2025 ANNUAL MEETING

OFFICIAL PROCEEDINGS, Volume XXVI

Scientific Session Abstracts

Scientific Session Awards

Abstracts presented at the Society's virtual scientific session will be considered for the following awards:

- The **George Peters Award** recognizes the best presentation by a breast fellow.
  In addition to a plaque, the winner receives $1,000. The winner is selected by the Society's Annual Meeting Scientific Committee.

  The award was established in 2004 by the Society to honor Dr. George N. Peters, who was instrumental in bringing together the Susan G. Komen Breast Cancer Foundation, The American Society of Breast Surgeons, the American Society of Breast Disease, and the Society of Surgical Oncology to develop educational objectives for breast fellowships. The educational objectives were first used to award Komen Interdisciplinary Breast Fellowships. Subsequently the curriculum was used for the breast fellowship credentialing process that has led to the development of a nationwide matching program for breast fellowships.

- The **Scientific Presentation Award** recognizes an outstanding presentation by a resident, fellow, or trainee. The winner of this award is also determined by the Annual Meeting Scientific Committee. In addition to a plaque, the winner receives $500.

- All presenters are eligible for the **Scientific Impact Award**. The recipient of the award, selected by audience vote, is honored with a plaque.

- The **Best Poster Award** recognizes the best poster presentation in the top ten poster category.
  The recipient of the award, selected by audience vote, is honored with a plaque.

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Breast Surgeons

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Scientific Oral Presentations I

Thursday, May 1, 2025 2:30 pm - 3:15 pm
Moderators: Sarah L. Blair, MD, FACS; Megan Miller, MD, FACS

2010191 - Cryoablation: A Minimally Invasive Alternative for Early-Stage Breast Cancer. The 6-year Update of the FROST Clinical Trial

Dennis R. Holmes, Suzan Manoian, Rakhshanda L. Rahman, Robert Ward, Ned Carp, Michael Plaza, Kamilia Kozlowski, Shoko Abe, Lisa Bailey, Veronica Jones, Sharla Patterson, Peter Littrup, Jose Tamayo

Background/Objective: Cryoablation is gaining traction as a minimally invasive alternative to lumpectomy for women with early-stage breast cancer. The FROST Trial (Freezing Instead of Resection of Small Tumors; NCT01992250) is a phase II, single-arm, multicenter clinical study evaluating the long-term efficacy and safety of cryoablation in appropriately selected patients. FROST enrolled women aged 50 years and older with unifocal, ultrasound-visible, clinical stage I (cT1, ≤2.0 cm), node-negative (cN0), core biopsy-confirmed hormone receptor-positive, HER2/neu-negative invasive ductal carcinoma. Tumor size was confirmed by mammography, ultrasound, and optional contrast-enhanced MRI. Participants were stratified by age into two risk-based groups: Stratum 1 (age ≥70 years) and Stratum 2 (age 50–69 years).

Methods: Following informed consent, all participants underwent ultrasound-guided cryoablation at one of 12 study sites. The procedure used a single cryoprobe, liquid nitrogen as the cryogen, and a freeze–thaw–freeze cycle. All patients were prescribed adjuvant endocrine therapy. Radiation therapy was required in Stratum 2. At 6 months post-procedure, participants underwent mammography, ultrasound, and optional MRI, as well as core needle biopsy of the cryoablation site to confirm complete ablation. Annual follow-up included clinical breast exams and breast imaging. The main outcomes were 5-year local recurrence rate and 5-year invasive local recurrence-free survival (ILRFS).

Results: Of 93 registered patients, 83 successfully completed cryoablation between July 22, 2016, and October 21, 2020, and were evaluable for long term follow-up. Stratum 1 included 48 subjects and Stratum 2 included 35 subjects. At the time of treatment, median patient age was 71 years (range: 51-95 years) for the entire group, 76 years (range: 70-95 years) for Stratum 1 and 62 years (range: 51-69 years) for Stratum 2. The median tumor size for both Strata was 9.5 mm (range: 4-19 mm) and 9.0 mm (range: 4-18 mm), respectively. During the follow-up period, 89.6% (43/48) of participants in Stratum 1 received adjuvant endocrine therapy. In Stratum 2, 85.7% (30/35) of patients received recommended endocrine therapy, 74.3% (26/35) received recommended whole breast radiation, and 5.7% (2/35) declined both endocrine therapy and radiotherapy. No serious adverse events were reported related to cryoablation, endocrine therapy, or radiotherapy.

Conclusions: The FROST trial demonstrates that cryoablation is a safe and effective alternative to lumpectomy in selected patients with early-stage, hormone receptor-positive breast cancer. Long-term results show low local recurrence and invasive recurrence rates, even with the omission of axillary

surgery. These findings support the continued investigation and selective clinical application of cryoablation as a breast-conserving, minimally invasive treatment approach.

Table 1. At median follow-up of 6.11 years (range 1.98-8.28), the following outcomes were observed:

Endpoint	Overall	Stratum 1	Stratum 2	
5-year LRR	3.64%	2.08%	5.80%	p= 0.38
5-year invasive LRFS	97.59%	97.92%	97.14%	p= 0.97
Axillary Recurrences	n=2	n=1	n=1	
Deaths from any cause	n=3	n=2	n=1	
Breast cancer-related deaths	n=0	n=0	n=0	

1973017 - From Podium to PubMed: Successful Manuscript Publication of Breast Surgical Oncology Presentations at National Meetings from 2017–2022

Margaret Summerside[1], Alexandra Istl[1], Christine Rogers[1], Adrienne Cobb[2], Amanda Kong[2], Puneet Singh[3], Chandler Cortina[2]

[1]Medical College of Wisconsin, Milwaukee, WI, [2]Medical College of Wisconsin and Medical College of Wisconsin Cancer Center, Milwaukee, WI, [3]University of Texas MD Anderson Cancer Center, Houston, TX

Background/Objective: Research participation is an integral aspect of medical education, surgical training, and faculty development. Academic conferences serve as the primary vehicle for research dissemination, but contemporary data on successful manuscript publication following conference presentation is limited. This study aims to assess manuscript publication rate for breast surgical oncology (BSO) national conference presentations and examine factors associated with successful manuscript publication.

Methods: We performed a retrospective review of orally presented BSO abstracts from three annual meetings from 2017–2022: the American Society of Breast Surgeons (ASBrS), the Society of Surgical Oncology (SSO), and the American College of Surgeons (ACS). Presentations were included if they focused on breast cancer and/or benign breast disease and were excluded if the abstract focused solely on breast reconstruction/plastics. Presentations were identified by searching published abstract proceedings and were then classified by year, first-author role, and demographics. Abstract titles were searched on PubMed to identify a corresponding manuscript using keywords and presentation authorship. Univariate and multivariate logistic and linear regression models were used to examine factors predictive of publication, journal impact factor (IF), and time to publication.

Results: A total of 441 presentations met study inclusion criteria: 112 (27.7%) from ASBrS, 154 (34.9%) from SSO, and 165 (37.4%) from ACS. Overall manuscript publication rate was 60.5% (n=267). Publication rate by meeting was 81.2% (n=99/112) for ASBrS, 63.4% (n=97/112) for SSO, and 43.0% (n=71/165) for ACS. The majority of first authors were trainees (56.8%) (defined as residents or fellows), followed by attendings/faculty (26.7%), medical students, (8.5%), and research professionals (1.4%). Presenting first authors more frequently had feminine pronouns compared to masculine pronouns (58.4% vs 26.6%, $p< 0.01$) but 15% of pronouns were unknown. Most published manuscripts were categorized as clinical outcomes (34.5%) or health-services research (28.5%), followed by survey studies or qualitative research (25.5%) and basic science research (11.6%). Annals of Surgical Oncology (ASO, IF=3.7) was the most common journal of publication (n=164, 61.2%). On univariate analysis, manuscripts published in a society-associated journal had a significantly shorter time from presentation to publication compared to those published in non-society journals ($p< 0.001$). Of the 102 manuscripts not published in ASO, a higher proportion of those from ACS and SSO were published in journals with an IF>3.7 ($p=0.046$). On multivariate regression analysis, presentations at SSO (OR 0.09, 95% CI 0.03–0.29) and ACS (OR 0.01, 95% CI 0–0.02) were less likely to result in manuscript publication than those presented at ASBrS ($p< 0.01$). When compared to students, trainees (OR 2.2, 95% CI 1.1–4.5) and attendings/faculty (OR 2.9, 95% CI 1.4–6.4) were significantly more likely to publish a subsequent manuscript ($p< 0.01$). Presenter pronouns were not associated with publication.

Conclusions: In this review of national BSO conference presentations from 2017–2022, specific meeting and first author role were predictive of successful manuscript publication. Findings not only guides authors on which conferences are most suitable for their abstract submission, but also

highlights the need for writing resources and mentorship for students conducting BSO research to foster manuscript composition and enhance their chances of successful research publication.

Table 1

Table 1. Manuscript publication rates and first author information of orally presented breast surgical oncology abstracts from select 2017–2022 scientific meetings

Variables		Meeting								*p*-value
		All		ASBrS		ACS		SSO		
		n = 441		n = 122		n = 165		n = 154		
		n	%	n	%	n	%	n	%	
Number of Published Manuscripts		267	60.5	99	81.1	71	43.0	97	63.0	**0.005**
Published Manuscript Research Type										**0.002**
	Basic Science	31	11.6	7	7.1	8	11.3	16	16.5	
	Health Services	76	28.5	23	23.2	29	40.8	24	24.7	
	Outcomes	92	34.5	33	33.3	17	23.9	42	43.3	
	Survey/Qualitative	68	25.5	36	36.4	17	23.8	15	15.5	
Published Manuscript First Author Role										**0.001**
	Student	16	6.0	5	5.1	10	14.1	1	1.0	
	Trainee*	156	58.4	48	48.5	47	66.2	61	62.9	
	Research Professional	5	1.9	3	3.0	0	0	2	2.1	
	Attending/Faculty	80	30.0	42	42.4	10	14.1	28	28.9	
	Unknown/Other	10	3.7	1	1.0	4	5.6	5	5.2	
Published Manuscript First Author Pronouns										**0.025**
	She/her	165	61.8	68	68.7	33	46.5	64	66.0	
	He/him	68	25.5	23	23.2	24	33.8	21	21.6	
	Unknown	34	12.7	8	8.0	14	19.7	12	12.4	

*Trainee category includes residents and fellows

1988771 - Impact of Time to Surgery Post Neoadjuvant Chemotherapy on Breast Cancer Outcomes: A Retrospective Study of Patients Enrolled in the I-SPY 2 Clinical Trial

Julie Van Hassel[1], Katrina Dimitroff[2], Christina Yau[2], Rita Mukhtar[2], Marissa M. Howard-McNatt[3], Nora Jaskowiak[4], Jane Perlmutter[5], Angela DeMichele[6], Douglas Yee[7], Nola Hylton[2], W. Symmans[8], Laura van't veer[2], Hope Rugo[2], Laura Esserman[3], Rebecca Shatsky[9], Claudine Isaacs[10], Henry Kuerer[8], Anne Wallace[14], Nicolas Prionas[2], Judy Boughey[11], Jennifer Tseng[12], Chantal Reyna[13], Neil Taunk[8], Susan Kesmodel[14], Marie Lee[15], Jana Fox[16], Mara Piltin[11], Julia Tchou[17], Lauren Postlewait[18], Roshni Rao[19]

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Background/Objective: Neoadjuvant chemotherapy (NCT) in the treatment of breast cancer allows for tumor downsizing, the ability to assess tumor response to NCT, and can increase surgical options. However, the optimal time to surgery (TTS) post NCT remains to be defined and surgeons typically operate between 4-6 weeks after completion of NCT. Existing studies are often single centered, of limited size, and do not delineate tumor receptor subtypes. Results may be conflicting, without a clear consensus. We thus aimed to investigate the impact of TTS following NCT on oncologic outcomes utilizing a large multi-institutional cohort within the I-SPY 2 Trial database.

Methods: A retrospective analysis of patients with breast cancer who were randomized on the I-SPY2 clinical trial to either the standard treatment arm (paclitaxel/anthracycline/cyclophosphamide) or to novel therapy treatment arms was performed. Patients were grouped based on TTS: 1-4 weeks, 5 weeks, 6-8 weeks, and 9+ weeks. We conducted subgroup analysis by tumor receptor subtypes (hormone receptor [HR]+/HER2-, HER2+, and triple negative breast cancer [TNBC]). Patient and clinical characteristics were analyzed between TTS groups using Chi-square and Kruskal-Wallis Rank Sum tests. The associations of TTS and local recurrence free interval (LRFI) and event free survival (EFS) were examined with Kaplan-Meier, log-rank test, and univariate/multivariate Cox regression hazard models, adjusting for patient and clinical factors.

Results: 1,877 patients were included in the study. 526 (28.0%) underwent surgery between 1-4 weeks, 425 (22.6%) at 5 weeks, 490 (26.1%) between 6-8 weeks, and 436 (23.2%) 9+ weeks after NCT. On tumor receptor subgroup analysis, 27.5% of patients with TNBC had a TTS following NCT of 9+ weeks vs 22.4% of patients with HR+HER2- tumors and 18.7% of patients with HER2+ tumors. LRFI for each TTS group was 95% (1-4 weeks), 92% (5 week), 95% (6-8 weeks), and 87% (9+ weeks) ($p < 0.001$). On multivariate analysis, TTS >9 weeks was independently associated with worse LRFI (HR 2.20, $p = 0.003$). A similar trend was seen for 5-year EFS (86%, 81%, 80%, and 73%; $p < 0.001$, on multivariate analysis HR 1.70, $p < 0.001$). Statistically significant decreases in 5-year LRFI and EFS related to TTS were appreciated on tumor receptor subgroup analysis in patients with TNBC

and HR+HER2- disease (Figure 1). No differences in 5-year LRFI and EFS were noted between TTS groups for patients with HER2+ disease (Figure 1). Additionally, a higher residual cancer burden (RCB) index was associated with longer TTS ($p < 0.001$).

Conclusions: Longer TTS (9+ weeks) after NCT is associated with worse local recurrence free interval and event-free survival outcomes in patients with breast cancer. On subgroup analysis, this relationship between TTS and survival remains in patients with HR+HER2- and TNBC tumor subtypes, but is not observed in patients with HER2+ tumor receptor subtypes, likely due to HER2 targeted agents. In the absence of contraindications, surgery should be considered within 8 weeks following NCT for improved survival outcomes.

Figure 1: Kaplan-Meier curves/log-rank test for local recurrence survival (A) and event free survival (B) in woman receiving NCT by TTS grouped by tumor receptor subtypes.

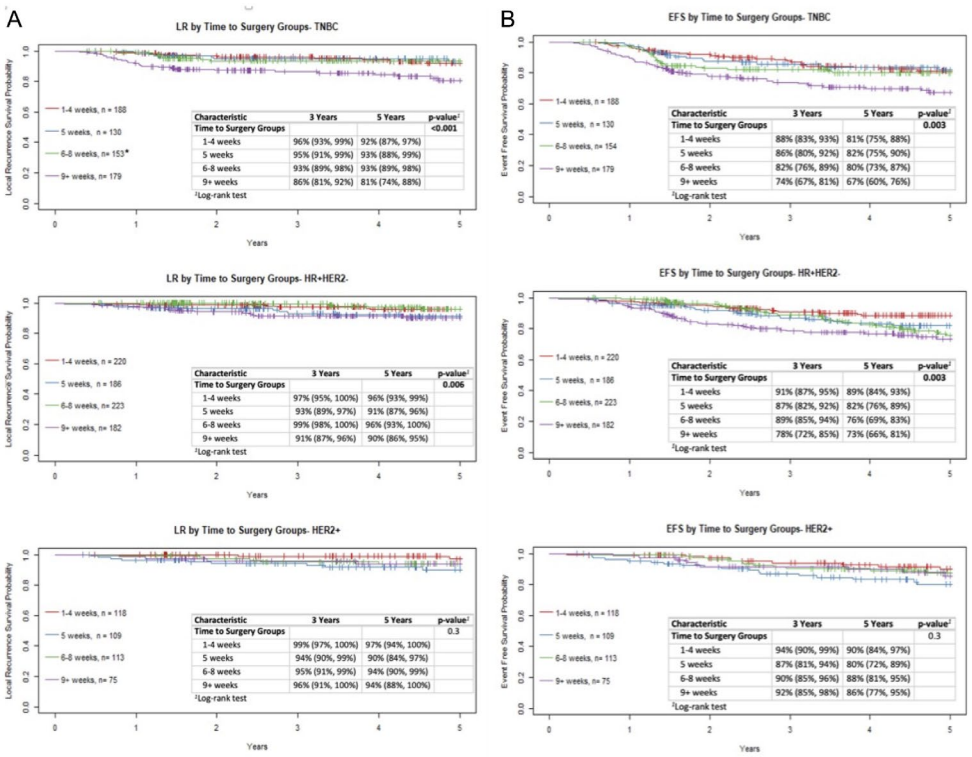

Figure 1. Kaplan-Meier curves/log-rank test for local recurrence survival (A) and event free survival (B) in woman receiving NCT by TTS grouped by tumor receptor subtypes.

1987888 - Validation of the Performance of the Novel Prognostic Staging System for Overall Survival in De Novo Metastatic Breast Cancer and Demonstration of Performance for Cancer-Specific Outcomes

Christopher Vetter, Tanya Hoskin, Carrie Olson, Judy Boughey

Mayo Clinic Rochester, Rochester, MN

Background/Objective: A novel prognostic staging system was developed by Plichta et al. to differentiate among patients with de novo metastatic breast cancer using data from the National Cancer Database (NCDB). We aimed to validate this staging system within a more contemporary cohort using individual patient specific data and to assess model performance with respect to cancer specific outcomes.

Methods: A retrospective review was conducted of all patients diagnosed with AJCC 8th edition clinicopathologic stage IV breast cancer in our institutional cancer registry from 2010-2022. Primary outcome was overall survival (OS). Secondary outcomes were disease-specific survival (DSS), progression-free survival (PFS), time to progression (TTP), and distant progression-free survival (DPFS). Progression was defined according to the RECIST 1.1 criteria. With more granular individual patient level data available in our dataset than the NCDB model-development cohort, we expanded the possible metastatic sites from the four in the NCDB (bone, brain, liver, and lung) to all possible metastatic sites. Statistical analysis was performed used Kaplan-Meier curves with log-rank tests; model discrimination was estimated using the C-statistic.

Results: 425 patients met inclusion criteria. Median age 59 (IQR 49-69), 99.5% female, 88% non-Hispanic white, 78% ductal histology, 3.3% cT0/is, 13.2% cT1, 35.1% cT2, 21.2% cT3, 25.9% cT4, 1.4% missing clinical T category, 64.7% HR positive/HER2 negative, 22.4% HER2 positive, 12.5% triple negative. Compared to the model-development cohort, our cohort had a slightly lower percentage of HER2 positive (22.4% vs 25.9%), triple negative cancers (12.5% vs 14.8%), and lung metastases (22.4% vs 29.6%). Applying the Plichta algorithm with granular clinical data resulted in a stage distribution of 6% IVA, 46% IVB, 31% IVC, and 15% IVD. Ten patients (2%) did not have sufficient information for stage grouping. Application of the staging system using granular data showed fair discrimination at 3 years for OS (C-statistic 0.64, 95% CI: 0.60-0.68). Furthermore, the staging system had fair discrimination for DSS (0.64), PFS (0.60), TTP (0.60), and DPFS (0.60). With a median follow-up of 41 months, stage IVA-D overall survival was 84%, 79%, 59%, and 47% at 3 years and 73%, 66%, 42%, and 28% at 5 years (Figure 1a); this differed significantly across groups ($p< 0.001$) and was higher than seen in the Plichta NCDB data. Stage groups also discriminated patients for all cancer specific outcomes: DSS, PFS, DPFS (Figure 1b), and TTP (each $p< 0.001$). DSS was 88%, 81%, 62%, 52% at 3 years, 81%, 70%, 44%, and 32% at 5 years for stage groups A-D respectively, PFS was 60%, 44%, 26%, and 14% at 3 years, and DPFS was 63%, 46%, 30%, and 15% at 3 years. The median TTP was 45 months for IVA, 28 months for IVB, 17 months for IVC, and 12 months for IVD ($p< 0.001$).

Conclusions: Using granular patient level data, the novel prognostic staging system for de novo metastatic breast cancer provided meaningful discrimination in overall survival. Furthermore, the novel prognostic staging system performed well for DSS, PFS, DPFS, and TTP. This supports use of this staging system for Stage IV breast cancer.

Figure 1. (A) Overall survival among stage groups A-D and (B) distant progression-free survival among stage groups A-D

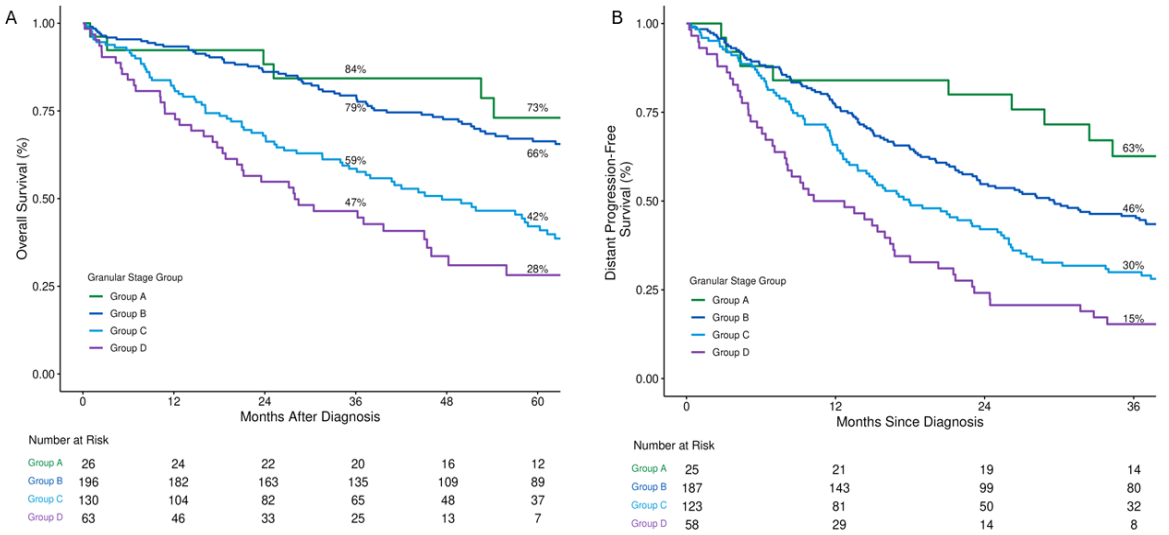

Figure 1. (A) Overall survival among stage groups A-D and (B) distant progression-free survival among stage groups A-D

1988302 - Impact of Neoadjuvant Chemotherapy on Surgical Outcomes and Conversion to Node-Negativity in Invasive Lobular Breast Cancer: Analysis of Molecularly High-Risk Tumors by Histologic Subtype on the I-SPY2 Clinical Trial

Rita Mukhtar[1], Katrina Dimitroff[1], Christina Yau[1], Jo Chien[1], Eileen Connolly[2], Marissa M. Howard-McNatt[3], Roshni Rao[2], Velle Ladores[1], Mehra Golshan[4], Candice Sauder[5], Kamran Ahmed[6], Rachael Lancaster[7], Jana Fox[8], Lily Gutnik[7], Marie Lee[6], Julia Tchou[9], Nicolas Prionas[1], Cletus Arciero[10], Chantal Reyna[11], Henry Kuerer[12], Kayla Switalla[1], Neil Taunk[13], Todd Tuttle[14], Meena Moran[4], Lauren Postlewait[15], Jane Perlmutter[16], Angela DeMichele[13], Douglas Yee[17], Nola Hylton[1], W. Symmans[12], Hope Rugo[1], Rebecca Shatsky[18], Claudine Isaacs[19], Laura Esserman[1], Laura van't veer[1], Judy Boughey[20]

[1]University of California San Francisco San Fransico, CA, [2]Columbia University, New York, NY, [3]Wake Forest, Winston-Salem, NC, [4]Yale School of Medicine, New Haven, CT, [5]UC Davis Health, Comprehensive Cancer Center, Sacramento, CA, [6]H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, [7]University of Alabama Birmingham, Birmingham, AL, [8]Montefiore Medical Center, New York, NY, [9]University of Pennsylvania, Wayne, PA, [10]Emory University School of Medicine, Atlanta, GA, [11]Loyola University Medical Center, Chicago, IL, [12]MD Anderson Cancer Center, Houston, TX, [13]University of Pennsylvania, Philadelphia, PA, [14]University of Minnesota, Minneapolis, MN, [15]Winship Cancer Institute, Emory University, Atlanta, GA, [16]Gemini Group, Ann Arbor, MI, [17]Masonic Cancer Center, University of Minnesota, Minneapolis, MN, [18]Moores Cancer Center, University of California San Diego, La Jolla, San Diego, CA, [19]Lombardi Comprehensive Cancer Center, Georgetown University, Washington, DC, [20]Mayo Clinic, Rochester, MN

Background/Objective: Invasive lobular carcinoma (ILC) represents 10-15% of all breast cancers and has significant treatment challenges compared to invasive ductal carcinoma. ILC tumors typically have poor response to neoadjuvant chemotherapy (NAC), require more extensive surgery, and have more positive margins. While many lobular tumors have low-risk biology by gene expression assays, there is significant heterogeneity within ILC, and the subset with high-risk biology may have different treatment response. We compared surgical treatment and outcomes by lobular versus non-lobular histology among patients with high genomic risk on I-SPY2, a prospective, multicenter NAC trial.

Methods: We evaluated 1,329 patients with stage II-III breast cancer and high-risk 70 gene assay (MammaPrint, Agendia) who completed treatment on I-SPY2 between 2011-2021. I-SPY2 tests novel NAC agents, with patients randomized by subtype (hormone receptor [HR]+/HER2-, triple negative, or HER2+) and monitored with serial breast magnetic resonance imaging. Patients with classic, pleomorphic, or mixed lobular/ductal histology were included in the lobular cohort and compared to the non-lobular cohort. We evaluated rates of mastectomy, positive margins, axillary dissection, and conversion from clinical node positive (cN+, defined as biopsy proven positive lymph node pre-NAC,) to pathologic node negative (ypN-) status.

Results: Of 1,329 patients, 124 (9.3%) had lobular histology, with most lobular tumors being HR+/HER2- (69%) and grade 2 (64%). Histologic subtype of lobular tumors was mixed lobular/ductal in 62%, classic ILC in 24%, and pleomorphic ILC in 14%; average age was 59.9 years, and 53% were cN+. There was no difference in mastectomy rate by histology (57.2% for lobular versus 55.8% for non-lobular cases, p=0.8). The ILC cohort had a significantly higher positive margin rate than the

non-ILC cohort (13.1% versus 4.8%, p=0.005), including in the lumpectomy setting (21.2% versus 7.9%, p=0.023), and nearly significantly in the mastectomy setting (7.8% versus 2.4%, p=0.058). Within the cN- subset (n=630), axillary dissection was significantly more common among the lobular cases compared to non-lobular (24.1% [n=14/58] versus 14.0% [n=80/572], p=0.039). In the cN+ subset (n=699), axillary dissection rates were similar (62.1% [n=41/66 lobular] versus 61.5% [n=389/633 non-lobular], p>0.9). Notably, conversion from cN+ to ypN- status did not differ statistically between lobular and non-lobular cases (40.1% [n=27/66] versus 51.2% [n=324/633] respectively, p=0.11). The rate of conversion from positive to negative nodal status among lobular tumors was high at 30.6% in HR+/HER2-, 72.7% in HER2+, and 66.7% in triple negative cases.

Conclusions: Relative to prior reports in ILC, we found a high rate of nodal response after NAC in this cohort of genomically high-risk lobular tumors in the I-SPY2 trial, as well as higher positive margin and axillary dissection rates. Overall, our data underscore the challenges of surgical management for ILC, but also hold promise that molecular classification can improve treatment selection. While genomically high-risk status is less common in ILC tumors in general, our findings suggest that gene expression assay testing in cN+ ILC patients can identify a subset who may benefit from NAC and potentially be spared axillary dissection. Further work on ILC specific predictors of therapy benefit is needed.

Scientific Oral Presentations II

Friday, May 2, 2025 2:30 pm - 2:45 pm
Moderators: Catherine C. Parker, MD, FACS; Mediget Teshome, MD, MPH, FACS

1988340 - 90 Days of Pre-Operative Endocrine Therapy Informs Patient and Physician Preference for Radiation Therapy: Primary Results from the Pre-Operative Window of Endocrine Therapy to Inform Radiation Therapy Decisions (POWER) Trial

Shayna Showalter[1], Lena Turkheimer[1], Max Meneveau[2], Gina Petroni[1], David Brighton[1], Kandace McGuire[3], Trish Millard[1]

[1]University of Virginia, Charlottesville, VA, [2]Memorial Sloan Kettering Cancer Center, New York, NY, [3]Virginia Commonwealth University, Richmond, VA

Background/Objective: Clinical trial data support the omission of radiation therapy (RT) when adjuvant endocrine therapy (AET) is planned for women ≥ 65 years with estrogen receptor-positive (ER+) early-stage invasive breast cancer (IBC) treated with breast-conserving surgery (BCS). Due to lack of insight regarding AET tolerance, the majority of older women still receive RT. The POWER trial is a phase II multicenter trial designed to determine if 90 days of pre-operative endocrine therapy (pre-ET) changes patient and/or surgeon preferences for RT. The intentional resequencing of treatments allows patients to assess tolerance to endocrine therapy (ET) before making a decision about RT.

Methods: Between 2020 and 2024, two centers enrolled 79 women aged ≥65 years with IBC measuring ≤2 cm, clinically N0, ER+/PR±/HER2-. Those with a history of ipsilateral breast RT or prior use of ET were excluded. Participants took 90 days of pre-ET before BCS. Patients' and surgeons' preferences for RT, and patient decisional conflict regarding adjuvant treatments were evaluated before and after pre-ET. After BCS, adjuvant treatment plans were made by the patient and treating physicians. For each cohort, a change in preference was tested from an assumed low change rate of 5% to a rate of ≥15% with a one-sided 5% level binomial test.

Results: The final cohort included 75 women with a median age of 73 (4 did not complete the RT preference survey). Ninety-five percent completed pre-ET (85.3%- aromatase inhibitor, 14.6%- tamoxifen). Adverse events attributed to pre-ET occurred in 35 participants (47%), with fatigue, hot flashes, and arthralgias being the most common. Patients reported a low level of decisional conflict, with no significant change between the two-time points. After pre-ET, 21 (28.0%) patients and 18 (24.0%) surgeons changed their preference for RT, which exceeded the predetermined thresholds to constitute a significant change ($p< 0.001$ and $p=0.015$, respectively). Before pre-ET, 45 patients (60%) reported they were 'unlikely/very unlikely' to pursue RT; after pre-ET, 11 of these 45 participants reported they were 'likely/very likely' to pursue RT. Conversely, among the 30 participants who initially reported being 'likely/very likely' to undergo RT, 10 switched to 'unlikely/very unlikely.' After pre-ET, most of the time (74.7%) surgeons' recommendation for RT was 'weak/very weak'. Agreement between patients' and surgeons' preferences for RT increased significantly from 53.3% (Kappa=-0.03) to 81.3% after pre-ET (Kappa=0.6, $p< 0.001$). Thirty-one patients (41.3%) received RT.

Conclusions: Pre-ET significantly changed patient and surgeon preferences for RT and increased the agreement between patients' preferences and surgeons' recommendations. These findings validate pre-ET as an innovative method to inform adjuvant therapy decisions and recommendations by

providing patients with the experience of taking ET prior to committing to adjuvant therapy. The forthcoming POWER II trial is designed to determine the impact of pre-ET on over- and under-treatment. The POWER trials have the potential to create a paradigm shift in the treatment of older women with early-stage ER+ breast cancer.

Figure 1: Patient and Physician Preference for Radiation Therapy Before and After Pre-ET

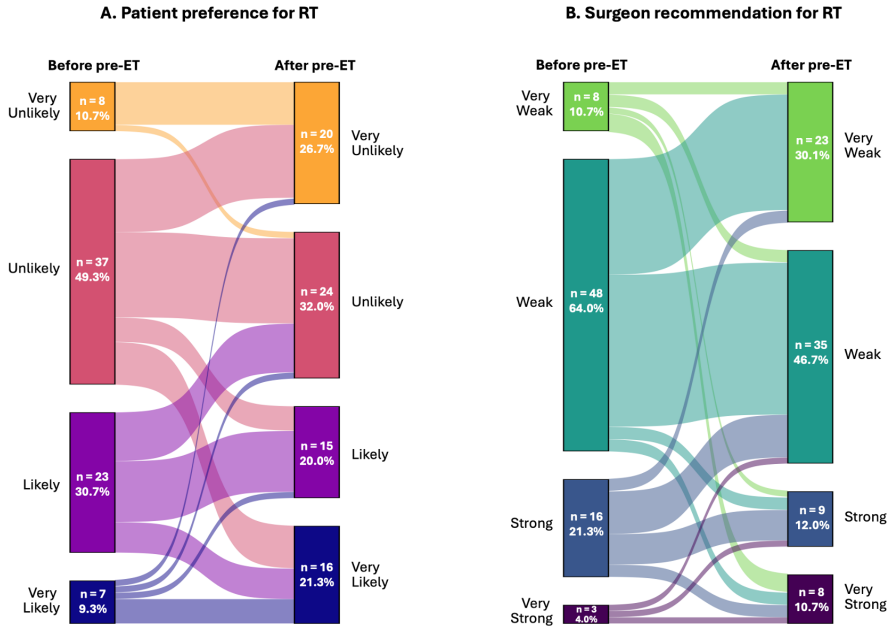

Figure. Sankey plot of (A) patient preferences for RT and (B) strength of surgeon recommendation for RT, before and after pre-ET. The size of each ribbon is proportional to the number of patients and surgeons moving from the before pre-ET to after pre-ET node. The height of each node represents the number of patients or surgeons reporting their preference or recommendation for RT before and after pre-ET. ET = endocrine therapy; RT = radiation therapy

1987887 - Impact of Quality Improvement Interventions on Biopsy to Treatment Time in Breast Cancer: Results from the PROMPT Quality Collaborative of the National Accreditation Program for Breast Centers

Danielle Thompson[1], Marie Fefferman[1], Sandra Simovic[2], Kristine Kutcha[3], Richard Bleicher[4], Jill Dietz[5], Riley Medenwald[2], Katharine Yao[6]

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Background/Objective: Timely care for breast cancer patients is an important quality metric. To address the time interval between biopsy and first treatment, the National Accreditation Program for Breast Centers (NAPBC) launched PROMPT, a network-wide quality collaborative that surveyed sites on times between mammographic exams, biopsy, and treatment. The objective of this study was to examine the time interval from biopsy to first treatment.

Methods: Participating PROMPT sites conducted quality improvement projects using the American College of Surgeons (ACS) quality framework. The main outcome measure was the number of days from biopsy to first treatment (either surgery or neoadjuvant treatment) before and after individual site interventions. We examined the association between facility and personnel factors and decreasing time intervals and successful interventions that decreased time intervals.

Results: Of 233 sites that participated in PROMPT, 103 (44.0%) sites chose the time interval of diagnosis to treatment. Sixty-one (59.2%) sites chose the time interval of biopsy to surgery and 42 (40.7%) sites chose biopsy to neoadjuvant therapy (NAC). Overall, from biopsy to treatment, 56 (54.4%) stated that their quality improvement projects were successful, meaning they were able to decrease the number of days between biopsy and treatment after their quality improvement project intervention. From biopsy to surgery, the average number of days before a successful intervention was 50.3 days compared to 38.8 days after intervention. From biopsy to NAC, the average number of days before a successful intervention was 40.7 days compared to 30.9 days after intervention. There were no facility or personnel factors that were found to be significantly associated with a site decreasing their time interval from biopsy to treatment. Out of 22 interventions listed, the top four most commonly used to decrease the time interval from biopsy to surgery were hiring a breast surgeon, increasing OR block time for either the breast surgeon or the breast surgeon and the plastic surgeon combined and enabling navigators to schedule appointments. Out of 17 interventions listed for time from biopsy to NAC, the top four most commonly used to decrease the time interval from biopsy to NAC were enabling navigators to schedule appointments especially for medical oncology, streamlining port placements, ordering staging studies prior to the medical oncology consult, and reserving echocardiogram slots.

Conclusions: PROMPT has demonstrated that monitoring and improving timely breast cancer treatment is feasible and resulted in improved time intervals for a majority of NAPBC sites. The type of interventions to improve timely care range from hiring of staff to process improvement which could be applicable to other disease sites.

Table 1: Successful QI Project Interventions from Most Successful to Least Successful

Successful QI Project Interventions from Most Successful to Least Successful	
Biopsy to Surgery	**Biopsy to NAC**
Hired a breast surgeon	Navigator scheduled appts
Navigator scheduled appts	Ordered staging studies prior to medical oncology appt
Increased OR block time for breast surgeons	Expedited port placements
Increased OR block time for combination breast/plastic surgery cases	Offered concurrent medical oncology and breast surgery appts
Special scheduling process for combination breast/plastic surgery cases	Reserved echo slots
Hired a plastic surgeon	Standardized eligibility for NAC
Hired a navigator	Identified SDOH factors
Increased breast surgery clinic slots	Monitored time intervals in real time
Increased plastic surgery clinic slots	Scheduled more infusion slots
Standardized who gets a breast MRI	Hired a med oncologist
Presence of a dedicated surgery scheduler	Hired a navigator
Increased MRI slots	Increased medical oncology clinic slots
Monitored time intervals in real time	Increased MRI slots
Hired a radiologist	Streamlined first chemo treatment
Streamlined cardiac clearance	Streamlined ordering of genomic tests
Increased medical oncology clinic slots	Added a tumor board
Ordered staging studies prior to medical oncology appt	Read echo's same day
Expedited port placements	-
Process to get outside imaging and slides ahead of appt	-
Navigators educated patients on time to surgery	-
Dedicated breast OR team lead	-
Surgeon placed genetic testing orders	-

1986863 - Evaluating the Effect of a Multidisciplinary Breast Cancer Clinic on Time to Treatment at an Urban Safety Net Hospital

Anna Kobzeva-Herzog[1], Sarvesh Palaniappan[1], Yilan Jiangliu[1], Heba Elassar[1], Andrea Merrill[2], Naomi Ko[1], Lauren Oshry[1], Jose Acevedo[1], Michael Cassidy[3]

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Background/Objective: Although the multidisciplinary breast cancer clinic (MBCC) model has been implemented at many hospitals, little is known about how the MBCC model affects vulnerable breast cancer patients receiving care in a safety net hospital setting. Our aim was to investigate how visits to a newly implemented MBCC impacted time to treatment for patients at our safety net hospital.

Methods: This single center retrospective cohort study evaluated female patients ≥ 18-years-old with new breast cancer diagnoses using our institution's breast cancer registry from January 2019 – September 2022. We assessed patients who were seen in the MBCC model that was implemented in January 2019 at our institution compared to those seen in the traditional discipline-based serial episodic clinic model. Patients were referred to MBCC if breast surgeons or oncologists requested specific patients to be seen in this format. The primary outcome was time to treatment from biopsy-confirmed diagnosis. Secondary outcomes included time to initial appointment from diagnosis and time to treatment from initial appointment.

Results: There were 734 patients who met the inclusion criteria. Average age was 58.5 (±13.2) years, and the majority of patients were Black (45.8%) and were covered by Medicaid (48.4%). A minority of patients (28.9%) were seen in MBCC, of which patients were younger (55.7 years vs 59.6 years, P< 0.001) and were less likely to be of Hispanic ethnicity (18.4% vs 27.6%, P=0.01) compared to those not seen in MBCC. The majority of patients seen in MBCC had invasive breast cancer diagnoses (86.8% vs 60.3%, P< 0.001) as opposed to DCIS. In MBCC patients, time to initial treatment was shorter (35.0 days vs 46.9 days, P< 0.001), chemotherapy was more common (48.6% vs 11.5%, P< 0.001), and surgery as first treatment modality occurred less frequently (43.4% vs 77.2%, P< 0.001) compared to non-MBCC patients. There was no statistically significant difference in time to first appointment between the two cohorts. On subgroup analysis of chemotherapy-first patients, those seen in MBCC had shorter time to first appointment (10.2 days vs 18.1 days, P=0.011) and decreased time to initial treatment (27.1 days vs 42.6 days, P< 0.001) compared to the traditional outpatient model. When looking at surgery-first patients, those seen in MBCC demonstrated no statistically significant difference in time to first appointment or time to initial treatment when compared to non-MBCC patients. Multivariable analysis showed that invasive histology was more often associated with being seen in MBCC (OR 4.29, 95% CI 2.75-6.68, P< 0.001) and Hispanic ethnicity (OR 0.55, 95% CI 0.34-0.88, P=0.014) and older age (OR 0.98, 95% CI 0.97-0.99, P=0.021) were less often associated with being seen in MBCC.

Conclusions: Our findings demonstrate that implementation of a MBCC in a safety net hospital improved time to initial breast cancer treatment for vulnerable patients, populations that have historically faced disproportionate treatment delays in national cohorts. Moving forward, it will be important to determine the extent to which participation in the MBCC, versus other clinical or patient factors, is responsible for shorter time to treatment.

Table 1: Diagnosis and treatment characteristics of breast cancer patients at our safety net hospital

Characteristic	**Overall (N=734)**	**Not MBCC (N=522)**	**MBCC (N=212)**	***P*-value**
Histology, *n %*				**<0.001**
Non-Invasive	235 (32.0%)	207 (39.7%)	28 (13.2%)	
Invasive	499 (68.0%)	315 (60.3%)	184 (86.8%)	
Time to First Appointment, days *(n, %)*	12.3±13.4	12.7±14.5	11.3±10.1	0.21
Time to First Treatment, days *(n, %)*	43.4±42.6	46.9±47.3	35.0±25.9	**<0.001**
Type of First Treatment, *n %*				
Surgery	495 (67.4%)	403 (77.2%)	91 (43.4%)	**<0.001**
Chemotherapy	163 (22.2%)	61 (11.5%)	103 (48.6%)	**<0.001**
Endocrine Therapy	71 (9.7%)	53 (10.2%)	18 (8.5%)	0.49
Radiation	5 (0.7%)	5 (1.0%)	0	0.15

Abbreviations: MBCC – multidisciplinary breast cancer clinic

1982946 - Surgeon Recommendation Drives Receipt of Sentinel Lymph Node Biopsy in Women 70 and Over

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Background/Objective: Sentinel lymph node biopsy (SLN) for women ≥70 years of age with early-stage breast cancer (SLN ≥70) has been identified as low-value care, making it appropriate for deimplementation. However, rates of SLN ≥70 have remained relatively unchanged over time. A critical gap toward supporting deimplementation of SLN ≥70 is our understanding of how decisions are made within the patient-surgeon interaction. The objective of this study is to identify patterns of surgeon-patient interactions that are associated with deimplementation of SLN ≥70.

Methods: We identified patients aged 70 or older that participated in clinical trial Alliance A231701CD (n=132) from 6/2019-12/2021. Patients were eligible for this post hoc analysis if they underwent breast surgery, were clinically node negative, did not have neoadjuvant treatment, and had hormone receptor positive/her2 negative breast cancer (n=67). We coded transcripts of the audio from initial patient-surgeon consultations to assess shared decision making (OPTION-5, range 0-100, Elwyn et al.) and for patient-surgeon interactions (using a taxonomy to assess who initiates topic, primary decision maker, strength of recommendation, and how patient responds, Stivers et al.). We summarized patients' demographic characteristics and performed logistic regression to identify factors associated with SLN ≥70. We then described the interactional patterns that led to the decision for SLN ≥70 and summarized the justifications surgeons used to support the decision.

Results: The median participant age was 74 years (range 70-90). The majority had T1 cancers (75%), were grade 1 (50%), and underwent breast conservation (79%). Overall, 51/67 (76%) patients underwent SLN. Older age was associated with a lower likelihood of undergoing SLN (OR=-0.20 [95% CI-0.33- -0.58], p=0.01) with no association with OPTION-5 score (p=0.10), clinical size (p=0.09) or grade (p=0.9). Most consults (42/67) did not discuss the option of forgoing a SLN. For patients discussing SLN (n=24), interactional patterns were similar for patients who did and did not undergo SLN (Figure), with most conversations initiated by the surgeon, most recommendations presented as pronouncements, and the surgeon being the decision maker. For patients who underwent SLN (n=51), the most common justifications were that this was a standard part of staging (n=45), would impact radiation decisions (n=23), and/or would impact chemotherapy decisions (n=12). Conversely, surgeons used age (n=12), low impact on chemotherapy (n=8), and low risk of disease in nodes (n=4) to support forgoing SLN. Surgeons emphasized the importance of multi-disciplinary buy-in when justifying the role for SLN ≥70.

Conclusions: Decision making for SLN ≥70 is largely based on strong surgeon recommendation, with minimal shared decision making with the patient. Although age is associated with receipt of SLN ≥70, surgeons cite the perceived value of SLN for staging and treatment decision making when making their recommendation. Our findings suggest that ongoing surgeon education and support in framing conversations about SLN ≥70 may be valuable in supporting deimplementation. Support: NCI R21CA283601, UG1 CA189823.

Figure. Sankey Diagram of Patient-Surgeon Interaction

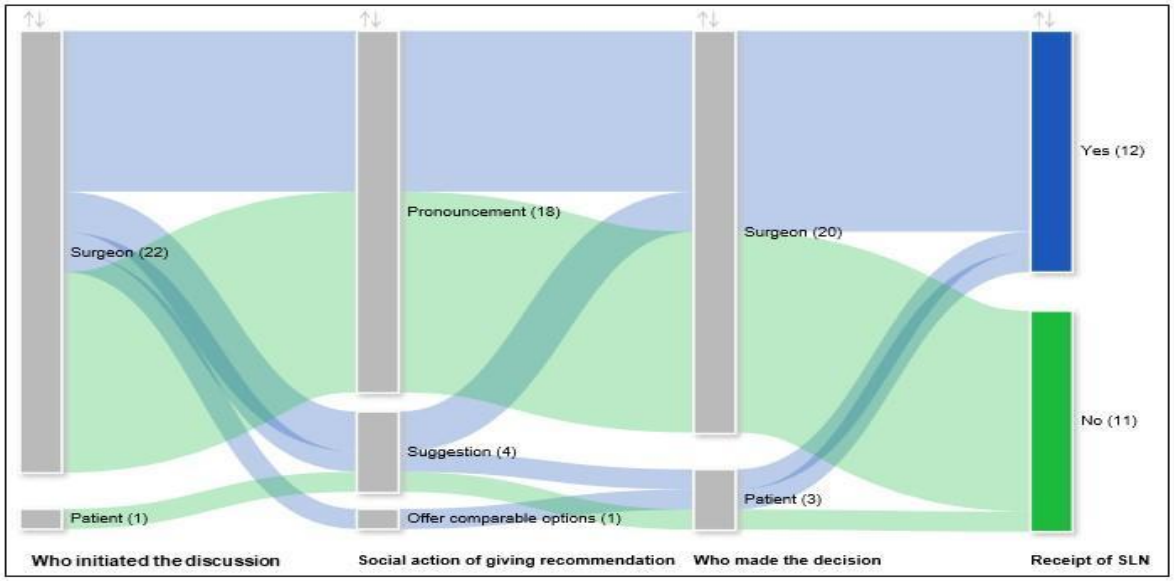

Figure. Sankey Diagram of Patient-Surgeon Interaction, including who initiated the discussion, the social action used to provide a recommendation, who was the decision maker, and whether SLN was received. Cohort includes 23 of 24 patients who discussed the option of forgoing a SLN (one excluded due to missing audio-recording).

1985885 - Margin Width and Local Recurrence in the NRG Oncology/NSABP B-35 DCIS Lumpectomy Trial

Irene Wapnir[1], Reena Cecchini[2], James Dignam[3], Stewart Anderson[4], Jiahe Li[5], J. Marie Suga[6], Adam Brufsky[7], Judith Hopkins[8], Laura Vallow[9], Kathy Albain[10], Mary Cianfrocca[11], Thomas Julian[12], Jean-Francois Boileau[13], Eleftherios Mamounas[14], Norman Wolmark[15]

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Background/Objective: NSABP B-35 is the largest randomized trial to prospectively collect margin width data on post-menopausal women with hormone receptor-positive DCIS treated by lumpectomy, whole breast irradiation, and adjuvant endocrine therapy. Local recurrence rates were similar in the tamoxifen and anastrozole arms of the trial providing an opportunity to analyze the effect of margin width on ipsilateral breast tumor recurrence (IBTR) and all breast cancer events.

Methods: NSABP B-35 was a phase 3, double-blind, randomized trial for DCIS in post-menopausal women treated by lumpectomy plus WBI, 5000-5040 cGy with an optional 1000 cGy boost. Participants were randomly assigned to five years of tamoxifen or anastrozole. Margins were classified by institutional pathologists as: positive (no ink on tumor), close (< 1mm), or negative (at least 1 mm). The closest surgical margin width was measured on those cancers having a negative margin, which enabled the analysis herein using 2mm as the discriminant size.

Results: Among 2,707 women analyzed using 1mm as the discriminant margin width, IBTR was the most common first event occurring in 90 patients (3.3%); 24/502 (4.8%) in those with < 1mm margins and 66/2,205 (3.0%) with margin widths >1 mm. The proportion of invasive-IBTRs was 29% and 39%, respectively. The 10-year cumulative incidence of all IBTR events for patients with a margin of < 1mm was 5.6% compared to 4.0% for those with margins that were ≥1mm (p=0.04). By comparison, for the 2,546 women analyzed using 2mm as discriminant margin width, 88 (3.5%) experienced an IBTR as a first event with 39/879 (4.4%) events for patients with < 2mm margins and 49/1,667 (2.9%) with >2mm margins. The 10-year cumulative incidence of IBTR events for patients with a margin width of < 2mm was 5.3% compared to 3.8% among those with margins that were ≥2mm (p=0.05). Contralateral breast cancer represented the second most common breast cancer event, occurring in 3.2% of participants.

Conclusions: The differences in 10-year IBTR cumulative incidences between the 1mm and 2mm cutoffs for margin width (5.6% vs 5.3% for < 1mm vs < 2mm, respectively, and 4.0% vs 3.8% for ≥1mm vs ≥2mm, respectively) are clinically minimal. These results indicate that the need to undertake re-excision lumpectomies based on margin width among post-menopausal women receiving

lumpectomy, breast irradiation, and adjuvant endocrine therapy should be reconsidered. NCT 00053898 Support: U10-80868, -180822, UG1CA189867.

1986088 - Ultrasound Guided Intratumoral Delivery of Immunotherapy in Breast Cancer

Camille Baumrucker, Nicole Harris, Paige Aiello, Junmin Whiting, Weihong Sun, Hatem Soliman, Hyo Han, Ricardo Costa, Susan Hoover, David Detz, Nazanin Khakpour, John Kiluk, Laura Kruper, Christine Laronga, Melissa Mallory, Brian Czerniecki, Marie Lee

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Background/Objective: Immunotherapy is a growing treatment option for difficult to treat subtypes of breast cancer (BC). However, systemic administration can lead to severe adverse events (AEs), thus limiting optimal dosing and indications. This has prompted interest in local administration via intratumoral injection. There are numerous immunotherapeutics being explored in this context in preclinical and clinical models, including cellular therapies, vaccines, and monoclonal antibodies. We evaluated our single institution experience with intratumoral injections focusing on safety and feasibility.

Methods: This is an IRB approved retrospective review of neoadjuvant patients who received intratumoral immunotherapy (IT) of talimogene laherparepvec (TVEC) for triple negative tumors, dendritic cell (DC1) vaccines for HER2+ tumors, or Voyager V1 oncolytic virus (VV1) for high-risk lesions on ISPY2 (ClinicalTrials.gov IDs: NCT05325632, NCT03387553, NCT05504707). All injections were administered by Breast surgical or clinical trial staff at a single institution. Primary outcomes were completion of planned neoadjuvant therapy, time to surgery (measured from completion of trial agents), and AEs secondary to injections as measures of feasibility. Secondary outcomes were the rate of pathologic complete response (pCR). The p-value was calculated using either the Chi-square test or Fisher's exact test, with a two-sided p-value of < 0.05 considered statistically significant.

Results: A total of 100 female patients with BC were included with a mean age of 52 (range 29-76) years at diagnosis. Most patients had cT2 disease (59%); 91 patients received IT; 90 were ultrasound (US) guided. Of IT, 47 (51.6%) received TVEC, 43 (47.3%) received DC1 vaccines, and 2 (2.2%) received VV1; 90 completed all injections. One TVEC patient missed a single injection due to RSV. Of those who completed planned injections, all have undergone surgery, mostly partial mastectomy (48/90=53.3%). Mean time from completion of IT to surgery was 126 days (range 59-207 days). Patients who received DC1 achieved a 58.1% pCR, 7% near pCR (tumor < 1mm), and 20.9% had a partial response (decrease in tumor size) to neoadjuvant therapy. In comparison, patients who received TVEC had a 42.6% pCR, 8.5% near pCR, and 36.2% had a partial response. Reported local AEs included pain (13%), injection site reaction (12%), hematoma (4%), swelling (2%), and injection site infection (1%). Reported systemic AEs included chills (29%), fever (25%), nausea (19%), fatigue (17%), flu-like symptoms (12%), headache (26%), myalgias (9%), and diarrhea (6%). Systemic AEs were reported more frequently, particularly fever, chills, and headache. Tumoral treatment response to neoadjuvant therapy was statistically associated with nausea ($p = 0.013$), while nodal response was not significantly associated with any specific adverse events; however, of note, 52 patients (52%) were cN0.

Conclusions: Intratumoral injection is a safe and effective approach for local administration of immunotherapeutics. BC can be feasibly targeted with US guidance due to its superficial location and minimally invasive access. Although patients reported AEs, these tended to be mild and self-limited. These findings support intratumoral immunotherapy as a viable option that may minimize systemic exposure while maintaining therapeutic efficacy in challenging BC subtypes. Breast surgeons skilled in US can play a critical role in intratumoral immunotherapy in BC.

2051182 - Circulating Tumor DNA (ctDNA) Is Reliably Detected in Patients with Metastatic Malignant Phyllodes Tumors: A Feasibility Study

Ellery Reason[1], Amanda Nash[2], Michael Aikuk[1], Susan McDuff[3], Derrick Renner[4], Sharlene Velichko[5], Charuta Palsuledesai[5], Angel Rodriquez[5], Minetta Liu[5], John Strickler[2], Juneko Grilley-Olson[6], Laura Rosenberger[6]

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Background/Objective: Phyllodes tumors (PT) are rare breast neoplasms classified as benign, borderline, and malignant based on histologic features. Malignant phyllodes tumors (MPT) are particularly aggressive with local and distant recurrence rates of 18-29.6%, and 16.5-28.6%, respectively. Once metastatic, median survival is approximately 7-15 months. Treatment is almost exclusively surgical; chemotherapy has not been evaluated systematically in the adjuvant or metastatic setting. In MPT, where the disease-free interval (DFI) is often less than two years, standard methods of surveillance such as imaging are not sensitive enough to allow for early intervention and potential rescue. Circulating tumor DNA (ctDNA) has the potential to be particularly beneficial in MPT, as it may allow for earlier detection of recurrence and intervention. Here, we aim to determine 1) the feasibility of detecting ctDNA in patients with known metastatic disease, 2) feasibility of detecting ctDNA prior to surgical resection in patients with non-metastatic MPT, 3) if ctDNA detection rates and levels vary according to histopathologic characteristics of MPT and tumor burden, and 4) determine genomic alterations.

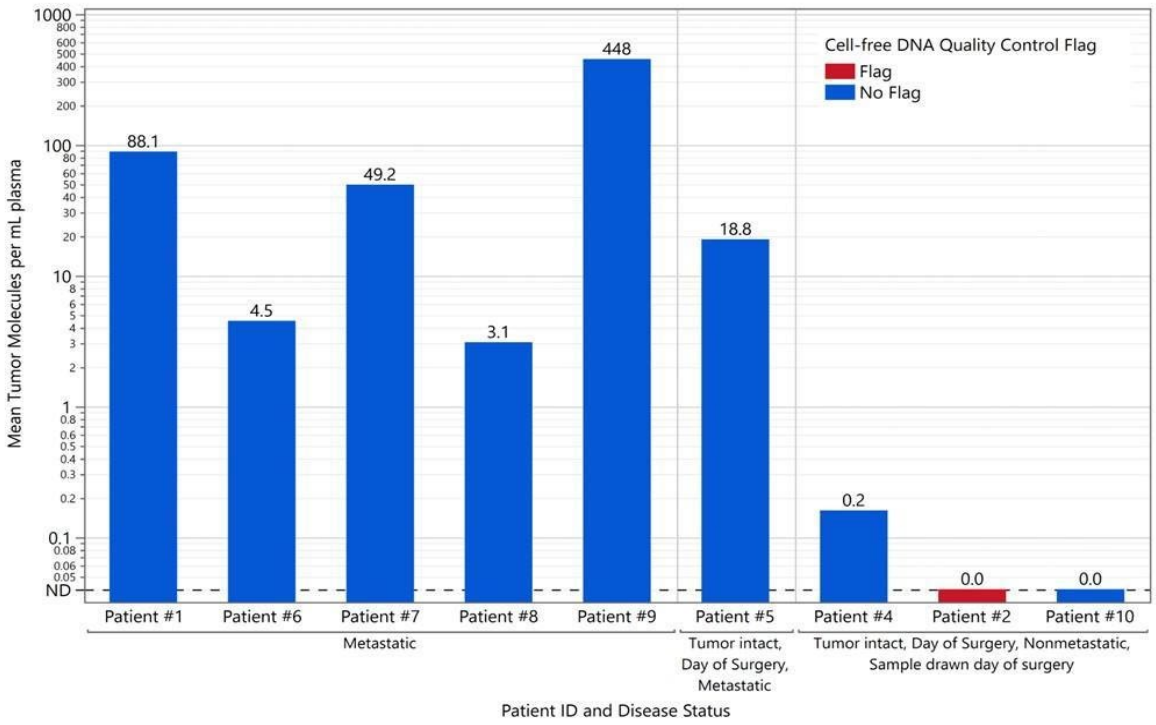
Methods: Ten patients with MPT were identified from an existing IRB-approved prospective PT registry and tumor biorepository (individually consented). Whole exome sequencing (WES) was performed on formalin-fixed paraffin-embedded tumor tissue and matched normal blood samples from each patient. A set of 16 patient-specific somatic single nucleotide variants were selected from the paired WES analysis to track ctDNA in the corresponding patients' banked plasma samples. ctDNA levels were reported in mean tumor molecules (MTM)/mL of plasma.

Results: Of the ten patients included (median age: 47.5 years), one had no usable plasma samples due to specimen tube damage, and could not undergo assay creation. At the time of initial tissue collection, 67% (n=6) of patients had known untreated metastatic disease (time to metastatic diagnosis, 17.5 mo), and 33% (n=3) did not have metastatic disease. All three patients with localized disease have remained disease-free (median 19 mo). All six cases with known metastatic disease are now deceased (median survival 8.7 mo). For all nine cases, WES was successfully performed of paired tumor and plasma samples and 16-plex assays were designed for ctDNA detection. 100% of patients (n=6/6) with known metastatic disease had detectable ctDNA with the highest ctDNA levels, mean MTM(mean tumor molecules)/mL of 119. (Figure 1) Nonmetastatic patients with primary tumor intact, ctDNA was detectable in 33% (n=1/3), with a MTM/mL of 0.2. One sample in this nonmetastatic cohort had a low total circulating-free-DNA level, flagging a potential quality control concern. WES revealed 100% of samples (N=9/9) had genomic alterations detected. The most common tumoral mutations were in TERT, TP53, NF1.

Conclusions: Results of this feasibility study revealed ctDNA is reliably detected in patients with known metastatic disease and may enable monitoring for new distant relapse after primary surgical resection. In addition, some patients without metastatic disease and long-term disease-free interval have detectable ctDNA at the time of surgery with primary tumor intact. These data will inform

prospective study design to determine efficacy and utility as well as its potential for monitoring response to systemic therapies.

Figure 1. Plasma ctDNA Levels by Patient and Disease Status, N=9.



2051596 - A Prospective, Randomized Controlled Study to Evaluate Efficacy of Argon Beam Coagulation Versus Conventional Electrosurgical Coagulation for Cutting and Coagulation During Mastectomy with Reconstruction

Stacey Carter, Jessica Montalvan, Ivan Marin, Logan Healy, Sebastian Winocour, Alastair Thompson, Marco Maricevich, Elizabeth Bonefas

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Background/Objective: In patients undergoing mastectomy, the large raw surface from the dissection requires meticulous hemostasis to minimize surgical complications. Conventional electrosurgical coagulation (CEC) systems are a popular choice for dissection of the mastectomy flaps and for securing hemostasis. Argon beam coagulation (ABC) may allow for more rapid hemostasis which may impact blood loss, drain duration and drain output. The objective of this study is to evaluate device efficacy between the ABC and CEC for cutting and coagulation during mastectomy procedures with reconstruction.

Methods: This single-institution, randomized trial consisted of consenting women 18 to 80 years of age, undergoing unilateral or bilateral mastectomy and reconstruction. All enrolled subjects underwent mastectomy with immediate breast reconstruction and were randomized in a 1:1 fashion to either ABC or CEC. Each patient was followed for 2 months post-surgical drain removal and exited from the study. The study was powered to demonstrate the superiority of the ABC to CEC for post-mastectomy procedure time to hemostasis. Secondary outcomes measured included: blood loss, drainage duration, and total drain output. Statistical comparisons for time to hemostasis and surgical duration were made with mixed-effects analysis of variance. Blood loss, drainage duration and total drain output were compared using analysis of covariance, adjusted for bilateral or unilateral treatment.

Results: A total of 82 patients were randomized (41 to ABC and 41 to CEC) between April 2021 and September 2024. Patients ranged in age from 26 to 80 years. Mastectomy with reconstruction was performed for a diagnosis of breast cancer in 68 patients (83%) and for risk-reduction in 14 patients (17%). There were 18 unilateral procedures (22%) and 64 bilateral procedures (78%). The patients underwent reconstruction as follows: tissue expander placement in 47 patients (57%), direct-to-implant in 7 patients (9%), deep inferior epigastric perforator flap in 27 patients (33%) and profunda artery perforator flap in 1 patient (1%). The primary and secondary endpoints are listed in Table 1. Post-mastectomy procedure time to hemostasis, was significantly different between ABC and CEC. There was no significant difference between hemostasis in the left and right breast with use of ABC or CEC, respectively ($p = 0.1$, $p = 0.2$). There was no difference in surgery duration between ABC (61.5 ± 17.9 mins) and CEC (64.3 ± 24.4 mins, $p = 0.6$).

Conclusions: In patients undergoing mastectomy with reconstruction, argon beam coagulation shows improved time to hemostasis compared to conventional electrosurgical coagulation. There was no difference in secondary outcomes of blood loss, drainage duration and total drain output.

Table 1. Primary and secondary endpoints of ABC and CE

Table 1. Primary and secondary endpoints of ABC and CEC

Outcome	Argon beam coagulation (ABC)	Conventional electrosurgical coagulation (CEC)	*p*-value
Time to hemostasis (mins)	3.9 ± 3.9	6.9 ± 4.8	$p < 0.001$
Blood loss (mL)	126 ± 81	173 ± 261	$p = 0.3$
Total drain ouput (mL)	1175 ± 610	1168 ± 770	$p = 0.9$
Drainage duration (days)	14.3 ± 4.9	14.2 ± 5.0	$p = 0.9$

Scientific Oral Presentations III

Saturday, May 3 9:00 am - 10:00 am
Moderators: Leslie L. Montgomery, MD, FACS, FSSO; Candice Sauder, MD, MEd, FACS

1986723 - Pre-Treatment Tumor Collagen Is Associated with Triple-Negative Breast Cancer Pathological Response to Chemo-Immunotherapy

Mackenzie Jones[1], Lina Adwer[1], Zahraa Alsafwani[1], Javier Orozco[2], Pranav Renavikar[1], Subodh Lele[1], Mohd Nasser[1], Surinder Batra[1], Juan Santamaria-Barria[1]

[1]University of Nebraska Medical Center, Omaha, NE, [2]Saint John's Cancer Institute at Providence Saint John's Health Center, Santa Monica, CA

Background/Objective: Triple-negative breast cancer (TNBC) is associated with a higher risk of distant recurrence and worse survival. The addition of the immunotherapy drug pembrolizumab to chemotherapy has improved TNBC pathological complete response (pCR), recurrence-free, and overall survival, as demonstrated in the KEYNOTE-522 trial. However, a significant portion of patients still do not achieve pCR with this regimen. The mechanisms underlying TNBC resistance to chemo-immunotherapy remain largely unknown. Our study aimed to identify TNBC transcriptomic and proteomic changes associated with pathological response to chemo-immunotherapy.

Methods: We analyzed clinical and gene expression data from TNBC patients treated with neoadjuvant chemo-immunotherapy in the phase II I-SPY2 trials, including those treated with chemotherapy plus durvalumab (GSE173839) or pembrolizumab (GSE194040). Differentially expressed genes between responders and non-responders were identified using DESeq and EdgeR. TCGA and Protein Atlas confirmed gene and protein expression, while KMplotter explored TNBC overall survival linked to gene expression. We reviewed our institutional KEYNOTE-522 data and obtained FFPE samples from initial TNBC core-needle breast biopsies, performing Masson's trichrome staining to compare collagen content in responders and non-responders. Collagen H-scores were assigned by pathologists, with higher scores indicating increased collagen staining area and intensity within the tumor. Institutional Review Board approval and patient consents were obtained.

Results: Our pooled gene expression analysis from the two datasets identified one differentially upregulated gene in TNBC responders (RTP4) and nine differentially upregulated genes in non-responders: COL8A1, POSTN, EMX2, COL8A2, COL1A2, ASPN, HTRA3, ITGA11, and MMP13. Notably, three collagen genes (COL1A2, COL8A1, and COL8A2) were significantly upregulated in non-responders, suggesting collagen's role in these non-responder TNBC tumors. TCGA analyses showed COL1A2 and COL8A1 were significantly upregulated in TNBC compared to normal breast tissue, and Protein Atlas confirmed high COL1A2 protein expression in breast cancer samples. Additionally, KMplotter associated COL8A1 with worse overall survival in TNBC [HR = 1.52 (1.04–2.24), p=0.03]. Over the past 3.5 years, 50 TNBC patients with cT2 (>2 cm) and/or lymph node-positive (cN+) disease received the neoadjuvant KEYNOTE-522 regimen at our institution (docetaxel, carboplatin, doxorubicin, cyclophosphamide, and pembrolizumab). Only 21 patients achieved pCR (42%), significantly lower than the 64.8% rate reported in the KEYNOTE-522 trial ($p< 0.01$). We

further evaluated TNBC collagen content using Masson's trichrome staining on treatment-naïve breast biopsies from 8 non-responders and 8 responders (Fig. 1A). Non-responders showed significantly higher TNBC collagen content by Masson's trichrome H-score compared to responders (Mann-Whitney U, p=0.0011, Fig. 1B).

Conclusions: Our data indicate a strong association between collagen and TNBC resistance to chemo-immunotherapy. Specifically, gene expression analysis revealed that three collagen genes were significantly upregulated in non-responders, and staining confirmed higher collagen content in treatment-resistant tumors. These findings suggest that high-collagen TNBC tumors represent an immune-evasive phenotype with resistance to chemo-immunotherapy. Targeting collagen may improve pathological responses in TNBC, providing a basis for tailored treatment strategies and guiding drug development focused on overcoming immune resistance.

Figure 1

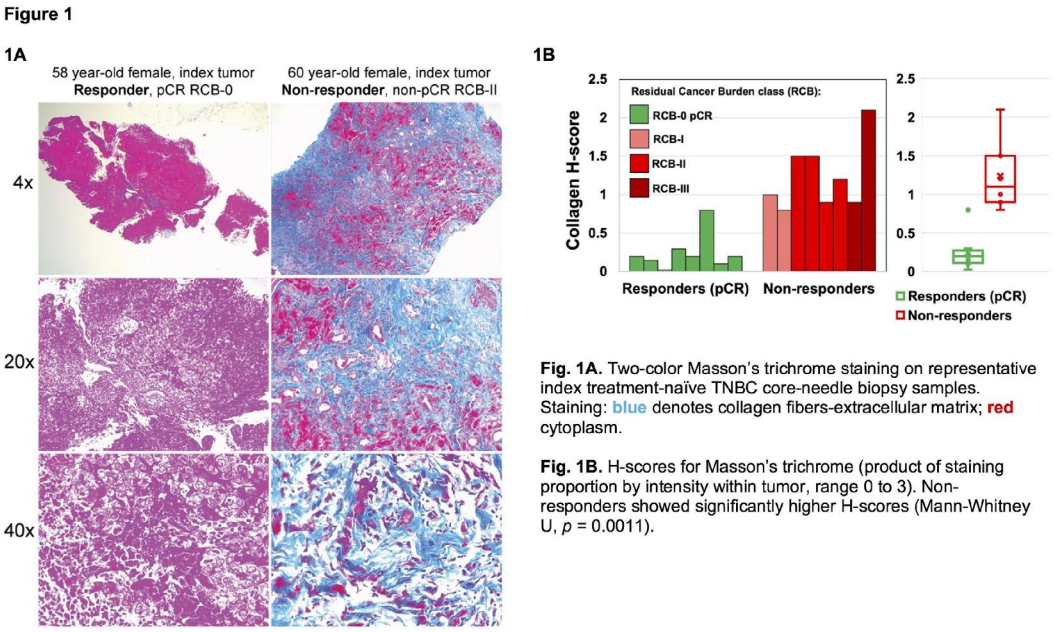

Fig. 1A. Two-color Masson's trichrome staining on representative index treatment-naïve TNBC core-needle biopsy samples. Staining: **blue** denotes collagen fibers-extracellular matrix; **red** cytoplasm.

Fig. 1B. H-scores for Masson's trichrome (product of staining proportion by intensity within tumor, range 0 to 3). Non-responders showed significantly higher H-scores (Mann-Whitney U, p = 0.0011).

1987621 - Reducing Seroma Formation After Mastectomy by Performing Flap Fixation Techniques: A Multi-Center, Double-Blind Randomized Controlled Trial Including Technical Aspects and Economic Evaluation

Merel Spiekerman van Weezelenburg, Lisa de Rooij, Nick Servaas, Elisabeth R.M. van Haaren, Alfred Janssen, Lori M. van Roozendaal, Yvonne L.J. Vissers, James van Bastelaar

Zuyderland Medical Centre, Sittard-Geleen, Limburg, Netherlands

Background/Objective: Seroma formation is the most common complication after mastectomy for breast cancer patients. The obliteration of dead space seems to be the most optimal solution for preventing seroma formation. In this randomized controlled trial (RCT), flap fixation sutures and tissue glue are compared to conventional wound closure.

Methods: In a time span of four years, 339 patients undergoing mastectomy or modified radical mastectomy were included and enrolled to undergo either conventional wound closure (CON, n = 115), flap fixation sutures (FFS, n = 111) or tissue glue (FFG, n = 113). The primary outcome was the need for seroma aspirations. Total follow-up was one year. Based on the outcomes of this analysis, patients undergoing FFS were included in the subsequent analysis to identify the most optimal number of sutures needed to prevent seroma formation. This was determined using a receiving operator characteristics curve. The incidence of seroma formation between patients receiving the most optimal number of sutures and patients receiving fewer sutures was compared. Lastly, health care costs, patients and family costs and costs due to productivity losses were assessed. Outcomes were expressed in incremental cost-effectiveness ratios (ICERs): the incremental cost per quality-adjusted life year (QALY). Bootstrapping techniques, sensitivity and secondary analyses were employed to address uncertainty.

Results: Both the FFS and FFG group had a lower incidence of seroma aspirations after surgery (CON 17.5%, FFS 7.3% and FFG 10.8%, p = 0.057). Patients in the FFS group were significantly less likely to develop seroma formation compared to the CON group (Odds Ratio [OR]: 0.37, 95% confidence interval [95% CI]: 0.16-0.89, p 0.025). The most optimal number of sutures proved to be 15. Patients with ≥15 sutures had a lower incidence of seroma formation at every time frame during follow-up. There was a significant difference at 6 weeks (odds ratio [OR]: 3.05, 95% confidence interval [CI]: 1.09–8.56), 3 months (OR: 4.62, 95% CI: 1.34–12.92), and 1 year postoperatively (OR: 20.48, 95% CI: 2.18–192.22). Ten days and 6 months postoperatively did not differ significantly. The FFS-group yielded most QALYs (0.810; 95%-CI 0.755–0.856), but also incurred the highest mean costs at twelve months (€10.416; 95%-CI 8.231–12.930). CON was the next best alternative with 0.794 QALYs (95%-CI 0.733–0.841) and mean annual costs of €10.051 (95%-CI 8.255–12.044). FFG incurred fewer QALYs and higher costs, when compared to the CON group. The ICER of FFS compared to CON was €22.813/QALY. Applying a willingness to pay threshold in the Netherlands of €20.000/QALY, the probability that FFS was cost-effective was 42%, compared to 37% and 21% for CON and FFG, respectively.

Conclusions: Flap fixation using sutures reduces the need for seroma aspirations significantly. When using sutures, it is advised to use a minimum of 15 sutures (approximately 3.7cm apart). Although the cost-effectiveness of sutures is uncertain from a societal perspective, it is the most cost-effective intervention from a health care and hospital perspective.

Table 1 - Logistic regression analysis: independent odds ratios for seroma aspirations for various factors

	Seroma aspiration *OR* (95% CI)	*p* Value
Intervention group		0.065
Conventional	–	–
FFS	0.37 (0.16–0.89)	0.025
FFG	0.57 (0.26–1.23)	0.152
Age (years)	1.01 (0.98–1.03)	0.693
CCI	1.04 (0.88–1.21)	0.669
BMI	1.02 (0.96–1.09)	0.532
Wound surface (per 10 cm^2)	1.05 (1.01–1.09)	0.013
Anticoagulation	0.77 (0.33–1.83)	0.561
Smoking	1.59 (0.73–3.47)	0.242
Axillary clearance	2.91 (1.49–5.69)	0.002
Neoadjuvant chemotherapy	2.08 (1.01–4.30)	0.047

OR, odds ratio; CI, confidence interval; FFS, flap fixation using sutures; FFG, fixation using tissue glue; CCI, Charlson Comorbidity Index; BMI, body mass index

1972203 - Disparities in the Surgical Management of the Axilla by Self-Identified Race in the Multicenter Neoadjuvant I-SPY2 Trial

Mandeep Kaur[1], Katrina Dimitroff[1], Judy Boughey[2], Laura Esserman[1], Christina Yau[1], Julia Tchou[3], Astrid Quirarte[1], Marie Lee[4], Marissa M. Howard-McNatt[5], Kayla Switalla[1], Henry Kuerer[6], Candice Sauder[7], Lauren Postlewait[8], Anne Wallace[9], Chantal Reyna[10], Kamran Ahmed[4], Lily Gutnik[11], Neil Taunk[12], Jane Perlmutter[13], Angela DeMichele[12], Douglas Yee[14], Nola Hylton[1], W. Symmans[6], Hope Rugo[1], Rebecca Shatsky[15], Claudine Isaacs[16], Sonali Rudra[17], Cheryl Ewing[1], Jasmine Wong[1], Michael Alvarado[1], Nora Jaskowiak[18], Nicolas Prionas[1], Meena Moran[19], Mehra Golshan[20], Mara Piltin[2], Olufunmilayo Olopade[21], Rita Mukhtar[1]

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Background/Objective: Axillary dissection (ALND) confers significant morbidity and its use in breast cancer management has been shown to vary by patient race, with higher rates of ALND reported for Black-identifying patients. Neoadjuvant chemotherapy (NAC) may allow for omission of ALND by facilitating nodal downstaging. Whether disparities in ALND use persist in this context is not well described. We therefore compared ALND rates after NAC by self-identified race in a multicenter NAC trial.

Methods: I-SPY2 is a prospective, adaptive trial for patients with molecularly high-risk clinical stage II-III breast cancer who are randomized to novel NAC agents. We retrospectively analyzed data from ISPY-2 patients across 19 participating centers who completed NAC and surgical treatment. Type of axillary surgery is not mandated by the trial and was categorized as sentinel lymph node surgery (SLN)-only or ALND (+/- SLN). We compared ALND rates by self-identified race and clinical/pathologic nodal status (cN and ypN, respectively) using chi-square and Kruskal-Wallis rank sum tests. cN+ status required pre-treatment needle biopsy demonstrating nodal disease, and analyses were performed by nodal stage (0-3) and categorically (N+/N-). To adjust for confounders such as regional variations in practice, we used a multivariable regression model including race, age, region of treatment, receptor subtype, cN, cT, ypN, and ypT stage to identify factors associated with undergoing ALND.

Results: Among 1,394 patients, 849 (60.9%) underwent SLN-only and 545 (39.1%) underwent ALND. Self-identified race was Black in 156 (11.2%), Asian/Other in 131 (9.4%), and White in 1,107 (79.4%). Overall, 52.5% of the study population was cN+ and 66.9% was ypN-, with no difference in

cN or ypN stage or category by race. Among cN+ patients the rate of conversion to ypN- status did not differ by race (32.1%, 19.1%, and 26.6% for Black, Asian/other, and White, respectively, p=0.3). On univariate analysis, Black patients had significantly higher rates of ALND compared to those identifying as Asian/other or White (50.6%, 38.9%, and 37.5%, respectively, p=0.007, Table). When stratified by nodal status, Black patients were more likely to undergo ALND specifically among cN+ and ypN- subgroups (Table). Notably, among those that converted from cN+ to ypN-, Black patients had significantly higher rates of ALND than Asian/other or White patients (62.0% vs. 40.0% and 41.2%, respectively, p=0.021). On multivariable analysis accounting for age, stage, region, and receptor subtype, Black patients still had significantly higher odds of undergoing ALND compared to White patients (OR 1.64, 95% CI 1.03-2.59, p=0.035).

Conclusions: In this prospective, multicenter NAC trial, we identified significant disparities in surgical management of the axilla, with Black-identifying patients experiencing higher rates of ALND surgery compared to other groups. This finding persisted both in the subgroup who converted to ypN- status and after adjusting for region and clinical/pathologic nodal stage, suggesting disparities in surgical treatment that are not solely driven by extent of disease or regional practice patterns. This underscores the need for further analysis of underlying causes, treatment standardization, and continuous improvement in the context of clinical trials to enhance the quality of cancer care for diverse populations.

Table 1. Type of Axillary Surgery by Self-Identified Race, Clinical Nodal Status, and Pathologic Nodal Status

Table. Type of Axillary Surgery by Self-Identified Race, Clinical Nodal Status, and Pathologic Nodal Status

Overall (N=1,394)				
	Self-Reported Race			
Axillary Surgery	Black (n=156)	Asian/other (n=131)	White (n=1,107)	p-value
SLN-Only	77 (49.4)	80 (61.1)	692 (62.5)	0.007
ALND	79 (50.6)	51 (38.9)	415 (37.5)	
Clinically Node Negative Patients (N=662)				
	Self-Reported Race			
Axillary Surgery	Black (n=65)	Asian/other (n=70)	White (n=527)	p-value
SLN-Only	54 (83.1)	56 (80.0)	455 (86.3)	0.3
ALND	11 (16.9)	14 (20.0)	72 (13.7)	
Clinically Node Positive Patients (N=732)				
	Self-Reported Race			
Axillary Surgery	Black (n=91)	Asian/other (n=61)	White (n=580)	p-value
SLN-Only	23 (25.3)	24 (39.3)	237 (40.9)	0.018
ALND	68 (74.7)	37 (60.7)	343 (59.1)	
Pathologic Node Negative Patients (N=932)				
	Self-Reported Race			
Axillary Surgery	Black (n=105)	Asian/other (n=84)	White (n=743)	p-value
SLN-Only	70 (66.7)	67 (79.8)	600 (80.8)	0.004
ALND	35 (33.3)	17 (20.2)	143 (19.2)	
Pathologic Node Positive Patients (N=462)				
	Self-Reported Race			
Axillary Surgery	Black (n=51)	Asian/other (n=47)	White (n=364)	p-value
SLN-Only	7 (13.7)	13 (27.7)	92 (25.3)	0.2
ALND	44 (86.3)	34 (72.3)	272 (74.7)	

Data reported n (%). P-values reported from Pearson's chi-square tests.

1988643 - Association of Margin Width and Local Recurrence Following Mastectomy for DCIS

Amanda Nash[1], Yan Li[2], Samantha Thomas[3], Akiko Chiba[3], Astrid Botty van den Bruele[3], Jennifer Plichta[3], Laura Rosenberger[3], Amanda Francescatti[4], Anne McCarthy[4], Ronald Weigel[4], Thomas Lynch[5], Liz Frank[6], Anne Partridge[7], Stephanie Sun[8], Alastair Thompson[9], Marc Ryser[5], E. Shelley Hwang[3]

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Background/Objective: Almost one-third of patients with DCIS undergo mastectomy. Despite the extent of this procedure, pathologic assessment occasionally demonstrates close or positive resection margins. Despite published studies, there remains no clear consensus regarding the most appropriate management in this setting. Therefore, we analyzed a large multicenter dataset to determine whether a smaller mastectomy margin width is associated with ipsilateral recurrence.

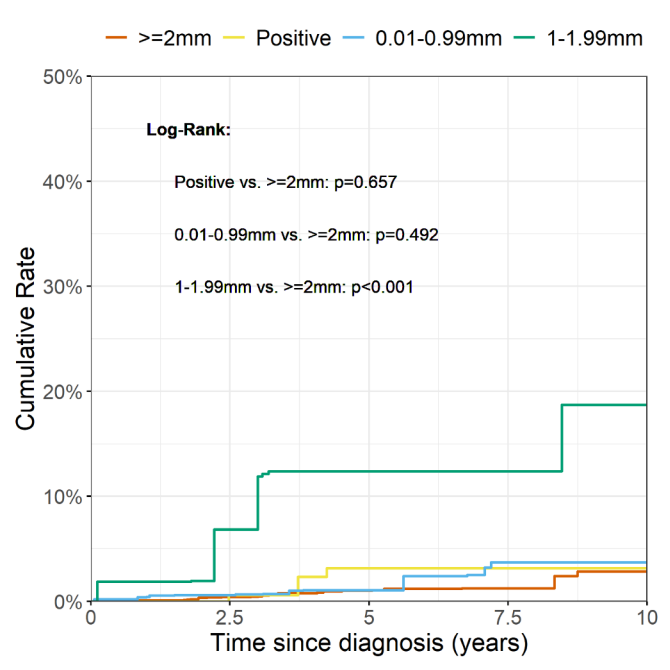
Methods: A stratified random sample of patients with DCIS who underwent mastectomy, either with or without post-mastectomy radiation therapy (PMRT) was derived from primary source documentation at 1,330 National Cancer Database (NCDB) Commission on Cancer-accredited sites. Only those with known final margin status were included. The primary outcome was any ipsilateral breast event (IBE), either DCIS or invasive cancer. The Kaplan-Meier method was used to estimate cumulative recurrence rates according to final margin width. A positive margin was defined as tumor on ink. Relative treatment effects were estimated using Cox proportional hazards models. Propensity score-based overlap weights were used for covariate balancing between treatment groups and were combined with survey weights to obtain population-averaged survival estimates.

Results: The final analytic cohort included 3,148 patients. The median follow-up time was 65 months (IQR 44-90 months), and median age at diagnosis was 56 years (IQR 48-66). 42% had DCIS size < 2.0cm, 74% were hormone receptor-positive, and 51% had high-grade disease. 17.4% (n=20/115) of the patients with positive margins were treated with PMRT, compared to 4.1% (n=129/3,148) in the entire cohort. Overall, 63 patients (2%) experienced an IBE, including 7 patients who received PMRT (5.4%) and 56 who did not (1.9%). 77.8% of recurrences were invasive. The weighted 8-year cumulative rate of IBEs in the entire cohort was 3.4% (95% CI 0-7.7%) for positive margins, 3.2% (95% CI 0-6.4%) for < 1mm margins, 13.4% (0-26.7%) for 1.0 to < 2mm margins, and 1.3% (0.7-1.9%) for ≥2mm margins. Positive margin width or < 1mm margins was not associated with higher recurrence risk compared to ≥2mm margins. However, mastectomy patients with 1-1.9mm margins had a higher hazard of recurrence compared to ≥2mm margins, although the wide confidence interval likely reflects the small sample size of this group [n=77 with 7 recurrences; HR 10.4 (95% CI 3.2-33.2)].

Conclusions: In this large, multicenter study of patients undergoing mastectomy for DCIS, the 8-year cumulative rate of IBE was low, and not consistently associated with margin width. Receipt of PMRT was not associated with margin width, suggesting that PMRT recommendations are not applied consistently or based on factors other than margin status. These findings justify more measured,

evidence-based recommendations for management of close margins, particularly in those patients whose outcomes could be negatively impacted by additional surgical excision or PMRT.

Figure 1



2038296 - A Prospective, Multi-Center, Randomized, Double-Arm Clinical Trial To Assess the Positive Margin Rate of Breast-Conserving Surgery With or Without the Aid of an Intraoperative Optical Coherence Tomography System

Alastair Thompson[1], James Jakub[2], Stacy Krisher[3], Marie Lee[4], Meghan Flanagan[5], Richard Fine[6], Maryam Elmi[7], Allison DiPasquale[8], Laila Samiian[9], Lee Wilke[10]

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Background/Objective: Despite ASBrS/ASCO/SSO guidelines for margin assessment and excision, unaddressed positive pathological margins and re-excision operations remain a challenge following breast-conserving surgery (BCS), underscoring the need for technologies that can provide immediate, intraoperative confirmation of surgical margin status. This study evaluated the impact of intraoperative optical coherence tomography (OCT) combined with an artificial intelligence (AI) detection algorithm (B-Series with ImgAssist, Perimeter Medical Imaging AI, Inc., Dallas, TX USA) to evaluate the sub-surface microstructure of tissue excised during BCS for residual malignancy. Using the AI-based detection algorithm, the OCT device highlights regions of interest to support intraoperative surgical decision making.

Methods: This prospective, multi-center, randomized controlled study assessed the effectiveness of the OCT-AI device in addressing positive pathologic margins following standard of care (SOC) intraoperative assessment during lumpectomy in women with biopsy-confirmed breast carcinoma, compared to SOC intraoperative assessment alone. OCT-AI was performed for device-arm patients after completion of SOC intraoperative assessment, allowing for within-subject comparison of effectiveness. Device effectiveness was measured pre- and post-device use on outermost margins. The primary effectiveness endpoint was the occurrence of at least one unaddressed positive margin per subject in the device arm. The prespecified super-superiority performance goal for the primary endpoint was set such that the probability of a subject having at least one unaddressed positive margin after SOC treatment but no unaddressed positive margins after treatment with SOC + OCT-AI exceeded a value of 0.01. An additional four secondary effectiveness endpoints were also evaluated.

Results: 613 participants (100% female) consented and enrolled between January 25, 2022 and September 23, 2024. Of those 613, all of whom were included in the safety analysis, 208 were randomized to the device arm. Of those, 206 were included in the within-subject effectiveness analysis. Mean age was 63.5 ± 11.1, and participants had either IDC, DCIS, or combined IDC + DCIS. Of 1735 total SOC margins evaluated, 56 positive margins in 35/206 patients remained unaddressed after SOC (17% patients with unaddressed positive margins). Of the 1230 margins assessed using OCT-AI, 115 margins had a subsequent device-directed shave (9.3%). Use of OCT-AI resulted in correct detection of residual disease in 14/35 (40%) additional patients, fully clearing 7/35 (20%) additional patients of all residual disease and leaving 28/206 (13.5%) patients with unaddressed positive margins (P=0.005). Mean total lumpectomy tissue volume excised in the device arm was 76.8 cm3 (76% of the volume was from 206 primary lumpectomies, 20% from 499 SOC shaves, and 4% from 115 device shaves). The overall margin accuracy was 88.4%, and the study met the prespecified super-superiority performance goal for the primary endpoint. There were no unanticipated device-related or serious adverse events.

Conclusions: Use of OCT-AI after SOC resulted in detection and excision of all residual disease in 20% of the patients who still had unaddressed positive margins after SOC, and the difference was statistically significant. The use of OCT-AI has the potential to enhance real-time intraoperative decision-making and reduce the incidence of re-excision due to unaddressed residual disease following lumpectomy.

1987316 - Survival Benefits and Less Intensive Treatment for Women Diagnosed with Early-Stage Breast Cancer While Participating in Population-Based Screening

Melissa Edwards[1], Kenneth Elder[2], Allison Rose[3], Surender Pandey[4], Elizabeth Tan[3], Allan Park[3], Carolyn Nickson[4], G. Bruce Mann[5]

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Background/Objective: The reduction in breast cancer mortality rates over time has been attributed to population-based mammographic screening programs and advances in systemic therapies. Population breast cancer screening programs have been shown to reduce breast cancer mortality among screening participants by 50%. Less intense treatment of clinically significant disease is a secondary benefit of screening. Overdiagnosis and subsequent overtreatment of clinically insignificant lesions is a potential harm of screening. We previously analyzed treatment patterns in a cohort of 791 women diagnosed with early-stage breast cancer (ESBC) according to their participation in a population screening program. We reported the extent to which those participating in screening (defined as active screeners (AS); whether screen-detected or diagnosed with interval cancer) received less intense treatment than those not recently screened (NRS), finding that AS patients had between 33 and 55% less mastectomies, axillary dissections, chemotherapy and post-mastectomy radiotherapy recommendations. Australian data has previously shown reduced risk of breast cancer mortality for women with screen-detected (HR 0.23) and interval cancers (HR 0.59) compared to women who have never been screened, and that these differences remain after adjustment for potential screening selection bias and lead time bias. The current study assesses the oncological outcomes of this cohort according to their original screening status, with comparison to national-level outcomes.

Methods: We collected follow up data for 766 patients; (with 3% of the original cohort unable to be linked to cancer registry data) 612 (79.9%) were AS (560 (73.1%) screen-detected and 52 (6.79%) interval cancers), while 154 (20.1%) were NRS. Mortality and subsequent cancer event data was derived via linkage with the Victorian Cancer Registry, extracted on 02/11/2023. Associations between screening status and survival were assessed using Kaplan-Meier and Cox proportional hazards models, with sensitivity analysis for potential overdiagnosis (defined as screen-detected DCIS or screen-detected node-negative, grade 1, < 10mm, non-triple negative or non-Her2+ cancers).

Results: Median follow up was 11.6 years (range: 0.1-16.0 years). There were 118 deaths (15.4% of the cohort), with 55 of these (46.6%) due to breast cancer. 10-year breast cancer-specific survival was 95.4% (95% CI 93.2%-96.8%) for AS, versus 86.4% (95% CI 79.7%-91.0%) for NRS (HR 0.28, 95% CI 0.17-0.48, p<.001). A survival benefit persisted after correction for estimated overdiagnosis (HR 0.35, 95% CI 0.20-0.60, p<.001). Overall survival was also superior for AS, with a 10-year survival rate of 90.6% (95% CI 87.9%-92.7%) compared with 82.5% (95% CI 75.4%-87.8%) for NRS (HR 0.54, 95% CI 0.36-0.79, p=.002). Overall, there were 39 ipsilateral breast events (5.09%) and 43 contralateral breast events (5.61%), with no differences noted by screening status.

Conclusions: Patients with ESBC who engage in active screening derive significant survival benefits, despite receiving less intensive treatment. Our findings are consistent with national data from a similar period, and are robust to adjustment for potential overdiagnosis. As treatment for ESBC becomes more tailored, with increasing focus on safe de-escalation of therapy (including for potentially

overdiagnosed cases), the balance between the benefits and harms of screening are likely to further improve.

Table 1. Cox proportional hazards regression for overall and breast cancer-specific mortality, ipsilateral breast events (IBE), contralateral breast events (CBE), and metastatic relapse by screening status

	Overall mortality		Breast cancer mortality		IBE		CBE		Metastatic relapse	
	HR (95% CI)	P value	HR (95% CI)	P value	HR (95% CI)	P value	HR (95% CI)	P value	HR (95% CI)	P value
Screening status	**Total cohort**									
NRS	Ref		Ref		Ref		Ref		Ref	
Interval	0.63 (0.29-1.35)	.23	0.58 (0.22-1.51)	.26	1.06 (0.28-4.01)	.09	1.15 (0.36-3.67)	.81	0.66 (0.25-1.74)	.40
Screen-detected	0.53 (0.35-0.76)	.002	0.24 (0.15-0.45)	<.001	0.90 (0.41-1.98)	.79	0.73 (0.36-1.50)	.39	0.28 (0.16-0.50)	<.001
All AS	0.54 (0.36-0.79)	.002	0.28 (0.17-0.48)	.01	0.91 (0.42-1.99)	.82	0.76 (0.38-1.55)	.46	0.31 (0.18-0.54)	<.001
	Excluding potential overdiagnoses[a]									
NRS	Ref		Ref		Ref		Ref		Ref	
Interval	0.63 (0.29-1.35)	.23	0.58 (0.22-1.51)	.26	1.05 (0.28-3.95)	.95	1.15 (0.36-3.67)	.81	0.66 (0.25-1.74)	.40
Screen-detected	0.63 (0.42-0.96)	.03	0.32 (0.18-0.56)	<.001	0.74 (0.32-1.72)	.49	0.74 (0.35-1.58)	.44	0.34 (0.19-0.63)	.001
All AS	0.63 (0.42-0.95)	.03	0.35 (0.20-0.60)	<.001	0.77 (0.34-1.77)	.55	0.79 (0.38-1.64)	.52	0.38 (0.21-0.67)	.001

[a] Potential over-diagnosis defined as screen-detected DCIS or screen-detected node-negative, grade 1, <10mm, non-triple negative and non-Her2+ invasive cancers. *N*=593.
Abbreviations: AS=active screener, CBE=contralateral breast events, CI=confidence interval, HR=hazard ratio, IBE=ipsilateral breast events, NRS=not recently screened, Ref=reference category.

Quickshots

Friday, May 2, 2025 5:00 pm - 6:00 pm
Moderators: Carla S. Fisher, MD, MBA, FACS; Marissa M. Howard-McNatt, MD, FACS

1979649 - Second Opinions, Same Standards: Time to Treatment for Breast Cancers Diagnosed Externally

Pooja Varman[1], Vincent Wu[1], Anna Chichura[1], Andrew Conner[1], William Bennett[1], Kimberly Woo[1], Amanda Cech[1], Christine Rosenberg[1], Wei Wei[2], Paula Escobar[1], Zahraa Al-Hilli[2]

[1]Cleveland Clinic Foundation, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH

Background/Objective: The Commission on Cancer (CoC) advocates that therapeutic breast surgery in the non-neoadjuvant setting is performed within 60 days of diagnosis of stage I-III breast cancer. We hypothesize that patients who seek a second opinion (external) experience increased delays in time to first treatment (TTT) compared to those diagnosed within the same institution (internal) due to the need for additional workup and care coordination. This study compares TTT between external and internal patients with newly diagnosed breast cancer.

Methods: This retrospective cohort study involved patients with new stage 0-III breast cancer diagnosed externally and internally and treated at a single comprehensive cancer center between January and July 2024. Sample size and power were based on historical institutional TTT data with a total of 226 patients (113 in each group) ensuring a power of 80% with a two-sided type I error rate of 5%. Patients with metastatic disease, externally treated, or declining standard of care were excluded. Data collected included patient demographics, date of multidisciplinary consultations, number of additional imaging tests and biopsies obtained following initial visit, and treatment information. Two different times to treatment were calculated: time from biopsy to first treatment (TBT) and time from first surgical oncology clinic appointment at our institution to first treatment (TCT).

Results: The median age of our cohort was 59.8 years. Racial distribution was majority White (81.0%) and Black (13.3%). Of external patients, 38.1% were from a different state. Clinical tumor stages were T0 (0.4%), Tis (15.2%), T1 (54.5%), T2 (22.8%), T3 (5.8%), and T4 (0.9%). Clinical nodal stages were N0 (87.9%), N1 (11.2%), N2 (0.4%), and N3 (0.4%). Median TBT was 35 days (IQR=12, 29) with statistically significant difference between external (41.5 days) and internal (31 days) patients ($p< 0.00001$). Median TCT was 21 days (IQR=12, 29) with no statistical difference between external (20 days) and internal (21 days) patients ($p=0.6594$). Radiologists recommended additional workup more often for external (68.1%) than internal (25.7%) patients ($p< 0.001$), but surgeons recommended additional workup with similar frequency in each group (external 61.1%, internal 63.7%, $p=0.68$). External patients required additional imaging and biopsies more frequently (90.3%) than internal patients (68.1%), which was statistically significant ($p< 0.0001$). Excluding MRI, external patients still required additional workup more frequently (79.7%) than internal patients (54.0%, $p< 0.0001$). The need for additional workup correlated with increased median TCT (11 vs 22

days, p< 0.00001). The need for a plastic surgery consultation also correlated with increased median TCT (18 vs 26 days, p< 0.00001).

Conclusions: Obtaining a second opinion after external diagnosis increased the overall time from diagnosis to treatment but remained well within the CoC standard. There was no difference in TCT between internally diagnosed and externally diagnosed patients once they initiated care within our hospital system, even though external patients required additional imaging and biopsies more frequently. Patients should not be discouraged from obtaining a second opinion based on concerns about time to treatment, and systems efforts should be made to address barriers patients face when pursuing second opinions at comprehensive cancer centers.

Figure 1. Time to Treatment

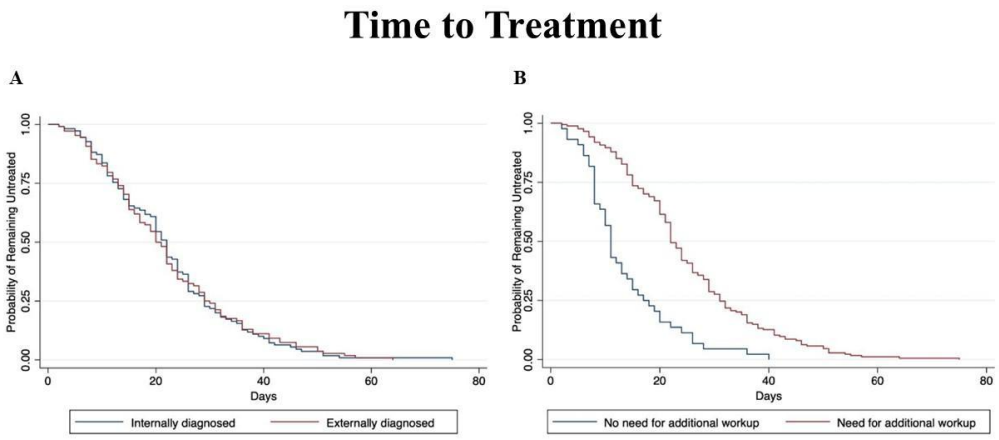


Figure 1. Time from initial clinic visit to treatment for (A) internally vs. externally diagnosed patients and (B) patients not needing additional workup vs. patients needing additional workup.

1982826 - Impact of Pathologic Complete Response on Local-Regional Recurrence in Patients Undergoing Neoadjuvant Chemotherapy and Breast-Conserving Surgery

Victoria Huynh[1], Alexa Glencer[2], Min Yi[1], Emma Wingate[1], Hannah Wingate[1], Naid Allassan[1], Sarah Alameddine[3], Puneet Singh[1], Kelly Hunt[1], Ana Paula Refinetti[1]

[1]University of Texas MD Anderson Cancer Center, Houston, TX, [2]Palo Alto Medical Foundation, Palo Alto, CA, [3]Houston Christian University, Houston, TX

Background/Objective: Neoadjuvant chemotherapy (NAC) increases rates of breast-conserving surgery (BCS) while offering assessment of pathologic response, which is associated with patient outcomes and prognosis. The primary objective of this study was to compare clinicopathologic variables and oncologic outcomes between patients with and without a pathologic complete response (pCR) undergoing BCS after receiving NAC. Secondary objectives were to assess margin status, rates of margin re-excision, and impact on local-regional recurrence.

Methods: Clinicopathologic data from patients treated with NAC and BCS for stage I-III invasive breast cancer at a single institution were identified. Patients were divided into two groups: patients with pCR and patients without pCR. Overall survival (OS), disease-specific survival (DSS), local-regional recurrence-free survival (LRRFS) and distant recurrence-free survival (DRFS) rates were compared between the two groups using Kaplan-Meier survival curves and log-rank tests. Multivariate analysis was used to identify clinicopathologic factors associated with oncologic outcomes.

Results: Between 1999-2015, 764 patients received NAC and BCS with a median follow-up time of 7.1 years. Median age at diagnosis was 52 years, and the majority of patients had invasive ductal carcinoma (89.3%) with clinical T2 (78.8%) and clinical N0 (95.9%) disease. Negative surgical margins (> 2 mm) were obtained in most (95.7%) patients, and overall margin re-excision rates were low (10.1%). There were no significant differences between age, race, or clinical T and N categories amongst patients with and without pCR. Larger proportions of patients with triple negative breast cancer (TNBC) achieved pCR compared to hormone receptor positive, HER2-negative (HR+/HER2-) disease (44.4%% vs 14.6%, p< 0.0001). Among patients with HER2+ disease, 37.5% of patients with HR+ subtype achieved pCR compared to 58.6% with HR-negative subtype (p=0.01). Patients who achieved pCR had significantly improved OS (p=0.001), DSS (p=0.01), and DRFS (p=0.01) compared to those without pCR. We did not observe any significant differences in LRRFS between patients with and without pCR, and overall rates of 5-year LRR were low (2.9% with pCR vs 7.4% without pCR, p=0.6). When stratified further by subtype (Table), TNBC without pCR experienced a 14.2% 5-year LRR rate while other subtypes had low rates of LRR regardless of pCR status. On multivariate analyses, oncologic outcomes differed significantly by tumor subtype, with TNBC subtype associated with worse OS, DSS, LRRFS, and DRFS.

Conclusions: In patients undergoing BCS after NAC, LRR rates were low across all cancer subtypes except for the TNBC subtype. While achieving pCR is associated with improved survival outcomes – including OS, DSS, and DRFS – local-regional recurrence-free survival rates did not differ significantly but were overall low in those patients with and without pCR.

Table 1: Multivariate Analysis of Factors Associated with Local-Regional Recurrence

Table. Multivariate Analysis of Factors Associated with Local-Regional Recurrence

Subtype		Hazard Ratio (95% CI)	P
HR+/HER2-		Referent	
HER2+		1.29 (0.66-2.53)	0.46
TN		1.86 (1.05-3.29)	0.03
Subtype	**pCR**	**5-year LRR Rate (95% CI)**	
HR+/HER2-	No	5.6% (3.3-9.5)	
	Yes	0.0% (--)	
HER2+	No	4.0% (1.3-12.1)	
	Yes	3.7% (0.9-14)	
TN	No	14.2% (8.6-23)	
	Yes	3.7% (1.2-11.2)	

Abbreviations: CI, confidence interval. HR, hormone receptor. HER2, human epidermal growth factor receptor 2. TN, triple negative. LRR, local-regional recurrence. PCR, pathologic complete response.

1953269 - Low Complication Rates After Invasive Procedures on the Lactating Breast in Patients Treated for Breast Cancer During Pregnancy

Jennifer Chen, Carla Warneke, Lavinia Middleton, Puneet Singh, Henry Kuerer, Kelly Hunt, Ashley Martinez, Jennifer Litton, Oluchi Oke, Helen Johnson

The University of Texas MD Anderson Cancer Center, Houston, TX

Background/Objective: Anatomical and functional changes in the lactating breast, such as increased vascularity and presence of breastmilk, may increase the risk of complications such as bleeding, milk fistula, and wound infection after surgical instrumentation. We sought to determine the incidence of and factors associated with post-operative complications in peripartum patients undergoing oncologic breast surgery.

Methods: We performed a retrospective review of a prospective registry of patients treated for breast malignancies during pregnancy from 1989-2022 to identify those who underwent invasive breast procedures during pregnancy or postpartum (PP). Lactational breast changes were defined as occurring >20 weeks gestational age (GA) up to 18 months PP, corresponding to the period from start of lactogenesis to completion of post-lactational involution. Clinicopathologic variables, reproductive details, and 90-day post-operative complications were abstracted. Logistic regression was used to identify factors associated with post-operative complications.

Results: Among 164 patients, 54.9% (n=90) were White, 19.5% (n=32) Hispanic, 9.8% (n=16) Black, 7.9% (n=13) Asian, and 7.9% (n=13) other or unknown race/ethnicity. Mean age at diagnosis was 33.1 years (SD 4.6). Most had invasive carcinoma (n=157, 95.7%) while the remaining had DCIS (n=3, 1.8%), phyllodes tumor (n=3, 1.8%) or angiosarcoma (n=1, 0.6%). Most invasive disease was high grade (n=105, 66.9%), ductal (n=140, 89.2%), and stage II-III (n=144, 91.7%). Receptor subtypes included 37.6% (n=59) hormone receptor (HR)+/Human Epidermal Growth Factor Receptor (HER2)-, 28.7% (n=45) HR-/HER-, 17.8% (n=28) HR+/HER2+, 6.4% (n=10), HR-/HER2+, and 9.6% HER2 unknown (n=15). 59.8% (n=98) received neoadjuvant chemotherapy (NAC). 160 (97.6%) patients were pregnant at diagnosis with median GA 19.1 weeks (Q1-Q3 11.7-24.1). The complication rate from biopsy procedures (128 CNB, 8 FNA, 28 excisional biopsy) was 0.61% (1/164, seroma, 95% CI 0.02-3.35%). Four patients became pregnant after diagnosis but prior to oncologic surgery. At the time of surgery, 64 (39.0%) were pregnant (median GA 16.4 weeks, Q1-Q3 12.0-21.8) and 100 (61.0%) were postpartum (median 19.4 weeks PP, Q1-Q3 13.3-23.4). 121 (74.2%) patients had lactational changes present at time of surgery. Surgery consisted of 71.2% (n=116) total mastectomy, 28.8% (n=47) segmental mastectomy, 67.3% (n=105) ALND, and 32.7% (n=51) SLNB. The complication rate after surgery was 12.2% (n=20, 95% CI 7.6-18.2%). Surgical site infection was the most common complication (10, 6.1%), followed by fluid collections (8, 4.9% - 7 seromas, 1 hematoma) and mastectomy flap necrosis (2, 1.2%) (Table 1). No milk fistulae were observed. Complication odds did not differ by pregnant vs postpartum status, presence of lactational changes, age, clinicopathologic characteristics (histology, grade, stage, subtype) or treatment (NAC, extent of breast surgery, extent of axillary surgery). Associations between surgical complications and lactational changes remained statistically insignificant ($p>0.05$) in multivariable analyses controlling for extent of breast surgery or NAC.

Conclusions: In the largest reported cohort of peripartum patients undergoing oncologic breast surgery, the post-operative complication rate was low and similar to published rates for breast cancer patients overall. Presence of lactational changes was not associated with increased complications. Our results support timely surgical treatment of peripartum patients with breast malignancies per standard of care regardless of lactational status.

Table 1. Summary of Post-Procedural Complications and Treatments

Table 1. Summary of Post-Procedural Complications and Treatments

Complication		Status at Surgery	NAC	Days post-op	Treatment
Surgical Site Infection	Breast	15 wks GA	N	20	PO antibiotics
		2 wks PP	Y	10	IV antibiotics
		9 wks PP	Y	7	PO antibiotics
		20 wks PP	Y	10	PO antibiotics
		31 wks PP	Y	10	PO antibiotics
		33 wks PP	Y	25	PO antibiotics
		36 wks PP	Y	72	PO antibiotics
	Drain site	8 wks PP	Y	10	PO antibiotics
		19 wks PP	Y	8	Nystatin cream
		22 wks PP	Y	11	PO antibiotics
Seroma	Axillary	7 wks GA	N	20	Conservative management
		10 wks GA	N	11	Conservative management
		31 wks PP	Y	8	Conservative management
		37 wks PP	Y	27	Conservative management, compression bra
	Breast	12 wks GA	N	24	Aspiration
		21 wks GA*	Y	22	Conservative management
		5 wks PP	N	8	Bedside aspiration unsuccessful, conservative management
Hematoma		13 wks PP	Y	12	Bedside aspiration, IR drain placement, return to OR for hematoma evacuation
Drain site bleeding		18 wks PP	Y	3	Pressure dressing
Mastectomy flap necrosis		2 wks PP	Y	20	Bedside debridement and local wound care, prophylactic antibiotics
		17 wks PP	Y	73	Bedside debridement and delayed primary closure, prophylactic antibiotics

*Complication from excisional biopsy

Abbreviations: NAC = neoadjuvant chemotherapy, GA = gestational age, PP = postpartum, wks = weeks

1987869 - Pitfalls of Nipple-Sparing Mastectomy: Recurrences Are in the Nipple and Axilla

Swetha Duraiswamy[1], Michael Cowher[1], Emilia Diego[1], Ronald Johnson[1], Kristin Lupinacci[1], Quratulain Sabih[1], Atilla Soran[1], Jennifer Steiman[1], Priscilla McAuliffe[1], Lakshmi Harinath[2], Erin Bayley[1]

University of Pittsburgh Medical Center, Pittsburgh, PA

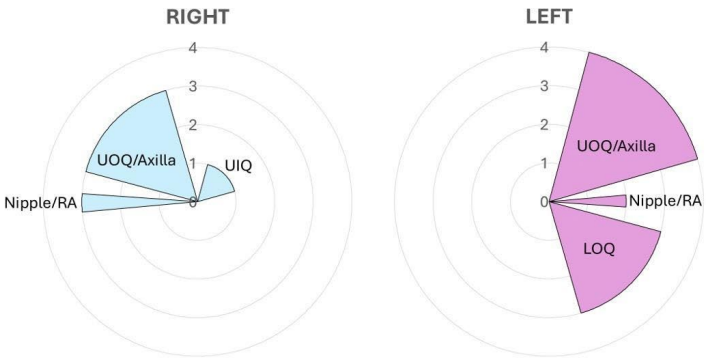
Background/Objective: Nipple-sparing mastectomy (NSM) has gained widespread use for breast cancer treatment and prophylaxis for its superior cosmetic outcomes. Although equivalent safety outcomes have been reported in comparison to skin-sparing approaches, whether specific regions of the surgical bed are at greater risk for residual breast tissue remains unknown. Therefore, we aimed to determine the incidence and anatomical distribution of new or recurrent cancer or atypia following NSM. These outcomes were selected as they highlight findings which are likely to require surgical intervention, thereby potentially compromising the reconstruction.

Methods: This retrospective cohort study utilized an institutional cancer registry to identify patients who underwent unilateral or bilateral NSM for cancer via an inframammary approach between 2009 and 2023. Subsequent pathology reports were examined to identify breast or axillary biopsies demonstrating atypia, or in situ/invasive carcinoma). These findings were then mapped to specific regions of the breast including: upper outer/axilla (UOQ), lower outer (LOQ), upper inner (UIQ), or lower inner quadrant (LIQ); and nipple/retroareolar).

Results: Among 249 patients who underwent NSM (99.6% female; mean age, 49 years), 24% presented with Tis/T0 tumors, while 52% had T1/T2 tumors, and 67% were node-negative. Neoadjuvant chemotherapy was administered to 22.5% (56/249) of patients. Unilateral NSM was performed in 34% (85/249) of cases, whereas 66% (164/249) underwent bilateral procedures. Follow-up identified 35 ipsilateral breast biopsies, of which 16 (46%) demonstrated carcinoma or atypia. Recurrence was most common in the UOQ/axilla (7 cases), followed by the nipple (5 cases) (Figure). Fewer recurrences were noted in the remaining quadrants, including the LOQ, LIQ, and UIQ.

Conclusions: Following NSM, the axilla, UOQ, and nipple are the highest-risk zones for recurrence following NSM. While recurrence rates remain low, these findings highlight the most technically challenging areas to achieve adequate, oncologically-sound resections. Furthermore, our findings suggest that perhaps routine use of an axillary counter-incision may be advantageous to safely accomplish NSM with nodal staging procedures, and multidisciplinary discussions with our plastic surgery colleagues is imperative for surgical planning. Adequate excision of maximal breast tissue off the nipple-areola complex, however, remains a challenge, as surgeons balance the risks and benefits of maximal resection and nipple ischemia.

Figure 1: Recurrence Locations



1988441 - Association of Surgeon Volume with Adherence to American Society of Breast Surgeons Surgical Quality Measures

Kelley Chan[1], Bryan Palis[2], Joseph Cotler[2], Richard Bleicher[3], Katharine Yao[4]

[1]Loyola University Medical Center, Chicago, IL, [2]American College of Surgeons, Chicago, IL, [3]Fox Chase Cancer Center, Philadelphia, PA, [4]NorthShore University HealthSystem, University of Chicago, Evanston, IL

Background/Objective: Surgeon volume has been associated with differences in the quality of cancer care but there is a paucity of data on its relationship to breast cancer quality. This study examined the association of individual surgeon volume with American Society of Breast Surgeons (ASBrS) quality measure performance. We also examined whether practice at a hospital having National Accreditation Program for Breast Centers (NAPBC) accreditation influenced performance.

Methods: Female patients with stage I-III breast cancer were identified from the National Cancer Database from 2018 to 2022. Surgeon volume was captured, using National Provider Identifiers, as the number of breast cancer surgeries divided by years of practice during this time frame, which was then analyzed as tertiles, ranked as low volume (LV), average volume (AV), and high volume (HV). The ASBrS quality measures evaluated were surgery ≤ 60 days, radiotherapy for node-positive mastectomy, sentinel lymph node biopsy (SLNB) alone for Z0011-eligible patients, omission of SLNB for breast conservation surgery (BCS) patients ≥ 70 years with T1N0M0 hormone receptor positive disease, negative margins after BCS, and use of diagnostic needle biopsy. Chi-squared and t-test statistics compared patient, tumor, hospital, and treatment characteristics by surgeon volume. Adjusted multilevel glimmix models, with hospital as a random effect, investigated associations with ASBrS quality measure performance.

Results: Of 1,011,356 patients, median age was 62 years (IQR 52-71), 73.2% were non-Hispanic White, and 76.9% had stage I disease. The annual median volume for LV surgeons was 31 breast cancer cases (IQR 15-48) compared to 167 cases for HV surgeons (IQR 145-200). Compared to HV surgeons, LV surgeons treated a higher proportion of patients who were ≥ 70 years (30.9% vs 25.8%, $p< 0.001$), non-White (29.4% vs 24.1%, $p< 0.001$), and from non-metropolitan areas (19.4% vs 13.2%, $p< 0.001$). Over one third (37.6%) of all patients were treated at NAPBC-accredited hospitals, including 28.9% of patients treated by LV surgeons and 41.3% by HV surgeons. For all surgeons, performance with diagnostic needle biopsy and negative margins after BCS was 97.2% and 96.6%, respectively and therefore not evaluated in the glimmix models. After adjustment, compared to AV surgeons, LV surgeons were more likely to provide surgery ≤ 60 days (OR 1.13, 95% CI 1.10 – 1.15) but less likely to adhere to radiotherapy for node-positive mastectomy (OR 0.80, 95% CI 0.77 – 0.84), SLNB alone for Z0011-eligible patients (OR 0.75, 95% CI 0.67 – 0.85), and omission of SLNB for eligible patients ≥ 70 years (OR 0.70, 95% CI 0.66 – 0.73) (Table). LV surgeons at NAPBC-accredited hospitals were more likely to adhere to radiotherapy for node-positive mastectomy (OR 1.39, 95% CI 1.20 – 1.60) and SLNB omission (OR 1.70, 95% CI 1.35 – 2.13) compared to LV surgeons at non-NAPBC-accredited hospitals.

Conclusions: Although LV surgeons have more variability in quality measure performance, NAPBC-accreditation was associated with improved performance for these surgeons. These findings suggest that efforts should be focused on methods to help LV surgeons achieve higher performance, including education and participation in breast program accreditation.

Table 1. Adjusted odds ratios for American Society of Breast Surgeons quality measure performance for low and high volume surgeons, compared to average volume surgeons

Table. Adjusted odds ratios for American Society of Breast Surgeons quality measure performance for low and high volume surgeons, compared to average volume surgeons.

	Low Volume Surgeon OR (95% CI)	p-value	High Volume Surgeon OR (95% CI)	p-value
Surgery ≤ 60 days	1.13 (1.10 – 1.15)	**<0.001**	0.99 (0.97 – 1.01)	0.173
Radiotherapy for node-positive mastectomy	0.80 (0.77 – 0.84)	**<0.001**	1.06 (1.01 – 1.11)	**0.014**
SLNB for Z0011-eligible patients	0.75 (0.67 – 0.85)	**<0.001**	1.36 (1.18 – 1.55)	**<0.001**
Omission of SLNB ≥ 70 years with T1N0M0 HR+ partial mastectomy	0.70 (0.66 – 0.73)	**<0.001**	1.02 (0.97 – 1.07)	0.429

*Adjusted for Charlson Comorbidity Index, disease stage, insurance status, race and ethnicity, hospital type and volume, National Accreditation Program for Breast Centers accreditation status, and surgeon volume.

1988447 - Understanding the Psychological and Demographic Drivers of Surgical Management in Very Young Women with DCIS

Asha Swamy[1], Run Xuan Zeng[2], Susan Isherwood[2], Yue Yang[2], May Lynn Quan[2]

[1]University of Ottawa, Calgary, AB, Canada, [2]University of Calgary, Calgary, AB, Canada

Background/Objective: Introduction: Ductal carcinoma in situ (DCIS) is uncommon in women < 40. Treatment focuses on reducing risk of invasive recurrence, with equivalent outcomes between breast conservation and mastectomy. Mastectomy has been associated with poorer psychosocial outcomes, thus understanding influencing factors in this unique population may help frame discussions around surgical options. We sought to evaluate patient reported preoperative factors influencing surgical treatment, and the associated psychosocial outcomes at year 1 in young women with DCIS.

Methods: Methods: Patients ≤40 with a diagnosis of pure DCIS from the Reducing the bUrden of Breast cancer in Young women (RUBY) prospective, national cohort in a universal payer system comprised the study group. In addition to demographics, patients completed questionnaires assessing depression (PHQ-9/CES), anxiety (GAD-7), self efficacy (Cancer Behavior Inventory CBI-B) and quality of life (QOL) and breast satisfaction (Breast-Q) at first surgical consultation, prior to surgery, and at year 1 post diagnosis. Final pathology and treatment data were also collected. Descriptive statistics and multivariable analysis were performed to assess for predictors of surgical treatment at diagnosis, and univariable analysis was used for psychosocial outcomes at year 1.

Results: Results: There were 107 patients who comprised the study cohort; average age was 36.3. Overall, 46 (43%) patients had breast-conserving surgery and 61 (57%) patients had a mastectomy, of which 47 (77%) had reconstruction. The majority were married/common law, had higher education and were of Caucasian descent. Most had a prior pregnancy and only half had any first degree relatives with any cancer; there was no significant difference between surgery groups on demographics. (Table 1). At diagnosis, 73.5% of women reported their QOL as below average; and 50% reported mild-moderate anxiety levels. When asked about their pre-consult attitude towards surgical management, 36% definitely wanted one or both breasts removed, 35% wanted the surgeon's recommendation, and 29% wanted to preserve their breast. On multivariable analysis, those with higher education (OR = 0.19, CI 0.06-0.62, p=0.006), and were single/separated (OR=0.18, CI=0.04-0.77, p=0.02) were significantly less likely to have a mastectomy, whereas mild or moderate anxiety was associated with having mastectomy (OR=4.54, CI=1.31-15.68, p=0.017). Those who strongly preferred mastectomy (OR=6.05, CI=1.36-26.92, p=0.018) or were waiting for their surgeon's recommendation (OR=5.24, CI=1.34-20.48, p=0.017) were more likely to receive mastectomy. Age, income, prior pregnancy, depression, and QOL were not significant factors. At year 1, on univariable analysis, QOL was higher in the breast conservation group, and there were no significant differences in depression, anxiety and self-efficacy between groups.

Conclusions: Conclusion: There is an interplay of factors influencing surgical treatment decisions for young women with DCIS. The strong correlation between anxiety and mastectomy and subsequent decreased QOL should be considered in treatment planning. With limited research on the long-term psychosocial impacts of mastectomy in young women, understanding factors that influence treatment plans is essential to support physician recommendations and patient-physician decision making for DCIS treatment.

Table 1. Preoperative patient demographics and psychosocial variables by surgery type

		Overall	Breast conserving surgery	Mastectomy	P-Value
Number of patients (n)		107	46	61	
A: Demographics					
Age at diagnosis, mean (SD)		36.3 (3.4)	36.4 (3.9)	36.2 (3.0)	0.793
Marital status, n (%)	Married/Common Law	87 (84.5)	33 (75.0)	54 (91.5)	0.059
	Separated, but legally married	1 (1.0)	1 (2.3)	0	
	Single	15 (14.6)	10 (22.7)	5 (8.5)	
Education, n (%)	College or technical school	31 (30.1)	9 (20.5)	22 (37.3)	0.24
	High school diploma or equivalent	11 (10.7)	4 (9.1)	7 (11.9)	
	University graduate degree	29 (28.2)	15 (34.1)	14 (23.7)	
	University undergraduate degree	32 (31.1)	16 (36.4)	16 (27.1)	
1st degree relative with cancer, n (%)	Breast Cancer	13 (12.1)	6 (13.0)	7 (11.5)	0.723
	Other Cancer	26 (24.3)	11 (23.9)	15 (24.6)	
	No	57 (53.3)	26 (56.5)	31 (50.8)	
	Unknown	11 (10.3)	3 (6.5)	8 (13.1)	
Past Pregnancy, n (%)	No	25 (23.6)	15 (32.6)	10 (16.7)	0.092
	Yes	81 (76.4)	31 (67.4)	50 (83.3)	
B: Attitudes & reasons					
Attitude towards breast surgery, n (%)	Wanted both breasts removed	24 (22.6)	4 (8.7)	20 (33.3)	0.003
	Wanted one breast removed	14 (13.2)	9 (19.6)	5 (8.3)	
	No opinion, waiting for surgeon recommendation	37 (34.9)	14 (30.4)	23 (38.3)	
	Wanted to preserve breasts	31 (29.2)	19 (41.3)	12 (20.0)	
C: Baseline patient-reported psychosocial factors					
Anxiety score (GAD-7), mean (SD)		7.0 (5.4)	6.1 (5.5)	7.7 (5.3)	0.15
Depression(PHQ-9/CES), n (%)	Not clinical depression	72 (71.3)	33 (75.0)	39 (68.4)	0.615
	Clinical depression	29 (28.7)	11 (25.0)	18 (31.6)	
Breast satisfaction (Breast-Q), mean (SD)		58.4 (20.1)	62.9 (18.4)	55.1 (20.8)	0.046
QOL (Breast-Q), mean (SD)		60.3 (17.3)	63.9 (15.7)	57.6 (18.0)	0.061
D: Post-treatment patient-reported psychosocial factors					
Anxiety score (GAD-7), mean (SD)		6.2 (5.0)	6.5 (4.8)	5.9 (5.2)	0.628
Depression (PHQ-9/CES), n (%)	Not clinical depression	57 (76.0)	26 (74.3)	31 (77.5)	0.957
	Clinical depression	18 (24.0)	9 (25.7)	9 (22.5)	
Breast satisfaction (Breast-Q), mean (SD)		59.1 (25.3)	65.4 (21.7)	54.0 (27.0)	0.042
QOL (Breast-Q), mean (SD)		61.7 (21.0)	69.3 (20.4)	55.5 (19.5)	0.003

1988734 - Neighborhood-Level Disadvantage as a Predictor of Metastatic Breast Cancer at Diagnosis and Delayed Treatment Initiation

Priyanka Parmar[1], Jessica Lin[2], Rajika Jindani[1], Susan Laura Jao[3], Fardeen Bhimani[4], David Entenberg[5], Maja Oktay[2], Michelle Sheckley[3], Ethan Ravetch[3], Anjuli Gupta[4], Jessica Pastoriza[3], Maureen McEvoy[3], Sheldon Feldman[3]

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Background/Objective: Late-stage breast cancer diagnosis leads to higher mortality, with 5-year survival rates starkly contrasting between localized (99%), regional (84%), and metastatic-stage disease (27%). Despite screening and treatment advancements, late-stage diagnoses persist due to multiple factors. Socioeconomic factors such as income, education level, and insurance coverage have individually been studied and shown to contribute to delayed diagnoses and poorer outcomes. However, more nuanced measures beyond these traditional proxies are needed to better understand a patient's socio-geographic environment and its cumulative effect on patient health. The Distressed Communities Index (DCI) is a validated socio-geographic measure of economic deprivation at the zip code level. It assesses economic distress at the zip code level through metrics such as education, unemployment, housing, poverty, income, and employment trends. A high DCI score identifies distressed communities. This study examines whether high neighborhood-level distress predicts metastatic breast cancer at diagnosis, delays in treatment, and reduced 5-year survival.

Methods: We conducted a retrospective cohort study of women aged 18 years and older with invasive breast cancer diagnosed or treated between 2012-2022 at a single center comprehensive cancer center. Each patient's zip code was linked to its DCI score. Multivariable logistic regression analysis, adjusted for age, race, ethnicity, and insurance, assessed the association between DCI and cancer stage at diagnosis (localized, regional, metastatic). ANCOVA was used to compare time-to-treatment between high- and low-DCI areas, controlling for stage.

Results: A total of 4,266 women were included in the final analysis. Among them, 3,102 had localized disease (pN0), 1,042 had regional disease (pN1-3), and 122 were metastatic (M1) at diagnosis. Of the entire cohort, 38% were Black and 38% were Hispanic. After adjusting for age, race, ethnicity, and insurance status, women from zip codes with high DCI scores were twice as likely to be diagnosed with metastatic disease compared to those from lower DCI areas (aOR= 2.02, 95% CI 1.19-3.45, p = 0.009) (Table 1). Additionally, patients from higher DCI zip codes experienced significant delays in initiating treatment in neoadjuvant chemo (33 vs 49 days, p=0.024), adjuvant chemo (85 vs 105 days, p = 0.01), surgery (56 vs 76 days, p < 0.001), and radiation therapy (119 vs 169 days, p = < 0.001), compared to those from lower DCI areas. Furthermore, the 5-year survival rates showed a decreasing trend among patients from higher DCI zip codes compared to lower DCI groups: 86.5% vs. 87.2% in localized, 75.4% vs. 82.0% in regional, and 22.1% vs. 30.8% in distant-stage cancer.

Conclusions: Patients residing in higher-distressed communities exhibited a twofold higher likelihood of being diagnosed with metastatic breast cancer and experienced delays in treatment initiation compared to those from lower-distressed communities. These results underscore the influence of socio-geographic factors on breast cancer disparities, emphasizing the need for tailored interventions to enhance outcomes in underserved populations. Leveraging the DCI database enables identification

of high-risk zip codes, facilitating targeted screening initiatives aimed at mitigating disparities in breast cancer outcomes.

Table 1. Multivariable Logistic Regression Analysis of Predictors for Regional and Metastatic Stage Breast Cancer at Initial Diagnosis.

	Regional*			Metastatic*		
	OR	**95% CI**	**P-value**	**OR**	**95% CI**	**P-value**
Age (continuous)	0.98	0.98 - 0.99	<.0001	1.00	0.99 – 1.02	0.67
Black Race (ref: White Race)	0.88	0.75 - 1.04	0.14	0.76	0.50 - 1.15	0.19
Hispanic ethnicity (Ref: non-Hispanic)	1.02	0.87 - 1.21	0.78	1.00	0.65 – 1.55	0.99
No insurance (ref: insured)	0.71	0.43 – 1.17	0.17	0.27	0.11 – 0.68	0.01
Medicare/Medicaid (ref: non-Medicare/Medicaid)	0.91	0.78 - 1.07	0.25	0.75	0.49 - 1.14	0.18
High DCI Score (ref: low DCI)	0.88	0.68 - 1.14	0.33	2.02	1.19 – 3.45	0.01

*Ref: localized stage

1988783 - Evaluating the Impact of a Surgeon-Led Ductal Carcinoma in Situ Program on Endocrine Therapy Uptake

Monika Masanam[1], Olga Kantor[1], Olivia Pappas Brunco[2], Caroline Dudman[1], Caroline Block[1], Brittany Bychkovsky[1], Jennifer Bellon[1], Elizabeth Mittendorf[1], Tari King[1]

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Background/Objective: Ductal carcinoma in situ (DCIS) is the earliest form of breast cancer, comprising a spectrum of disease with pathologic features that inform risk stratification and treatment decisions. Management of DCIS typically involves surgery followed by radiation therapy and/or endocrine therapy (ET). ET has been historically managed by medical oncologists. In April 2021, we initiated a surgeon-led DCIS program in which the breast surgeon managed ET. Here, we evaluate the impact of this DCIS program on ET uptake.

Methods: Patients undergoing surgical treatment for DCIS between Jan 2016 and Jul 2024 were identified from a prospectively maintained institutional database. Patients treated prior to the inception of the DCIS program (Jan 2016–Mar 2021) were categorized as the historical cohort and post-inception (Apr 2021–Jul 2024) as the DCIS program cohort. ET uptake was compared between the historical and DCIS program cohorts using Chi-square analyses. We further examined the type of ET use by menopausal status and over time given the introduction of the option of low-dose tamoxifen (5 mg/day) as a standard option in Jan 2023.

Results: A total of 2,058 patients underwent surgery for DCIS at our institution during the study period; 1,026 in the historical cohort and 1,032 in the DCIS program. Patient characteristics were similar between the two cohorts and are described in the Table. Most patients underwent breast-conserving surgery (BCS), 754 (73.5%) in the historical cohort and 682 (66.1%) in the DCIS program cohort. Among patients with ER+ DCIS undergoing BCS, the rate of ET uptake did not differ between the two cohorts; 54.5% in the historical cohort vs. 52.3% in the DCIS cohort ($p = 0.48$). Most patients who initiated ET in both cohorts were postmenopausal. Tamoxifen was favored over aromatase inhibitors in postmenopausal patients who initiated ET after the introduction of the DCIS program (56.1% vs. 31.1%, $p < 0.001$). This trend appeared to be driven by the introduction of low-dose tamoxifen as a standard option in early 2023, which increased tamoxifen utilization to 74.2% ($p < 0.001$). Of the 97 postmenopausal patients who initiated ET after Jan 2023, 25 (26.8%) initiated AI, 5 (5.2%) standard-dose tamoxifen, and 67 (69.1%) low-dose tamoxifen.

Conclusions: ET uptake among both pre- and postmenopausal women undergoing BCS for ER+ DCIS remained stable following the initiation of a surgeon-led DCIS program. Among postmenopausal women, prescribing patterns within the DCIS program favored tamoxifen over aromatase inhibitors, and low-dose tamoxifen has become the most common option for ET since its introduction in 2023. Ongoing analyses will examine ET adherence among women in the DCIS program.

Table 1. Patient characteristics and treatment patterns among DCIS patients pre- and post- inception of the DCIS program

Table. Patient characteristics and treatment patterns among DCIS patients pre- and post-inception of the DCIS program

Characteristic	Overall	Historical cohort	DCIS program cohort	*P* value
Total	2058	1026	1032	
Median age	59 (21-90)	58 (23-90)	59 (21-86)	0.24
Menopausal status				
Premenopausal	631 (30.7)	334 (32.6)	297 (28.8)	0.07
Perimenopausal	16 (0.8)	4 (0.4)	12 (1.2)	0.08
Postmenopausal	1411 (68.6)	688 (67.1)	723 (70.1)	0.16
ER+ DCIS	1,766	888 (86.5)	878 (85.1)	0.37
Surgery				
BCS	1436 (69.8)	754 (73.5)	682 (66.1)	< 0.001
Adjuvant RT	1000 (69.6)	526 (69.8)	474 (69.5)	0.96
Mastectomy	622 (30.2)	272 (26.5)	350 (33.9)	< 0.001
Patients who underwent BCS with ER+ DCIS eligible for ET	1,165	660	505	
ET taken	624 (53.6)	360 (54.5)	264 (52.3)	0.48
Menopausal status				
Premenopausal	164 (25.3)	99 (27.5)	65 (24.6)	0.47
Perimenopausal	7 (1.1)	4 (1.1)	3 (1.1)	1.0
Postmenopausal	453 (72.6)	257 (71.4)	196 (74.2)	0.48
Type of ET in postmenopausal patients				
AI	259 (56.2)	173 (67.3)	86 (43.9)	< 0.001
Raloxifene	4 (0.9)	4 (1.6)	0 (0.0)	0.21
Tamoxifen	190 (41.9)	80 (31.1)	110 (56.1)	< 0.001
Low-dose	87 (45.8)	0 (0.0)	87 (79.1)	< 0.001
Standard-dose	103 (54.2)	80 (100.0)	23 (20.9)	< 0.001

Abbreviations: AI, aromatase inhibitor; BCS, breast conserving surgery; DCIS, ductal carcinoma in situ; ER, estrogen receptor; ET, endocrine therapy; RT, radiation therapy.

Poster Session and Reception

Friday, May 2, 2025, 6:00 pm - 7:30 pm

Age Extremes

1975569 - Are We Not Choosing Wisely? Contemporary Nodal Management & Overall Survival in Older Patients with HER2+ Breast Cancer

Adrienne Cobb[1], Xiaowei Dong[2], Chiang-Ching Huang[2], Amanda Kong[1], Chandler Cortina[1]

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Background/Objective: In 2016, the Choosing Wisely guidelines recommended omission of nodal surgery for patients ≥70 years with early-stage cN0 HR+/HER2- breast cancer (BC) but excluded those with HER2+BC. We aimed to investigate contemporary nodal management in patients ≥70 with HR-/HER2+BC, identify factors associated with omission of nodal surgery, and examine overall survival (OS) by nodal surgery type.

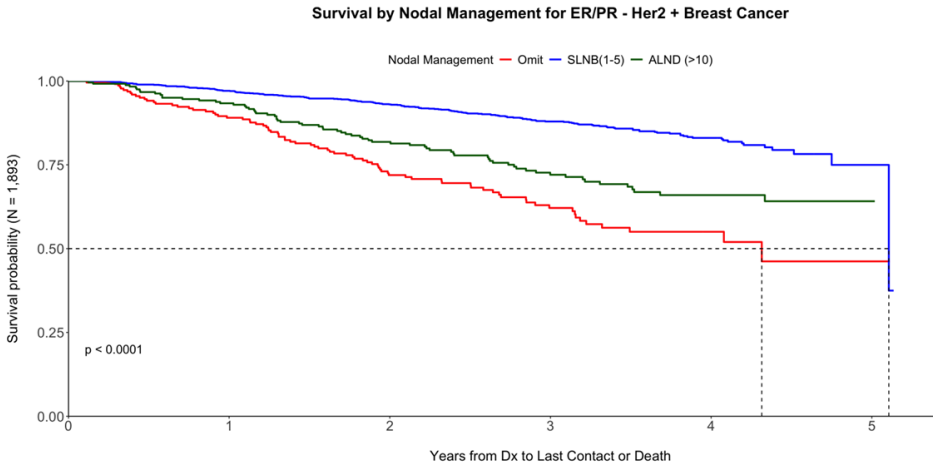
Methods: Women ≥70 with Stage I-III HR-/HER2+BC with upfront surgery in the NCDB from 2017–2019 were included. Nodal management was defined by number of nodes examined: omission (0), SLNB (1–5), and ALND (>10). Multinomial logistic regression identified factors associated with nodal omission. Kaplan-Meier analysis and a Cox proportional hazards model were performed to compare OS and identify factors associated with OS.

Results: Of the 2,152 eligible patients, 45.1% were age 70–75, non-Hispanic White (79.7%), had Medicare insurance (86.5%) and Charlson Comorbidity index (CCI) of 0 (74.9%). The majority had Stage I (50.4%) or 2 (38.8%) disease and underwent lumpectomy (55.8%). Only 46.6% of the cohort received radiation therapy (RT). Seventy percent of patients received RT post-lumpectomy (n=835/1201) and 17.7% (168/951) received post-mastectomy RT. Over half (59.7%) of patients received systemic therapy. Regarding nodal surgery, 1,426 (66.3%) patients had SLNB, 244 (11.3%) had an ALND, and 223 (10.4%) had omission. Of the 223 patients with nodal omission, the majority (64.6%) were age >81, 74% had CCI of 0, 85.1% were cT1–2, 4.6% were cT3, 3.3% were cT4 and 26.9% had systemic therapy. When stratified by cTN category, 11.6% (n=173/1489) of those with cT1-2N0 disease had omission of nodal surgery, while 8.3% (n=14/169) of cT1-2N+ patients omitted nodal surgery. Nearly 24% of cT3N0 (n=9/38) and 40% of cT4N0 (n=8/20) patients had omission of nodal surgery. In patients with cT3N+ and cT4N+ disease, 8.2% (n=4/49) and 28.9% of (n=11/38)

omitted nodal surgery, respectively. On regression analysis, factors associated with omission of nodal surgery included age >81 (OR 3.8, 95% CI 2.5–5.7) and Stage III disease (OR 2.8, 95% CI 1.5–5.2). Patients who underwent mastectomy were more likely to receive nodal surgery (OR 0.43 95% 0.3–0.6) as were patients who received chemotherapy (OR 0.39 95% 0.3–0.6). Notably, having a CCI ≥3 was not associated with nodal omission (OR 1.5 95% CI 0.83–2.8), Three-year OS was significantly worse for patients who had omission of nodal surgery (62%, 95% CI 55–98%) compared to those with SLNB (87%, 95% CI 86–89%) or ALND (72%, 95% CI 66–78%) (p< 0.01 for all). (Figure 1) Compared to patients who underwent SLNB, patients with nodal omission were nearly twice as likely to die (HR 1.9, 95% CI 1.4–2.5).

Conclusions: In this cohort of patients ≥70 with HR-/HER2+BC, 10.4% had omission of nodal surgery, including patients with locally advanced and cN+ disease, and omission was associated with inferior OS. Data suggests the Choosing Wisely guidelines are being applied more broadly to patients with HR-/HER2+BC. While reasons for omission are likely multifactorial, our data reveals that surgical nodal staging should remain standard of care for this population

Figure 1: Overall Survival for women age ≥70 in the NCDB from 2017–2019 with Stage I-III ER/PR- HER2+BC by nodal management type



Omit	223	191	130	73	22	1
SLNB (1-5)	1,426	1,336	1,072	636	260	3
ALND (>10)	244	222	173	115	57	2
	0	1	2	3	4	5

1972806 - Outpatient Mastectomy: ERAS® and Same-Day Discharge as a Viable Option in the Elderly

Lena Egbert, Heidi Kosiorek, Patricia Cronin, Julie Billar, Richard Bold, Edward Reece, William Casey, III, Alanna Rebecca, Daniel Rhee, Barbara Pockaj

Mayo Clinic Arizona, Phoenix, AZ

Background/Objective: Outpatient mastectomy has increased in prevalence over the past several years. Despite its increase in use, there are no recent studies assessing its implications in the elderly. Enhanced recovery after surgery (ERAS®) principles emphasizing outpatient mastectomy were introduced in our institution's breast surgery practice in 2017. The aim of our study was to assess the effect of introducing outpatient mastectomy on outcomes in the elderly.

Methods: This is a retrospective cohort study in a single center. All patients ≥70 years old undergoing mastectomy with or without reconstruction from 2015-2023 were included. Patients from 2015-2017 were in the pre-ERAS® cohort, and those from 2017-2023 were post-ERAS®. Univariate analysis was used to determine association of ERAS® with outcomes. Multivariable logistic regression was performed to determine variables associated with post-operative admission.

Results: In total, 141 elderly patients undergoing mastectomy were included. There were 55 patients in the pre-ERAS® group and 86 in the post-ERAS® group. Reconstruction was performed in 10.9% of the pre-ERAS® group and 15.1% of the post-ERAS® group (p=0.475). Bilateral procedures were performed in 23.6% of the pre-ERAS® group and 32.6% of the post-ERAS® group (p=0.255). The post-ERAS® group had a younger mean age (75.4 vs 77.1, p=0.032). There were no other significant differences between the two cohorts' patient characteristics by sex, ethnicity, tumor Stage, BMI, major comorbidities, smoking status, and anticoagulation. A higher proportion of post-ERAS® patients received neoadjuvant therapy (36.0% vs 18.2%, p=0.023) and underwent radiotherapy (29.1% vs 9.1%, p=0.005). A higher percentage of post-ERAS® patients received liposomal bupivacaine (82.6% vs 9.1%, p< 0.001), and a larger percentage underwent prophylactic surgery (9.3% vs 0.0%, p=0.020). There were no other differences in surgical treatment between the two groups, including axillary staging, bilateral procedures, concomitant reconstruction, and reconstruction type. Of the post-ERAS® group, 64.0% of patients were outpatient compared to 16.4% of pre-ERAS® patients (p< 0.001). There were no significant differences in complication rates between the two groups (33.7% vs 32.7%, p=0.920). This trend persisted when separated by type of complication, including major complications requiring return to the operating room (minor 18.6% vs 20.0%, p=0.837; major 15.1% vs 12.7%, p=0.692). There were no significant differences in mean hospital length of stay for those admitted postoperatively between the post- and pre-ERAS® groups (1.0 vs 1.3 days, p=0.183). After introduction of ERAS®, on univariate analysis, diabetes was a significant predictor of postoperative admission (OR 15.75, 95% CI 1.83-135.11, p=0.012). Severe cardiac disease was a borderline significant predictor of admission (OR 4.16, 95% CI 0.96-18.02, p=0.057). On multivariable analysis, the significance of diabetes persisted while cardiac disease was no longer significant. Patients treated 2020-2023 were less likely to be admitted than those treated closer to the initiation of ERAS®, 2017-2019 (OR 0.06, p=0.014). There was no significant association with age or BMI.

Conclusions: While there have been several studies on the safety and feasibility of outpatient mastectomy, few have focused on the elderly population. Outpatient mastectomy is safe and practical in the elderly, who should also reap the benefits of ERAS® protocols and same-day discharge.

TABLE 1: Treatment characteristics and complication rates before and after the introduction of ERAS® and outpatient mastectomy

Characteristic	Pre-ERAS® (n=55)	Post-ERAS® (n=86)	Total (n=141)	*p* value[1]
Outpatient, *n (%)*	9 (16.4%)	55 (64.0%)	64 (45.4%)	<.001
Reconstruction				0.475
No reconstruction, *n (%)*	49 (89.1%)	73 (84.9%)	122 (86.5%)	
With reconstruction, *n (%)*	6 (10.9%)	13 (15.1%)	19 (13.5%)	
Bilateral, *n (%)*	13 (23.6%)	28 (32.6%)	41 (29.1%)	0.255
Neoadjuvant Therapy, *n (%)*	10 (18.2%)	31 (36.0%)	41 (29.1%)	0.023
Type of neoadjuvant therapy				0.451
Endocrine only, *n (%)*[2]	2 (20.0%)	11 (35.5%)	13 (31.7%)	
Chemotherapy only, *n (%)*[2]	5 (50.0%)	10 (32.3%)	15 (36.6%)	
Axillary Management				0.419
None, *n (%)*	6 (10.9%)	8 (9.4%)	14 (10.0%)	
SLNB[3], *n (%)*	38 (69.1%)	54 (63.5%)	92 (65.7%)	
SLNB with ALND[4], *n (%)*	2 (3.6%)	10 (11.8%)	12 (8.6%)	
ALND, *n (%)*	9 (16.4%)	13 (15.3%)	22 (15.7%)	
Liposomal bupivacaine, *n (%)*	5 (9.1%)	71 (82.6%)	76 (53.9%)	<.001
Overall complication rate, *n (%)*	18 (32.7%)	29 (33.7%)	47 (33.3%)	0.920
Major complication,[5] *n (%)*	7 (12.7%)	13 (15.1%)	20 (14.2%)	0.692
Minor complication, *n (%)*	11 (20.0%)	16 (18.6%)	27 (19.1%)	0.837

[1]*p* value displayed for comparison of pre-ERAS® and post-ERAS® groups
[2]Percent of patients undergoing neoadjuvant therapy
[3]Sentinel lymph node biopsy
[4]Axillary lymph node dissection
[5]Requiring hospitalization or return to the operating room

1987344 - Association Between Ohio Opportunity Index and Overall Mortality in Older Adults

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Background/Objective: Numerous studies have demonstrated associations between neighborhood contextual factors and breast cancer outcomes; however, few have explored the implications of neighborhood factors in older adults. This study aims to examine the relationship between an area-level measure of resource availability—the Ohio Opportunity Index (OOI)—and overall mortality in older adults with breast cancer.

Methods: Older adults (aged ≥65 years) with Stages I-III breast cancer, diagnosed between January 1st, 2012 and December 31st, 2020, were identified in the Ohio State Registry and the Ohio State University Comprehensive Cancer Center electronic medical record. Neighborhood resource availability was measured using OOI, an area-level composite measure derived from transportation, education, employment, health, housing, crime, and environment. Higher scores suggest greater neighborhood resource availability. OOI was dichotomized as low versus high at the median. Patient clinical, demographic, and treatment characteristics were compared between patients living in areas with low opportunity versus those with high opportunity. Kaplan-Meier curves examined the association between OOI and all-cause mortality. Crude and adjusted Cox proportional hazards models assessed the crude and adjusted association between OOI and all-cause mortality (HR, 95%CI). Final models were adjusted for race, marital status, insurance, smoking history, alcohol history, Stage, surgery, chemotherapy, radiation, Charlson comorbidity index, and allostatic load (a biological correlate of life course stress).

Results: 1,361 patients met the study criteria, with a median age of 71 years (interquartile range 67-76). A higher percentage of individuals residing in areas with low OOI were racialized as Black (low OOI 12.2% vs high OOI 2.8%; p=0.001) compared to those in areas with high OOI. There were no significant differences in comorbidities (p=0.099), allostatic load (p=0.191), breast cancer subtype (p=0.476), Stage (p=0.152), breast surgery (p=0.374), axillary surgery (p=0.616), receipt of radiation therapy (p=0.264) or chemotherapy (p=0.604) between patients living in low OOI compared to high OOI areas. On multivariable analysis, older adults living in neighborhoods with low OOI had a 53% higher risk of mortality relative to older adults living in high OOI neighborhoods (HR 1.53, (1.03-2.27). Moreover, the risk of mortality began to diverge at 5 years (1.73 (1.14-2.61)) and persisted at 9 years (1.66 (1.15-2.40), with patients residing in low OOI areas having a higher mortality than those in areas with high OOI.

Conclusions: Despite similar clinical presentation and treatment receipt, older adults with breast cancer residing in low-resource areas, defined by low area-level opportunity, experienced poorer overall survival compared to those in high-resource areas. These findings suggest that neighborhood contextual factors are crucial in influencing survival outcomes for older adults beyond clinical and treatment factors.

1985470 - Are We Choosing Wisely? A Review of Compliance Using the National Cancer Database

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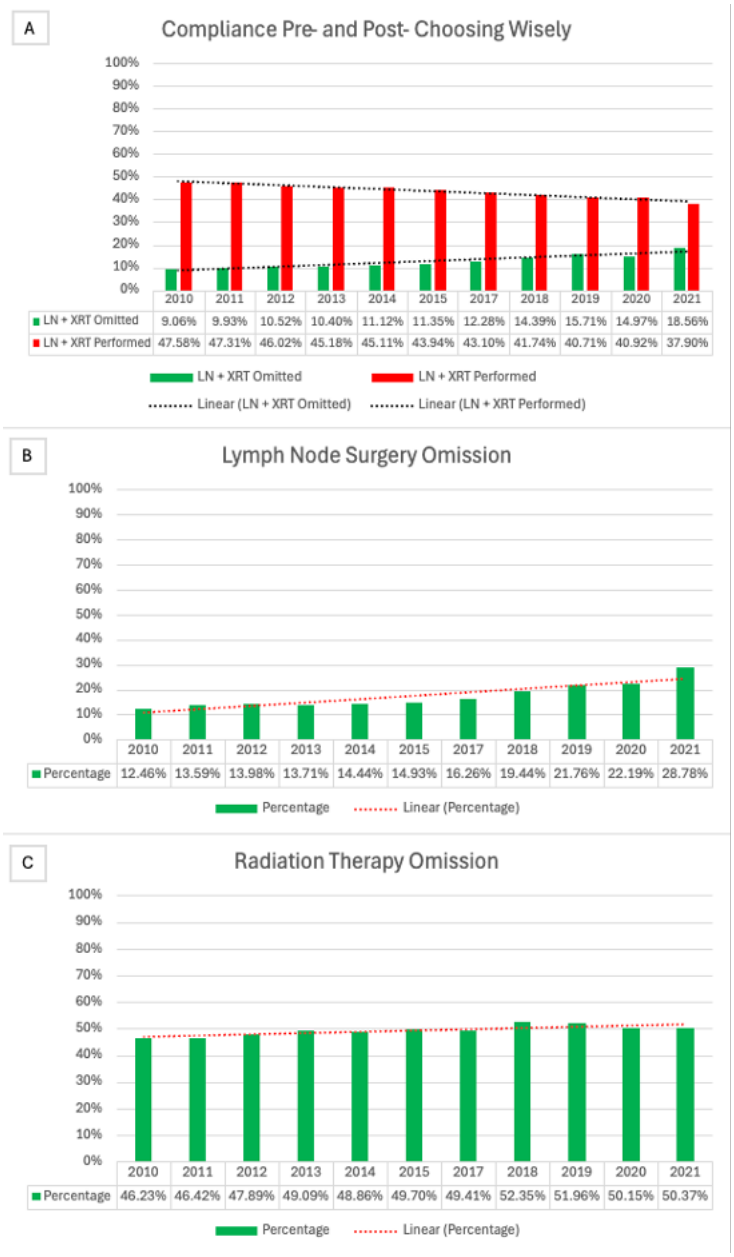
Background/Objective: The Choosing Wisely (CW) campaign by the American Board of Internal Medicine aimed to optimize care in an evidence-based approach, avoiding unnecessary procedures and duplicate clinical efforts. The subset of guidelines focused on breast oncology, published in 2016, stated that elderly patients over the age of 70 with a small tumor less than 2 cm, strongly hormone receptor positive, and clinically negative axillary lymph nodes (LN) were candidates to omit sentinel lymph node biopsy and possibly omit whole breast radiation. In our study we aim to examine the national trends in compliance and further assess subgroup characteristics that are associated with compliance or non-compliance.

Methods: Using the National Cancer Database (NCDB), we identified female patients, aged ≥70 years, who were diagnosed with invasive breast cancer, pathologically T1 (≤2cm), clinically node negative, hormone receptor positive, HER2 negative, and had undergone surgical treatment between 2010 and 2021. Subgroup analysis evaluating Choosing Wisely compliance (CWC) in omission of LN surgery and radiation therapy (xRT) for patients 70 years or older was performed.

Results: Our analysis of the NCDB resulted in a total of 252,900 patients. We divided the patients into Group 1- pre-CW (years 2010-2015) and Group 2- post-CW (years 2017-2021). Group 1 had a total of 118,388 patients and Group 2 had 134,512 patients. The average age was 76 in both groups, and 90% and 89% of patients were White in Group 1 and 2, respectively. The Charlson-Deyo Score (CDS) was similar between the two groups with a score of zero for 77% of patients in Group 1 and 76% in Group 2. Eighty-five percent of patients in each group were treated in metro areas. Fifty-three percent in Group 1 and 52% in Group 2 were classified as being treated in a community facility. In Group 1, LN surgery was omitted in 14% of patients and in Group 2, 22%. For xRT, Group 1 had 48% omission and 51% in Group 2. In a subgroup analysis, we defined compliance as omission of both LN surgery and xRT after adoption of the CW guidelines in 2016, the compliance rate was 16%. In isolation, LN surgery omission was at best 29% and xRT omission was at best 52% throughout the years that we analyzed. A multivariate logistic regression model analysis was performed to evaluate factors associated with a higher rate of CWC. Age >85 (OR: 12.1,95%CI 11.5-12.7, $p< 0.001$) and CDS of 3 (OR:1.5,95%CI 1.4-1.6, $p< 0.001$) were associated with higher CWC. Treatment at a community center (OR: 0.57,95%CI 0.55-0.59, $p< 0.001$) and grade 3 tumors were less likely to have CWC (OR: 0.5,95%CI 0.5-0.6, $p< 0.001$).

Conclusions: In our NCDB analysis of patients that met eligibility criteria for CW after 2017, only 16% of the patients were compliant with omission of both LN surgery and xRT. There is an opportunity to further enhance the implementation of the guidelines, including a focus on non-academic institutions and further analysis of how a decision to omit LN surgery affects the decision of radiation oncologists.

Figure 1: A) Compliance Trend (omission of LN surgery and xRT) Across Years 2010 – 2021. B) LN Surgery Omission Trend. C) Radiation Therapy Omission Trend.



1988398 - Breast Cancer in Pre- and Postmenopausal Patients: A Comparative Analysis

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Background/Objective: The incidence of breast cancer in women under the age of 50 is on the rise worldwide. Specific patient populations and clinical characteristics may be more predictive than others with regards to disease diagnosis and treatment plans. Recent trends have shown an increasing trend of breast cancer amongst all racial groups. The aim of this study is to measure differences between postmenopausal and premenopausal patients receiving surgical treatment for their breast cancer at a Level 1 Center located in Tampa, Florida .

Methods: This retrospective chart review study includes data abstracted from a Level 1 Center located in Tampa, FL. Patients who were diagnosed with anatomic Stage IA-IIIC breast cancer and received surgical intervention during 2023 were included. Patients were divided by menopause status. Comparative analysis was performed.

Results: 226 total patients received surgery in 2023 for Stage IA-IIIC breast cancer. These patients were 63.7% White or Caucasian, 12.4% Black or African American, 2.2% Asian, 1.8% Multi-Racial, 19.9% Other. 25.2% of patients were Hispanic or Latino (H/L). 171 (75.7%) were postmenopausal (Post-M), 46 (20.4%) were premenopausal (Pre-M) and 9 (3.3%) were perimenopausal. There was no significant difference between races (p-value = 0.533); however, 41.3% of Pre-M patients were H/L, compared to only 21.1% of Post-M patients ($\chi 2 = 7.99$, p-value =0.005). The Pre-M group was 5 years older at the age of first birth compared to the Post-M group, with median age 28 and 23 respectively (p-value < 0.001). Both had similar amounts of nulliparous women (p-value = 0.248). In contrast, Pre-M women had a median of 1 birth, while Post-M women had 2 (p-value = 0.027). There was no difference in pathology, grade, ER status, PR status, HER2 status, or KI67 (p-values > 0.13). There was a mildly higher percentage of cells that expressed PR in the Pre-M group, with medians of 91% and 70% respectively (p-value = 0.08). Finally, Pre-M patients were more likely to elect for mastectomy as a surgical treatment at 56.5%, compared to 32.1% of Post-M patients ($\chi 2 = 9.17$, p-value = 0.002).

Conclusions: The data demonstrates that premenopausal Hispanic patients could be more predisposed to breast cancer. Additionally, electing for a mastectomy is more popular among premenopausal patients. This study highlights how both racial and ethnic disparities and differential surgical preferences can influence the diagnosis and treatment of breast cancer.

1988192 - Breast Cancer Diagnosis at Age 85 and Older

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Background/Objective: Limited data is available on patients diagnosed with breast cancer who are 85 years of age and older. Here we describe characteristics of presentation in this patient population.

Methods: An Institutional Review Board approved retrospective study was conducted of patients ≥ 85 years old who consulted a breast surgeon for a diagnosis of breast cancer. The electronic medical record was used to ascertain diagnostic and screening details in women with newly diagnosed or recurrent breast cancer. Histopathological diagnosis and molecular markers were either abstracted from surgical pathology records or from core needle biopsy results for nonsurgical patients.

Results: From 01/01/2009 to 09/30/2024, 132 patients with newly diagnosed or recurrent breast cancer were identified. Median age was 89.5 (85 to 99) years. Fifty-two (39.4%) asymptomatic patients underwent core needle biopsy based on abnormal imaging findings (46 on screening mammogram, 2 on screening breast magnetic resonance imaging, and 4 incidentally detected on non-breast imaging). The remaining 80 (60.6%) patients were symptomatic and 82.5% (66) presented with a palpable mass. Other presenting complaints that led to diagnosis were bloody nipple discharge (4), breast pain (3), nipple retraction (1), or a combination of symptoms (6). Overall, 44 (32.6%) patients had a history of prior breast cancer (41.9% ipsilateral, 53.5% contralateral, 4.7% bilateral). Specifically, 46.2% (24/52) of asymptomatic patients versus 21.2% (17/80) of symptomatic patients had a prior history of breast cancer. Most (87.1%, 115/132) patients were diagnosed with invasive cancer: 80.0% of cancers were hormone receptor (HR) positive and human epidermal growth factor 2 (HER 2) negative, 6.1 % HER2 positive, and 13.9% triple negative. Ipsilateral breast tumor recurrences were diagnosed among 21.2% of 52 asymptomatic and 11.3% of 80 symptomatic women. Of the 41 asymptomatic patients with a new index cancer, 75.6% were clinical Stage 0 and I, compared to 35.2% for symptomatic patients. Moreover, 22.5% of symptomatic patients presented with clinical Stage III or IV breast cancer compared to none in the asymptomatic group.

Conclusions: Nearly 60% of women aged 85 and older were symptomatic at the time of breast cancer diagnosis and had proportionally more clinically advanced breast cancer than asymptomatic patients. More research is needed to guide breast cancer screening practices in this age group.

1988279 - Endocrine Treatment Alone as a Primary Treatment for Elderly Patients with Estrogen Receptor Positive Operable Breast Cancer and Low Recurrence Score: A Single-Arm Phase II Trial

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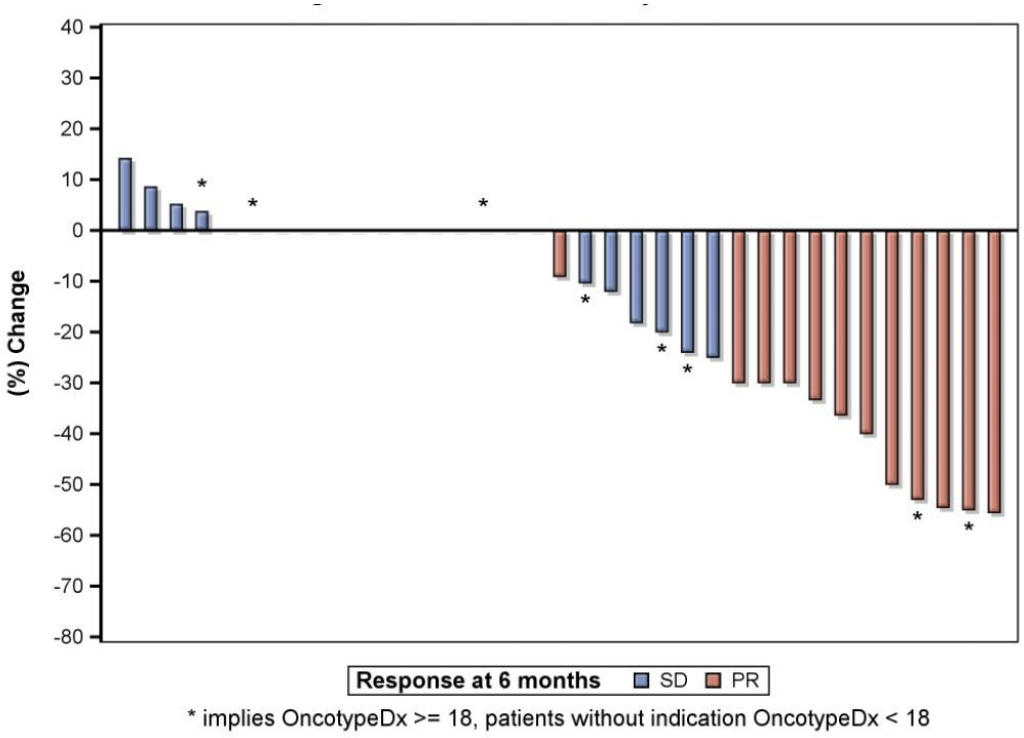
Background/Objective: Elderly breast cancer (BC) patients are less likely to receive guideline-concordant treatment and are more likely to experience high-morbidity surgical complications. Neoadjuvant endocrine therapy (ET) has been utilized in patients deemed inoperable or unfit for surgery. We sought to evaluate tumor response, quality of life (QOL), and survival in elderly women with early-stage ER+ BC treated with ET alone.

Methods: We performed a single institution, single-arm, phase II prospective study from 2017 to 2024. We included women ≥70 years of age with pathology-confirmed cT1-2, N0-1, and M0 operable invasive ER+ HER2- BC with Ki-67 ≤30%. Patients were treated with ET alone with imaging and clinical exams performed every 6 months to assess tumor progression (defined using RECIST criteria as complete response [CR], stable disease [SD], partial response [PR, < 30% decrease], or progressive disease [PD, >20% increase]). The primary endpoints were tumor control and QOL assessed by FACT-B questionnaires collected at baseline, 1-year, and 2-years. Patients with tumor progression or who opted out proceeded with standard of care (SOC) treatment. Patients were categorized based on percent tumor change at 6-months. Fisher's exact test or Chi squared test were used to compare categorical variables between groups and t-test or Wilcoxon rank sum tests were used for continuous variables. The Kaplan-Meier method was used to analyze overall survival (OS) and breast-cancer specific survival (BCSS).

Results: We enrolled 35 patients. Median follow-up was 35.5 months. 11 (31.5%) patients opted out throughout follow-up due to non-ET or PD reasons. One patient developed metastatic PD and was treated with SOC. The 2-year OS and BCSS rates were 78.5% (95% CI: 58.2%-89.8%) and 95.4% (95% CI: 71.9%-99.3%), respectively. Median percent primary tumor change at 6 months was -9.09% (range: -55.56% - 14.29%); (Figure 1). The high (>9.0%) and low (≤9.0%) percent tumor change groups did not differ in their Ki-67 levels (p=1.0) or Oncotype-Dx scores (p=0.99). At 6 months, 12 (34.3%) patients had PR and 23 (65.7%) had SD. The two groups differed significantly by ER Allred (p = 0.045) and PR Allred (p=0.025), but not by Oncotype-DX scores (p=0.62). The mean (SD) FACT-B scores were 101.63 (11.83) at baseline, 103.52 (7.00) at year 1, and 102.94 (6.96) at year 2. Total scores did not differ significantly between the PR and SD groups across all time points (all p>0.1). Patients with an Oncotype-DX score < 18 had significantly improved OS (2-year OS: 84.3% vs. 62.5%, p = 0.004), but similar BCSS (p=0.56) to patients with a score ≥18.

Conclusions: Elderly women with early-stage ER+ BC treated with ET alone have high BCCS with favorable QOL. Patients with low recurrence risk (Oncotype-DX score < 18) may benefit from this treatment strategy given acceptable OS and low rates of PD. While ET alone to treat early-stage ER+ BC in elderly women appears to be safe and well tolerated by patients, our results should be confirmed in larger clinical trials to both validate the prognostic ability of Oncotype-DX and identify other markers predictive of sustained tumor response to ET.

Figure 1: Percent primary tumor dimension change at 6 months, by RECIST tumor response.



1988953 - Hormone replacement therapy use in younger patients experiencing early menopause following breast cancer chemotherapy: a systematic review and meta-analysis

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Background/Objective: Early menopause is a frequently observed outcome following chemotherapy in younger breast cancer patients (under 50 years). The resultant symptoms of hot flushes, night sweats secondary to increased vasomotor symptoms and increased risks of fracture due to osteoporosis, can significantly impair patient quality of life. Hormone replacement therapy (HRT) is an effective treatment for menopausal symptoms. Its use in breast cancer survivors remains controversial due to increased likelihood of breast cancer recurrence resulting from increased circulating estrogen, particularly in hormone receptor-positive breast cancers. This systematic review and meta-analysis aimed to assess the safety and effectiveness of HRT use for managing chemotherapy-induced menopause symptoms in younger breast cancer patients.

Methods: An electronic search of PubMed, Medline, Embase and Web of Science databases was performed using MeSH and search terms including “menopause, premature,” “chemotherapy,” “breast neoplasms” and “young women.” Inclusion criteria for studies were defined HRT protocols with a minimum follow up period of 24 months in younger breast cancer patients (under 50 years) experiencing chemotherapy-induced menopause. Primary outcomes assessed were recurrence risk, disease-free survival, and mortality. Secondary outcome measures defined were relief of menopausal symptoms and quality of life measures. Meta-analysis for hazard ratios (HR) and relative risk (RR) outcomes of recurrence were calculated using a random effects model.

Results: 407 abstracts yielded from the initial literature search were screened. 36 studies (15 randomized control trials and 21 observational studies) comprising of 24,850 patients were included. 22% of patients (n=5467) received HRT. There was significant variability in recurrence rates. Compared to the non-HRT group, HRT was associated with an increased risk of local recurrence (HR=1.68 95% CI: 1.23-2.29),(RR=1.42 95% CI: 1.1–1.8). The greatest recurrence risk in the HRT group occurred within 5 years post-treatment. Recurrence risk was higher in observational studies (RR=1.6 95% CI: 1.2–2.1) than in randomized controlled trials (RR=1.2 95% CI: 0.9–1.5). Disease-free survival was slightly higher in the non-HRT group (90%) than in the HRT group (88%), and average mortality was lower in the non-HRT group (1.8%) compared to the HRT group (2.3%). Patients taking HRT demonstrated significant improvements in menopausal symptoms and quality of life. 67% reported relief from menopausal symptoms and more than half reported improved mood. Additionally, 67% reported improvement in sleep quality and 56% reported improvement in vaginal dryness and dyspareunia.

Conclusions: This systematic review and meta-analysis demonstrate an elevated risk of local recurrence associated with HRT use in younger breast cancer patients experiencing earlier chemotherapy-induced menopause. High disease-free survival and low mortality in addition to significant improvement in menopausal symptoms and quality of life, support use of HRT in these individuals. These results highlight the potential for HRT consideration in patients with lower initial recurrence risk. Further studies focusing on different HRT protocols are necessary to determine optimal management strategies in this patient population.

Benign

1974669 - Risk stratification for intraductal papilloma to guide decision making between surgery versus observation

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Background/Objective: The management of intraductal papilloma without atypia is controversial given the variable risk of upgrade to malignancy in the literature. While intraductal papilloma with atypia is typically excised given the elevated upgrade risk, there is less consensus on the management of papilloma without atypia. We sought to identify clinicopathologic and radiographic features associated with upgrade to malignancy and factors associated with the decision for surgical excision versus clinical observation to guide risk stratification for patients presenting with intraductal papilloma without atypia.

Methods: We conducted a retrospective review of adult female patients with biopsy-proven intraductal papilloma who underwent surgical excision or clinical observation with imaging surveillance. Exclusion criteria included atypia on core biopsy, ipsilateral concurrent malignancy, or incidentally identified papilloma on surgical pathology. Mann-Whitney U and independent student t-tests were used for continuous variables and Pearson's chi-square and Fisher's exact tests for categorical variables.

Results: A total of 127 patients diagnosed with intraductal papilloma between 2018 and 2024 were identified. Sixty-nine (54.3%) underwent surgery and 58 (45.7%) were observed with serial imaging. The majority of patients were post-menopausal (61.4%), and 60 (47.2%) had a family history of breast cancer. The primary presenting symptoms were asymptomatic imaging-detected lesions (58.3%) followed by nipple discharge (19.7%) and palpable mass (18.9%). Patients undergoing surgery more often had larger lesions on imaging (1.57 cm versus 1.05 cm, $p< 0.001$) and more frequent presence of ductal dilation (23.9% versus 3.4%, $p< 0.001$). In patients who underwent surgery, the rate of upgrade to malignancy on surgical pathology was 4.35% (n=3/69), with all cases upgraded to ductal carcinoma in situ (DCIS). Of the three patients with upgraded lesions, two presented with palpable masses. One presented with pathologic discharge and was found to have non-mass enhancement on MRI. All three patients had family history of breast cancer, and one patient had a personal history of ipsilateral DCIS. The rate of upgrade to high-risk lesion on surgical excision was 14.5% (n=10/69), with high-risk lesion defined as atypical ductal hyperplasia (ADH), atypical lobular hyperplasia (ALH), and lobular carcinoma in situ (LCIS). Within two years from surgery, one patient with ADH on surgical pathology developed DCIS. Of the 10 patients with high-risk lesions, six had elevated breast cancer risk at baseline. Of the 58 patients who were observed, none developed an ipsilateral malignancy within two years from initial diagnosis of papilloma. Ten (17.2%) of the observed patients developed an ipsilateral benign lesion within two years of observation with six arising from the same quadrant. Three of those patients underwent later surgical excision, and all had ultimately benign pathology.

Conclusions: Among patients undergoing surgical excision for intraductal papilloma without atypia in our cohort, the rate of upgrade to malignancy was 4.35%, and all upgraded patients had non-

invasive breast cancers in the setting of elevated personal risk. Within two years of diagnosis, no patients who were observed developed an ipsilateral breast cancer. These findings suggest that patients with intraductal papilloma without atypia can be safely observed. The method of observation should be personalized according to underlying patient risk.

Figure 1: Papilloma management decision and associated clinicopathologic and radiographic features

	Observation (N=58)	Surgery (N=69)	Total (N=127)	p-value
Age at diagnosis, Median (Range)	61.0 (24.0, 83.0)	55.0 (27.0, 76.0)	58.0 (24.0, 83.0)	0.073
Race, n (%)				0.321
Asian	3 (5.2%)	2 (2.9%)	5 (3.9%)	
Non-Hispanic Black	20 (34.5%)	30 (43.5%)	50 (39.4%)	
Other	2 (3.4%)	0 (0%)	2 (1.6%)	
Non-Hispanic White	33 (56.9%)	37 (53.6%)	70 (55.1%)	
BMI, Mean (SD)	31.3 (8.18)	31.4 (7.81)	31.3 (7.95)	0.990
Menopausal status, n (%)				0.175
Post-menopausal	39 (67.2%)	39 (56.5%)	78 (61.4%)	
Pre-menopausal	14 (24.1%)	26 (37.7%)	40 (31.5%)	
Unknown	5	4	9	
History of hormone replacement, n (%)				0.304
Current	1 (1.7%)	6 (8.7%)	7 (5.5%)	
Former	8 (13.8%)	12 (17.4%)	20 (15.7%)	
Never	34 (58.6%)	43 (62.3%)	77 (60.6%)	
Unknown	15	8	23	
Family history of breast cancer, n (%)				0.462
No	29 (50.0%)	31 (44.9%)	60 (47.2%)	
Yes	24 (41.4%)	36 (52.2%)	60 (47.2%)	
Unknown	5	2	7	
History of prior breast biopsy, n (%)				0.148
No	38 (65.5%)	36 (52.2%)	74 (58.3%)	
Yes	17 (29.3%)	30 (43.5%)	49 (37.0%)	
Unknown	3	3	6	
Presenting symptoms, n (%)				**<0.001**
Nipple discharge	2 (3.4%)	23 (33.3%)	25 (19.7%)	
Imaging detected	44 (75.9%)	30 (43.5%)	76 (58.3%)	
Mass	9 (15.5%)	15 (21.7%)	24 (18.9%)	
Other	1 (1.7%)	0 (0%)	1 (0.8%)	
Mastodynia	2 (3.4%)	1 (1.4%)	3 (2.4%)	
History of prior ipsilateral breast cancer, n (%)				
DCIS	0 (0%)	2 (2.9%)	2 (1.6%)	
ASA class, n (%)				0.183
1	4 (11.8%)	3 (4.8%)	7 (7.1%)	
2	19 (55.9%)	45 (72.5%)	64 (50.4%)	
3	10 (29.4%)	14 (22.6%)	24 (18.9%)	
4	1 (2.9%)	0 (0.0%)	1 (1.0%)	
Unknown	24	7	31	
Largest breast abnormality size, Mean (SD)	1.05 (0.99)	1.57 (1.32)	1.34 (1.21)	**<0.001**
Number of lesions identified, n (%)				0.577
0	4 (6.9%)	2 (2.9%)	6 (4.7%)	
1	35 (60.3%)	46 (66.7%)	81 (63.8%)	
2	10 (17.2%)	14 (20.3%)	24 (18.9%)	
3+	9 (15.5%)	7 (10.1%)	16 (12.6%)	
Imaging features, n (%)				
Mass	37 (63.8%)	55 (79.7%)	93 (73.2%)	0.072
Calcifications	16 (27.6%)	19 (26.1%)	35 (26.8%)	1.000
Ductal dilation	2 (3.4%)	17 (23.9%)	19 (14.7%)	**<0.001**
Focal asymmetry	13 (22.4%)	9 (13.0%)	22 (17.3%)	0.239
Architectural distortion	8 (13.8%)	5 (7.2%)	13 (10.2%)	0.253
Non-mass enhancement	1 (1.7%)	1 (1.4%)	2 (1.6%)	1.000

1987588 - Intralesional steroid injections versus oral medical management of idiopathic granulomatous mastitis: outcome comparison in a safety net population.

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Background/Objective: Idiopathic granulomatous mastitis (IGM) is a rare, chronic inflammatory breast disease affecting premenopausal women, with a higher incidence in Hispanic descent. While management is known to be challenging, no consensus gold standard has been established. This study aims to compare outcomes among multimodal treatment options in a safety net population with high Hispanic prevalence.

Methods: A retrospective chart review of patients with histopathological diagnosis of IGM was performed. Demographics, clinical history, treatment, and outcomes were collected. Treatment modalities included intralesional steroid injections (ILI, triamcinolone acetonide), oral medications (OM, doxycycline, and/or celecoxib), or a combination of both (ILI-OM). Response to treatment, length of remission and recurrence rate were analyzed. A z-test was used to compare remission and recurrence rates between groups (ILI vs OM, ILI vs ILI-OM and OM vs ILI-OM). Risk Ratio (RR) and odds ratios (OR) were calculated.

Results: A total of 55 females with median age 38.3 (range 23-52) were included. Average BMI was 34.03, 77.8% were premenopausal, 94.4% Caucasian and 90.7% Hispanic/Latino. A total of 5 patients (9%) were treated with ILI, 21 patients (38%) with OM, and 29 patients (53%) with ILI-OM. Remission of disease was achieved in 80% of patients treated with ILI, in 68.2% of patients treated with OM, and in 78% of patients treated with ILI-OM. Among the 29 patients receiving a combined treatment, 73.3% experienced remission from ILI after failing OM, 80% with a concurrent ILI-OM and 77.8% of patients with OM given pre and post- ILI. The average length of remission was 17.9 months for ILI, 15.2 months for OM, and 15.8 months for ILI-OM. Within the ILI-OM group, the average length of remission for patients treated with ILI after failing OM, concurrent ILI-OM and OM given pre and post- ILI was 17.2, 19.5 and 10.7 months, respectively. The remission rate comparison between groups did not show statistically significant differences. However, while patients in ILI group had a 12% likelihood of achieving remission compared to those treated with OM (RR 1.12); patients in OM group had odds of remission 1.6 times higher than ILI-treated patients (OR 1.60). Recurrence of disease was reported in 40% of patients treated with IL, 27% of patients treated with OM, and 65% of patients treated with ILI-OM. Among the ILI-OM group, the recurrence rate for patients treated with ILI after failing OM, concurrent ILI-OM and OM given pre and post- ILI was 73%, 60% and 55%, respectively. The recurrence rate comparison between groups showed a statistically significant difference between OM and ILI-OM ($p=0.007$).

Conclusions: This data supports the benefit of ILI either as the sole treatment modality or combined with OM, in favor of symptom relief and extended length of remission when compared with OM only. However, ILI-OM group was associated with higher rates of disease recurrence. These findings highlight that while overall remission rates were similar across groups, recurrence rates differ significantly between OM and ILI-OM, likely due to patient complexity. Prospective multicenter randomized trials are required to determine the optimal management of this complex disease.

1987076 - Idiopathic Granulomatous Mastitis: A Report from New Mexico, A Culturally Diverse Population

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Background/Objective: Idiopathic granulomatous mastitis (IGM) is an underrecognized benign inflammatory breast disease with increased prevalence within Hispanic/Latina populations. Most clinicians regard the etiology of the disease as autoimmune in nature, with a course of steroids as the typical first line therapy. In the setting of New Mexico's culturally diverse patient population, we aim to explore the management of IGM in women treated at an academic facility with the hypothesis that women referred from rural locations and further distance to tertiary care centers have longer times to definite treatment and more surgical interventions.

Methods: A retrospective chart review was conducted using HSC EMR databases to identify IGM cases at the University of New Mexico. Search terms were "granulomatous mastitis," "idiopathic granulomatous mastitis," "idiopathic lobular mastitis," "chronic mastitis," and "recurrent mastitis." Inclusion criteria included premenopausal and perimenopausal females 18-60 years old and presumed or confirmed diagnosis of IGM from June 2013 through December 2023. Pregnant patients at the time of presentation, unclear diagnosis, and cases with incomplete records were excluded. Descriptive statistics were analyzed using SAS 9.4 GEN MOD for repeated subjects, logistic and regression models controlling for encounter to assess associations between steroid use and distance to care with care and surgical intervention.

Results: Sixty-one patients were included. 15 presented with contralateral disease resulting in 76 total patient encounters. Median age at presentation was 35 (IQR: 30-40, Range: 21-59). Most patients were Hispanic (64%) or Native American (23%). 93% of patients living further from the academic facility (> 60 miles) were of Hispanic or Native American descent [p=0.02]. While 28.9% of patients encounters traveled more than 60 miles to care, time to definitive treatment was not statistically different. IGM was the referring diagnosis in 70.1% of encounters. Among the 5 university providers involved in care of these patients, approaches to first treatment included oral steroid therapy in 34 encounters (44.7%), oral antibiotics in 16 (31.1%), incision and drainage (6.6%), surgical excision (2.6%), and other (19.7%). Ultimately, 56 (73.7%) encounters received oral steroid therapy. There was no statistical difference in first treatment based on distance to care. Needle core biopsies were performed in 48 (63.2%), but no difference in utilization was found between the number of patients who experienced any type of surgical intervention vs those who received steroids only.

Conclusions: In New Mexico, Native American and Hispanic women represent a higher proportion of IGM diagnoses. There were no significant differences in time to first treatment, time to steroid initiation, or use of needle core biopsies and subsequent treatment in the patients traveling greater than or less than 60 miles from an academic center. The variety of first treatments highlights the complexity of this disease and the controversial approaches to care. We suspect that first line antibiotic initiation is underestimated due to the lack of clear data from outside records. We did not track treatment outcomes as there was a paucity of data. Our data supports the strong consideration of IGM as a diagnosis for benign inflammatory conditions in Native American women meeting clinical criteria.

Table 1

Table 1. Descriptive Statistics of IGM Characteristics (n=77)

Variable	Level	N=77	%
IGM referring diagnosis	No	22	28.6
	Yes	54	70.1
	Unclear diagnosis	1	1.3
Referring Facility type	Rural	22	28.6
	Urban	55	71.4
Number of acute care visits	Unknown or none	28	36.4
	1-2 visits	18	23.4
	3-5 visits	18	23.4
	6+	13	16.9
Number Needle-core biopsies	0	28	36.4
	1	40	51.9
	2	7	9.1
	3	2	2.6
First Treatment	None	3	3.9
	Antibiotics	16	20.8
	Steroid	34	44.2
	Immunologic	1	1.3
	ID	5	6.5
	Excision	2	2.6
	Other	16	20.8
Months to Steroid	Never	23	29.9
	1	18	23.4
	2	8	10.4
	3	10	13
	4	3	3.9
	5	6	7.8
	6	1	1.3
	7	1	1.3
	8	1	1.3
	9	1	1.3
	12	1	1.3
	14	2	2.6
	Unknown timing	2	2.6
Number Steroid Treatment	0	22	28.6
	1	35	45.5
	2	18	23.4
	3	1	1.3
	4	1	1.3
Number Flares	No flares	35	45.5
	1 flare	20	26
	>1 flare	22	28.6

1987646 - No FOMO for TOMO: ADH Upstage in the Era of Breast Tomosynthesis

Rashi Singh[1], Helene Sterbling[1], Neelima Katam[1], James Murphy[2], Abdul Zakkar[3], Indu Agarwal[1], Joshua Greenstein[1], Kevin Bethke[1], Nora Hansen[1], Seema Khan[1], Swati Kulkarni[1]

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Background/Objective: In recent years, there has been an overall trend towards active surveillance for benign, high-risk lesions due to the low upstaging rate after excisional biopsy. However, surgical excision is still recommended for atypical ductal hyperplasia (ADH) because of the upstaging to DCIS or invasive breast cancer (IBC) in 15-30% of cases as reported in the literature. With recent advancements in breast imaging such as the adoption of digital breast tomosynthesis (DBT) and vacuum-assisted core needle biopsy (CNB) techniques, we hypothesized that the overall upstage rate for ADH would be lower than previously reported using digital 2D mammography and conventional CNB techniques, and that we could potentially identify a subset of women who could avoid excisional biopsy.

Methods: We queried our institutional Enterprise Data Warehouse (EDW) to extract electronic health record data for this retrospective review. Women > 18 years old who had a screening DBT between 2016-24 with ADH diagnosed by either stereotactic or ultrasound-guided CNB followed by surgical excision were included in the cohort. Those who underwent MRI-guided imaging for detection or tissue sampling, and women with a prior/concurrent history of breast cancer or with a known pathogenic mutation were excluded. Statistical analyses were completed with chi-square testing using a p-value < 0.05 as statistical significance.

Results: 684 women with a mean age of 53 years (range 25-85 years) were identified from the EDW. Sixty percent were postmenopausal and 61% reported a family history of breast or ovarian cancer. Of these women, 67% were White, 12% were Black, and 8% were Asian. Over 70% of women had mammographically dense breast tissue. A total of 711 distinct cases of biopsy-proven ADH that underwent surgical excision were identified. The overall upstage rate was 12.4%. This included 14 IBC (1.9%) and 74 cases of DCIS (10.4%), with 52.7% of those with DCIS only having grade 1 disease. Moreover, 121 cases (17%) had benign pathology upon surgical excision. Within this subset, 77 cases had a lesion size reported, of which 58 (75%) were 1cm. Amongst those where lesion size was not reported (44 cases), about a quarter were noted to have “focal” ADH on biopsy. The presence of a mass on DBT was significantly associated with an upstage to cancer in comparison to the benign cases upon surgical excision ($\chi^2 = 7.96$, $p = 0.005$).

Conclusions: The overall upstage rate for biopsy-proven ADH detected by DBT and diagnosed with vacuum-assisted biopsy at our institution was lower than what has been previously reported in the literature, but still high enough to recommend surgical excision. The presence of a mass was associated with upstaging. Larger, multicenter studies are needed to determine if women with small lesion size or presence of focal ADH can potentially avoid surgical excision.

Table 1. Characteristics of women with biopsy-proven ADH who underwent surgical excision

Table 1. Characteristics of women with biopsy-proven ADH who underwent surgical excision

	Benign (n=121)	High-risk (ADH, ALH, LCIS) (n=502)	DCIS (n=74)	Invasive cancer (n=14)	All (n=711)
Mean age	53	53	58	62	53
Menopausal status					
- Premenopausal	48 (39.7%)	217 (43.3%)	16 (21.6%)	2 (12.5%)	282 (39.6%)
- Postmenopausal	73 (60.3%)	285 (56.7%)	58 (78.4%)	12 (87.5%)	429 (60.4%)
Family history of breast/ovarian cancer					
- Yes	81 (66.9%)	308 (61.3%)	38 (51.3%)	6 (42.9%)	432 (60.7%)
- No	40 (33.1%)	194 (38.7%)	36 (48.7%)	9 (64.3%)	279 (39.3%)
Race					
- White	89 (73.6%)	326 (64.9%)	53 (71.6%)	11 (78.6%)	479 (67.4%)
- Black	15 (12.4%)	58 (11.6%)	10 (13.5%)	1 (7.1%)	84 (11.8%)
- Asian	7 (5.8%)	43 (8.6%)	5 (6.8%)	0	55 (7.7%)
- Unknown/Other	10 (8.3%)	75 (15%)	6 (8.1%)	2 (14.3%)	93 (13.1%)
BIRADS density					
- A	1 (0.8%)	4 (0.8%)	1 (0.01%)	0	6 (0.8%)
- B	30 (24.8%)	141 (28.1%)	18 (24.3%)	7 (50%)	196 (27.5%)
- C	79 (65.3%)	319 (63.5%)	46 (62.2%)	6 (42.9%)	450 (63.3%)
- D	11 (9.1%)	38 (7.6%)	9 (12.2%)	1 (7.1%)	59 (8.3%)
Average BMI (kg/m2)	27.6	28.2	26.6	29.4	27.9
Grade					
- Low (1)			39 (52.7%)	11 (78.6%)	
- Intermediate (1-2, 2)			30 (40.5%)	3 (21.4%)	
- High (2-3, 3)			5 (6.8%)	0	

1984383 - Upstage Rate to Malignancy or High-Risk Lesion of Pure Radial Scar on Core Needle Biopsy: A Single-Institution Retrospective Review

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Background/Objective: Radial scars (RS) are commonly biopsied and may be associated with high-risk lesions (HRL) or malignancy. The majority represent benign proliferative change, posing the potential for overtreatment. At our institution, RS detection rate significantly increased from 0.04% to 0.13% ($p < 0.0001$) after the introduction of digital breast tomosynthesis (DBT). However, the clinical significance remains uncertain due to varying upstage rates in the literature. We previously reported a 3% upstaging rate of pure RS identified on core needle biopsy (CNB) to invasive or in situ malignancy with DBT, compared to 6% with two-dimensional mammography. The upstaging rate to other HRL (defined as ADH, ALH, or LCIS) was 22% with DBT and 12% with two-dimensional mammography. Herein, we provide an update, focusing on pure RS on CNB upstage to malignancy or HRL upon surgical excision.

Methods: This single-institution, retrospective study included data from patients diagnosed with pure RS without atypia by CNB who underwent surgical excision from 2019 through 2023. Patients with atypia or malignancy on initial biopsy, history of breast cancer, or follow-up at external facilities were excluded. Logistic regression analyses identified individual and independent prognostic factors (e.g., age, race, mammographic density, family history, biopsy type, number of imaging modalities, presence of microcalcifications, and elevated Tyrer-Cuzick risk >20%) associated with RS upstaging to malignancy or HRL. Multivariable model selection using stepwise elimination evaluated associations between patient factors and upstaging.

Results: 393 patients met inclusion criteria; 77% of patients were White with a mean age of 54. 44% (n=174) had a 1st/2nd degree relative with breast cancer. 97% (n=383) of RS were identified on DBT. Majority of CNB performed were stereotactic (81% vs. 18% ultrasound vs. 1.5% MRI). Only 0.3% of patients were already identified as high-risk (≥20%) prior to diagnosis and were on chemoprevention. 2% (n=8) were upstaged to malignancy (6 DCIS, 2 invasive carcinoma), and 14% (n=55) had HRL at excision with ADH being most common (39%, n=22). Chemoprevention was started in 31.1% of eligible patients after surgery. On univariate analysis, older age was associated with increased risk of upstaging to malignancy (OR 1.113, 95% CI 1.033-1.199, $p < 0.05$). On univariate analysis, family history of breast cancer was associated with identification of HRL (OR 1.867, 95% CI 1.032-3.380, $p < 0.05$). On multivariable logistic regression analysis, older women were more likely to have HRL found (OR 1.114, 95% CI 1.049-1.183, $p < 0.05$), after adjusting for risk ≥ 20% at diagnosis, and risk ≥ 20% after surgery.

Conclusions: In our current series the upgrade rate to malignancy was 2%, with HRL identified in 14%, lower than previously reported at our institution. Older age was significantly associated with an increased risk for upstaging to malignancy or identifying HRL. Family history of breast cancer was significantly associated with increased risk for identifying HRL. The low rate of upstaging in this selected group to malignancy is in alignment with national trends away from excision of radial scars. Further research is needed to determine predictive factors that would help guide decision making in this respect.

Figure 1: Demographic and clinical characteristics of patients diagnosed with pure radial scar

Table: Demographic and clinical characteristics of patients diagnosed with pure radial scar by core needle biopsy without atypia who underwent surgical excision and upgrade to malignancy or high-risk lesion. For continuous variables, we reported the mean, median and interquartile ranges (IQR), while categorical variables were reported as frequencies and percentages.

	All (n=393)	Upgrade to Malignancy		Univariate Analysis	Upgrade to High-Risk Lesion		Univariate Analysis
		Yes (n=8)	No (n=384)	P-value	Yes (n=55)	No (n=338)	P-value
Mean age at diagnosis, years	53.9	65.6	53.6	**<0.05**	56.2	53.5	**<0.05**
Race, n (%)							
White	303 (77.1%)	7 (87.5%)	295 (76.8%)		41 (74.6%)	262 (77.5%)	
African American	61 (15.5%)	1 (12.5%)	60 (15.6%)		10 (18.2%)	51 (15.1%)	
Asian	12 (3.1%)	0 (0.0%)	12 (3.1%)	0.95	2 (3.6%)	10 (3.0%)	0.84
Hispanic	8 (2.0%)	0 (0.0%)	8 (2.0%)		1 (1.8%)	7 (2.1%)	
Other	9 (2.3%)	0 (0.0%)	9 (2.3%)		1 (1.8%)	8 (2.4%)	
1st or 2nd degree relative with breast cancer, n (%)	174 (44.3%)	3 (37.5%)	171 (44.5%)	0.81	32 (58.2%)	142 (42.0%)	**0.04**
Mammographic density, n (%)							
A	12 (3.1%)	0 (0.0%)	12 (3.1%)		1 (1.8%)	11 (3.3%)	
B	108 (27.5%)	1 (12.5%)	107 (27.9%)	0.25	11 (20.0%)	97 (28.7%)	0.11
C	170 (43.3%)	6 (75.0%)	164 (42.7%)		29 (52.7%)	141 (41.7%)	
D	42 (10.7%)	0 (0.0%)	41 (10.7%)		6 (10.9%)	36 (10.7%)	
Seen on mammogram, n (%)	383 (97.5%)	8 (100.0%)	374 (97.4%)	0.99	53 (96.4%)	330 (97.6%)	0.12
Calcifications on mammogram n (%)	95 (24.2%)	2 (25.0%)	92 (24.0%)	0.89	14 (25.5%)	81 (24.0%)	1.0
Microcalcifications in core needle biopsy, n (%)	233 (59.3%)	6 (75.0%)	226 (58.9%)	0.37	37 (67.3%)	196 (58.0%)	0.20
Biopsy type, n (%)							
Stereo	318 (80.2%)	7 (87.5%)	310 (80.7%)		51 (92.7%)	267 (79.0%)	
Ultrasound	69 (17.6%)	1 (12.5%)	69 (17.7%)	0.92	4 (7.3%)	65 (19.2%)	0.11
MRI	6 (1.5%)	0 (0%)	6 (1.6%)		0 (0%)	6 (1.8%)	
Number of imaging modalities the lesion is seen, n (%)							
1	214 (54.5%)	5 (62.5%)	208 (54%)	0.92	27 (49.1%)	187 (55.3%)	0.69
2	173 (44.0%)	3 (27.5%)	170 (44.3%)		27 (29.1%)	146 (43.2%)	
Seen on ultrasound, n (%)	172 (43.8%)	3 (37.5%)	169 (44.0%)	0.80	27 (49.1%)	145 (42.9%)	0.20
Seen on MRI, n (%)	13 (3.3%)	1 (12.5%)	12 (3.1%)	-	3 (5.5%)	10 (3.0%)	-
Enhancement on MRI, n (%)	11 (2.8%)	1 (12.5%)	10 (2.6%)	-	3 (5.5%)	8 (2.4%)	-
Taking chemoprevention at time of diagnosis, n (%)	1 (0.25%)	0 (0%)	1 (0.3%%)	-	0 (0%)	1 (0.3%)	-
Risk ≥ 20% at time of diagnosis, n (%)	11 (2.8%)	0 (0%)	11 (2.86%)	0.98	2 (3.64%)	9 (2.7%)	0.69
Risk ≥ 20% after surgery, n (%)	64 (16.3%)	3 (37.5%)	61 (15.9%)	-	47 (85.5%)	17 (5.0%)	-
Taking chemoprevention after surgery, n (%)	24 (6.1%)	7 (87.5%)	17 (4.4%)	-	17 (30.9%)	7 (2.1%)	-

1987315 - Malignant upgrade rates and risk factors of Breast B3 Lesions

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Background/Objective: Lesions of uncertain malignant potential in the breast (B3 lesions) are composed of a wide spectrum of pathologies with differing risks of breast cancer. Asian women tend to have smaller and denser breasts than Western women, making identifying and treating these lesions more challenging. Malignant upgrade on final histology increases patient anxiety and healthcare costs as a second surgical intervention is often required for pathological clearance or lymph node staging. This study aimed to assess the malignant upgrade rate of B3 lesions in Korean and American women and to evaluate any key factors that may predict the risk of a malignant upgrade.

Methods: A retrospective multicenter international study was done on patients who were diagnosed with a B3 lesion (atypical ductal hyperplasia [ADH], flat epithelial atypia [FEA], intraductal papilloma [IDP] with/without atypia, lobular neoplasm, mucocele-like tumor, radial scar, and other lesions of uncertain malignant potential) on initial breast core needle biopsy and underwent surgical excision during 2020 to 2023 at Seoul National University Hospital (SNUH) and UC Irvine Health (UCI). Clinicopathologic factors associated with upgrade to malignancy on excisional biopsies were reviewed and analyzed.

Results: A total of 646 patients were diagnosed with B3 lesions, with 112 (17.3%) upgrading to malignancy. The most common malignancy was DCIS, 85 (75.9%), followed by invasive ductal carcinoma (IDC), 12 (10.7%) and invasive lobular carcinoma, 7 (6.3%). Compared to the upgrade rate of lesions of uncertain malignant potential (6/111 [5.4%]), higher malignant upgrade rates were observed for the B3 lesions intraductal papilloma (IDP) with atypia (24/53 [45.3%]; OR 14.6[5.78-42.6], $p < 0.001$), atypical ductal hyperplasia (ADH) (51/124 [41.1%]; OR 12.3 [5.41-33.5], $p < 0.001$), lobular neoplasia (12/31 [38.7%]; OR 11.2 [3.86-35.6], $p < 0.001$), and mucocele-like tumor (4/11 [36.4%); OR 10.1 [2.18-44.9], $p = 0.002$). Most patients had both ultrasound and mammographic evaluation, and all lesions in the study were graded BIRADS 4A and above. Univariate analysis showed that age >50 (OR 2.28 [1.51-3.46], $p< 0.001$), post-menopausal status (OR 2.52 [1.63-3.88], $p< 0.001$), lesion being identified on mammography (OR 4.29 [2.71-6.98], $p< 0.001$) and presence of microcalcifications on mammography (OR 3.2 [1.85-5.67], $p< 0.001$) were risk factors for malignant upgrade.

Conclusions: Based on our analysis predominantly of Asian women, post-menopausal patients with microcalcifications on mammography and a B3 biopsy result should be treated with a higher degree of suspicion for underlying malignancy. Surgical excision with adequate margins could be considered for B3 lesions such as ADH, IDP with atypia, lobular neoplasia, and mucocele-like tumor due to high upgrade rates. Avoiding surgery or offering a vacuum-assisted breast excision can be considered for younger patients with no suspicious findings on mammogram and diagnosis of flat epithelial atypia, IDP without atypia, or radial scar on core needle biopsy.

Figure 1: Malignant upgrade rates by B3 lesion subtypes

B3 lesion subtype	n	n (malignant)	Malignant (%)
Atypical ductal hyperplasia	124	51	41.1%
Flat epithelial atypia	14	2	14.3%
Papillary lesion	267	12	4.5%
Papillary lesion with atypia	53	24	45.3%
Lobular neoplasia	31	12	38.7%
Mucocele-like tumor	11	4	36.4%
Radial scar/Complex sclerosing lesion	35	1	2.9%
Benign lesions of uncertain malignant potential	111	6	5.4%
Total	**646**	**112**	**17.3%**

1987914 - Biopsy of Pediatric Breast Masses: A 10-year Review

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Background/Objective: This study seeks to describe the volume, work-up, and pathology of pediatric patients undergoing tissue sampling for breast masses in an academic health system over a ten-year period.

Methods: A retrospective review was conducted for pediatric patients 0-18 years old presenting for intervention on solid breast masses at 12 hospitals in the greater Indianapolis area from 2012-2022. Patient demographics and clinical characteristics were analyzed using descriptive statistics.

Results: A total of 68 patients (94% female), with a median age of 15.78 (9.9 – 18.1, SD 1.7) at diagnosis were identified. Most (64/68) underwent preoperative imaging via breast ultrasound, with a median maximum mass dimension of 3.2cm at first imaging. Pre-operative core biopsies were performed in 44% (30/68) with 24 (80%) reporting fibroadenoma, 1 (3.4%) phyllodes, and 3 (10.3%) other findings including lymphatic tissue, fibrosis, and infarction. Two (6.9%) reported intraductal papilloma. Excisional biopsy was performed on 18 (62%) of these, confirming previous diagnosis of fibroadenoma or intraductal papilloma in all except the suspected phyllodes, which was found to be a fibroadenoma. The remaining patients with biopsy-proven fibroadenomas (12/23) opted for non-operative management. Of those without core biopsies (38/68), pathology from excision demonstrated fibroadenoma (92%), normal breast tissue (5%) and one phyllodes tumor (2.6%). Final pathologic diagnosis included fibroadenoma (95%), intraductal papilloma (3.1%), and benign phyllodes (1.5%) for girls and gynecomastia (50%), fibrosis (25%) and benign lymphoid tissue (25%) for boys. 4 patients required a repeat procedure.

Conclusions: Surgical intervention for breast mass is rare in pediatric patients, and these masses were overwhelmingly small and benign. Core needle biopsy did not prevent surgical excision in the majority of patients.

1988900 - 693 Breast Abscesses: Resolution and Recurrence Unaffected by Socioeconomic Disadvantage and Treatment Strategy

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Background/Objective: Ultrasound-guided percutaneous drainage (USD) is an effective and minimally invasive approach to breast abscess management that avoids an incision on the breast. Unfortunately, risk factors for delayed healing and recurrence are largely unknown. This study's objective is to identify risk factors, including socioeconomic disadvantage, for delayed resolution and recurrence in the largest known single-institution dataset.

Methods: Two institutional sources were queried for breast abscess patients: TriNetX (01/01/2012 to 12/31/2022) and Picture Archiving and Communication System (PACS) (01/01/2018 to 12/31/2022). The two databases were merged, and duplicate cases were excluded. Inclusion criteria included diagnosis of abscess listed for USD, or ICD-10CM code N61.1 (Abscess of breast and nipple). Exclusion criteria included history of breast cancer, recent biopsy, and surgical intervention. The two co-primary endpoints were abscess resolution within 30 days, and recurrence within 1 to 6 months. Zip codes were matched with Area Deprivation Index rankings (ADI), a validated measure of socioeconomic disadvantage by neighborhood. Chi-squared tests were used to compare patient characteristics. A hierarchical logistic regression model was performed to evaluate the likelihood of the co-primary outcomes with each treatment modality, controlling for patient age, abscess size, state ADI ranking, diabetes, smoking, nipple piercing, and breastfeeding.

Results: 1043 patients were identified from TriNetX and 136 from PACS. 693 patients met study criteria. The mean age was 41 years. Most patients were white (47.8%) or Black/African-American (42.4%). Most patients had BMI >30 (59.0%), diabetes (70.6%), 56.7% smoked and 20.9% previously breastfed. Most abscesses were < 5 cm (52.1%). 325 (46.9%) received antibiotics only (ABX), 200 (28.9%) underwent USD, 121 (17.5%) required incision and drainage (I&D), and 60 (8.7%) patients received no treatment. 450/693 (64.9%) achieved abscess resolution within 30 days; recurrence was seen in 131/693 cases (18.9%). Non-Hispanic, non-smoking, non-lactating patients, patients with higher deprivation scores, and patients who were drained by USD were more likely to resolve by 30 days ($p< 0.05$). Patients with nipple piercings, smokers, and lactating patients were more likely to recur ($p < 0.05$). On multivariable analysis, the only factor significantly associated with abscess resolution within 30 days was former lactation status (Table 1). The only factor significantly associated with recurrence was abscess size >5 cm (OR 1.2 [95% CI 1.07-1.36]). Treatment strategy was not significantly associated with resolution or recurrence.

Conclusions: In this large series of breast abscesses, ADI does not significantly correlate with delayed resolution or recurrence. Additionally, size as opposed to treatment strategy (i.e., ABX, USD, or I&D) was the only factor associated with recurrence. This is likely in part due to the appropriate triage of patients by healthcare providers and is a limitation of this retrospective study. Given equal outcomes regardless of management approach, ultrasound-guided percutaneous drainage should remain the frontline breast abscess treatment to avoid more invasive procedures.

Table 1. Clinically and/or statistically significant factors associated with resolution within 1 month and recurrence of breast abscesses within 1 to 6 months, controlling for patient age, diabetes history, smoking history, nipple piercing

Resolution <30 days			
Variable	Odds Ratio	95% CI	p-value
ADI	0.93	0.52 – 1.68	0.82
Lactation Status			
Former	0.45	0.25 – 0.81	0.01
Current	0.69	0.35 – 1.34	0.27
Antibiotics	0.816	0.39 – 1.70	0.59
Ultrasound guided drainage	0.55	0.26 - 1.17	0.12
I&D	0.61	0.26 - 1.45	0.26

Recurrence >30 days and <6 months			
Variable	Odds Ratio	95% CI	p-value
ADI	1.63	0.81 – 3.26	0.17
Size (>5 cm)	1.21	1.07 – 1.36	<0.01
Antibiotics	1.29	0.51 – 3.27	0.59
Ultrasound-guided drainage	1.66	0.64 - 4.31	0.30
I&D	1.69	0.56 – 5.08	0.35

1988402 - Upgrade Rates and Long-Term Outcomes Among Patients with Intraductal Papillomas: A Single-Institution Experience

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Background/Objective: Surgical management of intraductal papillomas (IDP) remains controversial due to histologic heterogeneity of papillary-like lesions. We aimed to characterize clinicopathologic features of IDPs and identify factors associated with upstaging after surgical excision.

Methods: We conducted a single institution retrospective review of all patients diagnosed with IDP between 2002-2015. Patients with concomitant atypical ductal hyperplasia (ADH) and DCIS were excluded. Patients underwent surgical excision or surveillance based on multidisciplinary recommendations. Clinicopathologic, imaging, and biopsy characteristics were summarized with descriptive statistics. Upgrade was defined as in-situ or invasive carcinoma on surgical pathology. Fisher's exact and Mann-Whitney U tests were used to compare features associated with upstaging after surgical excision.

Results: Of 100 patients with IDPs, the median age was 54 years (IQR 48-65), and majority were post-menopausal (77%). Most had no personal history of high-risk breast lesions (85%) and no personal (91%) or family history (80%) of breast cancer. Up to 64% were symptomatic, most commonly presenting with nipple discharge (32%), palpable mass (26%), or breast pain and tenderness (9%). Median size was 1 cm (IQR 0.7-1.5 cm), and majority were detectable on initial screening or diagnostic mammography (64%). Of 100 patients in the cohort, 30 had atypia. In total, 55 patients underwent surveillance, while 45 patients underwent surgical excision (21/30 with atypia and 24/70 without atypia). Among 21 excised atypical IDPs, upgrade rate was 23.8% (N=5). Patients with upgrade were significantly older compared to those without upgrade (median age 69 vs. 57.7, p = 0.008, Table 1). Among 24 excised IDPs without atypia, upgrade rate was 0%. Three patients with IDP without atypia also had concomitant high-risk lesions on excision (ADH, 1 contained within the IDP). Patients with IDP without atypia and associated high-risk lesions were more likely to have prior history of high-risk lesions (66.7% vs. 4.8%, p = 0.032). At a median follow up of 11.5 years (95% CI: 9.9-13.1), among 30 patients with atypical IDP, rate of ipsilateral breast cancer was 0% (0/21) for the excision cohort and 11.1% (1/9 – different quadrant as IDP) for the surveillance cohort. Among 70 patients with IDP without atypia, rate of ipsilateral breast cancer was 0% (0/24) for excision cohort and 6.5% (3/46) for surveillance cohort, none of which were at the IDP site.

Conclusions: Up to a quarter of patients with atypical IDPs at our institution upgrade to malignancy upon excision with no identified factors associated with higher upgrade risk. As such, surgical excision of atypical IDPs remains standard of care. Among IDPs without atypia, a lack of upgrade on excision supports surveillance in this cohort. Furthermore, subsequent site of malignancy on long-term follow up was not associated with prior IDP location. Further research is warranted to refine excision criteria for atypical IDPs and identify factors associated with risk of future malignancy in IDPs without atypia.

Table 1. Baseline Patient Characteristics Among Surgical Excision Cohort (N=45)

Table 1. Baseline Patient Characteristics Among Surgical Excision Cohort (N=45)

IDPs with Atypia				
Variable	**Total N = 21**	**No upgrade, N=16**	**Upgrade, N=5**	**p-value**
Age, median (IQR)	60.0 (49-67)	57.5 (52-65)	69.0 (69-70)	**0.008**
BMI, median (IQR)	31.6 (24.1-38.6)	28.1 (26.9-40.3)	32.2 (23.2-33.5)	0.163
Race and ethnicity				0.817
NHW	13 (61.9%)	10 (62.5%)	3 (60.0%)	
NHB	7 (33.3%)	5 (31.3%	2 (40.0%)	
Asian	1 (4.8%)	1 (6.3%)	0 (0.0%)	
Menopause				1.000
Pre	2 (9.5%)	2 (12.5%)	0 (0.0%)	
Post	19 (90.5%)	14 (87.5%)	5 (100.0%)	
1st-degree family history of BC	7 (33.3%)	4 (25.0%)	3 (60.0%)	0.280
History of high-risk lesions	1 (4.8%)	1 (6.3%)	0 (0.0%)	1.000
History of BC	1 (4.8%)	1 (6.3%)	0 (0.0%)	1.000
Symptom at diagnosis				
Mass	6 (28.6%)	5 (31.3%)	1 (20.0%)	1.000
Skin Changes	2 (9.5%)	2 (12.5%)	0 (0.0%)	1.000
Nipple discharge	8 (38.1%)	8 (50.0%)	0 (0.0%)	0.111
Pain/tenderness	4 (19.0%)	2 (12.5%)	2 (40.0%)	0.228
IDPs without Atypia				
Variable	**Total N = 24**	**No high-risk lesion, N=21**	**High risk lesion, N=3**	**p-value**
Age, median (IQR)	52.5 (45-62.5)	51.0 (41-60)	51.0 (42.0-51.5)	0.452
BMI, median (IQR)	27.7 (23.7-32.4)	31.1 (26.8-33.6)	26.2 (24.0-27.6)	0.230
Race and ethnicity				0.657
NHW	13 (54.2%)	11 (52.4%)	2 (66.7%)	
NHB	6 (25.0%)	6 (28.6%)	0 (0.0%)	
Asian	1 (4.2%)	1 (4.8%)	0 (0.0%)	
Hispanic	3 (12.5%)	2 (9.5%)	1 (33.3%)	
Other	1 (4.2%)	1 (4.8%)	0 (0.0%)	
Menopause				1.000
Pre	8 (33.3%)	7 (33.3%)	1 (33.3%)	
Post	16 (66.7%)	14 (66.7%)	2 (66.7%)	
1st-degree family history of BC	3 (12.5%)	3 (14.3%)	0 (0.0%)	1.000
History of high-risk lesions	3 (12.5%)	1 (4.8%)	2 (66.7%)	**0.032**
History of BC	0 (0.0%)	0 (0.0%)	0 (0.0%)	n/a
Symptom at diagnosis				
Mass	8 (33.3%)	6 (28.6%)	2 (66.7%)	0.249
Skin Changes	0 (0.0%)	0 (0.0%)	0 (0.0%)	n/a
Nipple discharge	10 (41.7%)	9 (42.9%)	1 (3.3%)	1.000
Pain/tenderness	0 (0.0%)	0 (0.0%)	0 (0.0%)	n/a

1988516 - A Novel Approach for Classifying and Managing Idiopathic Granulomatous Mastitis (IGM): Pittsburgh Clinical and Radiologic Classifications of IGM and Treatment Algorithm

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Background/Objective: Treatment options for IGM vary from observation to repeated abscess aspirations, intralesional steroid injections, systemic treatments, and surgical procedures alone or in combination. A treatment algorithm has not been standardized because of lack of agreed upon clinical and radiological classification for IGM. In this study, we assess the compatibility of the treatment approach proposed by Pittsburgh ultrasound (US) and clinical classifications with daily practices and evaluate the complete response rate.

Methods: An ethics committee-approved multicenter retrospective analysis was conducted to identify clinical and US findings, as well as treatment and outcomes. US images were re-evaluated based on Pittsburgh US IGM classification ranging from Type A (localized mass ≤ 2 cm), Type B (localized mass> 2 cm), Type C (regional + fistula) through Type D (diffuse disease). Pittsburgh Clinical Classification ranges from Type 1 (minimal skin irritation), Type 2 (abscess), Type 3 (palpable mass), Type 4 (evident skin inflammation) to Type 5 (widespread involvement). Other types of mastitis were excluded from the study.

Results: A total of 302 lesions in 181 women were reviewed. Mean patient age was 37.2+/-8.7 years, and median follow-up was 10 months (range 1-56). Bilateral disease was observed in 10 (5.5%) of patients. While 59% (n=107) of women had a single IGM focus, 41% (n=74) had 2-4 foci. Of 302 lesions, 14.5% (n=44) were clinically Type 1, 16% (n=48) Type 2, 21.8% (n=66) Type 3, 40.7% (n=123) Type 4 and % 7 (n=21) Type 5. On US, there were 23.1% (n=70) Type A, 14.9% (n=45) Type B, 32.2% (n=97) Type C, and 29.8% (n=90) Type D. Treatment for 79.1% (239/302) lesions agreed with the Pittsburgh IGM treatment algorithm. Clinical and US complete response was observed in 113 (72.7%) out of 143 patients with treatment concordant with the Pittsburgh IGM treatment algorithm. This number was 9 (24%) out of 38 patients with treatment non-concordant with Pittsburgh IGM treatment algorithm.

Conclusions: The treatment algorithm developed using the Pittsburgh clinical and US classification appears to be verified by current treatment approaches. An international multicenter prospective non-randomized study has been initiated to further validate the proposed IGM clinical, US, and treatment algorithm.

Table 1: Pittsburgh Treatment Algorithm of IGM

Pittsburgh Treatment Algorithm of IGM

CLINICAL	ULTRASOUND	RECOMMENDED TREATMENT
Type 1	**Type A** (no collection)	Observation
	Type B, C (no collection)	*ILS or surgical removal of lesion with intraoperative ILS
Type 2	**Type A, B, C**	Aspiration under US (possible I&D), then continue with ILS
Type 3	**Type A, B, C** (no collection)	ILS or Surgical removal of lesion with intraoperative ILS
	Type A, B, C (with collection)	Aspiration under US + ILS where applicable
Type 4	**Type B, C** (no collection)	ILS + Low dose systemic therapy
	Type B, C (with collection)	Aspiration under US (possible surgical I&D), then continue with ILS + Low dose systemic therapy
Any	**Type D**	Wide-spread involvement (more than half of the breast) or **uncontrolled recurrence after any treatment modality; High dose systemic treatment + ILS if applicable, possible surgery (partial or total mastectomy)
Type 5	**Any**	
		If clinical inflammation seen, topical steroid should be added

* ILS: intralesional steroid injection

** (Uncontrolled stands for any disease that seems to be impossible to be treated with previous attempt)

*** Except US Type D and clinical Type 5 topical steroid twice daily

1988745 - Assessing Quality and Reliability of Online Consumer Health Information for Benign Breast Pathology

Brigitte Baella Olivieri, Kavita Jain, Malk Beydoun, Katie Carsky, Paul Baron

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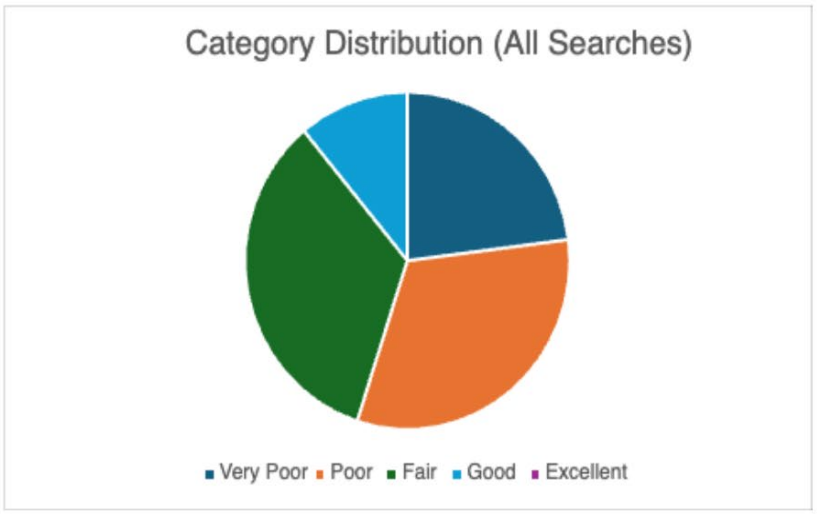
Background/Objective: With the increased prevalence of online consumer health information, patients are often researching their health conditions to learn more regarding their diagnoses and treatment options. In the past year, an overwhelming majority of searches were done using Google, with most users only viewing the first two pages. Given the ease of access, we aim to assess the quality of reliability of online consumer health information for common benign breast pathology.

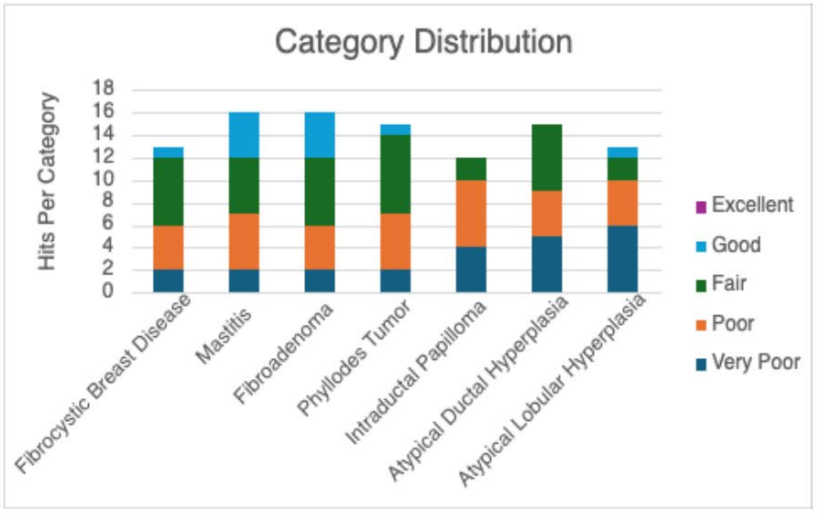
Methods: We used Google to search the following terms “fibrocystic breast disease,” “mastitis,” “fibroadenoma,” “phyllodes tumor,” “intraductal papilloma,” “atypical ductal hyperplasia” and “atypical lobular hyperplasia.” Results from the first two pages of websites generated were included as well as any result that was included as the Google “snippet.” From these, search results that were duplicates, advertisements, incorrect topics, required a log-in, or were paid sources were excluded. The DISCERN tool, a validated scoring system was used to evaluate both the reliability and quality of consumer health information. Each website was scored by two reviewers, with a maximum possible score of 80, 40 for reliability, 35 for quality, and 5 for overall rating. The mean of the total DISCERN score, reliability score, and quality score was calculated for each diagnosis.

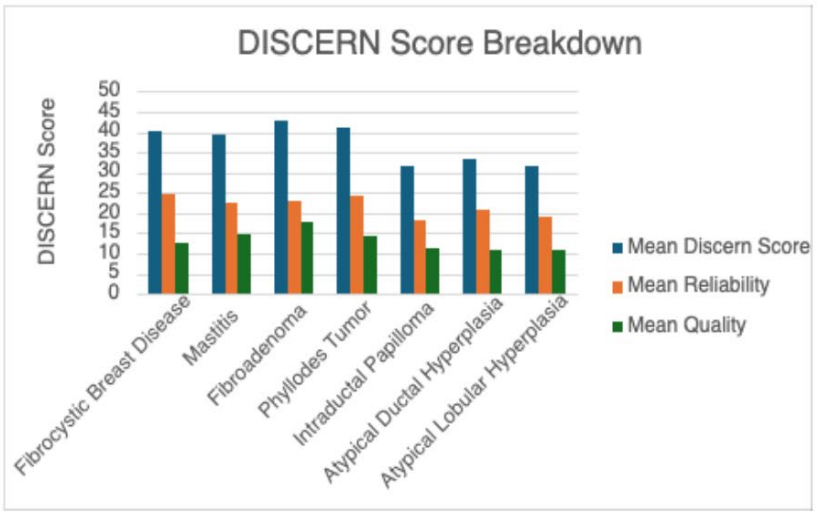
Results: Each term produced 10-17 hits in the first two pages, after excluded studies were removed and inclusion criteria met; one response was recorded for ChatGPT per diagnosis. Mean total DISCERN scores for each diagnosis ranged from 31.46 to 42.94, which ranges from Poor to Fair rating. 11% were rated “Good” (score between 51-62), 34% were rated “Fair” (score between 39-50), 32% were rated “Poor” (score between 27-38), and 23% were rated “Very Poor” (score under 27). No websites were rated “Excellent” (score > 62). Mean scores for reliability were higher than for quality.

Conclusions: Patients are using online search engines to glean information about benign breast pathology and their treatments. However, most websites are poor to fair in quality and reliability, with no websites deemed excellent, indicating there is room for improvement for online health information that patients are accessing. The DISCERN tool may be used to create new resources to provide patients with accurate, reliable, and thorough information regarding their diagnoses.

Figure 1: Assessing Quality and Reliability of Online Consumer Health Information for Benign Breast Pathology







1968326 - Methotrexate and Azathioprine are Effective Treatment for Idiopathic Granulomatous Mastitis

Jison Hong[1], Jacqueline Tsai[2], Kimberly Stone[3], Irene Wapnir[2]

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Background/Objective: Idiopathic granulomatous mastitis (IGM) is an inflammatory condition of the breast that has similar characteristics to other autoimmune diseases. Immunomodulator drugs including methotrexate and azathioprine are emerging as effective agents for IGM. Azathioprine is a safe alternative for breastfeeding patients or those seeking to become pregnant, for which methotrexate is contraindicated given teratogenicity. We sought to review our institutional experience and outcomes for treating IGM patients with immunomodulatory agents.

Methods: Patients with biopsy proven IGM who were treated by breast surgeons and/or rheumatologists from January 2014 to September 2024 were identified via our institutional database. A retrospective chart review was performed to evaluate the treatments used including oral steroids, intralesional steroids, and immunomodulatory drugs. Patient demographics, diagnostic imaging, laboratory tests and IGM clinical assessment were reported from the electronic health record.

Results: A total of 77 patients with IGM with an average age of 35.9 years at time of IGM diagnosis were identified. Overall, 93.5% were parous with an average of 2.2 pregnancies. The majority (54%) identified as Hispanic and 33% of our patients were Asians. Almost all patients were insured with 67% commercial insurance, 30% Medi-Cal and 3% uninsured. Treatment prior to initiation of immunomodulators included antibiotics (93%) and intralesional steroids injections (43%). Concurrent oral prednisone treatment was administered in 75% of the cohort for a median duration of 2 months (range 0.5-16 months) while initiating immunomodulatory medication After laboratory screening, methotrexate was prescribed for 72 (93.5%) patients and azathioprine for 5 patients. The starting dose for methotrexate was 15mg weekly, and 100mg daily for azathioprine. Of the patients on methotrexate, 30% were treated at a maximum dose of 15mg; only 7% were prescribed a lower dose, and the majority 67% required 20-25 mg, with 20 mg the most common dose taken by the entire cohort. Only 1 patient was prescribed azathioprine 150mg daily. 71.4% patients demonstrated response, partial (22) or complete (32) to treatment at the time of their last follow-up visit for IGM. The average duration of treatment for those with complete response was 19.3 months. Patients with less than 6 months of treatment were most likely to have continued active disease and least likely to have a complete response as compared to those treated with a longer duration (Table 1).

Conclusions: Treatment with immunomodulators is effective in patients with IGM. Treatment for less than 6 months is associated with incomplete disease resolution. Optimal treatment duration should be individually tailored to clinical and radiological signs of IGM .

Table 1

Table 1: Duration of Treatment and Clinical Response

	No evidence of disease	Improving/ partial response	Active	Total
< 6 months	4	19	9	32
7-12 months	6	3	1	10
13-24 months	14	10	2	26
> 25 months	9	0	0	9
Total	33	32	12	77

1968251 - Added Value of FNA or MRI as Part of the "Triple Test" to Assess Palpable Abnormalities on Breast Exam with Negative Imaging Findings

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Background/Objective: Historically, when a breast abnormality is palpated on clinical breast exam (CBE) in the setting of negative imaging (mammography and sonography), further workup with fine needle aspiration (FNA) or magnetic resonance imaging (MRI) has been recommended as part of the "triple test" to rule out malignancy. As the NPV of mammography and sonography has improved to >97%, the added value of FNA and MRI in the modern era may be limited; therefore, we aim to determine the added value of each of these modalities in malignancy detection.

Methods: We queried institutional pathology and radiology databases to identify patients >18 years old who underwent MRI or FNA for evaluation of a palpable breast abnormality on CBE ("mass," "nodularity," "dense tissue") between 2000 and 2023 at a large multi-hospital academic health system in New York City. All patients had a palpable breast abnormality on CBE, negative mammographic and/or sonographic findings in the location of the abnormality, and then subsequently underwent FNA or MRI for further evaluation. The primary outcome was identification of malignancy.

Results: Eighty-three patients with 90 palpable abnormalities on CBE were included in our study. Mean age was 48 (IQR 22.75). Nineteen (22.9%) patients had a family history of breast cancer, and 2 (2.4%) patients had concurrent breast cancer at the time of evaluation (1 contralateral, 1 bilateral). As part of the triple test, 68 (76%) masses were evaluated with FNA, 19 (21%) were evaluated with MRI, and 3 (3%) masses underwent both FNA and MRI. FNA findings were benign in 41 (58%) of palpable abnormalities, non-diagnostic in 26 (36%), atypical in 4 (6%), and 0 masses revealed malignancy. All MRI findings at the site of the palpable abnormalities were negative. Twelve masses (11 FNA, 1 MRI) underwent surgery: 4 with atypia on FNA and 8 due to surgeon or patient preference. All surgical pathology results were benign. At a median follow-up of 6.6 years, no patients developed malignancy at the site of palpable abnormality, and 6 patients developed breast cancer at other sites (3 ipsilateral; 3 contralateral).

Conclusions: In this study evaluating the use of supplemental investigation in women with palpable abnormalities and negative imaging, upgrade to malignancy with FNA or MRI was 0%. These results align with older studies (upgrade rate of 0-3%), and our results may reflect the higher sensitivity of mammogram and ultrasound in the modern era. We conclude that FNA or MRI as part of the "triple test" is unlikely to add diagnostic information for women with findings on CBE with negative imaging results and therefore appears to be a low-value intervention. It may be reasonable to instead consider active surveillance with interval imaging in 6 months.

Table 1: Outcomes of FNA and MRI on palpable breast masses with negative mammogram and ultrasound

Table 1: Outcomes of FNA and MRI on palpable breast masses with negative mammogram and ultrasound

Outcome	FNA N = 71	MRI N = 22
FNA Biopsy Results (N (%))		
Nondiagnostic/acellular	26 (36.6)	-
Benign	41 (57.7)	-
Atypical	4 (5.6)	-
Malignant	0 (0)	-
MRI Results (N (%))		
Negative	-	22 (100)
Positive	-	0 (0)
Surgical Excision (N (%))[1]	11 (15.5)	1 (4.5)
Benign surgical pathology results (N (%))	11 (100)	1 (100)
Development of cancer at site of palpable mass (N (%))[2]	0 (0)	0 (0)
Development of cancer at another site* (N (%))[3]	5 (7.7)	1 (4.5)

1. Indications for surgery included atypical results on FNA (n=4), patient preference or surgeon recommendation (n=8).
2. Median follow-up time between FNA/MRI and cancer diagnosis: 79 months (range 35 – 112 months)
3. Denominator is the total number of patients (n=83)

1957058 - Evaluation of Practice Patterns and Compliance for High-Risk Screening with Breast MRI in Patients with LCIS and Atypia

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Background/Objective: Atypical ductal hyperplasia (ADH), atypical lobular hyperplasia (ALH) and lobular carcinoma in situ (LCIS) are high-risk breast lesions associated with an increased lifetime risk of breast cancer. For women with these risk factors, The American College of Radiology screening guidelines include annual mammography and consideration of annual breast MRI. The American Society of Breast Surgeons consensus guidelines recommend physician discretion regarding the use of MRI in patients with high-risk lesions. The goal of this study was to characterize the practice patterns of recommending MRI for high-risk screening in patients at a major academic medical center with ADH, ALH and LCIS and examine compliance with these recommendations.

Methods: This study was a retrospective review of patients with ADH, ALH or LCIS who underwent surgical excision for these diagnoses at a single institution from 2019-2020. Data on completion of MRI screening was collected through August 2024. If patients had multiple pathologic findings, they were categorized by the most atypical diagnosis with LCIS being most atypical and ALH being least atypical. Patients with a concurrent diagnosis of cancer, underwent bilateral mastectomy, or had a pathogenic genetic mutation were excluded. Chi-squared tests were used to analyze the relationship between screening MRI recommendation, pathology findings and patient factors.

Results: Overall, 284 patients were included in the study. One patient underwent unilateral mastectomy, and 283 patients had excisional biopsies. 138 (49%) had ADH,125 (44%) had LCIS, and 21 (7%) had ALH. MRI was recommended for high-risk screening in 188 (66%) of patients. Recommendation for MRI screening was found to vary significantly with age. The majority of women in all age groups < 70 were recommended to have MRI, across all diagnoses (Table 1). Diagnosis, breast density, and race were also significantly associated with recommendation for MRI. MRI was most commonly recommended in those with LCIS (83%), followed by ALH (71%), and ADH (50%) ($p< 0.001$). MRI was recommended more often in patients with dense breasts with 71% of patients with heterogeneous or extremely dense breasts recommended for MRI vs 52% of patients with fatty or scattered density ($p=0.004$). Black women were significantly less likely to be recommended for MRI screening. In Black women the recommendation for MRI was higher in younger women ($p=0.05$) and those with LCIS ($p=0.01$). Of the patients who were recommended to have MRI screening, the compliance rate of completing at least one MRI was 74%. The frequency of MRI screening varied with 46 (33%) of patients having a single MRI, 35 (25%) undergoing yearly MRI, 12 (9%) undergoing MRI every other year and 46 (33%) undergoing MRI at another interval.

Conclusions: MRI was recommended for the majority of patients with high-risk lesions. Overall, two thirds of patients were recommended to undergo MRI screening, with the majority complying. MRI was recommended most often in patients with LCIS, the highest risk lesion, and the recommendation for MRI screening also varied by age, breast density, and race with Black women recommended to have MRI less frequently. Further investigation into this disparity is required.

Table 1: Chi-squared analysis of overall study population.

		MRI Screening Recommended n (%)		
		Yes	No	p-value
Diagnosis	ADH	69 (50%)	69 (50%)	<0.001
	ALH	15 (71%)	6 (29%)	
	LCIS	104 (83%)	21 (17%)	
Age	18-40	12 (67%)	6 (33%)	<0.001
	41-50	85 (83%)	17 (17%)	
	51-60	57 (70%)	24 (30%)	
	61-70	28 (58%)	20 (42%)	
	71-80	4 (14%)	25 (86%)	
	81+	2 (33%)	4 (67%)	
Race	Asian	7 (88%)	1 (12%)	0.035
	Black/African American	8 (42%)	11 (58%)	
	Hispanic	4 (67%)	2 (33%)	
	White/Caucasian	94 (65%)	50 (35%)	
	Other	53 (65%)	29 (35%)	
	Not Reported	22 (88%)	3 (12%)	
Breast Density	Entirely Fatty	2 (67%)	1 (33%)	0.013
	Scattered Fibroglandular	37 (51%)	35 (49%)	
	Heterogeneous	118 (67%)	54 (31%)	
	Extremely Dense	30 (83%)	6 (17%)	
	Not Reported	1 (100%)	0 (0%)	

Complications

1984049 - Post-Operative Bleeding and Operative Takeback by Procedure and Demographics from the 2022 National Surgical Quality Improvement Program (ACS-NSQIP) Database

Nora Elson, Mia Samaha, Madeline Weltzer, Olyvia Hundley, Kathleen Raque, Barbara Wexelman, Anne Kuritzky

TriHealth / Good Samaritan Hospital System, Cincinnati, OH

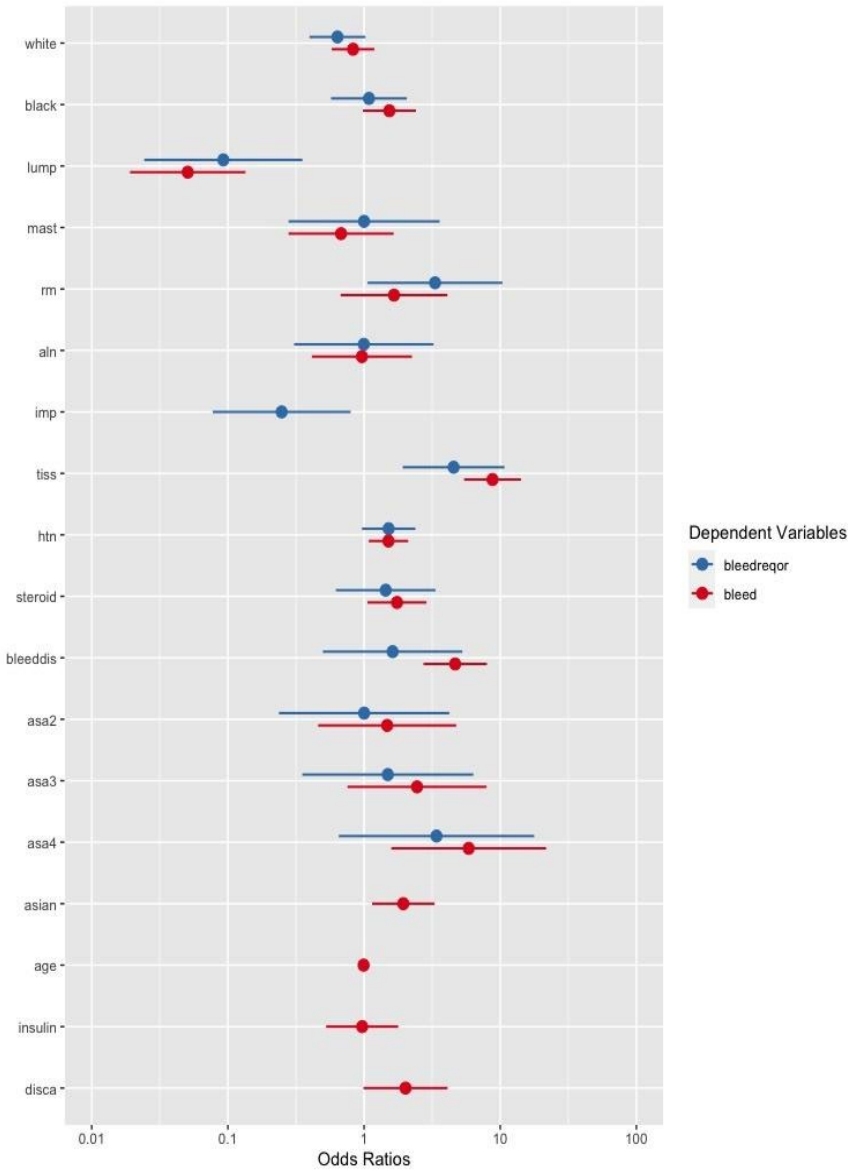
Background/Objective: The most common immediate post-operative complication after breast surgery is bleeding, which can lead to hemodynamic instability, need for transfusion, and return to the operating room (RTO). We seek to categorize the procedures and patient characteristics most at risk for bleeding with modern surgical technique as well as define factors that predict reoperation for bleeding.

Methods: Under IRB approval, the ACS-NSQIP Database for 2022 was surveyed for CPT codes 19301, 19302, 19303, 19305, 19306, 19307 which represent lumpectomy, mastectomy, modified radical (MRM), and radical mastectomy (RM) with and without sentinel lymph node biopsy (SLNB), axillary lymph node dissection (ALND), implant, and/or tissue reconstruction. All demographics and 30-day complications were evaluated. ICD codes were analyzed to determine case indication and CPT and ICD codes were used to differentiate RTO as being related to the complication. We completed statistical analysis using R statistical programming using Pearson's chi square or Fisher's Exact test as appropriate. A univariate analysis was performed followed by multivariate analysis to evaluate post-operative bleeding. Significance was delineated at $p< 0.05$.

Results: We analyzed 32,015 patients who underwent breast surgery in 2022. Demographics were evaluated by procedure performed with expected significant differences between surgical procedures due to lack of randomization and inherent variety. Post-operative bleed occurred in 201 (0.63% of total) cases with subsequent RTO for bleeding control in 87 cases (0.27% total cases, 43.28% of bleeds). Post-operative bleeding was seen most commonly after mastectomy with tissue reconstruction (10.71%), mastectomy with SLNB and tissue reconstruction (5.21%), RM with tissue reconstruction (33.33%), and MRM with tissue reconstruction (18.18%). Bleeding was significantly associated with African American (1.16%) and Asian (1.14%) ($p< 0.05$), higher BMI ($p=0.02$), steroid use (1.49%, $p< 0.01$), bleeding disorders (3.68%, $p< 0.05$), pre-operative transfusion (35.71%), disseminated cancer (2.22%, $p< 0.01$), and ASA 4 classification ($p< 0.05$). The average transfusion requirement was 1.73 units +/-0.95 (range 1-6). On multivariate analysis, African American ($p=0.04$) and Asian race ($p=0.02$) were significantly associated with post operative bleed, lumpectomy was protective ($p< 0.001$), tissue-based reconstruction was significantly associated with bleed ($p< 0.001$), hypertension ($p=0.002$), disseminated cancer ($p=0.037$), steroid use ($p=0.012$), and bleeding disorder ($p< 0.001$). Post-operative bleed resulting in RTO was significantly associated with African American (0.46%) and Asian (0.22%) ($p=0.02$) as before, and bleeding disorders (0.65%, $p=0.04$). The average POD for RTOR was 0.89 □ 0.93 (range 0-5) and the average transfusion requirement was 1.90 units +/-1.11 (range 1-6). On multivariate analysis, African American and Asian race patients with RTO was not significant. Radical mastectomy was not determined to be significantly associated with post-operative bleeding; however, in RM patients that bled, they were significantly associated with return to OR ($p=0.04$). Tissue reconstruction was significantly associated with RTO ($p< 0.001$).

Conclusions: We defined multiple factors that impact a patient's risk for bleeding complications after breast surgery. This modern cohort can inform preoperative risk counseling discussions by breast surgical oncology and plastic surgery. This can also heighten clinical suspicion for bleeding in high-risk patients in the immediate post-operative period.

Figure. Forest plot of multivariate analysis including post-operative bleed (red) and post-operative bleed requiring return to OR (blue). Abbreviations: Caucasian (white), African American (black), lumpectomy (lump), mastectomy (mast), radical mastectomy (rm), axillary lymph node dissection (aln), implant reconstruction (imp), tissue reconstruction (tiss), hypertension (htn), steroid use (steroid), bleeding disorder (bleeddis), ASA class (asa1, asa2, asa3, asa4), Asian (asian), age (age), diabetes requiring insulin (insulin), disseminated cancer (disca).



1987983 - Drain-Free Mastectomy and Flap Fixation: A Randomized Controlled Noninferiority Trial.

Nick Servaas[1], Merel Spiekerman van Weezelenburg[1], Lisa de Rooij[1], Loeki Aldenhoven[1], Sander Van Kuijk[2], Elisabeth R.M. van Haaren[1], Alfred Janssen[1], Lori M. van Roozendaal[1], Yvonne L.J. Vissers[1], Geerard Beets[2], James van Bastelaar[1]

[1]Zuyderland Medical Centre, Sittard, Limburg, Netherlands, [2]Maastricht University Medical Centre, Maastricht, Limburg, Netherlands

Background/Objective: Seroma formation is considered the most common complication after mastectomy and may lead to related complications such as pain, impaired wound healing, and infection. Depending on the extent of the seroma, interventions such as aspiration, antibiotics or surgery may be necessary to treat seroma and its related complications. Wound closure using flap fixation has shown promising results in reducing seroma formation and related complications. While historically, low-vacuum drains were placed in the dead space after mastectomy, the use of flap fixation may prove the routine placement of drains to become redundant. This study aims to assess noninferiority of drain-free mastectomy with flap fixation, compared to mastectomy with flap fixation and postoperative low-vacuum drainage.

Methods: This randomized controlled noninferiority trial will include 250 breast cancer patients undergoing mastectomy with wound closure using flap fixation, with or without postoperative low-vacuum drainage. Patients undergoing direct oncoplastic reconstruction or ALND will be excluded from the cohort. Patients will be randomized between mastectomy with flap fixation without low-vacuum drainage (intervention-group) or mastectomy with flap fixation with low-vacuum drainage (control-group). Primary outcome measure is clinically significant seroma (CSS) incidence. CSS was defined as seroma requiring interventions due to risk of wound breakdown, discomfort or pain, or infection. Secondary outcome measures are seroma incidence, number of wound complications, number of wound complications requiring an intervention, number of unscheduled visits, experienced wound pain and cosmetic outcome.

Results: Between July 2020 and October 2024 a total of 199/250 patients were included. We expect roughly 230/250 patients to have been included at time of the ASBrS 2025. Interim analysis conducted at 112/250 patients showed no significant differences in CSS, seroma formation, surgical reinterventions, wound complications, wound complications requiring an intervention or unscheduled visits.

Conclusions: Interim-analysis of this randomized controlled noninferiority trial showed promising results for drain-free mastectomy with flap fixation. We expect results of this study to prove drains to become redundant with the implementation of flap fixation. Noninferior results to traditional mastectomy with low vacuum drainage could be used to advocate for the implementation of drain-free mastectomy and flap fixation as routine surgical care. We look forward to presenting preliminary results of this trial at ASBrS 2025.

1987885 - Evaluating the Effect of BMI on Post-operative Outcomes in Patients Undergoing Bilateral Simple Mastectomy: A NSQIP Analysis

Alice Trye, MD, Victoria Haney, Sean Lee, Christine Teal

George Washington University, Washington, DC

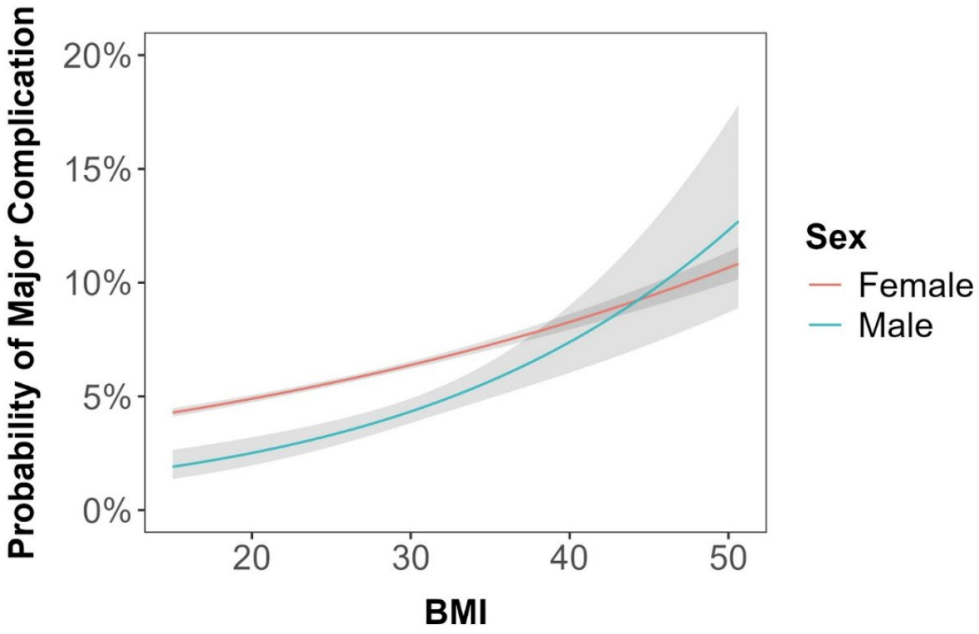
Background/Objective: The increasing prevalence of obesity presents significant challenges for patients undergoing surgical treatment of breast cancer. Prior studies have demonstrated an increased rate of postoperative complications in patients with obesity, specifically those who undergo bilateral mastectomy with reconstruction. Our study also sought to elucidate the association between body mass index (BMI) and the risk of both major and minor postoperative complications in patients undergoing bilateral simple mastectomy without reconstruction.

Methods: Our study queried the ACS-NSQIP database from 2005-2021 and identified all patients who underwent bilateral simple mastectomy without reconstruction. Patients under 18 years of age or with a BMI less than 15 were excluded. Logistic models were fitted to binary composite outcome data representing major (e.g. sepsis, shock, death) and minor (e.g. bleeding, UTI) complications in the 30-day postoperative period, as functions of BMI. Age, sex, diabetes, and hypertension were adjusted for as covariates in the models. An interaction term between BMI and sex was included in both models, to test whether the effect of BMI on complications is moderated by sex. Two-tailed hypothesis tests for each coefficient were performed with 5% alpha.

Results: A total of 172,176 patients were identified and 6.5% and 3.7% of subjects experienced major and minor complications, respectively. For both major and minor complications, there were statistically significant effects of BMI in logistic models; for every 1 unit increase in BMI, there was an associated 3% increase in the odds of a major complication ($p< 0.001$) and a 4% increase in the odds of a minor complication ($p< 0.001$). There were also significant interaction effects between BMI and sex in both models. At BMIs below 40, males experienced lower rates of both major and minor complications compared to females (major: $p< 0.001$; minor: $p< 0.001$). Similarly, as BMI increases, the rate of complications increases for males at a faster rate than for females, with the odds of a major complication in males increasing relative to females at a rate of 3% per unit increase in BMI ($p=0.004$).

Conclusions: This study characterizes the association between BMI and risk of complications in patients undergoing bilateral simple mastectomy without reconstruction. Our results showed that with increasing BMI there is a statistically significant increase in both major and minor postoperative complications. Further, our study demonstrated similar results in men undergoing mastectomy, emphasizing the need for pre-operative risk stratification in male patients as well. Our study highlights the importance of individualized pre-operative assessment and counseling for those who are overweight and obese before breast surgery, in order to mitigate post-operative complications.

Figure 1: Relationship between BMI and probability of Major Complication



1987988 - Negative Pressure Wound Therapy in Patients Undergoing Breast-Conserving Surgery for Breast Cancer: The Final Results of the LAUREN Trial.

Nick Servaas[1], Merel Spiekerman van Weezelenburg[1], Aike Bruijsten[1], Loeki Aldenhoven[1], Merel Kimman[2], Elisabeth R.M. van Haaren[1], Alfred Janssen[1], Lori M. van Roozendaal[1], Yvonne L.J. Vissers[1], Geerard Beets[2], James van Bastelaar[1]

[1]Zuyderland Medical Centre, Sittard, Limburg, Netherlands, [2]Maastricht University Medical Centre, Maastricht, Limburg, Netherlands

Background/Objective: Breast-conserving surgery has been implemented as standard surgical care for breast cancer patients over recent years. In the Netherlands, a total of 70% of breast cancer patients that proceeded to surgery were treated in breast-conserving fashion in 2023, compared to 37% in 1989. Complication rates after breast-conserving surgery vary from 2-17%, with the most common complications being surgical site infections (SSI), wound dehiscence, abscess, hematoma, and seroma. Negative Pressure Wound Therapy (NPWT) is a proven treatment modality which reduces complications of closed surgical wounds and improves postoperative outcome. This study aims to identify the effect of NPWT on surgical outcomes and wound complications after breast-conserving surgery for breast cancer.

Methods: This is a Dutch two-arm interventional study which will include 300 patients receiving breast-conserving surgery without oncoplastic reconstruction. A prospective cohort of 150 patients receiving NPWT after surgery will be compared to a retrospective cohort of 150 patients who received conventional wound care. The follow-up period is three months. Primary outcome was the incidence of surgical complications that require an intervention. Secondary outcomes were incidence of surgical complications, number of reinterventions, burden of NPWT for patients, number of unplanned visits, pain scores and EQ-5D-5L questionnaires.

Results: Interim-analysis at halfway-point of inclusion in the prospective cohort showed a reduction in wound complications from 29% for conventional wound dressing-group to 10% for NPWT-group. Wound complications that required an intervention were reduced from 7.0% to 5.0% for respective cohorts. Surgical interventions were comparable across cohorts at interim-analysis. NPWT after breast-conserving shows promising results, while full inclusion should be awaited to draw definitive conclusions. As of now, 120/150 patients are included in the prospective cohort. We expect full inclusion to be complete and all data analyzed before ASBrS 2025. Final results will be presented at the conference. A cost-effectiveness analysis will be implemented in the final analysis.

Conclusions: NPWT is a promising technique for reducing postoperative complications and is feasible for use in patients after breast-conserving surgery. Definitive results of NPWT after breast-conserving surgery and cost-effectiveness will be presented at ASBrS 2025.

1988512 - Evaluation of Absorbable Hemostatic Powder Benefit in Patients Undergoing Mastectomy

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Background/Objective: Seroma and hematoma formation are among the most common post-operative complications that require intervention in patients that undergo mastectomy. Various techniques are utilized with the goal of reducing these complications including suction drainage and compression. Arista™ AH absorbable hemostatic powder (AHP) is composed of microporous polysaccharide hemispheres derived from purified potato starch and is an approved surgical adjunct to control intraoperative bleeding. This study aimed to analyze the benefit of AHP in duration of suction drainage and relationship with post-operative complications including seroma, hematoma, and infection.

Methods: Patients who underwent mastectomy from May 2022-May 2024 were retrospectively identified from a prospectively maintained single-institution cancer registry. Inclusion criteria included patients that underwent therapeutic or prophylactic total mastectomy, with or without axillary staging surgery. Exclusion criteria included those that underwent reconstruction. Data collected included sex, age, race, menopausal status, body mass index, history of bleeding disorder, chest wall irradiation or breast surgery, use of anti-platelet or anti-coagulation medication, receipt of neoadjuvant chemotherapy, type of axillary staging surgery with number of lymph nodes excised, tumor biology and pathologic stage, surgery duration, AHP use, post-operative complications including hematoma, seroma, and infection, required aspiration or evacuation, and time to drain removal. Chi-square tests were used to compare the distribution of categorical variables. The non-parametric Mann-Whitney U rank-sum test was used for continuous variables without normal distribution. Student t-tests were used to compare variables with normal distribution.

Results: A total of 438 patients who underwent unilateral (n=232) and bilateral (n=206) mastectomies met inclusion criteria and were retrospectively reviewed. Of 644 mastectomies, 45%(n=288) received AHP and 55%(n=356) did not. Hematoma based on clinical exam was noted in 3.8%(n=11) of patients in the AHP group compared to 7.9%(n=28) in the no AHP group (p-value=0.03). Seroma was noted in 22.2%(n=64) of patients in the AHP group compared to 25%(n=89) in the no AHP group (p-value=0.41). Of those with clinically evident seroma or hematoma, 13.5%(n=87) required intervention including aspiration or surgical evacuation. Post-operative infection affected 8.7%(n=25) of patients in the AHP group compared to 8.4%(n=30) in the no AHP group (p-value=0.90). Median drain removal time was post-operative day 15 (IQR: 13-18) in the AHP group and post-operative day 15 (IQR:13-18.5) in the no AHP group (p-value=0.13). In patients that received AHP, a history of ipsilateral breast surgery was significantly associated with incidence of seroma formation (p-value=0.02). In patients that did not receive AHP, receipt of neoadjuvant therapy (p-value=0.02) and history of previous ipsilateral chest wall irradiation (p-value=0.04) were significantly associated with incidence of seroma formation. Anticoagulation use was significantly associated with incidence of both hematoma (p-value=0.01) and seroma (p-value=0.03), in patients that did not receive AHP.

Furthermore, perioperative anticoagulation use was significantly associated with hematoma in 9.7%(n=28) in the AHP group compared to 5.6%(n=20) in the no AHP group (p-value=0.049).

Conclusions: In patients undergoing mastectomy without reconstruction, AHP was associated with a decreased hematoma formation rate, while seroma, infection, and drain duration were similar in both groups. Further prospective randomized-controlled trials are needed to evaluate the benefit of AHP in breast surgery.

Table 1: Arista™ use and associated hematoma formation, seroma formation, and post-operative infection in post-mastectomy patients

Table 1: Arista™ use and associated hematoma formation, seroma formation, and post-operative infection in post-mastectomy patients

Hematoma Formation				
	Hematoma	No Hematoma	Total	*p*-value
Arista™	11 (3.8%)	277 (96.2%)	288	0.03
No Arista™	28 (7.9%)	328 (92.1%)	356	
Total	39 (6.1%)	605 (93.9%)	644	
Seroma Formation				
	Seroma	No Seroma	Total	*p*-value
Arista™	64 (22.2%)	224 (77.8%)	288	0.41
No Arista™	89 (25.0%)	267 (75.0%)	356	
Total	153 (23.8%)	491 (76.2%)	644	
Post-Operative Infection				
	Infection	No Infection	Total	*p*-value
Arista™	25 (8.7%)	263 (91.3%)	288	0.90
No Arista™	30 (8.4%)	326 (91.6%)	356	
Total	55 (8.5%)	589 (91.5%)	644	

1988443 - Breast Surgery Wound Complications by Procedure and Demographics from the 2022 National Surgical Quality Improvement Program (ACS-NSQIP) Database

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Background/Objective: While overall complication rates after breast surgery are low, wound healing complications create significant burden physically and financially. Incidence of wound complications varies by surgery and is influenced by many patient factors. We sought to evaluate risk factors for post-operative wound infection and dehiscence to stratify occurrence by specific surgical procedure.

Methods: Under IRB approval, the ACS-NSQIP Database for 2022 was surveyed for CPT codes 19301, 19302, 19303, 19305, 19306, 19307. These were divided into lumpectomy, mastectomy, modified radical (MRM), and radical mastectomy (RM) with and without sentinel lymph node biopsy (SLNB), axillary lymph node dissection (ALND), implant, and/or tissue reconstruction. All demographics and 30-day complications were evaluated. ICD codes were analyzed to determine case indication and CPT and ICD codes were used to differentiate return to OR (RTO) as being related. We completed statistical analysis using R statistical programming using Pearson's chi square or Fisher's Exact test as appropriate followed by a univariate analysis and multivariate analysis. Significance was delineated at $p< 0.05$.

Results: A total of 32,015 patients were analyzed who underwent breast surgery in 2022. Demographics had expected significant differences between surgical procedures due to lack of randomization. Complications requiring RTO occurred in 704 patients (2.20%) with rates as low as 0.68% and 0.76% with lumpectomy and lumpectomy with SLNB to as high as 9.09% for mastectomy with ALND and tissue reconstruction and MRM with tissue reconstruction and 33.33% with RM with tissue reconstruction ($p< 0.05$). Superficial wound infection (SWI) occurred in 2.86%, most commonly with RM (7.59%) and MRM with tissue reconstruction (9.09%), and significantly associated with higher BMI ($p< 0.05$), diabetes (5.03%, $p< 0.05$), steroid use (4.09%, $p=0.01$), bleeding disorder (6.49%, $p< 0.05$), HTN (3.11%, $p=0.03$), smoking (3.77%, $p< 0.01$). On multivariate analysis, African American ($p< 0.001$) and Asian ($p=0.016$) race and lumpectomy ($p=0.003$) were protective while insulin ($p< 0.001$), smoking ($p=0.007$), and bleeding disorder ($p< 0.001$) significantly increased risk. Deep wound infection (DWI) occurred in 0.41%, with most in RM (2.07%) and mastectomy with ALND and implant reconstruction (3.23%); this was significantly associated with prophylactic cases (1.93%, $p=0.01$), higher BMI ($p< 0.05$), diabetes (1.01%, $p< 0.01$), smoking (0.78%, $p< 0.01$). On multivariate analysis, African American race ($p=0.042$) and lumpectomy ($p=0.004$) were again protective while BMI ($p< 0.001$), insulin ($p=0.005$), and smoking ($p=0.007$) increased risk. Wound dehiscence (WD) occurred in 0.44%, commonly with mastectomy and ALND with implant (6.45%) and RM with implant reconstruction (7.14%). WD was significantly associated with prophylactic surgery (1.93%, $p< 0.01$), higher BMI ($p< 0.05$), bleeding disorders (1.08%, $p=0.08$), disseminated cancer (1.73%, $p< 0.01$). On multivariate, BMI ($p< 0.001$) and disseminated cancer ($p=0.001$) were again associated. Wound complication leading to RTO occurred in 55 cases of SWI (6.00%), 43 of DWI (33.08%), and 38 of WD (26.95%).

Conclusions: Surgical complications resulting in long term wound healing implications can have a significant long-term impact on patients and require RTO. Breast surgeons can target these patients

for pre-operative risk discussions, implement risk-reducing strategies, and closely monitor post-operatively with particular focus in the prophylactic breast surgery population.

Figure 1. Pre-operative variables associated with superficial wound infection, deep wound infection, and wound dehiscence on univariate and multivariate analysis. Green – significantly protective, orange – significantly increased risk. Significance defined as p<0.05. Abbreviations: Caucasian (white), African American (black), Asian (Asian), Native Hawaiian or Pacific Island (Hawaiian), Native American (nativeam), Hispanic (ethnicity), lumpectomy (lump), mastectomy (mast), radical mastectomy (rm), modified radical mastectomy (mrm), any axillary surgery (axilla), sentinel lymph node biopsy (sln), axillary lymph node dissection (aln), reconstruction performed (recon), implant reconstruction (imp), tissue reconstruction (tiss), diabetes requiring insulin (insulin), diabetes requiring medication only (dmmed), active smoker (smoke), hypertension (htn), disseminated cancer (disca), steroid use (steroid), bleeding disorder (bleeddis), ASA class (asa1, asa2, asa3, asa4).

Superficial Wound Infection
Univariate and Multivariate

		Univariate			Multivariate		
Characteristic	N	OR[1]	95% CI[1]	p-value	OR[1]	95% CI[1]	p-value
female	32,015						
male	32,015	1.43	0.89, 2.17	0.11	1.21	0.75, 1.85	0.4
white	32,015	1.21	1.05, 1.38	0.007	0.98	0.83, 1.15	0.8
black	32,015	0.51	0.38, 0.67	<0.001	0.45	0.32, 0.60	<0.001
asian	32,015	0.66	0.46, 0.90	0.014	0.65	0.45, 0.91	0.016
hawaiian	32,015	0.59	0.15, 1.56	0.4			
nativeam	32,015	1.10	0.43, 2.26	0.8			
ethnicity	32,015	1.13	0.88, 1.41	0.3			
lump	32,015	0.58	0.50, 0.66	<0.001	0.60	0.42, 0.84	0.003
mast	32,015	1.45	1.27, 1.65	<0.001	0.98	0.69, 1.40	>0.9
rm	32,015	2.49	1.27, 4.40	0.004	1.54	0.76, 2.83	0.2
mrm	32,015	1.67	1.35, 2.06	<0.001			
axilla	32,015	1.35	1.18, 1.54	<0.001	1.29	0.95, 1.71	0.093
sln	32,015	1.11	0.96, 1.27	0.2	0.87	0.65, 1.19	0.4
aln	32,015	1.49	1.25, 1.76	<0.001			
recon	32,015	1.08	0.86, 1.35	0.5			
imp	32,015	1.06	0.83, 1.34	0.6			
tiss	32,015	1.30	0.62, 2.39	0.4			
age	32,015	1.00	1.00, 1.01	0.2	1.00	1.00, 1.01	0.9
bmi	31,762	1.05	1.04, 1.05	<0.001			
insulin	32,015	1.86	1.42, 2.39	<0.001	1.67	1.27, 2.17	<0.001
dmmed	32,015	1.03	0.83, 1.26	0.8			
smoke	32,015	1.37	1.11, 1.68	0.003	1.33	1.08, 1.63	0.007
htn	32,015	1.16	1.02, 1.33	0.024	1.10	0.94, 1.28	0.2
disca	32,015	1.13	0.61, 1.89	0.7			
steroid	32,015	1.47	1.09, 1.94	0.008	1.32	0.98, 1.75	0.059
bleeddis	32,015	2.40	1.62, 3.44	<0.001	2.05	1.37, 2.96	<0.001
asa1	32,015	0.60	0.38, 0.90	0.019	0.89	0.46, 1.74	0.7
asa2	32,015	0.73	0.64, 0.84	<0.001	1.13	0.70, 1.94	0.6
asa3	32,015	1.45	1.27, 1.66	<0.001	1.49	0.93, 2.54	0.12
asa4	32,015	1.08	0.64, 1.71	0.7			

[1] OR = Odds Ratio, CI = Confidence Interval

Deep Wound Infection
Univariate and Multivariate

		Univariate			Multivariate		
Characteristic	N	OR[1]	95% CI[1]	p-value	OR[1]	95% CI[1]	p-value
female	32,015						
male	32,015	0.94	0.16, 2.96	>0.9			
white	32,015	0.98	0.69, 1.39	0.9			
black	32,015	0.57	0.26, 1.10	0.13	0.47	0.21, 0.91	0.042
asian	32,015	0.37	0.09, 0.98	0.091	0.30	0.05, 0.95	0.091
nativeam	32,015	1.29	0.07, 5.79	0.8			
ethnicity	32,015	0.67	0.28, 1.32	0.3			
lump	32,015	0.31	0.21, 0.45	<0.001	0.20	0.06, 0.54	0.004
mast	32,015	2.09	1.48, 2.95	<0.001	0.56	0.16, 1.56	0.3
rm	32,015	4.71	1.15, 12.6	0.009	2.29	0.53, 6.89	0.2
mrm	32,015	2.40	1.44, 3.78	<0.001			
axilla	32,015	1.35	0.96, 1.91	0.090	0.92	0.61, 1.38	0.7
sln	32,015	1.00	0.68, 1.43	>0.9			
aln	32,015	1.72	1.10, 2.59	0.012	0.81	0.24, 2.03	0.7
recon	32,015	2.19	1.35, 3.40	<0.001	1.58	0.94, 2.54	0.070
age	32,015	1.00	0.99, 1.01	0.7			
bmi	31,762	1.04	1.01, 1.06	<0.001	1.04	1.01, 1.06	<0.001
insulin	32,015	2.66	1.42, 4.55	<0.001	2.34	1.23, 4.11	0.005
dmmed	32,015	0.77	0.39, 1.36	0.4			
smoke	32,015	2.13	1.31, 3.30	0.001	2.20	1.35, 3.42	<0.001
htn	32,015	0.97	0.68, 1.37	0.9			
disca	32,015	1.22	0.20, 3.85	0.8			
steroid	32,015	1.59	0.71, 3.05	0.2	1.49	0.66, 2.87	0.3
bleeddis	32,015	1.07	0.18, 3.36	>0.9			
asa1	32,015	0.99	0.35, 2.18	>0.9			
asa2	32,015	0.78	0.55, 1.10	0.2	0.98	0.67, 1.41	0.9
asa3	32,015	1.19	0.84, 1.69	0.3			
asa4	32,015	2.30	0.81, 5.08	0.069	1.54	0.53, 3.54	0.4

[1] OR = Odds Ratio, CI = Confidence Interval

Wound Dehiscence
Univariate and Multivariate

		Univariate			Multivariate		
Characteristic	N	OR[1]	95% CI[1]	p-value	OR[1]	95% CI[1]	p-value
female	32,015						
male	32,015	0.87	0.14, 2.72	0.8			
white	32,015	0.93	0.67, 1.31	0.7			
black	32,015	1.12	0.64, 1.83	0.7			
asian	32,015	0.34	0.08, 0.90	0.066	0.47	0.12, 1.26	0.2
ethnicity	32,015	1.09	0.57, 1.89	0.8			
lump	32,015	0.23	0.15, 0.33	<0.001	0.44	0.17, 1.04	0.069
mast	32,015	3.26	2.32, 4.63	<0.001	1.75	0.69, 4.11	0.2
rm	32,015	2.85	0.47, 9.05	0.14	1.80	0.28, 6.46	0.4
mrm	32,015	1.68	0.96, 2.75	0.051			
axilla	32,015	1.24	0.89, 1.73	0.2	0.83	0.56, 1.21	0.3
sln	32,015	1.01	0.70, 1.42	>0.9			
aln	32,015	1.48	0.95, 2.24	0.070	1.78	0.77, 3.64	0.14
recon	32,015	3.99	2.72, 5.75	<0.001	2.01	0.49, 5.50	0.2
imp	32,015	3.96	2.66, 5.75	<0.001	1.35	0.48, 5.66	0.6
tiss	32,015	2.85	0.70, 7.60	0.074			
age	32,015	0.99	0.98, 1.00	0.15	1.00	0.99, 1.02	0.5
bmi	31,762	1.05	1.03, 1.07	<0.001	1.05	1.03, 1.07	<0.001
insulin	32,015	1.24	0.53, 2.47	0.6			
dmmed	32,015	1.22	0.72, 1.94	0.4			
smoke	32,015	1.52	0.90, 2.44	0.10	1.59	0.93, 2.55	0.070
htn	32,015	1.13	0.81, 1.58	0.5			
disca	32,015	4.13	1.74, 8.25	<0.001	3.54	1.48, 7.16	0.001
steroid	32,015	0.89	0.31, 1.95	0.8			
bleeddis	32,015	2.53	0.89, 5.58	0.043	2.34	0.82, 5.25	0.068
asa1	32,015	0.35	0.06, 1.11	0.15	0.55	0.09, 1.78	0.4
asa2	32,015	0.92	0.66, 1.29	0.6			
asa3	32,015	1.15	0.83, 1.61	0.4			
asa4	32,015	1.68	0.51, 3.99	0.3			

[1] OR = Odds Ratio, CI = Confidence Interval

1988636 - Burden of Physical Treatment-Related Side Effects Among Low Risk Breast Cancer Survivors

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Background/Objective: Individuals with early-stage breast cancer still experience a high burden of treatment side effects. One of the most common reported side effects of endocrine therapy is hot flashes. However, less is known about the co-occurrence of hot flashes with other treatment-related side effects. The purpose of this study was to explore the co-occurrence of physical treatment related side effects in early-stage breast cancer survivors.

Methods: Eligible survivors had a history of Stage I-II estrogen or progesterone receptor positive, HER2neu negative disease not treated with chemotherapy who were 6 months to 5 years post-diagnosis and without evidence of recurrence. Survivors were enrolled at the time of their follow-up visit at the UW Health Breast Center and emailed a link to a REDCap survey. The survey included patient reported outcomes (PRO) addressing survivorship domains informed by ASCO survivorship guidelines. For this analysis, we focused on physical treatment-related side effects, including hot flashes and joint pain. Post-surgical breast/chest problems (tightness, chronic pain, soreness, activity limitations) were assessed using the BREAST-Q PRO physical well-being scale. Categorical variables were compared using Chi-squared tests and continuous variables using t-tests.

Results: Of 130 patients approached, 76.1% (n=99) enrolled and 86.9% (n=86) of those completed the assessment. On average, participants were 60.8 years of age (SD=11.4) and 2.5 years from diagnosis (SD=1.2). During initial treatment of their cancer, 70.9% underwent breast-conserving surgery, 16.3% unilateral mastectomy, and 12.8% bilateral mastectomy. There was a high rate of adherence to endocrine therapy with 87.2% reporting currently taking. Overall, 37 (43%) reported moderate to severe hot flashes and 43 (50%) reported joint pain. In addition, the median BREAST-Q chest/breast score for all was 86.8 (SD=15.6), which was lower than the published population norm of 93 (SD=11). Co-occurrence of side-effects were common. Women experiencing hot flashes had significantly lower chest function scores compared to those without (Table), despite no significant difference in type of breast surgery or reconstruction between the two groups. There was no significant difference in breast/chest function for women experiencing joint pain compared to those without. There was no significant difference in reported joint pain for women experiencing hot flashes (56.8% vs 44.9%, p=0.3).

Conclusions: Patients with early-stage breast cancer have a high likelihood of experiencing treatment-related side effects. We observed a strong association between the presence of hot flashes, a common side effect of endocrine therapy, with breast and chest wall problems. Addressing these symptoms are important to the postoperative physical function of breast survivors.

Table 1: BREAST-Q chest physical well-being scores by other symptom

Table: BREAST-Q chest physical well-being scores by other symptom

	Breast-Q chest function score	p-value
Hot flashes (mean, SD)		0.02
Yes	82.5 (18.2)	
No	90.1 (12.5)	
Joint pain (mean, SD)		0.1
Yes	84.0 (17.3)	
No	89.6 (13.2)	

1988796 - Risk Factors Associated with Breast Surgical Site Infections in Southeast Michigan

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Background/Objective: Surgical site infections (SSIs) are one of the most common complications of breast surgery and a major source of postoperative morbidity and mortality. The reported incidence rate varies, ranging from 1–30%, depending on risk factors. Prolonged use of surgical drains has been considered a risk factor for SSIs. Recently, the Michigan Department of Health and Human Services (MDHHS) was investigating breast SSI (BSSI) cases associated with tissue-expander and/or drain placement surgeries. The objective of this study is to describe the clinical characteristics and outcomes of patients with BSSIs and compare patients with and without long-term tissue-expander and/or drain placement.

Methods: Retrospective case series of adult patients with clinical BSSI at Henry Ford Health, an integrated health care organization that includes 5 hospitals and 9 emergency departments (EDs) in Southeast Michigan, from January 2021 to December 2023. Patients who met National Healthcare Safety Network (NHSN) BSSI criteria were screened for clinical infection. Demographics, comorbidities, risk factors, microbiological data, and clinical outcomes were included.

Results: A total of 147 cases met NSHN surveillance criteria, of which 80 (54%) had clinical infection (Table). Most patients were female (95%) and white (63%) with a mean age of 51.7 years and BMI >30 (35%). The majority had active breast cancer (56%) and breast biopsy within the past year (66%). Invasive breast cancer (36%) and ductal carcinoma in situ (DCIS) (19%) were the most common indications for the procedure, and the majority underwent a mastectomy (51%) with or without lymph node dissection. Fifty-four (68%) had a tissue expander/drain placed. Prior history of breast cancer was more common among patients with tissue expander/drain (22% vs 4%, P=0.037). These patients were more likely to receive perioperative antibiotics (93% vs 77%, P=.047) and had longer procedure duration (3.35 vs 1.63 hours, $P < 0.001$). Post-operative complications were similar between the two groups; however, Pseudomonas aeruginosa infection was more common among patients with tissue expander/drain (24% vs 4%, P=0.026). Need for hospitalization was higher (67% vs 42%, P=0.038) and length of stay was longer in patients with tissue expander/drain (15.62 vs 12.62 days, P=0.086). All patients received antimicrobial therapy with similar treatment duration. Relapse and infection-related mortality were uncommon.

Conclusions: In this large study of BSSI patients, history of active malignancy, undergoing mastectomy, and/or long-term placement tissue expander/drain during surgery were common. Patients with tissue expanders/drains had a longer procedure duration and higher infection-related hospitalization with longer length of stay. Risk stratification of at-risk patients and implementation of infection preventive strategies may reduce risk of BSSI.

Table. Clinical characteristics, risk factors, and outcomes associated with breast surgical site infections

Table. Clinical characteristics, risk factors, and outcomes associated with breast surgical site infections

	Total N=80 (%)	Tissue Expander/JP drain N=54 (%)	No Tissue Expander/JP drain N=26 (%)	P-value
Demographics				
Mean age, years (SD)	51.7 (14.82)	52.6 (14.36)	49.8 (15.87)	0.432
Sex, Female	76 (95.0)	53 (98.1)	23 (88.5)	0.063
Race				0.338
Black	19 (23.8)	15 (27.7)	4 (15.4)	
White	50 (62.5)	32 (59.3)	18 (69.2)	
Comorbidities				
BMI >30	28 (35)	21 (38.9)	7 (26.9)	0.293
Smoking History	33 (41.3)	22 (40.7)	11 (42.3)	0.894
Alcohol use disorder	27 (33.8)	18 (33.3)	9 (34.6)	0.910
Diabetes mellitus	14 (17.5)	11 (20.4)	3 (11.5)	0.330
Breast surgery within 1 year	8 (10.0)	5 (9.3)	3 (11.5)	0.750
Biopsy within 1 year	53 (66.3)	36 (66.7)	17 (65.4)	0.910
Active breast cancer	45 (56.3)	32 (59.3)	13 (50.0)	0.434
Prior breast cancer	13 (16.3)	12 (22.2)	1 (3.8)	**0.037**
Chemo within 30 days	9 (11.3)	4 (7.4)	5 (19.2)	0.117
Immunomodulator	7 (8.8)	5 (9.3)	2 (7.7)	0.816
Prior chest irradiation	7 (8.8)	5 (9.3)	2 (7.7)	0.816
MRSA within 1 year	2 (2.5)	1 (1.9)	1 (3.8)	0.593
Procedure Details				
Indication of primary surgery				0.040
DCIS	15 (18.8)	12 (22.2)	3 (11.5)	
Invasive breast cancer	29 (36.3)	20 (37.0)	9 (34.6)	
Breast reduction	8 (10.0)	5 (9.3)	3 (11.5)	
Implant failure	8 (10.0)	7 (13.0)	1 (3.8)	
Primary procedure				**<0.001**
Mastectomy	41 (51.3)	40 (74.1)	1 (3.8)	
Lumpectomy	9 (11.3)	1 (1.9)	8 (30.8)	
Mammoplasty reduction	7 (8.8)	4 (7.4)	3 (11.5)	
Biopsy/excision	6 (7.5)	0 (0.0)	6 (23.1)	
Lymph node dissection	37 (46.3)	28 (51.9)	9 (34.6)	0.148
ASA classification				0.643
ASA II	37 (46.3)	27 (50)	10 (38.5)	
ASA III	37 (46.3)	23 (42.6)	14 (53.8)	
ASA IV	1 (1.3)	1 (1.9)	0 (0.0)	
Infiltration of anesthetic agent	17 (21.3)	9 (16.7)	8 (30.8)	0.149
Periop antibiotics	70 (87.5)	50 (92.6)	20 (76.9)	**0.047**
Glucose >150 mg/dL	4 (5.0)	2 (3.7)	2 (7.7)	**0.005**
Surgical skin prep	74 (92.5)	48 (88.9)	26 (100.0)	0.077
Blood transfusion	1 (1.3)	1 (1.9)	0 (0.0)	0.485
Procedure duration, hours	2.79	3.35	1.63	**<0.001**
Complications				
Post-op hematoma	7 (8.8)	5 (9.3)	2 (7.7)	0.816
Post-op seroma	17 (21.3)	13 (24.1)	4 (15.4)	0.374
Polymicrobial infection	34 (42.5)	25 (46.3)	9 (34.6)	0.322
S. aureus	24 (30.0)	13 (24.1)	11 (42.3)	0.096
MRSA	5 (6.3)	2 (3.7)	3 (11.5)	0.175
P. aeruginosa	14 (17.5)	13 (24.1)	1 (3.8)	**0.026**
Management				
Required surgical intervention	64 (80.0)	45 (83.3)	19 (73.1)	0.283
Require hospitalization	47 (58.8)	36 (66.7)	11 (42.3)	0.038
Length of stay, days	3.20	3.89	1.77	**0.022**
Treatment	80 (100)	54 (100)	26 (100)	-
Duration, days	14.58	15.62	12.62	0.086
Outcome				
Relapse	2 (2.5)	0	2 (7.7)	0.039
30-day mortality	0 (0.0)	0 (0.0)	0 (0.0)	-
90-day mortality	1 (1.3)	1 (1.9)	0 (0.0)	-

1988872 - The Hidden Costs of Choice: Increased Postoperative Risks in Patient-Preference Mastectomy for Breast Cancer

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Background/Objective: Global mastectomy rates for early-stage breast cancer have risen over the past decade, yet limited research compares early postoperative complications between breast-conserving surgery (BCS) and total mastectomy. No data currently exist to differentiate complication risks across BCS, medically necessary mastectomy (Mast-MN), and patient preference mastectomy (Mast-PP). This study characterized the incidence and severity of postoperative complications across these surgical modalities and identified patient and disease factors predictive of these outcomes.

Methods: Patients undergoing index surgery for DCIS or Stage 1-3 breast cancer at our provincial referral center between January 2023 – July 2024 were identified from a prospectively maintained database. The indication for mastectomy was coded preoperatively by the consulting surgeon. Mast-MN was coded for patients for which BCS was contraindicated and Mast-PP was for patients who chose mastectomy when BCS was feasible or opted for prophylactic mastectomy. The 30-day postoperative complication rates were evaluated, and severity was graded using the Clavien-Dindo (CD) classification. Major complications were classified as CD grade >3.

Results: Among 929 patients, 640 had BCS, 202 had Mast-MN, and 87 had Mast-PP. The median patient age was 61 years. Immediate reconstruction rates were similar for Mast-MN (57.4%) and Mast-PP (60.9%, $p = 0.580$). Overall complication rates were 9.5% (61/640) for BCS, 14.4% (29/202) for Mast-MN, and 24.1% (21/87) for Mast-PP, with major complication rates at 1.3%, 5.9%, and 13.8%, respectively. Symptomatic seromas were the most frequent complication for BCS (28/61), and wound infection was most common for Mast-MN (12/29) and Mast-PP (12/21). Univariate analysis showed Mast-PP was associated with higher complication odds than BCS (OR = 3.02, 95% CI: 1.73–5.27, $p < 0.001$), but this was not significant after adjusting for confounders, particularly immediate reconstruction (Adjusted OR = 1.15, 95% CI: 0.49–2.73, $p = 0.743$). Ordinal logistic regression indicated Mast-PP patients had higher odds of severe complications (OR = 2.24, 95% CI: 1.06–4.73, $p = 0.035$) compared to Mast-MN patients. Immediate reconstruction and older age were also significant risk factors for postoperative and major complications.

Conclusions: While mastectomy by patient preference does not independently increase the overall risk of complications after adjusting for reconstruction, it is associated with a higher likelihood of severe complications. Further research is warranted to understand the mechanisms behind this association. Immediate breast reconstruction and advanced age remain significant predictors of postoperative complications and should be carefully considered in surgical planning and patient counselling.

Figure 1: Multivariable logistic regression for predictors of incidence of postoperative complications after breast cancer surgery.

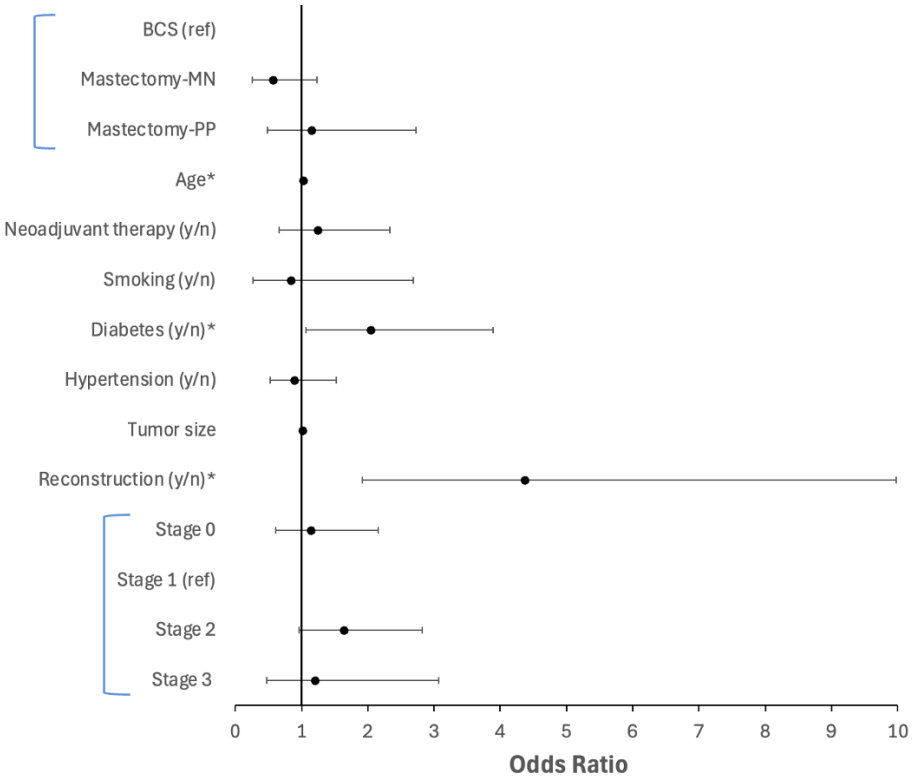

Figure 1: Multivariable logistic regression for predictors of incidence of postoperative complications after breast cancer surgery. *Indicates statistical significance. Mastectomy-PP (OR=1.15, 95% CI: 0.49–2.73, p = 0.743), Age (OR=1.02, 95% CI: 1.00 – 1.04, p = 0.021), Reconstruction (OR=4.37, 95% CI: 1.92 – 9.98, p < 0.001). Stage 0 = ductal carcinoma in-situ. *Abbreviations: BCS, breast conserving surgery; Mastectomy-MN, total mastectomy medically necessary; Mastectomy-PP, total mastectomy patient preference; y/n, yes/no; ref, reference.*

1934213 - The Healthcare Cost and Risk Factors of Nipple-Areolar Complex Necrosis After Nipple-Sparing Mastectomy Using Real-World Data Over 15 Years

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Background/Objective: Nipple-sparing mastectomy (NSM) offers patients with breast cancer or those at high risk for breast cancer an option for excellent cosmetic outcomes with preservation of the lipocutaneous envelope of skin and nipple. However, post-operative nipple-areolar complex (NAC) necrosis remains a challenging complication occurring at varying rates, previously reported ranging from 5-20%. We describe the first large scale report on healthcare resource utilization and costs associated with NAC necrosis after NSM to better understand the downstream impacts of this complication to both patients and payors.

Methods: We utilized Optum's de-identified Market Clarity Data, which deterministically linked medical and pharmacy claims with electronic health record data. We initially included all patients with breast cancer or a genetic susceptibility for breast cancer in the dataset from 2007-2022. We then captured NSM recipients and subsequent NAC necrosis patients using a keyword search in unstructured text from provider notes in the EHR, as no consistent coding currently exists for NSM or NAC necrosis. We utilized a six-month follow-up period after NSM to identify any NAC necrosis diagnoses plus all post-operative healthcare encounters and associated costs.

Results: We identified 982,113 patients diagnosed with or at increased risk for breast cancer. 90,736 patients underwent mastectomy and after application of inclusion criteria, 5,644 patients underwent NSM with a rate of NAC necrosis of 8.0% (n=449) overall. Compared to patients who did not develop NAC necrosis, those who did were more likely to be younger (mean age 49.3 vs 50.5 years, p=0.04) and Hispanic (10.7% vs 3.6%, p< 0.001). Lower mean white blood cell count (mean count 6.26 x 109L vs 6.67 x 109L, p=0.001) and higher mean platelet count (mean count 267.65 x 109L vs 257.74 x 109L, p=0.01) were also associated with the development of NAC necrosis. Of the patients who developed NAC necrosis, 55.5% (n=249) were ever smokers and 22.5% (n=101) were never smokers, with 22.0% missing/unknown smoking status. Medicaid insurance was more common among NAC necrosis patients compared to the population without necrosis (12.7% vs 8.6%, p=0.004). No statistically significant difference was detected by BMI, indication for breast surgery (breast cancer vs genetic susceptibility vs both), or the comorbid conditions of diabetes or connective tissue disorders. After excluding patients without six-months continuous insurance enrollment, the NAC necrosis rate was 8.5% (n=126/1,485). NAC necrosis patients received significantly more post-operative ambulatory care than non-necrosis patients (3.5 additional visits, p=0.007) and incurred a median additional $9,337 (IQR $5,853, p=0.045) in claims costs in the six-month post-operative period.

Conclusions: In this large cohort of patients undergoing NSM using real-world data, we identified patient demographics, clinical characteristics, and behavioral practices as potential risk factors for NAC necrosis. Medicaid insurance was also disproportionately high in the NAC necrosis group which may suggest a socioeconomic disparity warranting further investigation. We also identified nearly $10,000 in additional associated financial burden to patients and payors with the development of NAC necrosis. These findings highlight the need for continued adoption of improved surgical techniques during NSM to optimize patient outcomes.

CPM

1982763 - Feasibility and Efficacy of Decision Aids to Improve Decision Making for Contralateral Prophylactic Mastectomy: A Systematic Review

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Background/Objective: Over the last two decades, the rate of contralateral prophylactic mastectomy (CPM) for unilateral breast cancer has significantly increased. Ipsilateral breast-conserving surgery or mastectomy is often recommended for average or low-risk patients, to minimize surgical risk and because of limited evidence of survival benefit with CPM. However, women often cite many reasons for preferring CPM such as fear, greater perception of their risk for contralateral breast cancer, and limited awareness of possible negative outcomes of CPM. Shared decision-making using decision aids (DAs) can support this decision about whether to undergo CPM. We aimed to systematically and critically review the literature to understand the feasibility and efficacy of using DAs to improve decision outcomes about ipsilateral surgery vs. CPM. Furthermore, we aimed to understand characteristics of DAs that are most important for both patients and clinicians.

Methods: We searched 6 databases for articles published through April 2024, while adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Included studies reported on patient DAs about CPM after diagnosis of unilateral breast cancer in average or low risk patients. Ongoing clinical trials without available data were excluded. Two investigators independently reviewed 6,186 abstracts, 156 full-text articles, and critically appraised each study. Studies excluded after full text review did not focus on CPM decisions or DAs. Study details were independently extracted by two reviewers. Data quality assessment was performed using the GRADE approach. A meta-analysis was not performed due to heterogeneity of outcomes measured and reported within small samples.

Results: Six studies published from 2017-2021 were included (Table 1). 4 (66.7%) studies solely reported on patient acceptance and satisfaction of the DAs, while 2 (33.3%) studies included clinician perspectives. 4 (66.7%) DAs were formatted for online delivery, while 2 (33.3%) were designed on paper. 2 (33.3%) research teams utilized a multi-disciplinary group to develop their DA. 3 (50.0%) studies included a health literacy outcome measure. Overall, patient satisfaction with the DAs was high, knowledge scores increased, and patients found DA's helpful for CPM decision-making. Only 2 studies asked women to disclose which surgical option they were leaning towards prior to completing the DA, which suggested that the DA confirmed patient preferences rather than changed them. Important DA characteristics measured by studies included time to completion, time point at which it was introduced, use with or without a clinician, and the order and balance of information about pros and cons.

Conclusions: There is limited literature about using DAs for CPM decisions and little consensus on the balance and type of content to include and the format, timing, and optimal delivery of a DA. Furthermore, it is unclear whether a DA for CPM should be offered to all patients or solely those who discuss the decision with their clinicians. Future work in larger, multi-institutional patient populations

using standardized, validated measures for satisfaction, values, decisional conflict, and health literacy could assess the impact of DAs for CPM.

Table 1: Characteristics of included studies.

Study	Study Design	Total Number of Participants Included	Decision Aid (DA) Content	Outcomes of Interest Measured about the Decision Aid (DA)	Other Shared Decision-Making Outcomes Collected
Yao 2017	Non-Randomized Experimental	211 – 97 DA patients and 114 usual care patients	Surgical choices, goals of surgical treatment, people involved in the decision-making process, published outcomes related to cancer recurrence, survival, contralateral breast cancer risk, recovery time, and complications	None	Knowledge, CPM decision
Ager 2018	Qualitative Pilot	23	Information about CPM, chances of developing cancer in the future, options to manage future cancer risk, options to manage breast appearance, summary and patient stories, worksheets to help with deciding	Acceptability (format/information), balanced presentation of information, comprehensibility, feasibility, implementation	Distress about prior decisions, patient satisfaction
Yao 2019	Prospective	120 – 63 DA patients and 57 usual care patients	Surgical choices, goals of surgical treatment, people involved in the decision-making process, published outcomes related to cancer recurrence, survival, contralateral breast cancer risk, recovery time, and complications	None	Knowledge, CPM decision, anxiety, and distress, patient values, quality of life
Squires 2019	Mixed-methods survey	51 – 39 health care providers and 12 patients	Not available	Acceptability, usability, clarity, agreement	Knowledge
Manne 2020	Randomized Pilot Trial	93 – 47 DA patients and 47 usual care patients	Recurrence risk, risks and benefits of undergoing CPM, worry about cancer recurrence, future surveillance	Feasibility, acceptability, preliminary efficacy	CPM knowledge and decisional conflict, self-efficacy, perceived risk, worry about their decision, reasons for considering CPM
Jansen 2022	Single-Arm Pilot	42 – 11 breast surgeons and 31 patients	Risk for contralateral breast cancer, risk of metastatic cancer, body image, risks of CPM, how many women choose CPM	How the DA fit into the diagnostic and treatment workflow, barriers and facilitators to DA use, views on the content and format, optimal timing of delivery	Decisional conflict, anticipated decisional regret, patient and provider satisfaction

1983535 - Contralateral Prophylactic Mastectomy in Women with Unilateral Breast Cancer by Age, Race, and Tumor Subtype

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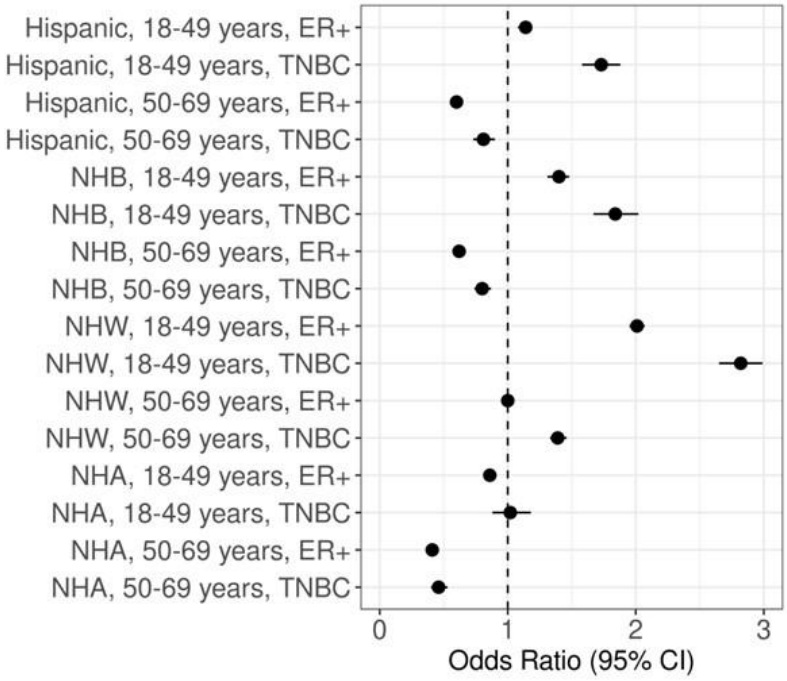
Background/Objective: Contralateral prophylactic mastectomy (CPM) is discouraged in average risk women with unilateral breast cancer (UBC) per national consensus guidelines. As CPM rates among different UBC populations are unknown, our aim was to determine contemporary CPM rates by age, race, and tumor subtype.

Methods: Women with Stage I-III UBC were identified from Surveillance Epidemiology and End Results' 17 cancer registries, 2010-2021. Patient and tumor characteristics were compared between the CPM group and no CPM group using Chi-square or Wilcoxon tests. A multivariable logistic regression model was used to evaluate factors associated with CPM.

Results: Of 240,624 women, 63.1% were non-Hispanic white (NHW), 13.8% Hispanic, 11.4% Asian/Pacific Islander (Asian), 10.8% non-Hispanic black (NHB), 0.6% American Indian, and 0.4% unknown race. Overall, 31.2% of women underwent CPM. By race, NHW women were more likely to undergo CPM compared to NHBs, Hispanics, and Asians (34.7% vs 27.6%, 27.5%, and 20.2% respectively; p<.0001). From 2010-2021, CPM rates increased from 25.4% to 33.6% (8.2%) with the greatest increase in NHBs (16.7%) and the smallest in Asians (6.3%) (p<.0001). On multivariable analysis (MVA), factors associated with CPM were age 18-39 years (HR 3.39 compared to age 60-69 years), white race (HR 2.46 compared to Asian), estrogen receptor (ER)-negative/HER2-negative subtype (HR 1.29 compared to ER-positive/HER2-negative subtype), Stage I (HR 1.43 compared to Stage III), lobular histology (HR 1.10 compared to ductal histology), and high grade (HR 1.10 compared to low grade) (all p<.0001). By receptor subtype, CPM was most frequent in women with triple negative breast cancer (TNBC) versus non-TNBCs (36.9% vs 30.5%; p<.0001). For TNBC, CPM was most frequent in NHWs (41.3% vs 35.3% Hispanics, 31.8% NHBs, and 21.9% Asians; p<.0001). As shown in the Forest Plot, MVA considering race, age, and receptor subtype, with the referent group as NHWs age 50-69 years with ER+ cancer, CPM rates were highest in: NHWs age 18-49 years with TNBC followed by NHWs 18-49 years with ER+ cancer, NHBs age 18-49 years with TNBC, and Hispanics 18-49 years with TNBC. CPM was least likely in Asians age 50-69 years with ER+ cancer (Figure 1). In 2021, CPM was most frequent among NHWs age 18-49 years with TNBC (60.2%) followed by NHBs age 18-49 years with TNBC (57.8%), who had the greatest increase in CPM rates (24%) over the study time period.

Conclusions: CPM rates in women with UBC continue to increase despite national consensus guidelines. CPM was most frequent in young NHW women with TNBC. Young NHBs with TNBC had the greatest rate of increase over time. Further research to identify factors (e.g., desire for symmetry, fear of contralateral breast cancer, genetic testing, physician recommendation) motivating CPM may help define strategies to improve guideline compliance.

Figure 1: Contralateral Prophylactic Mastectomy Rates by Race, Age, and Receptor Subtype in Women with Unilateral Invasive Breast Cancer



	OR	95% CI	P-value
Hispanic, 18-49 years, ER+	1.14	1.08-1.19	<0.0001
Hispanic, 18-49 years, TNBC	1.73	1.58-1.88	<0.0001
Hispanic, 50-69 years, ER+	0.60	0.57-0.63	<0.0001
Hispanic, 50-69 years, TNBC	0.81	0.73-0.90	<0.0001
NHB, 18-49 years, ER+	1.40	1.31-1.48	<0.0001
NHB, 18-49 years, TNBC	1.84	1.67-2.02	<0.0001
NHB, 50-69 years, ER+	0.62	0.59-0.65	<0.0001
NHB, 50-69 years, TNBC	0.80	0.74-0.87	<0.0001
NHW, 18-49 years, ER+	2.01	1.95-2.07	<0.0001
NHW, 18-49 years, TNBC	2.82	2.65-2.99	<0.0001
NHW, 50-69 years, ER+	REF		
NHW, 50-69 years, TNBC	1.39	1.33-1.46	<0.0001
NHA, 18-49 years, ER+	0.86	0.81-0.91	<0.0001
NHA, 18-49 years, TNBC	1.02	0.88-1.18	0.8038
NHA, 50-69 years, ER+	0.41	0.38-0.43	<0.0001
NHA, 50-69 years, TNBC	0.46	0.40-0.53	<0.0001

1965874 - Clinical factors influence decisions regarding prophylactic contralateral mastectomy in women without genetic predisposition

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Background/Objective: Over the last several decades, rates of contralateral prophylactic mastectomy (CPM) in patients with unilateral breast cancer (BCa) and without known genetic risk have been on the rise, despite lack of evidence for improved outcomes. Prior studies have cited young age, lobular histology, use of immediate reconstruction (IR), surgeon counseling, preoperative MRI, and family history of breast cancer in association with CPM. This study assesses clinical factors influencing rates of CPM vs unilateral mastectomy (UM) in patients with unilateral primary BCa.

Methods: 369 women with unilateral BCa treated with mastectomy between January 2020 and December 2023 were identified from our tumor registry for retrospective chart review. Those with deleterious genetic mutations, personal history of prior BCa, and male BCa were excluded. Clinical and patient factors were compared using logistic regression between patients who underwent UM vs. mastectomy with CPM, along with multivariate analysis using Chi-square analysis. Differences in surgeon-specific rates were evaluated with Chi-square analysis and logistical regression.

Results: Of the 369 patients, 223 (60.40%) underwent UM, while 146 (39.60%) chose CPM. Younger age was associated with higher rates of CPM ($p < 0.001$), as were family history ($p = 0.012$) and IR ($p < 0.001$). Reconstruction remained significantly associated with surgery type after adjusting for age and family history factors ($p=0.0006$). Tumor histology, including invasive lobular carcinoma, was not associated with a significant difference in rates of CPM vs. UM. 293 patients (79.40%) had preoperative MRI, either before surgical consultation or at surgeon discretion. Among patients who had preoperative MRI, there was no significant difference in rates of CPM vs. UM. Chi-square analysis demonstrated statistically significant difference in rate of CPM vs UM by surgeon ($\chi2 = 9.7$, $df = 4$, $p = 0.04$).

Conclusions: In our patient population, young age and IR were most significantly associated with CPM, while family history (with positive genetic testing excluded) was also significant. Histologic subtype and preoperative MRI scan, both of which have been associated with CPM in prior studies, were not significant factors in our study group. Half of patients receiving IR selected CPM, while only 12% of those not receiving IR had CPM. Reconstruction remained a significant factor when adjusted for age and family history, suggesting that patients may be selecting CPM based more on cosmetic concerns than contralateral risk reduction. Patient state of health, which could not be captured in our data set, could also contribute to this difference. The statistically significant difference in rates of CPM vs. UM between individual surgeons suggests patient counseling and shared decision-making remain a vital part of surgical planning, with care to address individual patient values and concerns.

Table 1. Univariate analysis of clinical factors associated with CPM

	CPM	UM	p-value
Age, n (%)			<0.001
<50	67 (61.47)	42 (38.53)	
≥50	79 (30.38)	181 (69.62)	
Preoperative Diagnosis, n (%)			
DCIS	59 (41.84)	82 (58.16)	0.48
Invasive Ductal Carcinoma	100 (42.19)	137 (57.81)	0.17
Invasive Lobular Carcinoma	13 (30.23)	30 (69.77)	0.18
Papillary Carcinoma	2 (28.57)	5 (71.43)	0.71
Mammary Carcinoma Not Specified	17 (40.48)	25 (59.52)	0.9
Preoperative MRI, n (%)			0.42
Yes	119 (40.61)	174 (59.39)	
No	27 (35.53)	49 (64.47)	
Family History Breast Ca, n (%)			0.012
Yes	81 (46.29)	94 (53.71)	
No	65 (33.51)	129 (66.49)	
Reconstruction, n (%)			<0.001
Yes	134 (50.19)	133 (49.81)	
No	12 (11.76)	90 (88.24)	
Surgeon, n (%)			0.04
A	38 (46.34)	44 (53.66)	
B	20 (35.09)	37 (64.91	
C	28 (56.00)	22 (44.00)	
D	24 (43.64)	31 (72.34)	
E	13 (27.66)	55 (70.51)	

Current Accruing Trials

1980866 - The PREDICT II Registry: A Prospective Study to Evaluate the Clinical Utility of a 7-Gene Predictive Biosignature on Treatment Decisions in Patients with Ductal Carcinoma In Situ

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Background/Objective: For women with ductal carcinoma in situ (DCIS) treated with breast-conserving surgery (BCS), the benefit of adjuvant radiation therapy (RT) remains controversial. Evidence from randomized clinical trials supports the role of RT in reducing the risk of local recurrence. Given the understanding that 70-80% of women with DCIS do not recur after BCS alone, current guidelines recommend the use of clinicopathologic (CP) features to determine which patients may be considered for de-escalation. To overcome limitations of CP risk assessment, a biosignature has been developed and validated that integrates the protein expression of seven genes and four CP features. The 7-gene biosignature has been clinically validated to be both prognostic for in breast recurrence (IBR) risk and predictive for response to RT. The primary objective of the PREDICT registries is to understand the clinical impact this tool has on treatment, shared decision making, and long term outcomes.

Methods: PREDICT2 is a multicenter, prospective, observational registry for women with DCIS.

Results: The study is open to females age 26-89 who are candidates for BCS and eligible for RT and/or systemic treatment. Subjects must not have been previously treated for DCIS or invasive breast cancer.

Conclusions: Primary endpoints are changes in treatment recommendations for surgical, radiation therapy, and hormonal therapy. Secondary endpoints are identification of key drivers for treatment recommendations, such as age, size, grade, patient preference, biosignature status and recurrence.

1983041 - Pre-Operative Window of Endocrine Therapy to Inform Radiation Therapy Decisions in Older Women with Early-Stage Breast Cancer: The POWER II Trial

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Background/Objective: Radiation therapy (RT) omission is an established treatment paradigm for women ≥ 65 years with estrogen receptor positive (ER+), node negative, small breast cancers treated with breast-conserving surgery (BCS) and adjuvant endocrine therapy (AET). Despite consideration for RT omission in the NCCN guidelines, multiple modern studies demonstrate that a majority of older women still receive RT, raising concerns of overtreatment (BCS+RT+AET). Conversely, there are a portion of patients who choose to omit RT, are not able to tolerate AET, and thus are at risk for under-treatment (BCS alone) and worse oncologic outcomes. In the POWER I trial, patients were treated with 90 days of preoperative endocrine therapy (pre-ET) as a window to establish ET tolerance. The POWER I Trial demonstrated that pre-ET significantly changed patients' and surgeons' RT preferences, thus validating pre-ET as a tool to inform RT decisions. The POWER II Trial (PNCT06507618) will assess whether 90 days pre-ET reduces under- and over-treatment of older women with early-stage breast cancer.

Methods: The POWER II Trial is a phase III multi-center randomized controlled trial. Participants are randomized 1:1 to either the Control Arm (BCS first) or the Intervention Arm (90 days of pre-ET prior to BCS; Figure 1). Performing a sentinel lymph node biopsy at the time of BCS is at the discretion of the treating physician. After BCS, decisions regarding RT are made by the patients and their physicians. AET will be recommended for all participants but is not required. Adherence is defined as taking AET 2 years post-BCS.

Results: Inclusion criteria: women ≥65 years with ER+/PR∓/HER2- invasive breast cancer, clinically negative nodes, and T size ≤2.0 cm (any grade) or T 2.1-3.0 cm (grade I-II, no LVI). Participants must be eligible for BCS and a candidate for RT and ET. Exclusion criteria: women with bilateral synchronous breast cancer, multicentric disease, prior use of SERMs or aromatase inhibitors, history of ipsilateral RT.

Conclusions: Co-primary endpoints: determine whether treatment with 90 days of Pre-ET, compared to standard of care, reduces treatment with (1) BCS alone and (2) BCS + RT+ AET. Secondary endpoints: assess impact of pre-ET on patient reported outcomes and to obtain data on recurrence and survival.

Figure 1: Power II Trial Randomization

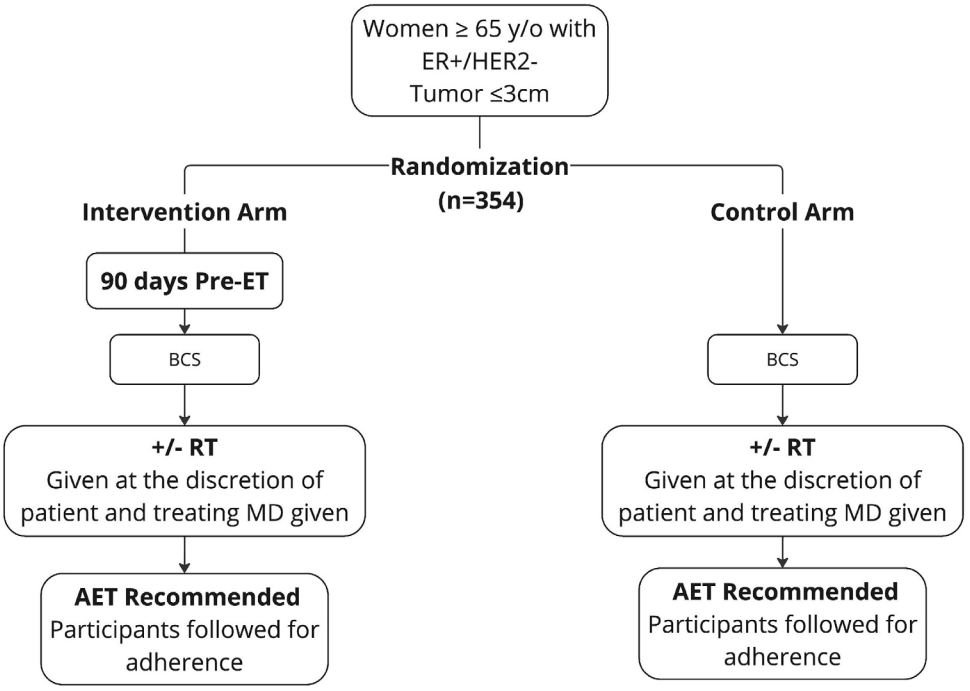

Figure 1. POWER II Trial randomization. ER+: Estrogen receptor positive, HER2-: Human Epidermal growth factor receptor 2 negative; Pre-ET: Pre-operative Endocrine Therapy; BCS: Breast Conserving Surgery; RT: Radiation Therapy; AET: Adjuvant Endocrine Therapy.

1988640 - The ABODE Study: At-home Breast Oncology Care Delivered with E-health Solutions

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Background/Objective: eHealth solutions such as smartphone applications (app) are known to support accessible cancer care delivery and can improve patient experience. We developed the Breast Cancer Treatment Application (BCTA) for patients to use throughout their breast cancer (BC) treatment journey. The app delivers educational resources, collects patient-reported outcome measures (PROMs), and allows messaging with the health care team. It also is a platform to provide psychosocial support via oncology e-health coaches at the PMCC Care & Connect program. We hypothesize that use of the app will improve PROMs, reduce distress, and facilitate communication with health care providers (HCPs).

Methods: This randomized controlled trial, initiated in June 2023, will include 200 patients with early-stage breast cancer. The intervention group (n=100) will use the app, in addition to standard care, for 13 months following diagnosis. The control group (n=100) will receive standard care. Both groups will receive a Fitbit for activity tracking. Patients will complete questionnaires at enrollment, 6- and 12-months, to measure PROMs measuring patient activation, distress, anxiety, and quality of life. We will also measure health services utilization including calls to the nursing center and number of in-person hospital visits.

Results: The study aims to enroll 200 patients (assigned female at birth) over 4 years, diagnosed with primary invasive breast cancer who are over the age of 18. Patients must have surgery as the first step of their treatment, have access to an electronic device with connection to the internet, have a valid email address, and can communicate in English.

Conclusions: The primary outcome is to assess whether use of the BCTA improves patient activation scores (measured with the PAM-13) at the 12-month follow-up. Patient activation is defined as the knowledge and confidence a patient has in self-management of one's health. The secondary outcomes include additional PROMS such as: IES-R, GAD-7, EORTC QLQ-C30, QLQ-BR23, EORTC-INFO25, CEQ, heiQ, KnowGene, MICRA, FACT-ES, SUS, DASI and Distress Thermometer. We will also evaluate health services outcomes such as utilization of the nursing triage line and unplanned visits to the hospital and emergency department. Finally, participant and HCP user experience with be assessed through interviews. Exploratory outcomes include Fitbit utilization and physical activity.

1988002 - The Effect of a Post-Operative Exercise Program Versus Standard Care on Physical Fitness of Patients Undergoing Deep Inferior Epigastric Perforator (DIEP) Flap Reconstruction Surgery: A Randomized Control Trial

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Background/Objective: Current recommendations are that patients undergoing mastectomy be offered reconstructive surgery if appropriate at time of mastectomy. Deep Inferior Epigastric Perforator (DIEP) reconstruction is becoming increasingly popular as a gold standard of reconstructive surgery in terms of functional and cosmetic outcomes as well as tolerability of adjuvant radiotherapy with an acceptable complication and post op recovery profile for patients. However it does involve a significant impact on patient mobility and recovery time post operatively. Exercise training is safe during and after cancer treatments and results in improvements in physical functioning, quality of life and cancer-related fatigue. Postdiagnosis physical activity confers a greater risk reduction than prediagnosis activity among pre-menopausal and post-menopausal women for breast cancer-specific and all-cause mortality.

Methods: This will be a prospective and pragmatic randomized controlled single center superiority trial that compares a program of post operative exercise with standard care in patients undergoing DIEP reconstruction. The patients will be recruited in a university affiliated European Cancer Centre Hospital with a dedicated Breast Oncology Department. The exercise intervention will be delivered by a team of specialized allied health professionals who focus on disease focused exercise and rehabilitation services.

Results: Eligibility criteria include women, over the age of 18 who have been identified as being suitable for a unilateral DIEP reconstruction (immediate or delayed) after undergoing mastectomy. Exclusion criteria are any patients undergoing a bilateral DIEP reconstruction, patients who do not wish to consent to or cannot participate in a structured exercise program and patients who do not pass pre-operative assessment for a DIEP reconstruction.

Conclusions: The primary objective is to demonstrate that a structured post operative exercise program delivered in the community can improve patient fitness post DIEP reconstruction based on a 6 minute walk test. Further assessments will be taken of strength, body composition and Sarcopaenia Index. Secondary outcomes will include assessment of quality of life outcomes specifically the BREAST-Q quality of life measure which is a validated PROM post mastectomy and reconstruction. There will also be exploratory Endpoints of Post op morbidity, hospital length of stay, nutritional status, and a medico-economics analysis of cost effectiveness of the exercise intervention

1988104 - TADPOLE: A Multicenter, Pragmatic, Phase III Randomized Controlled Trial Comparing Targeted Axillary Dissection vs Axillary Node Clearance in Patients with POsitive Axillary Lymph Nodes in Early Breast Cancer.

Shelley Potter[1], Kerry Avery[2], Petra Baji[2], Indrani Bhattacharya[3], Natalie Blencowe[2], Ramsey Cutress[4], David Dodwell[5], Lucy Culliford[2], Katherine Fairhurst[2], Jessica Frost[2], Jessica Harris[2], Hannah Markham[6], Elsa Marques[2], Adrienne Morgan[7], Margaret Perkins[7], Sophie Rees[2], Kirsty Roberts[2], Tim Robinson[2], Nisha Sharma[8], Stuart McIntosh[9]

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Background/Objective: Approximately 20% of women with breast cancer will be node-positive at presentation. In the UK, all patients with newly-diagnosed breast cancer have axillary staging with USS+/-biopsy of abnormal/equivocal nodes. Currently UK NICE guidelines recommend axillary node clearance (ANC) for all patients with biopsy proven node positive breast cancer having primary surgery, irrespective of the number of nodes involved. This highly morbid procedure leads to life-long complications in 1-in-3 patients including lymphoedema which dramatically impact quality-of-life. ANC aims to reduce locoregional recurrence (LRR) and improve breast cancer survival but there is no evidence to support these benefits for patients with low-volume nodal disease (cN0, radiologically-detected disease). These patients would meet the criteria for omission of ANC based on eligibility for the ACOSOG-Z0011 trial, but this approach has not been adopted in the UK due to concerns regarding false negative sentinel node biopsy (SNB) in node-positive patients. Targeted axillary dissection (TAD) combining removal of the localized biopsy-proven involved node(s) with a SNB may offer an alternative to ANC, effectively addressing concerns regarding false negative rates while reducing the risk of life-changing complications The TADPOLE study aims to determine if TAD is a clinically and cost-effective alternative to ANC in patients with low-volume node positive breast cancer having primary surgery.

Methods: Multicenter pragmatic phase 3 RCT with a 9-month internal pilot, embedded qualitative work and surgical and radiotherapy quality assurance; 2:1 randomization to TAD or ANC and co-primary endpoints, and a trial-based economic evaluation with development of an economic model to estimate the long-term cost-effectiveness of TAD vs ANC. The co-primary end-points are: i) Patient-reported and objective lymphoedema at 12-months ii) Single-arm analysis of LRR at 5 years in the TAD cohort.

Results: All patients with cN0 biopsy-proven low-volume axillary nodal disease will be eligible to participate. Excluded will be patients with >3 nodes on USS, those who have recurrent disease, previous axillary surgery, or neoadjuvant therapy.

Conclusions: Pilot phase • To establish that the required number of sites can be opened, and sufficient numbers of eligible patients can be recruited, randomized and adhere to their treatment allocation Main trial • To establish whether, in early breast cancer patients with biopsy-confirmed low volume axillary nodal disease having primary surgery, TAD is superior to ANC in terms of reducing lymphoedema at 12 months while maintaining acceptable rates of locoregional recurrence at 5 years.

1988096 - SMALL: Open Surgery versus Minimally Invasive Vacuum-Assisted Excision for SmaLL Screen-Detected Breast Cancer – A UK phase III Randomized Multi-center Trial

Stuart McIntosh[1], Charlotte Coles[2], David Dodwell[3], Kenneth Elder[4], Beatrix Elsberger[5], Jessica Foster[6], Claire Gaunt[6], Julia Henderson[7], Iain Lyburn[8], Claire Mabena[9], Jenna Morgan[10], Sangeetha Paramasivan[11], Sarah Pinder[12], Sarah Pirrie[6], Shelley Potter[11], Tracy Roberts[6], Nisha Sharma[13], Hilary Stobart[14], Elizabeth Southgate[6], Amruta Talwalkar[15], Sian Taylor-Phillips[16], Will Teh[9], Elliot Turner[6], Matthew Wallis[17], Daniel Rea[6]

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Background/Objective: Mammographic screening programs reduce breast cancer mortality but detect many small good-prognosis tumors which may not progress. These are treated with surgery and adjuvant therapies, with associated morbidities, meaning there is a need to reduce overtreatment. Minimally invasive treatment approaches have been described, although there is no prospective randomized evidence to support their use. SMALL (ISRCTN 12240119) is designed to determine the feasibility of using vacuum-assisted excision (VAE) to treat small tumors detected within the UK NHS Breast Screening Program.

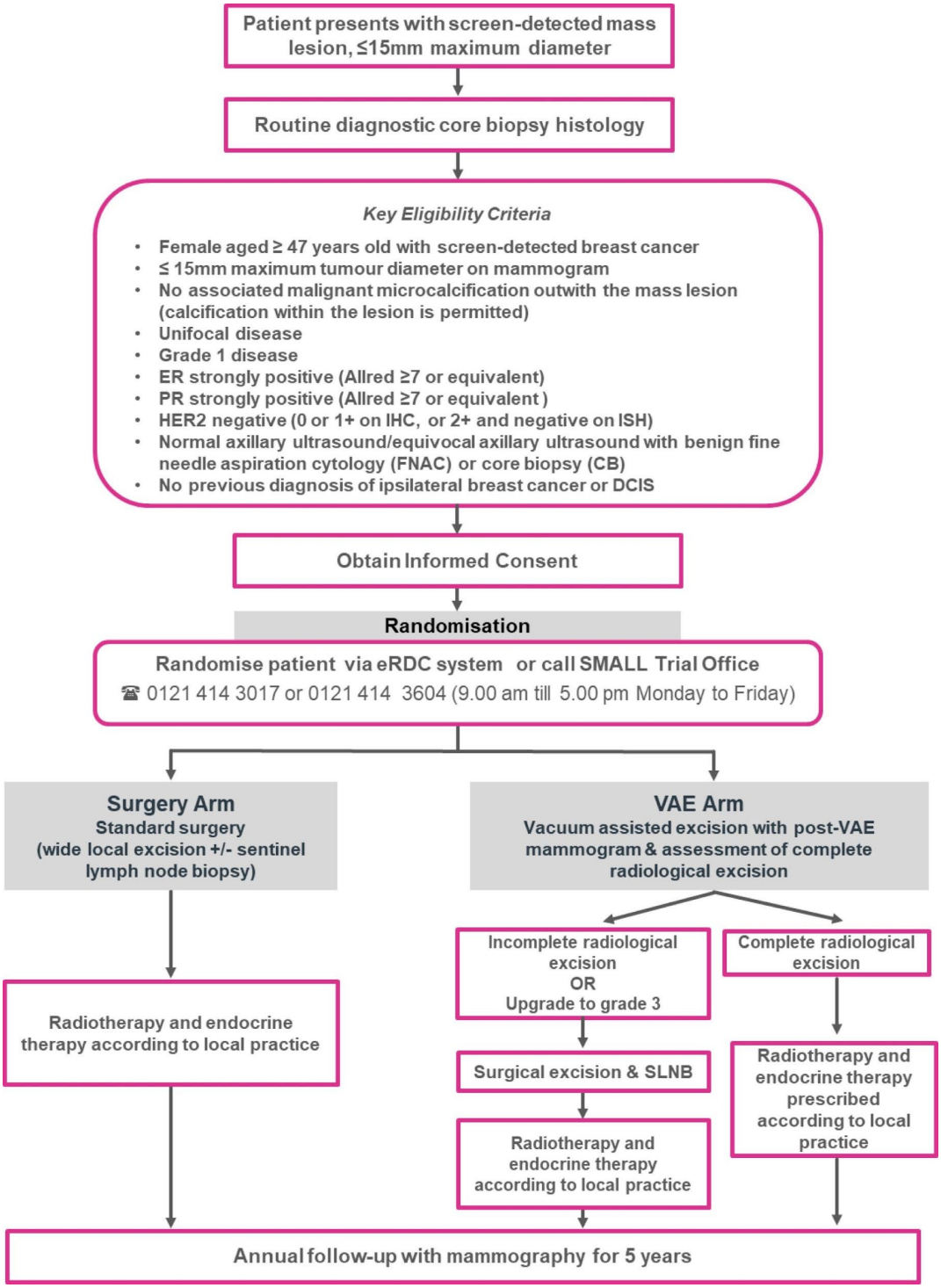
Methods: Phase III multicenter randomized trial comparing surgery to VAE for screen-detected cancers. Patients are randomized 2:1 to VAE or surgery, with no axillary surgery in the VAE arm. Excision is assessed radiologically, and if incomplete, patients undergo surgery. Adjuvant radiotherapy and endocrine therapy are mandated in the VAE arm.

Results: Eligibility criteria are age ≥47 years, unifocal grade 1 tumors with maximum diameter 15mm, strongly ER/PR positive (>66% or Allred score >6) and HER2 negative, with negative axillary ultrasound at diagnosis.

Conclusions: SMALL aims to determine the feasibility and acceptability of minimally invasive vacuum assisted excision for small, biologically favorable screen-detected breast cancers, to determine whether this can be done with an acceptable re-excision rate following VAE, and what the local recurrence implications of this approach are. Co-primary end-points for SMALL are: 1. A randomized non-inferiority comparison of the requirement for a second procedure following excision,

with a non-inferiority margin of 10% 2. Single arm analysis of local recurrence (LR) at 5 years following VAE, with a pre-determined unacceptable level of local recurrence of 3% at 5 years following treatment.

Figure 1: SMALL trial schema



1917994 - A Phase III Randomized Trial of Radiotherapy Optimization for Low-Risk HER2-Positive Breast Cancer (HERO): NRG-BR008

Lior Braunstein[1], Melissa Mitchell[2], Hanna Bandos[3], William Sikov[4], Atif Khan[1], Peter Chen[5], Patricia Ganz[6], Reshma Jagsi[7], Julia White[8], Reena Cecchini[3], Hyejoo Kang[9], Shannon Puhalla[10], Kelly Bolton[11], Eileen Connolly[12], Erica Stringer-Reasor[13], Kimberly Gergelis[14], Thomas Julian[15], Eleftherios Mamounas[16], Norman Wolmark[16]

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Background/Objective: Breast radiotherapy (RT) is the standard of care for patients with early-stage breast cancer (BC) who undergo breast-conserving surgery (BCS). However, the magnitude of benefit of RT is less clear in BCS patients with low-risk disease who receive effective systemic therapy. Among patients with early-stage HER2-positive (HER2+) BC, 10-year locoregional recurrence has been reported as low as 1.5% following BCS, RT, adjuvant chemotherapy, plus HER2-targeted therapy. Given these exceedingly favorable outcomes in the context of HER2-directed therapy, we seek to evaluate the feasibility of omitting RT among patients with early-stage HER2+ BC following BCS and appropriate systemic therapy.

Methods: This is a phase III randomized trial for patients ≥40 years with early-stage, node-negative, HER2+ (IHC/FISH) BC treated with BCS. Patients may enroll via two cohorts: Patients may receive adjuvant chemotherapy plus HER2-directed therapy following surgical resection confirming T1N0 HER2+ disease (COHORT 1); or patients may enroll following neoadjuvant chemotherapy and HER2-directed therapy for tumors that are clinically up to 3cm in size, node-negative, and for which surgery resection via lumpectomy demonstrates pCR (ypT0N0) (COHORT 2). All patients will then be randomly assigned to RT per the standard of care or the investigational omission of RT. Continuation of HER2-directed therapy and endocrine therapy will be per the standard of care. NCT05705401. Support: U10CA80868, -180822, UG1CA189867, U24CA196067.

Results: Tumor pathology must be HER2+ (IHC/FISH). The BC is treated with BCS. Patients undergoing primary surgery must have pathologic T1 (≤2 cm) N0 disease. Patients receiving

neoadjuvant therapy must have tumors ≤3.0 cm, clinically N0 disease, and exhibit a pCR (ypT0N0) at surgery. (Residual invasive or in situ disease not permitted). Contralateral BC is not permitted. Multicentric carcinoma (invasive cancer or DCIS) in more than one quadrant or multifocal disease spanning >4 cm is not permitted. If multifocal, all foci should be confined to a maximum tumor bed of 3 cm, determined by pathological assessment. All patients must receive cytotoxic chemotherapy and HER2-targeted therapy, either in the adjuvant or neoadjuvant setting.

Conclusions: Primary endpoint is recurrence-free interval (RFI). Secondary endpoints include time to ipsilateral breast recurrence, locoregional recurrence, disease-free survival, and overall survival, in addition to the 7-year ipsilateral breast recurrence rate among those not receiving RT. A health-related quality of life sub-study will assess differences in patient-reported breast pain and worry.

DCIS

1973907 - Evaluating Health Literacy Among Patients with Ductal Carcinoma in Situ

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Background/Objective: Ductal carcinoma in situ (DCIS) is an increasingly prevalent disease that is most commonly detected by screening mammography. Treatment can include a combination of surgery, radiation, and endocrine therapy, based on individual patient and disease factors. Prior studies have shown a high degree of confusion and concern among patients about the diagnosis and treatment of DCIS1. Health literacy (HL) has emerged as a social determinant of health implicated in appropriate navigation of complex treatment decisions. This study aims to assess health literacy among patients with DCIS to better understand how this may impact their care.

Methods: This retrospective cohort study was conducted at a single academic tertiary-care center and included patients diagnosed with DCIS between 2010 and 2023. Health literacy was measured using the Brief Health Literacy Screen (BHLS), a validated tool with scores ranging from 3 to 15. Low HL was defined as a score < 9. Patients without BHLS scores were excluded. Multivariate logistic regression was used to assess the relationship between HL and treatment received, while the Kruskal-Wallis test evaluated differences in DCIS grade based on HL.

Results: 833 patients were included. The mean BHLS score was 14.2 (SD 1.8, range 3-15). A significant association was found between lower HL and older age ($p = 0.007$) as well as insurance status, with Medicare and Medicaid patients having an average 3.6 point lower score compared to privately insured patients ($p = 0.036$). There was not a significant association between BHLS score and DCIS grade or treatment received (summarized in Table 1). When compared to a cohort of invasive breast cancer patients from our institution with BHLS scores, there was a statistically significant difference between these two groups, with a higher proportion of invasive breast cancer patients scoring < 9 on the BHLS (5.9% vs 3.1%, $p = 0.002$).

Conclusions: Patients with low HL appear to be more likely to present with invasive breast cancer, indicating a potential need for interventions aimed at increasing participation in screening mammography in this group. The DCIS patients in this study had overall high health literacy. Health literacy alone does not appear to be an independent predictor of DCIS grade at presentation or therapy received. However, understanding the baseline health literacy of this patient population is valuable when thinking about how to frame discussions about the meaning of this diagnosis and treatment options. Prior research has explored the psychosocial impact of DCIS, with most common findings being concerns of over-treatment or undertreatment, ambiguity about having cancer or not, and a substantial negative impact on sexual health and body image2. Providing clear, personalized patient education and partnering in shared decision making is crucial to ensure optimal clinical outcomes as well as emotional well-being for our patients.

Table 1: Summary of cohort demographics and logistic regression results evaluating the association between therapy received and health literacy

DEMOGRAPHICS			
		BHLS < 9	**BHLS > 9**
Age, median (IQR) y		63 (34-88)	59 (25-91)
Sex, n (%)	Female	25 (96.2)	803 (99.5)
	Male	1 (3.8)	4 (0.5)
Race, n (%)	White	19 (73.1)	651 (80)
	Black	4 (15.4)	110 (13.6)
	Asian	0	15 (1.9)
	Other	3 (11.5)	31 (4.5)
Insurance, n (%)	Medicare/Medicaid	16 (61.5)	381 (47.2)
	Private insurance	8 (30.8)	366 (45.4)
	Self-pay	2 (7.7)	32 (4)
	Other	0	28 (3.5)
DCIS Grade, n (%)	Low	3 (11.5)	89 (11)
	Intermediate	8 (30.8)	324 (40.1)
	High	5 (19.2)	234 (29)
	Unknown	10 (38.5)	160 (19.8)
TREATMENT			
Surgery, n (%)	Mastectomy	9 (34.6)	385 (42.3)
	Lumpectomy	17 (65.4)	448 (53.8)
Logistic regression analyzing surgery and BHLS score		OR 1.04, CI (0.96-1.13)	
Radiation, n (%) N=451	Received	5 (19.2)	182 (22.6)
Logistic regression analyzing receipt of radiation and BHLS score*		OR 1.01, CI (0.96-1.19) *Analysis restricted to patients who had partial mastectomy	
Endocrine therapy, n (%) N=388	Received	7 (26.9)	227 (28.1)
Logistic regression analyzing receipt of endocrine therapy and BHLS score*		OR 0.97, CI (0.83-1.14) *Analysis restricted to HR+ patients	

1982842 - Recurrence Rates in ER+ DCIS: The Impact of Provider Recommendations and Patient Adherence to Endocrine Therapy

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Background/Objective: National guidelines recommend consideration of adjuvant endocrine therapy (ET) after breast-conserving surgery (BCS) for ER+ DCIS to lower risk of recurrence. While rates of patient acceptance and adherence to ET are known to range widely, rates of provider recommendation for ET are less understood. Here we aim to capture patient, tumor, and treatment factors associated with provider recommendation for ET and variables associated with recurrence in patients with ER+ DCIS.

Methods: Patients with ER+ DCIS treated at a single institution from 2016-2017 with minimum 3-year follow-up were included. Patients were excluded if they had prior breast malignancy/DCIS, or missing receptor status and/or treatment information. Data was collected on patient demographics, tumor characteristics, local therapy, and recommendation and adherence to adjuvant therapy. Recommendation for ET was defined as referral to medical oncology and documented recommendation for ET. Recurrence was defined as any breast cancer event including DCIS.

Results: Of 265 patients with DCIS, 130 met study criteria. Most patients were non-Hispanic, White, and postmenopausal. Median age was 59 (range 34-86). Median DCIS span was 22 mm (range 0.6-94 mm), 93.8% were unifocal, and 51.5% were intermediate grade. Most patients underwent BCS (54.6%), followed by bilateral mastectomy (23.1%), then unilateral mastectomy (22.3%). Of the whole cohort, 91/130 (70%) patients were offered ET, including 62/71 (87.3%) who underwent BCS, 22/29 (75.9%) who had unilateral mastectomy, and 7/30 (23.3%) who had bilateral mastectomies. Of 91 patients recommended to take ET, 44 (48.3%) declined, 22 (24.1%) took ET for less than 5 years, and 25 (27.5%) took ET for 5 years. The mean duration of ET was 3.4 years (range 0-5 years). Factors associated with ET recommendation included BCS ($p < 0.001$) and recommendation for radiation after BCS ($p = 0.001$). Among patients undergoing BCS (Table 1), factors associated with ET uptake were higher BMI ($p = 0.008$), larger span of DCIS ($p = 0.032$), and receipt of radiation ($p=0.027$), while White race was associated with 5-year adherence to ET. At median follow up of 7.0 years (range 3.0-9.7 years), there were 15 (11.5%) recurrences with median time to recurrence of 3.8 years (range 0.9-7.3 years). Patients who took ET for any duration were less likely to recur than those who did not take ET (13.3% vs 86.7%, $p = 0.019$), and patients who declined ET were more likely to recur than those not offered ET (27% vs 2.6%, $p=0.002$). Among those patients who did not take ET, after adjusting for DCIS span, type of surgery, and radiation, those who declined ET were more likely to recur than those who were not offered ET (OR 23.87, 95% CI 2.6-451.77, $p = 0.01$).

Conclusions: In this series of patients with ER+DCIS, patient, tumor, and treatment factors were associated with provider recommendations for ET, patient uptake of ET, and ET adherence. While any duration of ET use was associated with lower recurrence rates, not all patients were offered ET. Prospective studies are needed to better understand how ET recommendations are made.

Table 1. Provider recommendations, patient uptake and adherence to endocrine therapy in patients undergoing breast-conserving surgery for ER+ DCIS

Table 1. Provider recommendations, patient uptake and adherence to endocrine therapy in patients undergoing breast conserving surgery for ER+ DCIS

	Recommended Endocrine Therapy				Uptake of Endocrine Therapy				5 Years of Endocrine Therapy			
	No (N = 9)	Yes (N = 62)	Total (N = 71)	p value	No (N = 28)	Yes (N = 34)	Total (N = 62)	p value	No (N = 12)	Yes (N = 22)	Total (N = 34)	p value
Patient Factors												
Age				p = 0.055				p = 0.790				p = 0.987
Median (Range)	69 (47 - 81)	62 (38 - 86)			63 (38 - 86)	62 (40 - 85)	62 (38 - 86)		62.5 (40 - 72)	62 (42 - 85)	62 (40 - 85)	
Race				p = 0.796				p = 0.266				**p = 0.020**
Black	11.1% (1)	8.1% (5)	8.5% (6)		14.3% (4)	2.9% (1)	8.1% (5)		8.3% (1)	0.0% (0)	2.9% (1)	
White	55.6% (5)	59.7% (37)	59.2% (42)		64.3% (18)	55.9% (19)	59.7% (37)		41.7% (5)	63.6% (14)	55.9% (19)	
Asian	22.2% (2)	14.5% (9)	15.5% (11)		7.1% (2)	20.6% (7)	14.5% (9)		16.7% (2)	22.7% (5)	20.6% (7)	
Other	0.0% (0)	11.3% (7)	9.9% (7)		10.7% (3)	11.8% (4)	11.3% (7)		33.3% (4)	0.0% (0)	11.8% (4)	
Choose not to answer	11.1% (1)	5.5% (4)	7.0% (5)		3.6% (1)	8.8% (3)	6.5% (4)		0.0% (0)	13.6% (3)	8.8% (3)	
Ethnicity				p = 0.700				p = 0.882				p = 0.302
Hispanic	11.1% (1)	8.1% (5)	8.5% (6)		7.1% (2)	8.8% (3)	8.1% (5)		16.7% (2)	4.5% (1)	8.8% (3)	
Non-Hispanic	77.8% (7)	87.1% (54)	85.9% (61)		89.3% (25)	85.3% (29)	87.1% (54)		83.3% (10)	86.4% (19)	85.3% (29)	
Unknown	11.1% (1)	4.8% (3)	5.6% (4)		3.6% (1)	5.9% (2)	4.8% (3)		0.0% (0)	9.1% (2)	5.9% (2)	
Menopausal Status				p = 0.465				p = 0.354				p = 0.063
Premenopausal	11.1% (1)	27.4% (17)	25.4% (18)		32.1% (9)	23.5% (8)	27.4% (17)		8.3% (1)	31.8% (7)	23.5% (8)	
Perimenopausal	0.0% (0)	3.2% (2)	2.8% (2)		0.0% (0)	5.9% (2)	3.2% (2)		16.7% (2)	0.0% (0)	5.9% (2)	
Postmenopausal	88.9% (8)	69.4% (43)	71.8% (51)		67.9% (19)	70.6% (24)	69.4% (43)		75.0% (9)	68.2% (15)	70.6% (24)	
Total Pregnancies				p = 0.671				p = 0.293				p = 0.486
None	22.2% (2)	29.0% (18)	28.2% (20)		35.7% (10)	23.5% (8)	29.0% (18)		16.7% (2)	27.3% (6)	23.5% (8)	
One or more	77.8% (7)	71.0% (44)	71.8% (51)		64.3% (18)	76.5% (26)	85.5% (53)		83.3% (10)	72.7% (16)	76.5% (26)	
Use of oral contraceptives				**p = 0.035**				p = 0.073				p = 0.717
Current	0.0% (0)	9.7% (6)	8.5% (6)		17.9% (5)	2.9% (1)	9.7% (6)		0.0% (0)	4.5% (1)	2.9% (1)	
Prior	22.2% (2)	35.5% (22)	33.8% (24)		25.0% (7)	44.1% (15)	35.5% (22)		50.0% (6)	40.9% (9)	44.1% (15)	
Never	77.8% (7)	53.2% (33)	56.3% (40)		57.1% (16)	50.0% (17)	53.2% (33)		50.0% (6)	50.0% (11)	50.0% (17)	
Unknown	0.0% (0)	1.6% (1)	1.4% (1)		0.0% (0)	2.9% (1)	1.6% (1)		0.0% (0)	95.5% (21)	97.1% (33)	
Use of hormone replacement therapy				p = 0.647				p = 0.723				p = 0.992
Current	22.2% (2)	11.3% (7)	12.7% (9)		14.3% (4)	8.8% (3)	11.3% (7)		8.3% (1)	9.1% (2)	8.8% (3)	
Prior	22.2% (2)	21.0% (13)	21.1% (15)		17.9% (5)	23.5% (8)	21.0% (13)		25.0% (3)	22.7% (5)	23.5% (8)	
Never	55.6% (5)	66.1% (41)	64.8% (46)		67.9% (19)	64.7% (22)	66.1% (41)		66.7% (8)	63.6% (14)	64.7% (22)	
Unknown	0.0% (0)	1.6% (1)	1.4% (1)		0.0% (0)	2.9% (1)	1.6% (1)		0.0% (0)	4.5% (1)	2.9% (1)	
Body Mass Index (kg/m²)				p = 0.779				**p = 0.008**				p = 0.578
Median (Range)	24 (19 - 38)	25 (17 - 65)			23 (17 - 33)	27 (17.66 - 65)	25 (17 - 65)		29 (17.66 - 36)	26 (19.18 - 65)	27 (17.66 - 65)	
Tumor Factors												
Span of DCIS (mm)				**p = 0.001**				**p = 0.032**				p = 0.146
Median (range)	7 (0.6 - 23)	15.5 (0 - 64)			10 (0 - 50)	18.5 (1 - 64)	15.5 (0 - 64)		27.5 (1 - 64)	15.5 (2 - 50)	18.5 (1 - 64)	
DCIS grade				p = 0.179				p = 0.470				p = 0.992
Low	33.3% (3)	12.9% (8)	15.5% (11)		7.1% (2)	17.6% (6)	12.9% (8)		16.7% (2)	18.2% (4)	17.6% (6)	
Intermediate	55.6% (5)	53.2% (33)	53.5% (38)		57.1% (16)	50.0% (17)	53.2% (33)		50.0% (6)	50.0% (11)	50.0% (17)	
High	11.1% (1)	33.9% (21)	31.0% (22)		35.7% (10)	32.4% (11)	33.9% (21)		33.3% (4)	31.8% (7)	32.4% (11)	
Multifocal				p = 0.500				p = 0.443				p = 0.453
Yes	0.0% (0)	4.8% (3)	4.2% (3)		7.1% (2)	2.9% (1)	4.8% (3)		0.0% (0)	4.5% (1)	2.9% (1)	
No	100.0% (9)	95.2% (59)	95.8% (68)		92.9% (26)	97.1% (33)	95.2% (59)		100.0% (12)	95.5% (21)	97.1% (33)	
Distance of closest margin				p = 0.334				p = 0.938				p = 0.881
≥2mm	88.9% (8)	74.2% (46)	76.1% (54)		71.4% (20)	76.5% (26)	74.2% (46)		75.0% (9)	77.3% (17)	76.5% (26)	
<2mm	11.1% (1)	25.8% (16)	23.9% (17)		28.6% (8)	23.5% (8)	25.8% (16)		25.0% (3)	22.7% (5)	23.5% (8)	
Genomic Testing				p = 0.500				p = 0.443				p = 0.453
Yes	0.0% (0)	4.8% (3)	4.2% (3)		7.1% (2)	2.9% (1)	4.8% (3)		0.0% (0)	4.5% (1)	2.9% (1)	
No	100.0% (9)	95.2% (62)	95.8% (71)		92.9% (26)	97.1% (33)	95.2% (59)		100.0% (12)	95.5% (21)	97.1% (33)	
Radiation												
Offered	55.6% (5)	85.5% (53)	90.6% (58)	p = 0.300	82.1% (23)	88.2% (30)	85.5% (53)	p = 0.498	91.7% (11)	86.4% (19)	88.2% (30)	p = 0.646
Received	80.0% (4)	79.2% (42)	79.3% (46)	p = 0.968	65.2% (15)	90.0% (27)	79.2% (42)	p = 0.027	100.0% (11)	84.2% (16)	79.4% (27)	p = 0.505

1987165 - Delayed axillary mapping in ductal carcinoma in situ using superparamagnetic iron oxide 2023-2024: A single institution experience

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Background/Objective: Delayed sentinel lymph node biopsy (SLNB) is made possible by using superparamagnetic iron oxide (SPIO). This study is a continuation from a previous study reviewing outcomes of delayed SLNB following SPIO injection in patients with DCIS undergoing mastectomy.

Methods: In this retrospective, cross-sectional study, we reviewed medical records of all patients who underwent mastectomy for a diagnosis of DCIS who received SPIO injection from January 2023 to August 2024 at a single institution. Clinical and demographic data was collected, including age at diagnosis, family history, genetic mutation status, pathology, and need for SLNB.

Results: A total of 78 patients underwent mastectomies for DCIS from January 2023 to August 2024. All patients were female. Mean patient age was 54 (range 29-78 years). The average span of DCIS was 40.5 mm. The most common reasons for mastectomy were diffuse extent of disease (54% of patients) and patient choice (18% of patients). The most common mastectomy type was skin sparing mastectomy (45%), and 82% of patients underwent immediate reconstruction. Of the cohort, 95% of the mastectomy specimens had pure DCIS (74/78) and 5% had invasive cancer (4/78). All four cases with upgrade to invasive cancer underwent a delayed sentinel lymph node biopsy. Of these, only 1 patient had sentinel lymph nodes that were positive for carcinoma.

Conclusions: Only 5% of patients in our single institution cohort study required delayed SLNB due to upgrade to invasive cancer after mastectomy for biopsy proven DCIS. Using SPIO during mastectomy can help prevent upfront SLNB in patients diagnosed with DCIS undergoing mastectomy and facilitates delayed SLNB in patients found to have underlying invasive cancer.

1986933 - Payer and patient costs associated with upfront Sentinel Lymph Node Biopsy vs delayed Sentinel Lymph Node Biopsy for patients undergoing mastectomy for Ductal Carcinoma In Situ

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Background/Objective: Current guidelines recommend sentinel lymph node biopsy (SLNB) for patients with ductal carcinoma in situ (DCIS) who require a mastectomy. Superparamagnetic iron oxide, with its long injection window, enables a delayed SLNB to be performed only when it is necessary enabling approximately 78.7%1 of patients with high-risk DCIS to avoid unnecessary surgery. The objective of this study is to elucidate the costs associated with upfront SLNB versus delayed SLNB for DCIS patients undergoing mastectomy from both the payer and patient perspectives.

Methods: The Merative MarketScan Commercial Claims Database was used to analyze costs associated with mastectomy and SLNB. Women with DCIS who underwent a mastectomy and had one year of continuous insurance enrollment following initial DCIS diagnosis and following mastectomy between January 2017 and January 2024 were included. The sample was stratified into two groups: women who underwent mastectomy and SLNB on the same day (mastectomy + SLNB cohort), and women who underwent mastectomy but did not undergo SLNB (mastectomy-only cohort). Total cost, insurance cost, and patient cost were extracted for the day of mastectomy, 30 days post-mastectomy, and one year post-mastectomy for both cohorts. ICD-9 and ICD-10 codes were used to identify DCIS diagnoses. CPT codes were used to identify procedures of interest.

Results: Inclusion criteria was met by 8,551 women. Mastectomy occurred a median of 49 days after the initial DCIS diagnosis. Of these 8,551 patients, 6,977 (82%) had an SLNB within one year of the mastectomy, with 6,888 (99%) of SLNB procedures occurring on the same day as mastectomy (mastectomy + SLNB cohort). The remaining 1,574 (18%) patients did not have an SLNB procedure code within one year of mastectomy (mastectomy-only cohort). On the day of mastectomy, median total cost was higher for the mastectomy + SLNB cohort ($30,638) as compared to the mastectomy-only cohort ($26,079) (Table 1). This cost difference remained consistent for 30 days post-mastectomy yet widened when looking at a full year of costs post-mastectomy. Insurance cost and patient cost were both higher for the mastectomy + SLNB cohort as compared to the mastectomy-only cohort across all time horizons. The median total cost of delayed SLNB was approximated to be $1,482. As ~21.3% of DCIS patients undergoing mastectomy would require delayed SLNB, an additional $316 per patient would be added to the delayed SLNB pathway with a total cost of $26,395 for the delayed SLNB pathway compared with $30,638 for upfront SLNB.

Conclusions: Delayed SLNB presents an opportunity to eliminate unnecessary axillary surgery for approximately 78.7% of women with high-risk DCIS undergoing mastectomy. In addition to the clinical benefits and reduced surgical morbidity, this analysis demonstrates that delayed SLNB also leads to a reduction in healthcare costs for both payers and patients. Future research should work to understand the key cost drivers, including those associated with lymphedema morbidity and management, associated with upfront SLNB versus delayed SLNB.

Table 1 - Costs associated with mastectomy and SLNB for DCIS patients

Table 1. Costs associated with mastectomy and SLNB for DCIS patients

Patient cohort		On day of mastectomy		1 month post mastectomy		1 year post mastectomy	
		Median	IQR	Median	IQR	Median	IQR
Mastectomy + SLNB cohort (n=6,888)	Total cost	$30,638	$16,782 - $52,265	$36,032	$20,061 - $59,637	$76,196	$41,533 - $133,283
	Insurance cost	$29,503	$15,783 - $51,247	$34,804	$19,051 - $58,568	$73,111	$38,862 - $129,885
	Patient cost	$300	$0 - $1,442	$495	$59 - $1,675	$2,554	$1,175 - $4,486
Mastectomy-only cohort (n=1,574)	Total cost	$26,079	$13,389 - $48,232	$31,585	$16,177 - $55,788	$66,502	$33,825 - $128,076
	Insurance cost	$25,618	$12,919 - $47,135	$30,628	$15,373 - $54,436	$63,243	$31,706 - $123,717
	Patient cost	$102	$0 - $992	$240	$21 - $1,292	$2,146	$960 - $4,111

1988584 - Correlation between metastasis initiating cancer cells and DCIS risk categories

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Background/Objective: Dissemination and seeding of metastasis initiating cancer cells (MICs) in distant organs have been identified as a source for distant metastases in invasive breast cancer (IBC) and have been previously isolated in this patient population. However, isolation of MICs in ductal carcinoma in situ (DCIS) patients has been variable. Using a validated, commercially available tumor genomic biomarker profile (DCISionRT) which incorporates clinicopathologic factors, DCIS patients are stratified into risk categories: low, elevated, and residual risk type (RRt). We therefore assessed the relationship of DCIS risk categories and MICs compared to IBC patients in a pilot clinical study.

Methods: An IRB-approved, single-center study collected bone marrow (BM) samples of breast cancer (BC) patients undergoing surgery. This subset of patients included those with clinical DCIS or IBC. Patients with preoperative DCIS pathology underwent DCISionRT testing. The BM aspirates were processed for red blood cells lysis and MICs were isolated by immunomagnetic negative selection and EpCAM-based immunomagnetic enrichment. The isolated MICs were quantified and confirmed for cancer cell phenotype by histopathology. The statistical analysis was performed with GraphPad Prism. P value was calculated using one-tailed Mann–Whitney test.

Results: A total of 59 patients underwent BM aspiration at time of primary surgery, 22 of which had DCIS and 37 had IBC on preoperative pathology. Of the DCIS patients, 59% had MICs (>400) present in BM: 33.3% of low risk patients, 37.5% of elevated risk and 100% of RRt. Of the 6 low risk DCIS patients, 1 (16.7%) was noted to have microinvasive disease on final pathology while 3 of the 8 elevated risk patients (37.5%) were upgraded, 2 with microinvasive pathology and 1 with invasive. Of the 8 RRt patients, 4 (50%) had evidence of invasion: 3 microinvasive and 1 invasive. In comparison, 75.7% of the 37 IBC patients had >400 MICs (84.2% of the 19 IBC patients that received neoadjuvant chemotherapy [NACT] and 66.7% of the 18 IBC patients that were untreated.

Conclusions: MICs were more likely to be isolated from DCIS patients with RRt than those in low and elevated risk categories (P = 0.0293), correlating to a subset of DCIS patients who are known to have a higher rate of ipsilateral breast recurrence (IBR) after standard of care therapy. These RRt patients also had a higher proportion of invasion on final pathology, and rates of MIC isolation comparable to IBC patients vs other DCIS risk categories. This ongoing work highlights the potential of MICs as another tool to stratify DCIS patients and as a potential predictor for risk of upstaging DCIS to invasive disease on final pathology. Continued work in this area is needed to understand the significance of MICs in relation to IBR and recurrent metastatic BC in both DCIS and IBC patients.

Table 1: Relationship of MICs and Risk Categories

	0-400 MICs	>400 MICs
low risk (n=6)	4 (66.7%)	2 (33.3%)
elevated risk (n=8)	5 (62.5%)	3 (37.5%)
RRT (n=8)	0 (0%)	8 (100%)
IBC, untreated (n=18)	6 (33.3%)	12 (66.7%)
IBC, neoadjuvant (n=19)	3 (15.8%)	16 (84.2%)

1986348 - A National Cancer Database investigation on predictors of upstaging from ductal carcinoma in situ on biopsy to invasive breast cancer on surgical pathology: does hormone receptor status play a role?

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Background/Objective: The management of ductal carcinoma in situ (DCIS) is evolving with ongoing clinical trials investigating the role of active surveillance versus surgical management for these patients. However, risk factors associated with upstaging from DCIS on biopsy to invasive disease on surgical pathology must be understood to safely de-escalate care and appropriately formulate treatment plans. Currently, reflex testing of hormone receptor status on biopsy-proven DCIS prior to surgical intervention is not a universally accepted practice. The purpose of this study was to identify risk factors associated with upstaging of biopsy-proven DCIS to invasive disease with particular attention to hormone receptor status.

Methods: The National Cancer Database (NCDB) was queried for female patients 18 years or older with DCIS (cTis) who underwent curative-intent oncologic surgery between 2004-2020. Hormone receptor positive (HR+) DCIS was defined as estrogen and/or progesterone receptor positive disease (immunohistochemical stain >/=1%). Upstaging to invasive disease was defined as pT1 or greater or >pN0 disease on surgical pathology. Univariate and multivariate logistic regression were performed to identify risk factors predictive of upstaging to invasive disease.

Results: A total of 22416 patients were included. Median age was 61 (IQR 52-70). Most patients were White (77.6%) while 14.0% were Black and 8.4% were listed as 'Other.' The majority (87.3%) had HR+ disease. Median pathologic tumor size was 10mm (IQR 5-20). Histologic grade was reported as 1 in 18.5% (n=4141), 2 in 49.7% (n=11143) and 3 in 31.8% (n=31.8). Of the included patients, 6661 (29.72%) were found to have upstaging to invasive disease on surgical pathology. There was a trend towards lower rates of upstaging to invasive disease over time (2004-2007: 74.4%; 2008-2011: 64.2%; 2012-2015: 58.0%; 2016-2019: 20.8%; p< 0.001). Hormone receptor negative (HR-) DCIS was associated with an increased rate of upstaging compared to HR+ DCIS (35.4% vs 29.3%, p< 0.0001). HR- DCIS patients were more likely to have high grade disease (72.3% vs 26.0%, p< 0.001) and larger pathologic tumor size (mean 3.16cm vs 2.29cm, p< 0.001) compared to HR+ patients. Of those with upstaged disease, 15.6% had >N0 disease. After controlling for grade and tumor size on multivariate analysis, hormone receptor negative status remained independently associated with increased upstage to invasive disease (OR 1.77; 95%CI: 1.59-1.98, p< 0.001).

Conclusions: Upstaging of biopsy-proven DCIS to invasive breast cancer on surgical pathology is common, occurring in 29.7% of patients included in the NCDB. Hormone receptor negative status is independently associated with increased risk of upstaging to invasive disease. As we continue to redefine the management of DCIS, knowing a patient's hormone receptor status, in addition to other clinicopathologic factors, may help clinicians to risk-stratify patients and inform treatment decision making. Future investigation into survival and recurrence outcomes related to hormone receptor status in upstaged DCIS will be pursued.

1986580 - Cost containment analysis of superparamagnetic iron oxide (SPIO) injection in patients with ductal carcinoma in situ (DCIS): a continuation study of a single-institution experience

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Background/Objective: Research has demonstrated that Superparamagnetic Iron Oxide [SPIO (Magtrace®)] is both safe and effective for delayed sentinel lymph node biopsy (SLNB). Current guidelines recommend up-front lymph node biopsy for DCIS patients undergoing mastectomy. There is increased cost and risk associated with up-front axillary surgery, and only a small proportion of DCIS patients (5-21%) will ultimately be upgraded to invasive cancer, making SLNB necessary in only a minority of patients undergoing mastectomy for DCIS.1,2,3 This study aims to assess cost savings associated with using SPIO and delayed SLNB compared to the traditional technetium-99 lymphatic tracer and upfront SLNB in patients with DCIS undergoing mastectomy.

Methods: A total of 119 patients underwent mastectomy with Magtrace® injection for biopsy-proven DCIS were included in a single institution retrospective analysis from January 2021 to August 2024. All patients received an injection of SPIO prior to surgery. Cost data for total charges of SPIO injection and delayed SLNB as well as technetium-99 and upfront SLNB were obtained from our institution's financial department for all those patients undergoing mastectomy for DCIS. Statistical comparisons were made using descriptive statistics and cost-containment analysis.

Results: Among the 119 patients who received SPIO, six (5%) required a return to the operating room for a delayed SLNB due to upgrade to invasive disease on final pathology. The total average cost per patient for use of SPIO and planning for delayed axillary surgery is $771.78 while the total average cost per patient of technetium-99 injection for upfront SLNB is $1,068.06. Despite the need for delayed SLNB in 6 patients, the use of SPIO resulted in an average total cost savings of $2,700.44 per patient compared to traditional upfront SLNB with technetium-99. Performing delayed SLNB with SPIO, resulted in a total cost reduction of $389,758.47 for 113 patients that would have otherwise undergone upfront SLNB.

Conclusions: The use of SPIO for delayed SLNB in patients with DCIS undergoing mastectomy significantly reduces overall costs and risks associated with axillary surgery while maintaining safety and efficacy. These findings support the adoption of SPIO in the treatment of DCIS, particularly for cost containment and reduction of morbidity from axillary surgery. Future studies should explore long-term outcomes and broader applications of this technique.

1988014 - The traditional key feature in DCIS shared decision-making, histologic grade, is unreliable: central vs local pathologist inter-observer reproducibility analysis in a prospective trial

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Background/Objective: 20% to 30% of patients with Ductal Carcinoma in-situ (DCIS) who undergo a lumpectomy alone will recur within 10 years without adjuvant radiation, which reduces the risk of recurrence by half. Since these trials demonstrate no survival advantage, the primary treatment goal for DCIS is to prevent development of invasive breast cancer. Unlike individualized adjuvant treatment decisions for invasive breast carcinoma, DCIS radiation treatment recommendations still rely on traditional clinicopathologic features, especially grade 3 vs grade 1-2. National Comprehensive Cancer Network (NCCN) guidelines criteria require nuclear grade 1-2 to identify low-risk patients for consideration of omission of radiotherapy or accelerated partial breast irradiation (APBI) treatment. Reliable grade assessment for every patient is critical for shared decision-making until a tumor-specific, validated biomarker is widely utilized. However, nuclear grade concordance studies have demonstrated significant inter-observer variability. This study assesses the concordance of nuclear grade reported for patients in the prospective PREDICT 7-gene biosignature clinical utility study, compared to a central pathology review with consensus assessment.

Methods: Concordance of nuclear grade reported by pathologists from individual sites in the PREDICT 1 study was compared to nuclear grade from a central pathology review with consensus (PreludeDx). During central review, nuclear grade was assessed independently by two pathologists, and when scoring differed, a third pathologist was used to obtain a consensus result. Concordance was reported for grade 1 or 2 vs grade 3.

Results: Nuclear grade was compared for 924 archived patients. Overall, 24% of patients (226/924) had discordant scoring of nuclear grade between clinical sites and central review. Of the 68% (627/924) of patients defined grade 1-2 by clinical sites, 16% (98/627) were assessed as grade 3 by central review, while 43% of patients (128/297) assessed as grade 3 by clinical sites were assessed as grade 1 or 2 by central review.

Conclusions: This study demonstrates that nuclear grade assessment has poor concordance among pathologists. Given nuclear grade is a prognostic factor for local relapse, the reliability of the assessment of nuclear grade for individual patients is inadequate, particularly given the reliance on this pathologic factor in treatment guidelines. Use of nuclear grade as part of assessing “low-risk” will lead to misclassification of patient risk and under- or over-treatment. Due to the discordance of nuclear grading, use of additional methods such as an individualized, validated biomarker may better inform shared decision-making for DCIS patients, as has been utilized for invasive breast cancer for over a decade.

1987948 - Nipple-sparing mastectomy is safe for the management of ductal carcinoma in situ

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Background/Objective: The use of nipple-sparing mastectomy (NSM) for the surgical treatment of breast cancer has increased in recent decades. The safety of this approach for patients with ductal carcinoma in situ (DCIS) is understudied. This study aims to investigate the rate of recurrence after NSM compared to skin-sparing and simple mastectomy techniques (non-NSM) and to evaluate risk factors for recurrence in patients who undergo mastectomy for DCIS.

Methods: Patients who underwent mastectomy for DCIS between 2007 and 2021 were identified from a prospectively maintained institutional database. Demographic, clinicopathologic, and treatment characteristics were compared between patients who underwent NSM and those who underwent non-NSM. Recurrence-free survival (RFS), including both locoregional and distant recurrence, was compared between the two groups using Kaplan-Meier curves and the log-rank test. Risk factors associated with recurrence were determined using univariate and multivariable Cox regression analysis.

Results: Two-hundred ninety-four patients underwent mastectomy for DCIS; 123 (41.8%) underwent NSM. Patients in the NSM group were younger (median age 47 years versus 51 years, $p< 0.001$), had less extensive DCIS (median 1.9cm versus 3.6cm, $p< 0.001$), less often had a partial mastectomy (PM) as the first operation (46/123 patients, 37.4% versus 101/171 patients, 59.1%, $p< 0.001$), required fewer reoperations for close or positive margins if PM was the first operation (median 0 versus 1, $p< 0.001$) and more frequently underwent bilateral mastectomy (91/123 patients, 74.0% versus 104/171 patients, 60.2%; $p=0.02$)(Table 1). Eight of 294 patients (2.7%) had positive mastectomy margins, including 3/123 (2.4%) in the NSM group and 5/171 (2.9%) in the non-NSM group. Management of the positive margins in the NSM group included re-excision to negative margins in 2 (66.7%) and no additional treatment in 1 (33.3%); the non-NSM group were managed with re-excision in 1 (20.0%), radiation in 1 (20.0%), and no additional treatment in 3 (60.0%). At a median follow-up of 96 months, 7/123 patients (5.7%) in the NSM group experienced disease recurrence compared to 5/171 patients (2.9%) in the non-NSM group. Isolated local recurrence occurred in 9/294 patients (3.1%), including 5/123 (4.1%) after NSM, 2 involving the nipple, and 4/171 (2.3%) after non-NSM. Two of 123 patients (1.6%) experienced simultaneous local and distant recurrence after NSM, and 1/171 patient (0.58%) experienced an isolated distant recurrence after non-NSM. The 5-year and 10-year RFS were 95.9% and 94.3%, respectively, in the NSM group compared to 97.7% and 97.7% in the non-NSM group ($p=0.12$). On multivariable analysis, younger age (HR:0.91, 95%CI:0.84-0.99, $p=0.03$) was associated with increased risk of recurrence, while having undergone bilateral mastectomy trended toward a decreased risk (HR:0.29, 95%CI:0.08-1.04, $p=0.06$), though did not reach statistical significance. NSM (HR:2.13 95%CI:0.60-7.49, $p=0.24$), DCIS size (HR:1.07, 95%CI:0.93-1.22, $p=0.34$), and PM as first operation (HR:1.75 95%CI:0.47-6.59, $p =0.41$) were not associated with recurrence risk.

Conclusions: Patients with DCIS treated with NSM were younger and had less extensive disease than those who had non-NSM. Recurrence rates were low and similar between groups. Preservation of the

nipple areolar complex, if clear of disease, can be offered as a safe approach for the management of DCIS.

Table 1

Characteristics	All patients (n=294)	Non-NSM (n=171)	NSM (n=123)	p-value
Age at diagnosis (median, range)	49 (25-82)	51 (33-82)	47 (25-75)	<0.001
History of contralateral breast cancer, (n, %)	15 (5.1)	12 (7.0)	3 (2.4)	0.107
DCIS size (median, range)	2.7 (0.0-29.9)	3.6 (0.0-29.9)	1.9 (0.0-15.1)	<0.001
DCIS grade, (n, %)				0.902
- 1	24 (8.3)	15 (8.8)	9 (7.5)	
- 2	108 (37.1)	62 (36.3)	46 (38.3)	
- 3	159 (55.0)	94 (55.0)	65 (54.2)	
Comedo necrosis (n, %)	75 (27.0)	39 (23.5)	36 (32.1)	0.130
Partial mastectomy as first operation (n, %)	147 (50.0)	101 (59.1)	46 (37.4)	<0.001
Number of re-operations for margin <2mm after partial mastectomy (median, range)	0 (0-4)	1 (0-4)	0 (0-4)	<0.001
Bilateral mastectomy (n, %)	194 (66.0)	103 (60.2)	91 (74.0)	0.018
Estrogen receptor positive, (n, %)	245 (87.8)	146 (89.0)	99 (86.1)	0.464
Progesterone receptor positive (n, %)	210 (75.5)	121 (74.2)	89 (77.4)	0.574
Adjuvant endocrine therapy (n, %)	28 (9.6)	21 (12.3)	7 (5.7)	0.071
Adjuvant radiation (n, %)	5 (1.7)	2 (1.2)	3 (2.5)	0.653
Reconstruction				0.098
- None	44 (15.0)	32 (18.8)	12 (9.8)	
- Implant	218 (74.4)	121 (71.2)	97 (78.9)	
- Flap	31 (10.6)	17 (10.0)	14 (11.4)	

1988697 - Diagnostic Timelines, Patient Attitudes, and Clinical Presentation and Treatment of Women ≤40 with DCIS: A Prospective Cohort Study

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Background/Objective: Introduction: Ductal carcinoma in situ (DCIS) is commonly detected in older women on screening mammography. However, the diagnostic journey for very young women with DCIS remains poorly understood. We aim to examine the pathway from symptom presentation to diagnosis for women ≤ 40 with DCIS.

Methods: Methods: We analyzed DCIS patients ≤40 from the Reducing the bUrden of Breast Cancer in Young Women (RUBY) study, a prospective cohort with over 1500 young women from across Canada enrolled at the time of diagnosis. Patient-reported questionnaires were used to determine prior screening practices, presenting symptoms, time to seek care, healthcare providers seen, and knowledge of DCIS at diagnosis. Imaging, diagnostic evaluation, surgery, pathology, radiation, and systemic therapy were also collected. Descriptive statistics were used to summarize results.

Results: Our cohort included 107 pure DCIS patients ≤40. Most patients presented symptomatically (69.5%), including palpable mass (50.5%), pain (27.1%), nipple discharge (15.9%), skin changes (9.3%) or dimpling (6.5%). Screening detected 18.1%, and 10.5% were detected incidentally on imaging for unrelated reasons i.e., breast pain and cancer found elsewhere. On average, patients waited 7.9 weeks before seeking medical attention; 34.2% sought care immediately, 34.2% were unconcerned thus delayed care, and 20.3% waited for a menstrual cycle. The majority presented to their family physician (73.4%), followed by a walk-in clinic (16.5%) or to an emergency department (1.3%). Half were seen within one week of requesting an appointment (51.9%), with only 10.1% waiting >4 weeks; most felt that their access to care was fast or reasonable (77.2%). Mammogram (87.9%) and ultrasound (80.4%) were the primary diagnostic imaging modalities used; the majority were diagnosed on core needle biopsy (86.9%). Median clinical size preoperatively on imaging/exam was 2.4 cm. Surprisingly, 38.3% had staging investigations; CT chest, abdomen, and pelvis (24.3%) was most common, followed by bone scan (25.2%) and PET-CT (3.7%) (Table 1). Prior to surgical consultation, 57.1% of patients reported limited or no knowledge of general breast cancer treatment. Many used the internet (55.1%) and media (51.4%) as information sources. Most patients were aware of the use of surgery (89.7%), chemotherapy (72.9%), radiation (79.4%), but less about hormonal treatment (34.6%). Prior to seeing the surgeon, 27.6% preferred breast preservation, 35.2% wanted the surgeon's advice, and 34.3% preferred removal of one or both breasts. Ultimately, 28% of patients had breast-conserving surgery and 72% had mastectomy, of which 58.9% underwent reconstruction. Final pathology results correlated with pre op assessment with a median size of 2.0 cm (Table 1).

Conclusions: Young women diagnosed with DCIS present symptomatically. With the lack of screening in women under 40 and limited patient knowledge, increasing awareness for both patients and physicians on the presentation and staging of DCIS in young women is essential for optimal care. Further follow up is needed to better understand the long term outcomes of this unique population.

Table 1. Presenting characteristics, diagnostic evaluation, treatment, and pathology for 107 YWBC with DCIS

Category		Frequency (%)
A: Presentation and healthcare interactions		
First detected by	Symptomatic	73 (69.5)
	Routine screening (i.e. mammogram or MRI)	19 (18.1)
	Incidental finding on investigations for another problem	11 (10.5)
	Found on routine breast exam	2 (1.9)
Presenting symptoms	Lump	54 (50.5)
	Pain	27 (27.1)
	Nipple discharge	17 (15.9)
	Skin changes	10 (9.3)
	Skin dimpling/puckering	7 (6.5)
	None	27 (25.2)
Average weeks before seeking medical attention		7.9
Time waited to be seen by a physician after calling for an appointment	< 1 week	41 (51.9)
	1-2 weeks	27 (34.2)
	3-4 weeks	3 (3.8)
	> 4 weeks	8 (10.1)
Reason for timing of seeking medical attention after initial symptom onset	I sought attention right away	27 (34.2)
	I thought I would wait a menstrual cycle to see if it would go away	16 (20.3)
	I was not really worried about it	27 (34.2)
	I had difficulty accessing timely care	5 (6.3)
	I was concerned, but was reassured that it was likely benign	3 (3.8)
	I put of seeking care to deal with other priorities	1 (1.3)
Type of physician first seen	Regular family physician	58 (73.4)
	Walk-in clinic doctor	13 (16.5)
	Emergency room doctor	1 (1.3)
	Specialist in a Breast Centre/Cancer Centre	2 (2.5)
	Surgeon	2 (2.5)
	Other medical doctor	3 (3.8)
B: Diagnostic and pathology modality		
Diagnostic breast imaging modality	Mammogram	94 (87.9)
	MRI	33 (30.8)
	Ultrasound	86 (80.4)
Mean clinical tumour size, mm (SD)		32.6 (28.0)
Method of pathological diagnosis	Core needle biopsy	93 (86.9)
	Fine needle aspiration	5 (4.7)
	Lumpectomy or other surgery	9 (8.4)
Did patient have staging investigation	Yes	41 (38.3)
	No	63 (58.9)
	Unknown	3 (2.8)
Investigations completed	CT chest/abdomen/pelvis	26 (24.3)
	CT brain	1 (0.9)
	Bone scan	27 (25.2)
	PET-CT	4 (3.7)
	MRI non-breast location	3 (2.8)
	Chest X-ray	8 (7.5)
	Abdomen US	4 (3.7)
C: Surgical treatment plan		
Final surgery	Mastectomy	77 (72.0)
	Breast conserving surgery	30 (28.0)
Mastectomy after breast conserving surgery	Yes	16 (15.0)
	No	30 (28.0)
Reconstruction completed	Yes	63 (58.9)
	No	44 (41.1)
Immediate reconstruction done	Yes	59 (93.7)
	No	3 (6.3)
Received radiation treatment	Yes	49 (45.8)
	No	58 (54.2)
Received systemic hormonal therapy	Yes	26 (24.3)
	No	81 (75.7)
Highest tumour grade reported	I	1 (1.9)
	II	12 (22.2)
	III	34 (63.0)
	Not reported	7 (13.0)
Maximum reported dimensions, mm, median [Q1,Q3]		20.0 [8.0,46.0]
Final margin status	Positive	13 (14.8)
	Negative	73 (83.0)
	Cannot be assessed	2 (2.3)

1988935 - Interferon Signaling Pathways may play a Central Role to Invasive Progression of DCIS: Detailed Correlation Analysis of High-Risk DCIS with Age and Molecularly Matched Invasive Breast Cancers

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Background/Objective: High-risk features of DCIS (Ductal Carcinoma in situ) for progression to IDC (Invasive Ductal Carcinoma) include young age, large size, palpable, high grade, hormone receptor (HR) negative, or HER2 receptor (HER2) positive disease, and comedo-necrosis. Why do some DCIS lesions grow to become large and palpable but, nevertheless, remain in situ lesions? To answer this question, we created a cohort of large (≥5 cm) DCIS with at least one high-risk feature (DEFENSE cohort: DCIS Elaboration of Factors from Enlarged lesions that Nevertheless remain Stage 0 Entities) and compared their molecular profiles to molecular subtype matched Stage 2/3 IDC from the I-SPY TRIAL.

Methods: 74 cases of IDC were molecularly matched with 52 large high-risk DCIS cases based on age at diagnosis, HR/HER2 status, and molecular subtypes (MammaPrint, BluePrint) using the Optmatch package in R (Table 1). Leveraging gene expression data (Agilent 44K Microarray) from pre-treatment biopsies, we generated 50 Hallmark Molecular Signatures DataBase and 58 immune and stromal xCell Tumor Micro-Environment (TME) signature scores using single-sample gene set enrichment analysis (ssGSEA). We calculated the pair-wise Spearman correlations of both Hallmark and TME signature scores (n=1,225 and n= 1,653 signature pairs respectively) in each cohort and then compared the correlation structure of these signature scores between DCIS and IDC using the Differential Gene Correlation Analysis (DGCA). Significant differences in the correlation of signature pairs between cohorts were defined at adjusted p-value < 0.05.

Results: ssGEA and DGCA reveal significant changes in the correlation structures of 54 Hallmark and 23 TME signature pairs analyzed between the DCIS and IDC cohorts. In particular, Hallmark Interferon (IFN)-alpha and gamma pathways correlate positively in DCIS and negatively in IDC with cancer hallmark pathways such as (1) Wnt/Beta-Catenin signaling, (2) TGF-beta signaling, (3) epithelial-mesenchymal transition, (4) angiogenesis, and (5) down-regulation of UV response. In the TME, there is a positive correlation in DCIS and a negative correlation in IDC between (1) pericyte and overall immune score (R=0.38 vs. -0.41), (2) lymphatic endothelial and overall immune score (R=0.45 vs. -0.33), and (3) overall stroma score and CD4+ memory T cells (R=0.31 vs. -0.39). In contrast, we saw no correlation between macrophage M1 and T gamma delta cells in the DCIS cohort and a positive correlation in the IDC cohort (R=0.04 vs. 0.8).

Conclusions: Our analysis of the Hallmark pathway and TME signatures identified potential functional relationships between cancer and immune pathways, notably the IFN pathways. We observed shifts in their co-regulation patterns between large high-risk DCIS and IDC. Our findings suggest a key role for IFN signaling and immune cell dynamics in host prevention vs. permissive DCIS invasion. This potentially explains the positive response to immunomodulatory intratumoral injections for high-risk DCIS by shifting the balance toward a host-protective environment. We will

further explore the differences among luminal vs. HER2+/basal DCIS, where the immune infiltrates differ significantly.

Table 1. Matching characteristics of 52 DCIS DEFENSE cases and 74 IDC I-SPY 2 counterparts

Group	Subtype	Cases	Age Range	Percent
DCIS	Basal type	3	49-72	5.77
DCIS	HER2-type	21	32-78	40.4
DCIS	Luminal A-type	13	38-88	25
DCIS	Luminal B-type	15	30-64	28.8
IDC	Basal type	15	39-68	20.3
IDC	HER2-type	18	33-69	24.3
IDC	Luminal A-type	8	38-78	10.8
IDC	Luminal B-type	33	30-68	44.6

1967988 - Net zero or net gain: Comparison of conventional clinical models and a multigene assay to assess DCIS risk in a prospective single center study

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Background/Objective: Ductal carcinoma in situ (DCIS) is a preinvasive breast cancer typically treated with surgery followed by adjuvant therapy. While there is consensus this results in overtreatment, there is little agreement on criteria for de-escalating therapy. Two freely available prediction models, Van Nuys Prognostic Index (VNPI) and Memorial Sloan Kettering Nomogram (MSK-N), are commonly used to stratify DCIS risk based on clinicopathological features. Oncotype DX DCIS Score (DS) is a relatively newer, commercially available tissue-based multigene assay , but its use is currently limited due to cost and unclear added value to safely identify low-risk DCIS. In this study, we compared these tests' agreement in estimating DCIS ipsilateral breast recurrence (IBR) risk and potential to de-escalate therapy.

Methods: As part of a prospective single-center trial, we analyzed 38 patients with newly diagnosed pure DCIS confirmed at excision. Each risk assessment tool was performed for all patients. Oncotype DX reports both a raw DCIS score (0-100) categorizing IBR risk as either low, intermediate, or high and a DCIS refined risk score (DRRS) incorporating clinicopathologic features reporting a 10-year IBR risk (%). The VNPI calculates a raw score (4-12) and assigns an IBR risk category (low, intermediate, high). MSK-N calculates 10-year IBR risk (%). The tests were dichotomized as low vs. not-low risk categories using the following thresholds: DS = low (0-38), DRRS ≤ 10% IBR risk, VNPI risk category = low (4-6), MSK-N ≤ 10% IBR risk. Agreement of the 4 models was assessed using Spearman's rank correlation (r) and percent agreement.

Results: The average 10-year IBR risk by DRRS and MSK-N were 24±11% and 20±5% respectively. A minority of patients were identified as low risk according to DS (37%), DRRS (8%), VNPI (3%) and MSK-N (0%). DS, DRRS, and VNPI were moderately correlated with each other ($r=0.32$-0.45, $p< 0.048$ for each pairwise comparison). MSK-N was moderately correlated with VNPI ($r=0.323$, $p=0.48$) but uncorrelated with DS or DRRS ($r < 0.09$, $p >0.58$). Based on DS, 37% of patients could be considered low risk, while only 0-8% were classified as low risk by any other scores. With a median follow-up of 3.6 years, there were no IBR events.

Conclusions: The strongest correlation was observed between VNPI and DRRS scores ($r=0.49$) both which include clinicopathologic features followed by the correlation between DS and DRRS ($r=0.45$). The Oncotype DX DCIS raw score categorized the most lesions as low risk, but the addition of age and tumor size to create the refined score categorized more patients as non-low risk, decreasing the proportion of patients available for consideration of de-escalation of therapy. Overall, all assays classified most patients as non-low risk including the use of a more costly multigene assay; however, the addition of clinicopathologic features to DS decreased the number of patients for whom therapy may be de-escalated.

Table 1. Correlation and agreement between risk scores (N = 38)

Table 1. Correlation and agreement between risk scores (N = 38).

		Spearman's Correlation		Low Risk		Percent
Score 1	**Score 2**	**r**	**P-value**	**Score 1**	**Score 2**	**Agreement ***
VNPI	DS	0.32	**0.048**	1 (3%)	14 (37%)	25 (66%)
VNPI	DRRS	0.49	**0.002**	1 (3%)	3 (8%)	34 (89%)
VNPI	MSK-N	0.32	**0.048**	1 (3%)	0 (0%)	37 (97%)
DS	DRRS	0.45	**0.005**	14 (37%)	3 (8%)	27 (71%)
DS	MSK-N	0.08	0.63	14 (37%)	0 (0%)	24 (63%)
DRRS	MSK-N	0.09	0.58	3 (8%)	0 (0%)	35 (92%)

VNPI (Van Nuys Prognostic Index); DS (DCIS Score); DRRS (DCIS Refined Risk Score); MSK-N (Memorial Sloan Kettering Nomogram); DCIS (ductal carcinoma in situ); CI (confidence interval); *Agreement is based on the binary classification of low risk vs. intermediate or high risk.

1932053 - Human Ductal Carcinoma in Situ: Mechanism of Early Dissemination and Metastasis

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Background/Objective: Ductal Carcinoma In Situ (DCIS) is a proliferation of neoplastic cells confined to the breast's ductal system. Traditional practice has emphasized early detection and treatment of DCIS to prevent progression into invasive carcinoma. Evidence from numerous studies challenges the previously well-accepted theory that invasion is a prerequisite for metastasis. Furthermore, although local therapy has been shown to reduce local recurrence, it has not been shown to reduce breast cancer mortality. This highlights that additional factors influence metastasis and mortality. This study aims to elucidate intrinsic cell factors such as stemness and Tumor Microenvironment of Metastasis (TMEM) doorways that contribute to metastasis. Sharma et al evaluated the role that inherent cell stemness plays in metastasis. A higher density of cancer stem cells (CSC) were identified near macrophage-containing intravasation sites named TMEM doorways. Enrichment of CSC occurred when they interacted with TMEMs. A direct association was noted between the number of doorways and the number of cancer cells expressing markers of stemness. This data showcased the role of TMEMs both as gateways for metastasis and as CSC programming sites. Recently, several algorithms have been developed for predicting cellular stemness from single-cell (sc) RNA sequencing (sc-RNA-seq) data. CytoTRACE is a computational method that predicts the differentiation state of cells from sc-RNA-seq data. CytoTRACE employs the number of detectably expressed genes per cell, or gene counts per cell to determine the developmental potential of cells.

Methods: To study the mechanisms by which some DCIS become invasive and metastatic, while others remain non-invasive, we created the Mice INtraDuctal (MIND) models. MIND involves intraductal injection of patient-derived cells into the mammary ducts. MIND enables the study of the natural progression of non-invasive to invasive and metastatic breast cancer transition, thus enabling the identification of biomarkers of aggressive DCIS. We utilized MIND models and patient DCIS with known metastatic outcomes to examine whether stemness and TMEM doorways predicted DCIS with invasive and metastatic potential.

Results: Patient-derived DCIS cells from 37 samples were transplanted into 202 xenografts using the MIND method, and 54% showed invasive progression, while 46% remained non-invasive. Sc-RNA-seq was performed on 60,000 cells derived from 17 DCIS samples (9 that showed invasive progression and 8 that remained non-invasive). CytoTRACE analysis of Sc-RNA sequencing data showed that stemness scores were significantly higher in progressed compared to non-progressed DCIS cells.

Conclusions: CytoTrace analysis of Sc-RNA sequencing data identified that progressed DCIS cells show significantly higher scores of stemness than non-progressed DCIS cells. Future studies are aimed at performing spatial transcriptomics, CytoTRACE analysis and TMEM scoring on 20 patient DCIS samples with known metastasis outcomes with cohort-matched patients with DCIS without metastasis. We will evaluate whether TMEM doorways, cell-mediated interactions, and intrinsic cell

stemness contribute to evidence of distance metastasis through mechanisms other than direct invasion. The proposed study will help elucidate mechanisms that contribute to metastasis and determine whether these processes account for breast cancer mortality. Furthermore, the development of appropriate molecular markers and therapeutic targets predictive of breast cancer mortality should facilitate tailored strategies for treatment and improved outcomes.

Disparities

1975172 - Impact of race on pathologic complete response to neoadjuvant HER2-directed therapy

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Background/Objective: Rates of pathological complete response (pCR) in Black women with HER2-positive tumors are reported to be 10-30% lower than for patients of other races. We sought to evaluate differences in pCR rates by race in a contemporary cohort of HER2-positive patients treated with neoadjuvant chemotherapy (NAC) with HER2-directed therapy.

Methods: Patients with HER2-positive breast cancer receiving neoadjuvant HER2-directed therapy with subsequent surgery from 2017-2021 were identified from a prospectively maintained database. We included patients with Stage I-III HER2+ breast cancer (by IHC or FISH), who received NAC with trastuzumab +/- pertuzumab. Race was self-reported. Patients were excluded if race was not recorded. pCR was defined as ypT0/TisN0 or ypT0N0. We compared patients by race category to identify differences in pCR.

Results: A total of 500 patients were included. Of these, 81 were Asian (16.2%), 73 were Black (14.6%) and 346 were White (69.2%). At presentation, there were no significant differences in patient or tumor characteristics by race. The median patient age was 50.1 years (IQR 41.9-59.4), 53.0% were peri-or post-menopausal, 76.2% had cT1/2 tumors, 52.2% were N1, and 66.8% were ER-positive (Table 1). All but 10 patients (98.0%) received both trastuzumab and pertuzumab, and 378 patients (75.6%) received regimens containing adriamycin, cyclophosphamide, and a taxane (ACT). Overall, 264 (52.8%) patients achieved pCR when defined as ypT0/TisN0, including 43 Asian (53.1%), 39 Black (53.4%) and 182 White patients (52.6%). When defined as ypT0N0, pCR was achieved in 199 patients (39.8%). There were no statistically significant differences in pCR by race using either definition (ypT0TisN0 $p>0.9$, ypT0N0 $p=0.9$). pCR (ypT0/TisN0) varied by estrogen receptor (ER) status, with 149 of 334 ER+/HER2+ patients achieving pCR (44.6%), whereas 115 of 166 ER-/HER2+ patients achieved pCR (69.3%). Within each ER status group, there were no statistically significant differences in pCR by race (ER-positive $p=0.8$, ER-negative $p>0.9$).

Conclusions: In contrast to prior studies, we found no statistically significant differences in pCR rates across race groups, even when accounting for differing definitions of pCR or ER status. Further studies are warranted to understand how the interactions between race, biology, and social determinants of health may account for the varying reports on the impact of race on the efficacy of systemic therapy.

Table 1

	All (n=500)	White (n=346)	Black (n=73)	Asian (n=81)	p-value
Age (Median [IQR])	50.8 [41.9-59.4]	50.1 [41.5-59.6]	51.0 [41.9-56.7]	51.5 [44.5-60.7]	0.3
Menopausal status					>0.9
Premenopausal	235 (47.0%)	161 (46.5%)	36 (49.3%)	38 (46.9%)	
Peri-/Post-menopausal	265 (53.0%)	185 (53.5%)	37 (50.7%)	43 (53.1%)	
Clinical T stage					0.9
T0/Tis	8 (1.6%)	7 (2.0%)	0 (0%)	1 (1.2%)	
T1/T2	381 (76.2%)	265 (76.6%)	55 (75.3%)	61 (75.3%)	
T3/T4	111 (22.2%)	74 (21.4%)	18 (24.7%)	19 (23.5%)	
Clinical N stage					0.066
N0	217 (43.4%)	148 (42.8%)	29 (39.7%)	40 (49.4%)	
N1	261 (52.2%)	188 (54.3%)	37 (50.7%)	36 (44.4%)	
N2/N3	22 (4.4%)	10 (2.9%)	7 (9.6%)	5 (6.2%)	
Overall clinical stage					0.12
I	27 (5.4%)	24 (6.9%)	2 (2.7%)	1 (1.2%)	
II	380 (76.0%)	258 (74.6%)	54 (74.0%)	68 (84.0%)	
III	93 (18.6%)	64 (18.5%)	17 (23.3%)	12 (14.8%)	
ER status					0.081
ER+	334 (66.8%)	242 (69.9%)	44 (60.3%)	48 (59.3%)	
ER-	166 (33.2%)	104 (30.1%)	29 (39.7%)	33 (40.7%)	
Chemotherapy regimen					
ACT	378 (75.6%)	266 (76.9%)	52 (71.2%)	60 (74.1%)	
Other taxane-based regimen	119 (23.8%)	77 (22.3%)	21 (28.8%)	21 (25.9%)	
Other	3 (0.6%)	3 (0.9%)	0 (0%)	0 (0%)	
HER2-directed regimen					
Trastuzumab	10 (2.0%)	6 (1.7%)	3 (4.1%)	0 (0%)	
Trastuzumab and pertuzumab	490 (98.0%)	340 (98.3%)	70 (95.9%)	81 (100%)	
Surgical procedure					0.8
Mastectomy	300 (60.0%)	206 (59.5%)	48 (65.8%)	46 (56.8%)	
Lumpectomy	198 (39.6%)	138 (39.9%)	25 (34.2%)	35 (43.2%)	
Axillary surgery only	2 (0.4%)	2 (0.6%)	0 (0%)	0 (0%)	
pCR (ypT0/TisN0)	264 (52.8%)	182 (52.6%)	39 (53.4%)	43 (53.1%)	>0.9
ER+/HER2+ (n=334)*	149/334 (44.6%)	111/242 (45.9%)	18/44 (40.9%)	20/48 (41.7%)	0.8
ER-/HER2+ (n=166)*	115/166 (69.3%)	71/104 (68.3%)	21/29 (72.4%)	23/33 (69.7%)	>0.9
pCR (ypT0N0)	199 (39.8%)	136 (39.3%)	31 (42.5%)	32 (39.5%)	0.9

Percentages noted are fractions of each race category unless otherwise noted.
*Percentages are calculated based on number of patients of each race within each ER status category.

1980326 - Racial Disparities in Male Breast Cancer Outcomes: An Analysis of the SEER Database

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Background/Objective: Male breast cancer accounts for less than 1% of all new breast cancer cases in the United States, presenting across all income levels and regions. While racial disparities in male breast cancer outcomes have been reported, there is a paucity of data over the last five years. This study aims to evaluate recent trends in male breast cancer outcomes and to assess disparities across race.

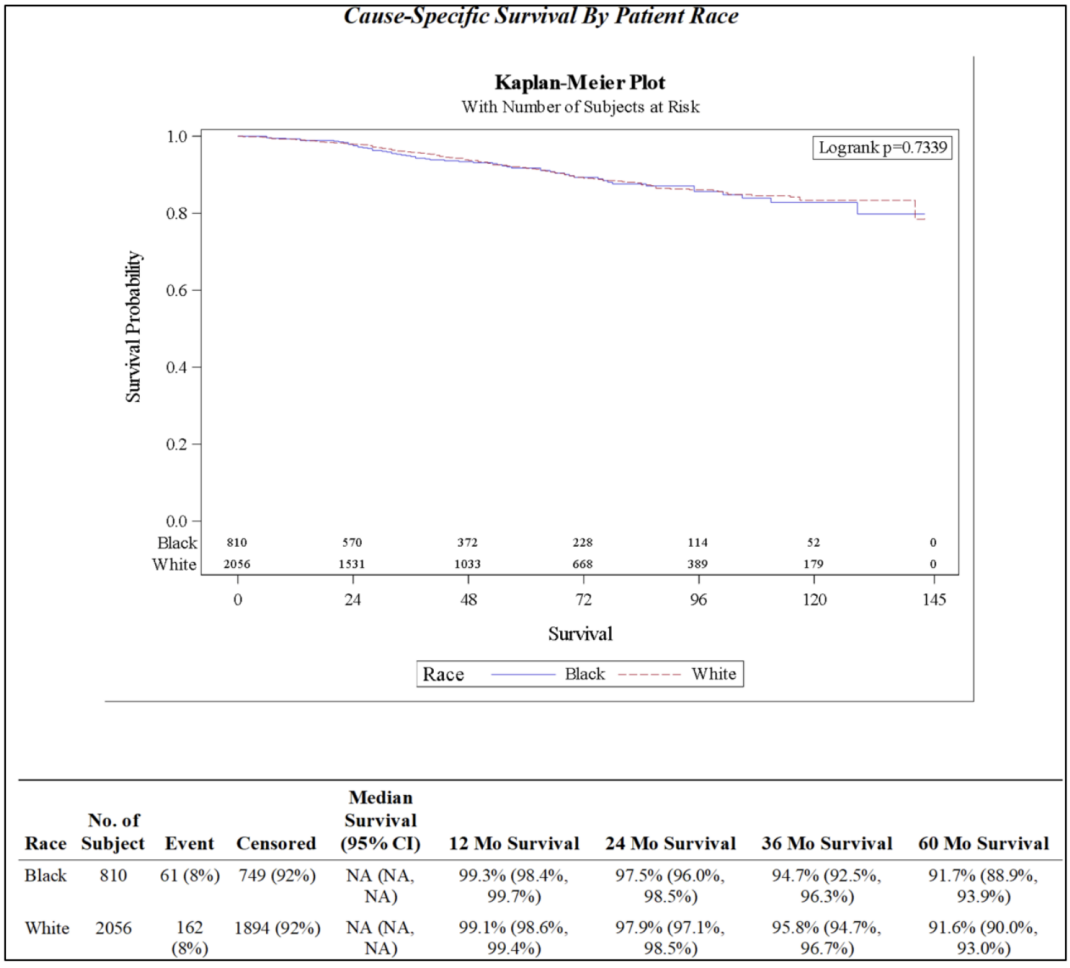
Methods: The National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) database was queried for all new male invasive breast cancers from 2010-2021. Studied variables included age, receptor subtype, stage, time to treatment, surgery, chemotherapy, and radiation. Data were stratified by race, defined as "White" and "Black." Patients of Asian/Pacific Islander, American Indian, and unknown ancestry were excluded. Categorical variables were analyzed with Pearson's chi square and numerical variables with one-way ANOVA. Multivariable logistic regression was performed after stratifying by residence in lower-income (<$70,000/year) versus higher-income (>$70,000/year) areas. Survival statistics included relative and cause-specific survival, which were reported as Kaplan-Meier curves.

Results: A total of 3188 male breast cancer patients were identified (28.6% Black, 71.4% White). Black patients were more likely to be diagnosed under age 50 (17.5% vs 8.0%, P< 0.001). There were no significant differences in rates of localized or regional disease (P=0.35). Black patients were more likely to have estrogen receptor (ER) negative (4.2% vs 1.7%, P< 0.001) and progesterone receptor (PR) negative (12.4% vs 7.5%, P< 0.001) disease. There was no significant difference in Her2-positive status between groups (11.8% Black vs 11.1% White, P=0.61). Time to treatment was significantly longer in Black patients (median 28 days vs 24 days, P< 0.001). There were no significant differences in the type of breast surgery, with 77.8% of Black patients and 80.7% of White patients undergoing mastectomy (P=0.15). There were no significant differences in extent of axillary surgery (P=0.12) or rate of nodal positivity (P=0.15). Black patients had a significantly higher rate of chemotherapy (42.0% vs 37.0%, P=0.01). There was no significant difference in adjuvant radiation therapy (33.4% Black vs 32.1% White, P=0.51). With multivariable logistic regression, there were no significant differences between lower-income Black and White patients. Black higher-income patients had increased odds of PR-negative disease compared to White higher-income patients (OR 1.51, P=0.03). There were no significant differences in 5-year relative survival (88.2% Black vs 86.5% White, P=0.83, Figure) or cause-specific survival (91.7% Black vs 91.6% White, P=0.73).

Conclusions: Black male breast cancer patients were more likely to present at younger ages and with hormone receptor-negative breast cancer compared to White patients. Black male patients were more likely to receive chemotherapy and time to treatment was longer. Despite this, no differences in breast

or axillary surgery, nodal positivity, or 5-year survival were observed between White and Black males. While these survival findings are encouraging, additional investigation is needed to understand the differences in tumor biology and presentation among male breast cancer patients. Propensity score matching would also allow better understanding of male breast cancer outcomes in Asian/Pacific Islander and American Indian patients in future studies.

Figure: 5-year cause-specific survival by race



Race	No. of Subject	Event	Censored	Median Survival (95% CI)	12 Mo Survival	24 Mo Survival	36 Mo Survival	60 Mo Survival
Black	810	61 (8%)	749 (92%)	NA (NA, NA)	99.3% (98.4%, 99.7%)	97.5% (96.0%, 98.5%)	94.7% (92.5%, 96.3%)	91.7% (88.9%, 93.9%)
White	2056	162 (8%)	1894 (92%)	NA (NA, NA)	99.1% (98.6%, 99.4%)	97.9% (97.1%, 98.5%)	95.8% (94.7%, 96.7%)	91.6% (90.0%, 93.0%)

1981934 - Black Patients Identified at a Higher Risk of Delays in Receiving Timely Surgical Management as the First Line of Treatment for Breast Cancer.

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Background/Objective: Several studies have demonstrated that delays in surgical treatment of breast cancer are associated with worsened survival outcomes and increased mortality. Despite recognizing the significance of timely surgical management, there is still a subset of the population who experience delays at receiving surgical care. The Commission on Cancer (CoC) National Cancer Data Base quality metric established in 2022 requires that for patients with AJCC Clinical Stage I-III breast cancer, the first therapeutic surgery in a non-neoadjuvant setting is performed within 60 days of diagnosis. Our objective was to identify demographic and socio-economic factors associated with increased intervals from diagnosis to surgical care and to determine our compliance with this CoC quality metric.

Methods: We completed a retrospective review using our institutional Breast Cancer Registry identifying all patients with age 18 or older diagnosed with Stage I-III breast cancer between 2012–2022 who underwent surgery as first-line treatment modality. Patients who received neoadjuvant systemic therapy were excluded. We categorized patients based on timing from diagnosis to surgery and further stratified them based on their demographics to identify characteristics associated with an increased interval from diagnosis to surgery greater than the current CoC standard quality metric of 60 days. Categorical data is presented as frequencies and percentages and compared using Chi-squared or Fisher's-exact tests as applicable. Multiple logistic regression was used to assess the effect of each characteristic after controlling for confounders. Significance level was set at 0.05. Analysis was performed with SAS software 9.4 (Cary NC).

Results: A total of 1,304 patients were included. The median age was 62. Most patients had surgery within the standard of 60 days from diagnosis (79.7%), the overall median was 46 days. Notably, the average time to surgery in 2012 was 36 days and in 2022 was 70 days. Importantly, Black patients were 45% less likely to have received surgery within 60 days of diagnosis when compared to White patients. Regarding insurance status, Medicare patients were found to have the highest rate of receiving surgery within 60 days followed by Private insurance patients (85% and 78%, respectively). However, no significant difference was found based on insurance status among the cohort when controlling for patient's characteristics, this was also the case when we analyzed insurance status within the Black population subgroup.

Conclusions: This analysis identified that Black patients are at increased probability of waiting more than 60 days for primary surgical management of breast cancer. These results are consistent with previously described health disparities among Black patients who are recognized as the most vulnerable population, not only regarding diagnosis delays but also at higher risk of delays to receiving standard and timely breast cancer care. It is paramount to start engaging more with our communities, advocating for improved healthcare for our minorities and to start closing the gap that unfortunately continues to increase despite outstanding advances in the field. Additionally, the notorious delays encountered during 2022 may reflect coronavirus pandemic effects (resolution of non-emergent surgeries affecting/adjusting surgery times) but are unable to be determined within the scope of this analysis.

Table 1: Multiple logistic regression estimates for effect of patient characteristics on time to surgery.

Effect	Adjusted Odds Ratio (95 % Confidence Interval)	p-value
Age group		
≥ 60 vs 18-59	1.65 (1.17 – 2.34)	0.0048
Race		
Black vs White	0.55 (0.36 - 0.84)	0.0053
Other vs White	0.75 (0.26 -2.25)	0.6170
Primary Payer at Diagnosis		
Not insured vs Private	0.98 (0.30 - 3.18)	0.9705
Medicaid vs Private	0.91 (0.50 - 1.64)	0.7466
Medicare vs Private	1.21 (0.81 - 1.81)	0.3474
Unknown vs Private	0.66 (0.42 - 1.05)	0.0786

1972482 - A Retrospective Analysis of Behavioral Impacts of Breast Cancer Genetic Testing in the Hispanic Population

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Background/Objective: As genetic testing for breast cancer becomes more accessible, an increasing number of high-risk patients are facing complex decisions regarding whether to pursue frequent screening or prophylactic surgical measures. Hispanic patients, in particular, are more vulnerable to suboptimal outcomes in breast cancer treatment due to disparities in healthcare access, socioeconomics, language barriers, and cultural stigmas. This study investigates the demographic and clinical factors influencing treatment decision-making among genetically positive Hispanic patients diagnosed with breast cancer, aiming to identify specific drivers behind their treatment choices.

Methods: A single-institution Institutional Review Board-approved retrospective review was conducted using a breast oncology database. Patients diagnosed with breast cancer between October 2021 to date, who completed genetic testing as their preoperative workup, were included. The analysis focused on patients with positive genetic testing results. Data collected included age at testing, preferred language, genetic testing results, family history of breast cancer, insurance status, treatment decision, and follow up status. Statistical analyses, including logistic regression, chi-square, and T-tests, examined the impact of these factors on patients' treatment selection, categorized as prophylactic surgery, versus high-risk imaging screening.

Results: Out of 368 breast cancer patients, 54 (14.6%) with a pathogenic mutation were included in the analysis. Patients had a mean age of 51.4 (21-74 years) and mean BMI of 30.0 (15.7-63.6); 87.3% were Hispanics, with a majority being uninsured (65%) and Spanish-speaking (62.5%). Genetics Testing results were significant for the following mutations: BRCA2 (33.3%), BRCA1 (16.7%), ATM 9.3%, PALB2 (7.4%), CDKN2A (7.4%), CHEK2 (5.6%), PMS2 (3.7%), NF1 (3.7%), TP53 (1.85%), TPP1 (1.85%), AXIN2 (1.85%), BRIP1 (1.85%), SHDB (1.85%), MUTYH (1.85%), and HOXB13 (1.85%). Insured patients were more likely to select high risk imaging screening (54.5%), while uninsured patients demonstrated a preference for prophylactic mastectomies (52%) with statistical significance ($p=0.045$). Spanish-speaking patients selected breast conservative surgery more frequently (25%) than English speakers (8.3%), though language preference was not a statistically significant predictor of treatment choice in logistic regression ($p=0.589$). Logistic regression revealed family history as a near-significant predictor (coefficient=-1.447, $p=0.053$), with those having a family history of cancer less likely to choose prophylactic mastectomies. Age showed a trend toward prophylactic surgery selection in multinomial regression (Coefficient=0.080, $p=0.085$) and a near-significant association in a T-test comparing surgery and non-surgery groups (T-statistic=1.82, $p=0.076$). BMI did not significantly impact treatment choice ($p=0.981$).

Conclusions: A critical finding in this study was the role of insurance status in influencing treatment choice. This retrospective review suggests that uninsured patients, likely limited by financial constraints, are inclined to pursue one-time, definitive surgical interventions over ongoing screening, which may incur recurrent costs and access barriers. The preference for surgery among uninsured patients underscores the need to address financial barriers and provide culturally sensitive counseling to facilitate informed and sustainable treatment choices. Our findings highlight the complex interplay

of genetic, demographic, and socioeconomic factors in cancer treatment decisions, with implications for tailoring patient-centered care strategies for Hispanic patients at high risk for breast cancer.

1987534 - Disaggregation of Asian American Pacific Islander Data Reveals Heterogeneous Outcomes After Neoadjuvant Chemotherapy for Invasive HER2+ Breast Cancer

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Background/Objective: Asian American Pacific Islander patients (AAPI) have a higher risk of HER2-positive (HER2+) invasive breast cancer (IBC); however, the AAPI population is heterogeneous, with multiple cultural and socioeconomic differences amongst AAPI subgroups. This study evaluates the response of AAPI subgroups to neoadjuvant chemotherapy for HER2+ invasive breast cancer (IBC) to identify and address potential disparities within the AAPI population.

Methods: The National Cancer Database was queried from 2018-2020 for women with HER2+ IBC who received neoadjuvant chemotherapy followed by surgical excision. Patients were stratified by race, comparing White, AAPI, and Non-White Non-Asian (NWNA) patients, followed by AAPI subgroup analysis. Demographics, tumor and treatment characteristics were evaluated. The primary outcome was pathologic complete response (PCR). Bivariate and multivariate logistic regressions were performed to determine predictors of PCR.

Results: A total of 14,110 women with HER2+ IBC were identified. Of these, 75.1% were White, 18.0% were NWNA, and 6.8% were AAPI. Compared to White and NWNA patients, AAPI had the highest PCR rate at 43.3%, compared to 42.5% and 36.1% for White and NWNA patients, respectively ($p< 0.001$). However, upon disaggregation of AAPI subgroups, Filipino and Pacific Islander (PI) patients had lower PCR rates than White patients. PI patients, in particular, had the lowest PCR rate at 35.6%, lower than both White and NWNA patients ($p< 0.001$). While all other AAPI subgroups demonstrated higher PCR rates than White and NWNA patients, there remained significant variation; notably, Korean (K) patients had the highest PCR rate of all subgroups at 54.6% ($p< 0.001$). PI patients, who demonstrated the lowest PCR of all subgroups, were most likely to be above the median income and education levels but least likely to be treated at a high-volume center (all $p< 0.001$). They were most likely to have comorbidities, present with advanced clinical stage (29.6%, $p=0.006$), lymphovascular invasion (LVI) (29.2%, $p=0.045$), and have high rates of nodal involvement (50.0%, $p< 0.001$). PI patients had the longest interval to initiation of chemotherapy (40 days, $p< 0.001$). Meanwhile, Korean patients who demonstrated the highest PCR of all subgroups were also more likely to be above median income and education levels but were most likely to be treated at high-volume centers (K 85.4% vs PI 51.0%, $p< 0.001$). They were least likely to present with advanced clinical stage, nodal involvement, or LVI (all $p< 0.05$). Furthermore, they had the shortest interval to initiation of chemotherapy (28 days, $p< 0.001$). On multivariate analysis, nodal involvement, LVI, and time to initiation of chemotherapy were negative predictors of PCR (all $p< 0.05$). Ethnic subgroup was not in itself an independent predictor of PCR.

Conclusions: While aggregate analysis of AAPI with HER2+ IBC demonstrates higher PCR than White and NWNA patients, disaggregation reveals a variable response to chemotherapy amongst AAPI patients. The contrast between PI and Korean patients, with PCRs spanning White and NWNA patients, highlights disparities amongst AAPI patients. Increasing awareness of these differences

amongst AAPI subgroups allows for targeted interventions to mitigate disparities in the treatment of HER2+ IBC which may impact individual patient outcomes.

Table 1: Pathologic complete response of women with HER2+ IBC after neoadjuvant chemotherapy

	White	Chinese	Japanese	Filipino	Korean	SE Asian	Indian	PI	Vietnamese	NWNA	
	n=10,582	n=118	n=41	n=161	n=55	n=27	n=151	n=59	n=56	n=2,535	**p-value**
PCR, n (%)	4507 (42.5%)	64 (53.3%)	20 (48.8%)	60 (37.3%)	30 (54.6%)	13 (48.2%)	68 (45.0%)	21 (35.6%)	28 (50.0%)	918 (36.1%)	<0.001

1986627 - Mastectomy Rates and Survival Gaps in Rural Breast Cancer Patients

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Background/Objective: Randomized trials from the 1970-80s comparing breast conservation therapy (BCT: breast conservation surgery plus radiation) with mastectomy demonstrated equivalent survival outcomes for breast cancer (BC). Consequently, both BCT and mastectomy have traditionally been offered to patients with BC, with counseling emphasizing their comparable oncological outcomes. However, modern retrospective data challenges this view, suggesting that BCT may be associated with improved survival. Rural patients experience healthcare disparities, including longer travel distances for cancer care. We hypothesized that rural patients have higher rates of mastectomy, which may contribute to worse survival outcomes.

Methods: We analyzed the National Cancer Database (2004–2020) to compare BC treatment patterns among rural, suburban, and metro patients. Variables included mastectomy, BCT, sentinel lymph node biopsy (SLNB), axillary lymph node dissection (ALND), and travel distance for care. Demographic, clinical, pathological, and treatment data were collected, with rurality classified by RUCA codes: rural (10), suburban (4–9), and metro (1–3). To assess overall survival and control for confounding variables, we applied a novel artificial intelligence (AI) eXtreme Gradient Boosting (XGB) 1:1 propensity matching and applied Cox proportional hazard regression to evaluate the impact of mastectomy and rurality on overall survival (hazard ratio, HR).

Results: We identified 3,690,015 patients with BC between 2004-2020. We found 51,518 rural, 395,182 suburban, and 3,145,255 metro patients with BC. ALND rates were higher in rural (16.4%) compared to metro patients (13.9%, $p < 0.001$). SLNB rates were higher in metro (33.2%) compared to rural patients (31.1%, $p < 0.001$). BCT was performed in 69.4% of metro patients, while 30.6% received mastectomy. This distribution differed significantly for rural patients, where BCT was performed 65.7% of the time and mastectomy 34.3% ($p < 0.001$). Logistic regression revealed that doubling the travel distance increased the rates of mastectomy by 10.2% and increased ALND rates by 2.8% respectively ($p < 0.01$). To assess the effect of BCT vs. mastectomy on overall survival by location, we used AI XGB 1:1 propensity matching. Among mastectomy patients, non-metro location (rural and suburban) was significantly associated with poorer survival (HR: 1.26, 95% CI: 1.14–1.39, Fig. 1A). This association also held for BCT patients (HR: 1.30, 95% CI: 1.19–1.42, Fig. 1B), indicating poorer outcomes for non-metro patients regardless of surgery type. Among metro patients, BCT was associated with better survival than mastectomy (HR: 0.89, 95% CI: 0.87–0.91, Fig. 1C). Interestingly, in non-metro patients, BCT was associated with worse survival compared to mastectomy (HR: 1.19, 95% CI: 1.12–1.27, Fig. 1D).

Conclusions: In this U.S. hospital-based study, rural patients more frequently underwent mastectomy and ALND than suburban and metro patients. Using AI-driven XGB 1:1 propensity matching, we found that non-metro patients had worse overall survival than metro patients, irrespective of surgery type. While mastectomy was associated with poorer survival in metro patients, it unexpectedly correlated with better survival in non-metro patients. These findings underscore healthcare disparities in BC treatment and outcomes for non-metro patients, with the surprising survival benefit of mastectomy in this group warranting further investigations.

Figure 1

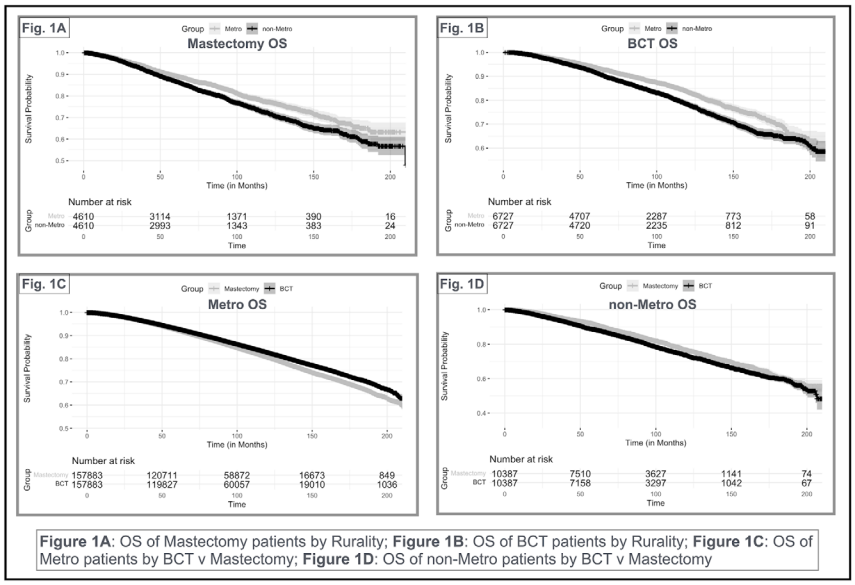

Figure 1A: OS of Mastectomy patients by Rurality; **Figure 1B**: OS of BCT patients by Rurality; **Figure 1C**: OS of Metro patients by BCT v Mastectomy; **Figure 1D**: OS of non-Metro patients by BCT v Mastectomy

1987821 - The Role of Mammography in Breast Cancer Screening of Transgender Patients

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Background/Objective: Very little is known regarding the performance and value of mammography in both transgender male and female patients. While the age to start and frequency of mammography for the general population is still a subject of debate, hormonal treatment in transgender patients may further affect the optimum schedule of mammography in this population. Additionally, procedures such as augmentation or mastectomy may further affect the performance and necessity of mammography. Currently, most recommendations regarding breast cancer screening in transgender patients are based on experts' opinions rather than the results of clinical trials.

Methods: We performed retrospective analysis of our transgender patient population at UCSD. After obtaining IRB approval, we conducted a keyword search on EPIC to identify transgender patients who received at least one mammographic evaluation of their breasts in our institution between 01/01/2010 and 01/01/2023. We reviewed their age, mammographic density (including the temporal changes in breast density when available), and the outcome of mammography in relation to hormonal treatment.

Results: Our search identified 56 transgender patients who were on at least one year of hormone-replacement therapy (HRT) and had received at least one mammographic evaluation. Of the 44 patients assigned male at birth (average age 52.5, range 28-73), the BI-RADS density by mammogram was as follows: 1 (2.3%) category A, 14 (31.8%) category B, 23 (52.3%) category C, and 6 (13.6%) category D. In the 23 of 44 patients who had more than one mammogram, 16 had steady density, 4 increased, 2 decreased, and 1 fluctuated. The remaining 12 patients were assigned female at birth (average age 42.6, range 25-72). The prevalence of each density was 1 (8.3%) category A, 6 (50.0%) category B, 3 (25.0%) category C, and 2 (16.7%) category D. Regarding the 4 of 12 patients that received multiple mammograms, 3 had steady density and 1 decreased.

Conclusions: Compared to the general population with approximately 10% BI-RADS category A, 40% category B, 40% category C and 10% category D density, we found transgender female (assigned male at birth) patients had a higher prevalence of heterogeneously and extremely dense breasts (category C and D) after a year or more of hormonal therapy. The difference in density between transgender patients and the general population is a multifactorial event that is at least affected by the young mean age of transgender patients, hormonal treatment, and procedures such as silicone injection. The majority of patients did not have a mammogram prior to starting HRT, so additional studies into mammogram density throughout treatment would provide a more comprehensive understanding of HRT-induced changes. With preliminary data showing higher average BI-RADS density, which is known to impede mammogram visibility, long-term research following transgender patients at multiple institutions is warranted to determine a proper schedule for screening mammography.

Table 1: Transgender Patient Population at UC San Diego

	N	%
Transgender Patient Population		
Total Patients	**56**	
Average Age at Last Mammogram	**50.36**	
Assigned Male at Birth		
Total Patients	**44**	**78.57**
Average Age at Last Mammogram	**52.48**	
Age Range	**28-73**	
Mammogram BI-RADS Density		
A: almost entirely fatty	1	2.27
B: scattered areas of fibroglandular density	14	31.82
C: heterogeneously dense	23	52.27
D: extremely dense	6	13.64
Multiple Mammograms	23	52.27
Increase	4	17.39
Decrease	2	8.70
Steady	16	69.57
Varied	1	4.35
Assigned Female at Birth		
Total Patients	**12**	**21.43**
Average Age at Last Mammogram	**42.58**	
Age Range	**25-72**	
Mammogram BI-RADS Density		
A: almost entirely fatty	1	8.33
B: scattered areas of fibroglandular density	6	50.00
C: heterogeneously dense	3	25.00
D: extremely dense	2	16.67
Multiple Mammograms	4	33.33
Increase	0	0.00
Decrease	1	25.00
Steady	3	75.00
Varied	0	0.00

1984398 - The Impact of Treatment at a Commission on Cancer (CoC)-Accredited Facility on the Receipt of Guideline Concordant Breast Cancer Care Varies by Rurality and Income

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Background/Objective: The American College of Surgeons Commission on Cancer (CoC) is the largest cancer center accreditation program in the US. The CoC aims to improve patient survival and quality of life through standardization of cancer care. Accredited facilities are required to report compliance with guideline concordant care. The extent to which CoC accreditation improves the quality and consistency of breast cancer treatment is not well understood. This study evaluates whether treatment at an accredited facility is associated with receiving guideline concordant breast cancer care, and whether these associations vary by geographic residence.

Methods: Using publicly available Surveillance, Epidemiology, and End Results (SEER) data, we identified female patients with a first, primary invasive breast cancer diagnosis (Stage I-III) from 2018-2020. Cases were analyzed to determine whether patients received evidence-based guideline concordant care; specifically, post-lumpectomy radiation therapy, combination chemotherapy in HR-/HER2+ or HR-/HER2- tumors, and post-mastectomy radiation in pN2+ disease. The primary exposure was treatment at a CoC facility. Patients were further stratified using Rural Urban Continuum Codes and median household income into three mutually exclusive subgroups of non-metro, low-income metro, and high-income metro. Linear probability regression modeling was used to estimate the association between treatment at a CoC facility and the probability of receiving guideline concordant breast cancer care, adjusting for SEER registry and patient and tumor factors.

Results: Of the 175,092 patients that met inclusion criteria, 83% (n= 144,540) received treatment at a CoC accredited facility (77% of non-metro, 81% of low-income metro, and 84% of high-income metro patients). The percentage of patients receiving treatment at an accredited facility varied by rurality and registry, from 43% of patients in non-metro New Mexico to 95% of Kentucky patients in high-income metro counties. Treatment at a CoC facility was associated with a higher probability of receiving guideline concordant post-lumpectomy radiation (Estimate= +14.6 percentage points (%-points), C.I.=[13.6-15.6]); combination chemotherapy (Est.= +8.8%-points, C.I.=[7.0-10.6]); and radiation therapy after mastectomy (Est.= +17.2%-points, C.I.=[13.7-20.7]). The association between treatment at a CoC facility and receipt of post-lumpectomy radiation was larger in non-metro and low-income metro counties compared to high-income metro counties (Est.= Non-Metro: +18.9%, C.I.= 15.8-22.0; Metro, Low-Income: +16.1%, C.I.= 14.1-18.1; Metro, High-Income: +12.5%, C.I.= 11.1-13.9). The association between treatment at a CoC facility and receipt of combination chemotherapy was larger in patients from low-income metro counties (Est.= +12.5%, C.I.= 9.4-15.6) compared to the association in patients from high-income metro counties (Est.= +6.2%, C.I.= 3.8-8.6). There were no differences in the positive association between treatment at a CoC facility and the probability of receiving post-mastectomy radiation by county subgroup (Non-Metro: +18.8%, C.I.= 8.6-29.0; Metro, Low-Income: +17.1%, C.I.= 10.8-23.4; Metro, High-Income: +16.5, C.I.= 11.4-21.6).

Conclusions: Breast cancer patients from non-metro and low-income metro communities were less likely to receive treatment at a CoC accredited facility but experienced the greatest impact of accreditation on receipt of guideline concordant care. Expanding access to standardized, high-quality treatment could help alleviate place-based breast cancer disparities.

1984758 - Breast Cancer Incidence in Patients Undergoing Chest Masculinization Surgery: A Scoping Review

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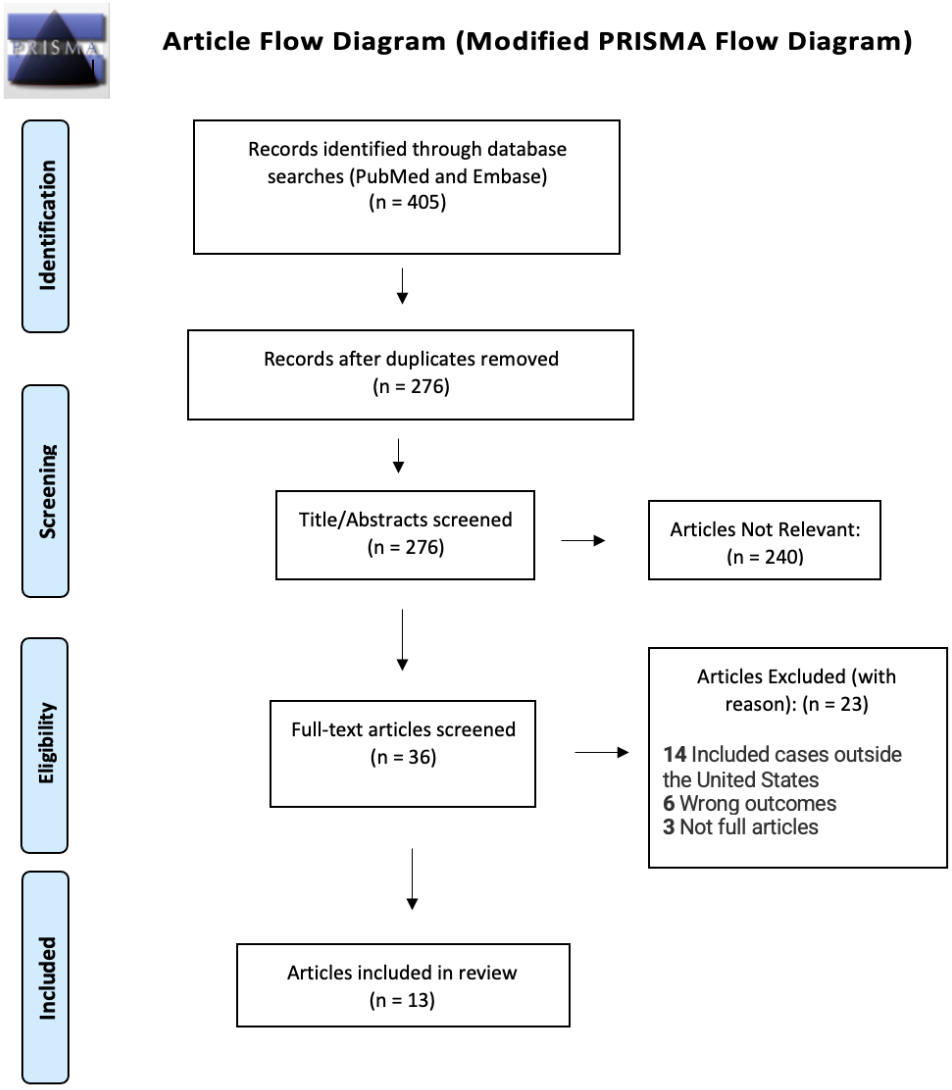
Background/Objective: The incidence of breast cancer (BC) cases in transgender males undergoing gender affirming mastectomy (GAM) and future BC risk for this population is not well established. This scoping review aimed to explore breast cancer incidence rates pre- and post-GAM in the United States.

Methods: Following the Arskey and O'Malley framework and in consultation with a health system librarian, the search was conducted in Embase and PubMed using keywords "gender affirming surgery" and "breast cancer." A total of 405 articles resulted from the initial search. All results were exported into the reference manager Zotero to remove duplicates and initial screening. Thirty-six articles were imported to Covidence for the screening and selection phase. Articles were limited to United States only and within the last 10 years.

Results: Thirteen articles were identified for final inclusion (11 observational/retrospective cohort studies and 2 case studies). Across all the included studies, a total of 42 cases of atypia, 6 cases of DCIS, 1 Paget's disease and 10 cases of invasive ductal carcinoma were reported. Nine studies reviewed routine GAM surgical specimens (N=3869 cases) identifying 42 cases of atypia, 5 cases of DCIS, 1 case of Paget's disease, and 3 invasive ductal carcinomas. Seven invasive carcinomas and 1 DCIS case were detected pre-GAM during screening and involved concurrent treatment from breast and plastic surgery teams.

Conclusions: Standardization and best practice screening protocols including breast imaging before GAM and performing pathology on specimens collected during GAM are needed. A shared decision making approach and clinical coordination including breast and plastic surgery for patients that receive a breast cancer diagnosis while pursuing GAM can help achieve oncologic and cosmetic goals. Patients post-GAM require education about future breast cancer screening needs including self-chest examinations, personal breast cancer risk scores, and chest imaging modalities.

Figure 1. PRISMA Flow Diagram



1985535 - Sexual Orientation and Gender Identity Impacts Surgical Decision-Making and Patient Experience: Insights from a Survey of Sexual and Gender Minority Patients with Breast Cancer

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[1]Nuvance Health, Poughkeepsie, NY [2]Medical College of Wisconsin, Milwaukee, WI and Medical College of Wisconsin Cancer Center, Milwaukee, WI, [3]Brigham and Women's Hospital, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA

Background/Objective: The experience and treatment choices for breast cancer in sexual and gender minority (SGM) populations have been underrepresented in breast cancer research. This survey-based study sought to better understand the intersection of SGM identity and breast cancer.

Methods: The WhySurg survey was modified with a breast cancer focus and distributed to SGM persons via social media platforms, breast cancer support groups, and clinic flyers between 2023–2024. Persons who identified as SGM, were age ≥18 older, and had a breast cancer history were eligible to participate in this voluntary and anonymous survey study. Descriptive and qualitative thematic analyses were performed.

Results: There were 50 survey responses, with 30 (60%) completing the survey. Of these 30, 23 (76.7%) respondents identified as cisgender women, 5 (16.7%) as nonbinary, and 2 (6.7%) were unknown gender. Respondent sexual orientation included 17 (56.7%) who identified as lesbian/gay/homosexual, 5 (16.7%) who identified as bisexual, 4 (13.3%) as queer, and 2 (6.7%) as pansexual. Six (20%) respondents were age ≤35 years old, 14 (46.7%) were 36–50, and 10 (33.3%) were 51–75. Breast cancers were detected by screening mammography in 15 (46.7%), by exam in 14 (46.7%), and 4 (13.3%) were symptomatic. Twenty-five (83.3%) had Stage I-III breast cancer, 4 (13.3%) had DCIS, and 1 (3.3%) participant had early-stage cancer but did not know their stage. Fifteen (50%) underwent radiation, 13 (43.3%) received endocrine therapy, and 10 (33.3%) of respondents had chemotherapy. Twenty-three (85.0%) underwent genetic testing and of those 4 (17.4%) had a pathogenic germline variant. Surgical treatment was with breast conservation in 14 (46.7%) respondents, bilateral mastectomy in 11 (36.7%), and unilateral mastectomy in 5 (16.6%). Fifteen (50%) respondents reported they had no form of reconstruction, 4 (13.3%) had flat aesthetic closure, and 1 (3.3%) underwent goldilocks reconstruction. 43.3% (n=13) of respondents stated that gender and/or sexual identity had an impact on surgical choice. Twelve (40.0%) respondents disclosed their SGM identity to their surgeon. Reasons for not disclosing SGM identity for the remaining respondents included not being asked (n=8, 26.7%), not believing it would factor into breast cancer treatment (n=2, 6.7%), and fear of discrimination or marginalization (n=2, 6.7%). Overall, 30% (n= 9) of respondents reported they experienced discrimination and/or marginalization related to their SGM identity. Qualitative thematic analysis (Table 1) of free-text responses identified that both perception of varying SGM identity and a prior interest in gender-affirming chest masculinization surgery supported the decision for some to undergo mastectomy with flat closure. Additionally, non-cisgender respondents reported frequent misgendering in clinical settings.

Conclusions: In this survey study of SGM persons with a prior breast cancer diagnosis, we identified that SGM identify is relevant to breast cancer treatment choices, especially regarding surgical decision-making. Furthermore, many respondents reported misgendering and discrimination which demonstrates the need for staff and clinician sensitivity training. Surgeons should be cognizant of

patient SGM identities to ensure incorporation into patient-centered shared decision-making in this minoritized population.

Figure 1: Qualitative Theme Analysis of Free-text Responses of Sexual and Gender Minority Persons with Breast Cancer Regarding Their Decision to Undergo Surgery and Reported Discrimination

Theme	Patient Quotes
Prior exploration/consideration of gender-affirming chest masculinization surgery supported and facilitated the decision to opt for a mastectomy with flat closure and provided dual benefit for gender-affirmation and breast cancer treatment.	"I have always had some **gender dysphoria with my large breasts so being** able to get a reduction felt very affirming..." "... **nonbinary and had always considered** top surgery.." "I had been **researching gender-affirming top surgery** closures for around 3 years prior to surgery"
Some respondents who identified as bisexual reported that due to their sexuality, their perception of options for physical body types was broader and it supported their decision to go flat.	**"**As a **bisexual woman that fluctuates my expression of gender from feminine to masculine..."** "...had I not been bisexual, I would not have understood that I could **present as breastless in a world that expects women to have breasts"**
Misgendering of respondents and feeling judged regarding their decision to go flat.	"...the receptionist **misgendered me as a man**... Then they both start laughing right in front of me. I felt humiliated." "**Misgendering**, assumptions that I am a woman" "My **surgeon was horrified** that I didn't want reconstruction"

Figure 1. Qualitative Theme Analysis of Free-text Responses of Sexual and Gender Minority Persons with Breast Cancer Regarding Their Decision to Undergo Surgery and Reported Discrimination

1988088 - Adherence to Guideline-Concordant Cancer Screening in Patients with High-Risk Genetic Mutations for Breast Cancer Receiving Care at a Safety-Net Hospital Compared to a Quaternary Care Hospital

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Background/Objective: Neighborhood-level social determinants of health (SDOH) have been shown to influence the rate of screening mammography and other aspects of cancer care. Safety net hospitals (SNHs) provide care to individuals who are primarily uninsured or covered through Medicaid and often live in areas with greater deprivation. The aim of this study was to characterize differences in cancer screening and risk-reducing surgery between two patient cohorts with known high-risk genetic mutations who received care at either a quaternary care hospital (QH) or a neighboring SNH.

Methods: Retrospective review of a prospectively maintained institutional genetics database was completed to identify patients with mutations at high risk for breast cancer. Patients were divided into a SNH cohort or a QH cohort based on care location. Adherence to gene-specific National Comprehensive Cancer Network screening guidelines (3.2024) was assessed using the electronic health record between August 26, 2019 and August 26, 2024. Patients were linked to neighborhood SDOH data from the American Community Survey and assigned an Area Deprivation Index (ADI) using residential address. Univariate analysis was performed to compare demographics between the two cohorts. Logistic regression was used to evaluate differences in screening lapses and receipt of prophylactic surgeries, including risk-reducing mastectomy (RRM) and risk-reducing salpingo-oophorectomy (RRSO) between locations while controlling for socioeconomic factors.

Results: A total of 701 patients were identified with a high-risk mutation during the study period. There were multiple significant differences in the SDOH factors between the SNH and QH cohorts. Notably, 58.7% of patients in the QH cohort lived in areas with low ADI ranks, meaning areas with less deprivation, compared to only 11.9% of patients in the SNH group ($p < 0.001$). 84.3% of QH patients had private insurance compared to 12.9% of SNH patients ($p < 0.001$). There were no differences in rates of cancer diagnosis or stage at diagnosis between the two groups. Overall, 53.5% of all patients experienced lapses in screening and only a third of patients had undergone RRM (31.1%) or RRSO (36.1%). On univariate analysis, QH patients had a higher rate of screening lapses (54.9% vs 48.0%, $p < 0.001$), but after controlling for patient-specific socioeconomic factors, no differences were seen rates of screening lapses (OR: 1.49 [95% CI 0.55-4.02]), RRM (OR: 1.60 [95% CI 0.38-6.80]), or RRSO (OR: 0.37 [95% CI 0.09-1.46]). On multivariate analysis, younger age, higher national ADI rank, and lack of insurance remained associated with higher likelihood of screening lapses (Table 1).

Conclusions: No difference in rates of screening lapses or receipt of prophylactic surgeries was seen between patients receiving care at a QH compared to those at a SNH after controlling for SDOH factors. However, only a third of patients underwent prophylactic surgery and nearly half of all patients experienced a lapse in recommended screening indicating these patients may require additional support. Further analysis of these cohorts will be performed to identify the specific SDOH factors that contribute to lapses in screening at a SNH versus a QH to allow for targeted interventions to improve guideline-concordant care at each setting.

Table 1. Social Determinants of Health Factors Associated with Lapses in Cancer Screening in Patients with High-Risk Genetic Mutations for Breast Cancer

Table 1. Social Determinants of Health Factors Associated with Lapses in Cancer Screening in Patients with High-Risk Genetic Mutations for Breast Cancer

Variable		OR	95% CI	p value
Treatment Location				
	SNH	Reference		
	QH	1.49	0.55-4.02	0.433
Age		0.97	0.95-0.99	0.015
Insurance				
	Uninsured	Reference		
	Private	0.30	0.11-0.81	0.018
National ADI Quintile				
	1	Reference		
	2	2.03	0.94-4.38	0.072
	3	4.70	1.44-15.28	0.010
	4	6.37	1.21-33.62	0.029
	5	9.47	0.80-111.85	0.074

1988163 - What prevents early diagnosis and screening, is it disparities in health or ignorance?

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Background/Objective: Breast cancer (BC) awareness is essential for early detection and improved outcomes; however, awareness levels and screening practices vary across demographic groups. Türkiye is home to women of a wide variety of socioeconomical, ethnical and educational background including immigrants. The level of screening uptake is still low despite a national screening program. In this study we aimed to assess BC awareness and screening behaviors among men and women attending to various outpatient clinics at Koç University Hospital in Istanbul. Results will be preliminary to a stepwise wider study.

Methods: A cross-sectional survey was conducted among women and men who had admitted to outpatient clinics at Koç University Hospital across multiple departments, excluding the Breast Clinic. Participants completed a questionnaire, that included sociodemographic characteristics, health literacy, knowledge of breast cancer (BC) risk factors, signs and symptoms, ones attitudes towards BC screening and self-examination (BSE) practices.

Results: 594 respondents completed the survey, women comprising 68.5% (n=407), and 31.5% (n=187) were men. The mean age of participants was 38.36 ± 12.47 (18 to 74 years). Postgraduate women demonstrated significantly higher awareness of breast cancer symptoms compared to those with undergraduate education, particularly for recognizing a palpable breast lump (65.06% vs. 34.94%, $p = 0.035$), a mass under the armpit (67.80% vs. 32.20%, $p = 0.004$), and nipple bleeding or discharge (68.87% vs. 31.13%, $p = 0.007$). Male postgraduates showed greater symptom awareness, including palpable breast lumps (55.32% vs. 44.68%, $p = 0.016$), breast swelling (58.75% vs. 41.25%, $p = 0.045$), and nipple discharge (67.35% vs. 32.65%, $p = 0.005$) Women participants' knowledge of BC risk factors highlights several statistically significant relationships between their level of education and awareness. 89.93% of women were aware that BC can be detected early by mammography screening. Although 157 of 163 (%96) women over age 40 had at least one screening, only 45 (%27.6) women reported annual; 35 (%21.4) women reported biennial screening. Having no complaints, neglect and not having time are the major reasons shown for not having regular screening. The participants were also asked where they got medical advice. Majority reported healthcare workers as a common source, with 64.37% of women and 60.43% of men citing them as their information source. The internet was another major source, reported by 53.81% of women and 62.57% of men, associated with a health literacy score of 35.299 ± 8.587. Men were asked about their attitude to their spouse having mammography and 87.8% answered as they supported breast screening.

Conclusions: Breast cancer awareness as health literacy increases with level of education. Although most women were aware of BC, negligence seems a major impact on not having screening on a regular basis. Healthcare workers and reliable online sources should emphasize the importance of screening. The study size of women over 40 were limited and the study population is restricted to a more educated and higher income area. The next study will be conducted on larger and various sectional populations, aiming to find the gap in knowledge and ways of promoting adherence to screening.

Table 1. Demographic data

Table 1: Demographic characteristics of the participants

	Women (n:407)	Men (n:187)	Total (n:594)
Age			
(Mean +- sd)	37,43 ± 12,40	40,38 ± 12,39	38,36 ± 12,47
Minimum-Maximum	18 -74	18 - 70	18 - 74
Marital Status			
Single	165 (40,5%)	62 (33,2%)	227 (38,2%)
Married	242 (59,5%)	125 (66,8%)	367 (61,8%)
Level of Education			
Undergraduate	152 (37,3%)	93 (49,73%)	245 (41,25%)
Postgraduate	255 (62,7%)	94 (50,27%)	349 (58,75%)
Health Insurance			
Public	243 (59,7%)	98 (52,4%)	341 (57,4%)
Private	23 (5,7%)	14 (7,5%)	37 (6,2%)
Both	104 (25,6%)	66 (35,3%)	170 (28,6%)
None	37 (9,1%)	9 (4,8%)	46 (7,7%)
Monthly Income			
Below Minimum wage	139 (34,1%)	25 (13,3%)	164 (27,6%)
Above minimum wage	268 (65,9%)	162 (86,7%)	430 (72,4%)
Health Literacy			
Mean +- sd	34.568 +- 9.037	34.244 +- 9.327	34.408 +- 9.248
Minimum-Maximum	0-50	0 - 50	0-50

1988237 - Demographic and socioeconomic characteristics of women undergoing abbreviated breast MRI in a large healthcare system: Who are we serving with specialized surveillance?

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Background/Objective: Abbreviated MRI (aMRI) has been introduced as a valuable screening tool for breast cancer in patients with dense breasts. Our healthcare system provides an out-of-pocket option for patients who wish to undergo aMRI. We hypothesize that there are significant demographic gaps in women who utilize this option versus women who do not.

Methods: Retrospective chart review was performed on women who had aMRI or mammography (MMG) performed at statewide sites from January 2023 to May 2024 to collect age, race, and zip codes. CDC Social vulnerability index (SVI) was evaluated using zip codes and data from the U.S. Census Bureau and American Community Survey. Chi-square analysis was performed comparing groups by categorical age and self-identified race (12 categories, including "not available" and "other"). Ordering provider and breast density of those undergoing aMRI was also collected and analyzed descriptively.

Results: A total of 1,205 patients underwent aMRI and 63,608 underwent screening MMG. Age for mammography was more evenly split with the highest percentages in the 40-50 (23.9%), 50-60 (26.2%) and 60-70 (28.1%) year old age groups. MRI was more heavily concentrated in the younger population with 38.2% in 40-50, 29.2% in 50-60, and 17.9% in 60-70 year olds ($p<.0001$). Race was unavailable for 24.4% of patients in MMG and 24.1% of patients in aMRI due to lack of reporting by technologists. 62.7% of those undergoing MMG were White and 9.4% Black/African American, compared to 67.9% White and 4.0% Black/African American for aMRI ($p<.0001$). When further comparing the two most prominent known race groups, there was a statistically significant difference between Black women who underwent aMRI compared to White women. Of the 6,037 Black women who obtained imaging, 48 (0.8%) underwent MRI, compared to 2.0% (n=818/40,693) of White women ($p<.0001$). The SVI for the aMRI group was lower than for that of the MMG group with a weighted mean of 0.49 (median 0.46) compared to a mean of 0.63 (median 0.65), indicating less social vulnerability in aMRI group. The most common ordering provider of aMRI was primary care (32.3%, n=338), followed by gynecology (25.9%, n=271), oncology (25.2%, n=264), and breast surgery (10.8%, n=113). aMRI was self-requested in 59 of the 1,048 studies (5.6%). The majority of patients did meet the indication for an aMRI with dense breast tissue (extreme: 20.3%, n=213; heterogenous: 61.2%, n=641); however, 17.3% (n=181) and 1.2% (n=13) had scattered or fatty non-dense tissue, respectively.

Conclusions: Women undergoing aMRI in a large healthcare system were more likely to be younger, White, and from less socially vulnerable neighborhoods than the population undergoing mammography at the same sites. The younger age of aMRI is expected given it may correlate with breast density. However, attention is needed to racial and socioeconomic disparities in who can access specialized surveillance options such as aMRI, which may worsen already existing inequities.

1987939 - Preliminary Data from the Institution-Based Registry of the Cancer Treatment Center in Hawassa, Ethiopia

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Background/Objective: Accurate data is crucial for addressing global disparities in cancer outcomes, yet low-income countries face resource barriers to establishing and maintaining cancer registries. In Ethiopia, only the Addis Ababa population-based registry exists and includes only the capital city of 5.7 million people, while 80% of Ethiopians live in rural areas. This study evaluates preliminary results of an institution-based registry with breast cancer focus at a tertiary cancer center in southern Ethiopia.

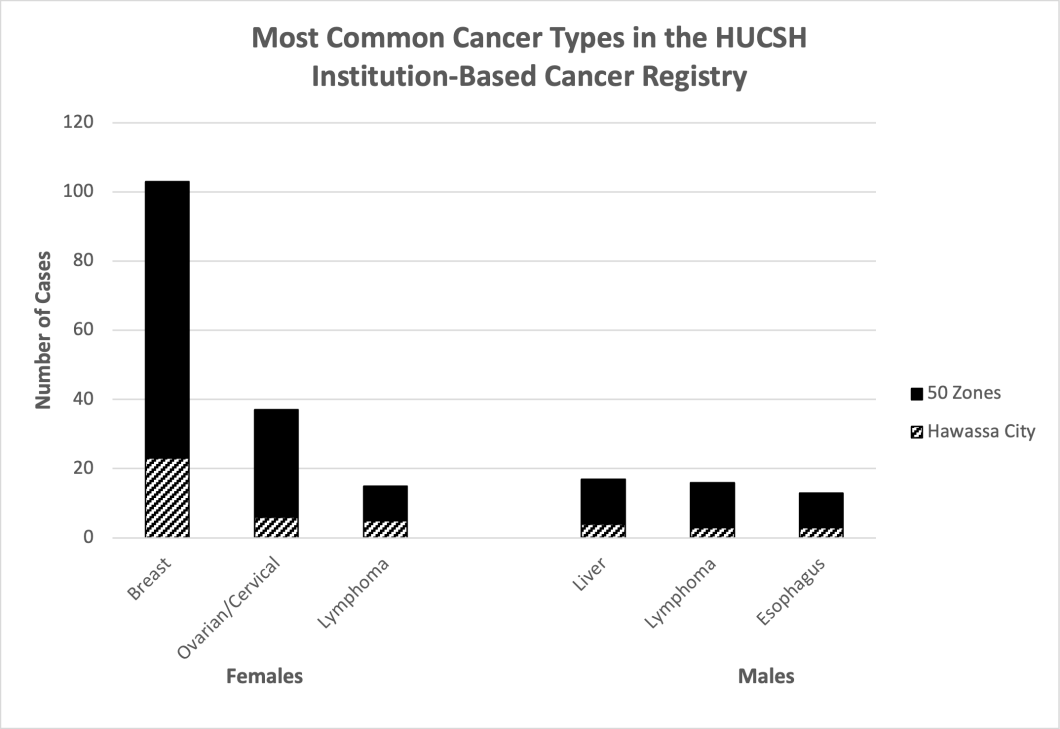
Methods: A phased approach to implementation was co-developed, monitored, and evaluated by teams from Hawassa University Comprehensive Specialized Hospital-Cancer Treatment Center (HUCSH-CTC) in Ethiopia, Martin Luther University in Germany, and City of Hope in USA. An Ethiopian cancer registry team was formed of an oncologist, statistician, public health nurse, systems analyst, and data supervisor. All underwent International Association for Research on Cancer (IARC) training in CanReg5 software for data collection and analysis of new cancer cases at HUCSH-CTC. Descriptive analysis was performed using SPSS. The crude incidence of all cancers in Hawassa city was calculated by using the estimated population of 300,000 per last census and projected population growth. Data were compared to the Addis Ababa population-based cancer registry as an early implementation outcome metric.

Results: Between January and March 2023, 401 new cancer cases were registered from 51 "zones" or regions. Females were 60.6% of the cases. The top three cancers were breast cancer (27.6%, 111/401), lymphoma (7.7%, 31/401), and esophageal cancer (7.5%, 30/401). Among women, the most common cancers were breast (42% 103/243), ovarian/cervical (15.2%, 37/243), and lymphoma (6.2%, 15/243). Of breast cancer cases, 8/158 or 5% were in men. Among men, the most common cancers were liver (10.8%, 17/158), lymphoma (10.1%, 16/158) and esophageal cancer (8.2%, 13/158). The median age of breast cancer diagnosis was 40 years (range 20–80). Among breast cancer the distribution of stages were: Stage 1 (1%, 1/97), Stage 2 (23%, 22/97), Stage 3 (25%, 24/97), and Stage 4 (52%, 50/97). Of the total 401 cases in the registry, 77 patients were from Hawassa city; 53 were from Arsi, which is 130 km from HUCSH-CTC. Among women from Hawassa city, the most common cancers were breast (44.2%, 23/52), ovarian/cervical (11.5%, 6/52), and lymphoma (9.6% 5/52). Among men from Hawassa city, the most common cancer were liver (14.8% 4/27), lymphoma (11.1%, 3/27) and esophageal (11.1% 3/27). The crude incidence of cancer in Hawassa city was estimated as 26 per 100,000.

Conclusions: This new registry captures cancer rates in an underrepresented region in Ethiopia, showing lower rates than Addis Ababa (26/100,000 vs. 70/100,000), meeting early implementation goals. With trained staff and validated data, it will expand to include more facilities in Hawassa that diagnose and treat cancer. It will contribute to national and IARC-WHO databases, allowing for long-term tracking of cancer incidence and trends. Most patients travel to HUCSH-CTC from a wide

geographic area, and this should be considered in estimating disease burden, allocating resources, and strengthening capacity for equitable cancer care with breast cancer as a priority.

Table 1. Most Common Cancer Types in the HUCSH Registry



1987956 - Germline Pathogenic Variants and Surgical Decision Making in Asian American/Pacific Islander Women with Breast Cancer

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Background/Objective: Despite a 2024 American Cancer Society report that Asian American/Pacific Islander (AAPI) women have an increased breast cancer incidence annually over the last decade, these patients remain undertested for germline pathogenic variants. Since 2020, the Precision Medicine Initiative at City of Hope has provided universal no cost panel germline testing to all patients regardless of testing criteria. Implications for breast cancer care and surgical decision making were reviewed for AAPI women who underwent germline testing.

Methods: The electronic health record was queried for self-identified AAPI women diagnosed with breast cancer between 2020 and 2024 who had germline testing. Frequency of gene mutations was quantified by age, insurance status, molecular subtype, and breast surgery type. Fisher's exact testing was performed to identify significant interactions.

Results: Between 2020 and 2024, 797 AAPI women with breast cancer underwent germline testing (Table 1). Pathogenic variants (PV) were found in 172 patients (21.6%) (Table 1). Highly penetrant PV for breast cancer (BRCA1, BRCA2, PALB2, TP53, PTEN, CDH1, STK11) were discovered in 25.6% of PV and 5.5% overall (n=44). BRCA1/BRCA2 was found in 19.9% of PV and 4.3% overall (n=34). Moderately/low penetrant PV for breast cancer (including ATM, CHEK2, BRIP1, RAD51C, RAD51D) were found in 22.7% of PV and 4.9% overall (n=39). Patients with pathogenic variants were more likely to present with luminal B and basal-like/triple negative breast cancers and less likely with DCIS or luminal A and HER2 enriched breast cancers ($p=0.002$). Patients with pathogenic variants were more likely to undergo contralateral prophylactic mastectomy, or bilateral mastectomies, instead of unilateral mastectomy or breast-conserving surgery ($p< 0.001$). Germline testing results did not influence postmastectomy reconstruction ($p=0.12$).

Conclusions: In the largest review to date of Asian American/Pacific Islander women with breast cancer undergoing germline testing, over 20% of patients were found to have pathogenic variants. AAPI women with pathogenic variants were more likely to have luminal B and basal-like/triple negative breast cancers. When a pathogenic variant was found, patients were more likely to choose more extensive breast surgery. Germline genetic results are an influential component of comprehensive breast surgical care for AAPI women, and efforts should be made to improve patient access to and understanding of germline testing to allow for appropriate screening, prevention, and individualized counseling of preoperative and systemic therapy options.

Table 1: Clinical, Demographic, and Treatment Characteristics of Asian American/Pacific Islander Women with Breast Cancer with Germline Testing (n=797)

Characteristics	Pathogenic Variant		P-Value
	Yes (%)	*No (%)*	
Age, years			0.41
≤39	14 (8.1)	30 (4.8)	
40-54	64 (37.2)	237 (38.1)	
55-75	81 (47.1)	309 (49.4)	
>75	13 (7.6)	49 (28.5)	
Insurance			0.622
Public	42 (24.4)	159 (25.4)	
Private	98 (57.0)	332 (53.1)	
Multiple	32 (18.6)	134 (21.4)	
Molecular Subtype			
DCIS (all)	9 (5.2)	63 (10.1)	0.002
Luminal A (ER+/PR+/HER2-)	53 (30.8)	231 (37.0)	
Luminal B (ER+/HER2-/either high Ki-67 or PR-)	46 (26.7)	138 (6.1)	
Luminal B-Like (ER+/HER2+/any Ki-67 and either PR+ or PR-)	27 (15.7)	77 (12.3)	
HER2 Enriched (ER-/PR-/HER2+)	5 (2.9)	49 (7.8)	
Basal-Like/Triple Negative (ER-/PR-/HER2-)	32 (18.6)	67 (10.7)	
Surgery			<0.001
Breast Conserving Surgery	54 (31.4)	265 (42.4)	
Unilateral Mastectomy	55 (32.0)	235 (37.6)	
Bilateral Mastectomy	52 (30.2)	99 (15.8)	
No Surgery	11 (6.4)	26 (4.2)	

1988701 - Medicaid Expansion and Persistent Disparities in Breast Reconstruction Rates Among Asian Subtypes: A National Cancer Database Analysis

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Background/Objective: Disparities in breast reconstruction post-mastectomy continue to persist, particularly affecting socioeconomically disadvantaged and minority groups. Medicaid expansion, through the Affordable Care Act, aimed to reduce these inequities by improving healthcare access. However, its long-term impact on reconstruction rates across diverse sociodemographic groups remains underexplored, especially among Asian subgroups, who have notably lower reconstruction utilization. This study provides new insights into the influence of Medicaid expansion on reconstruction rates and examines shifts in sociodemographic predictors post-expansion. We also conduct subgroup analyses within the Asian cohort to identify specific barriers to reconstruction among Asian subtypes.

Methods: We conducted a retrospective cohort analysis of female breast cancer patients over age 39 on Medicaid who underwent mastectomy or mastectomy with reconstruction from 2004 to 2020, using National Cancer Database (NCDB). Only patients from states that adopted Medicaid expansion were included, and they were divided into pre-expansion (2004–2014) and post-expansion (2015–2020) groups. Multivariate logistic regression was used to assess how sociodemographic factors—such as race, co-morbidities, income, education, and geographic location—affected reconstruction rates between these time periods. Given the persistently low reconstruction rates among Asian patients, we also performed a subgroup analysis to explore disparities within specific Asian ethnic subtypes.

Results: Among the 63,439 patients analyzed, 21,419 (34%) underwent reconstruction after mastectomy. This included 14,779 out of 42,667 White patients, 4,507 out of 13,277 Black patients, and 1,132 out of 3,491 Asian patients. Post-expansion, the odds of reconstruction increased significantly overall (aOR = 1.40, 95% CI 1.33-1.46, $p < 0.001$). Black patients showed improvement in reconstruction rates after expansion, while Asian patients continued to have significantly lower odds of reconstruction than White patients, with variations observed among different Asian subgroups. In a subgroup analysis of Asian patients, Asian Indian or Pakistani (aOR = 0.41, 95% CI 0.33-0.50, $p < 0.001$), Chinese (OR = 0.42, 95% CI 0.36-0.49, $p < 0.001$), and Filipino (aOR = 0.56, 95% CI 0.44-0.71, $p < 0.001$) patients were less likely to receive reconstruction post-expansion compared to White patients. Across all racial groups, residing in an area with lower income (<$38,000, aOR = 0.70, 95% CI 0.64-0.77, $p < 0.001$) and lower education levels (aOR = 0.88, 95% CI 0.80-0.97, $p = 0.007$) at the zip-code level were consistently associated with reduced odds of reconstruction. Additionally, patients from the Midwest (aOR = 0.75, 95% CI 0.70-0.80, $p < 0.001$) and West (aOR = 0.51, 95% CI 0.48-0.54, $p < 0.001$) were less likely to undergo reconstruction compared to those in the Northeast.

Conclusions: Medicaid expansion has contributed to an overall increase in reconstruction rates, with improvements observed among Black patients. However, persistent disparities remain, especially within the Asian cohort, where specific subgroups (Asian Indian/Pakistani, Chinese and Filipino)

continue to face lower odds of reconstruction. These findings underscore the need for culturally tailored interventions and supportive resources to address unique barriers faced by underserved populations. This study highlights critical opportunities to advance health equity by ensuring accessible reconstructive options for all breast cancer survivors.

Figure 1 – Subgroup Analysis: Sociodemographic Factors Predicting Reconstruction Rate Post-Mastectomy, Stratified by Asian Subtype.

	aOR	95% CI	p-value
Age (ref: 65+)	-	-	-
<45	6.29	[5.55, 7.12]	<0.001
45-54	4.64	[4.13, 5.22]	<0.001
55-64	2.55	[2.27, 2.88]	<0.001
Race (ref: white)	-	-	-
Chinese	0.42	[0.36, 0.49]	<0.001
Japanese	0.77	[0.44, 1.32]	0.335
Filipino	0.56	[0.44, 0.71]	<0.001
Korean	0.64	[0.5, 0.83]	0.001
Vietnamese	0.9	[0.71, 1.15]	0.413
Thai	0.55	[0.24, 1.25]	0.154
Asian Indian or Pakistani	0.41	[0.33, 0.5]	<0.001
Other Asian, including Asian, NOS and Oriental	0.61	[0.51, 0.72]	<0.001
% without HS Degree (ref: 1st quartile)	-	-	-
4th Quartile	0.88	[0.8, 0.97]	0.007
3rd Quartile	0.83	[0.77, 0.91]	<0.001
2nd Quartile	0.91	[0.85, 0.98]	0.013
Income (ref: > $65,000)	-	-	-
< $38,000	0.7	[0.64, 0.77]	<0.001
$38,000 - $47,999	0.79	[0.73, 0.85]	<0.001
$48,000 - $62,999	0.83	[0.77, 0.89]	<0.001
Charlson–Deyo Comorbidity Index (ref: 0)	-	-	-
1	0.91	[0.85, 0.98]	0.011
2	0.71	[0.61, 0.82]	<0.001
3+	0.56	[0.44, 0.72]	<0.001
Population Density (ref: Metropolitan)	-	-	-
Urban	0.77	[0.72, 0.83]	<0.001
Rural	0.76	[0.63, 0.92]	0.006
Geographic Location (ref: Northeast)	-	-	-
South	0.57	[0.53, 0.61]	<0.001
Midwest	0.75	[0.7, 0.8]	<0.001
West	0.51	[0.48, 0.54]	<0.001
Medicaid Expansion Status (Ref: Before Expansion)	-	-	-
After expansion	1.4	[1.33, 1.46]	<0.001

aOR = adjusted odds ratio, CI = Confidence Interval

1988396 - Geographical Influence on Treatment Patterns in Low-Income Breast Cancer Patients

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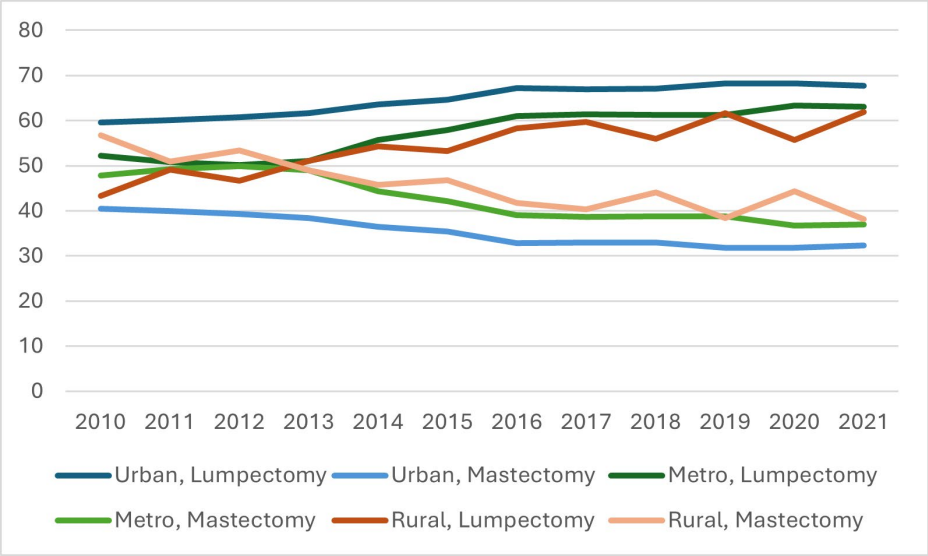
Background/Objective: Social determinants of health are nonmedical factors (such as economic stability, access to healthcare, and education) that affect health outcomes. Previous studies have demonstrated differences in treatment and outcomes based upon socioeconomic status, while others have identified disparities between patients living in urban (U), metropolitan (M), and rural (R) areas. The aim of this study is to assess differences in characteristics and treatment patterns between low-income patients living in different population-density areas.

Methods: Using the National Cancer Database, we identified women undergoing surgery (2004-2021) for Stage I-III breast cancer who were in the lowest median income quartile. Patients were stratified based on living in urban, metropolitan, and rural areas. Differences in demographics, clinicopathologic characteristics, and treatment patterns were evaluated.

Results: 89,681 patients were included in the study, of whom 66,861 (74.5%) were urban, 19,527 (21.7%) were metropolitan, and 3,293 (3.7%) were rural. Urban areas contained a higher percentage of Black and Hispanic patients ($p< 0.001$). Urban patients were more likely to have higher clinical tumor and nodal stages, and poorly differentiated tumors (all $p< 0.001$). As expected, the mean distance traveled for care was shortest for urban patients and longest for rural patients (U:11.9 vs. M:42.0 vs. R:60.0 miles, $p< 0.001$). Regarding surgery, most patients underwent lumpectomy (63%), while mastectomy became less common over time in all locales (Figure). Urban patients had the lowest, and rural patients had the highest mastectomy rates (U:35% vs. M:42% vs. R:45%, $p< 0.001$). Of patients undergoing mastectomy, 27% had reconstruction, with urban patients being most likely to undergo reconstruction (U:31 % vs. M:22% vs. R:22%, $p< 0.001$). The lower likelihood of mastectomy but higher likelihood of reconstruction for urban patients persisted on multivariable analysis after correcting for pertinent clinicodemographic variables such as race, tumor stage, and receptor subtype. Despite a higher clinical nodal stage, urban patients were more likely to not undergo axillary surgery (U:17.8% vs. M:14.6% vs. R:14.6%, $p< 0.001$). Using National Accreditation of Breast Center (NAPBC) quality metrics, there was no difference in the rates of receipt of adjuvant systemic therapy (chemotherapy and endocrine therapy) nor radiotherapy, with the only exception being that more urban patients received post-mastectomy radiotherapy when indicated (U:62.4% vs. M:55.7% vs. R:53.8%, $p< 0.001$). The time from diagnosis to initiation of each therapy was longer for urban patients, and a higher proportion of urban patients failed to meet the timeliness quality metric for each therapy (all $p< 0.001$).

Conclusions: Breast cancer treatment patterns among low-income patients living in various population density areas differ and are likely driven by proximity to care. While we cannot assess patient preferences, improved access to radiation or omission in appropriate circumstances may help to reduce differences in mastectomy rates between these groups. Systematic review of timeliness of care among urban patients is needed to reduce delays and optimize outcomes.

Figure 1: Surgical approach over time among low-income breast cancer patients stratified by area of residence.



1988725 - Who Chooses Mastectomy in cT1 Breast Cancer? A National Analysis of BCT-Eligible Breast Cancer Patients and the Impact of Sociodemographic Factors from 2004 – 2020.

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Background/Objective: Breast-conserving therapy (BCT) is the preferred treatment for early-stage invasive breast cancer, matching mastectomy in survival outcomes while preserving breast tissue. However, the sociodemographic and temporal factors influencing the choice of mastectomy over BCT in patients with small, early-stage tumors (cT1N0) are not well understood. Identifying these patterns is crucial to addressing disparities and guiding patient-centered interventions.

Methods: We conducted a retrospective cohort study using the National Cancer Database (NCDB) from 2004 to 2020, analyzing women aged 18 and older with cT1N0 invasive breast cancer eligible for BCT. Exclusions included inflammatory breast cancer or positive surgical margins requiring re-excision. BCT was defined as partial mastectomy (lumpectomy) with adjuvant radiation. Factors associated with choosing mastectomy over BCT were analyzed using a multivariable logistic regression, adjusting for age at diagnosis, race, ethnicity, insurance, Charlson-Deyo comorbidity score, distance to treatment facility (≥20 miles), education, income (zip code-based) and subtype (HR+/HER2-, HER2+, HR-/HER2). Facility type and location were included as fixed effects, and trends were assessed over time (2004–2007, 2008–2011, 2012–2015, and 2016–2020).

Results: Of the 655,316 BCT-eligible patients with cT1N0 breast cancer, 154,638 (24%) opted for mastectomy, while 411,703 (63%) underwent BCT and 88,975 (13%) underwent lumpectomy alone without radiation. Over time, BCT utilization increased significantly (Cochran-Armitage Trend Test, $p < 0.001$). Despite this trend, specific groups continued to favor mastectomy over BCT each year, including younger patients (≤45 years, OR 1.9, $p < 0.001$), Asian patients (vs. White, OR 1.95, $p < 0.001$), Black patients (vs. White, OR 1.21, $p < 0.015$), Medicaid-insured patients (vs. privately insured, OR 1.26, $p < 0.001$), those residing over 20 miles from treatment (OR 1.37, $p < 0.001$), patients in the South and Midwest (vs. Northeast, OR 1.36, $p < 0.001$), those with a Charlson Comorbidity Index of 3+ (vs. 0, OR 1.75, $p < 0.001$), and patients from lower socioeconomic areas (1st quartile, low high school graduation rate, zip code-based) (vs 4th quartile, OR 1.31, $p < 0.003$). Additionally, HER2+ subtype was associated with a higher likelihood of mastectomy (vs. HR+/HER2-, OR 1.6, $p < 0.001$) (Table 1).

Conclusions: Our study highlights ongoing disparities in the choice between breast-conserving therapy (BCT) and mastectomy among women with early-stage cT1 breast cancer. Key factors such as young women (age ≤ 45), Asian and Black race, Medicaid insurance, lower education, Midwest and Southern geography, HER2+ tumors, and longer travel distances continue to influence treatment decisions. While structural barriers persist, recent improvements among underserved groups—including Asian Indian/Pakistani —reflect promising gains in equitable access to BCT. This underscores the critical need for sustained policy and healthcare interventions to enhance accessibility and support informed, patient-centered treatment choices. By reducing these disparities, healthcare systems can promote quality of life and equity in breast cancer care.

Table 1 – Multivariable Logistic Regression Analysis of Factors Associated with the Likelihood of Mastectomy Versus Breast-Conserving Therapy (BCT) Among Patients Eligible for BCT, Stratified by Year of Diagnosis.

	2004 - 2007				2008 - 2011				2012 - 2015				2016 - 2020			
Variable	N	OR[1]	95% CI[1]	P-value	N	OR[1]	95% CI[1]	P-value	N	OR[1]	95% CI[1]	P-value	N	OR[1]	95% CI[1]	P-value
Age	138,547				178,977				215,918				28,950			
65+		—	—			—	—			—	—			—	—	
<45		1.31	1.23, 1.40	<0.001		1.42	1.34, 1.50	<0.001		1.7	1.61, 1.80	<0.001		1.9	1.50, 2.40	<0.001
45-54		1.08	1.02, 1.13	0.004		1.07	1.02, 1.11	0.002		1.18	1.14, 1.23	<0.001		1.27	1.08, 1.49	0.004
55-64		0.85	0.81, 0.89	<0.001		0.85	0.82, 0.88	<0.001		0.86	0.83, 0.89	<0.001		0.99	0.86, 1.14	0.9
Distance from Facility (mi)	131395				163021				188590				25180			
< 20		—	—			—	—			—	—			—	—	
> 20		1.33	1.28, 1.38	<0.001		1.29	1.25, 1.33	<0.001		1.3	1.26, 1.34	<0.001		1.37	1.21, 1.55	<0.001
Insurance Status	138547				178977				215918				28950			
Private Insurance		—	—			—	—			—	—			—	—	
Not Insured		1.11	0.98, 1.26	0.1		1.17	1.06, 1.29	0.002		1.19	1.09, 1.30	<0.001		1.39	0.96, 1.98	0.074
Medicaid		1.23	1.14, 1.33	<0.001		1.14	1.08, 1.21	<0.001		1.12	1.06, 1.18	<0.001		1.26	1.05, 1.52	0.015
Medicare		1.22	1.17, 1.28	<0.001		1.2	1.16, 1.25	<0.001		1.18	1.14, 1.22	<0.001		1.19	1.03, 1.37	0.017
Other Government		1.08	0.92, 1.27	0.3		1.18	1.05, 1.33	0.005		0.98	0.88, 1.10	0.8		0.9	0.52, 1.50	0.7
Unknown		1.02	0.91, 1.14	0.7		1.06	0.96, 1.18	0.2		1.31	1.20, 1.44	<0.001		1.65	1.16, 2.32	0.004
Race	138547				178977				215918				28950			
White		—	—			—	—			—	—			—	—	
Black		0.94	0.89, 1.0	0.031		1.02	0.97, 1.06	0.4		1.1	1.06, 1.14	<0.001		1.21	1.04, 1.41	0.015
American Indian		1.39	1.03, 1.87	0.029		0.96	0.75, 1.23	0.8		1.24	1.01, 1.51	0.042		1.78	0.81, 3.75	0.14
Asian		1.56	1.42, 1.70	<0.001		1.61	1.51, 1.73	<0.001		1.97	1.86, 2.09	<0.001		1.95	1.52, 2.48	<0.001
Pacific Islander		0.84	0.59, 1.17	0.3		1.09	0.83, 1.42	0.5		1.44	1.16, 1.79	0.001		1.4	0.53, 3.33	0.5
Asian Indian or Pakistani		1.51	1.19, 1.91	<0.001		1.57	1.32, 1.87	<0.001		1.38	1.20, 1.59	<0.001		0.9	0.53, 1.47	0.7
Other		1.1	0.89, 1.35	0.4		1.23	1.06, 1.43	0.005		1.05	0.93, 1.18	0.5		1.73	1.20, 2.48	0.003
Unknown		1.11	0.97, 1.27	0.13		0.97	0.86, 1.09	0.6		0.86	0.75, 0.97	0.019		0.87	0.54, 1.37	0.6
Ethnicity	138547				178977				215918				28950			
Non-Hispanic		—	—			—	—			—	—			—	—	
Hispanic		1	0.92, 1.08	>0.9		1.15	1.08, 1.22	<0.001		1.13	1.08, 1.19	<0.001		1.07	0.88, 1.30	0.5
Unknown		1.1	1.05, 1.15	<0.001		1.02	0.97, 1.07	0.5		1.1	1.02, 1.17	0.008		1.58	1.27, 1.96	<0.001
% without HS Degree (Zip-code Level)	128723				162905				186784				25008			
< 14.0%		—	—			—	—			—	—			—	—	
29.0% +		1.02	0.97, 1.08	0.4		1.03	0.98, 1.09	0.2		1.04	1.00, 1.09	0.054		1.31	1.09, 1.56	0.003
20.0% - 28.9%		0.95	0.91, 1.00	0.03		1	0.96, 1.04	>0.9		1.01	0.98, 1.05	0.6		1.1	0.95, 1.27	0.2
14.0% - 19.9%		0.93	0.90, 0.97	<0.001		0.98	0.95, 1.01	0.2		0.98	0.95, 1.01	0.13		1.05	0.93, 1.19	0.5
Income (Zip-code Level)	128730				162844				186491				24957			
$46,000 +		—	—			—	—			—	—			—	—	
< $30,000		1.04	0.97, 1.10	0.3		1.01	0.97, 1.06	0.6		1.02	0.98, 1.07	0.3		0.7	0.58, 0.84	<0.001
$30,000 - $34,999		1.01	0.96, 1.06	0.8		1.01	0.98, 1.05	0.5		1	0.97, 1.04	0.8		0.77	0.66, 0.90	0.001
$35,000 - $45,999		1.03	0.99, 1.07	0.13		0.99	0.96, 1.02	0.4		1.03	1.00, 1.07	0.033		0.83	0.73, 0.95	0.008
Population Density Area	134098				174150				210850				28372			
Metro		—	—			—	—			—	—			—	—	
Urban		0.96	0.92, 1.01	0.2		0.96	0.92, 1.00	0.07		0.9	0.86, 0.93	<0.001		1.07	0.91, 1.25	0.4
Rural		1.02	0.91, 1.13	0.8		0.97	0.89, 1.07	0.6		0.97	0.89, 1.06	0.5		1.24	0.86, 1.76	0.2
Charlson Comorbidity Index	138547				178977				215918				28950			
0		—	—			—	—			—	—			—	—	
1		1.53	1.47, 1.60	<0.001		1.37	1.33, 1.42	<0.001		1.17	1.14, 1.21	<0.001		1.08	0.94, 1.23	0.3
2		2.08	1.90, 2.27	<0.001		1.69	1.57, 1.81	<0.001		1.42	1.33, 1.51	<0.001		1.26	0.98, 1.61	0.062
3+		2.34	1.95, 2.80	<0.001		2.28	1.99, 2.60	<0.001		1.65	1.47, 1.85	<0.001		1.75	1.30, 2.35	<0.001
Geographic Area	134736				175258				211989				28412			
Northeast		—	—			—	—			—	—			—	—	
South		1.23	1.18, 1.27	<0.001		1.19	1.15, 1.23	<0.001		1.34	1.30, 1.38	<0.001		1.54	1.37, 1.74	<0.001
Midwest		1.13	1.09, 1.18	<0.001		1.14	1.10, 1.18	<0.001		1.24	1.20, 1.28	<0.001		1.36	1.19, 1.56	<0.001
West		1.03	0.98, 1.08	0.2		1.09	1.05, 1.14	<0.001		1.22	1.18, 1.26	<0.001		1.09	0.93, 1.28	0.3
Facility Type	134736				175258				211989				28412			
Integrated Network Cancer Program		—	—			—	—			—	—			—	—	
Community Cancer Program		0.79	0.74, 0.84	<0.001		0.81	0.77, 0.86	<0.001		0.84	0.80, 0.88	<0.001		0.86	0.68, 1.08	0.2
Comprehensive Community Cancer Program		0.92	0.89, 0.95	<0.001		0.9	0.87, 0.92	<0.001		0.98	0.95, 1.00	0.093		0.91	0.80, 1.03	0.14
Academic/Research Program		1.1	1.05, 1.14	<0.001		1.08	1.05, 1.12	<0.001		1.09	1.06, 1.13	<0.001		0.96	0.82, 1.11	0.6
Subtype	137045				178883				215918				14238			
HR+/HER2-		—	—			—	—			—	—			—	—	
HR+/HER2-		0.93	0.66, 1.30	0.7		1.1	1.04, 1.16	<0.001		1.11	1.07, 1.15	<0.001		1.27	1.09, 1.48	0.002
HER2+		1.71	1.23, 2.35	0.001		1.61	1.54, 1.69	<0.001		1.6	1.55, 1.66	<0.001		1.6	1.40, 1.83	<0.001
Unknown		0.91	0.78, 1.07	0.3		1.13	1.11, 1.16	<0.001		1.81	1.73, 1.90	<0.001		1.92	1.55, 2.38	<0.001
HER2+		1.7	1.23, 2.35	0.001		1.7	1.23, 2.35	0.001								
Unknown		0.91	0.78, 1.07	0.2		0.91	0.78, 1.07	0.2								

[1] OR = Odds Ratio, CI = Confidence Interval

1988794 - Palpable Breast Cancer Among Patients in the Bronx is Associated with Inadequate Screening and Later Stage at Diagnosis

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Background/Objective: In the United States, 1 in 8 women develop breast cancer. Many women present with a self-detected breast mass, but only 10% are diagnosed with cancer. Thus, the U.S. Preventative Services Task Force currently discourages self-breast exams and instead recommends biennial mammographic screening beginning at age 40 for average risk women. Early detection can reach 99% survival at 5-years. In the Bronx, NY, only 61.4% of cases are diagnosed at an early stage, compared to 70.1% statewide, while 7.6% are late-stage diagnoses- higher than the state's 5.3%. Socioeconomic disadvantage in the Bronx characterized by higher distressed community index scores may affect access to education and adequate screening, leading to more advanced diagnoses and presentation with a self-palpated mass. This study examines whether Bronx breast cancer patients with palpable masses received appropriate screening.

Methods: A single-institution retrospective review was conducted on demographics, cancer data, and screening history for breast cancer patients diagnosed from January 2017 to December 2019. Screening history included prior mammography, mammography within one year of diagnosis, and consistent annual screening over three years. Patients were grouped by presentation type—palpable or screen-detected mass—and statistical analyses identified factors linked to palpable mass presentation.

Results: Of the 1,123 patients, 298(26.5%) presented with a palpable mass and 825(73.5%) with a non-palpable, screen-detected mass. There was no significant age difference between groups: 59.35(±14.01) years in the palpable group and 61.02(±11.34) years in the non-palpable group ($p=0.741$). Other demographics including race, ethnicity, and insurance status were also not significant. However, considerable disparities in screening were observed. In the palpable group, 43.5% had no prior mammogram compared to 11.8% in the non-palpable group ($p < 0.001$), 75.6% lacked a mammogram within one year of diagnosis compared to 20.2% ($p < 0.001$), and 81% did not have consistent annual screenings over three years compared to 42.9% ($p < 0.001$). Odds of presenting with a palpable mass were higher among those without prior mammograms (OR 5.74, 95% CI 4.14–8.0), recent mammograms (OR 10.52, 95% CI 7.63–14.49), or consistent screenings (OR 5.65, 95% CI 4.03–7.94). Additionally, 14.4% of the palpable group had Stage 3 or 4 disease versus 5.1% of the non-palpable group, with 3.14 times the odds of later-stage diagnosis (95% CI 2.008–4.921). A higher percentage of the palpable group were also found to have lymph nodes positive for metastatic disease at the time of surgery (38.2% vs. 19.6%, $p< 0.001$).

Conclusions: Within the examined patient population in the Bronx, patients with a palpable mass were significantly less likely to have consistent mammographic screenings, which was strongly associated with advanced disease at diagnosis. Although demographic factors did not differ between groups, those without prior or recent mammograms were much more likely to present with a palpable mass and had over three times the odds of being diagnosed at Stage 3 or 4. These results highlight the importance of education and access to appropriate screening for early cancer detection and also questions the benefit of annual versus biennial screening.

Table 1: Demographic, cancer, screening information stratified by non-palpable vs. palpable mass presentation

	Non-Palpable (n= 825)	Palpable (n= 298)	p-value
Age at Diagnosis (years), mean ± SD	61.02 ±11.34	59.35 ±14.01	0.741
Race (n, %)			0.85
White	414 (50.2)	142 (47.7)	
Black or African American	297 (36)	114 (38.3)	
Asian	31 (3.8)	15 (5)	
American Indian or Alaska Native	1 (0.1)	0 (0)	
Other	46 (5.6)	15 (5)	
Unknown/Patient declined	36 (4.4)	12 (4)	
Hispanic (n,%)			0.77
Yes	321 (38.9)	119 (39.9)	
No	488 (59.2)	175 (58.7)	
Unsure/Patient declined	16 (1.9)	4 (1.3)	
Insurance Coverage (n, %)			0.69
Medicaid	184 (22.3)	77 (25.8)	
Medicare	314 (38.1)	110 (36.9)	
Private	309 (37.5)	103 (34.6)	
No insurance	5 (0.6)	3 (1)	
Unknown	13 (1.6)	5 (1.7)	
AJCC Stage (n, %)			<0.001
1	649 (78.7)	162 (54.4)	
2	134 (16.2)	93 (31.2)	
3	26 (3.2)	33 (11.0)	
4	16 (1.9)	10 (3.4)	
Histology (n, %)			0.37
IDC	674 (81.7)	256 (85.9)	
ILC	92 (11.2)	26 (8.7)	
Mixed IDC and ILC	58 (7)	16 (5.4)	
Other	1 (0.1)	0 (0)	
Estrogen Receptor (ER) Status (n, %)			0.021
Positive	683 (82.8)	233 (78.2)	
Negative	113 (13.7)	58 (19.5)	
Unknown	29 (3.5)	7 (2.3)	
Progesterone Receptor (PR) Status (n, %)			0.006
Positive	415 (50.3)	130 (43.6)	
Negative	161 (19.5)	80 (26.8)	
Unknown	249 (30.2)	88 (29.5)	
HER2 Status (n, %)			0.36
Positive	169 (20.5)	70 (23.5)	
Negative	388 (47)	137 (46)	
Unknown	268 (32.5)	91 (30.5)	
Triple Negative (n, %)			0.20
Yes	92 (11.2)	45 (15.1)	
No	454 (55)	159 (53.4)	
Unknown	279 (33.8)	94 (31.5)	
Prior Mammogram N= 1008 (n, %)			<0.001
Yes	650 (88.2)	153 (56.5)	
No	87 (11.8)	118 (43.5)	
Mammogram within 1 year diagnosis N= 1013 (n,%)			<0.001
Yes	567 (77.2)	68 (24.4)	
No	167 (20.2)	211 (75.6)	
Consistent Annual Mammogram past 3 years N= 937 (n, %)			<0.001
Yes	379 (57.1)	52 (19)	
No	285 (42.9)	221 (81)	
Pathologic Lymph nodes (n, %)			<0.001
Lymph node negative	620 (80.4)	176 (61.8)	
Lymph node positive	151 (19.6)	109 (38.2)	

1988754 - Recent breast cancer patterns by region: Rural America's disadvantage

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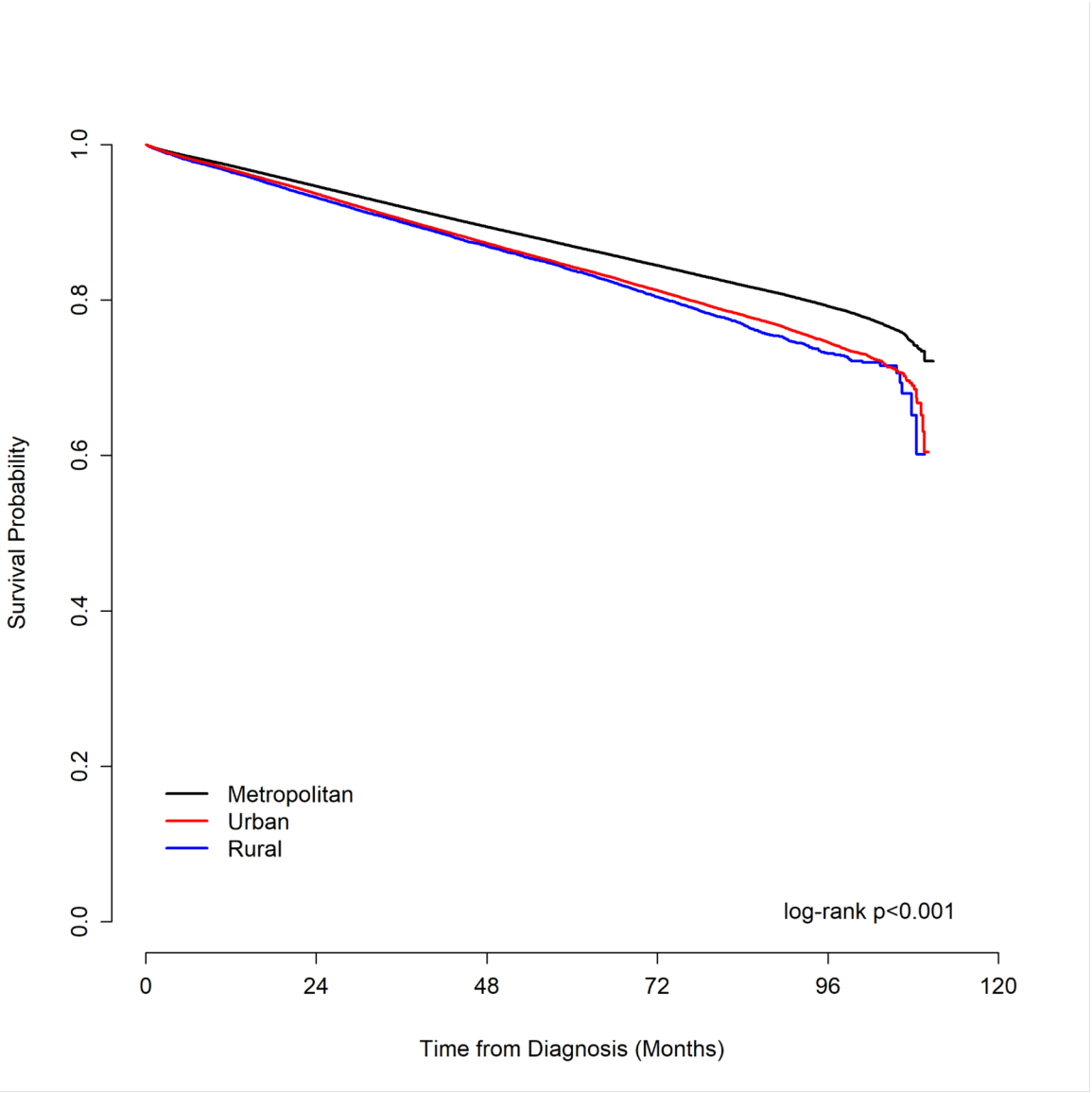
Background/Objective: Rural healthcare research is essential for understanding and addressing the distinct health needs of rural communities, which comprise an estimated 46 million Americans. These populations are well documented to experience higher poverty rates, limited technology access, and fewer economic and healthcare resources; factors that may contribute to the lower healthcare utilization rates by rural patients compared to their urban counterparts. Understanding differences between urban vs. rural populations is only one element of this complex subject. To fully understand the state of rural population health, one must recognize that not all rural areas are similar. Multiple studies comparing cancer incidences in rural vs. metropolitan areas report consistent variability in cancer incidence between rural areas, highlighting the need to analyze local differences across rural regions in future rural healthcare research.

Methods: Adult female patients diagnosed with breast cancer were selected from the National Cancer Database (NCDB) (2014-2020). Patient community type was categorized based on recorded rural-urban continuum codes defined by 2013 files published by the United States Department of Agriculture Economic Research Service as metropolitan, urban, and rural. Unadjusted overall survival (OS) was estimated with the Kaplan-Meier method and log-rank tests were used to compare groups. A Cox proportional hazards model was used to identify factors associated with overall survival after adjustment for available covariates.

Results: Rural patients were less likely to be of Hispanic ethnicity or Asian race, but more likely to be of American Indian/Alaskan Native (AI/AN) race. Rural patients were also more disadvantaged regarding social determinants of health, having lower incomes and high school graduation rates, and higher rates of government-based insurance coverage. Patients from rural areas were treated more often at comprehensive community cancer programs located in the South (all $p< 0.001$). Comorbidity scores, tumor subtype, hormonal status, HER2 positivity and stage showed no clinically significant difference between regions. Rural patients were more likely to undergo mastectomy rather than lumpectomy and axillary lymph node dissection (both $p< 0.001$). Rural patients were more likely to receive adjuvant chemotherapy and endocrine therapy. There was no clinically significant difference in radiation therapy received by region. Rural patients had compromised OS vs. metropolitan patients, but similar OS to those in urban regions (Figure). After adjustment, AI/AN vs. white race, income below $48,000, no insurance vs. private coverage, higher comorbidity scores, treatment at community cancer vs. academic programs, treatment in the Midwest vs. South, more aggressive tumor biology, and not receiving therapies were associated with compromised OS.

Conclusions: Contrary to our initial hypothesis, patients in the rural setting do not present at a later stage or have clinically significant delays in their treatment course. However, these patients have significant differences amongst social drivers of health and poorer outcomes overall. There is a staggering disparity amongst overall survival in rural patients not attributable to tumor biology or initial stage at presentation. Further investigation of mitigating factors is warranted to address this disparity. In future works, we will examine whether care delivery via rural comprehensive cancer centers within a single region provide better breast cancer outcomes.

Figure 1: Unadjusted Overall Survival by Community Type from NCDB, 2014-2021



1956882 - Racial Disparities in Genetic Testing

Taylor Cusick[1], Kristina Fraser[2], Kallie Woods[3], Therese Cusick[2], Shelly Cummings[3]

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Background/Objective: Black women are sixteen times and Hispanic women two times less likely to undergo genetic testing compared with Non-Hispanic White women. This is significant as women of African and Latin American ancestries have a significantly higher prevalence of deleterious BRCA1/2 mutations compared to women of Western European ancestry. The Myriad Collaborative Research Registry (MCRR) is a large registry with data from 1.23 million patients who underwent genetic testing between 1996-2024. This study explores disparities in patients with a BRCA1 or BRCA2 pathogenic variant (PV).

Methods: The MCRR was used to collect information from individuals who completed germline genetic testing between January 1996 and May 2024. Observations were made based on these patients' demographic information, self-reported ancestries, germline genetic findings, and family history. Patients were divided into cohorts based on ancestry and compared, excluding those who did not report ancestry.

Results: Of the 1.23 million patients in the MCRR, this study includes a total of 53,424 patients who were found to have BRCA1/2 PV. Overall, 73.6% of the patients self-reported White ancestry. Of those who reported Non-White ancestry, the most commonly self-reported ancestries included Black/African (34.98%), Hispanic/Latino (33.44%), and Asian (12.53%). A breast cancer diagnosis was reported in 66.2% of White patients and 75.2% of Non-White patients. Non-white patients were over two times more likely to report no family history of cancer (15.22%) than their Non-White counterparts (7.20%), but the average age of breast cancer diagnosis was younger in the non-white population (44 years old), compared to the white population (48 years old).

Conclusions: The data contained in the MCCRR shows a higher prevalence of breast cancer in people of color (POC) compared to White individuals; however, proportionately fewer POC are undergoing testing compared to White patients. The discrepant number of POC receiving testing demonstrates a gap in healthcare to underserved populations. Significant efforts to study and improve delivery of cost-effective and culturally sensitive discussions of genetic testing for minority patients is needed. More work is needed on why POC are not receiving appropriate genetic testing as compared to White patients. Also, physicians and patients need culturally appropriate education materials in order to assuage fears of perpetuating historic racism in medicine and research to garner trust in at-risk communities who are not getting adequate access to genetic testing.

Table 1: Self-Reported Ancestry

Self-Reported Ancestry	White Cohort*	%	Non-White Cohort	%
Western/Northern Europe	23,984	51.71%	0	0%
White/Non-Hispanic	8,370	18.05%	0	0%
Central/Eastern Europe	5,543	11.95%	0	0%
Ashkenazi Jewish	4,539	9.79%	0	0%
Other	1,724	3.72%	1,675	10.61%
Native American	1,170	2.52%	817	5.17%
Hispanic/Latino	480	1.03%	5,282	33.44%
Black/African	296	0.64%	5,525	34.98%
Asian	178	0.38%	1,979	12.53%
Middle Eastern	94	0.20%	482	3.05%
Pacific Islander	6	0.01%	34	0.22%

*The white cohort includes those who self-reported any white ancestry. Patients can report multiple ancestries, but the non-white cohort excludes those who reported any white ancestry.

1932257 - Evaluating the Gail Model: Racial Disparities in Breast Cancer Risk Assessment

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Background/Objective: In 1989 the Gail model was developed from a case control series of white women to create an individualized breast cancer risk calculator. Multiple validations with more contemporary and racially diverse data have been used to improve the model. The model was last updated in 2017, and authors warn of underestimating risk for Black/African American and Hispanic women born outside of the United States. Case series used to calibrate risk for non-white groups included less than 7,000 participants in total, compared to 280,000 White women. Race has been recognized as a poor proxy for biological differences and may perpetuate racial disparities that exist. There is limited data evaluating the accuracy of the Gail model across racial groups.

Methods: Retrospective data including Gail scores, classification of High-risk (HR) Gail score, age, BMI, age at first birth and menarche, history of biopsy, family history of cancer, race, use of risk-reducing endocrine therapy and diagnosis of breast cancer were extracted from the electronic medical record. Patients ages 25-75, undergoing mammogram from 7/2020-7/2023 were included. Chi-squared, logistical regression were used to evaluate differences in outcomes between groups.

Results: Data was collected from 31,256 patients; 1,429 Asian, 11,589 Black/African American, 5,872 Hispanic/Latino, 1,358 Other, and 11,008 white patients. High-risk Gail model classification (HR) among each racial group was 6.09% (87/1429) of Asian, 2.86% (331/11589) of Black/African American, 0.68% (40/5872) of Hispanic/Latino and 11.4% (1228/11008) of white patients. Patients classified as white were significantly more likely to be classified as HR than all other groups ($p< 0.001$). This difference persisted even when controlling for all other components of the Gail model with a logistical regression. Black patients were less likely to be HR compared to white patients (OR 0.23, 95% CI = 0.20 – 0.28). Rates of cancer diagnosis were: 1.26% of Asian, 1.57% of Black/African American, 1% of Hispanic/Latino, and 1.6% of white patients. When comparing rates of cancer diagnosis between patients in HR or non-HR groups, only white participants had a significant difference in number of cancer diagnosis (1.47% vs. 2.61%, $p< 0.01$). All other racial groups had increased rates of cancer diagnosis among HR patients, however, these numbers were not statistically significant.

Conclusions: Our study suggests that a racial disparity exists in the classification of patients as HR with the Gail model. Recent epidemiologic data suggests rates of breast cancer are only slightly higher in white women compared to black. Despite this, in our population, Black patients are much less likely to be considered HR by the Gail model. The rate of HR classification varied significantly across racial groups and white patients had the highest rate of HR classification. We did not identify a specific factor within the Gail model variables that could account for this. These findings underscore the need for individualized cancer screening and the potential limitations of relying on algorithms that incorporate race as a variable.

Genetics

1976805 - Germline genetic testing for all women with a new diagnosis of primary, recurrent or metastatic breast cancer: The incidence of a positive genetic test and the impact on surgical decision making

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Background/Objective: The BRCA-Direct Study evaluated a 'clinician-light' genetic testing pathway including a digital management platform and postal saliva testing (with genetic counsellor support) and compared standard of care pre-test counselling with digital pre-test information for BRCA1, BRCA2 and PALB2 in breast cancer (BC) patients. All patients at the Royal Marsden Hospital with a new diagnosis of invasive BC, high grade ductal carcinoma in situ (HGDCIS), recurrence or metastatic disease were eligible to participate. The aim of this sub-study was to assess incidence of a positive genetic test result and potential impact on surgical decision-making.

Methods: Ethical approval for the BRCA-Direct Study was gained. Females >18years with a new diagnosis of HG DCIS or primary, recurrent or metastatic BC were eligible. Patients who withdrew consent, had insufficient clinical electronic records or limited comprehension of English were excluded. Data was collected for patient demographics, tumor biology, time from consent to results, medical and surgical treatments. For a positive genetic test, further data was collected on whether test results were available pre-operatively and if so, whether the positive result influenced the type of breast surgery performed.

Results: 653 women were eligible for the BRCA-Direct study. 35 withdrew consent, therefore 618 underwent testing. Those withdrawing consent were of higher age (63 versus 57 years, p=0.0021). Ethnicity and deprivation index was not associated with withdrawal of consent. Following exclusion of 42patients for insufficient clinical data, 576patients were included in the analysis. The median age was 57 (IQR 49-66) years while 495(85.9%) patients had a first diagnosis of BC/HGDCIS and 81(14%) of recurrent BC. Of these, 38(6.6%) had distant metastatic BC. 21(3.64%) women had a positive test: 11/576(1.9%) BRCA1, 6/576(1%) BRCA2 and 4/576(0.7%) PALB2. 18/21(85.7%) with median age of 47years (IQR 41-59) had primary BC diagnosis. 19/21(90.4%) underwent surgery. Younger age (median 49years, p=0.018), higher tumor grade (2/3, p=0.007), histology (luminal A, TNBC, p=< 0.001) and family history of breast/ovarian/pancreatic cancer (p< 0.001) were statistically significant risk factors for a positive result. Ethnicity, deprivation index, recurrence, subtype and TNM stage were not associated with a positive result. Median time for test consent to result was 33days (IQR 25-45). 566 women underwent breast surgery. 121 (21.4%) received results prior to surgery, 10(8.3%) had a positive result and of these, 8 underwent bilateral mastectomy. 364(64.3%) received results after primary surgery, 9(2.5%) had a positive result and none underwent risk reduction mastectomy as their first operation. Subsequently 6 have undergone completion risk reduction surgery.

Conclusions: In our cohort of patients with a new diagnosis of invasive BC, HGDCIS, recurrent or metastatic BC, the rate of positive high penetrance genetic mutations was 3.6%. Median time from consenting to receiving results for the genetic testing was 33days (IQR 25-45). Patients who received a positive test result pre-operatively were more likely to undergo bilateral mastectomy as their first operation compared to those who received the results post-operatively. Receiving test results after surgery can result in women having to undergo a second operation which may compromise the cosmetic outcome and results in additional personal and healthcare related costs.

Table 1: Surgical outcomes for patients with a positive genetic test result

Surgical outcomes for patients with a positive genetic test result		
	Results before surgery (n=121)	**Results after surgery (n=364)**
	Positive result (n=10)	**Positive result (n=9)**
NACT	8 (80%)	1 (11.1%)
BCS	1 (10%)	7 (77.8%)
- + Adjuvant RT	0	7 (77.8%)
Unilateral Mastectomy	1 (10%)	2 (22.2%)
- Simple mastectomy	1 (10%)	1 (11.1%)
- Implant-based reconstruction	0	1 (11.1%)
Bilateral Mastectomy	8 (80%)	0
- Simple mastectomy	2 (20%)	0
- +Implant-based reconstruction	5 (50%)	0
- +Autologous reconstruction	1 (10%)	0
Upfront RR Breast Surgery	8 (80%)	0
Completion RR Breast Surgery at a later date	1 (10%)	6 (66.7%)
High risk surveillance imaging only (No RR Surgery)	1 (10%)	3 (33.3%)

NACT: Neo-adjuvant chemotherapy; BCS: Breast conservation surgery; RT: Radiotherapy; RR: Risk-Reducing

1975661 - Uptake of Risk-Reduction and Surveillance Interventions among Women with Pathogenic Germline Variants in Breast Cancer Susceptibility Genes

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[1]Medical University of South Carolina, Charleston, SC, [2]Labcorp Genetics Inc., Pittsburgh, PA, [3]Labcorp Genetics Inc, Chicago, IL, [4]Labcorp Genetics Inc, San Francisco, CA, [5]Labcorp Genetics Inc, Wellington, FL, [6]Labcorp Genetics, San Francisco, CA, [7]Labcorp Oncology, Durham, NC, [8]Beth Israel Deaconess Medical Center, Boston, MA, [9]School of Medicine, Stanford University, Stanford, CA

Background/Objective: Management of patients with pathogenic germline variants (PGVs) in breast cancer (BC) susceptibility genes can include risk-reducing bilateral mastectomy (BLM), risk-reducing bilateral salpingo-oophorectomy (RRBSO), enhanced breast imaging (MRI), pancreatic cancer surveillance (endoscopic ultrasound (EUS)/MR cholangiopancreatography, MRCP). We assessed intervention uptake in 4,000 PGV-positive patients with BC or without cancer who underwent GGT for high or moderate risk BC genes.

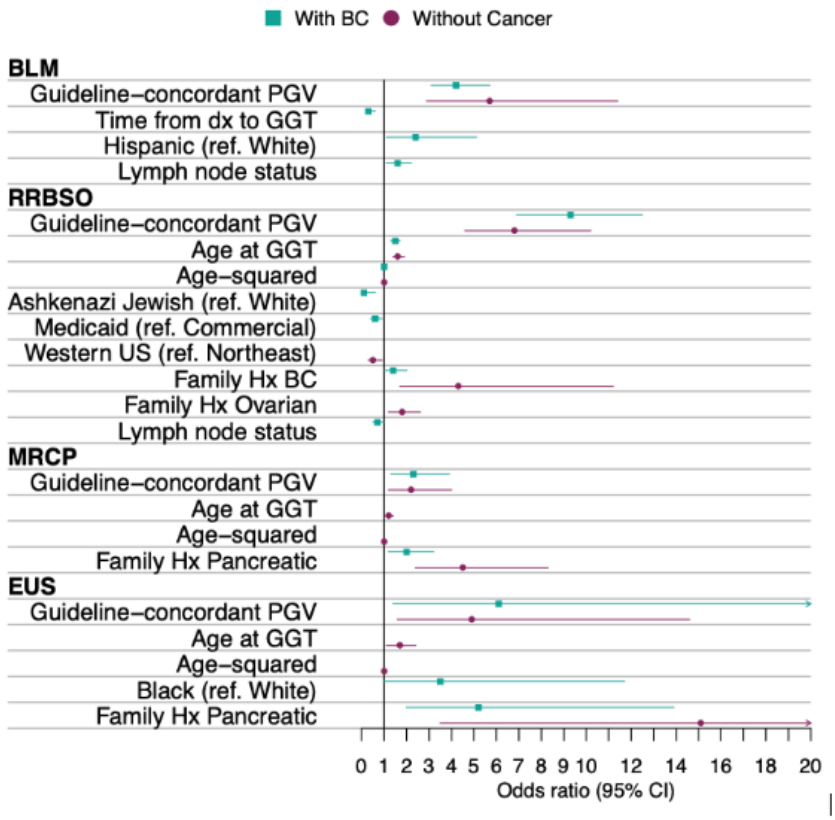
Methods: Germline genetic testing (GGT) data and insurance claims data were analyzed for cancer-free or BC/DCIS-affected female patients diagnosed 2015-24, GGT < 120 days from diagnosis, and ≥1 year of claims pre/post-GGT (uptake measured within 1 year of GGT). Inclusion/exclusion criteria followed prior work (PMID 32027353). Guideline-concordance was determined by NCCN gene-specific recommendations (Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic v1.2025) and was defined as % uptake among patients with PGVs eligible for a specific intervention. Non-concordance was defined as % uptake of an intervention among patients with non-eligible PGVs. All PGVs were eligible for breast MRI. Genes analyzed and additional eligibility, if applicable, included: ATM (EUS/MRCP), BARD1, BRCA1/BRCA2 (BLM, RRBSO, EUS/MRCP), CDH1 (BLM), CHEK2, NF1, PALB2 (BLM, EUS/MRCP), PTEN (BLM), RAD51C/RAD51D (RRBSO), STK11 (BLM, EUS/MRCP), TP53 (BLM, EUS/MRCP). Chi-square tests were used to compare intervention uptake by guideline-concordance status. Factors associated with interventions were evaluated with multivariable logistic regression models (Figure).

Results: 4,001 patients (1,903 with BC, 2,098 cancer-free) had ≥ 1 PGV: predominantly CHEK2 (30%), BRCA2 (22%), BRCA1 (17%), or ATM (14%). Characteristics were: 68% White, 81% BC family history, 28% Medicare/Medicaid, mean (SD) age at testing: 45 (14). The intervention with the overall highest uptake was breast MRI (33%). Among BC patients, BLM was the highest uptake (56%) intervention, with the highest guideline-concordant (75%) and non-concordant (40%) rates, followed by RRBSO (41% concordant uptake, 9% non-concordant). Among cancer-free women, RRBSO had the highest uptake (12% concordant) of any risk-reducing intervention. EUS/MRCP had the lowest uptake overall (6.3% combined for concordant uptake). In the multivariable models, across all interventions, the odds of uptake were significantly higher in patients with a guideline-concordant PGV (Figure). Compared to BC patients without BLM, those who did receive BLM had a shorter time from diagnosis to GGT, and were more likely to be Hispanic and have lymph node positive disease (Figure). Compared to patients without RRBSO, both BC and cancer-free patients who underwent RRBSO were more likely to be older at GGT and have family history of BC; whereas only cancer-free women with RRBSO had higher odds of family history of ovarian cancer (Figure). Family history of pancreatic cancer increased the odds of MRCP/EUS in all women (Figure).

Conclusions: Intervention uptake generally followed PGV-specific guidelines, with uptake consistently higher in patients with guideline-concordant vs. non-concordant PGV. A limitation of claims data is lack of information about how decisions were made, and future studies should focus on this to identify gaps in quality of care.

Figure 1: Variables significantly (p<0.05) associated with odds of intervention uptake

Figure. Variables significantly (p<0.05) associated with odds of intervention uptake



Model variables included: guideline concordance, race/ethnicity, age, non-linear effect of age (age^2), family cancer history, lymph node status (BC patients), type of insurance (BLM, RRBSO), geographic region (RRBSO), and time from diagnosis to GGT (BC patients).

1987813 - Evaluating Different Genetic Testing Guidelines for Pathogenic Variant Detection in Breast Cancer Patients within a Laboratory-Based Research Registry.

Sami Diab[1], Laura Brzeskiewicz[2], Damini Morah[2], Shelly Cummings[2], Sacha Finn[3]

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Background/Objective: The criteria for germline genetic testing in breast cancer patients vary among different guidelines, potentially impacting the detection of pathogenic variants (PVs) or likely pathogenic variants (LPV) and subsequent clinical management and treatment options. This study compares the PVs/LPVs and clinical profiles of breast cancer patients based on testing age criteria from the American Society of Breast Surgeons (ASBrS), the National Comprehensive Cancer Network (NCCN), and the American Society of Clinical Oncology (ASCO)-Society of Surgical Oncology (SSO) guidelines. The ASBrS 2019 guideline recommends offering genetic testing to all breast cancer patients regardless of family history, pathology, or ancestry. In contrast, the 2024 NCCN and ASCO-SSO guidelines suggest considering genetic testing for patients diagnosed with breast cancer at age 65 or younger, with additional factors such as triple negative, family history, or ancestry required for those older than 65.

Methods: Data from the Myriad Collaborative Research Registry (MCRR) were analyzed to compare PV detection and clinical profiles among breast cancer patients. Since 2019, when the ASBrS guideline was published recommending genetic testing for all breast cancer patients, Myriad has accepted patient samples for clinical testing regardless of age. We examined germline genetic testing PV rates and genes, clinical profiles, and ancestry of patients who were diagnosed with breast cancer >65 years versus < 65 years.

Results: A total of 740,256 breast cancer patients underwent germline multi-gene panel testing at Myriad Genetics, with genetic and clinical data available in the MCRR. Among these, 640,308 patients diagnosed with breast cancer < 65 years were tested, revealing 63,760 PVs/LPVs, with 9.96% of patients testing positive. The median age at diagnosis was 48 years. Of the 640,308 patients, the most frequently detected PVs were in BRCA1 (22,215, 3.47%), BRCA2 (22,010, 3.44%), MUTYH (4,514, 0.7%), CHEK2 (4,373, 0.68%), ATM (2,914, 0.46%), and PALB2 (2,432, 0.38%). The remaining PVs were identified in other genes (5,302, 0.82%). In contrast, 99,948 patients diagnosed with breast cancer >65 years were tested, revealing 7,143 PV/LPVs, with 7.15% testing positive. The median age at diagnosis was 70 years. Of the 99,948 patients, the most frequently detected PVs were in BRCA2 (1,984, 1.99%), MUTYH (1,136, 1.14%), CHEK2 (862, 0.86%), BRCA1 (770, 0.77%), ATM (539, 0.54%), PALB2 (391, 0.39%). The remining PVs were identified in other genes (1,461, 1.46%). A higher proportion of Non-White patients were tested < 65 compared to >65, with percentages of 31.11% and 23.78%, respectively.

Conclusions: Restricting genetic testing to patients aged 65 and under, unless additional factors are present, as per NCCN and ASCO-SSO guidelines, will miss significant numbers of patients with PVs. This impacts both their cancer risk management and that of their family members. This data supports the ASBrS guidelines, which recommend testing all breast cancer patients. This approach helps identify patients at high risk for secondary cancers, reduces disparities, and improves access to genetic testing, ultimately enhancing clinical outcomes.

1980997 - Navigating Chemotherapy Decisions in Early-Stage Breast Cancer: The Role of Oncotype DX Recurrence Scores in a National Cohort

Cara Berkowitz[1], Elizabeth DeJesus[1], Stephany Perez-Rojas[1], Jiarui Yan[2], Sara Ginzberg[2], Peter Eby[2], Christine Edmonds[2], Leisha Elmore[2], Krystle Collins[2], Rachel Jankowitz[1], Neil Taunk[1], Julia Tchou[3], Jennifer Zhang[2], Anne McCarthy[2], Oluwadamilola Fayanju[2]

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Background/Objective: The Oncotype DX Recurrence Score (RS) is a genomic tool for guiding chemotherapy recommendations in hormone receptor-positive (HR+), human epidermal growth factor receptor 2-negative (HER2-) breast cancer. Results from the TAILORx and RxPONDER trials indicate that RS can effectively stratify and identify patients who would benefit most from chemotherapy. In this study, we aimed to investigate the association between RS and chemotherapy receipt across patients in low (RS 1-13), intermediate (RS 14-25) and high-risk (RS ≥26) categories in a large national cohort.

Methods: We identified women ≥18 years who underwent upfront partial mastectomy for cT1cN0M0 HR+/HER2- invasive breast cancer diagnosed in the National Cancer Database between 2018-2021. Patients who received neoadjuvant therapy or had missing survival or clinical stage data were excluded. RS was stratified according to the RxPONDER trial criteria, with low-risk defined as RS 1–13, intermediate-risk as RS 14–25, and high-risk as RS ≥26. Chi-square tests and multivariate logistic regression were used to evaluate associations between RS, patient/disease characteristics, and receipt of chemotherapy.

Results: A total of 166,821 patients met inclusion criteria. The median age was 66 years and median follow-up time was 34.9 months (95% CI 34.81-34.94, $p< 0.001$). The cohort was predominately Non-Hispanic White (83.6%) with ductal histology (80.3%). Of the total cohort, 122,466 (73.4%) patients had a low-risk RS, 35,301 (21.2%) had an intermediate-risk RS, and 9,054 (5.4%) had a high-risk RS. Patients in the low-risk group were more likely to be >70 (39.5%) compared to the intermediate (19.4%) and high-risk groups (21.4%; $p< 0.001$). Additionally, patients in the low-risk group were less likely to have positive lymph nodes (9.7%; 0.6% ≥4 +LNs) compared to the intermediate (11.7%; 0.2% ≥4 +LNs) and high-risk (11.2%; 0.2% ≥4 +LNs) groups ($p< 0.001$). Patients in the high-risk group were more likely to have grade 3 tumors (32.6%) compared to those in the low (5.5%) and intermediate-risk (5.9%) groups ($p< 0.001$). After adjustment for race/ethnicity, insurance status, age, tumor grade, histology, Charlson comorbidity score, number of positive lymph nodes, and RS, compared to the low-risk group, patients in the intermediate-risk group were less likely to receive chemotherapy (OR 0.55, 95% CI 0.52-0.58, $p< 0.001$) and those in the high-risk group were more likely to receive chemotherapy (OR 38.08, 95% CI 35.84-40.46, $p< 0.001$). This trend held true amongst patients with 1-3 positive lymph nodes only ($p< 0.001$).

Conclusions: These findings highlight the nuances involved in managing patients with low and intermediate-risk RS, with intermediate-risk patients being less likely to receive chemotherapy compared to both low and high-risk patients. Clinicians may be using more individualized approaches to the management of these patients, particularly when considering additional factors, such as age and lymph node involvement, known to affect the risk of recurrence.

1987836 - Community Screening Events Expand Access to Hereditary Cancer Testing in Underserved Areas

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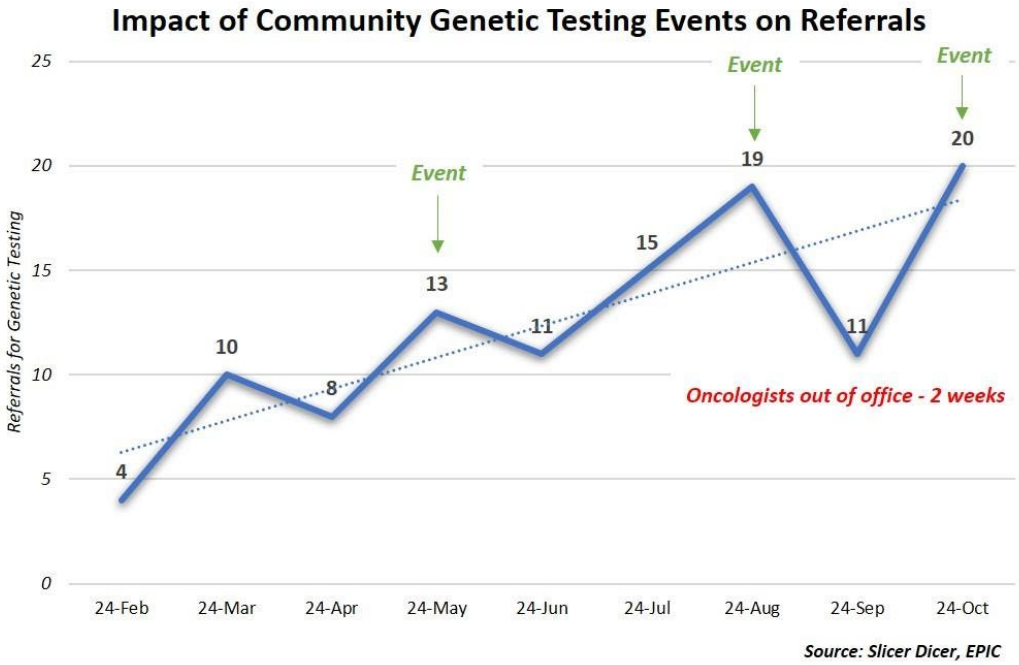
Background/Objective: Hereditary cancer testing has become pivotal in identifying patients who have an increased risk of developing cancer but is underutilized due to a lack of awareness and access to genetic counseling. Pathogenic germline mutations appear at a higher prevalence in northern New Mexico yet knowledge and education about genetic testing are limited due to geographic isolation and limited healthcare access. This study's objective is to evaluate the feasibility and yield of community hereditary cancer testing events organized by a community cancer center in a medically underserved population.

Methods: This study was conducted at three different sites in Santa Fe, New Mexico from May through October 2024. Individuals were screened and hereditary cancer testing was offered to those who met criteria based on the National Comprehensive Cancer Network guidelines. At the events, individuals were assessed on their baseline knowledge of hereditary cancers and on site education was provided. Outcomes were evaluated in terms of demographics, the number and types of pathogenic germline mutations identified, and if high risk individuals were enrolled in a cancer specific screening clinic. Individuals were given a pre and post test to assess their knowledge as well as their satisfaction with the testing experience. A subset was interviewed for qualitative feedback.

Results: Out of 100 patients who were screened, 77 patients underwent hereditary cancer testing with an 81 gene multi cancer panel. The median age was 49 years. 86% were female, 58% were Hispanic and 47% (n=64) were from New Mexico for 3 or more generations. Seven patients were identified as having a pathogenic germline mutation (9.1%). All seven patients were enrolled in a high risk cancer specific screening clinic. Additional family members were also tested with four additional pathogenic mutations identified. Eleven patients (14.3%) had an above 20% remaining lifetime risk of breast cancer and were enrolled in our high risk breast clinic. After participating in a community testing event, patients' knowledge of which cancers are hereditary and which groups are at higher risk increased by 25 percentage points and by 19 percentage points, respectively (McNemar's Chi Square Test $p=0.00024$, $OR= 0.056$ and $p= 0.00596$, $OR=0.14286$). 75% of patients were satisfied with their genetic testing experience and 85% of patients were very likely or extremely likely to follow up for cancer specific screening. In qualitative interviews, patients expressed they were grateful for the opportunity to be tested in a convenient manner. After the first genetic testing event, referrals to the cancer center for hereditary cancer testing increased demonstrating increased awareness in the community (Figure 1).

Conclusions: Community testing events can be performed to increase access to hereditary cancer testing in underserved communities. Individuals with high risk pathogenic variants as well as >20% lifetime risk for breast cancer were identified who may not otherwise have been able to access genetic counseling and testing. These individuals were able to receive preventative care at cancer specific screening clinics. The events and the education associated with them also increase community knowledge and awareness of the indications for genetic testing.

Figure 1: Impact of Community Genetic Testing Events on Referrals



1988660 - Factors Influencing Conversion from Surveillance to Prophylactic Mastectomy in BRCA Carriers at a High-Volume Cancer Center

Caitlin Marsh[1], Acacia Sharma[1], Alyssa Marmer[2], Brooke Greenfield[1], Charles DiMaggio[3], Amber Guth[1], Deborah Axelrod[1], Freya Schnabel[1]

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Background/Objective: High-risk surveillance programs for BRCA carriers have been a well-established pillar of breast cancer centers throughout the USA for nearly three decades. Studies on this population have led to the adoption of specific imaging modalities and schedules, allowing early detection of breast cancer. Though early surveillance plays a critical role in providing appropriate care for these patients, prophylactic mastectomy remains an important treatment option. Surgery can provide both significant reduction of cancer risk, as well as freedom from frequent imaging appointments and invasive procedures. The aim of this study is to determine the factors associated with the decision to convert from surveillance to prophylactic surgery in BRCA carriers within a high-risk cohort.

Methods: Retrospective review of an IRB-approved prospective database was performed to identify patients enrolled in our institution's high-risk surveillance program between 1/2011- 5/2024 who tested positive for BRCA mutations. Demographic information, breast-cancer risk factors, lifestyle habits, in-depth surveillance details, and required procedures were collected. Descriptive analyses were conducted in the R statistical software program and consisted of frequencies, proportions, standard deviations and associated 95% Confidence Intervals. Comparisons of continuous variables were based on t-tests, and categorical variables were compared using Chi Square tests.

Results: Our database identified 234 patients within the high-risk cohort that tested positive for a BRCA mutation. The mean age of the study group was 43 years (SD 13.5 years), and 208 (88.9%) of the patients identified as White. Of the 234 patients, 112 (48.1%) elected to undergo prophylactic mastectomy while the remaining 122 patients remained on the surveillance protocol. There was no significant difference in age between the surveillance (43 years, SD 14.9 years) and surgery group (42 years, SD 11.8 years), with a p-value of 0.51. There was also no significant difference in household income ($p=0.871$) or education level ($p=0.734$) between the two groups. Patients within the prophylactic surgery group were more likely to have a first-degree relative with breast cancer (59% v 43%, $p=0.021$) and were more likely to perform frequent self-breast exams ($p=.003$). These patients were also more likely to have received a previous surgical biopsy ($p< 0.001$). The frequency of MRI ($p=0.023$) and the frequency of mammograms ($p=0.04$) were also significantly different between the two cohorts. Death of a relative from breast cancer was not a significant factor between the two groups ($p=.211$).

Conclusions: Within our population of young females, it was apparent that while education and income did not play a role in the decision to pursue surgery, psychosocial factors such as family history and personal time undergoing imaging and procedures did have a significant impact. The fact that those who eventually chose surgical management were more likely to have performed frequent self-exams highlights the possibility that surgery may provide a means to physically eliminate a source of fear for these patients. Understanding these patterns will allow us to better counsel and prepare our patients, no matter which treatment path they choose.

1988257 - Are Broadened Guidelines Improving Our Detection of Pathologic Genetic Mutations in Breast Cancer Patients? A 5-Year Comparative Analysis of American Society of Breast Surgeons and National Comprehensive Cancer Network Guidelines

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Background/Objective: Genetic testing (GT) is an important part of comprehensive breast cancer care. In 2019, the American Society of Breast Surgeons (ASBrS) recommended that GT be available to all individuals newly diagnosed with breast cancer considering evidence that demonstrated nearly half of patients with pathologic or likely pathologic variants are missed when adhering to National Comprehensive Cancer Network (NCCN) guidelines. NCCN guidelines restrict GT to patients of certain age groups, gender, and subtypes of cancer or family history. We sought to evaluate our institutional detection of pathologic genetic mutations (PGM) after implementation of ASBrS guidelines and to understand what patient factors can be predictive of detecting a PGM.

Methods: We conducted a retrospective cohort study of patients who had GT performed in association with a new or recurrent diagnosis of breast cancer from April 2019 to April 2024 at our institution. Demographic, tumor, personal and family history, along with GT data and follow up results were collected from electronic medical record data to determine patient's GT eligibility per NCCN guidelines. The two cohorts were compared and univariable and multivariable analyses were performed to analyze predictors of detection of PGM.

Results: In total, 934 patients were analyzed who met ASBrS criteria. 860 (92.1%) of those patients met NCCN guidelines. The ASBrS cohort mirrored the NCCN cohort on all characteristics (Table 1). PGM detection rate within the ASBrS cohort was 9.5%, while PGM detection rate within the NCCN cohort was 9.9%. There was no statistically significant difference in PGM detection rates between the non-NCCN and NCCN cohort ($p = 0.30$). However, within the non-NCCN cohort, 5.4% of patients had actionable PGM and received follow-up care accordingly. Within our whole cohort, 89 patients had PGM and were on average 56.1 years of age. 23 (25.8%) patients with PGM had a prior history of breast cancer before the current diagnosis, while 84 (94.4%) had a family history of cancer. In a multivariable regression, patients with invasive lobular carcinoma (OR 3.29; 95% CI 1.49-7.29) and invasive ductal carcinoma (OR 2.11; 95% CI 1.06-4.16) were significantly more likely to have PGM than those with other invasive subtypes or DCIS. Patients with an age at diagnosis >50 showed a trend toward being less likely to have a PGM than those ≤50 years of age (OR 0.64; 95% CI 0.39-1.06). Similarly, patients with a personal history of cancer tended to be more likely to have a PGM than those without (OR 1.6; 95% CI 0.95-2.70). Family history of cancer, hormone receptor status, metastatic disease were not significant predictors for PGM.

Conclusions: At our single institution over the last 5 years, we captured more patients with an actionable PGM through the broader ASBrS GT guidelines. There were patients within the non-NCCN cohort who had PGM, suggesting that patients with actionable PGM are missed with more stringent guidelines. Our regression demonstrated that tumor histology is associated with an increased likelihood of identifying a PGM. Further study is needed to determine how a broader testing approach impacts GT disparity.

Table 1. Patient characteristics by genetic testing guidelines.

Patient Characteristics	Following ASBrS guideline Full Cohort (n=934)	Following NCCN guidelines	
		No (n=74)	Yes (n=860)
Age at Diagnosis (years), n (%)			
<=50 years	273 (29.2)	0 (0)	273 (31.7)
> 50 years	661 (70.8)	74 (100)	587 (68.3)
Days from Surgical Consultation to Genetic Testing, n (%)			
<=0	872 (93.5)	67 (90.5)	805 (93.7)
>0	61 (6.5)	7 (9.5)	54 (6.3)
Gender, n (%)			
Male	5 (0.5)	0 (0)	5 (0.6)
Female	929 (99.5)	74 (100)	855 (99.4)
Ashkenazi Jewish Ancestry, n (%)			
Yes	8 (0.9)	0 (0)	8 (0.9)
No	926 (99.1)	74 (100)	852 (99.1)
Breast Cancer, n (%)			
Invasive	791 (84.7)	64 (86.5)	727 (84.5)
DCIS	143 (15.3)	10 (13.5)	133 (15.5)
Laterality of Cancer, n (%)			
Unilateral	886 (94.9)	74 (100)	812 (94.4)
Bilateral	48 (5.1)	0 (0)	48 (5.6)
Hormone Receptor Status, n (%)			
Invasive, ER-/PR+/HER2-	4 (0.4)	0 (0)	4 (0.5)
Invasive, ER-/PR-/HER2-	100 (10.7)	0 (0)	100 (11.6)
Invasive, ER+/HER2-	595 (63.7)	53 (71.6)	542 (63)
Invasive, ER-/HER2+	26 (2.8)	4 (5.4)	22 (2.6)
Invasive, ER+/HER2+	66 (7.1)	7 (9.5)	59 (6.9)
DCIS, ER+	109 (11.7)	6 (8.1)	103 (12)
DCIS, ER-	34 (3.6)	4 (5.4)	30 (3.5)
Metastatic Disease, n (%)			
Yes	184 (19.7)	15 (20.3)	169 (19.7)
No	750 (80.3)	59 (79.7)	691 (80.3)
Personal History of Cancer, n (%)			
No	741 (79.3)	66 (89.2)	675 (78.5)
Yes	193 (20.7)	8 (10.8)	185 (21.5)
Family History of Cancer, n (%)			
No	60 (6.4)	20 (27)	40 (4.7)
Yes	874 (93.6)	54 (73)	820 (95.3)
Genetic Testing Results, n (%)			
Positive	89 (9.5)	4 (5.4)	85 (9.9)
Negative	562 (60.2)	44 (59.5)	518 (60.2)
VUS	283 (30.3)	26 (35.1)	257 (29.9)
If Genetic Testing Results = Positive, What Was the Mutation, n (%)			
BRCA1	10 (11.2)	0 (0)	10 (11.8)
BRCA2	7 (7.9)	0 (0)	7 (8.2)
CHEK2	16 (18)	2 (50)	14 (16.5)
ATM	5 (5.6)	0 (0)	5 (5.9)
Other	51 (57.3)	2 (50)	49 (57.6)

1988625 - Surgical Practice Patterns in Non-Metastatic HER2 Negative Breast Cancer Patients with Germline Pathogenic Variants in Hereditary Breast and Ovarian Cancer Susceptibility Genes

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Background/Objective: Risk of breast cancer ranges from 20%-80% by age 80 for patients with germline pathogenic variants (PV) or likely pathogenic variants (LPV) in moderate or high penetrance cancer susceptibility genes, such as BRCA1/2, PALB2, ATM and CHEK2. Surgical options for patients with PV or LPV include breast conservation therapy (BCT) or mastectomy, as well as risk reduction surgery through contralateral mastectomy given the increased risk of future breast cancer. We aimed to assess the potential influence of genetic testing results on surgical approach for treatment and risk reduction of breast cancer.

Methods: ASCO CancerLinQ reports 1333 incident non-metastatic adult breast cancer cases with PV or LPV germline variants in BRCA1/2, PALB2, ATM and/or CHEK2 from 2002 to 2023. Exclusion criteria included metastases or Stage 4 disease within 9m of diagnosis, patients without stage information, patients with somatic mutations alone, patients with 4 or more positive germline mutations, and patients with oncologic surgical procedures on the breast later than 12 months from diagnosis date. Patients with oncologic surgical procedures on the breast beyond 12 months of diagnosis date were excluded. Patients who had BCT followed by mastectomy within 12 months were categorized in the mastectomy group.

Results: Nearly equal numbers of patients underwent BCT (n=450) compared to Mastectomy (n=460), with an average age in the mastectomy group being younger (46.8 years vs 52.4 years). The majority (65.6%) identified as White, followed by Black (13.2%), Unknown (12.0%), other (7.0%), or Asian (4.1%), and 6.8% of the study population identified as Hispanic/Latina. There was no difference between ER/PR status or triple negative breast cancer status among patients who underwent BCT versus mastectomy. While T stage was not significantly associated with surgical approach, higher N stage was significantly associated with mastectomy compared to BCT (p=0.0001). Patients who underwent mastectomy were also significantly more likely to undergo neo-adjuvant therapy (n=75 vs 25, p< 0.0001). There was no association between race or ethnicity and surgical approach (p=0.5598 and p=0.8563, respectively). Among patients who underwent mastectomy, 53% had pre-operative genetic testing, as opposed to 21% of patients who received BCT. Forty-three percent of patients who elected to undergo contralateral prophylactic mastectomy had pre-operative genetic testing. Germline mutation status was significantly associated with surgical approach as patients with BRCA1/2 variants were more likely to undergo mastectomy (Table, p=0.001588).

Conclusions: Germline genetic testing provides patients with empowering information that can influence decision making regarding the extent of surgery for treatment of breast cancer and future risk reduction of cancer in patients who harbor cancer susceptibility gene variants. This information should be pursued in those meeting criteria early in treatment.

Table 1: Breast Cancer Surgical Procedure and Germline Genetic Mutation Status

	BCT (n=450)	Mastectomy (n=460)	p-value
Genetic Mutation			
ATM	35	19	0.001588
BRCA1	125	169	
BRCA2	185	197	
CHEK2	48	26	
PALB2	36	27	
Multiple (2 positives)	21	22	

1988842 - Bruton's tyrosine kinase expression was associated with immune cell infiltrations and immune response but not with response to neoadjuvant chemotherapy or survival

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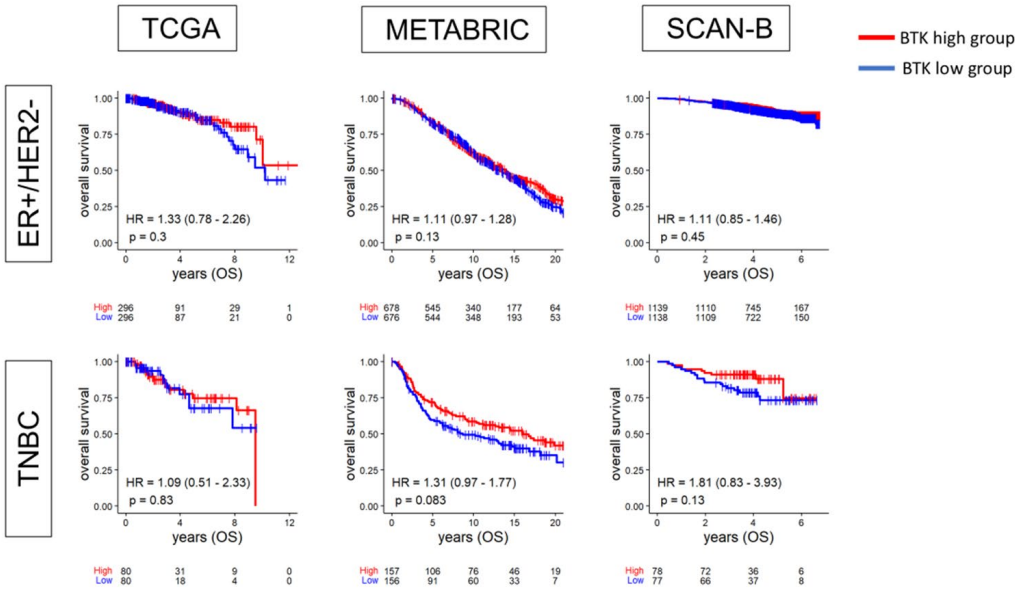
Background/Objective: Bruton's tyrosine kinase (BTK), a downstream mediator of the B-cell receptor (BCR) signaling pathway, is known to be essential in differentiation and proliferation of B-cell. Thus, BTK inhibitors are used to treat refractory mantle cell lymphoma and chronic lymphocytic leukemia. Recent discoveries have revealed the expression of BTK in myeloid-derived suppressor cells, known to worsen breast cancer (BC) outcomes. To this end, it was of interest to investigate the clinical relevance of BTK expression in BC.

Methods: Total of 9297 BC patients from 23 independent cohorts with tumor transcriptome and clinical data were analyzed.

Results: Based on two independent single-cell sequencing cohorts, approximately 15% of B-cells and 30% of myeloid cells within the tumor microenvironment expressed BTK, while no other cells exhibited BTK expression, suggesting that the BTK expression signal from bulk tumor samples primarily originates from these cells. Correlation with BTK expression was highest in macrophage regulation ($r=0.94$), and leukocyte fraction, lymphocyte infiltration, TCR Shannon and TCR Richness (all $r>0.74$), but not with BCR Shannon nor BCR Richness. Total macrophage, M1 and M2 macrophage, dendritic cells, total B-cells, memory B-cells, as well as CD8 and CD4 cells were all highly infiltrated in BTK high BCs. In agreement, BTK high BC enriched all immune-related gene sets in the Hallmark collection including Complement, Inflammatory response, Allograft rejection, IFN-γ, IFN-α, IL2, IL6, and TNFα signaling. At the same time, BTK high BC enriched tumor-aggravating signaling pathways such as PI3k/AKT/mTOR signaling and mTORC1 signaling. The cytolytic activity score, reflecting the global immune killing, was significantly higher in the BTK high BC. Given that BC with abundant tumor infiltrating lymphocytes respond better to chemotherapy, the relationship between BTK expression and response to neoadjuvant chemotherapy was assessed. Somewhat unexpectedly, BTK expression was associated with better response in only one out of ten neoadjuvant cohorts. Further, no change in BTK expression were observed before and after neoadjuvant chemotherapy in six cohorts. While BTK expression was higher in primary sites compared to metastatic sites, it was not associated with distant recurrence. Across the TCGA, METABRIC, and SCAN-B cohorts, no significant overall survival differences were observed between the BTK high and low expression groups. All findings were consistent regardless of the subtypes.

Conclusions: Myeloid cells and B-cells were the source of BTK expression, and it was associated with macrophage regulation and infiltration of various types of immune cells and enriched immune related gene sets. However, BTK expression was not associated with response to neoadjuvant chemotherapy or survival, regardless of subtypes.

Figure 1: Survival outcomes in breast cancer patients by BTK high and low groups.



1957922 - Surgical Choice Among Women with a First Breast Cancer and Pathogenic Variants in Breast Cancer Genes

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Background/Objective: Patient choice regarding risk-reducing mastectomy in the setting of deleterious genetic mutations has been well studied, but preference for oncologic operative treatment after a breast cancer diagnosis is not well documented. The objective of this study was to evaluate surgical decision-making patterns among women with first breast cancer diagnosis who have a genetic mutation associated with breast cancer.

Methods: A single-center, retrospective analysis of adult women with Stage 0-III breast cancer and at least one pathogenic/likely pathogenic (P/LP) variant in a high penetrance (BRCA1, BRCA2, PALB2, PTEN, STK11, TP53) or moderate penetrance (ATM, BARD1, CHEK2, RAD51C, RAD51D) breast cancer susceptibility gene, who underwent surgical treatment between 4/2021 and 4/2024, was performed. Patients with bilateral synchronous breast cancer or a personal history of breast cancer were excluded from analysis. Clinicopathologic factors were compared across individual gene groups using Fisher's exact or Kruskal–Wallis tests. Multivariable logistic regression for associations with CPM included factors determined a priori, including family history of breast cancer, stage, and genetic testing results, as well as any variable with $p < 0.1$ on univariate analysis.

Results: A total 128 patients were included for analysis. P/LP variants were identified in the following genes: BRCA2 (n=36, 28%), BRCA1 (n=31, 24%), CHEK2 (n=24, 19%), ATM (n=17, 13%), PALB2 (n=8, 6.3%), BARD1 (n=5, 3.9%), RAD51C (n=2, 1.6%), RAD51D (n=3, 2.3%), STK11 (n=1, 0.8%), and TP53 (n=1, 0.8%). Most patients selected bilateral mastectomy (n=104, 81%), followed by breast-conserving surgery (n=18, 14%) and unilateral mastectomy (n=6, 5%). Women who underwent CPM were younger (mean age: 46 vs. 59 years; $p < 0.001$) and had fewer comorbidities ($p < 0.001$) than those selecting breast-conserving surgery or unilateral mastectomy. While there were no differences in CPM rates by race, ethnicity, or receipt of neoadjuvant chemotherapy, bilateral mastectomy rates were higher for patients with BRCA2 (83%), BRCA1 (90%), CHEK2 (67%), ATM (94%), and PALB2 (63%) variants. The odds of CPM selection were similar between BRCA1/2 carriers and other high-penetrance genes (aOR, 0.33; 95% CI, 0.07-2.48; p=0.3). CHEK2 carriers (aOR, 0.18; 95% CI, 0.04-0.07; p=0.018) and PALB2 (aOR, 0.09; 95% CI, 0.01-0.66; p=0.017) had a significant negative association with CPM. Age ≤ 50 and comorbidities were associated with CPM; however, first-degree family history was not an independent predictor of CPM (aOR, 0.98; 95% CI, 0.21-5.12; $p< 0.9$).

Conclusions: In this cohort of women with a first breast cancer and P/LP gene variants, we identified differing rates of CPM across genes, specifically more uptake of CPM in select mutation carriers. The high uptake of CPM in CHEK2, ATM, and PALB2 carriers is noteworthy given data confirms these patients are not at increased risk of a new second primary breast cancer. Future studies should examine patient perspectives on genetic testing results, evaluate provider comfort with risk management counselling, and assess long-term patient satisfaction with surgical decision making.

Imaging

1980996 - Screening Mammogram Adherence Before Reduction Mammaplasty and Incidence of Occult Pathologic Findings in Surgical Specimens

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Background/Objective: Non-oncologic reduction mammaplasty (RM) is a commonly performed procedure for symptomatic macromastia or aesthetic purposes. Finding an unexpected breast cancer or high-risk lesion on surgical pathology following RM poses a clinical challenge. Given the limited literature regarding preoperative screening mammogram timing before RM, we aimed to analyze the incidence of occult findings in RM specimens, patient adherence to standard screening mammography guidelines, and the postoperative management of incidental breast cancer following RM. We hypothesized that patients who were up-to-date with screening mammogram preoperatively would have a lower incidence of occult breast cancer in RM specimens.

Methods: We performed a retrospective chart review of adult female patients without a prior history of breast cancer who underwent elective non-oncologic RM at a single institution between January 2019 and December 2023. We recorded patient characteristics, pre-operative mammogram details including BI-RADS classification, and final surgical pathology. Fisher's exact tests were used to compare cohorts. We classified patients as adherent with screening mammogram recommendations if they were 40 years of age or older and received a mammogram within one year of RM.

Results: We identified 1,081 female patients, mean age 38.7 years, who underwent non-oncologic RM. Most had benign findings (n=1,018, 94.1%), with 569 meeting age criteria for screening mammogram and 305 (53.6%) adhering to screening guidelines. High-risk lesions were found in 55 (5.2%) patients, mean age 49.6 years, of whom 46 met age criteria for screening mammogram and 27 (58.7%) were adherent. Breast cancer was incidentally detected in eight (0.74%) patients, mean age 55.5 years (p=0.0031); five had grade I-II invasive carcinoma and three had grade I-II DCIS. All eight met criteria for screening and five (62.5%) were adherent, with preoperative mammograms assigned BI-RADS scores of 1 or 2. Seven (87.5%) of the eight cancer patients had oncologic follow-up available in the medical record for review and all seven consulted a multidisciplinary team; of these, two (25%) underwent mastectomy, two (25%) received whole breast irradiation, and three (37.5%) declined further treatment. There was no association between screening mammogram adherence and the detection of an incidental breast cancer (p=0.7308) or high-risk lesion (p=0.5414) in RM specimens.

Conclusions: Our analysis found no significant association between adherence to screening mammogram guidelines and the detection of incidental pathologic lesions in RM surgical specimens. However, the incidence of occult breast cancer is rare and the interpretation of our results is limited by a low event rate of 0.74%, which is similar to the incidence range of 0.7% to 0.95% reported by other studies. Another limitation is the age cutoff of 40 years-old for screening initiation, as this should be personalized. Most patients with incidental cancer were evaluated by a multidisciplinary team and received further treatment. Future research should investigate predictive factors for incidental lesions in RM specimens, to help guide individualized preoperative mammogram recommendations.

1986405 - Does RECIST 1.1 Predict Nodal Response to Neoadjuvant Chemo-Immunotherapy in Breast Cancer?

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Background/Objective: The fidelity of nodal imaging response to neoadjuvant chemo-immunotherapy (NACI) for patients with early breast cancer is underexplored. NACI is now standard of care for ≥cT2 and/or cN+ ER/PR/HER2-negative tumors and other immune checkpoint inhibitor (ICI) regimens are being tested for other tumor subtypes. ICIs, when efficacious, may induce immune cell activation within regional lymph nodes (LNs) and complicate interpretation of LN imaging findings. Our aim was to define the performance characteristics of baseline and post-NACI imaging per RECIST 1.1 LN assessment criteria with pathologic nodal status at operation.

Methods: With IRB approval, we identified all patients granting research consent with non-metastatic breast cancer from our prospective registry treated with NACI and operated on 03/2020-09/2024. Pre- and post-NACI cross-sectional imaging with PET/CT, CT chest or MRI was reviewed. Short axis diameter (SAD) of target (LN SAD ≥ 15 mm) and non-target (LN SAD ≥10 and < 15 mm) LN(s) at baseline and post-treatment was measured per RECIST 1.1 criteria. Statistical analysis was performed using Fisher's exact and Wilcoxon rank-sum tests.

Results: Among 115 patients, 84 (73%) cN+ (FNA+) form this study cohort. Seventy-five (89%) had a baseline MRI and 78 (93%) a PET-CT or CT; post-NACI 64 (76%) had an MRI and 36 (43%) a PET-CT or CT. Seventy-eight, with pre- and post-NACI cross-sectional imaging were RECIST 1.1 response assessment eligible. Median number of LN+ on imaging was 4 (IQR 2-5) baseline and 0 (IQR 0-2) post-NACI. Fifty-one patients (65%) had a nodal pathologic complete response (pCR) while 1 (1%) had ypN0i+, 13 (17%) ypN1, 10 (13%) ypN2, and 3 (4%) ypN3 disease at operation. Forty-one patients (53%) met RECIST 1.1 criteria for evaluable target LNs, 34 (44%) only evaluable for non-target LNs, 3 (4%) assessment ineligible (baseline SAD < 10mm). The association of imaging (i) and pathologic response is shown (Table). Target LN iCR was not significantly associated with pCR (p=0.24) nor was the combination of target and non-target LN iCR (p=0.76). Neither pre-NACI cN category nor change in number of imaging suspicious LNs pre-to-post-NACI predicted ypN status (p=0.60 and p=0.62, respectively). However, patients with nodal pCR had a median 0 suspicious nodes on post-NACI imaging versus median 1 for patients without nodal pCR (p=0.06). Nodal pCR rates were 73% (32/44), 71% (10/14), and 45% (9/20) for 0, 1, or >1 suspicious nodes on post-NACI imaging with a significant difference in nodal pCR for ≤1 versus >1 suspicious node (p=0.03).

Conclusions: Among breast cancer patients treated with NACI, 89% of patients with pathology confirmed cN+ disease at baseline were eligible for RECIST 1.1 target or non-target LN assessment. RECIST 1.1 response assessment did not correlate with nodal pathologic response suggesting limited utility for RECIST 1.1 nodal assessment for these patients. However, we found a higher nodal pCR rate (72% versus 45%) among patients with ≤1 versus 1 suspicious LN on post-NACI imaging. Further refinement of RECIST 1.1 may improve its predictive value for nodal response assessment in order to better guide surgical treatment planning and inform post-NACI preoperative patient discussion.

Table 1: Association of RECIST 1.1 Nodal Imaging Response with Nodal Pathologic Response

		Nodal Pathologic Response	
RECIST 1.1 Nodal Imaging Response	**Total**	**ypN0**	**ypN+**
Target Lesion Eligible (N=41)			
CR (complete response)	32	21 (66%)	11 (34%)
PR (partial response)	7	6 (86%)	1 (14%)
SD (stable disease)	2	2 (100%)	0
PD (progressive disease)	0	--	--
Non-Target Lesion Only Eligible (N=34)			
CR (complete response)	29	17 (59%)	12 (41%)
PR (partial response)	0	--	--
SD (stable disease)	5	2 (40%)	3 (60%)
PD (progressive disease)	0	--	--
Combined Target and Non-Target Eligbile (N=75)			
CR (complete response)	61	38 (62%)	23 (38%)
PR (partial response)	7	6 (86%)	1 (14%)
SD (stable disease)	7	4 (57%)	3 (43%)
PD (progressive disease)	0	--	--

1987341 - Peritumoral Magtrace® injection does not prevent post-operative MRI surveillance after breast-conserving surgery

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Background/Objective: Magtrace® (Endomag, Cambridge, UK) is a superparamagnetic iron oxide tracer that is non-inferior to the gold standard for sentinel lymph node biopsy (SLNB) procedures. Magtrace enables improved operational efficiency(1), cost savings(2) and advanced techniques such as dSLNB(3). Despite this, some clinicians have concerns that residual Magtrace® may limit MRI use after breast-conserving surgery (BCS) (4). Current literature has reported only on sub-areolar injection(4,7,8). The MagTotal technique involves a peritumoral (PT) injection of Magtrace®(5) which may reduce MRI artifact by removing residual Magtrace® during BCS. 1ml injection may further reduce artifact compared to previously used 2ml injection volume(9). The aim of this study was to investigate the readability of post-operative MRI after BCS with 1ml peritumoral injection.

Methods: We performed retrospective analysis of post-operative BCS patients who had received MRI after a 1ml PT injection of Magtrace® by a single surgeon within a single health system. Standard MRI protocol included a 1.5T, T1weighted without fat saturation, T1weighted with fat saturation and contrast enhancement, and T2-weighted images. The MRI images were reported by a fellowship trained radiologist (Radiologist 1) as part of routine care and a second review was performed by an independent fellowship trained breast radiologist (Radiologist 2), who graded images based on the following Likert score: 0 (no artifact), 1 (good diagnostic quality), 2 (locally impaired but still readable), 3 (hampered clinical assessment) (7,8). Number of patients eligible for MRI was calculated by reviewing records of all patients receiving breast surgery between March 2023 and June 2024. MRI was recommended for patients diagnosed with cancer < 50 years, or in one case, for surveillance of a large lobular cancer.

Results: 420 surgeries were included. 24 MRI's (5.7%) were ordered post-operatively as a part of clinical surveillance. Median time from surgery to MRI was 351 days (147-459). All images were reported as readable by Radiologist 1, with one image showing local impairment. Upon second read by Radiologist 2, all images were rated as readable (1 or 2) in T1, fat suppressed scans with contrast and T2 scans. One image using T1 with no contrast was rated as 3.

Conclusions: In patients requiring post-operative MRI, the use of a PT injection of Magtrace® did not prevent MRI interpretation. T1 with contrast enhancement was the best sequence for readability in this patient cohort. Overall, use of MRI following BCS was low (5.5%) and included primarily younger and high-risk patients. This data shows Magtrace® use does not preclude post operative MRI surveillance.

Table 1. Total number and category of MRI scans in rated by Radiologist 2 (T1 FS (no contrast, T1 FS with contrast, T2. Scored on Likert scale)

Tab 1. Table showing total number and category of MRI scans in rated by Radiologist 2 (T1 FS (no contrast, T1 FS with contrast, T2. Scored on Likert scale)

	Number of MRI's	0. No Artifact	1. Good diagnostic Quality	2. Locally impaired but readable	3. Artifact prevents interpretation
T1 FS (No Contrast)	8	0	0	7	1
T1 with contrast	8	0	4	4	0
T2	8	0	1	7	0

1988607 - Mamas getting mammos: A single institution review of trends in rates for screening and diagnostic imaging of pregnant patients

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Background/Objective: Breast imaging during pregnancy has had a lack of consensus through the years due to concerns for radiation from mammography, teratogenic effects from contrast used with MRI, and false positives from ultrasound. There has been hesitation towards the use of mammography both for screening and diagnostic imaging in pregnant women due to radiation risk to the fetus. However, the overwhelming consensus from, National Comprehensive Cancer Network (NCCN) and American College of Radiology (ACR) is that the fetal radiation dose from a four-view mammogram is less than 0.03 mGy, which does not pose any teratogenic effects to the fetus. The incidence of Pregnancy-associated breast cancer (PABC) has increased over the past few decades and is often aggressive with poor prognostic factors. Early detection, as in most breast cancers, can be beneficial for the prognosis of PABC. In 2018, the ACR published recommendations of breast imaging in pregnant and lactating women which stated that mammography and digital breast tomosynthesis were appropriate for lactating women, pregnant women < 30 at high risk, 30-39 and elevated risk, and ≥40 at any risk level. Following these recommendations, NCCN published recommendations in 2022 stating that screening mammograms can and should continue on a yearly basis during pregnancy. The purpose of this study was to quantify the changes in imaging in pregnant patients before and after the publication of NCCN's consensus guidelines.

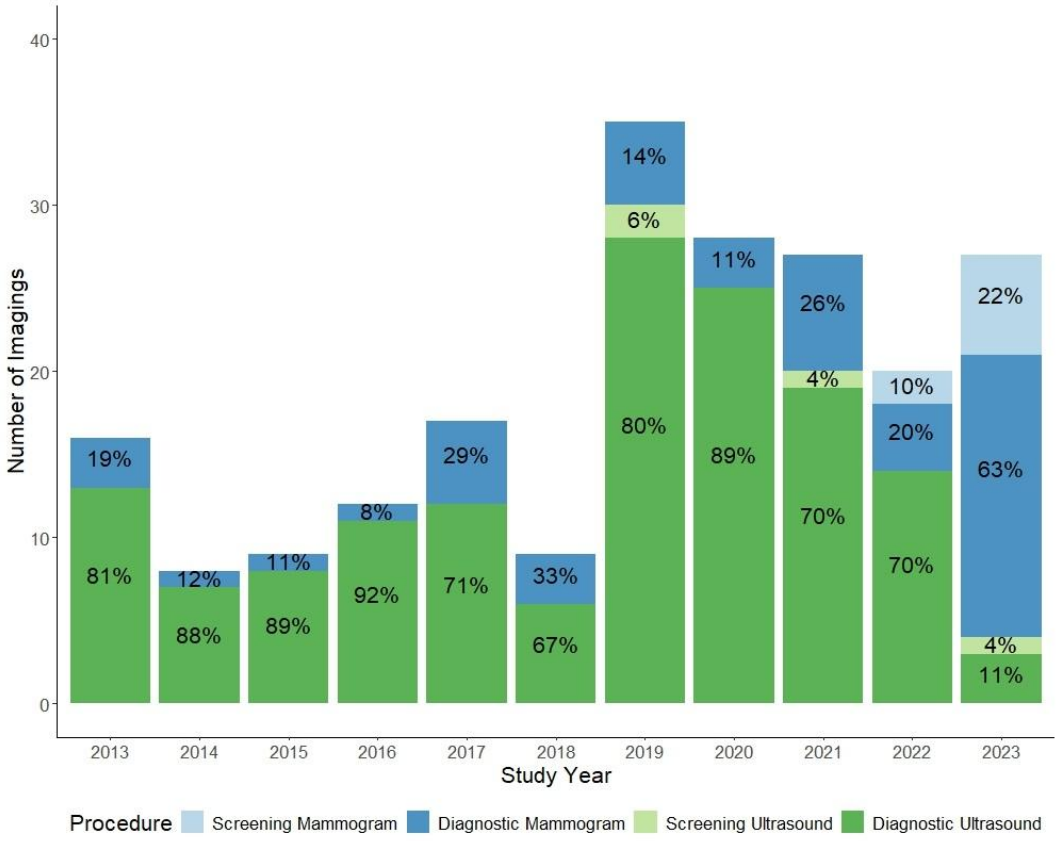
Methods: This study is a HIPAA-complaint, IRB-approved retrospective observational study using data obtained from a single, large volume hospital's electronic medical record using Magview. The study included pregnant patients who underwent screening or diagnostic mammograms or ultrasounds from 2013-2023. MRI was not included as it is not recommended for screening or diagnosis during pregnancy. Patients who were not pregnant were excluded. Descriptive studies were performed. Categorical variables are described as frequencies and percentages, and continuous variables were described as medians and IQR. Fisher's exact test was implemented to assess whether there was a difference in the frequency of imaging between 2013-2021 and 2022-2023.

Results: Among 209 pregnant women who underwent any breast imaging from 2013-2021, there was a significant difference in the distribution of imaging types among pregnant patients when compared to 2022-2023 ($p < 0.001$). As seen in Figure 1, there was an increase in the proportion of mammograms in 2022 (30%) and 2023 (85%) compared to prior years when ultrasounds comprised greater than 80% of imaging. Furthermore, screening mammograms increased from zero percent (n=0) in the 2013-2021 time period to 17% (n=8) in the 2022-2023 timeframe.

Conclusions: Screening for breast cancer during pregnancy is important for the early detection of breast cancer just as it is in the non-pregnant population. The ACR supports the use of mammography for screening for pregnant women at high risk < 30, elevated risk 30-39, and ≥40 at average risk. This study demonstrates that our institution has had a significant increase in the proportion of mammograms since 2022 when the NCCN recommendations were published regarding continuation

of screening during pregnancy. It also suggested an overall increase in screening mammograms during that time.

Figure 1



1987497 - Questioning Protocols: The Case Against Routine Post-Lumpectomy Mammography for Patients with Calcifications

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Background/Objective: Post-lumpectomy mammography (PLM) is commonly recommended following lumpectomy for suspicious calcifications prior to initiating adjuvant radiation therapy to ensure all malignancy-associated calcifications have been resected. PLM has been routinely used at our institution for patients who presented with malignant calcifications and were treated with breast conservation therapy (BCT). We evaluated the utility of PLM in detecting residual breast cancer to determine if it is necessary for all patients who had malignant calcifications at the time of diagnosis.

Methods: A retrospective analysis was performed by querying the Henry Ford Breast Cancer Registry for all patients with a malignant diagnosis on core biopsy who were managed with BCT across 5 sites within our network in 2021.

Results: A total of 456 patients were included in the study. Of these, 156 (34.2%) had calcifications on initial imaging and 124 were recommended for PLM at their initial tumor board presentation. The histology of the initial biopsy in patients with calcifications was predominantly DCIS (64/156, 41.0%) and IDC (53/156, 33.9%). PLM was completed for 128 patients after post-operative tumor board discussion. In this cohort, 24 patients demonstrated calcifications on their PLM (18.8%). After radiology review, 13/24 (54.2%) of these PLM-detected calcifications were read as benign and required no additional workup, while 11/24 (45.8%) demonstrated suspicious calcifications requiring additional histologic confirmation, either with stereotactic core needle biopsy or re-excision. Additional work-up with biopsy or re-excision was completed in all 11 of these patients. In 4 /11 patients, residual disease was detected on additional sampling, all of which was determined to be DCIS on pathological diagnosis. The average span of calcifications on pre-operative imaging in these patients with DCIS in residual calcifications following lumpectomy and additional sampling was 66.3 mm.

Conclusions: Only 4 of the 128 patients who were recommended for PLM demonstrated residual disease (3.1%), and the mean span of calcifications in these patients was 66.3 mm (Range 55.0-84.0 mm). Due to the extremely low likelihood of detecting residual disease in patients who initially presented with malignant calcifications, it can be concluded that routine use of PLM is not necessary and should be performed only for patients at high-risk of residual disease. Based on the results from our institution, high risk could be defined as having extensive malignant calcifications, greater than 50 mm, on mammogram at the time of diagnosis.

1987340 - Does Preoperative Breast MRI Assist in Identification of Axillary Lymph Node Metastases

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Background/Objective: Breast MRI is the most sensitive modality for identification of invasive breast cancer (IBC) with published sensitivity rates of 89-100%. Prior studies have demonstrated a change in breast surgical management after pre-operative MRI in 9-23% of patients, however, the effect of MRI on axillary management has not been as thoroughly evaluated. While sentinel lymph node biopsy (SLNB) is the standard of care for most patients with IBC, axillary de-escalation in select patients is supported by recent studies, such as the SOUND trial. The current study evaluates if radiographic data from preoperative breast MRI can identify axillary lymph node metastases with a high sensitivity, specificity, and accuracy.

Methods: With IRB approval, patients with IBC, a preoperative breast MRI, and SLNB or axillary biopsy prior to neoadjuvant chemotherapy from 1/1/2020- 12/31/2022 were identified retrospectively from a single institution. Descriptive and receiver operative characteristics (ROC) analysis was used to determine the predictability of MRI in our cohort. Sensitivity, specificity, positive and negative predictive values (PPV, NPV) and overall accuracy were calculated.

Results: Of the 1759 patients reviewed, 841 met inclusion criteria. The mean age was 56.5, with 26.30% ≥ age 65. Over 99% of the patients were female with an average BMI of 28.4. 77.7% of tumors were Invasive Ductal Carcinoma and 14.6% were Invasive Lobular Carcinoma. 71% of patients had tumors ≤ 20 mm and 29% had tumors larger than 20 mm. The overall sensitivity of MRI for detecting axillary metastases was 59.4%, with an 87.6% specificity, 83.1% NPV, 67.9% PPV, and 79.0% accuracy. When excluding micrometastases (≤2mm), which are unlikely to be detected on imaging, sensitivity increased to 61.5% and NPV increased to 84.4%, while specificity (87.6%), PPV (67.6%) and accuracy (79.9%) remained relatively the same. In patients with negative axillary findings on MRI, 19.6% had axillary metastases on SLNB. In patients with tumors ≤ 2 cm, only 12.6% (60/475) had axillary metastasis, compared to 13.7% in the patients who underwent SLNB in the SOUND trial. Of those patients, 30% (18/60) received chemotherapy. However, this included 6 patients with either Triple negative or HER2+ disease, and 6 pre-menopausal patients. In our study, only 5 postmenopausal patients with HR+/HER2- IBC received chemotherapy following a negative MRI and positive SLNB.

Conclusions: This study demonstrates that breast MRI had a moderate sensitivity (59.4%) and high specificity (87.6%) in identifying axillary lymph node metastases, with AUC of 0.765. Notably, only 12.6% of patients with negative axillary MRI findings and tumors ≤ 2 cm had axillary metastases. While MRI is not as sensitive for detecting axillary metastases as in-breast tumors, its high NPV (83.1% increasing to 84.4.% when excluding micrometastases) suggests it can effectively identify patients with a low likelihood of axillary metastases. These findings support the use of pre-operative breast MRI as an adjunct tool to identify patients who are suitable for axillary de-escalation. When combined with the Choosing Wisely guidelines, MRI may help clinicians consider omitting a SLNB in select patients with early-stage breast cancers who are clinically and radiographically node negative.

Table 1: Demographic and Clinical Characteristics of the Patients (N=841)

TABLE 1. Demographic and Clinical Characteristics of the Patients (N=841)	
Characteristics	**Mean ±SD/ N (%)**
Age Range (years)	56.46 ± 11.33 (25-87)
Sex	
Male	1(0.10)
Female	840 (99.90)
Race	
White	493 (58.80)
Black	111 (13.20)
Asian	121 (14.40)
Hispanic	58 (6.90)
Other	56 (6.70)
Axillary MRI Findings	
No lymphadenopathy	616 (73.30)
Indeterminate	58 (6.90)
Enlarged	166 (19.80)
Tumor Type	
IDC	1378 (76.4)
ILC	426 (23.6)
Mixed	41 (4.9)
Inflammatory	1 (0.10)
Other	22 (2.60)
Lymphovascular Invasion	
No	696 (82.60)
Yes	137 (16.40)
BMI Range (kg/m^2)	28.47 ± 6.40 (10-54)
Multifocality	
No	583 (69.70)
Yes	137 (16.40)
Tumor Grade	
I (Low)	133 (15.80)
II (Medium)	538 (64.00)
III (High)	170 (20.20)
ER Status	
Positive	747 (88.80)
Negative	94 (11.20)
Unknown	-
PR Status	
Positive	654 (77.80)
Negative	187 (22.20)
Unknown	-
HER2 Status	
Positive	97 (11.50)
Negative	739 (87.89)
Unknown	5 (0.60)
Oncotype Score	
Low (0-25)	479 (90.50)
High (26-100)	50 (9.50)
Final Node Status	
Node Positive	256 (20.40)
Node Negative	583 (69.40)
Unknown	1 (0.10)

Abbreviations: IDC, Invasive Ductal Carcinoma; ILC, Invasive Lobular Carcinoma; BMI, Body Mass Index

1986755 - Validation of breast cancer quantitation from MRIs: Comparison of an AI-powered software with expert radiologists

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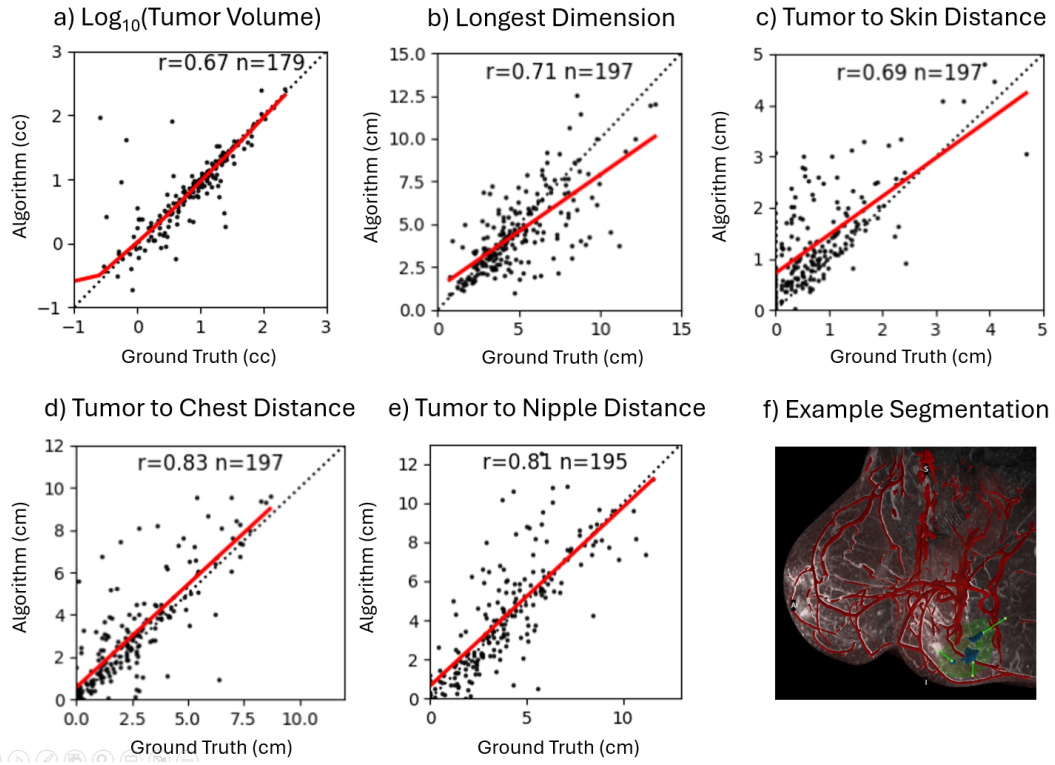
Background/Objective: Surgery remains the primary curative treatment in the management of early-stage and locally advanced invasive breast cancer. Artificial Intelligence (AI)-powered analyses of cancers offer the compelling potential to quantitate the 3D size, shape, and location of disease with expert precision currently inaccessible in radiology departments due to budget and labor constraints. We sought to validate a segmentation algorithm specifically designed to segment and subsequently characterize biopsy-proven invasive breast cancers in dynamic contrast enhanced magnetic resonance imaging (DCE-MRI).

Methods: A retrospective study assessing algorithm performance with ground-truth established by 7 US Board-certified, Fellowship-trained breast radiologists (5-20 years of experience) was conducted. Briefly, ground truth was established via a multi-case, multi-reader study where radiologists: 1) measured quantities of interest including the tumor dimension along each of the three anatomical axes, and the closest approach of disease to the chest, nipple, and skin; and 2) approved tumor regions hand-segmented by trained annotators. Algorithm-generated segmentations were compared directly to ground truth.

Results: Data from over 15 institutions geographically distributed throughout the US representing both Academic and Community practice settings were used to train or validate the device performance. The algorithm was trained on 676 patients, and subsequently validated with 202 patients. Segmentation performance was primarily assessed by volumetric and surface Dice score, which quantify the similarity of the overall tumor segmentation (Dv) and the similarity of tumor boundary (Ds), respectively. An average Dv = 0.75±0.24 observed in the validation dataset was near that reported in studies examining interadiologist agreement where the median volumetric dice was found to be 0.81 (Hirsch et al. Radiology AI, 2021). Similarly, average surface dice, Ds = 0.88±0.24, was near the theoretical maximum (Ds,max = 1). Absolute error in tumor center of mass was found to be 7.2mm. Notably, this is across tumors of all sizes, and accounts for errors in both large and small tumors. Tumor quantities of interest including tumor to landmark distances, and tumor volume were compared directly to radiologist measurements (see Figure). Statistically significant ($p < 0.01$; t-test), and numerically substantial correlation was observed for tumor volume (r=0.67), longest dimension (r=0.71), tumor to skin distance (r=0.69), tumor to chest distance (r=0.83). and tumor to nipple distance (r=0.81). Additionally, mean distance error for each measurement was similar to observed interradiologist variability. Finally, algorithm performance was found to be stable across clinical and imaging substrata. No statistically different segmentation performance ($p>0.05$, Welch's t-test) was observed across T stage (T1-T4), histology (HR+/HER2-, HR+/HER2+, HR-/HER2+, TNBC), MRI manufacturer (GE, Siemens, Philips), or magnetic field strength (1.5T, 3T).

Conclusions: Because data from each institution was used solely to train or to validate the algorithm, the validation result establish the generalizability of the algorithm performance. The statistical performance of the platform's automated features was robust and within the range of inter-radiologist variability. These detailed depictions of 3D tumor offer both qualitative and quantitative assessment of cancer topology and may aid in management of patient disease.

Figure 1: Segmentation model validation results comparing radiologist-established ground truth with algorithm performance for: a) tumor volume, b) tumor longest dimension, c) tumor to skin distance, d) tumor to chest distance, e) tumor to nipple distance, and an example segmentation overlaid on the MRI (f).



1984899 - Enhancing Breast Cancer Diagnosis: Evaluating AI's Role in Differential Assessment of Breast Lesions

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Background/Objective: By 2020, breast cancer became the most common type of cancer. Women are advised to undergo annual screenings to detect it in early stages. Key imaging techniques include ultrasound, mammography, MRI, and PET, alongside with clinical examination and histopathological evaluation. Standardized screening protocols currently utilized have a very high sensitivity but often lead to overdiagnosis, false positives and exorbitant costs. AI has shown promise in improving differential diagnostic accuracy, consistency, and efficiency. This study aims to explore AI integration in putting breast lesions into high, medium and low risk, and to highlight current achievements and potential prospects.

Methods: In this non-human subject qualitative study, 4 different breast lesions (simple cyst, fibroadenoma, radial scar, IDC) were selected to evaluate the diagnostic accuracy of AI utilizing ChatGPT. Breast lesions were defined as the most common lesions found in breast tissue. Using Radiopaedia, 10 case reports pertaining to each lesion were selected, 5 using mammography and 5 using ultrasound, respectively. The history of the presenting illness and investigation findings were extracted from each case report. Five study staff independently inputted each extracted data into ChatGPT using the following prompt: "Offer your top 3 differential diagnoses, identifying your most probable diagnosis." Responses were reviewed by 2 internal medicine residents enrolled in an ACGME-approved training program and were crossmatched with the case reports they were obtained from as a baseline for the correct diagnosis. Responses were categorized into the following 3 groups by confidence in diagnosis: 1- exact match, the most probable diagnosis offered by ChatGPT was the correct diagnosis; 2- correct differential, the right diagnosis was included in the differential list, and 3- incorrect, with no correct diagnosis offered. Furthermore, to assess the reproducibility of responses, the 3 differential lists provided for each scenario were compared, and a reproducible result was defined as having the same 3 differential lists per scenario.

Results: A total of 40 diagnostic images (20 mammograms and 20 ultrasounds) were inputted into ChatGPT, 10 images per lesion, of which 39/40 were correctly included in the differential list, giving it a diagnostic accuracy score of 97.5% (CI: 92,65-100%). When evaluating the confidence in diagnosis using ultrasound, 25% (5/20) were exact match, 75% (15/20) were correct differentials, and 0% (0/20) were incorrect. When evaluating the confidence in diagnosis using mammography, 5% (1/20) were exact match, 90% (18/20) were correct differentials, and 5% (1/20) were incorrect. Lesion-specific differential diagnostic accuracy was calculated for both diagnostic modalities and is as follows: simple cyst 100% (10/10), fibroadenoma 90% (9/10), radial scar 100% (10/10), ductal carcinoma 10/10% (10/10). All proposed scenarios resulted in the same response when run 3 times through the ChatGPT, suggesting a reproducibility of 100%.

Conclusions: The use of artificial intelligence (AI) in breast diagnosis holds significant promise for enhancing the accuracy, efficiency, and consistency of detecting and diagnosing breast abnormalities. Based on the findings of this study, which demonstrated an accuracy rate of 97.5%, AI algorithms can serve as a valuable tool in the early detection and diagnosis of breast conditions, improving patient outcomes.

1985506 - Paternal vs. Maternal Inheritance of a BRCA Mutation: Is there a difference in screening patterns?

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Background/Objective: National screening protocols for female BRCA mutation carriers has been well studied. However, patients with a paternal family history genetic inheritance may be under-recognized, thus never meeting the national standards for high-risk surveillance. We investigated the differences in prior screening practices and subsequent management between patients with maternal (M-BRCA) vs. paternal BRCA (P-BRCA) lineage for patients diagnosed with breast cancer. To our knowledge there are no current studies that exist in the published literature on the impact of BRCA lineage (M-BRCA vs P-BRCA) on screening patterns and stage of diagnosis.

Methods: Retrospective review was performed to identify women with newly diagnosed breast cancer who were also BRCA positive from 2010-2022. Pedigree was reviewed and lineage of the mutation was assigned as definitively or likely paternal or maternal; we excluded patients whose lineage could not be determined. We conducted two-sample independent t-tests to compare mean age at genetic testing, surgery, diagnosis, and tumor size between maternal and paternal inheritance groups. Multinomial logistic regression examined the association between family pedigree (maternal vs. paternal) and mode of detection (MRI, MAMMO/US, and PE), while logistic regression was applied to other outcomes. Results are presented as odds ratios with 95% confidence intervals.

Results: 221 BRCA+ females with newly diagnosed breast cancer patients were identified, 131 patients met inclusion criteria where lineage could be determined (See table); 59 (44%) had P-BRCA and 72 (55%) had M-BRCA. P-BRCA patients were 60% less likely to participate in a high-risk screening compared to M-BRCA patients (OR = 0.4, 95%CI [0.2,0.9], p = 0.0385). Age at diagnosis was not found to be a significant modifier of screening practices (p = 0.122). However, when stratifying by age, patients under 40 years, we found P-BRCA were 80% less likely to participate in screening programs compared to M-BRCA (OR=0.2, 95%CI [0.05,0.7], p = 0.0119). We also found that among individuals over 40 years, P-BRCA individuals were 30% less likely to participate in a high-risk screening program compared to M-BRCA patients; this association was not statistically significant (OR=0.7, 95%CI [0.2, 2.0], p = 0.4882). There was a non-statistically significant trend for P-BRCA patients to detect cancer by physical exam versus MRI compared to M-BRCA patients, at 2.7 times higher (p = 0.07). We also noted that P-BRCA patients were 2.2 times more likely to be detected by means of mammography or ultrasound compared to MRI than M-BRCA patents, again not statistically significant (p = 0.1616). Consistent with our previous institutional findings, P-BRCA patients were more likely to be diagnosed with invasive cancer and nodal disease compared to M-BRCA patients (OR=0.2, 95%CI [0.07,0.7], p = 0.0138, OR=2.5. 95% [1.0,6.4] p = 0.0596).

Conclusions: Our results support the hypothesis that patients with paternal linked BRCA mutations are less likely to be enrolled in high-risk screening programs prior to their diagnosis of cancer. Our findings highlight the increased need for education and awareness regarding potential P-BRCA lineage to optimize high-risk surveillance and early detection in BRCA positive women.

Table 1: Data Table 1

	n=131(%)	M-BRCA n=72 (55%)	P-BRCA n=59 (44%)		
				Effect Size (95% CI)	p-value
Age at Diagnosis					
Mean (SD)	46.4 (12.82)	48.1 (13.88)	44.5 (11.20)	3.6 (-0.8, 8.0)	0.1049
Range	26.7-95.1	26.7-95.1	27.5-77.5		
Average tumor size (mm)					
Mean (SD)	22.1 (16.5)	19.8 (14.2)	24.2 (18.3)	-4.3 (-10.7, 1.9)	0.1728
Range	1.0-86.0	2.0-60.0	1.0-86.0		
				Odds ratio (95% CI)	p-value
High-Risk Screening Program					
Yes	36 (28.1%)	25 (35.7%)	11 (19.0%)	0.4 (0.2-0.9)	**0.0385**
No	92 (71.9%)	45 (64.3%)	47 (81.0%)		
Disease Stage at Diagnosis					
Noninvasive	21 (16.0%)	17 (23.6%)	4 (6.8%)	0.2 (0.07-0.7)	**0.0138**
Invasive	110 (84.0%)	55 (76.4%)	55 (93.2%)		
Lymph Node Status					
Positive	22 (16.8%)	8 (11.1%)	14 (23.7%)	2.5 (1.0-6.4)	**0.0596**
Negative	109 (83.2%)	64 (88.9%)	45 (76.3%)		
Mode of Detection					
Mammo/US	56 (43.4%)	30 (42.9%)	26 (44.1%)	2.15 (0.73-6.40)	0.1616
MRI	21 (16.3%)	15 (21.4%)	6 (10.2%)		
Physical Exam	52 (40.3%)	25 (35.7%)	27 (45.8%)	2.7 (0.91 to 8.05)	0.0746
Unknown	2 (1.2%)	2 (2.8%)	0 (0.0%)		

P-BRCA is defined as patients with likely paternally linked BRCA mutation inheritance. M-BRCA is defined as patients with likely maternally linked BRCA mutation inheritance. Noninvasive refers to ductal carcinoma in-situ without an invasive component. Mammo/US is defined as Mammography or Ultrasound

1987463 - Opportunistic Mammography for Women Over 40 at UK One-Stop Breast Clinics: Rethinking Current Guidelines and Recommendations

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Background/Objective: Breast cancer is the leading cause of cancer- related deaths in women worldwide, and early detection through screening is critical to reducing mortality. To that end, USPSTF recommends that women between the ages of 40 and 74 receive a screening mammogram every two years. Similarly, the UKNHSBSP (NHS Breast Screening Program) invites women aged between 50–70 to have a mammogram every three years. While the benefits and drawbacks of breast screening programs are well established, there is a paucity of data with regards to symptomatic women with normal physical examination that are offered an "opportunistic" mammogram as part of their referral to one stop breast clinics. This audit investigates the number of cancers detected in women offered "opportunistic" mammograms at a busy tertiary, one stop breast clinic at our center and whether this practice is cost-effective to justify the current NICE/ABS guidelines-based practice.

Methods: We conducted a retrospective review of electronic hospital records for all women referred to the one-stop breast clinic at a busy academic tertiary breast cancer unit in the UK between June and September 2023. A total of 658 "opportunistic" mammograms were performed over six months in women who presented with various symptoms but had unremarkable clinical examination. Adherence to institutional guidelines on patient privacy and data security ensured accuracy and confidentiality.

Results: Six hundred and fifty-eight (658) "opportunistic" mammograms were performed on women aged 40 to 74. Of these, 68 (10.33%) showed indeterminate, suspicious, or malignant findings, leading to 38 image-guided biopsies (with the remainder downgraded to normal after further mammographic assessments and ultrasound scans). Additionally, 42 biopsies were performed on patients with benign mammographic findings, bringing the total number of biopsies to 80 (12.15% of patients). Histopathology revealed a malignant neoplasm (B5) in 18 patients (2.70% of the total patient population). Five patients had B3 lesions, while the rest had normal breast or benign histopathology. Among the diagnosed cancers, there were 12 cases of NST IDC , 1 ILC , 5 DCIS. Age distribution of malignant diagnoses was as follows: 6 patients (33.33%) were aged 40–49, 8 patients (44.44%) were aged 50–70, and 4 patients (22.22%) were aged 71 and above.

Conclusions: Only 18 cancers were detected out of 658 mammograms (2.70% detection rate). Ten patients diagnosed with cancer were outside the UK screening age criteria. Further research is needed to evaluate whether waiting for routine screening or the development of clinical symptoms would have altered their outcomes. The low detection rate suggests that opportunistic screening may not be cost-effective under current recommendations. The high number of biopsies (80 out of 658) highlights unnecessary procedures and associated costs. Widespread implementation of opportunistic screening could lead to substantial healthcare resource consumption with limited benefit. A reassessment of existing guidelines and the development of more targeted screening strategies for symptomatic women are warranted.

1987827 - Practice Patterns and Rate of Additional Disease Detection with Preoperative MRI in Black Women with Breast Cancer

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Background/Objective: Utilization of preoperative magnetic resonance imaging (MRI) varies widely among health institutions and breast surgeons. Although MRI is a highly sensitive modality for detecting breast cancer, overall patients' survival benefit is yet to be determined. Conversely, preoperative MRI has been shown to be associated with higher mastectomy rates. Despite the controversy and lack of guidelines the rate of preoperative breast MRI continues to be on the rise. Prior studies have shown that non-Hispanic Black women are less likely to undergo preoperative MRI compared to their non-Hispanic White counterparts, highlighting potential disparities in breast cancer treatment.

Methods: We examined practice patterns and rate of additional disease detection with preoperative breast MRI in Black women with breast cancer in our community-based Comprehensive Breast Center. This was a retrospective IRB-approved analysis of a total of 200 patients who underwent surgery from January 2021 to June 2024. Decision for preoperative MRI was up to surgeon's discretion and was analyzed based on patients' age, breast density, histopathology, tumor hormone receptor status as well as presence of regional lymph node involvement. Additional biopsy and cancer detection rates were determined. Analysis of the type of surgery patients underwent was made.

Results: Of the 200 patients who underwent surgery 99 (49.5%) had preoperative breast MRI. 33 (33.3%) of the patients who underwent breast MRI had additional breast findings not otherwise detected on initial imaging. This led to 14 second look ultrasounds and 2 second look mammograms as well as 29 additional biopsies in 24 patients (24.2%). A total of 16 MRI-guided biopsies, 10 ultrasound-guided biopsies and 3 stereotactic-guided biopsies were performed. Additional cancer was detected in 11 (11.1%) of preoperative MRI patients. 2 of these patients were found to have contralateral cancer. Patients who underwent preoperative MRI were more likely to have higher breast density (49.5% vs 18.8%), be 50 years of age or younger (34.3% vs 7.9%) have invasive lobular carcinoma (14.1% vs 4.0%), have hormone receptive negative tumor (27.3% vs 14.9%) and have clinically positive lymph node involvement (26.3% vs 7.9%) compared to non-MRI cohort. Patients with additional cancer detection were more likely have low density breasts (63.6%), be over the age of 50 (90.9%) have invasive ductal pathology (63.6%), be hormone receptor positive (81.8%) and have no clinical lymph node involvement (72.7%). Patients who underwent preoperative MRI were more likely to undergo mastectomy (63.6% vs 34.7%) and were more likely to have a bilateral mastectomy (13.1% vs 2.0%) compared to non-MRI patients.

Conclusions: Although preoperative MRI does lead to additional cancer detection in Black women with breast cancer, our study shows that clinical factors such as younger patient's age, higher breast density, lobular tumor histopathology, negative hormone receptors and lymph node involvement does not necessary predict presence of additional disease. Preoperative MRI is associated with higher mastectomy rates, including bilateral mastectomy. Further studies in this population are needed.

1987851 - Characterizing Breast Cancer Subtypes Detected by Automated Breast Ultrasound (ABUS) in Supplemental Screening for Women with Dense Breast Tissue: A Retrospective Analysis

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Background/Objective: Automated breast ultrasound (ABUS) is increasingly being used as a supplemental screening modality for breast cancer detection in women with dense breast tissue. There is little data on the type and stage of breast cancers that ABUS is detecting that are missed by screening mammogram (MGM) in women with dense breast tissue.

Methods: In a cohort of women who had MGM and ABUS in the setting of dense breasts, we compared patient and tumor characteristics of mammographically occult breast cancers that were detected on ABUS alone to breast cancers detected on screening MGM alone or in addition to ABUS. Subgroup analysis was performed for women ≥ 65 years old and for cases of invasive cancer only.

Results: There were no significant differences in patient age, race, family history of breast or ovarian cancer, presence of pathogenic variants, or menopausal status between patients whose cancers were detected on screening MGM vs. ABUS alone. Patients with cancers detected on ABUS alone had a lower body mass index compared to patients with cancers detected on MGM (mean 25.1 vs 26.6, p=0.011). Of women undergoing supplemental screening imaging with ABUS (in addition to screening MGM) for dense breast tissue from 2018-2023, there were 493 breast cancers diagnosed. One hundred and forty-five (29.4%) of these cancers were detected on ABUS alone and not detected on screening MGM. ABUS-detected cancers were more likely to be AJCC Stage I (77.2% vs 69.9%, p< 0.01), grade I (41.4% vs 29.6%, p=0.011), and HER2/neu negative (85.5% vs 69.3%, p=0.0004). Approximately 8% of cancers detected on ABUS were noninvasive compared to 16.1% of cancers detected on screening MGM (p=0.03). Furthermore, 27 (18.6%) of ABUS-detected tumors were invasive lobular carcinoma compared to 40 (11.5%) of screening MGM-detected tumors (p=0.03). Subgroup analysis in women ≥ 65 years old (n=197) showed that 51 (25.8%) cancers were detected by ABUS alone. ABUS-detected cancers in women ≥ 65 years old were more likely to be smaller (0.8 vs 0.7cm, p=0.05) and more likely to be non-invasive cancer (19% vs 2%, p=0.005) than cancers detected on MGM.

Conclusions: Nearly a third of breast cancers detected in women undergoing screening MGM with supplemental ABUS imaging for dense breast tissue were detected by ABUS alone. These cancers were early stage and more likely to be invasive cancers than cancers detected on MGM.

Table 1: Types of breast cancer detected by screening mammogram compared to those detected by ABUS and missed by screening mammogram

Table 1. Types of breast cancer detected by screening mammogram compared to those detected by ABUS and missed by screening mammogram.

	All Patients	Detected on MGM +/- ABUS	Detected on ABUS Only	p-value
Total Patients, N	493	348	145	-
Diagnostic MGM Lesion Size, cm [Mean ± SD]	-	1.6 ± 1.7	-	-
ABUS Lesion Size, cm [Mean ± SD]	1.1 ± 0.8	1.1 ± .8	1.0 ± 0.8	0.0956
Biopsy Lesion Size, cm [Mean ± SD]	0.7 ± 0.4	0.7 ± 0.4	0.7 ± 0.4	0.2411
Surgical Pathology Tumor Size, cm [Mean ± SD]	1.5 ± 1.3	1.4 ± 1.1	1.6 ± 1.6	0.8555
Tumor Stage [N (%)]				0.0056
0	65 (13.2)	57 (16.4)	8 (5.5)	
IA	322 (65.3)	217 (62.4)	105 (72.4)	
IB	33 (6.7)	26 (7.5)	7 (4.8)	
II	34 (6.9)	22 (6.3)	12 (8.3)	
III-IV	6 (1.2)	2 (0.6)	4 (2.8)	
Unknown	33 (6.7)	24 (6.9)	9 (6.2)	
Tumor Grade [N (%)]				0.0105
1	163 (33.1)	103 (29.6)	60 (41.4)	
2	219 (44.4)	154 (44.3)	65 (44.8)	
3	89 (18.1)	73 (21.0)	16 (11.0)	
Unknown	22 (4.5)	18 (5.2)	4 (2.8)	
Positive Lymph Nodes [N (%)]				
Negative	309 (62.7)	211 (60.6)	98 (67.6)	0.3251
Positive	74 (15.0)	54 (15.5)	20 (13.8)	
No Nodes Examined	110 (22.3)	83 (23.9)	27 (18.6)	
HER2 Status [N (%)]				0.0004
Negative	365 (74.0)	241 (69.3)	124 (85.5)	
Positive	38 (7.7)	29 (8.3)	9 (6.2)	
Unknown	90 (18.3)	78 (22.4)	12 (8.3)	
HR Positive [N (%)]	429 (87.0)	296 (85.1)	133 (91.7)	0.0448
HR Negative, HER2 Positive [N (%)]	12 (2.4)	11 (3.2)	1 (0.7)	0.1951
Triple Negative [N (%)]	37 (7.5)	28 (8.0)	9 (6.2)	0.4801
Biopsy Pathology [N (%)]				<.0001
DCIS	80 (16.2)	72 (20.7)	8 (5.5)	
IDC	291 (59.0)	209 (60.1)	82 (56.6)	
ILC	56 (11.4)	31 (8.9)	25 (17.2)	
Other	66 (13.4)	36 (10.3)	30 (20.7)	
Final Surgical Pathology [N (%)]				0.0302
DCIS	68 (13.8)	56 (16.1)	12 (8.3)	
IDC	263 (53.3)	188 (54.0)	75 (51.7)	
ILC	67 (13.6)	40 (11.5)	27 (18.6)	
Other	95 (19.3)	64 (18.4)	31 (21.4)	

ABUS = Automated breast ultrasound, MGM = mammogram, HR = Hormone receptor, DCIS = Ductal carcinoma in situ, IDC = Invasive ductal carcinoma, ILC = Invasive lobular carcinoma

1987797 - Evaluating Upgrade Rates in High-Risk Breast Lesions: Does Tyrer-Cuzick Score Matter?

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Background/Objective: High-risk lesions (HRLs) on core needle biopsy (CNB) undergo excisional biopsy to confirm absence of malignancy, but this management is controversial. Certain HRLs, such as atypical ductal hyperplasia (ADH), pose a higher risk of upgrade to breast cancer on excision than others. Current risk assessment models, like Tyrer-Cuzick (TC), are important for stratifying the risk of breast cancer development. These risk assessments, however, are limited and further investigation on the management of HRLs is needed. This study investigates the differences in upgrades to breast cancer between imaging modalities and correlates upgrade rates with the patient's risk assessment score to further individualize the clinical management of patients with HRLs.

Methods: In this single-institutional study, HRLs were assessed in patients who underwent imaging studies at a Chicagoland academic medical center between July 2020 and July 2023. For inclusion in this study, patients must have a TC score and a mammogram at our institution. Patients with a personal history of breast cancer, a concurrent breast cancer diagnosis on CNB, and those who did not undergo an excisional biopsy at our institution were excluded. Abnormal imaging findings were further evaluated via CNB and excisional biopsy within one year. The mode of detection was documented at the time of biopsy and attributed to mammography, ultrasound, or MRI. Lesions on CNB considered high-risk include: ADH, lobular carcinoma in situ (LCIS), atypical lobular hyperplasia (ALH), radial scar, intraductal papilloma with atypia, and flat epithelial atypia (FEA). Patients with multiple HRL diagnoses were classified by the lesion with the highest risk for upgrade. If excisional biopsy confirmed invasive cancer or ductal carcinoma in situ, lesions were considered upgraded. Regression models were used to test the significance of the differences in upgrade rates by mode of detection, TC score, and pathology codes.

Results: Our institution conducted 114968 imaging studies on eligible patients. 4854 CNBs were performed and 150 HRLs were detected. Of these, 15 were upgraded to malignancy on excision resulting in an upgrade rate of 10.0%. When classified by imaging modality, screening and diagnostic mammogram resulted in upgrade rates of 8.2% and 19.1%, respectively. MRI resulted in a 3.1% upgrade rate while screening ultrasound had zero upgrades. ADH and intraductal papilloma with atypia were upgraded with rates of 13.8% and 20%, respectively. While classifying by the TC score, patients scoring < 20% had an upgrade of 10.6% while their high-risk counterparts had an upgrade rate of 8.7% (OR=0.9992).

Conclusions: While the TC score is effective in identifying patients at increased risk for breast cancer, our results indicate that it does not reliably predict upgrade rates for HRLs. Despite the lack of statistically significant findings, diagnostic mammograms are more likely to be upgraded than other modalities. MRI produced a small number of upgrades, possibly due to the larger amount of tissue taken during biopsy resulting in an immediate cancer diagnosis. ADH is the most likely HRL to be upgraded while ALH, FEA, and intraductal papilloma with atypia are more likely to be upgraded than LCIS.

Table 1: Upgrade Rates Classified by Imaging Modality, TC Score, and CNB Pathology Codes

		Total # of Lesions		Upgraded			
				No		Yes	
		N = 150		N = 135		N = 15	
Variable	**Levels**	**N**	**%**	**N**	**Row %**	**N**	**Row %**
Core Biopsy Imaging Modality							
	Diagnostic Mammogram	42	28.0%	34	80.9%	8	19.1%
	Screening Mammogram	73	48.7%	67	91.8%	6	8.2%
	MRI	32	21.3%	31	96.9%	1	3.1%
	Screening Ultrasound	3	2.0%	3	100.0%	0	0.0%
Tyrer-Cuzick High Risk							
	No (<20%)	104	69.3%	93	89.4%	11	10.6%
	Yes (≥20%)	46	30.7%	42	91.3%	4	8.7%
Core Needle Biopsy Pathology Code							
	Atypical ductal hyperplasia (ADH)	87	58.0%	75	86.2%	12	13.8%
	Atypical lobular hyperplasia (ALH)	8	5.3%	8	100.0%	0	0.0%
	Flat epithelial atypia (FEA)	10	6.7%	10	100.0%	0	0.0%
	Intraductal papilloma with atypia	15	10.0%	12	80.0%	3	20.0%
	Lobular carcinoma in situ (LCIS)	23	15.3%	23	100.0%	0	0.0%
	Lobular carcinoma in situ (LCIS) pleomorphic	1	0.7%	1	100.0%	0	0.0%
	Radial scar	6	4.0%	6	100.0%	0	0.0%

1987968 - Importance of Approaching Breast Implant with Ultrasound and Checklist to Find Implant Rupture in Asymptomatic Patients

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Background/Objective: As more information about the potential risks and complications related to breast implants has become available, the United States Food and Drug Administration (FDA) has responded by implementing changes to improve patient education. The addition of ultrasound (US) as an alternative to MRI for initial imaging surveillance for implant ruptures was a major change. Information about the style of the breast implants, such as provided on patient device cards, is critical for clinical observers during the interpretation of imaging surveillance tests. Since 2022 FDA guidelines now recommend the first screening imaging test at 5 years after implantation instead of 2 years after implantation. This study was to determine the utility of high-resolution ultrasonography (HRUS) with breast implant checklist in the evaluation of asymptomatic patients with breast implant, as it can be important information in diagnosis and treatment for breast implant associated complications.

Methods: Ultrasonographic breast evaluation of 2,385 women with breast implants during August31st, 2017 through December 31st, 2023, from a single facility were studied. Women were evaluated with HRUS plus the Breast implant Checklist which was first introduced by the Korean Society of Breast Implant Research (KoSBIR) in 2017. High-frequency linear transducers of Canon Aplio i600 model was used. The HRUS and clinical findings of patients were retrospectively reviewed.

Results: Total of 2,385 women, and 4,770 implants were studied. Median age was 36.1(±8.4), median day count from previous surgery was 2,543.6 days (±2,351.9). Patient device cards were available in 1,196(50.1%), 767 (32.2%) were miss placed or not found, and 422(17.7%) said they never got one. Implant ruptures were found in 448(9.4%) patients. Seventy-four patients (16.5%) were symptomatic, and 374 (83.5%) were asymptomatic at the diagnosis of implant rupture. Twelve (2,7%) patients were found with rupture less than 3 years from implantation surgery, 169 (37.7%) within 3-10years, 208 (46.4%) between 10-20 years, 55 (12.3%) more than 20 years, and 4 were non applicable. Breast implant insertion purposes were aesthetics 4,755 (99.7%) and reconstructive 15(0.3%). HRUS findings showed different shell types; 2,413(50.6%) texture, 2,269(47.6%) smooth (including microtexture), and 88(1.8%) were unknown. Implant shapes were 1.190(24.9%) anatomical, 3,394(71.2%) round, and 186(3.0%) were unknown. HRUS images showed Implant pockets of 4,402(92.28%) sub-pectoral, 367(7.7%) sub-glandular, and 1(0.02%) sub-cutaneous. Rupture was found in different types of implants; 448(9.4%) silicone, 412(8.6%) saline, 5(0.1%) dual chamber, and 1(0.02%) hydrogel implant. The rupture scale, which determines silicone migration, showed 161(35.9%) subcapsular rupture (SCR), 196(43.8%) Intracapsular rupture (ICR), and 91(20.3%) extracapsular rupture (ECR).

Conclusions: HRUS and Breast Implant Checklist can be strongly recommended as a guideline to recommend further treatment or observation according to findings. Because of high observer dependency of ultrasound, learning curve may be crucial for the clinical observer to be aware of the

breast implant specific findings of the checklist. Patients need to make sure to keep their device cards for any further checkups. More studies are in need including the checklist which could help step towards thorough evaluation and diagnosis method for less miss of breast implant complications.

Table 1. Matching degree between HRUS and patient information

N=4,770

	HRUS	Patient
Manufacturer		
Sebbin	248(5.2)	158(3.3)
Bellagel	26(0.6)	24(0.5)
Motiva	23(0.5)	23(0.5)
Eurosilicone	20(0.4)	14(0.3)
Allergan	1,213(25.4)	1,025(21.5)
Mentor	329(6.9)	222(4.7)
Polytech	342(7.2)	111(2.3)
Silimed	121(2.5)	66(1.4)
Unknown (d/t -Round	2,307(48.4)	3,127(65.5)
-Rupture)	141(2.9)	0(0.0)
Shell type		
Texture	2,413(50.6)	1,784(37.4)
Smooth	2,269(47.6)	1,432(30.0)
(Including micro texture)		
Unknown	88(1.8)	1,554(32.6)
(Non applicable d/t rupture)		
Shape type		
Anatomical	1,190(24.9)	1,349(28.3)
Round	3,394(71.2)	2,263(47.4)
Unknown	186(3.9)	1,158(24.3)
(Non applicable d/t rupture)		
Fill material		
Silicone	4,539(95.2)	3,524(73.9)
Saline	215(4.5)	208(4.4)
Dual chamber	10(0.2)	8(0.16)
Hydrogel	6(0.1)	2(0.04)
Unknown	0	1,028(21.5)

1988729 – Follow-up imaging for additional lesions found on pre-operative breast MRI for patients with invasive breast carcinoma

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Background/Objective: MRI has become a cornerstone in the pre-operative planning for breast cancer patients, and additional lesions are frequently encountered at the pre-operative MRI, requiring further workup and follow-up. The management of additional breast lesions detected through MRI, particularly those classified as BI-RADS 3 or higher, has not been well studied. The lack of standardized guidelines raises concerns about the balance between ensuring timely detection of potential malignancies and avoiding unnecessary procedures and investigations. This project aims to address this gap by investigating the appropriate MRI follow-up intervals for additional lesions identified in the pre-operative setting. By analyzing patient outcomes and lesion characteristics, this study aims to optimize follow-up strategies that can improve patient management and resource allocation.

Methods: Using the clinical database from Sunnybrook Odette Cancer Center, a tertiary breast cancer care center based in Toronto, Canada, a retrospective chart review was performed for data collection. All patients including both new patients and follow-ups of a single surgeon (NL) assessed between July 1 – Dec 31, 2019, were reviewed, allowing for up to 5 years of follow-up. Research ethics board approval was not required due to the quality improvement nature of this study.

Results: Of the 200 patients reviewed, 136 (70.1%) had invasive breast cancer. The majority (61.0%, n=83/136) of these patients had pre-operative MRIs, and of the patients who underwent MRIs, 61.4% (n = 51/83) had additional lesions identified (Figure 1). An average of 2.9□2.7 lesions were identified (1.9 +/- 2.7 ipsilateral lesions and 1.2 +/- 1.0 contralateral lesions). A total of 52/149 (34.9%) of additional lesions underwent pre-operative biopsies. The biopsied lesions were mostly benign (45/149, 30.2%), and 7/149 (4.7%) additional malignant lesions were identified, including 4/149 (2.7%) invasive carcinoma and 3/149 (2.0%) lesions with ductal carcinoma in situ. Post-operatively, an average of 2.5 +/- 1.1 follow-up MRIs over a duration of 21.4 +/- 9.8 months were completed for 18/83 (21.7%) patients with biopsy-proven benign lesions, and 3/83 (3.6%) patients without pre-operative biopsies. None of the additional lesions had an upgrade of BIRADS score on follow-up imaging, and no additional biopsies were done in the post-operative period.

Conclusions: Pre-operative MRIs can identify mammographically occult malignant and pre-malignant lesions, but will also identify a large number of benign lesions. Additional lesions found on pre-operative MRI and benign on biopsy did not progress on follow-up imaging, suggesting that they may not require extensive follow-up MRIs. Future directions of this study will focus on expanding the patient database, as well as completing imaging review of specific lesion characteristics that may be associated with an increased risk of delayed malignancy diagnosis (if identified). This information can then be used to develop an updated follow-up protocol for benign lesions detected on pre-operative MRIs to optimize resource use.

Figure 1: Flowchart of data collection for patients with invasive breast carcinoma assessed between July 1- Dec 31, 2019.

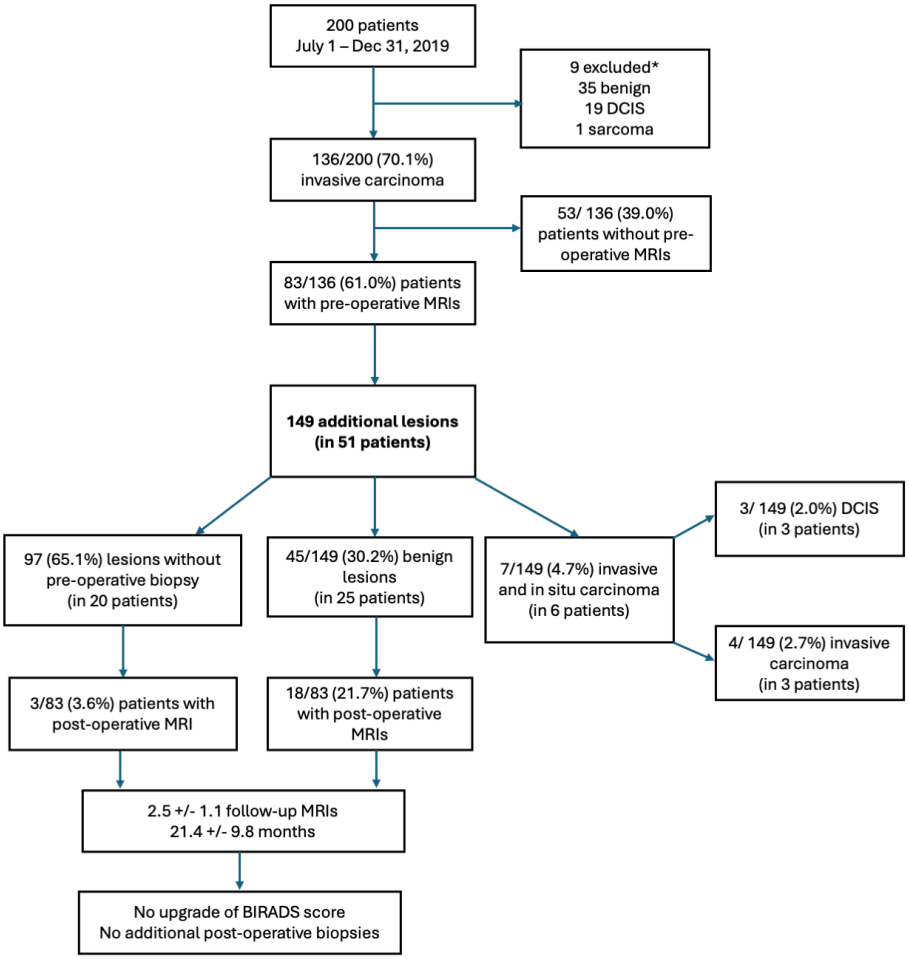

Figure 1. Flowchart of data collection for patients with invasive breast carcinoma assessed between July 1- Dec 31, 2019. The majority of patients had pre-operative MRIs that identified additional lesions to be biopsied or followed on imaging. None of the additional lesions that was benign on pre-operative biopsy had an upgrade of BIRADS score on follow up imaging.
* 9 excluded: breast cancer recurrence, initial workup and treatment completed remotely, unable to access
DCIS: ductal carcinoma in situ

1988756 - False negative rate of image-guided needle biopsies of the axilla for patients with ipsilateral breast cancer and suspicious lymph nodes

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Background/Objective: For patients with breast cancer, the management of lymph nodes negative by percutaneous needle biopsy (PNB) remains uncertain. Due to the risk of false-negative results from PNB, some surgeons opt to target these nodes for removal during surgery. However, unnecessary lymph node excision may lead to increased complications without improving survival. This study aims to assess the false-negative rate (FNR) of image-guided PNB in patients with ipsilateral breast cancer and suspicious lymph nodes, in order to determine the necessity of their removal during surgery.

Methods: A retrospective, IRB-exempt analysis was conducted on women aged 18 and older with newly diagnosed breast cancer who underwent negative PNB of a suspicious (by imaging or exam) ipsilateral lymph node, followed by surgical excision. Patients treated between January 1, 2019, and July 3, 2024 at a tertiary care hospital in western Massachusetts were identified from the PENRAD Imaging database. Males, biopsies without lymphatic tissue, and cases where the biopsied node was not excised or identified on final pathology (assessed by presence of biopsy clip or pathologic changes of a definitive biopsy site) were excluded. Demographic and lesion characteristics were recorded in a REDCap database. Our data was analyzed using descriptive statistics.

Results: Of 206 patients who underwent PNB, 80 (39%) had a negative result for lymph node involvement. A total of 63 patients (78.8%) underwent sentinel lymph node excision, with 25 meeting inclusion criteria for final analysis. Two patients had a positive clipped and localized lymph node on final surgical pathology, yielding a false-negative rate (FNR) of 8%. Both patients who had false negative PNB had palpable breast lesions and non-palpable lymph nodes, one had multiple foci of tumor. In one case, the lymph node identified by PNB was a sentinel node, which would have been removed regardless of the biopsy result. In another case, the PNB node was non-sentinel and would not have been excised without targeting the clipped node, however the patient also had positive sentinel nodes on final pathology. Two patients who had a true negative, non-sentinel PNB, had a different sentinel node which were positive. Additionally, one patient with a negative PNB was found to have lymphoma on final pathology on a non-sentinel node and a positive sentinel lymph node biopsy.

Conclusions: The observed FNR of 8% for image-guided PNB meets the generally accepted threshold of 10% for sentinel lymph node biopsy, suggesting that patients may not need further lymph node excision after negative PNB. However, due to the small sample size, further research with larger cohorts is needed to confirm the role of targeted lymph node excision in this context.

1988917 - Charlson Comorbidity Index Is a Powerful Tool for Thoughtful Screening Mammography

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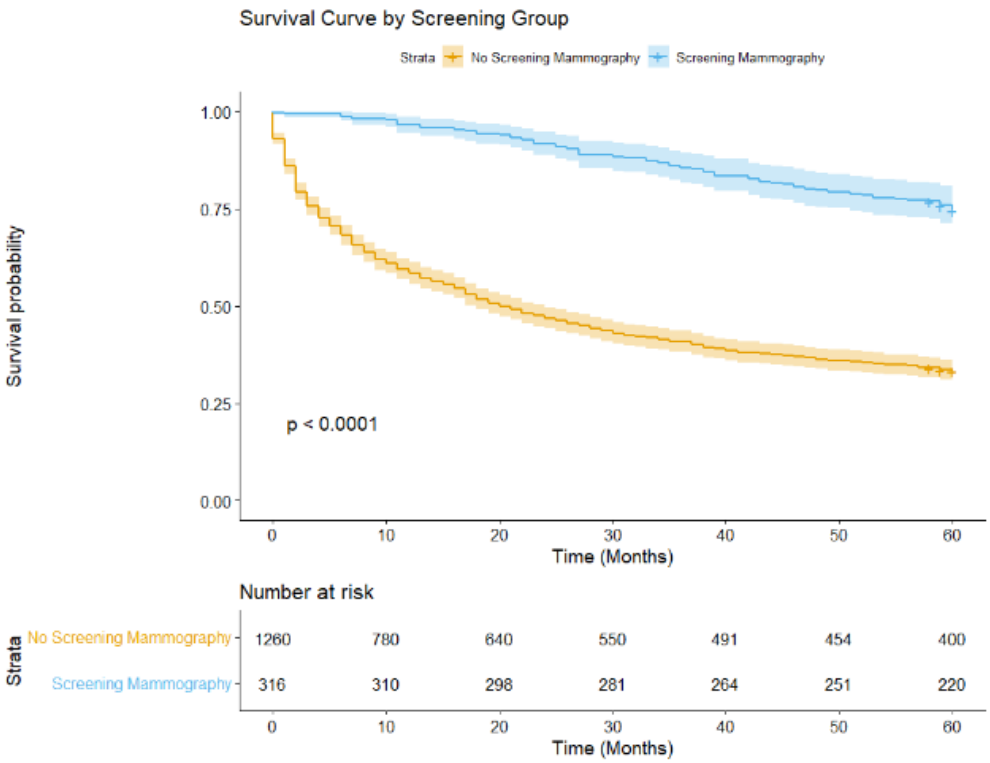
Background/Objective: National guidelines state that radiographic screening for breast cancer should be based on lifetime risk with consideration of stopping screening if life expectancy is less than 10 years. The Charlson Comorbidity Index (CCI) uses several variables to estimate 10-year survival, with a score ≥6 indicating a 10-year survival of 2%. These patients have a limited benefit of routine breast cancer screening, and the aim of this study was to evaluate the extent to which patients with a CCI ≥6 continue to undergo routine breast cancer screening.

Methods: A large single institution review of all patients admitted with a calculated CCI≥6 in 2019 was conducted to identify the incidence of screening breast imaging performed from 2019-2024. Comorbidities included in the CCI are age, history of myocardial infarction, congestive heart failure, peripheral vascular disease, stroke, dementia, chronic obstructive pulmonary disease, peptic ulcer disease, liver disease, diabetes, hemiplegia, chronic kidney disease, solid organ tumor, leukemia, lymphoma and acquired immunodeficiency syndrome. Charts were reviewed, and patients who had mammograms, diagnostic work-up, biopsies, surgery, and new breast cancer diagnosis were recorded. Survival was determined from date of CCI calculation to date of death.

Results: A total of 1576 patients were identified with a CCI≥6, of which 316 patients had received at least 1 screening mammogram (SM) since 2019 (20.0%). Of the 316 SM patients, 141 required a diagnostic mammogram (44.6%), 45 underwent a breast biopsy (14.2%), and 5 underwent breast surgery (1.6%). 5 patients had breast cancer identified based on screening mammography, a majority were early stage and none had breast cancer related mortality during follow up. The top 3 comorbidities present in patients who had SM were metastatic cancer (n=225, 71.2%), chronic obstructive pulmonary disease (n=81, 25.5%) and congestive heart failure (n=66, 20.8%). The 5-year mortality rate was 58.3%. Overall, patients who underwent SM were found to have higher 5-year survival versus those who were not offered SM (74.0% [95% CI 69.1-79.2%] vs. 33.1% [95% CI 30.6–35.8%]).

Conclusions: Despite low overall survival for patients with CCI≥6, SM was performed in 20.0% of this population at our institution. Over 40% underwent additional imaging or intervention with unclear survival benefit. Breast surgeons are encouraged to continue to educate patients and their providers regarding the risks and lack of benefit of SM in this patient population.

Figure 1: 5-year survival curve by screening mammography.



1990029 - Pre-operative Breast MRI Conundrum: Should Anyone be Excluded?

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Background/Objective: Breast magnetic resonance imaging (MRI) is increasingly used in the preoperative setting to assess newly diagnosed breast cancer patients, but its use is still controversial. MRI can find occult disease away from the primary tumor, but research has shown that MRI leads to higher mastectomy rates, additional biopsies, and no overall survival benefit. This study aimed to evaluate patient factors and tumor characteristics that could aid in predicting which patients would be most likely to have occult disease.

Methods: We retrospectively analyzed consecutive breast cancer patients who had surgical treatment at a high-volume MRI (1.5 Tesla) institution from 2017-2021. Data was collected regarding recommendations for biopsy after MRI and final biopsy results regarding the presence of occult malignancy whether multifocal, multicentric or contralateral.

Results: A total of 440 patients met inclusion criteria and underwent pre-operative MRI. Ages ranged from 26 to 88. African American patients made up 37.73% of the population. 40.68% (n=179) of patients were recommended for additional biopsy. Only 66.29% (n=118) of these patients proceeded with additional biopsies, of which 26.3% (n=31) were found to have additional malignancy away from the primary tumor. No patient factor or tumor characteristics were significantly associated with the presence of occult malignancy, but African American women were 5.9% more likely to have a positive biopsy. When looking at who would be recommended for biopsy, age was inversely associated, and hormone positive HER2 negative breast cancer was significantly more likely to be recommended for biopsies when compared to HER2 positive and triple-negative breast cancer.

Conclusions: Occult disease on MRI is found in a significant number of patients. Patients deserve to have the option of an MRI prior to surgery. Clinicians should be familiar with breast MRI and its potential consequences before allowing it to affect clinical decisions, and patients should be adequately counseled regarding the need for additional biopsies if indicated.

Table 1: MRI Figure 1.0

Variable	Level	Biopsy Recommendation		Test
		0	1	
Race	African American	96 (57.83%)	70 (42.17%)	p value: 0.8060
	Other	5 (55.56%)	4 (44.44%)	(Fisher's Exact Test for Count Data)
	Caucasian	160 (60.38%)	105 (39.62%)	
Breast Density	C/D Dense Breast	88 (55.00%)	72 (45.00%)	p value: 0.1676
	A/B Dense Breast	171 (61.73%)	106 (38.27%)	(Pearson's Chi-squared test)
	NA	2	1	
Pathogenic Gene Mutation	0	88 (54.32%)	74 (45.68%)	p value: 0.7029
	1	11 (50.00%)	11 (50.00%)	(Pearson's Chi-squared test)
	NA	162	94	
Lesion Type	Calcification	44 (53.01%)	39 (46.99%)	p value: 0.2255
	Mass	210 (61.40%)	132 (38.60%)	(Pearson's Chi-squared test)
	Other	7 (46.67%)	8 (53.33%)	
Positive Lymph Node	0	222 (59.36%)	152 (40.64%)	p value: 0.9675
	1	39 (59.09%)	27 (40.91%)	(Pearson's Chi-squared test)
Nuclear Grade	1	57 (57.00%)	43 (43.00%)	p value: 0.7338
	2	106 (58.56%)	75 (41.44%)	(Pearson's Chi-squared test)
	3	98 (61.64%)	61 (38.36%)	
Histology	Ductal	187 (61.51%)	117 (38.49%)	p value: 0.1031
	Ductal in situ	40 (47.62%)	44 (52.38%)	(Fisher's Exact Test for Count Data)
	Lobular	27 (64.29%)	15 (35.71%)	
	Other	7 (70.00%)	3 (30.00%)	
Cancer Type	Ductal in situ HR-	7 (53.85%)	6 (46.15%)	p value: 0.0275
	Ductal in situ HR+	28 (45.16%)	34 (54.84%)	(Pearson's Chi-squared test)
	HER2+	44 (69.84%)	19 (30.16%)	
	HR+ Her2-	134 (57.51%)	99 (42.49%)	
	Triple Negative	46 (68.66%)	21 (31.34%)	
	NA	2	0	
Age				p-value = 0.0016 (Kruskal Wallis Test)
BMI				p-value = 0.8745 (Kruskal Wallis Test)
Lesion Size				p-value = 0.119 (Kruskal Wallis Test)

1961220 - The Value of Mid-cycle MRI During Neoadjuvant Chemotherapy for Breast Cancer

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Background/Objective: Neoadjuvant chemotherapy (NACT) is the standard of care for patients with locally advanced breast cancer and select patients with early-stage breast cancer. The role of magnetic resonance imaging (MRI) in the management of breast cancer has been variable. MRI is widely viewed as the best imaging modality to follow tumor response to NACT; however, MRI is expensive and can result in logistical challenges or complex workups for some patients. The value of a mid-cycle MRI during NACT remains questionable. Our primary aim is to assess how often a mid-cycle MRI leads to a treatment change for patients with breast cancer.

Methods: This retrospective study identified 154 patients with breast cancer receiving NACT between 2012 and 2022 who had at least 2 MRIs, including one at the mid-cycle point of NACT. We excluded patients who had a history of prior ipsilateral breast cancer. All MRIs were re-reviewed by fellowship-trained breast radiologists at our institution, and imaging responses were categorized as a complete, partial, progression, or stable disease per RECIST criteria. The response in the breast and the regional lymph nodes were categorized separately. Clinical responses were gathered from the most recent clinical notes prior to mid-cycle MRI with responses classified as complete, partial, stable disease, progression, or not reported using the TNM AJCC 8th edition classification system. All variables were reported as frequency. We used McNemar's test to evaluate the agreement between mid-cycle MRI breast, and lymph node response with the clinical response. As there were so few progressions, we added progression to the stable group for McNemar's statistical significance. We plotted treatment plan changes and completion rates against their imaging response groups.

Results: Out of 154 patients, mid-cycle MRI classified 125 (81.1%) patients as demonstrating a partial response in the breast, 16 (10.4%) complete response, 12 (7.8%) stable disease, and 1 showed progression as depicted in the Table. As for nodal disease, 60 (39.0%) patients demonstrated a partial response to NACT, 40 (26.0%) complete response, 54 (35.0%) were stable, and none had progression. Three patients (1.9%) had a change to their chemotherapy regimen, two secondary to toxicity and one for inadequate response. 134 (90.5%) patients completed their planned chemotherapy regimen; with toxicity (78.6%) being the dominant reason for patients not completing their treatment plan (Table).

Conclusions: This study demonstrates that changes in treatment based on mid-cycle MRI only occurred in 2% of patients. Among the three patients whose treatment was altered, only one was due to inadequate response to the chemotherapy regimen. Regardless of the mid-cycle MRI response, greater than 90% completed their pretreatment management plan. These results demonstrate that mid-cycle MRI has a limited role in influencing treatment decisions in current practice.

Table 1: Comparison of Mid-cycle MRI breast response with clinical breast response, changes to NACT, and patients completed the planned regimen.

	Mid-cycle MRI breast response				
	Complete (N=16)	Partial (N=125)	Stable (N=12)	Progression (N=1)	Total (N=154)
Breast clinical Response					
Complete Response	8 (50.0%)	21 (16.8%)	2 (16.7%)	0 (0.0%)	31 (20.1%)
Partial Response	4 (25.0%)	54 (43.2%)	0 (0.0%)	0 (0.0%)	58 (37.7%)
Stable Disease	2 (12.5%)	22 (17.6%)	8 (66.7%)	1 (100.0%)	33 (21.4%)
Progression	0 (0.0%)	1 (0.8%)	0 (0.0%)	0 (0.0%)	1 (0.6%)
Not Reported	2 (12.5%)	27 (21.6%)	2 (16.7%)	0 (0.0%)	31 (20.1%)
Change in neoadjuvant chemo plan	0 (0.0%)	1 (0.8%)	2 (18.2%)	0 (0.0%)	3 (2.0%)
Drug regimen change	0 (0.0%)	1 (0.8%)	2 (16.7%)	0 (0.0%)	3 (1.9%)
Patient completed neoadjuvant chemo	13 (81.2%)	110 (91.7%)	10 (90.9%)	1 (100.0%)	134 (90.5%)
If no, why did the patient not complete planned neoadjuvant chemo?					
Exceptional Response	0 (0.0%)	0 (0.0%)	0 (0.0%)	0	0 (0.0%)
Progression	0 (0.0%)	0 (0.0%)	1 (100.0%)	0	1 (7.1%)
Toxicity	3 (100.0%)	8 (80.0%)	0 (0.0%)	0	11 (78.6%)
Other	0 (0.0%)	1 (10.0%)	0 (0.0%)	0	1 (7.1%)
Not Reported	0 (0.0%)	1 (10.0%)	0 (0.0%)	0	1 (7.1%)

1968148 - Characterization of 3-D morphology and morphometry of microcalcifications in benign and malignant breast tissues

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Background/Objective: Breast microcalcifications (calcs) are sentinel markers of breast disease and their morphology is radiologically assessed as part of the rationale for biopsy, but a histologic classifier of calcs has not been established. We aim to utilize high-resolution micro-computed tomography (microCT) on breast biopsies to assess morphometric characteristics of calcs by histologic subtype.

Methods: We reviewed the source tissue blocks from 157 excisional breast tissues (December 1992 – October 2021) containing calcs including 74 (47.1%) diagnosed as benign breast disease (BBD); 40 (25.5%) as ductal carcinoma in situ (DCIS) and 43 (27.4%) as invasive breast cancer (IBC) coincident with DCIS to define location of calcs within tissues. Calcs in microCT images of source blocks (10 µm resolution) were segmented from soft tissue using Bruker CTAn V1.20.8.0 software. Structural features including volume (mm^3), structural model index, major diameter and sphericity were measured per calc. Mixed-effects models of continuous log-transformed and untransformed structural features with biopsy included as a random effect term were developed, adjusted for age at surgery. Standard deviation (SD) of imaging features was calculated across calcs in each block as a measure of heterogeneity. Kruskal-Wallis test was used to compare SD between histologic groups.

Results: Women with cancer were older than women with BBD (median 62.1 vs. 57.6 years; p=0.02). Compared to calcs in blocks containing BBD, individual calcs in cancer (DCIS ± IBC) blocks were 14% larger by volume (p=0.008), after adjustment for age (Table 1). Comparing across cancers, the volumes of calcs located in IBC were 42% smaller than calcs located in DCIS (p=0.005). Calcs in blocks with high grade (grade 3) cancer (DCIS ± IBC) were significantly larger by volume than in blocks with low grade (grade 1 and 2) cancer (18%, p=0.03). In age adjusted analyses, calcs in blocks diagnosed as nonproliferative BBD (n=24 biopsies) were 20% larger than calcs associated with proliferative disease without atypia (n=25 biopsies) (p=0.02). Although not statistically significant, calcs in blocks containing nonproliferative BBD were 13% larger than calcs associated with atypical hyperplasia (n=25 biopsies) (p=0.13). The heterogeneity (reflected by SD) of calc volume and diameter within a block was significantly greater in cancers than in BBD (p=0.04 and p=0.03, respectively, Table 1).

Conclusions: We utilized high-resolution microCT imaging to identify significant morphometric differences between calcs in breast biopsies by lesion subtype. Calcs of biopsies diagnosed as cancer were larger than those in BBD tissues excised. However, our analysis did not include calcs deemed insufficiently worrisome to biopsy. High grade cancer presents with larger calcs than low grade disease, and calcs located in DCIS are significantly larger than those located in IBC alone, supporting the association of histologic calcs with high grade DCIS. Further, volume and diameter of calcs in

cancer tissues show greater heterogeneity than calcs in BBD, suggestively consistent with mammographic BI-RADS calc classifications. MicroCT imaging has potential to link histologic and mammographic classification of calcs and improve radiologic-pathologic correlation.

Table 1: Linear mixed models of calc volume and assessment of calc volume heterogeneity by histologic subtype of breast disease and calc location

Table 1: Linear mixed models of calc object volume and assessment of calc heterogeneity. Calc volume (mm^3) was transformed to $\log_{10}$(object volume ($100\ \mu m^3$)) for improved modeling and interpretation. Calc volume is compared between cancer and benign histology, major benign histologic categories, grade in malignant tissues, and calc location in malignant groups. All models were adjusted for age at surgery. Median (IQR) heterogeneity (standard deviation) of calc volume and major diameter, compared between histologic categories, are also shown. DCIS = ductal carcinoma in situ, IBC = invasive breast cancer, BBD = benign breast disease, NP = nonproliferative, PDWA = proliferative disease without atypia, AH = atypical hyperplasia, high grade = grade 3, low grade = grade 1 or 2.

	Mixed model of volume by tissue histology			
	Estimate	SE	t	p-value[1]
Intercept	-0.61	0.14	-4.37	<0.001
DCIS with or without IBC (vs. BBD)	0.14	0.053	2.66	0.008
Age	0.00064	0.0023	0.27	0.8
	Mixed model of volume by BBD histology subtype			
	Estimate	SE	t	p-value[1]
Intercept	-0.55	66.95	-3.14	0.003
PDWA (vs. NP)	-0.20	0.085	-2.30	0.02
AH (vs. NP)	-0.13	65.30	-1.54	0.13
Age	0.0015	65.72	0.52	0.6
	Mixed model of volume by grade in DCIS with and without IBC			
	Estimate	SE	t	p-value[1]
Intercept	-0.61	0.24	-2.57	0.01
High grade (v. low grade)	0.18	0.082	2.25	0.03
Age	0.0020	0.0036	0.54	0.6
	Mixed model of volume by calc location in DCIS with and without IBC			
	Estimate	SE	t	p-value[1]
Intercept	-0.70	0.24	-2.94	0.005
Calcs in IBC only (v. DCIS only)	-0.42	0.18	-2.34	0.02
Calcs in IBC and DCIS (v. DCIS only)	-0.31	0.10	-2.92	0.005
Calcs in other lesions only (v. DCIS only)	-0.36	0.12	-2.96	0.004
Age	0.0062	0.0039	1.57	0.12
	Heterogeneity of calc volume (SD)		Heterogeneity of calc major diameter (SD)	
	SD (median; IQR)	p-value[2]	SD (median; IQR)	p-value[2]
		0.04		0.03
BBD	1.30 (0.40, 4.08)		0.082 (0.043, 0.14)	
DCIS with or without IBC	2.99 (0.51, 7.90)		0.12 (0.053, 0.18)	

1973122 - Two dimensional MR Spectroscopy Identifies Tissue Chemistry in the Transition Towards Occult Cancers and Cancer

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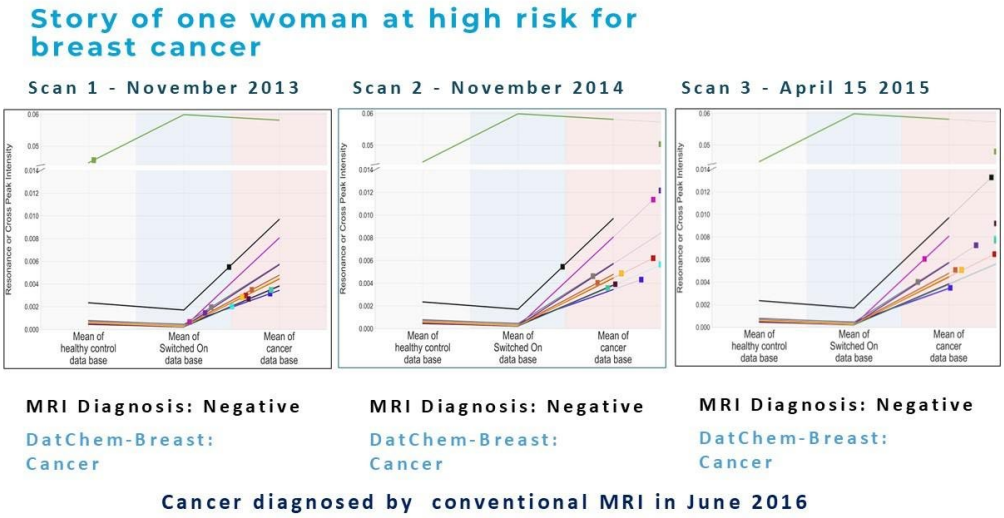
Background/Objective: Magnetic resonance spectroscopy, specifically two dimensional (2D) Correlated SpectroscopY (COSY) protocol, provides an objective evaluation of biomarkers in the breast tissue in transition from normal to cancer. We know from cell studies that increasing genetic abnormalities correspond to a series of chemical changes (1). This biomarker information is now obtained in a Siemens clinical 3T MRI scanner. Breast Density is independently recorded based on tissue chemistry(2). Two known tumor promotors UDP-GlcNAc and methyl malonic acid (MMA) (3), are recorded in the breast tissue of high risk patients and those with cancer. We report the results of a ten year longitudinal study.

Methods: Institutional Ethics approval for all sites with informed consent from participants' referred by breast surgeons in tertiary centers. Cohorts: Women at high risk for breast cancer (NICE 1 & 2) n= 208; BRCA1 n=32 ; BRCA2 n=54; healthy n=96, and patients with imaging and histologically proven tumors n=25. Most high risk women were scanned multiple times. Field Strength/Sequence: 3T/ axial/ T1-weighted 3D, T2-weighted TSE, 2D COSY. Patient Assessment: A comprehensive breast cancer history recorded and IBIS and NICE scores calculated. Mammography, ultrasound and breast MRI were employed according to local guidelines. A voxel was placed on apparently normal breast tissue and 2D COSY protocol (4) performed at initial evaluation and each subsequent breast MRI to provide a longitudinal assessment. Data Analysis: 2D COSY crosspeak intensities evaluated using newly developed datamining pipelines and recognition classifiers.

Results: The longitudinal study is still in progress and the results to date presented. In high risk category 173/185 and 33/86 in the BRCA category evaluated. Over the ten years 23/23 cancers developed and identified 2-6 years ahead of current imaging methods generating an accuracy of 100% with no false positives. A further 85 women at high risk are in the transitional state and being monitored. A case study shown in Figure 1. The tumor promotor UDP-GlcNAc was recorded in many non-dense breast tissue in transition and MMA in many dense breast tissue. BRCA gene carriers were all in a “transitional state.” The biomarkers for BRCA1 are different from BRCA2(3). The breast density classifier, which relies on tissue chemistry inferred from the magnetic resonance data, confirmed by BIRADS, in 46/52 healthy women with a cross validation exhibited an accuracy of 90.20%.

Conclusions: The ten year prospective longitudinal study demonstrated that 2D COSY data, from "apparently" healthy breast tissue, evaluated by data recognition paradigms, identified how far, tissue has deviated from normal, and when small foci of cancer (occult cancers) are present. All 23 cancers were predicted correctly 2-6 years ahead of current clinical methods. Once scanned the women become their own control. This technology adds 15 minutes scanner time and does not need contrast agent. References 1. Mackinnon, W. et al. Int J Cancer 59, no. 2 (1994): 248-61. http://www.ncbi.nlm.nih.gov/pubmed/7927926. 2. Santamaría, G., et al JMRI 56, no. 5 (2022): 1355-69. https://dx.doi.org/https://doi.org/10.1002/jmri.28168. 3. Santamaría, G., et al. NMR Biomed (2022): e4851. https://dx.doi.org/10.1002/nbm.4851. 4. Ramadan, S.et al Radiology 275, no. 3 (2015): 675-82. https://dx.doi.org/10.1148/radiol.15140967.

Figure 1: Biomarkers (1) in the transitional tissue increasing in concentration over time.



Localization

1972420 - A single institution comparative analysis of bracketed localization for partial mastectomy using traditional wire and wireless methods

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Background/Objective: The utilization of multiple wires to bracket large areas of breast lesions has been shown to be an effective way to minimize repeat surgical procedures in patients with a large extent of disease. Wireless localization has emerged as an alternative technique to the traditional wire localization for bracketed localization. A comparison of wire and wireless bracketed localization has not been well-studied, and there are no specific guidelines regarding the indications for bracketed localization. This study aims to compare wireless and wire bracketed localization and identify factors associated with positive margins and need for additional surgery.

Methods: In this IRB-approved retrospective study, patients who underwent bracketed localization at our institution for malignancy from 2019 to 2024 were identified. Data collected included demographics, radiographic features, pathology, margin status, need for additional surgery, and type of additional surgery. Patients with benign pathology and those undergoing oncoplastic surgery were excluded. Patient characteristics were compared between patient groups (by bracketed localization, by margin status, or by need for additional surgery) using a Chi-square test or Fisher exact test for categorical variables and a student t test or ANOVA for continuous variables. All tests were two-sided and p-value ≤ 0.05 was considered statistically significant.

Results: A total of 240 patients were identified. 175 (72.9%) underwent wire bracketed localization and 65 (27.1%) underwent wireless bracketed localization. Those who underwent wireless localization were older at diagnosis (mean 65.29 years vs 61.97 years, p=0.032) and had a lower BMI (mean 29.14 vs 32.8, p< 0.001). Patients in the wireless group had an average of 3.26 cm of disease on imaging compared to 4.11 cm in the wire group (p< 0.001). There were no differences in pathology between groups. There were no significant differences in final margin status, distance from the closest margin, need for additional surgery, number of additional surgeries, shave margins, or size of specimen between the wire and wireless bracketed localization groups (Table 1). 173 patients had negative margins, 48 patients had positive margins, and 18 patients had close margins. Ductal carcinoma in situ (DCIS, 42.9%) and invasive lobular cancer (ILC, 38.1%) were associated with a higher rate of positive or close margins compared to invasive ductal carcinoma (IDC, 17.6%, p< 0.001), as was a larger tumor size (p< 0.001) and presence of atypical ductal hyperplasia (ADH) on core biopsy (58.3% vs 26.1%, p=0.017). 64 patients required additional surgery and 175 patients did not, and the same factors were associated with additional surgery as with close or positive margins.

Conclusions: In this large single-institution retrospective study of bracketed localization, there was no difference in margin status, need for additional surgery, or number of additional surgeries between patients undergoing wireless and wire bracketed localization. This study demonstrates that wireless and wire localized bracketed partial mastectomies have similar final pathological and surgical

outcomes. Additionally, this study corroborates previous findings on factors associated with positive margins and need for additional surgery such as the presence of DCIS or ILC, larger tumor size, and presence of ADH, when wider margins are needed during surgical resection.

Table 1. Demographic factors, tumor characteristics, and surgical outcomes by bracketed localization technique.

Variable	Level	Wire N = 175	Wireless N=65	P-value
Age at diagnosis		61.97 (10.63)	65.29 (10.48)	**0.032**
Race	Black	56 (32.00%)	11 (16.92%)	0.047
	White	115 (65.71%)	52 (80.00%)	
	Other	4 (2.29%)	2 (3.08%)	
BMI		32.8 (7.76)	29.14 (6.04)	**<0.01**
Menopausal status	Pre-menopausal	28 (16%)	6 (9.23%)	0.051
	Post-menopausal	147 (84%)	57 (87.69%)	
	Hysterectomy	0 (0.00%)	1 (1.54%)	
	Unknown	0 (0.00%)	1 (1.54%)	
Family history	Yes	81 (46.29%)	39 (60.00%)	0.059
	No	94 (53.71%)	26 (40.00%)	
Genetic mutation	BRCA 1	0 (0.00%)	1 (1.85%)	0.512
	BRCA2	1 (0.76%)	0 (0.00%)	
	CHEK2	1 (0.76%)	1 (1.85%)	
	FANCC	1 (0.76%)	0 (0.00%)	
	None	127 (96.21%)	51 (94.44%)	
	Other	1 (0.76%)	1 (1.85%)	
	PALB2	1 (0.76%)	0 (0.00%)	
Hormone replacement	Current	3 (1.71%)	3 (4.62%)	0.301
	Former	28 (16.00%)	13 (20.00%)	
	Never	140 (80.00%)	49 (75.38%)	
	Unknown	4 (2.29%)	0 (0.00%)	
Largest extent of disease (cm)		4.11 (2.12)	3.26 (1.41)	**<.001**
Size of specimen (cm)		7.53 (2.21)	7.24 (1.89)	0.354
Final margin status	Close	14 (8.05%)	4 (6.15%)	0.854
	Negative	124 (71.26%)	49 (75.38%)	
	Positive	36 (20.69%)	12 (18.46%)	
Final Pathology	IDC	76 (43.43%)	32 (49.23%)	0.416
	ILC	19 (10.86%)	2 (3.08%)	
	Noninvasive DCIS	60 (34.29%)	24 (36.92%)	
	Other	7 (4.00%)	2 (3.08%)	
	pCR	13 (7.43%)	5 (7.69%)	
ER/PR/HER2 status	DCIS ER+	55 (31.43%)	24 (36.92%)	0.703
	DCIS ER-	12 (6.86%)	6 (9.23%)	
	HER2+ invasive cancer	18 (10.29%)	7 (10.77%)	
	HR+/HER2- invasive cancer	77 (44.00%)	22 (33.85%)	
	Triple negative invasive cancer	13 (7.43%)	6 (9.23%)	
Closest margin (cm)		2.23 (2.32)	2.64 (2.58)	0.263
Additional surgery	No	128 (73.14%)	48 (73.85%)	0.913
	Yes	47 (26.86%)	17 (26.15%)	
Number of additional surgeries	1	41 (37.96%)	15 (40.54%)	0.962
	2	5 (4.63%)	2 (5.41%)	
	3	1 (0.93%)	0 (0.00%)	
Shave margins	No	104 (60.47%)	37 (56.92%)	0.62
	Yes	68 (39.53%)	28 (43.08%)	

1979422 - Non-Wire Bracketed Localization Techniques And Decreased Margin Positive Rates in Breast Cancer

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Background/Objective: Breast-conserving therapy (BCT) for non-palpable lesions can be performed with the assistance of a number of different localization devices. Larger or multifocal lesions may require "bracketing" with two or more localizers in order to achieve complete excision. SAVI ScoutTM utilizes a radar localizer (RL) to target the clip location(s). SmartClipTM is an electromagnetic chip (EMC) localization system generating 3-dimensional navigation and the ability to distinguish between up to 3 distinct EMC localizers in bracketed cases. The aim of this study was to compare excision of breast lesions requiring bracketed localization using EMC versus RL and traditional wires.

Methods: A single institution, IRB-approved retrospective study was performed, comparing EMC to RL and wire localization in patients undergoing bracketed BCT localization between 8/25/2020 and 8/6/2024. All cases were performed amongst 7 breast surgeons, and 4 out of 7 utilized EMC localization devices in select cases. Case length, margins requiring re-excision, and complete retrieval of all localizers in a single specimen were compared. Operative time was calculated from incision to specimen radiograph or SLN specimen time to specimen radiograph for cases where SLN biopsy was performed prior to breast excision. Clinical, pathologic, and surgical datapoints were also collected. Analyses were performed using Kruskal-Wallis test for numerical covariates and Chi-square test or Fisher's exact test, where applicable, for categorical covariates. Statistical significance was set with a two-sided $p < 0.05$.

Results: A total of 118 cases were analyzed composed of 43 wires, 44 RLs, and 31 EMCs. The mean age of patients was 66 years (range: 36-86); and the majority of patients had Stage 2 (63/118, 53.4%) or Stage 0 (41/118, 34.7%) disease. The three groups were well balanced with regards to size/span of the lesions being localized for excision (p=0.736), and the number of bracketing localizers placed (p=1.000), with a mean size of 40.3mm in the longest axis (range 10mm-100mm). The average time from incision to removal of the specimen was significantly less when utilizing EMC compared to RL and wires (EMC 33.9 minutes, RL 45.6 minutes, wire 40 minutes, p= 0.025). There were significantly fewer cases with positive margins for invasive lesions or < 2mm margins for DCIS on final pathology when EMC or RL were utilized compared to wires (EMC 29%, RL 22.7%, wires 50%, p=0.022). In cases with positive/close margins, there were a significantly fewer average number of positive margins when EMCs were utilized compared to RL and wires (EMC 1.0, RL 2.0, wires 1.8, p=0.016). There were no significant differences in rates of complete retrieval of all localizers in one specimen (EMC 93.5%, RL 97.7%, wire 100%, p= 0.264).

Conclusions: EMC localization is an effective tool for bracketed breast-conserving surgery; our institutional data demonstrating significantly lower operative time and comparable or lower rates of positive margins suggests that EMC facilitates bracketed resections compared to other localization techniques.

Table 1. Univariate Association with Localization Device

Table 1. Univariate Association with Localization Device				
Covariate	**Localization Device**			**P-Value**
	EMC	**RL**	**Wire**	
Rate of Positive Margins	29%	22.7%	50%	**0.022**
Average Number of Positive Margins	1.0	2.0	1.8	**0.016**
Operative Time (Minutes)	33.9	45.6	40	**0.025**
Complete Retrieval of Localizers in One Specimen	93.5%	97.7%	100%	**0.26**

1988753 - Feasibility of Repeat Sentinel Lymph Node Biopsy for Recurrent Breast Cancer after Breast Conservation Therapy

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Background/Objective: Surgical management of the axilla in recurrent breast cancer (RBC) states that repeat sentinel lymph node biopsy (re-SLNB) may be considered, though its prognostic value is unknown and data is limited. Prior studies have demonstrated successful re-SLNBs ranging from 55% to 77%. The aim of this study was to determine the feasibility of re-SLNB at a single large academic center and identify clinical factors that predict successful repeat mapping in patients with locoregional breast cancer recurrence to better guide surgical management.

Methods: A single site retrospective analysis was conducted on female patients diagnosed with locoregional RBC from 2010-2022 who underwent breast-conserving therapy (BCT) at their index operation. Patient demographics, surgical intervention, and nodal data from the index cancer and time of RBC were collected. Univariate analysis was performed using two-tailed chi-squared test and t-test.

Results: A total of 138 female patients who underwent surgical intervention for RBC with a history of BCT were identified. The median time to recurrence was 7 years (0.96 -30.8 yrs) and the median age at diagnosis of recurrence was 74 years (33-98 yrs). At time of local recurrence, 93% (128/138) were clinically node negative (cN0). Forty-seven patients underwent re-SLNB, of which 89% (42/47) successfully mapped. In the patients with successful mapping, 83% (35/42) used dual tracer. The median number of lymph nodes removed during SLNB at index and recurrence (n=2) was equivalent in both groups. Frozen section analysis detected positive nodes in four patients with successful mapping of whom 66% (2/3) were found to have >3 (+) lymph node on completion ALND. In the patients who failed to map, 4/5 underwent completion ALND and 50% of these patients had 2+ positive nodes. 25 patients had BCT at index case without SLNB but did undergo SLNB at recurrence. In this subset, 96% (24/25) successfully mapped. Of 37 patients who had an axillary lymph node dissection at the index case, 16 underwent attempted repeat SLNB of which 6% (1/16) mapped. In the subset of patients with planned ALND at recurrence for clinically palpable nodes, 6/6 had at least 1 positive node. Re-SLNB was omitted in the remaining 23 patients and included those with DCIS, older patients who met choosing wisely guidelines and those with selective excision of palpable nodes. Overall, 11% (15/138) of patients were found to have positive nodes at recurrence. There was no statistical significance among clinical factors to predict failure of lymph node mapping including tumor location, laterality, number of tracers used, number of nodes removed at index case, BMI or time to recurrence.

Conclusions: The success rate for re-SLNB for locoregional RBC at a single large academic center was 89.3%, which is higher than previously published literature. In the era of decreasing axillary surgery, re-SLNB should be considered the standard of care for axillary management in cN0 patients with recurrent breast cancer. Such a change would spare many females from ALND and its associated complications. For patients with failed mapping or positive nodes on pathologic frozen section analysis, a completion ALND would still be advised.

1988186 - Safety, Ultrasound Conspicuity and Migration of a Novel Ultrasound Twinkling Marker Observed for Sonographic Targeting (UTMost Trial); Results of a Phase 1 Clinical Trial

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Background/Objective: Retrieving a biopsy-proven axillary lymph node at surgery has shown to reduce the false-negative rate of sentinel lymph node biopsy after neoadjuvant systemic therapy (NST). Commercial breast biopsy clips placed in axillary lymph nodes are often challenging to detect by ultrasound after the node normalizes post-NST. We developed a biopsy marker with a robust ultrasonographic color Doppler twinkling signature (TM, twinkling marker) and aimed to assess its safety and twinkling after months of NST.

Methods: In this prospective, single-arm Phase 1 trial, 10 patients with node-positive breast cancer had a TM placed adjacent to the commercial clip in the node before NST. Ultrasound (3-8 MHz transducer) was performed at implantation and before surgery in all subjects, with optional scans throughout NST. Twinkling and B-mode conspicuity were scored on a 0 (none) to 4 (robust) ordinal scale. The Wilcoxon signed-rank test compared twinkling scores of the TM and commercial marker at implantation and before surgery, and a McNemar's test evaluated high confidence, indicating level of confidence for ultrasound guided localization. Based on the pre-operative scan, the surgeon opted for a localizing device or intraoperative ultrasound for surgery. Assessment forms were completed in all cases by surgeons and 9/10 cases by pathologists after retrieval.

Results: Ten patients completed the study with a median age of 47 years [32-72] and mean body mass index of 29.1 kg/m2 [SD 6.5]. Clinical nodal category (cN) was cN1 in 80% (n=8) and cN3 in 20% (n=2). After NST, the pathologic nodal category (pN) was pN0 in 50% (N=5), pN1 in 30% (n=3) and pN2 in 20% (n=2). All patients underwent targeted axillary dissection and 5 patients with residual disease (50%) proceeded to completion lymphadenectomy. Mean duration of NST was 5.9 months [SD 1.2] and no safety concerns were reported. B-mode detectability of the TM compared to the commercial marker was not statistically different at implantation (p=0.20) or before surgery (p=0.40). Twinkling signatures for the TM were significantly higher than the commercial marker at both implantation and before surgery (p=0.02). McNemar's test showed high confidence in detecting the TM 100% of the time at implantation (p=0.07) and before surgery (p=0.04) when using both B-mode and twinkling information. On the surgeon assessment, the clipped node was visible by B-mode in 100% (n=10) and by twinkling in 90% (n=9). In 70% of the cases, the surgeon utilized intraoperative ultrasound alone to localize. None of the TMs migrated outside of the node per the surgeons. Surgery was marked "less difficult" in 70%, unchanged in 30% and none were indicated "more difficult". According to the pathology assessment, location within the node was as follows: 1/3 localizers, (33.3%), 4/9 clips (44.4%) and 8/9 TMs (88.9%).

Conclusions: This Phase 1 clinical trial demonstrated the safe and effective performance of a novel marker placed in lymph nodes at diagnosis and retrieved after months of NST. No surgeons noted migration of TM. In 70% of cases, the surgeon was comfortable with the level of twinkling to utilize ultrasound guided excision, obviating the need for a localizing device.

Figure 1. Twinkling score

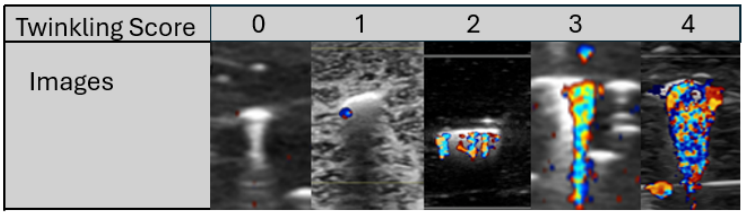

Figure 1: Twinkling Score. Twinkling score was assigned on a scale from 0 to 4 based on the confidence in the presence of twinkling, amount of the twinkling, and confidence in the ability to perform radioactive seed localization. A score of 3 or 4 would allow for localization based on presence of twinkling alone. A score of 2 would require the presence of additional B mode features to allow for localization. Scores of 0 and 1 would not allow for localization using twinkling artifact.

1909991 - Microdochectomy in Four Techniques: Metal Probe, Polypropylene Suture, Methylene Blue, Indocyanine Green

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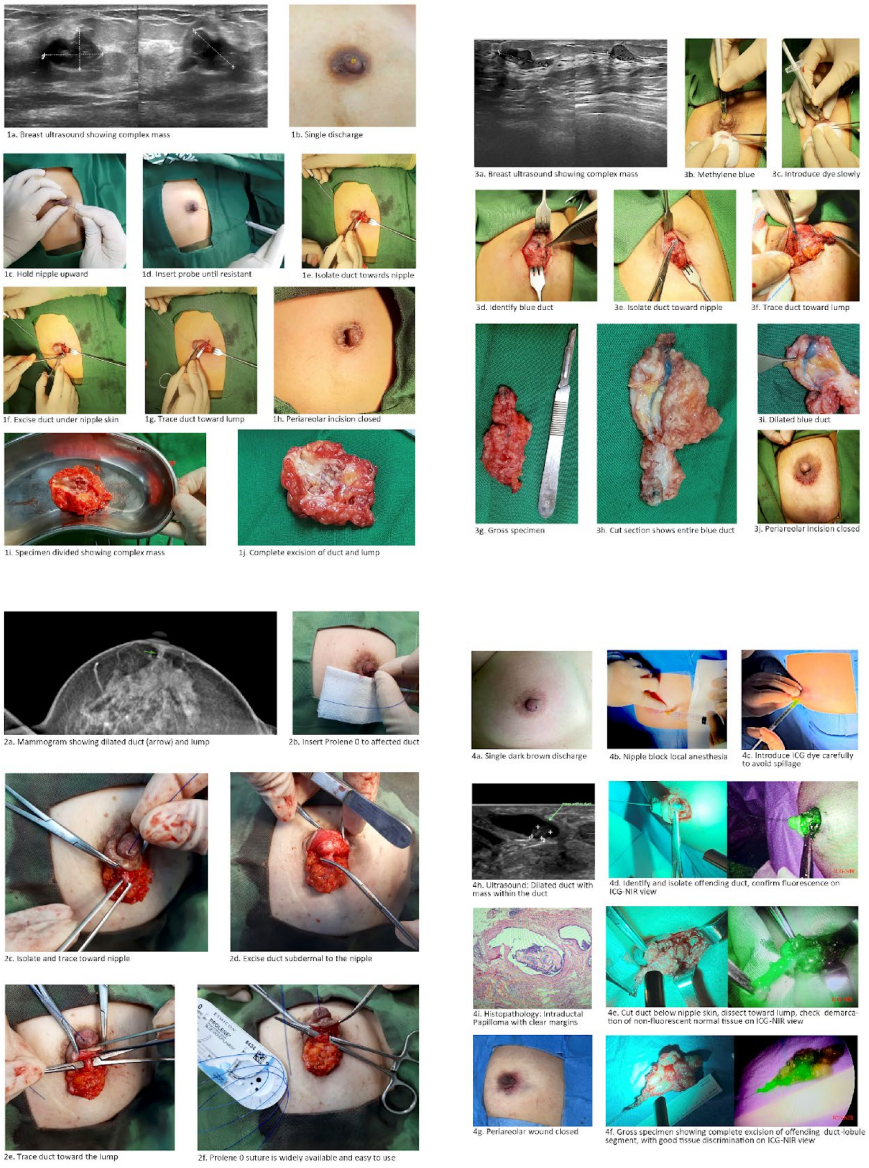
Background/Objective: Microdochectomy is a surgical excision of a single duct manifesting a pathologic nipple discharge (PND). PND is defined as a clear, serous, or bloody secretion, spontaneous, discharging from a single duct and unilateral. Up to 20% of PND have underlying malignancy. Localization techniques are best done intra-operatively and in real-time.

Methods: Four cases are reported in this study using metal probe, polypro- pylene suture, methylene blue, and indocyanine green. All cases used periareolar incision, local anesthesia, out-patient setting.

Results: 1) METAL PROBE TECHNIQUE 43/F 3 months serous PND right breast. Ultrasound showed 1.9x1.4x2.1cm complex breast mass BIRADS4. Metal lacrimal probe 3-0 was inserted to the discharging duct to guide excision. Histopathology confirmed Intraductal Papilloma. (See pictures 1a-1j) 2) POLYPROPYLENE SUTURE TECHNIQUE 48/F 3 months brownish PND with growing lump right breast. 9 years stable bilateral breast lumps. Sister had breast cancer. Mammogram showed 1.8x1.3x1.5cm oval circumscribed equal density lump RUOQ 15mm from nipple BIRADS4. Polypropyl- ene suture (Prolene 0) was inserted to the discharging duct to guide excision. Histopathology confirmed sclerosing Ductal Carcinoma In-Situ. (See pictures 2a-2f) 3) METHYLENE BLUE TECHNIQUE 54/F 1 month clear PND left breast. Ultrasound showed 1.7x0.6x1.3cm irregularly shaped microlobulated mass BI- RADS4. Methylene blue 0.2 ml was instilled using 24G cannula to the discharging duct and excised the blue duct. Histopathology confirmed Intraductal Papilloma. (See pictures 3a-3j) 4) INDOCYANINE GREEN TECHNIQUE 59F 6 months brownish PND right breast. Ultrasound showed dilated duct 3.0mm with intraductal mass 2.9x1.8mm. Indocyanine green (ICG) 2.5mg 0.5 ml was instilled using 24G cannula to the discharging duct. Excision of fluorescent duct facilitated by Near Infrared (NIR) camera. Histopathology confirmed Intraductal Papilloma. (See pictures 4a-4i)

Conclusions: Microdochectomy allows real-time intra-op identification of the offending duct. Microdochectomy is both diagnostic and therapeutic. Complete excision ensures diagnostic accuracy and total relief of symptoms. Breastfeeding function is also preserved. The 4 techniques reported are simple and can be performed with local anesthesia in out-patient setting. In resource-challenged areas, the lacrimal probes and Prolene sutures are widely available. Methylene blue is commonly used in breast cancer sentinel node biopsy. ICG is becoming popular among laparoscopic and breast surgeons.

Figure 1: Pictures 1a-1j, metal probe technique. Pictures 2a-2f, Polypropylene technique. Pictures 3a-3j, methylene blue technique. Pictures 4a-4i, ICG technique.



LRR

1987774 - Clinically detected breast cancer recurrence to the contralateral axilla: distant metastasis or extended locoregional recurrence?

Jenna Sturz-Ellis, Courtney Day, Amy Degnim, Mary Mrdutt

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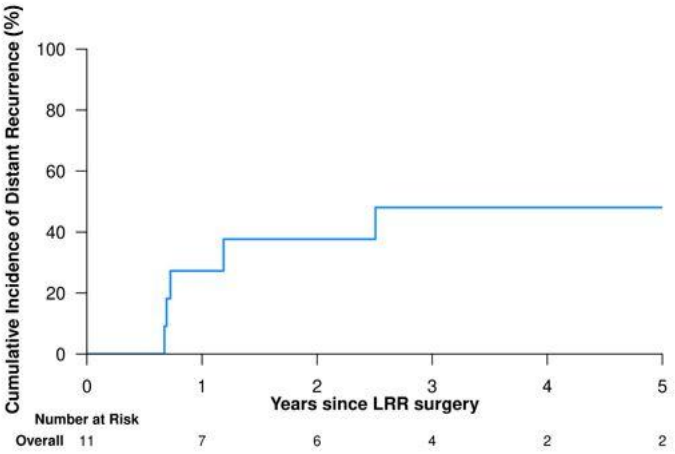
Background/Objective: Breast cancer (BC) metastasis to contralateral axillary nodes is currently classified as distant (M1) disease but may be treated as extended locoregional disease. CAM may be identified clinically via imaging or histologically at surgery as a result of aberrant lymphatic drainage. Here we study patients with clinically detected CAM in the context of locoregionally recurrent disease (LRR-CAM) and characterize their treatment and outcomes.

Methods: In a retrospective single institution study, we identified LRR BC patients (2008-2024) with clinical M1 disease in the contralateral axilla. Patients with additional sites of distant disease, CAM at time of index diagnosis and/or de novo Stage IV were excluded. Demographics, tumor characteristics, treatment (index and recurrence) and oncologic outcomes were collected. Distant recurrence is reported as a cumulative incidence.

Results: We identified 11 patients with clinical CAM diagnosed preoperatively: 9 had concurrent local recurrence and CAM , and in 2 CAM was the only recurrence site. Median disease-free interval from index to LRR-CAM was 3.4 years (IQR 1.9-10.3 years). Prior breast cancer therapy for CAM patients included: mastectomy (5), BCS (6); ALND (7), SLNB (3), none (1); chemotherapy (9), hormone therapy (4); radiotherapy (9). Biologic subtype of LRR-CAM was HR+HER2- in 4(36.4%), HER2+ in 4 (36.4%), TNBC in 3(27.3%). Ipsilateral nodal involvement was present clinically in 5 patients, all biopsy proven with clip placed in 3 (60%). CAM was palpable in 1 patient and detected on imaging in 10 patients, of which 5/10 were systemic staging. Pre-operative nodal biopsies confirmed CAM in 8 patients, with clip placed in 4 (50%). Neoadjuvant systemic therapy was utilized in 8/11(73%; 7 chemotherapy, 1 endocrine therapy). Surgical management of CAM included: ALND (6), localization of clipped node + ALND (1), TAD (2), SLNB (1), targeted excision of single palpable node (1). All 4 clipped CAM nodes were retrieved (3 with seed localization, 1 in ALND). CAM status was ypN0 in 3 and ypN+/pN+ in 8 (range positive nodes 1-6). Ipsilateral axillary surgery was performed in the 5 patients with known ipsilateral nodal disease: 2 TAD and 3 ALND. Ipsilateral axilla was ypN0 in 2 patients and ypN+/pN+ in 3. Adjuvant therapies included: chemotherapy (2), endocrine therapy (4), and radiation (9). Median follow up from LRR surgery was 37.7 months. 5 patients experienced distant recurrence (DR), with median time to progression 8.7 months. Cumulative incidence of DR was 27.3% at 1 year and 48.1% at 5 years (Figure 1). All 5 patients with distant progression expired from their disease; no non-cancer deaths were observed. There was 1 re-recurrence in the contralateral axilla in a patient also with distant progression.

Conclusions: In this series of patients with clinically detected LRR-CAM and extensive prior local regional therapies, targeted surgery with clipped nodal localization was feasible and informative of response. Distant progression and poor outcome were observed in approximately half of patients and occurred rapidly. Future work will compare oncologic outcomes in LRR-CAM patients to node-positive ipsilateral recurrence to improve counseling for recurrence in the contralateral axilla.

Figure 1: Cumulative Incidence of Distant Recurrence Following Resection of Clinically Detected Contralateral Axillary Recurrence



1987918 - Bracketed lumpectomy: A comparison of radiofrequency identification tag localization to wire localization

Denise Garcia[1], Kyle Anderman[2], Abigail Daly[2], Sarah Bernhardt[3], Michele Gadd[3], Francys Verdial[2], Leslie Lamb[3], Barbara Smith[2], Michelle Specht[3]

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Background/Objective: Breast-conserving surgery with bracketed localization has been shown to decrease re-excision rates for larger areas of DCIS or invasive disease. New localization devices including radiofrequency identification (RFID) tags are an alternative to wire localization given the benefits of localization prior to the day of surgery. We sought to compare bracketed lumpectomy with RFID localization to wire localization with regards to rates of re-excision and local recurrence.

Methods: This is a single center study in which patients undergoing bracketed lumpectomy for ductal carcinoma in situ (DCIS) or invasive breast cancer with either RFID tag or wire localization between January 2018 and July 2024 were identified. The decision to perform RFID or wire localization was determined by surgeon and radiologist preference. The distance between bracketed localization devices and total lumpectomy volume were collected from specimen radiography and pathology reports. Rates of re-excision, management of positive margins, and recurrence data were compared.

Results: A total of 313 patients underwent bracketed lumpectomy were identified: 151 with RFID localization and 162 with wire localization with a median follow up of 41.3 months. Indication for lumpectomy was DCIS in 102 patients and invasive disease in 211 patients with no significant difference between the RFID tag and wire groups. The two groups were also similar with respect to age and race. Patients with RFID tag localization had a statistically higher median BMI (29.3) compared to patients with wire localization (26.8, p=0.035). The median bracketed distance between localization devices was statistically longer in the RFID group (3.2cm) compared to the wire localization group (2.9 cm, p=0.019). Median lumpectomy volume was larger in the RFID group (111cm3) compared to the wire group (92 cm3, p=0.038). RFID tags were placed prior to the day of surgery in 46% of cases while wires were placed the same day as surgery in 100% of cases. Positive margin rates were not significantly different between the tag group (27%) compared to the wire localization group (23%, p=0.848). Patients undergoing RFID tag bracketing had an overall higher rate of conversion to mastectomy at 39% compared to 19% in the wire group (p=0.035). The 30-day complication rate for both groups was not significantly different (p=1.00). Total, local, and distant recurrence rates were similar between the tag group: 5.3%, 4%, and 1.3% compared to the wire group: 8% (p=0.470), 6.2% (p=0.531) and 0.6% (p=0.611), respectively.

Conclusions: Our findings demonstrate equivalent re-excision and local recurrence rates between RFID tag and wire bracketed localization techniques. Our study supports the use of either bracketing methodology for lumpectomy.

Table 1: Surgical and Treatment Characteristics and Outcomes

	Wire Bracketed	Tag Bracketed	p-values
Total Patients	**N = 162**	**N = 151**	
Median Months Follow-up, (range)	48 (1-78)	35 (1-80)	***p* <0.001**
Median Age, year	60 (28-83)	61 (30-90)	***p=0.367***
Race			
Black	5(3.1%)	3 (2.0%)	p=0.731
Asian	6 (3.7%)	3 (2.0%)	
White	146 (90.1%)	139(92.1%)	
Other/Not reported	5(3.1%)	6(3.9%)	
Median BMI, kg/m² (range)	26.8 (18-58)	29.3 (19-55)	***p* = 0.035**
Median Largest Distance Between Brackets (cm), (range)	2.9 (0.5-8.85)	3.2(1.0-9.0)	***p* = 0.019**
Median Volume of Excision (cm^3), (range)	92 (9-755)	111 (20-685)	***p* = 0.038**
Median Ratio Excised Volume/Bracket Distance (cm2), range	28.9 (5.2 – 157.4)	30.7(3.3-166.6)	p = 0.817
Positive Margins	37 (23%)	41 (27%)	*p* = 0.848
Positive Margin Treatment	**N = 37**	**N = 41**	
Re-excision	22 (59%)	18 (44%)	*p* = 0.170
Multiple re-excisions	1 (3%)	0 (0%)	p=0.474
Re-excision followed by mastectomy	2 (5%)	4 (10%)	*p* = 0.472
Straight to mastectomy	5 (14%)	12 (29%)	*p* = 0.092
No Surgery*	7 (19%)	7 (17%)	*p* = 0.832
Complications within 30 days post-op			
Infection	4 (2.5%)	2 (1.3%)	*p* = 0.450
Hematoma	0 (0%)	2 (1.3%)	P=0.232
Recurrence and Survival			
Total Recurrences	13 (8.0%)	8 (5.3%)	*p* = 0.470
Local Recurrence Only	10 (6.2%)	6 (4.0%)	*p* = 0.531
Distant Recurrence Only	1 (0.6%)	2 (1.3%)	*p* = 0.611
Local and Distant Recurrence	2 (1.2%)	0 (0%)	p=0.499
Survival			
Breast-Cancer Related Death	2 (1.2%)	0(0%)	p=0.499
Overall Survival	157 (97%)	149 (99%)	*p* = 0.450

*Omission of surgery on positive margins was at discretion of operative surgeon based on operative findings and per NCCN guidelines

1983620 - Long-Term Outcomes of Invasive Lobular Carcinoma in Breast Cancer Survivors

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Background/Objective: Invasive lobular carcinoma (ILC) of the breast is recognized for its unique growth pattern and distinct clinical behavior. Although treatment is similar to invasive ductal cancer, ILC has different characteristics, which may change the approach to patient disease recurrence monitoring in survivorship. This study aims to evaluate the long-term survival outcomes and recurrence patterns of ILC patients treated at a large academic multidisciplinary cancer center.

Methods: An IRB approved retrospective analysis was performed of all patients diagnosed with Stage I-III ILC at our institution between 2004 -2017. Patient demographics and treatment data were analyzed. The incidence and patterns of metastatic recurrences were reviewed and compared. Statistical methods were employed to analyze differences in recurrence patterns relative to treatment modalities and to identify potential predictors of recurrence patterns.

Results: We identified 694 patients diagnosed with ILC and treated during the 13-year study time period at our institution. The median patient age at cancer diagnosis was 61.6 years (31 - 91). Tumor stage at presentation included Stage I (50.7%), Stage 2 (44.5%), Stage 3 (4.5%), and Stage 4 (0.3%). Hormone positive, HER2 negative tumors were found in 83.9% of patients. Lumpectomy was performed in 315 patients and mastectomy in 379 patients; 32 patients presented with bilateral disease and 96 patients underwent a contralateral prophylactic mastectomy. Overall, 34.3% of patients had a positive lymph node (LN), for which an axillary lymph node dissection was performed, as per standard at that time. All patients received standard adjuvant systemic and radiation therapy recommendations as per guidelines. Median follow-up was 9.3 years (range 0-21 yrs). During this time, 21 patients (3%) experienced an isolated local-regional recurrence (LRR) (12 in-breast recurrence, 7 lymph node recurrence, 2 both in-breast and lymph node recurrence) and 90 patients (13%) developed distant metastatic disease. The median time from initial diagnosis to development of distant metastasis was 5 years. Of the 21 patients who had a breast site recurrence, 10 initially underwent a lumpectomy whereas 11 patients had a mastectomy. Among the 90 patients with distant metastatic disease, 140 metastatic sites were identified; the most common being 63 (45%) osseous, 22 (15.7%) hepatic,19 (13.6%) peritoneal, 16 (11.4%) lung/pleura, 11 (7.9%) brain or meningeal metastasis, and 5 (3.6%) ovarian. Factors influencing recurrence were larger tumor size, increased nodal burden and higher pathologic stage. In patients with an intact contralateral breast (n=598), the incidence of developing a contralateral breast cancer was 1.5% (n=9) at a median of 6.5 years from the initial cancer diagnosis. The 5-year overall survival (OS) was 84.3% and 10-year OS was 42.5%.

Conclusions: The findings from this large cohort of ILC patients treated at an academic medical center show that during 9 years of survivorship, 13% of patients experienced disease recurrence, which typically occurred at 5 years after initial diagnosis. Bone (45%) and abdominal (33%) recurrences were the most common sites of recurrence. The treating clinician should be aware of the risks of recurrence and consider having a low threshold to order imaging studies to evaluate recurrence in the high-risk cohort during survivorship.

Table 1. Locoregional recurrence sites and tumor characteristics.

Recurrence Site	Breast	Ax	Breast+Ax	Total
Number of patients	12	7	2	21
Surgery				
PM + SLNB	3	2	1	6
PM + ALND	3	-	1	4
SM + SLNB	-	2	-	2
SM + ALND	6	3	-	9
pT				
pT1b	1	-	-	1
pT1c	4	4	-	8
pT2	6	2	2	10
pT3	1	1	-	2
pN				
pN0	6	4	1	11
pN1mi	1	1	1	3
pN1a	2	1	-	3
pN2a	1	1	-	2
pN3a	2	-	-	2

Figure 1. Locoregional recurrence site and tumor characteristics.

Ax = Axillary nodes; *PM* = Partial mastectomy; *SLNB* = sentinel lymph node biopsy, *SM* = Simple mastectomy; *ALND* = axillary lymph node dissection

Lymphedema

1985559 - The importance of a pre-treatment baseline when screening patients for breast cancer related lymphedema

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Background/Objective: The use of bioimpedance spectroscopy (BIS) screening to detect subclinical breast cancer-related lymphedema (sBCRL) coupled with early intervention has been shown to be associated with lower rates of chronic lymphedema (cBCRL) in a randomized trial. Optimal BIS use includes a pre-treatment baseline to accurately determine each individual's post-treatment change over time. This study explores the role of a pre-treatment baseline in detecting sBCRL.

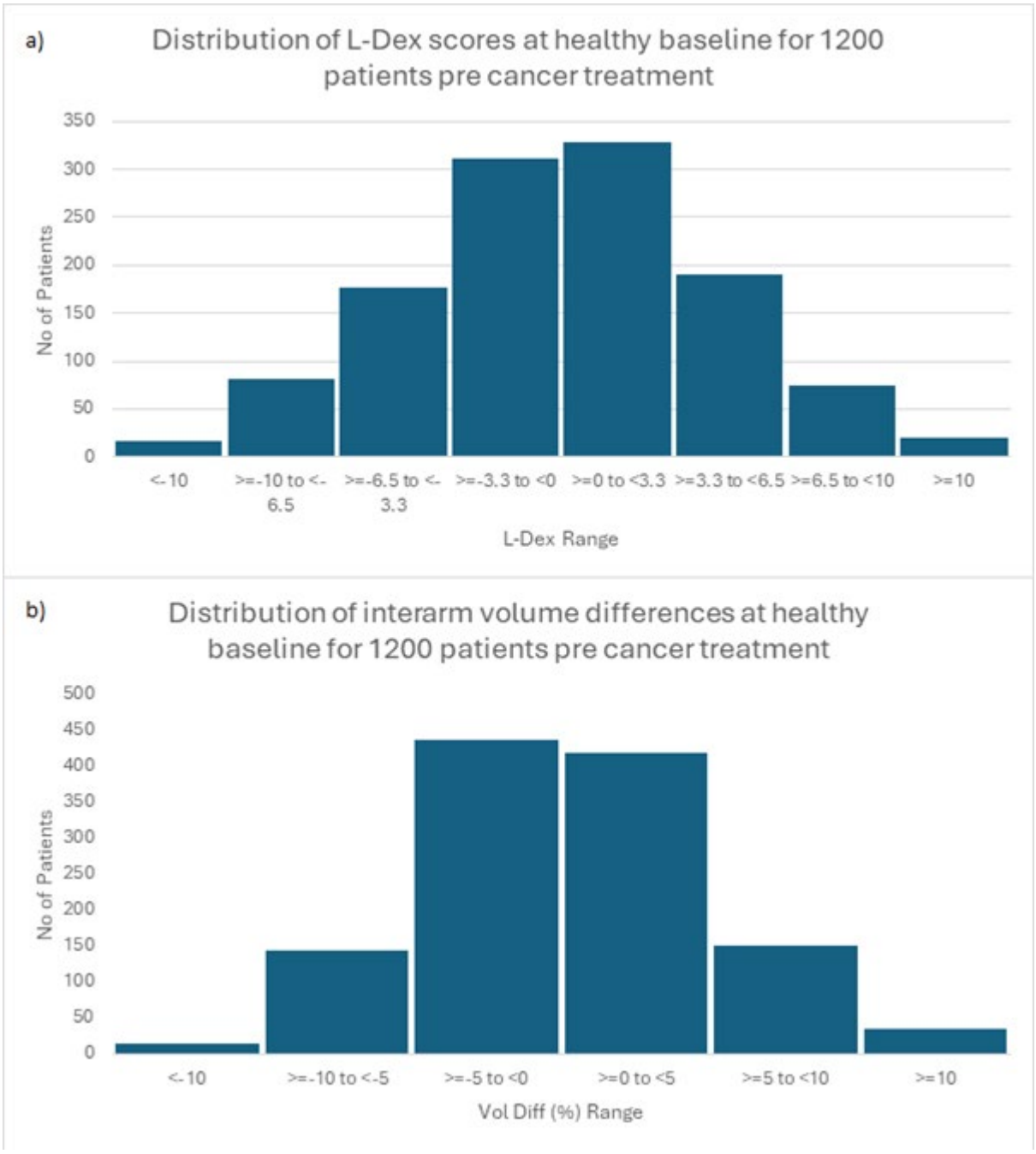
Methods: The PREVENT trial randomized female breast cancer patients at risk of BCRL to be screened by either BIS or Tape Measure (TM). 1200 enrolled patients had both BIS (L-Dex) and TM (inter-limb volume difference (ILVD)) pre-treatment baseline measures. 963 patients had follow-up screening for sBCRL every three to six months for up to three years using either BIS (n=482) or TM (n=481). sBCRL was identified in 209 patients (BIS: 89, TM: 120) by either an increase from baseline of ≥6.5 L-Dex units with BIS or ≥5% and < 10% increase in inter-limb volume difference with TM. The pre-treatment L-Dex and inter-limb volume difference baselines, and the absolute L-Dex scores and inter-limb volume differences at the time sBCRL was detected were analysed.

Results: In 587 enrolled patients (48.9%), the baseline L-Dex score was negative, and in 596 enrolled patients (49.0%) , the baseline inter-limb volume difference was negative. (Figure 1a & b) At the time of sBCRL trigger, 26 of 89 BIS screened patients (29.2%) had an absolute L-Dex outside the normal range (L-Dex ≥10) and 53 of 89 (59.6%) had an L-Dex ≥6.5, (the threshold if a proxy baseline of zero was assumed) demonstrating that 40.4% (L-Dex ≥6.5) to 70.8% (L-Dex ≥10) of the BIS monitored patients would not have been classified as having sBCRL without a pre-treatment baseline for comparison. For TM screened patients, 15 of 120 (12.5%) had an inter-limb difference outside the normal range (ILVD >10%) at sBCRL trigger, and 58 of 120 patients (48.3%) had a ILVD >5% demonstrating that 51.7% (ILVD >5%) to 87.5% (ILVD ≥10%) of TM monitored patients would be misclassified without measuring a pre-treatment baseline to determine a reference ILVD.

Conclusions: The results demonstrate that regardless of measurement technique, many patients who trigger for sBCRL would not have been detected without a recorded baseline to compare to. Up to 71% of patients monitored using BIS and up to 88% of patients monitored using TM would not be identified as having sBCRL as early without a baseline, consequently missing early intervention and risking progression to irreversible cBCRL. Establishing a pre-cancer treatment baseline is important in detecting sBCRL at its earliest time point to ensure the maximum benefit from early intervention . In cases when a pre-cancer treatment baseline is unavailable, a stable post-treatment measurement may

still be helpful with careful consideration of negative values to improve sensitivity of detecting sBCRL onset as early as possible.

Figure 1: Distribution of baseline measurements



1987781 - Immediate lymphovenous anastomosis (LVA) and prevention of breast cancer related lymphedema (BCRL): A Systematic Review and Meta-analysis of outcomes

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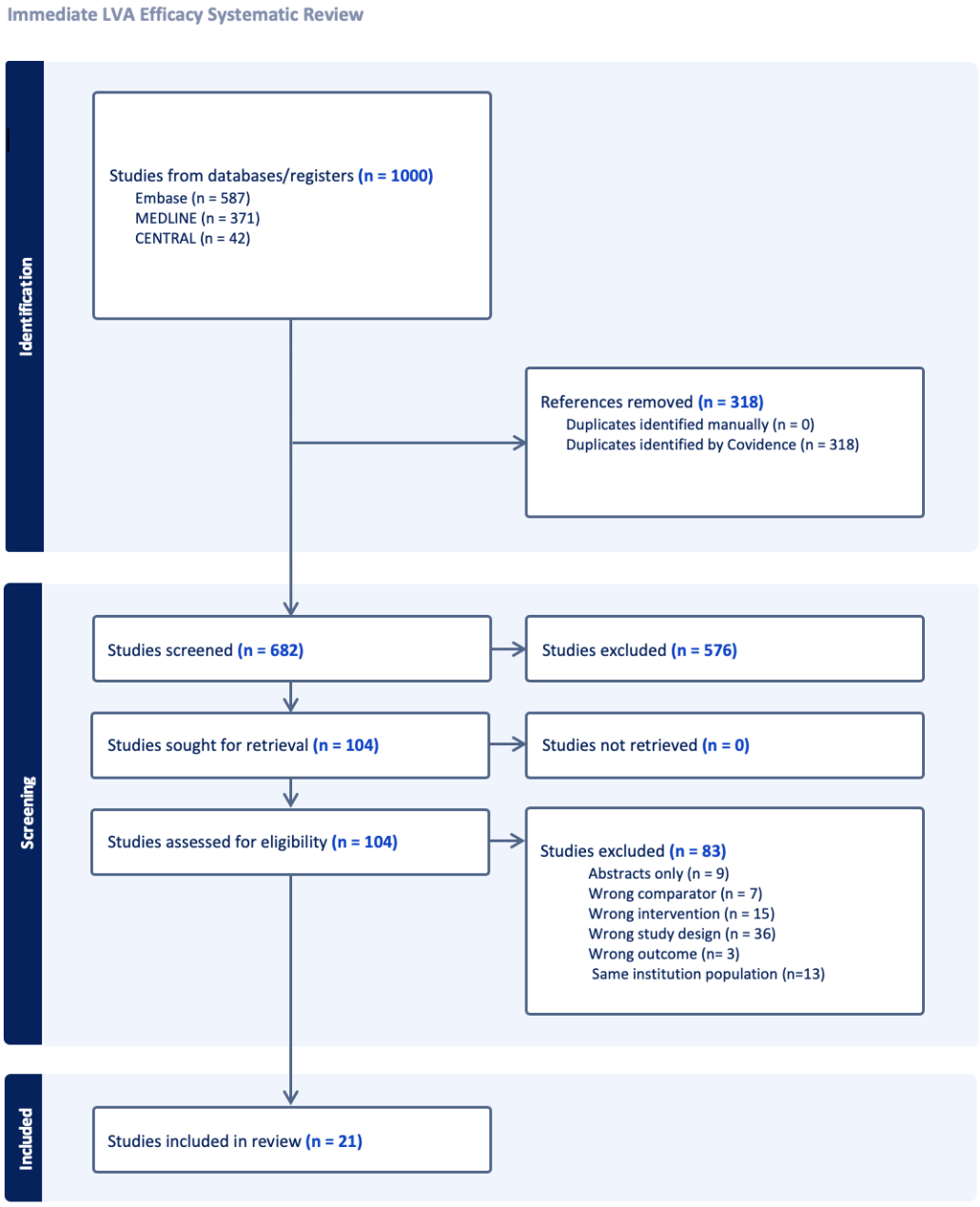
Background/Objective: Breast cancer–related lymphedema (BCRL) is a debilitating consequence after axillary lymph node dissection (ALND) for breast cancer with a compounding risk if adjuvant radiation was received in up to 47% of patients. BCRL results from the disruption of lymphatic vessels in the axilla leading to the accumulation of a proteinaceous fluid subcutaneously in the upper limb. This fluid causes tissue hardening and fibrosis, abnormal swelling, decreased range of motion, and decreased patient quality of life. Moreover, BCRL can develop at any time ranging from months to years after breast surgery. Currently, there is no proven curable treatment for BCRL once it develops, rendering pre-emptive prevention mandatory. Lymphovenous anastomosis (LVA) performed at the time of ALND has emerged as a prophylactic approach to intercept BCRL development. LVA has been implemented as a standard care procedure at several academic institutions. However, a paucity of data has caused this procedure to continue to be viewed as experimental. This study presents a systematic review with meta-analysis to benchmark the incidence of lymphedema after LVA as an outcome measure and define predictors of BCRL development.

Methods: A comprehensive search strategy was developed with a medical librarian to identify potentially relevant articles discussing LVA outcomes. The following databases were searched from inception until August 23, 2024: Medline (Ovid), Embase (Ovid), and Cochrane Library. Covidence software was used to manage, screen, deduplicate, and document this systematic review. Search results were independently screened and assessed based on inclusion criteria by 2 authors. Papers were included if microsurgical LVA was done for BCRL prevention at the time of ALNB and excluded if LVA was done for BCRL treatment, delayed LVA, or lymphedema incidence was not reported. Full text in the English language of all titles that met inclusion criteria by a majority vote was obtained. Meta-analysis was performed with a forest plot generated using a Mantel -Haenszel statistical method, with a random-effect analysis model.

Results: This systematic review yielded data from 21 studies that fulfilled the inclusion criteria. Six studies with a control group (No-LVA) and 15 without a control group. The six studies with the control group included a total of 776 breast cancer patients; 485 patients (62.5%) underwent immediate LVA at the time of ALND. Meta-analysis comparing the 2 groups on outcomes of lymphedema showed that there was no statistical difference in the mean age (p=0.73), mean BMI (p=0.6), or receipt of adjuvant radiation (p= 0.87) between the two groups. The meta-analysis revealed a significantly lower incidence of BCRL development in the LVA group 9.27% (n=45) compared to 31.6% (n=92) in the control group. Patients in the LVA group had an odds ratio of 0.28 (95%CI, 0.12-0.67, p = 0.013) of BCRL. The 15 studies without control included 996 patients and reported a BCRL incidence of 8.4% (n= 84). The PRISMA flow diagram is outlined in Figure 1.

Conclusions: These findings reinforce the efficacy of immediate LVA as a preventive microsurgical technique in significantly decreasing the incidence of BCRL.

Figure 1: PRISMA flow diagram of systematic review and study screening



1987420 - Utilizing bioimpedance spectroscopy to evaluate association between skeletal muscle mass body composition and risk of developing breast cancer related lymphedema

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Background/Objective: Breast cancer-related lymphedema (BCRL) is a complication of breast cancer treatment that can significantly impact a patient's quality of life, with an incidence of approximately 20-40%- up to 60% in those undergoing axillary lymph node dissection (ALND) and radiotherapy compared to sentinel lymph node biopsy (SLNB). Additional known risk factors include higher BMI, higher quantity of lymph nodes excised, and adjuvant taxane therapy. Sarcopenia- the progressive loss of skeletal muscle mass and function- has been correlated with adverse outcomes in breast cancer patients including higher chemotherapy toxicity and worse overall prognosis. However, literature about the relationship between skeletal muscle mass and BCRL is limited. Historically, it was believed that upper body exercise post-surgery increased BCRL risk; however, recent studies have demonstrated that resistance exercise plays a crucial role in reducing BCRL. Muscle mass is crucial for lymphatic function as muscle fiber contractions enhance propulsion of lymphatic fluid. Thus, this study aims to utilize bioimpedance spectroscopy to evaluate body composition, specifically muscle mass, to evaluate if patients with lower pre-operative muscle mass are at higher risk of developing BCRL.

Methods: A retrospective chart review was conducted of patients that underwent axillary surgery (January 2019- December 2023) that also obtained serial SOZO® measurements. SOZO® is a bioimpedance spectroscopy (BIS) device that measures limb fluid levels as well as body composition elements such as fat mass (FM), fat-free mass (FFM), total body water (TBW), intra and extracellular fluid, and skeletal muscle mass (SMM). Patients were stratified based on whether they developed lymphedema, as determined by BIS pre-op and post-op L-dex limb fluid scores. Statistical analyses were performed to assess if elements of body composition influenced risk of developing lymphedema.

Results: Of the 402 patients, 38 developed post-operative lymphedema with an average time to lymphedema of 9.4 months(±6.5). Univariate analysis showed that axillary surgery type, number of lymph nodes removed, nodal radiation, and skeletal muscle mass percentage of weight (SMM%) significantly impacted lymphedema development. Factors such as age, race, BMI, cancer histology, receptor status, and stage were not found to be significant. In patients with lymphedema, the average pre-operative SMM% was 24.64(±4.14) compared to 26.23(±4.21) in those who did not develop lymphedema ($p=0.027$). Multivariate analysis including variables such as age, race, type of axillary surgery, and number of nodes excised showed that SMM% remained a significant factor ($p=0.033$). Patients that had a pre-operative SMM% of < 20% were found to have four times higher odds of developing lymphedema (OR 4.37, 95% CI 1.-8-17.66). Furthermore, patients that developed lymphedema had a mean pre-operative SMM% that was 0.3%(±0.39) higher than at the time of diagnosis of lymphedema ($p < 0.001$).

Conclusions: Lower pre-operative SMM% is a significant risk factor for developing BCRL with SMM% < 20% associated with a fourfold increased risk. Although further studies with larger sample sizes are needed to corroborate these findings, this study emphasizes how pre-operative muscle mass

can help identify patients at risk of developing BCRL and may allow for a modified prevention plan including both pre- and post-operative strength training exercises.

Table 1: Demographic, cancer and treatment, and body composition data stratified by development of post-operative lymphedema

Demographic Information			
	No lymphedema	**Lymphedema**	**P-value**
Age at diagnosis (years), mean ± SD	57.44 (11.41)	60.21 (11.39)	0.156
Race (n, %)			0.702
Caucasian	42 (11.5)	5 (13.2)	
African American	115 (31.6)	15 (39.5)	
Hispanic	144 (39.6)	15 (39.5)	
Asian	12 (3.3)	0 (0)	
Mixed Race	1 (0.3)	0 (0)	
Other/Patient declined	50 (13.7)	3 (7.9)	
Insurance Coverage (n, %)			0.107
Medicaid	103 (28.3)	5 (13.2)	
Medicare	124 (34.1)	519 (50.0)	
Private	133 (36.5)	13 (34.2)	
None	4 (1.1)	1 (2.6)	
Cancer and Treatment Information			
	No lymphedema	**Lymphedema**	**P-value**
AJCC Pathologic Stage (n, %)			0.064
0 (DCIS)	33 (9.1)	1 (2.6)	
1	207 (56.9)	18 (47.4)	
2	69 (19.0)	9 (23.7)	
3	27 (7.4)	8 (21.1)	
4	3 (0.8)	0 (0)	
Pathologic Complete Response (pCR)	25 (6.9)	2 (5.3)	
Histology (n, %)			0.19
DCIS (Ductal carcinoma in situ)	24 (6.6)	1 (2.6)	
IDC (Invasive ductal carcinoma)	292 (80.2)	31 (81.6)	
ILC (Invasive lobular carcinoma)	34 (9.3)	5 (13.2)	
IMC (Invasive micropapillary carcinoma)	8 (2.2)	0 (0)	
Other*	5 (1.7)	1 (2.6)	
ER (Estrogen receptor) Positive	281 (77.2)	29 (76.3)	0.902
PR (Progesterone receptor) Positive	232 (63.7)	26 (68.4)	0.567
HER2 Positive	81 (22.3)	4 ((10.5)	0.105
Triple Negative	46 (12.6)	8 (21.1)	0.148
Surgical Procedure (n, %)			0.153
Mastectomy	112 (30.8)	16 (42.1)	
Lumpectomy	252 (69.2)	27 (71.1)	
Axillary Surgery Type (n, %)			0.006
SLNB (Sentinel lymph node biopsy)	318 (87.4)	27 (71.1)	
ALND (Axillary lymph node dissection)	46 (12.6)	11 (28.9)	
Number Lymph Nodes Excised, mean ± SD	4.08 (4.692)	8.03 (7.81)	<0.001
Received Neoadjuvant Chemo (n, %)	124 (34.1)	11 (28.9)	0.525
Received Adjuvant Chemo (n, %)	144 (39.6)	16 (42.1)	0.76
Received Adjuvant Radiation Therapy (n, %)	238 (65.4)	29 (76.3)	0.175
Received Nodal Radiation Therapy (n, %)	81 (22.3)	14 (36.8)	0.044
Pre-Op Body Composition			
	No lymphedema	**Lymphedema**	**P-value**
BMI (Body Mass Index) (mean ± SD)	29.27 (5.7)	30.95 (7.066)	0.96
SMM%† Weight (mean ± SD)	26.23 (4.21)	24.64 (4.14)	0.027
TBW %† Weight (mean ± SD)	47.56 (4.96)	45.98 (5.63)	0.066
ECF %† TBW (mean ± SD)	46.17 (2.78)	46.08 (2.34)	0.848
ICF %†TBW (mean ± SD)	53.83 (2.78)	53.92 (2.34)	0.848
FFM%† Weight (mean ± SD)	64.97 (6.79)	62.81 (7.70)	0.066
FM%† Weight (mean ± SD)	35.03 (6.87)	37.19 (7.71)	0.066
BMR† (cal/day) (mean ± SD)	199.21 (10.44)	212.82 (34.52)	0.677
Protein and Mineral % Weight (mean ± SD)	17.41 (1.81)	16.83 (2.07)	0.066
SMM% <20 (n, %)	7 (1.9)	3 (7.9)	0.025
SMM%<25 (n, %)	165 (45.3)	23 (60.5)	0.074

*Other includes basaloid carcinoma, mucinous carcinoma, non-invasive papillary carcinoma, lobular carcinoma in situ, and phyllodes- all of which represented < 1% of cases

†SMM% = skeletal muscle mass, TBW = total body water, ECF = extracellular fluid, ICF = intracellular fluid, FFM = fat free mass, FM = fat mass, BMR = basic metabolic rate

P-values are results of chi-squared and unpaired independent T-tests

1988509 - One-Year Patient Reported Outcomes and Lymphedema in Node-Positive Breast Cancer in the Prospective Multicenter Neosenti-Türk/MF-18-03 study: Is there any benefit of Targeted Axillary Dissection over Sentinel Lymph Node Biopsy?

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Background/Objective: The NEOSENTITURK MF18-03 study was launched as a prospective multicenter study by the Turkish Breast Diseases Federation and supported by the Breast Health Working Group International, investigated whether axillary lymph node dissection (ALND) following sentinel lymph node biopsy (SLNB) could be omitted in patients with initially clinically positive axilla after neoadjuvant chemotherapy (NAC) . The aim of this cohort study was to evaluate whether breast cancer-related lymphedema (BCRL), patient-reported arm and shoulder morbidity and quality of life were affected by axillary surgery type in the Neosenti-Türk/MF-18-03 study.

Methods: The patients with clinically positive axilla included in Neosenti-Türk/MF-18-03, were treated with axillary surgery, either with SLNB/targeted axillary dissection (TAD) (n=291) or ALND (n=218) after NAC. BCRL was evaluated by Arm Circumference Measurement Form. Data was collected by SF-12 health survey, and QUICK-DASH questionnaires.

Results: Of 509 patients from 15 centers, BCRL was detected in 60 (11.8%) patients at the 12-month follow-up. Patients with BCRL were more likely to be >50 age, or to have body mass index (BMI) level of 25 kg/m2 and above, or more than 6 lymph nodes removed or ALND (Table 1). The multivariate analysis identified BMI level of 25 kg/m2 and above (p=0.047) and having underwent ALND (p< 0.001) as independent variables that were associated with increased risk of BCRL. Of note, in subgroup analysis patients treated with TAD (3.2%) were less likely to develop BCRL compared to those treated with SLNB (7%) at one-year follow-up that did not reach a statistical significance. Similarly, patients with TAD undergoing ALND (8.9%) were less likely to have BCRL compared to those with SLNB followed by ALND (8.9 vs 22.8%, p=0.023) as shown in Table 1. According to QUICK-DASH scoring, patients who underwent ALND, more than 6 LNs removed and having developed BCRL had a higher level of arm and shoulder-related physical limitation compared to those treated with SLNB/TAD, 6 or less LNs retrieved or without having developed BCRL (p=0.009, p=0.096, p< 0.001). Patients with BCRL had significantly lower physical role difficulty

(p=0.004) and pain (p=0.006), and those who underwent ALND had significantly lower pain (p=0.045) related quality of life. According to univariate analysis, being 50 years of age or older (p=0.027) and the development of BCRL (p=0.004) decreased the physical component-related quality of life. In addition, increased level of arm and shoulder-related physical limitation decreased physical (p< 0.001) and mental (p< 0.001) related quality of life.

Conclusions: These findings in the present cohort suggest a more conservative axillary surgery associated with removal not more than 6 lymph nodes to decrease BCRL. Of note, patients with TAD have a trend to develop less BCRL compared to those with SLNB. Patients who underwent ALND were more likely to have lymphedema and impaired arm and shoulder function compared to those who did not undergo ALND. Furthermore, presence of BCRL was found to be associated with decreased quality of life. Therefore, precautions such as early postoperative exercise and early diagnosis of preclinical BCRL should be considered to prevent the BCRL in the first year after surgery.

Figure 1: Breast Cancer Related Lymphedema Rates of Patients According to Clinical Characteristics

Breast Cancer Related Lymphedema Rates of Patients According to Clinical Characteristics

	Total	Lymphedema	Univariate		Multivariate	
Variables	**n(%)**	**n (%)**	**OR (95% CI)**	***P* value**	**OR (95% CI)**	***P* value**
All	509(100)	60(11.8)				
Age (year)						
<50	290(57)	27(9.3)	1(reference)		1(reference)	
≥50	219(43)	33(15.1)	1.73(1.01-2.97)	**0.046**	1.42(0.80-2.49)	0.230
BMI						
<25 kg/m^2	76(14.9)	4(5.3)	1(reference)		1(reference)	
≥25 kg/m^2	222(43.6)	35(15.8)	3.37(1.16-9.82)	**0.019**	3.00(1.02-8.89)	**0.047**
Clinical T Stage						
I/II	392(77)	42(10.7)	1(reference)			
III-IV	117(23)	18(15.4)	1.52(0.84-2.75)	0.169		
Clinical N Stage						
I	436(85.7)	48(11)	1(reference)			
II-III	73(14.3)	12(16.4)	1.59(0.80-3.16)	0.183		
Breast Surgery						
BCS	260(51.1)	29(11.2)	1(reference)			
Mastectomy	249(48.9)	31(12.4)	1.13(0.66-1.94)	0.650		
Axilla Surgery						
SLNB/TAD	291(57.2)	18(6.2)	1(reference)		1(reference)	
ALND	218(42.8)	42(19.3)	3.62(2.02-6.49)	**<0.001**	3.74(2.07-6.78)	**<0.001**
Number of LNs						
≤6	259(50.9)	15(5.8)	1(reference)		1(reference)	
>6	250(49.1)	45(18)	3.57(1.93-6.59)	**<0.001**	2.02(0.81-5.04)	0.130
Only SLNB/TAD						
TAD	62(21.3)	2(3.2)	1(reference)		1(reference)	
SLNB	229(78.7)	16(7)	2.25(0.50-10.08)	0.380	N/A	
ALND						
TAD+ALND	56(25.7)	5(8.9)	1(reference)		1(reference)	
SLNB+ALND	162(74.3)	37(22.8)	3.02(1.12-8.12)	**0.023**	N/A	

BCRL, Breast Cancer Related Lymphedema, **TAD**, Targeted axillary dissection; SLNB=sentinel lymph node biopsy; ALND=axillary lymph node dissection; **N/A,** not available.

Male Breast Cancer

1987500 - Male Breast Cancer: Insights from a large registry

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Background/Objective: Between 4-40% of patients assigned male at birth diagnosed with breast cancer have a germline genetic variant identified on genetic testing, however only 50% of MBC patients have undergone genetic testing. The largest study on male breast cancer patients (MBC) who had multigene panel testing included < 1,000 patients. The Myriad Collaborative Research Registry (MCRR) has data on over 700,000 total patients with breast cancer, >10,000 of whom are male, who underwent genetic testing between 1996-2024. The purpose of this study was to evaluate this data and identify disparities in genetic testing in the MBC population.

Methods: The MCRR is a registry of de identified clinical, genetic, and genomic data from cancer patients tested at Myriad Genetics between January 1996 and May 2024. We queried all patients diagnosed with breast cancer and focused on those assigned male at birth who completed germline testing. Patient's ancestry, germline genetic findings, and family history was included in the analysis.

Results: Of the 1.23 million patients in the MRCC, 10,424 males with an average age of breast cancer diagnosis at 64 years old underwent genetic testing with Myriad Genetics. The most common self-reported ancestries of males who underwent genetic testing were Western/Northern European 3,942 (37.82%) and White/non-Hispanic 2,009 (19.27%). Other ancestries included Black/African 1,079 (10.35%), Hispanic/Latino 403 (3.87%), and Asian 227 (2.18%). At least one pathogenic variant (PV) was identified in 1,562 (14.98%) patients with at least one variant of uncertain significance identified in 1,371 (13.15%) patients. In those with a PV, the average age of breast cancer diagnosis was 64 years old. The most common gene with a PV identified was BRCA2 in 1,123 (10.77%) patients, followed by BRCA1 158 (1.52%), CHEK2 85 (0.82%), ATM 43 (0.41%) and PALB2 42 (0.40%). Family history was associated with a likelihood of having a PV identified on genetic testing ($p = < 0.001$), but there was no significant association between personal history of cancer and positive genetic test ($p = 0.26$).

Conclusions: This study reports on the largest population of males tested for genetic variants with the most common identified PV BRCA2, consistent with previously reported data. This study identified significant disparity in patients completing genetic testing with predominantly White males undergoing genetic testing compared to Black/Hispanic males. Further research is needed to determine the barriers to testing for these underserved populations.

Table 1: Demographics of individuals tested

Table 1: Demographics of individuals tested							
Demographic	Total		Negative Genetic Testing		Positive Genetic Testing		P
Total	10424		8862		1562		
Average age at Diagnosis	64		64		64		
Ancestry							<0.001
Pacific Islander	7	0.07%	7	0%	0	0%	
None Specified	1557	14.94%	1310	15%	246	16%	
Ashkenazi Jewish	671	6.44%	544	6%	127	8%	
White/Non-Hispanic	2009	19.27%	1665	19%	344	22%	
Western/Northern European	3942	37.82%	3399	38%	543	35%	
Middle Eastern	127	1.22%	113	1%	14	1%	
Black/African	1079	10.35%	940	11%	139	9%	
Hispanic/Latino	403	3.87%	342	4%	61	4%	
Other	470	4.51%	413	5%	57	4%	
Asian	227	2.18%	194	2%	33	2%	
Central/Eastern Europe	837	8.03%	716	8%	121	8%	
Native American	247	2.37%	217	2%	30	2%	
Personal History of Cancer							0.026
Prostate	820	7.87%	678	8%	142	9%	
Melanoma	341	3.27%	150	2%	26	2%	
Colo/rectal	176	1.69%	136	2%	26	2%	
Renal	162	1.55%	67	1%	14	1%	
Bladder	78	0.75%	67	1%	11	1%	
Pancreas	51	0.49%	31	0%	18	1%	
Thyroid	40	0.38%	42	0%	7	0%	
Gastric	5	0.05%	5	0%	0	0%	
Relatives with Cancer Diagnosis							<0.001
Yes	7732	74.17%	6406	72.29%	1326	84.89%	
No	2692	25.83%	2456	27.71%	236	15.11%	

1988532 - Axillary Management Trends and Survival in Men Undergoing Mastectomy with Positive Sentinel Nodes

Elizabeth Fish[1], Ian Whittall[2], Walker Lyons[2], Richard Bleicher[2], Cecilia Chang[3], Allison Aggon[2], Andrea Porpiglia[2], Alycia So[2], Austin Williams[2]

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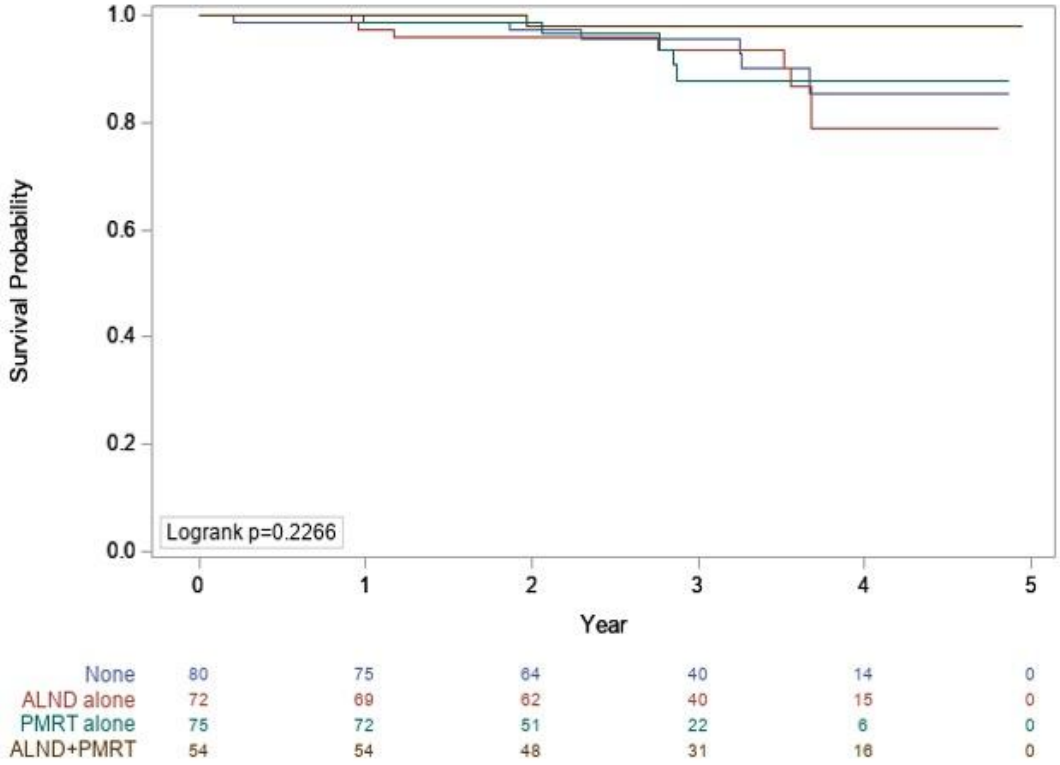
Background/Objective: Due to lack of screening and unfavorable tumor-to-breast ratio at presentation, men are more likely to be diagnosed with node-positive breast cancer (MBC) and treated with mastectomy. The AMAROS trial evaluated the difference between axillary lymph node dissection (ALND) and axillary radiation in female patients with cT1-2N0 breast cancer with positive sentinel nodes (SLNs) and showed no difference in oncologic outcomes with fewer adverse effects (including among those undergoing mastectomy). Management of the axilla in males with limited nodal disease remains unstandardized, and we aim to assess current management trends and outcomes.

Methods: Male patients with cT1-2N0M0 breast cancer undergoing upfront mastectomy from 2018-2021 with 1-2+SLNs were identified from the National Cancer Database (NCDB). Patients were stratified based on axillary management. Postmastectomy radiotherapy (PMRT) was defined as radiation to the chest wall and axillary nodes. Differences in clinicodemographics, axillary management, and overall survival (OS) trends were assessed.

Results: Of 445 patients included, 354 (80%) had 1+SLN and 91 (20%) had 2+SLNs. No further axillary treatment was performed in 25% of patients (who were therefore under-treated), while 22% underwent ALND alone, 29% underwent PMRT alone, and 24% underwent dual ALND+PMRT. Patients undergoing no further axillary treatment were older ($p=0.01$) and more likely to have only 1+SLN ($p< 0.001$). Patients with 2+SLNs were more commonly treated with ALND+PMRT (43% vs. 19%, $p< 0.001$). There was a non-significant increase in the rate of PMRT alone (23% to 36%) and a concomitant decrease in the rate of ALND alone (27% to 12%) over the study period ($p=0.14$). The rate of ALND+PMRT remained relatively stable (29% to 24%). Among patients undergoing ALND, 31% had additional positive nodes (+LNs), with a mean of 1.2±3.3 additional +LNs being found. While more patients in the ALND+PMRT group had additional +LNs than in the ALND alone group (42% vs. 18% $p< 0.001$), there was no difference in the number of additional +LNs between the groups ($p=0.98$). Among patients undergoing PMRT, the mean number of fractions was 27, and 89% were treated with ≥45 Gy. There was a significant delay in initiation of radiation among those undergoing ALND+PMRT vs. PMRT alone (194 vs. 133 days from diagnosis, $p< 0.001$). On both univariate and multivariable analysis (adjusting for pertinent clinicopathologic features), having 2+SLNs was the only independent predictor of undergoing ALND+PMRT (OR 2.5, 95% C.I. 1.29-4.70, $p=0.006$). With a median follow-up of 2.9 years, older age ($p< 0.001$) and having 2+SLNs ($p=0.03$) were predictive of worse OS, while the axillary management strategy was not ($p=0.23$, Figure).

Conclusions: Despite evidence for safe and effective management strategies for limited nodal disease, half of men undergoing mastectomy continue to either be under-treated or over-treated. More work and longer follow-up are needed to determine the impact of axillary management on outcomes in this population. Case-by-case multidisciplinary discussion is warranted to optimize outcomes while decreasing morbidity.

Figure 1. Overall survival among men with cT1-2N0 breast cancer undergoing upfront mastectomy with 1-2 positive sentinel nodes stratified by axillary treatment.



1988611 - Phenotypes in Male Breast Cancer: A National Update

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Background/Objective: Male breast cancer (MBC) accounts for < 1% of all breast cancers, and its management is often based on data from female breast cancer (FBC). Many retrospective series on which we base MBC management have not been updated to evaluate modern treatment paradigms. Specifically, changes in management of adjuvant and neoadjuvant chemotherapy (NACT) in triple negative (TN) and human epidermal growth factor receptor 2 (HER2+) cancers. This study looks to expand the existing literature on the characteristics of MBC, including patient, tumor and treatment characteristics along with overall survival (OS) and then compare this to FBC.

Methods: Patients in the National Cancer Database, having non-metastatic invasive breast cancers diagnosed between 2004-2021 were identified. Individuals were excluded if their tumors' phenotypes, treatment (surgery, systemic or radiation) or timing were unknown. Differences by phenotype, treatment patterns, chemotherapy use and response, and OS were analyzed for differences between MBC and FBC.

Results: A total of 1,102,851 patients met criteria, among which there were 8,753 (0.8%) males. MBC patients were more likely to be estrogen receptor (ER) and progesterone receptor (PR) positive than FBC patients; ER+ 95.8% vs 85.7% ($p< 0.0001$) and PR+ 89.3% vs 76.6% ($p< 0.0001$). ER and PR staining/intensities were stronger in MBC than FBC (ER: 87.8% vs 58.7%, and PR: 45.4% vs 30.0%; p's< 0.0001). MBC patients were less likely to have TN breast cancers, 3.1% v 10.3% ($p< 0.0001$), but rates of HER2+ were similar between MBC and FBC, 10.8% vs 11.78 ($p< 0.001$). Although MBC patients had higher tumor grades (intermediate grade 51.7% vs 45.3% and high grade 31.8% vs 27.4%, $p< 0.0001$) and higher rates of lymphovascular invasion, (27.7% vs 16.0%, $p< 0.0001$), MBC patients were less likely to undergo neoadjuvant chemotherapy 6.9% vs 9.8% ($p< 0.0001$). MBC and FBC patients with cT1c or larger tumors or those who were cN+ were similarly likely to receive NACT if they were TN (91.3% vs 94.1%, $p=0.099$) or HER2+ (93.6% vs 90.5%, $p=0.176$). Downstaging of the breast primary due to NACT in TN patients was similar in MBC and FBC, 68.1% vs 70.5% ($p=0.665$), and a complete in-breast response was seen in 33.3% of MBC patients vs 30.9% ($p=0.657$) of FBC patients. However, there was a difference in the response to NACT in HER2+ patients. Fewer MBC HER2+ patients had an in-breast response than FBC HER2+ patients, 63.0% vs 75.9% ($p=0.0001$), and fewer had a complete in-breast response, 13.9% vs 38.6% ($p< 0.0001$). Propensity weighted OS for 17 patient, tumor and treatment factors found a MBC vs FBC 5-year OS of 83% vs 85% and 10-year OS of 63% vs 70% (Log rank $p< 0.0001$).

Conclusions: MBC is less likely to be TN and more likely to be HR+ than FBC. While fewer MBC patients received NACT than FBC patients overall, NACT was administered with similar frequency in the TN and HER2+ subsets. With MBC having poorer NACT responses in HER2+ patients and a slightly lower adjusted OS generally, genomic analysis and treatment paradigm trials should be considered to close this gap.

1988757 - A comparison of early versus late 21st century cases of male breast cancer reveals evolving characteristics, diagnostics, and treatment strategies

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Background/Objective: Male breast cancer's rarity leads to limitations in evaluation over time. To identify the evolution of patient features and practice patterns, we present a single academic-institution comparison of male breast cancer treated in the last twenty years.

Methods: Cases of male breast cancer between 2005-2024 were obtained from Columbia University Medical Center chart review. A retrospective analysis of patient features, diagnostic imaging, tumor histochemistry, surgical treatment, and systemic therapy was performed. Patients were stratified into an earlier group (2005-2014) or a recent group (2015-2024) and compared.

Results: A total of 58 cases were identified. Mean age was 65 (range: 19-91) with 35 identified as white, 6 Black, 5 Hispanic, 5 other, and 3 declined. Our cohort's overall 5-year survival rate of 87.5% is reflective of the reported national rate of 84%. When stratified into early (2005-2014) 27 patients versus recent (2015-2024) 31 patients, the mean age at diagnosis trends younger in recent years (62.2 vs 69) as well as mean ultrasound tumor size (25mm vs 17.92mm, $p = 0.03$). Histologic subtypes were comparably distributed, with invasive ductal carcinoma the most common (75.9%), followed by both DCIS and papillary carcinoma (10.3% each). Advanced stage (IIIC, IV) comprised 12% of our total population with the majority presenting in the recent decade (85.7%). In contrast, more Stage IIA stage cancers were noted in the early cohort with all other stages being comparable between the two groups. 35 patients had genetic testing which was significantly more likely performed among the recent cohort ($p = 0.002$). While total mastectomy persists as the main surgical modality, less invasive surgery has emerged. All breast conservation cases in our cohort were performed in the recent decade, with a decreased number of modified radical mastectomies. Axillary lymph node dissection rates decreased by half among the two cohorts (44% vs 22%). Interestingly, the use of lymphoscintigraphy alone for sentinel lymph node localization doubled among the recent cohort, whereas the rate of dual-localization technique decreased by 50%. Lymph node fiducial marker placement has also emerged in the last decade as well. The use of adjuvant therapy between the two groups was comparable; however, neoadjuvant therapy (10%) was employed solely in the recent group.

Conclusions: Although male breast cancer is extremely rare compared with women, and advances in treatment modalities benefit both, this study finds that the pace at which this is applied occurs much slower in men. Further education is needed to ensure modern approaches are adopted equally in a timelier manner.

Margins

1973770 - Assessing recurrence outcomes in breast-conserving surgery with and without cavity shave margin resection

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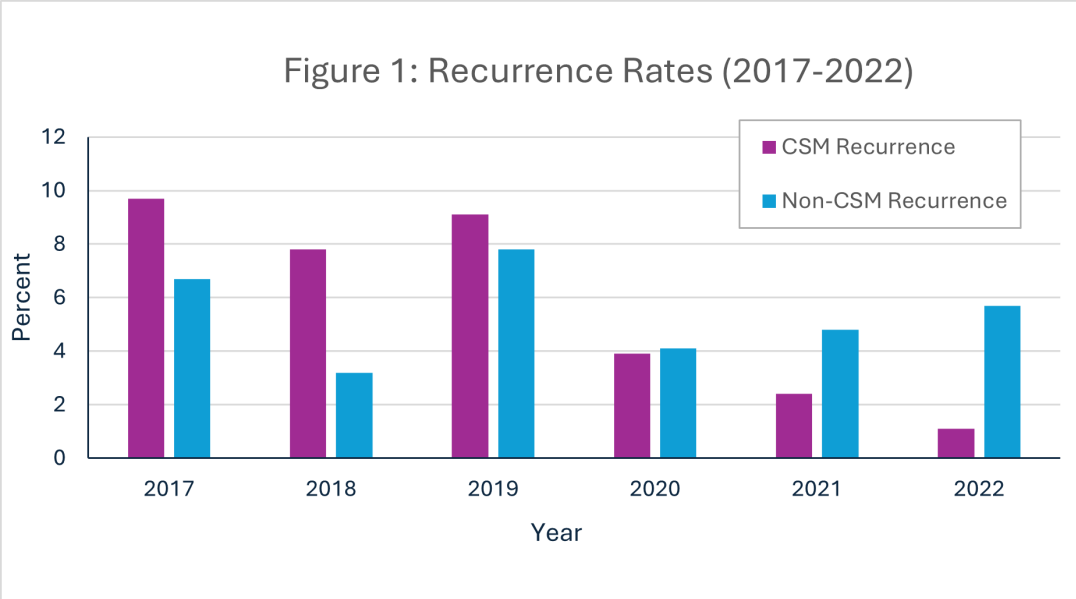
Background/Objective: For patients undergoing breast-conserving surgery (BCS) for breast cancer, cavity shave margin (CSM) resection has correlated to positive margin rate reductions, ranging from 50% to over 70%, and occult multifocal disease identification, ranging from 8% to 19%. There is a paucity of data on the impact of CSM on locoregional recurrence (LRR), therefore our study sought to compare whether rates of recurrence differed between partial mastectomy with CSM versus without.

Methods: A single-institution retrospective review was conducted of biological women >18 years who underwent BCS for a diagnosis of Stage 0-III breast cancer from January 1, 2017 and December 31, 2022. Patients with a history of breast cancer prior to 2017 were excluded. Patients were stratified into either BCS with CSM resected circumferentially (CSM) or BCS without CSM (non-CSM). Primary outcome measures were rates of LRR and distant recurrence. Secondary outcome measures included re-excision rates for positive surgical margins.

Results: The study population included 2681 patients (median age 64 years), 86 of whom had a concurrent diagnosis of bilateral breast cancer for a total of 2766 operations among 9 surgeons. There were 531 (19.2%) in-situ carcinomas and 2236 (80.8%) invasive malignancies. There were 901 (32.6%) partial mastectomies performed with CSM and 1865 (67.4%) partial mastectomies performed without circumferential CSM. The majority (72.5%) of cases were completed using wireless localization devices. Throughout the study period, there was a gradual shift of the predominant surgical approach from BCS without CSM to BCS with CSM. There were 136 women (5.1%) who had a documented recurrence event: 35 patients in the CSM cohort and 101 in the non-CSM cohort. A total of 20 (2.2%) locoregional relapses and 15 (1.7%) distant metastases were observed in the CSM group, and 72 (3.9%) locoregional relapses and 29 (1.6%) distant metastases in the non-CSM group. The absolute risk of all recurrence events associated with non-CSM was 5.4% compared to 3.9% with CSM, this difference did not reach statistical significance ($p = 0.13$). There were 436 re-excisions performed for positive margins: 66 in the CSM cohort and 370 in the non-CSM cohort. The re-excision rate associated with non-CSM was significantly higher at 19.8% compared to 7.3% with CSM ($p = < 0.05$).

Conclusions: This single center review compares recurrence rates among patients who underwent partial mastectomy with and without CSM, which is scarce in the literature. Although CSM resection was associated with reduced rates of positive margins, this did not correspond to a significant difference in recurrence rates compared to partial mastectomy without CSM. Follow up studies of prospective, randomized control trials, specifically the SHAVE2 trial, are recommended to provide further insight into whether recurrence rates are impacted by partial mastectomy technique.

Figure 1: Recurrence Rates in CSM vs non-CSM Patients (2017-2022)



1988451 - Loco-Regional Recurrence following Breast Cancer Surgery with Positive Anterior Margins: A Cohort Analysis

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Background/Objective: The management of positive anterior margins (PAM) is clinically challenging due to the paucity of data on the literature. This study assesses the rate of locoregional recurrence (LRR) in breast cancer patients with positive anterior margins following surgery, with the goal of better informing practice.

Methods: A retrospective cohort study (Institutional Review Board number BST_18) was undertaken in an academic Medical Center in patients who underwent breast cancer surgery (partial mastectomy or mastectomy) for early-stage breast cancer from January to December 2017. Exclusion criteria included patients with recurrent disease, prior surgery, or previous radiotherapy. A negative margin was defined as ≥1mm for both invasive and in situ carcinoma. Five-year follow-up was collected for LRR. Management for PAM, including further surgery, radiotherapy, or observation only, was documented. Descriptive and non-parametric statistical methods were employed for analysis.

Results: A total of 210 patients were included in the analysis (Table 1), with a median age of 67.5 years (range: 37-97). Ductal Carcinoma In Situ (DCIS) was present in 38 patients (18.1%) while 172 patients (81.9%) had invasive carcinoma. Of the invasive cancers, 143 (68%) were estrogen receptor (ER)-positive, 28 (13.3%) were HER2-positive and 20 (9.5%) triple negative (TN). Oncologic treatment included partial mastectomy in 151 patients (71.9%) and total mastectomy in 59 (28.1%). Sentinel lymph node biopsy was performed in 144 cases (68.6%) and axillary lymph node dissection in 35 (16.7%). Neoadjuvant chemotherapy was administered to 25 (12%) patients, adjuvant radiotherapy to 121 (58%), adjuvant chemotherapy to 29 (14%), and endocrine therapy to 113 (54%). Positive margins (PM) were identified in a total of 46 cases (23.3%). Of these, 13 patients (28%) had concurrent involvement of the anterior margin while 33 (72%) did not. Among all PM, 33 (72%) underwent additional surgery, 11 (24%) received radiotherapy alone and 2 (4%) had no further treatment. A total of 19 cases (9.0%) had a positive anterior margin (tPAM), Of these, 13 cases (68%) had concurrent involvement of radial margins (PRM) and 6 (32%) had isolated PAM (iPAM). In the tPAM group, 6 (32%) cases were positive for DCIS and 13 (68%) for invasive cancer. 6 patients (32%) underwent further surgery, 10 (52%) received radiotherapy alone and 3 (16%) were observed without further treatment. The reason for surgical intervention in all cases was presence of an associated radial margin for which 3 patients (50%) underwent completion mastectomy and 3 (50%) underwent radial margin re-excision. In the iPAM group (n=6), no patients underwent re-excision (0%), 4 received radiotherapy (67%) and 2 had no additional treatment (33%). Over a median follow up of 5 years (IQR: 2-5), no LRR was observed in the tPAM group. One patient had distant recurrence.

Conclusions: The rate of LRR in patients with PAM is extremely low. This data supports current clinical strategies to not re-excise for iPAM. We propose a larger prospective analysis with long term surgical follow-up to confirm these findings. Ultimately, this would reinforce the safety of balancing oncologic and aesthetic considerations in margin management in this group of patients.

Table 1: Summary of Study Findings

Tumor Characteristics			
	Total number (n=210)		**%**
DCIS	38		18.1
Invasive cancer	172		81.9
ER-positive	143		68
HER2-positive	28		13.3
Triple negative (TN)	20		9.5
Oncologic Management			
Partial Mastectomy	151		71.9
Mastectomy	59		28.1
Sentinel Lymph Node biopsy	144		68.6
Axillary Lymph Node dissection	35		16.7
Neoadjuvant chemotherapy	25		12
Adjuvant radiotherapy	121		58
Adjuvant chemotherapy	29		14
Adjuvant endocrine therapy	113		54
Positive Margins			**23.3%**
	Total number (n=46)		**%**
PRM with concurrent PAM	13		28
Isolated PRM	33		72
Positive Anterior Margins (tPAM)			**9%**
	Total number (n=19)		**%**
DCIS	6		68
Invasive cancer	13		32
PAM with concurrent PRM (cPAM)	13		68
Isolated PAM (iPAM)	6		32
5-year LRR	0		0%
5-year distant recurrence	1		5.2%
Margin Management			
	PM (%) n=46	**tPAM (%) n=19**	**iPAM (%) n=6**
Further Surgery	33 (72%)	6 (32%)	0 (0%)
Radiotherapy alone	11 (24%)	10 (53%)	4 (67%)
No further treatment	2 (4%)	3 (16%)	2 (33 %)

TABLE 1 Table Summary of Study Findings

1988863 - Efficacy of intraoperative volumetric specimen imaging in evaluating lumpectomy margins in breast-conserving surgery and its effect on re-excision rates

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Background/Objective: The standard of care for early-stage breast cancer is breast-conserving treatment, consisting of lumpectomy and whole-breast irradiation. Positive lumpectomy margins are associated with a two-fold increase in local tumor recurrence, thus prompting additional surgery to obtain negative margins. In addition to the morbidity of another surgery, re-excisions have other consequences including delay of adjuvant therapy, increased costs, possible worse cosmesis and patient distress. As such, numerous techniques for intraoperative margin assessment are being developed to decrease the need for a second surgery. This study evaluates the use of intraoperative volumetric specimen imaging (VSI) in achieving negative margins for invasive cancer (IC) and ductal carcinoma in situ (DCIS), and its effect on re-excision rates.

Methods: A retrospective review of 127 patients who underwent partial mastectomy for invasive breast cancer and/or DCIS at a single institution was performed. We compared patient populations before and after the implementation of Clarix Imaging VSI-360, an intraoperative 3D VSI device. Positive margin rates for IC and DCIS were calculated based on final pathology. Positive margins were defined as ink on tumor for IC and mixed IC/DCIS, and < 2mm for pure DCIS. Re-excision rates were also calculated for both groups. Chi-square and logistic regression analysis were performed. A p-value of < 0.05 was considered statistically significant.

Results: Of 127 partial mastectomies performed between January 2023 and October 2024, 53 utilized conventional 2D x-ray and/or final pathology to assess margin status and 74 utilized intraoperative VSI after its implementation. Of note, 3 patients with significant multifocal disease identified on VSI were excluded from further analysis due to widespread disease requiring mastectomy for definitive treatment. Compared to the conventional group, the VSI group had lower rates of re-excision (12.68% vs 45.28%, $p< 0.001$), positive margins for IC (9.09% vs 24.44%, $p< 0.05$) and positive margins for DCIS (8.70% vs 48.28%, $p< 0.001$). Controlling for individual surgeon, age at time of surgery, ethnicity, BMI and history of diabetes mellitus (DM), the VSI group had significantly lower odds of re-excision (OR 0.18; 95% CI 0.07-0.48), positive margins for IC (0.29; 95% CI 0.09-0.99) and positive margins for DCIS (0.10, 95% CI 0.02-0.44). Interestingly, patients with a history of DM had a higher odds of positive margins for DCIS (8.39; 95% CI 1.06-66.43), although this may be due to low variability.

Conclusions: The use of intraoperative VSI in breast-conserving surgery decreases re-excisions and positive margin rates for both invasive cancer and DCIS compared to conventional practices. This may impact patient survival by decreasing local tumor recurrence as well as avoiding the adverse consequences associated with re-excision. Current data evaluating intraoperative VSI specifically is limited. Additional investigation is warranted to compare intraoperative VSI to other margin assessment techniques and assess its applicability to different practice settings.

Table 1. Unadjusted Rates of Re-Excisions, Positive IC margins and Positive DCIS margins before and after implementation of intraoperative VSI

Table 1. Unadjusted Rates of Re-Excisions, Positive IC margins and Positive DCIS margins before and after implementation of intraoperative VSI

	Conventional*	Intraoperative VSI	p-value**
	N (%)	N (%)	
Re-excisions	24 (45.28)	9 (12.68)	< 0.001
Positive IC Margins	11 (24.44)	6 (9.09)	0.027
Positive DCIS margins	14 (48.28)	4 (8.70)	< 0.001

Abbreviations: IC= invasive carcinoma, DCIS= ductal carcinoma in situ, VSI= volumetric specimen imaging

*Conventional refers to cases utilizing 2D x-ray and/or final pathology for margin assessment before intraoperative VSI was implemented.

** P-values were obtained using chi-square tests.

1988087 - Does additional margin excision during LumiSystem pegulicianine fluorescence-guided lumpectomy surgery affect patient breast satisfaction and cancer worry?

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Background/Objective: Use of the LumiSystem intraoperative margin assessment tool in lumpectomy surgery removed additional tumor and reduced rates of second surgeries. We asked if the use of the tool and/or the additional margin tissue removed with this system negatively impacted patient breast satisfaction or cancer worry measures.

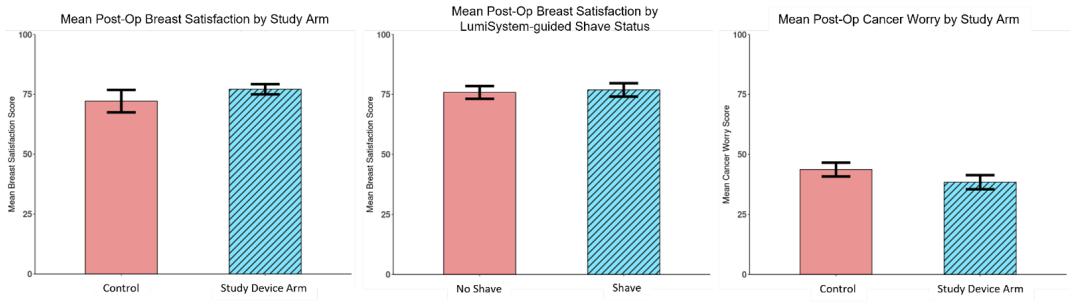
Methods: In two prospective multicenter trials, patients with Stage 0-3 breast cancer received 1 mg/kg IV pegulicianine (LUMISIGHT) 2-6 hours pre-operatively and were randomized to pegulicianine LumiSystem-assisted (device arm) vs. standard lumpectomy (control arm). In the device arm, additional LumiSystem-guided cavity margins were taken at sites of pegulicianine fluorescence seen with a handheld probe utilizing cancer detection software. Patient, tumor, and lumpectomy data were collected. BREAST-Q surveys assessed pre-operative and post-operative breast satisfaction and cancer worry.

Results: Postoperative breast satisfaction surveys were completed 6-12 months by 118 patients. Pegulicianine fluorescence prompted excision of additional margin tissue resection in 52 (44%) of the surveyed device arm patients. There was no significant difference in mean post-operative breast satisfaction scores between device and control arms (77.1/100 device, 72.2/100 control, $p = 0.53$), nor between patients with and without additional margin tissue excision prompted by LumiSystem (76.9 additional shaves taken, 75.8/100 no additional margins taken, $p = 0.79$). Both pre- and post-operative breast satisfaction surveys were completed by 98 participants. Both device and control arm patients reported increased breast satisfaction at the post-operative timepoint compared with the pre-operative timepoint, with no significant difference in score change (mean increase of 10.2 points device, 14.9 points control, $p = 0.42$). There was also no significant difference in breast satisfaction score change between patients with and without device-prompted additional margin excision; both groups reported increased breast satisfaction from pre-operative to post-operative timepoints (mean increase of 8.1 with additional margins taken, 13.2 points no additional margins, $p = 0.18$). Cancer worry surveys were completed 6-12 months post-operatively by 63 patients. Post-operative cancer worry scores were generally low, with no significant difference in mean cancer worry scores between device and control arms (38.4/100 device, 43.7/100 control, $p = 0.53$). However, mean cancer worry scores were significantly lower in patients with additional LumiSystem-guided cavity margins taken vs. those with no additional margin, (31.6/100 additional margins taken, 44.9/100 no additional margins, $p = 0.04$). Both pre- and post-operative cancer worry surveys were completed by 39 participants. Both device and control arms exhibited a mean decrease in cancer worry from pre-operative to post-operative timepoints, with no significant difference in score change between arms (mean decrease of 6.7 points device, 16.5 points control, $p = 0.17$). Multivariate binomial logistic regression analyses showed that excision of additional LumiSystem-guided margins and total volume excised were not significant predictors of decreased post-operative breast satisfaction. BMI, larger breast size, age > 50,

neoadjuvant therapy, and oncoplastic closure also failed to correlate with post-operative breast satisfaction.

Conclusions: Breast satisfaction scores increased, and cancer worry scores decreased in breast cancer patients in LumiSystem intraoperative lumpectomy margin assessment trials, despite the excision of additional margin tissue in some patients.

Figure 1: Post-Operative Breast Satisfaction and Cancer Worry Scores



1988635 - Factors Associated with Additional Disease on Re-excision Specimens After Breast-Conserving Surgery in Breast Cancer

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Background/Objective: After breast-conserving surgery (BCS) for early-stage breast cancer, re-excision rates due to positive or close margins vary from 1%-23%. Notably, residual disease is only found in 21%-47% of cases. Additional surgeries have been associated with psychological distress, increased mastectomy rates, delays in adjuvant therapies, and significant healthcare costs. Here, we aimed to identify clinical, pathological, and surgical factors associated with additional disease in re-excision specimens to help guide the selection of patients needing re-excision following BCS.

Methods: This is a retrospective review of patients treated with breast-conserving surgery from 2018 to 2024. Patient-level data was obtained from the prospectively maintained Saint John's Cancer Institute breast database. Women with breast cancer diagnosis (DCIS or invasive breast cancer) who underwent BCS with subsequent re-excision due to inadequate margins were included in this study. Clinical-demographics variables, imaging findings (by mammogram, ultrasound, and/or MRI), use of neoadjuvant systemic therapy, surgical procedures, and pathologic parameters were obtained. Multivariate logistic regression analysis was performed to identify factors associated with additional disease.

Results: A total of 926 patients were treated with BCS within this time frame, of whom 184 (19.9%) patients underwent additional surgery due to positive or close margins. Of these 184 patients included in the final analysis, 54 (29%) had additional disease (DCIS=36, invasive breast cancer=18). Overall, the median (IQR) age at diagnosis was 61 (51 – 70) years. On imaging, most patients had one finding (48.6%), presence of a mammographic mass (48.8%), and the median (range) span of disease was 19 mm (1 – 100). Pathologically, most patients had invasive breast carcinoma (n=140, 76.1%), one positive margin (n=98, 53.3%), and in the cases of invasive disease, additional DCIS was identified in 98 (70%) patients. In the univariate analysis, age at diagnosis, pathological tumor size, distance to margin, and number of positive margins were significantly associated with additional disease ($p < 0.05$). However, in the multivariate logistic regression analysis, positive margins (OR: 1.88, 95% CI 0.79 - 4.74), and two (OR: 1.47, 95% CI 0.62 – 3.42) and three or more (OR: 6.53, 95% CI 2.61 – 17.16) positive margins increased the likelihood of additional disease (Table 1).

Conclusions: In this retrospective review, the number of positive margins was a significant predictor of additional disease in re-excision specimens following breast-conserving surgery. The majority of patients undergoing re-excision did not have additional disease on re-excision. Patients with multiple positive margins were more likely to have additional disease on re-excision and are more likely to benefit from additional surgery. A more targeted approach to additional surgery may reduce unnecessary surgeries, psychological distress, delays in adjuvant therapy, and healthcare costs. Future studies should focus on validating these findings in diverse patient populations and developing decision-making tools to guide re-excision in BCS.

Table 1. Univariable and multivariate logistic regression analysis of additional disease in re-excision specimens

Variable	Univariable			Multivariable		
	OR	95% CI	*p*-value	OR	95% CI	*p*-value
Age	0.97	0.94 - 0.99	0.009	0.97	0.94 - 1	0.048
Clinical span (mm)	1.01	1 - 1.03	0.136	1	0.98 - 1.02	0.724
Neoadjuvant therapy						
No	ref			ref		
Yes	2.09	0.75 - 5.62	0.145	0.85	0.2 - 3.54	0.825
Number of positive margins						
1	ref			ref		
2	1.87	0.86 - 4.08	0.114	1.47	0.62 - 3.42	0.377
≥3	7.41	3.13 - 18.37	<0.001	6.53	2.61 - 17.16	<0.001
Distance to margin						
Close						
Positive	2.36	1.15 - 5.21	0.025	1.88	0.79 - 4.74	0.163
Pathologic tumor size (mm)	1.02	1 - 1.03	0.011	1.01	0.99 - 1.03	0.181
PR						
Negative	ref			ref		
Positive	0.5	0.25 - 1.04	0.059	0.57	0.24 - 1.33	0.185
Total LN resected	1.06	0.98 - 1.16	0.17	1.06	0.97 - 1.17	0.194

* Positive margin was defined as "ink of tumor" for invasive breast cancer (*Moran et al, J Clin Oncol 2014*) and <2mm for DCIS (*Morrow et al, J Clin Oncol 2016*)

Abbreviations: OR, odds ratio; PR, progesterone receptor; LN, lymph node

1988885 - Surgeon Interpretation of Margin Status Utilizing Intraoperative 3D Tomosynthesis During Breast-Conserving Surgery

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Background/Objective: Intraoperative margin assessment for patients undergoing segmental mastectomy (SM) is designed to identify positive margins and allow for the immediate excision of additional tissue. Our current institutional standard of care is a labor-intensive, intraoperative margin assessment by a pathologist and radiologist. A recent retrospective study demonstrated that intraoperative interpretation of three-dimensional (3D) digital breast tomosynthesis (DBT) images is an acceptable alternative method for detecting positive margins on SM specimens. In this study we aimed to compare intraoperative surgeon interpretation of DBT specimen images to our institution's standard extensive processing (SEP).

Methods: DBT images of intact SM specimens were obtained and interpreted by the operative surgeon. Proposed additional margins were recorded. The SM specimen then underwent intraoperative SEP consisting of two-dimensional (2D) imaging of the intact and sliced specimen, image interpretation by a breast radiologist, and gross assessment by a breast pathologist. Additional margins were excised based on SEP recommendations. Margin assessment time was recorded for each method. Margin status of the primary specimen and additional specimens were determined by permanent pathologic evaluation. To evaluate the accuracy of each method for identifying a positive margin on the SM primary specimen, sensitivity, specificity, false negative rate (FNR), positive predictive value (PPV) and negative predictive value (NPV) were calculated. Performance measures for SEP and surgeon interpretation of DBT specimen images were compared using the exact McNemar's test.

Results: Ninety-four patients underwent SM and were included in the analysis. Thirteen specimens (14%) had positive margins at one or more of the intact specimen edges prior to excision of additional tissue. Of the specimens with positive margins, 10 were identified by SEP for a sensitivity of 77%, specificity of 31%, FNR of 23%, PPV of 15%, and NPV of 89%. Surgeon interpretation of DBT images of intact specimens identified 9/13 with positive margins for a sensitivity of 69% ($p>0.9$), specificity of 53% ($p=0.002$), FNR of 31%, PPV of 19%, and NPV of 91%. The mean time for surgeon interpretation of margins was 6 minutes (range 2-35) versus 27 (range 19– 59) minutes for SEP.

Conclusions: Intraoperative margin assessment reduced the incidence of positive final margins in patients undergoing SM. Surgeon interpretation of DBT specimen images is an accurate alternative to SEP for detecting positive margins intraoperatively, with comparable sensitivity and lower utilization of time and labor resources.

1988903 - Performance comparison of micro-CT and tomosynthesis for breast cancer specimen imaging

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Background/Objective: Radiographic imaging devices have been introduced into the operating room for accelerating and improving the intraoperative decision-making during breast cancer surgery. While early specimen radiography is based on 2D X-ray imaging, its accuracy for assessing margin status has been insufficient. In recent years, specimen radiography modalities that are beyond traditional 2-D X-ray have emerged, which include platforms based on micro-computed tomography (mCT) and tomosynthesis. This is the first study that compares mCT and tomosynthesis for their clinical performance in imaging breast cancer patient specimens.

Methods: Two FDA-cleared commercial 3D specimen imaging modalities, an mCT modality and a tomosynthesis modality were used for imaging main specimens from ten prospectively enrolled lumpectomy patients with invasive breast carcinoma (IBC) or ductal carcinoma in situ (DCIS). The main specimens from the ten enrolled patients were imaged sequentially first with mCT, followed by tomosynthesis. The twenty sets of images were retrospectively interpreted by a fellowship-trained radiologist for the likelihood of each of the six margins being positive, according to the definition in the latest ASBrS guidelines for IBC and DCIS. The result was analyzed for sensitivity, specificity, receiver operating characteristic (ROC) curves, and area-under-the-curve (AUC) values.

Results: With the ten enrolled patients, nine has IBC or IBC with DCIS, and one has pure DCIS, and the average lesion size is 11.1 mm (range: 1.1 – 18mm). Among those, two cases had positive margins on the main specimen. The study shows that the mCT platform has sensitivity of 100%, specificity of 87.9% for identifying positive margins, whereas the tomosynthesis platform has sensitivity of 50% and specificity of 65.5. The ROC curve of mCT is higher than that of tomosynthesis, with their AUCs values at 0.96 and 0.57, respectively.

Conclusions: The results show that both mCT and tomosynthesis are useful for identification of positive margins in breast cancer specimens. The sensitivity and specificity for margin assessment are both higher in mCT than in tomosynthesis.

Figure 1: Example images of micro-CT and tomosynthesis and ROC curves comparing the two modalities.

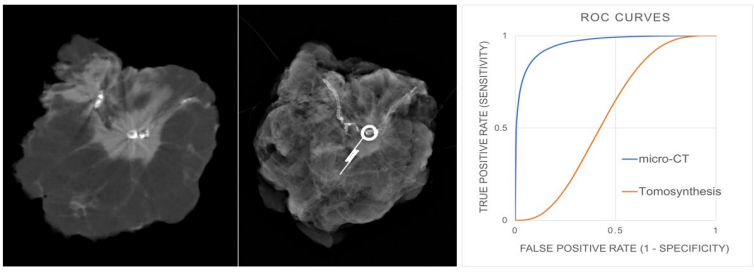

Figure 1. Micro-CT (A) and tomosynthesis (B) images of a specimen with invasive ductal carcinoma. The entire data set is summarized in the ROC curves (C).

NAC

1977382 - Contemporary Use of Neoadjuvant Chemotherapy for Metaplastic Breast Cancer and its Association with Overall Survival

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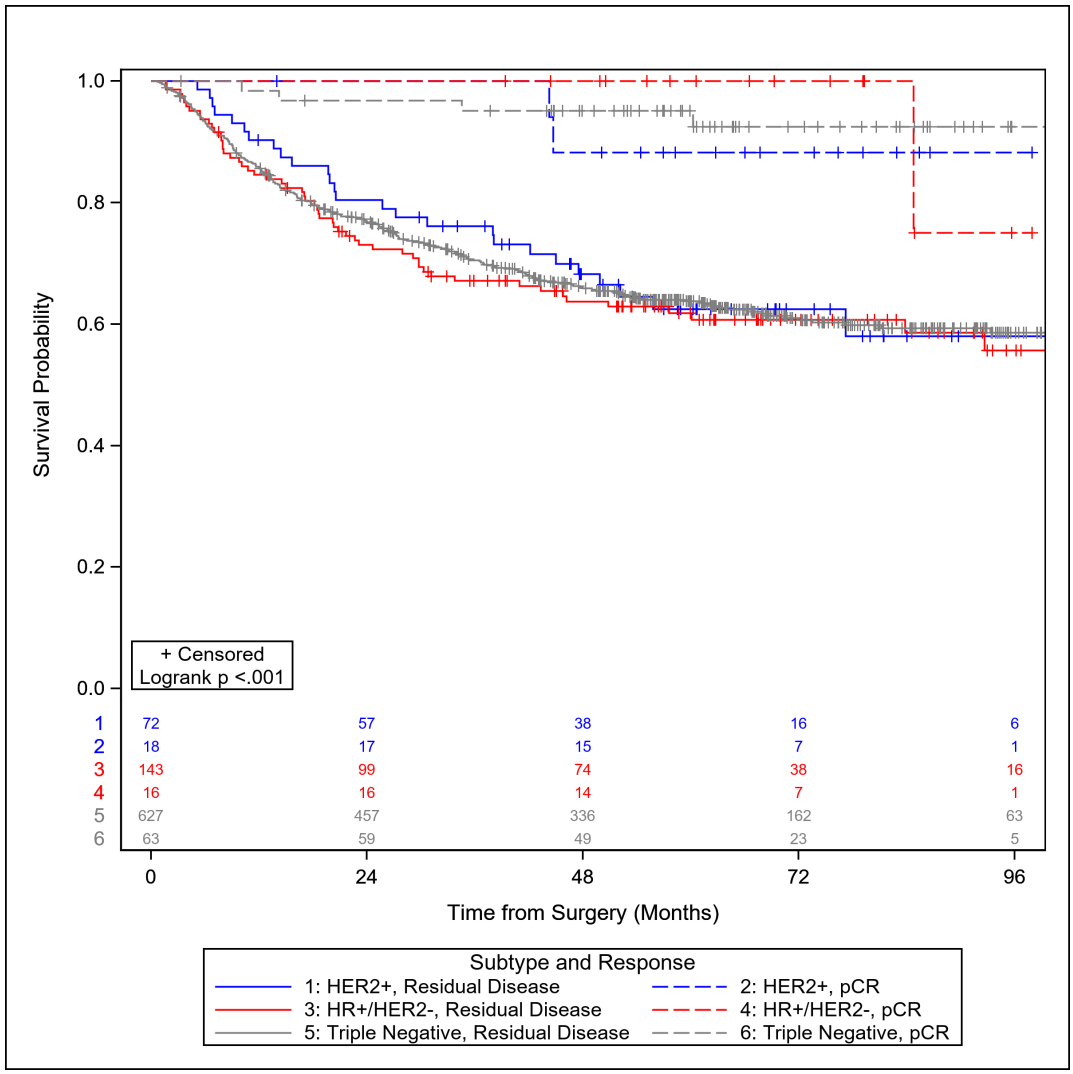
Background/Objective: Metaplastic breast cancer (MpBC) is a rare subtype of breast cancer that less frequently expresses the estrogen-receptor (ER), progesterone-receptor (PR), and HER2/neu biomarkers, with roughly 70% classified as triple negative (TN). MpBC is often considered chemo-resistant and to have a worse overall survival (OS). In recent years, neoadjuvant chemotherapy (NAC) has been delivered more frequently as pathologic complete response (pCR) after NAC has been associated with improved OS. However, historic data suggests lack of efficacy of NAC for MpBC. Given the increase in use of NAC in recent years, we aimed to summarize contemporary treatment patterns and outcomes of MpBC.

Methods: Adult female patients diagnosed with MpBC (2012-2020) were selected from the National Cancer Database (NCDB). Patients with incomplete data were excluded. Patient characteristics were summarized with N (%) and median (IQR), as appropriate. Study groups were compared with chi-square or Fisher's exact tests for categorical variables, and analysis of variance for continuous variables. Unadjusted OS was estimated with the Kaplan-Meier method, and log-rank tests were used to compare study groups. Cox Proportional Hazard models were used to estimate the association of receptor subtype [hormone receptor (HR), HER2] with OS after adjustment.

Results: 4,601 patients with MpBC were included; 72.7% TN (N=3,344), 21.6% HR+/HER2- (N=995), and 5.7% HER2+ (N=262). While tumor size and clinical T-stage did not differ between subtypes, patients with HER2+ MpBC were more frequently cN1 (TN 10.0%, HR+/HER2- 13.7%, HER2+ 16.4%, p< 0.001). Among all patients, 20.4% received NAC. Patients with HER2+ MpBC were more likely to receive NAC (34.4%) compared to TN or HR+/HER2- subtypes (20.6% and 16.0%; p< 0.001). HER2+ patients were twice as likely to achieve a pCR after NAC (20%), compared to TN and HR+/HER2- subtypes (9.1% and 10.1%, p=0.006). Unadjusted OS did not differ by subtype or when stratified by prognostic stage, but was improved for those who achieved pCR, compared to those with residual disease (5-year OS 0.95 vs. 0.63, p< 0.001, Figure 1). Among all patients, those who received adjuvant chemotherapy only had an improved unadjusted OS rate (5-year OS 0.81, 95%CI 0.79-0.83) compared to those who received NAC (0.67, 95%CI 0.63-0.70). This held true within each receptor subtype. After adjustment, adjuvant chemotherapy only was associated with improved OS (hazard ratio (HR) 0.69, 95%CI 0.59-0.80) compared to NAC (HR 1.25, 95%CI 0.91-1.71; REF: No Chemotherapy). Notably, from 2012 to 2020, the use of NAC for MpBC decreased for all subtypes (lowest rates in 2020).

Conclusions: Of women with MpBC who received NAC, pCR is highest in those with HER2+ disease, but remains extremely low compared to published rates with non-MpBC. OS did not differ by subtype; however, patients who received adjuvant chemotherapy had improved OS compared to those who received NAC in all subtypes. Use of NAC for MpBC remains low in an era when NAC has become more common in the treatment of non-MpBC. Further investigation into pCR rates and OS are needed to determine whether outcomes are improved with the increasing incorporation of immunotherapy into treatment regimens.

Figure 1. Unadjusted Overall Survival by Receptor Subtype and Response after Neoadjuvant Chemotherapy in Metaplastic Breast Cancer.



1981781 - Neoadjuvant Chemotherapy is Associated with Worse 5-Year Overall Survival in Patients with Metaplastic Breast Cancer Compared to Primary Surgery

Anna Chichura[1], Xiaoying Chen[2], Lauren Kopicky[2], Azka Ali[3], Chirag Shah[2], Zahraa AlHilli[2]

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Background/Objective: Metaplastic breast carcinoma (MBC) is a rare morphological subtype of breast cancer characterized by the presence of squamous and/or mesenchymal differentiation that characteristically has a poor response to chemotherapy. The objective of this study is to evaluate clinical outcomes following upfront surgery as compared to neoadjuvant chemotherapy (NAC) in patients with MBC.

Methods: Patients ≥18 years old diagnosed with Stage I to III MBC between 2010 and 2017 were identified using the National Cancer Database (NCDB). Patient characteristics were summarized using medians, IQRs, and ranges for continuous variables, and frequencies and percentages for categorical variables. Fisher's exact test and the Wilcoxon rank-sum test compared characteristics between the groups. The log-rank test assessed overall survival differences. Statistical significance was defined as $p \leq 0.05$.

Results: A total of 3,667 patients with MBC were identified, of whom 2666 (72.7%) underwent upfront surgery and 1001 (27.3%) received NAC. The majority of patients had poorly differentiated carcinoma (74.8%) with triple negative (71.5%) or HR+/HER2- (21.58%) receptor status. After a median follow-up of 6.3 years (range: 0.3-12.1 years), 5-year overall survival was 81% (95% CI: 0.79-0.82) in the upfront surgery group and 64% in the group treated with NAC followed by surgery (95% CI: 0.61-0.67, $p< 0.0001$). There was no difference in OS seen between receptor subtypes (HR+/HER2- 0.76 [95% CI: 0.73-0.8], HER2+ 0.76 [95% CI: 0.69-0.83], HR-/HER2- 0.76 [95% CI: 0.73-0.8], $p = 0.99$). Median overall survival (OS) was not reached for either group.

Conclusions: Upfront surgery is associated with a significantly higher 5-year overall survival compared to neoadjuvant chemotherapy in patients with metaplastic breast carcinoma (MBC), independent of receptor status, suggesting that upfront surgery should be offered to patients with resectable disease.

1986794 - Real-World Comparison of Pathological Complete Response Rates in Triple-Negative Breast Cancer Patients Treated with Pembrolizumab Plus Chemotherapy Versus Chemotherapy Alone

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Background/Objective: Triple-negative breast cancer (TNBC) is an aggressive subtype associated with poor prognosis. The KEYNOTE-522 trial demonstrated that adding pembrolizumab immunotherapy to neoadjuvant chemotherapy significantly improved pathological complete response (pCR) rates, event-free survival, and overall survival in TNBC patients. However, real-world data comparing the efficacy of the KEYNOTE -522 regimen (pembrolizumab plus chemotherapy) to chemotherapy alone are limited.

Methods: We conducted a retrospective cohort study comparing TNBC patients treated with the KEYNOTE-522 chemo-immunotherapy regimen (KN-522: docetaxel, carboplatin, doxorubicin, cyclophosphamide, and pembrolizumab) between July 2021 and August 2024 and those treated with ddACT before July 2021 (dose-dense doxorubicin, cyclophosphamide, taxane). We included TNBC with cT2 (>2 cm) and/or node-positive (cN+). Data collected included demographics, clinical-pathological staging, treatment details (dose reductions, discontinuations, adverse events), and outcomes. Descriptive analyses compared baseline characteristics, with categorical variables, including pCR rates, analyzed using chi-square tests, and continuous variables using unequal variance two-sample t-tests. All analyses were conducted using SAS 9.4. Institutional Review Board approval was obtained for this study.

Results: We analyzed 78 patients: 50 who received the KN-522 chemo-immunotherapy regimen starting in July 2021 and 28 who received ddACT prior to July 2021. The KN-522 chemo-immunotherapy group had a slightly younger mean age (52.7 vs. 56.1 years) and a similar racial composition compared to the ddACT group. Prognostic staging differed significantly, with the KN-522 chemo-immunotherapy group having a higher proportion of patients in advanced stages (IIB, IIIB; p=0.0298). Despite having more advanced staging, the pCR rate was 42.0% (95% CI, 28.3–55.7) in the KN-522 chemo-immunotherapy group and 28.6% (95% CI, 11.8–45.3) in the ddACT group, though this difference was not statistically significant (p=0.2391). However, our real-world pCR rate for the KN-522 chemo-immunotherapy group was statistically lower than the pCR rate reported in the KEYNOTE-522 trial (64.8%; p=0.00117). Mortality was significantly lower in the KN-522 chemo-immunotherapy group (4.0%) compared to the ddACT group (28.6%; p=0.0018), as was recurrence (8.0% vs. 42.9%; p=0.0003); however, the median follow-up for the ddACT group was longer: 40.4 months for ddACT vs. 17.7 months for KN-522 chemo-immunotherapy, due to the timing of these treatments being given. The four patients who experienced recurrence in the KN-522 chemo-immunotherapy group included three with cT4d inflammatory TNBC and one with RCB-III partial response residual disease. Adverse events leading to dose reductions or discontinuations were more frequent in the KN-522 chemo-immunotherapy group (54%) than in the ddACT group (17.9%;

p=0.0051), with 86% of patients experiencing grade 3 or higher adverse events under the KN-522 chemo-immunotherapy regimen.

Conclusions: In this real-world cohort, the addition of pembrolizumab to neoadjuvant chemotherapy in TNBC showed a trend toward improved pCR rates compared to ddACT chemotherapy alone (42% vs. 28.6%); however, these pCR rates were still lower than those reported in the KEYNOTE-522 trial (64.8%). The KN-522 chemo-immunotherapy regimen proved to be highly toxic in our patient population, resulting in adverse events and treatment delays and discontinuations. Further follow-up is needed to assess long-term outcomes, particularly regarding recurrence and survival.

1987596 - Does HER2 Copy Number Predict Pathologic Response?

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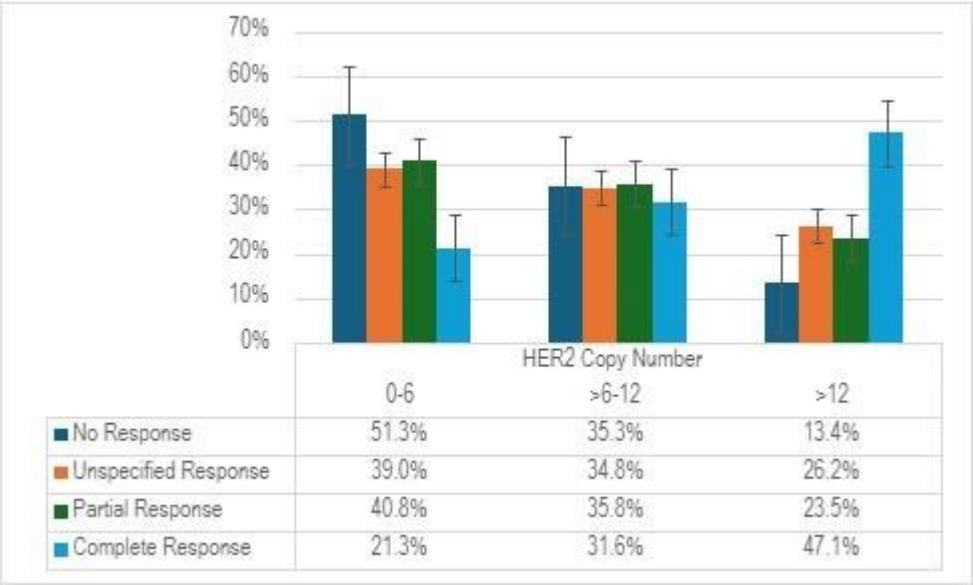
Background/Objective: Human epidermal growth factor receptor 2 (HER2) targeted therapy has revolutionized care for HER2-positive breast cancers, and recent research suggests these therapies may benefit a larger subset of patients. With an increasing lineup of HER2 targeted drugs and an expanding population of patients who may benefit from them, predictive biomarkers are needed to refine treatment recommendations. In this study, we investigate whether HER2 copy number is predictive of HER2 targeted treatment response.

Methods: The NCDB (National Cancer Data Base) was queried to identify patients with HER2-positive breast cancer treated with neoadjuvant therapy between 2018 and 2021. The patients were divided into 3 groups based on copy number: 0-6 (low), >6-12 (intermediate), and >12 (high). Univariate and multinomial regression was performed to evaluate the correlation between HER2 copy number and pathologic response, when controlling for other clinicopathologic variables including age, sex, race, ethnicity, insurance status, presence or absence of high school diploma, median zip code income, treatment facility type, Charlson-Deyo score, and clinical tumor size and nodal status. The continuous values of HER2 copy number were analyzed with one-way ANOVA, and when grouped comparison was performed Chi-square analysis was used.

Results: Of the 1,031,934 patients with breast cancer included in the NCDB database from 2018-2021, 109,912 were reported as HER2-positive by overall summary. Of these 27,814 had a documented HER2 copy number between 0-100, and 8,940 underwent neoadjuvant therapy with a documented response. This defined our study population. The categories of response to neoadjuvant therapy reported in the NCDB include no response (NR), response to treatment, but not noted if complete or partial (UR), partial response (PR), and complete response (CR). NR was seen in 558 patients (6.2%), UR was seen in 2,267 patients (25.4%), PR was seen in 3,027 patients (33.9%), and CR was seen in 3,088 patients (34.5%). Figure 1 details the response to neoadjuvant therapy stratified by HER2 copy number. A direct relationship between HER2 copy number and treatment response was observed, both when analyzing HER2 copy number as a continuous variable ($p < 0.001$) or by group ($p < 0.001$). On multinomial regression, HER2 copy number was correlated with treatment response independent of other clinicopathologic factors ($p< 0.001$).

Conclusions: Our study demonstrates that pathologic response rate correlates with increasing HER2 copy number. This study is limited by the fact that the NCDB database lacks granularity in the regimens used for neoadjuvant treatment in HER2-positive breast cancers. However, if we extrapolate from national guidelines that the standard of care treatment for most of these cases would include HER2 targeted therapy, then this suggests that copy number could be a useful biomarker in predicting who would benefit from HER2 targeted therapy. Further studies could be done to compare the effect of different neoadjuvant therapies currently in use and the response rate based off copy number. With additional survival analysis, this biomarker could be used to select patients that might benefit from additional adjuvant HER2 targeted therapies.

Figure 1. Response to neoadjuvant therapy vs. HER2 copy number



	HER2 Copy Number		
	0-6	>6-12	>12
No Response	51.3%	35.3%	13.4%
Unspecified Response	39.0%	34.8%	26.2%
Partial Response	40.8%	35.8%	23.5%
Complete Response	21.3%	31.6%	47.1%

1987952 - The Metaplastic Conundrum: An NCDB analysis of Metaplastic versus Triple-Negative Ductal Breast Cancer

Catherine Pratt, Paul McClelland, Szu-Aun Long, Allison Moore, Jaime Lewis, Alicia Heelan

University of Cincinnati College of Medicine, Cincinnati, OH

Background/Objective: Metaplastic breast cancer (MpBC) remains a clinical challenge. Historically, MpBC behavior was thought to parallel triple-negative ductal breast cancer (TN-IDC) resulting in the adoption of a similar treatment approach. Yet, MpBC has persistently worse survival, even in the age of modern systemic therapeutics. Additionally, a paucity of literature describes treatment and outcome differences for triple-negative MpBC (TN-MpBC) compared to biomarker positive MpBC (nTN-MpBC). This study aimed to describe rates and response to the use of neoadjuvant systemic therapy (NAC) for MpBC and evaluate survival between TN-MpBC, nTN-MpBC, and TN-IDC by treatment approach.

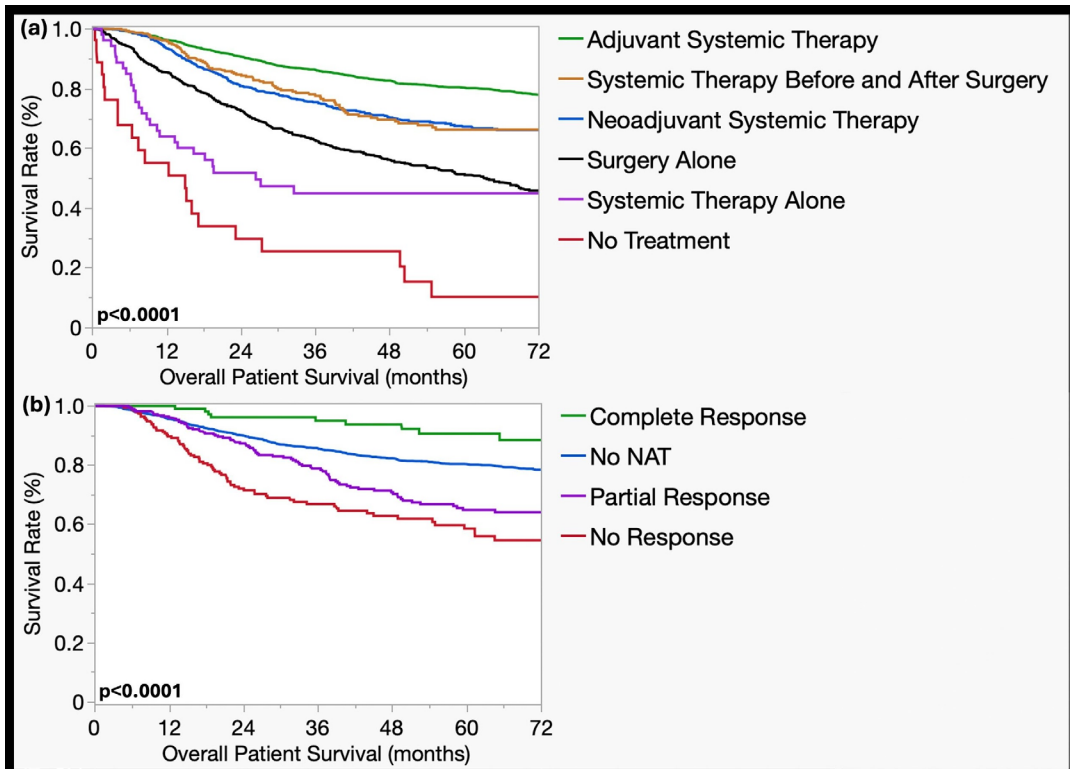
Methods: The NCDB was queried for females diagnosed with clinically nonmetastatic metaplastic or ductal breast cancer from 2011-2021. All patients with complete data regarding biomarkers, clinical staging, treatment(s) received, and treatment sequence were included. Patients were categorized into cohorts and analyzed based on biomarker status: TN-MpBC, nTN-MpBC, TN-IDC. One-to-one propensity score matching between MpBC and TN-IDC patients was performed.

Results: 149,655 patients met inclusion criteria. Most (n=144,080; 96.3%) were TN-IDC, while fewer were TN-MpBC (n=4,175; 2.8%) or nTN-MpBC (n=1,400; 0.9%). Among MpBC patients, rates of surgical resection were high (TN-MpBC: 97.5%, nTN-MpBC: 96.6%, $p>0.05$). Most MpBC patients received chemotherapy (TN-MpBC: 80.1%, nTN-MpBC: 78.8%, $p>0.05$). A slight minority of MpBC patients received radiation (TN-MpBC: 41.7%, nTN-MpBC: 41.7%, $p>0.05$). TN-MpBC patients were less likely to receive immunotherapy or hormone therapy compared to nTN-MpBC (immunotherapy: 4.1% vs. 13.5%, $p< 0.01$; hormone therapy: 2.5% vs. 51.9%; $p< 0.01$). For patients who received systemic therapy and surgery, an adjuvant approach (TN-MpBC: 63.4%, nTN-MpBC: 68.3%) was favored over either NAC (TN-MpBC: 25.0%, nTN-MpBC: 14.8%) or systemic therapy both before and after surgery (TN-MpBC: 11.6%, nTN-MpBC: 16.9%) ($p< 0.01$). The overall rate of NAC for TN-MpBC increased from 18.3% in 2011 to 32.5% in 2021 ($p< 0.01$). When comparing TN-MpBC and nTN-MpBC to TN-IDC, both MpBC cohorts had higher clinical and pathologic T stages. Conversely, clinical and pathologic N stages were lower for MpBC. When considering response to NAC, higher rates of nonresponse were found among TN-MpBC (23.6%) and nTN-MpBC (23.4%) compared to TN-IDC (6.5%) ($p< 0.01$). On Kaplan-Meier survival analysis, TN-MpBC and nTN-MpBC had lower overall survival (OS) than TN-IDC ($p< 0.01$). For TN-MpBC, an adjuvant approach had significantly better OS than other systemic therapy sequences, including NAC (FIGURE). When evaluated by pathologic response to NAC, a partial or nonresponse had worse survival compared to compete response and not undergoing NAC (including patients who received surgery alone). This pattern was also found among nTN-MBC. On Cox proportional hazard regression modeling of the matched patients, NAC was associated with mortality (HR: 2.56 [2.36, 4.79], $p< 0.01$) compared with not undergoing NAC.

Conclusions: MpBC is predominately treated with surgery and systemic therapy with an increasing rate of NAC for TN-MpBC. However, patients with MpBC have inferior survival to TN-IDC. Furthermore, NAC for MpBC is associated with worse OS when compared to other systemic therapy

sequences, unless a complete pathologic response is achieved. In correlation with previous studies, these findings reinforce the need for systemic treatment sequence optimization for MpBC.

Figure 1: Kaplan-Meier survival curves for TN-MpBC comparing overall survival by (a) sequence of systemic therapy and (b) response to neoadjuvant systemic therapy.



1987941 - Neoadjuvant vs. Adjuvant Therapy for Metaplastic Breast Cancer: Insights from the National Cancer Database— Is There a Winning Strategy?

Fatemeh Shojaeian[1], Mahtab Vasigh[2], Haydee del Calvo[3], Lourdes Chaves[1], Miranda Jones[4], Olutayo Sogunro[5]

[1]Johns Hopkins University School of Medicine, Baltimore, MD, [2]Johns Hopkins Medical Institute, Dayton, MD, [3]Johns Hopkins Medicine, Baltimore, MD, [4]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, [5]Johns Hopkins University School of Medicine, Columbia, MD

Background/Objective: Metaplastic breast cancer (MtBC) is a rare, yet aggressive subtype of breast cancer, often characterized by poorer outcomes and more aggressive features than other types. Due to its rarity, there is no standardized treatment approach for MtBC. This study aims to address this gap by comparing the outcomes of adjuvant versus neoadjuvant chemotherapy, providing insights into therapeutic strategies for this challenging breast cancer subtype.

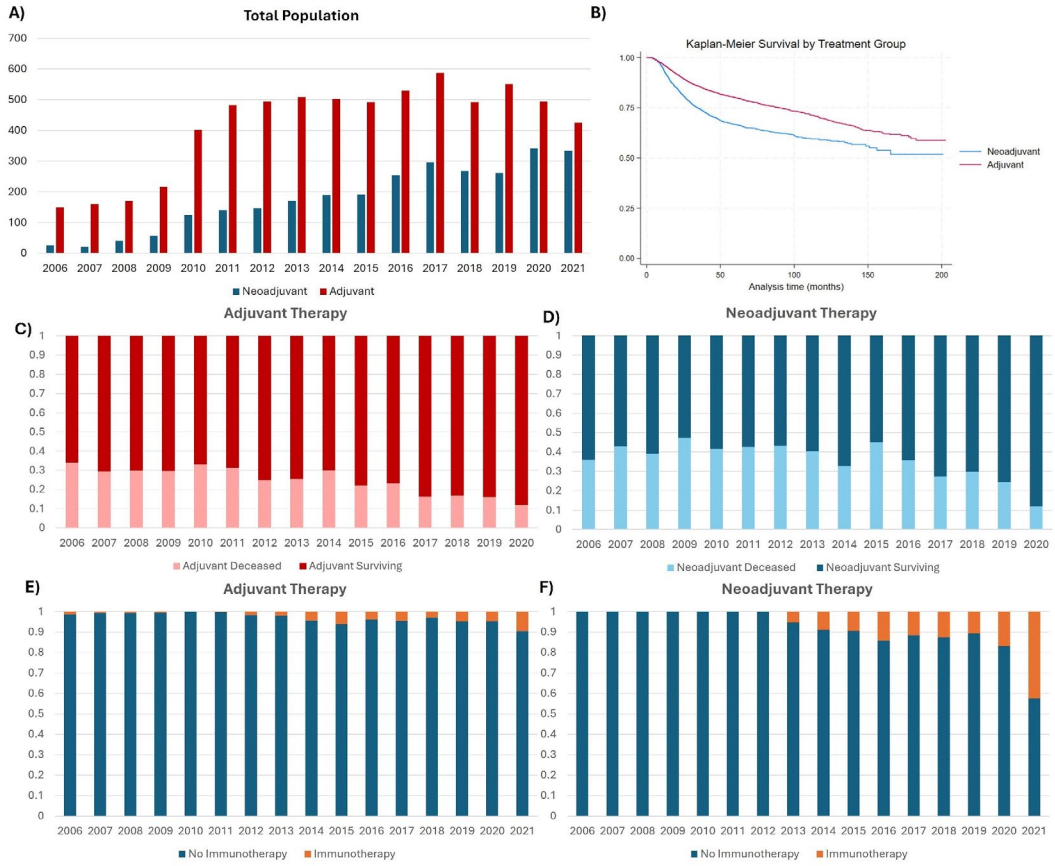
Methods: Female patients diagnosed with MtBC between 2006–2021 were identified by relevant histological codes in the National Cancer Database. Stage 4 cancer, patients who did not undergo surgery and/or chemotherapy, and those with unknown surgical or chemotherapy status were excluded. Patients were grouped into neoadjuvant and adjuvant based on the sequence of surgery and chemotherapy. Their baseline and clinical characteristics and overall survival were compared. Multivariable-adjusted hazard ratio (HR) for overall mortality was calculated from the time of the diagnosis, using Cox proportional hazards models.

Results: A total of 9,526 patients were included in the study, with 2,866 (30%) receiving neoadjuvant and 6,660 (70%) receiving adjuvant treatment. The use of neoadjuvant chemotherapy increased from 14.29% to 43.95% between 2006 and 2021, with the survival rate in this subgroup rising from 57.14% to 87.89% by 2020. Notably, the adoption of immunotherapy in this subgroup also grew from 0% to 42.46%. The cohort was predominantly white (76.72%), 44.56% presenting with clinical T2 tumors, 62.01% with high-grade (3) tumors, 16.17% node-positive, and 60.71% exhibiting a triple-negative phenotype. Mastectomy was performed in 66% of neoadjuvant patients versus 50% in the adjuvant group. Lymph node surgery was performed in 95.22% of neoadjuvant and 93.87% of adjuvant patients, while radiation therapy was received by 63.08% of neoadjuvant and 57.93% of adjuvant patients. Over a mean follow-up of 68.98 months, the overall mortality rate was 25.91% (2,271 patients); the mortality was 28.30% in the neoadjuvant group and 21.92% in the adjuvant group. The mean 5-year survival rate was 66.71% in the neoadjuvant and 80.67% in the adjuvant group. The mortality hazard ratio was 0.69 (95% CI: 0.60–0.79) for the adjuvant versus the neoadjuvant group. Higher pathological T (T4) (HR: 4.99, 95% CI: 2.46–10.12), clinical nodal stage (N3) (HR: 3.05, 95% CI: 1.90–4.90), comorbidity score index (CDI 3) (HR: 1.79, 95% CI: 1.28–2.49), and lymphovascular invasion (HR: 1.38, 95% CI: 1.19–1.61) were associated with higher mortality. Conversely, Hispanic origin (HR: 0.65, 95% CI: 0.48–0.85), adjuvant radiation (HR: 0.72, 95% CI: 0.63–0.82), and adjuvant hormone therapy (HR: 0.77, 95% CI: 0.64–0.92) were associated with better survival.

Conclusions: Although patients with MtBC in the adjuvant group demonstrated better survival outcomes compared to those in the neoadjuvant group, the use of neoadjuvant therapy is increasing within this population. The addition of immunotherapy to modern neoadjuvant regimens in recent years may contribute to the observed trend of improved survival with neoadjuvant chemotherapy.

While adjuvant therapy still shows a survival advantage, the integration of immunotherapy in the treatment of MtBC in the coming years may be promising to enhance outcomes for neoadjuvant treatment in this rare population.

Figure 1: A) Total number of patients in the adjuvant and neoadjuvant groups from 2006 to 2021. B) Kaplan-Meier survival curve comparing the survival rates between the adjuvant and neoadjuvant groups. The x-axis represents the time (in months) from diagnosis, while the y-axis shows the survival probability. (P<0.001) C) Annual proportion of deceased and surviving patients in the adjuvant group. D) Annual proportion of deceased and surviving patients in the neoadjuvant group. E) Annual proportion of patients who underwent immunotherapy in the adjuvant group. F) Annual proportion of patients who underwent immunotherapy in the neoadjuvant group.



1988721 - Outcomes for Breast Conservation Therapy after Neoadjuvant Chemotherapy

Caitlin Marsh[1], Praveen Satarasinghe[2], Acacia Sharma[1], Alyssa Marmer[1], Charles DiMaggio[3], Amber Guth[1], Deborah Axelrod[1], Karen Hiotis[1], Freya Schnabel[1], Mary Gemignani[1]

[1]New York University Langone Health, New York, NY, [2]New York University Langone Health, Brooklyn, NY, [3]New York University School of Medicine, New York, NY

Background/Objective: Improved outcomes associated with breast conservation therapy have been reported in the primary surgery setting with invasive breast cancer. The aim of this study is to compare outcomes for patients treated with BCT and mastectomy after neoadjuvant chemotherapy (NAC).

Methods: Retrospective review of IRB-approved prospective database was performed to identify patients with unilateral invasive breast cancer (IBC) treated with NAC from 1/2010 – 12/2023. Clinical, pathologic, treatment, and follow-up data were collected. R statistical software program was utilized to compare continuous variables with t-tests and categorical variables with chi-squared tests. Time to recurrence and death was estimated and compared using Kaplan Meier analysis. The association of BCT or mastectomy with survival and time to recurrence was estimated with multivariable proportional hazard models.

Results: We identified 375 patients of which 348 had unilateral breast cancer and comprised our study group. Clinical and pathologic variables are shown on Table 1. Of the 348 patients, 229 (66%) had a mastectomy while 119 (34%) underwent BCT. Adjuvant radiation therapy was given in 105 (91%) of BCT and 164 (73%) of mastectomy patients ($p< 0.001$). Patients in the mastectomy group were younger ($p=0.01$), had a larger tumor size ($p=0.05$), and were more likely to have histologic invasive ductal carcinoma (IDC) ($p=0.02$), more total positive axillary nodes ($p=0.03$), and axillary lymph node dissection ($p=0.004$). With a median follow up 55 months, we noted 50 recurrences. Breast cancer specific survival was $p=0.053$, favoring BCT, with no difference in local regional recurrence ($p=0.19$) between the groups. There was no statistically significant difference in time to recurrence between the two groups, $p=0.4$ (95% CI 0.7-2.4). Multivariate analysis controlling for age, IDC histology, tumor size, number of positive nodes, and adjuvant radiation therapy demonstrated no difference between groups in time to recurrence or time to death.

Conclusions: In our patient population, younger age, larger tumor size, and IDC histology were associated with mastectomy. Breast cancer specific survival was improved with BCT, with no difference in local regional recurrence compared to mastectomy. Our study supports use of BCT in the post NAC setting, and suggests that further study on patient-provider decision making regarding surgical options is warranted.

Table 1: Clinical, Pathologic, and Treatment Variables

Table 1: Clinical, Pathologic, and Treatment Variables

Variable	BCS (N=119)	Mastectomy (N=229)	P-Value
Age (mean (SD))	**53.93 (13.41)**	**50.24 (12.39)**	**0.01**
Histology Type(%)			**0.02**
IDC	113 (95)	198 (86.5)	
ILC	1 (0.8)	15 (6.6)	
Invasive Other	1 (0.8)	10 (4.4)	
Mixed Type	1 (0.8)	5 (2.2)	
Unknown Invasive	1 (0.8)	0 (0.0)	
Not Reported	1 (0.8	0 (0.0)	
Tumor Size in cm (mean (SD))	1.76 (1.48)	2.25 (2.12)	**0.05**
ER Positive (%)	67 (56.8)	131 (57.2)	1.00
PR Positive (%)	50 (42.4)	107 (46.7)	0.51
HER2 Positive (%)	50 (42.4)	88 (38.6)	0.69
Triple Negative (%)	33 (28.0)	52 (22.7)	0.34
LVI (%)			0.38
Yes	22 (25.3)	61 (33.2)	
No	58 (66.7)	107 (58.2)	
Indeterminate	7 (8.0)	16 (8.7)	
Axillary Nodes Positive (mean (SD))	1.11 (2.76)	2.16 (3.70)	**0.03**
ALND Performed (%)	76(67.3)	186 (81.9)	**0.004**
Adjuvant Radiation Therapy (%)	105 (91%)	164 (73.9)	**<0.001**

NSM

1988408 - Prospective evaluation of breast skin and nipple areolar complex sensation following single port robotic nipple sparing mastectomy with immediate reconstruction

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Background/Objective: Skin and nipple areolar complex (NAC) sensation is commonly diminished or completely absent following nipple-sparing mastectomy with implant or expander-based reconstruction. Previous studies have reported both safety and feasibility of single port robotic nipple sparing mastectomy (SPrNSM). However, it is unclear whether SPrNSM impacts post-operative skin and NAC sensation. The aim of this study was to characterize breast skin and NAC sensation following SPrNSM with immediate reconstruction.

Methods: Patients as part of an IRB and FDA IDE approved single institution study from February 2020 through October of 2024 examining safety and feasibility of SPrNSM were included. Patient eligibility included surgical candidates for open nipple-sparing mastectomy per standard of care, including prophylactic mastectomy for risk reduction or treatment of ductal carcinoma in-situ or clinically node-negative cT1-T3 breast cancer. Patient and operative characteristics including age, surgical indication, body mass index, breast size, operative time, postoperative skin necrosis were obtained. Breast skin and NAC sensation was measured using Semmes-Weinstein Monofilament (SWM) testing in nine pre-defined points of the breast and NAC pre-operatively and at 2 weeks post index operation. Filament sizes were converted to categorical values where 0=no sensation, 1= 300g, 2=4g, 3= 2g, 4=0.4g, and 5=0.07g.

Results: 51 patients (100 breasts) underwent SPrNSM with immediate prepectoral tissue expander reconstruction. Surgical indications included: 26, high-risk for breast cancer; 25, breast cancer. Breast size ranged from A-D cup with median B, with BMI ranging from 17.1-29.1 (median 23.0). At two weeks following SPrNSM, breast skin and NAC sensation was present in 61 resected breasts (60%). No significant change in sensation was associated with BMI, breast cup size, or indication for surgery. Median (and range) sensation by the 9 pre-defined points of the breast and NAC are shown in Figure 1.

Conclusions: SPrNSM demonstrates retained post-operative sensation in the majority of patient at the first post-operative visit irrespective of cup size, surgical indication, or BMI. Further longitudinal collection of sensation data is warranted and based on previous studies in open NSM will likely demonstrate increased retention of sensation.

Table 1: Breast Sensation by the 9 pre-defined points of the breast and NAC pre and post operatively

	UPPER INNER QUADRANT RIGHT Pre-Op	UPPER INNER QUADRANT RIGHT 2-Weeks Post-Op	UPPER INNER QUADRANT LEFT Pre-Op	UPPER INNER QUADRANT LEFT 2-Weeks Post-Op
Mean	4.72	3.85	4.76	3.29
Range	3--5	0--5	3--5	0--5
	UPPER OUTER QUADRANT RIGHT Pre-Op	UPPER OUTER QUADRANT RIGHT 2-Weeks Post-Op	UPPER OUTER QUADRANT LEFT Pre-Op	UPPER OUTER QUADRANT LEFT 2-Weeks Post-Op
Mean	4.64	2.23	4.71	2.15
Range	3--5	0--5	1--5	0--5
	LOWER OUTER QUADRANT RIGHT Pre-Op	LOWER OUTER QUADRANT RIGHT 2-Weeks Post-Op	LOWER OUTER QUADRANT LEFT Pre-Op	LOWER OUTER QUADRANT LEFT 2-Weeks Post-Op
Mean	4.56	2.33	4.59	2.15
Range	3--5	0--5	3--5	0--5
	LOWER INNER QUADRANT RIGHT Pre-Op	LOWER INNER QUADRANT RIGHT 2-Weeks Post-Op	LOWER INNER QUADRANT LEFT Pre-Op	LOWER INNER QUADRANT LEFT 2-Weeks Post-Op
Mean	4.67	2.82	4.66	3.15
Range	3--5	0--5	3--5	0--5
	NIPPLE RIGHT Pre-Op	NIPPLE RIGHT 2-Weeks Post-Op	NIPPLE LEFT Pre-Op	NIPPLE LEFT 2-Weeks Post-Op
Mean	3.87	1.21	3.8	0.93
Range	1--5	0--5	1--5	0--5
	UPPER INNER AREOLA RIGHT Pre-Op	UPPER INNER AREOLA RIGHT 2-Weeks Post-Op	UPPER INNER AREOLA LEFT Pre-Op	UPPER INNER AREOLA LEFT 2-Weeks Post-Op
Mean	4.05	1.18	4.05	1
Range	1--5	0--5	1--5	0--5
	UPPER OUTER AREOLA RIGHT Pre-Op	UPPER OUTER AREOLA RIGHT 2-Weeks Post-Op	UPPER OUTER AREOLA LEFT Pre-Op	UPPER OUTER AREOLA LEFT 2-Weeks Post-Op
Mean	4	1.15	4.05	1
Range	1--5	0--5	1--5	0--5
	LOWER OUTER AREOLA RIGHT Pre-Op	LOWER OUTER AREOLA RIGHT 2-Weeks Post-Op	LOWER OUTER AREOLA LEFT Pre-Op	LOWER OUTER AREOLA LEFT 2-Weeks Post-Op
Mean	4.03	1.23	4.02	1
Range	1--5	0--5	1--6	0--5
	LOWER INNER AREOLA RIGHT Pre-Op	LOWER INNER AREOLA RIGHT 2-Weeks Post-Op	LOWER INNER AREOLA LEFT Pre-Op	LOWER INNER AREOLA LEFT 2-Weeks Post-Op
Mean	4.03	1.18	4	1
Range	1--5	0--5	1--5	0--5

1988416 - Reconsidering Nipple Discharge as an Absolute Contraindication to Nipple-Sparing Mastectomy

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Background/Objective: In appropriately selected patients, nipple-sparing mastectomy (NSM) may result in a preferred aesthetic outcome. Contraindications to NSM include nipple discharge (ND), positive surgical margins, clinical involvement of the nipple-areolar complex (NAC), and Paget's disease of the breast. In this study, we analyzed patients with ND who underwent simple or skin-sparing mastectomy to determine rates of pathologic involvement of the NAC in patients with ND.

Methods: We identified all patients who underwent simple or skin-sparing mastectomy at a single institution with a diagnosis of breast cancer between January 2000 to December 2023 (n=2,611). Patients with ND were identified (n=135) but were excluded if NAC involvement was noted on physical exam (n=30), they had pre-operative diagnosis of Paget's disease (n=6), had purulent ND (n=3), or had an identifiably benign cause of ND (n=2). Clinical and pathologic data including imaging findings and pathologic involvement of the NAC or large lactiferous ducts were extracted from the electronic medical record. Selected cases were reviewed by a breast pathologist.

Results: A final cohort of 94 cases of sanguinous and/or serous ND were identified (Table 1). Of these cases, spontaneous discharge was present in 77 patients (81.9%). Thirty-three (35.1%) patients had imaging showing an abnormality ≤1 cm from the NAC, and out of these patients, 15 (45.5%) patients had involvement of either the NAC or the large lactiferous ducts on surgical pathology. Conversely, 62 (66.0%) patients did not have an imaging abnormality ≤1 cm from NAC, and 17 (27.4%) had involvement of either the NAC or the large lactiferous ducts on surgical pathology. Out of 70 (74.5%) patients who underwent preoperative MRI, 41 (43.6%) did not show any abnormality ≤1 cm from NAC. Of the 41 patients, 11 (26.8%) had pathologic involvement of the NAC or large lactiferous ducts.

Conclusions: In patients with breast cancer and ND without clinical or imaging involvement of the NAC (≤1 cm), pathologic involvement of the NAC or large lactiferous ducts after surgery occurred in about one quarter of patients. In highly selected patients with pathologic nipple discharge, NSM may be considered if there are no imaging abnormalities within 1 cm of the NAC, negative margins are achieved and appropriate adjuvant therapy is administered. If NSM is attempted, frozen section should be considered as up to 27% of patients may have imaging-occult involvement of the NAC.

Table 1.

Characteristic		
	n (94)	**%**
Median age at diagnosis	49	
Pathologic Stage		
Stage 0	20	21.3
Stage 1	53	56.4
Stage 2	17	18.1
Stage 3	3	3.2
Stage 4	1	1.1
Histology		
Ductal	83	88.3
Lobular	3	3.2
Other	8	8.5
Hormone receptor (HR) and Her2 status		
HR+Her2-	68	72.3
HR+Her2+	6	6.4
HR-Her2+	11	11.7
Triple Negative	9	9.6
Neoadjuvant chemotherapy	17	18.1
Nipple discharge quality		
Sanguinous	61	62.9
Serous	33	34
Spontaneous nipple discharge	77	81.9
Imaging with abnormality ≤1 cm from NAC	33	35.1
Involvement of nipple or large lactiferous ducts on pathology	15	45.5
Imaging without abnormality ≤1 cm from NAC	62	66.0
Involvement of nipple or large lactiferous ducts on pathology	17	27.4
MRI total cohort	70	74.5
MRI without abnormality ≤1cm from NAC	41	43.6
Involvement of nipple or large lactiferous ducts on pathology	11	26.8

Oncoplastics

1981527 – Tumescent-assisted dissection in breast surgery retrospective cohort analysis

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Background/Objective: Since 1996, when Worland introduced the tumescent dissection mastectomy method, it has become a commonly used technique for various breast surgical procedures, such as those related to breast cancer and aesthetics. This method involves injecting a highly diluted solution of local anesthetic with epinephrine and crystalloid into the subcutaneous tissues of the breast through small stab punctures. The resulting space enhances visibility and facilitates dissection, allowing the surgeon to differentiate between subcutaneous and glandular tissues. The use of sharp scissors in this technique eliminates the need for electrocautery near the skin flaps, which could potentially damage soft tissues due to the dissipation of thermal energy. The vasoconstrictive effect of epinephrine in the mixture is further augmented by the tamponading impact of the high-volume infiltration on sub-dermal vessels. Aim: This study aimed to compare the occurrence of complications and surgical outcomes between the tumescent and non-tumescent techniques in breast surgery.

Methods: This retrospective cohort study included patients who underwent breast-conserving surgery with level 1 and level 2 oncoplastic techniques, nipple/skin-sparing mastectomy, and immediate implant-based reconstruction between January 2020 and December 2023. The patients were divided into two groups: one group underwent surgery with standard electrocautery (control group), while the other group underwent surgery with Tumescent-assisted surgery (TA group). Patient demographics, procedural details, surgical outcomes, and complications were analyzed using nonparametric statistical tests and logistic regression analysis.

Results: A total of 204 patients were included in the analysis (104 patients in the TA group and 100 in the control group). Patient demographics were similar between the two groups. Surgical time was shorter with TA compared to standard mastectomy (median 168 versus 207.5 minutes, $P = 0.016$). Additionally, there was a significant reduction in the need for re-excision of the margin in the TA group compared to the control group (9 versus 14, $P = 0.033$). The TA group also had a significant reduction in post-operative seroma compared to the control group (12 versus 3, $P = 0.003$). However, other complication rates were not statistically significant between the two groups.

Conclusions: TA Breast surgery is a safe alternative to standard technique in selected patients. Further surgical research to explore the role of TA breast surgery in a wider clinical setting is warranted.

1987864 - Evaluating Oncological Safety and Clinical Outcomes in Volume-Replacement Oncoplastic Surgery: a 12-year experience of Chest Wall Perforator Flaps (CWPF)

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Background/Objective: There is increasing adoption of oncoplastic breast-conserving surgery (BCS) due to the well documented benefits in aesthetic outcomes and patient psychological benefit. However, there is a gap in the evidence for long-term clinical and oncological outcomes for volume-replacement oncoplastic techniques. Chest wall perforator flaps (CWPFs) are an example of volume-replacement oncoplastic surgery (VR-OPS) and are fascio-cutaneous flaps based on the lateral thoracic vessels and/or the lateral intercostal vessels. As use of such flaps increases for partial breast reconstruction (PBR) there is a need to ensure we are not compromising the oncology for reconstruction. Our aim was to assess the long-term oncological outcomes of breast cancer patients undergoing partial breast reconstruction using lateral CWPFs.

Methods: Patients diagnosed with DCIS or breast cancer undergoing VR-OPS with CWPFs by a single surgeon were included in the study. A prospective database has been maintained since 2011 with retrospective updating of oncological outcomes. The hospital electronic records were interrogated for women who have completed a minimum of 1 year follow-up. The data is summarized using descriptive statistics.

Results: 172 patients underwent PBR with CWPFs between 2011 and 2022 with a median follow-up of 78 months (ranging 12 – 143 months) with 115 patients having over 5-year follow up. 156 (91%) were invasive cancers and 16 (9%) were DCIS only. The majority were T2 tumors at diagnosis (T1: 25, T2: 107, T3: 22, T4: 2) but 100/156 (64%) invasive cancers also had DCIS and 34/156 (22%) were multifocal which means that larger volumes were excised than T status implies. 108/156 (69%) were ER positive and Her-2 negative, 18/156 (12%) were triple negative whilst 27/156 (17%) were Her-2 positive. 26/172 (15%) were LN+ at diagnosis and 48/172 (28%) had positive nodes after SLNB. 28/172 (16%) patients underwent neoadjuvant chemotherapy. 116/172 (68%) underwent cancer resection and flap reconstruction as one operation whilst 56/172 (32%) underwent it as two-stage approach. The T-status correlated with this with most T1 (22/25- 88%) and T2 tumors (75/107 70%) getting 1-stage operations. T3 tumors had majority 2 stage (13/22 59%). The long-term complication rate requiring any intervention (surgery/aspiration/injection) was low at 8/172 (4%) with only 3 (2%) of these returning to theatre. The re-operation rate for close margins was 14/116 (12% - NB 1 further patient declined) with 4/14 (29%) requiring mastectomy. After excluding 4 lost to f/u and 1 metastatic at presentation - the local recurrence rate was 6/163 (3.7%) (excluding mastectomies), regional recurrence rate 4/167 (2.4%), distant recurrence rate was 14/168 (8.3%) and breast cancer deaths were 9/167 (5.4%).

Conclusions: Our study establishes the oncological safety of CWPFs. To our knowledge, this is the first cohort study to publish evidence on long-term oncological outcomes after VR-OPS with CWPFs. This approach can help those with relatively large or multifocal tumors safely avoid mastectomy whilst also achieving an aesthetic outcome that withstands radiotherapy.

1987850 - Is This the Right Link? How TikTok Views Oncoplastic Breast Surgery

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Background/Objective: Patients are increasingly turning to online social networks for health information. Studies have shown that patient education on reconstructive options influences their choice in treatment. TikTok currently has 1.58 billion users. US users spend an average of 53.8 minutes daily on TikTok, more than any other social network. The majority of TikTok users are young women, making it a potentially valuable platform for breast cancer education. We sought to evaluate content related to oncoplastic breast surgery found on TikTok.

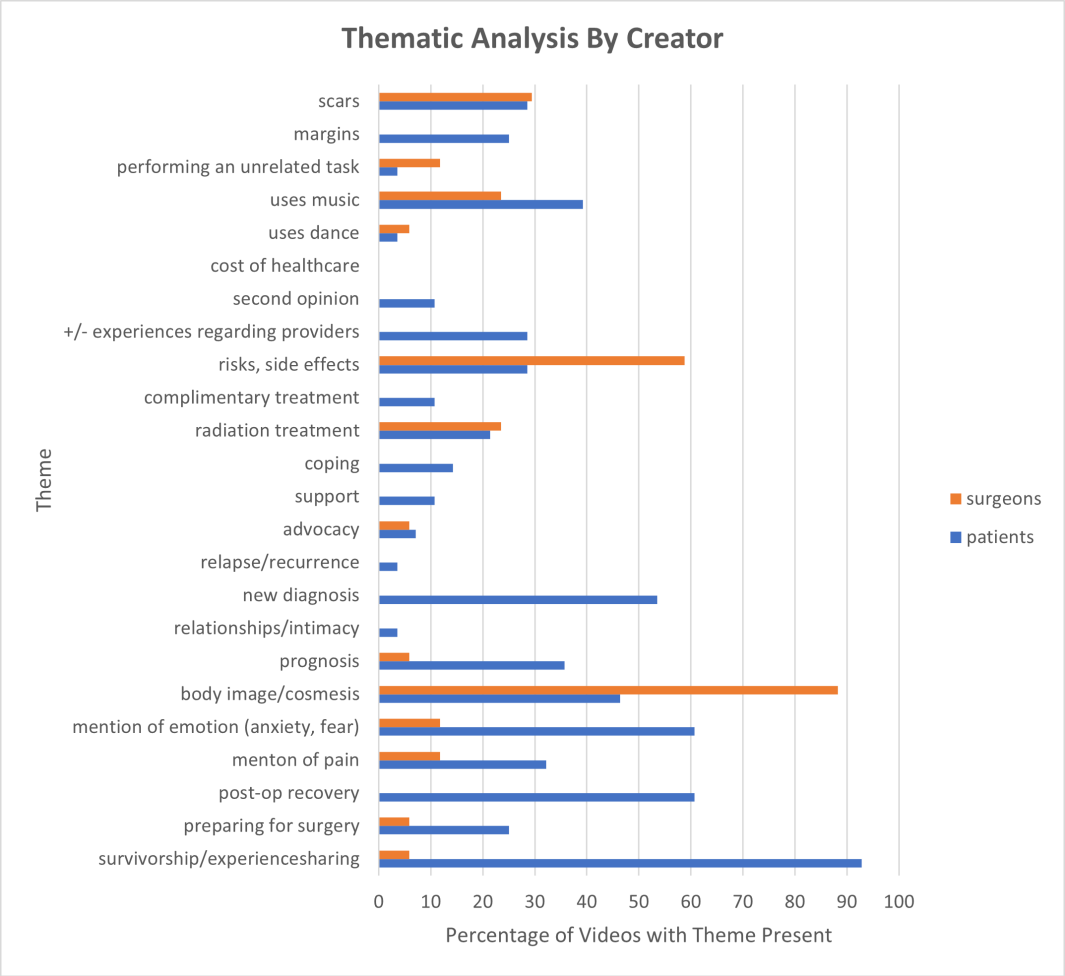
Methods: The top fifty videos were retrieved from subsequent TikTok searches for "oncoplastic breast surgery," "oncoplastics," and "oncoplastic surgery." These were compiled, and the 50 with the most views were selected. Excluding irrelevant videos resulted in 49 total videos. Video characteristics were abstracted, and the videos were analyzed for thematic content by three surgeons and graded for educational value by eight individuals of varying background (three surgeons, three surgical trainees, and two non-healthcare professionals).

Results: Of 49 videos, five were published by breast surgeons, twelve by plastic surgeons, twenty-seven by patients with breast cancer, two by non-physician healthcare workers, and three by private organizations. Most (n=45, 92%) were uploaded by women. We focused our analysis on the two most common creator types: surgeons and patients. These 44 videos amassed over 1 million views, with both groups showing comparable engagement patterns. The average views per video were 23,887 for patients and 25,561 for surgeons, with median views of 3,692 and 5,895, respectively. Statistical analysis showed no significant difference in views, likes, and comments between the two groups, indicating similar surface-level engagement. However, subscribers, saves, and shares differed significantly, with surgeons showing higher numbers ($p < 0.05$). Analyzing thematic content by creator type highlights different priorities between the groups (Figure 1). 96% of videos created by patients mentioned the theme of survivorship, compared to 6% in surgeons. 88% of videos created by surgeons mentioned the theme of body image and cosmesis, compared to 48% in patients. Across ratings by eight individuals significant differences were identified between surgeon and patient created content. Surgeon videos received significantly higher ratings on questions about providing accurate medical information ($p < 0.01$) and explaining surgery outcomes clearly ($p < 0.05$). Surgeons and trainees consistently noted these differences, with 70% of their ratings showing significance in favor of surgeon content. In contrast, non-healthcare raters showed fewer significant distinctions, with only 40% of their ratings identifying differences between creator groups. This highlights the influence of professional background on educational quality, with surgeon content rated higher for clinical details.

Conclusions: Patient awareness of oncoplastic options may help inform their medical decision making. Surgeons should be aware of what patients are learning from online sources, as suboptimal or inaccurate information may impair care. This study provides insights into the content landscape of oncoplastic surgery on TikTok, revealing that while patient creators focus on personal experiences and survivorship, surgeon content emphasizes medical accuracy. Surgeons can use these findings to

better understand the information their patients are accessing and to tailor their own educational efforts accordingly.

Figure 1. Thematic Analysis by Content Creator.



1988714 - Chest Wall Perforator Flaps in Breast-Conserving Surgery: an effective and safe tool to reduce mastectomy rates. Insights from the SCARABEO (SCARless Advanced Breast Extreme Oncoplasy) international multicentric study

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Background/Objective: Breast-conserving surgery (BCS) combined with pedicled chest wall perforator flaps (CWPF) is a promising approach to achieve wide and safe oncological resection while preserving aesthetic outcomes. This technique is particularly beneficial for patients with high tumor-to-breast volume ratios who would traditionally be ineligible for BCS. We collected data on surgical and oncological outcomes aiming to assess the potential benefits of CWPFs implementation in BCS.

Methods: This retrospective study analyzed data from patients who underwent BCS combined with CWPFs for Stage 0-III breast cancer between 2014 and 2024 across three high-volume Breast Units in Italy, Brazil, and the USA. Patient demographics, tumor characteristics, surgical and oncological outcomes were collected. Skin incision were place outside the breast boundaries. Breast volumes were estimated through mammogram evaluations, while tumor and specimen volumes were calculated based on pathology report data. Optimal resection volume (ORV) was defined as the tumor volume plus an additional 1 cm of surrounding healthy tissue.

Results: A total of 153 female patients were included. Median age was 55 years, with 79% identifying as White Caucasian and 51% having a 18-25 kg/m² BMI. Tumors were palpable in 62.1%of patients and the most common histotype was IC of non-special type (75.2%). The median tumor diameter was 24 mm (IQR: 16-33), with 20.9% of the tumors being multifocal; most patients were diagnosed at Stage II disease (44.4%). The median ORV-to-breast volume ratio was 31.8% (IQR: 24.9-43.0). Flap types included LICAP (65.4%), AICAP (13.7%), MICAP (13.1%), TDAP (3.9%), and LTAP (3.9%). The median flap volume was 57.5 cm³ (IQR: 30-90), while the median specimens volume was 51.4 cm³ (IQR: 33.2-80.2). The median operation time was 110 minutes (IQR: 85-130), with 43.8% of procedures guided by intraoperative ultrasound. All surgeries were performed by breast surgeons. The 30-day global complication rate was 17.0%, with seroma being the most common (9.8%); notably no flap losses occurred. Diabetes ($p=0.023$) and larger specimen volumes ($p< 0.001$) were significantly associated with postoperative complications, while active smoking showed borderline significance ($p=0.082$). Surgical drains were placed in 41.2% of cases with a median removal time of 7 days. All complications were conservatively managed in the outpatient setting. Five patients underwent a day-surgery procedure, while 88.9% had a one-night hospital stay. The overall involved margins rate was 9.2%, leading to six local re-excisions and four mastectomies. Adjuvant radiotherapy was administered to 93.5% of patients, with no associated flap-related long-term complications. Only four patients required contralateral breast symmetrization for aesthetic purposes. At a median follow-up of 25 months (IQR: 14-77), three ipsilateral breast recurrences and one distant recurrence (bones) were observed.

Conclusions: BCS combined with CWPFs provided excellent surgical and oncological outcomes, with minimal scarring impact on breast appearance. This approach effectively and safely reduces mastectomy rates, particularly in patients with medium to small breasts and an unfavorable tumor-to-breast size ratio, or in women with larger breasts who are not willing to undergo a therapeutic mammoplasty with contralateral symmetrization. Prospective studies with longer follow-up and patient reported outcomes are needed to confirm these promising results.

Table 1: Clinicopathological characteristics, surgical and oncological outcomes

Clinicopathological characteristics, surgical and oncological outcomes

Patients' clinical characteristics [n (%)]	
Age (years)	
Median (interquartile range)	55 (46-63)
Range	32-77
Race	
White	122
Black	6
Asian	2
Other	23
Fertility status	
Premenopausal	27
Perimenopausal	13
Postmenopausal	113
Family history of breast cancer	
No	110
Yes, first degree relatives under 50 yo	22
Yes, other degrees or age	21
Personal history of breast cancer	
No	149
Yes, ipsilateral	1
Yes, contralateral	3
Body Mass Index	
< 18	1
18-25	78
25-30	60
30-35	10
> 35	4
Breast cup size	
A	16
B	82
C	47
D	7
E	1
Comorbidities	
Diabete mellitus	16
Smoking habit	10
Cardiovascular disease	44
Neoadjuvant chemotherapy	
Not performed	112
Performed	41
Palpable mass	
No	39
Yes	84
Unknown	30
Diagnostic imaging assessment [n (%)]	
Mammography	
Performed	151
Median size (interquartile range), mm	22 (14-30)
Median breast volume (interquartile range), cm^3	221 (146-303)
Ultrasound	
Performed	117
Median size (interquartile range), mm	21 (11-28)
Magnetic Resonance Imaging	
Performed	42
Median size (interquartile range), mm	27 (18-36)
Radiographic distribution	
Unifocal	121
Multifocal	32
Tumor histologic characteristics [n (%)]	
Histotype	
Invasive cancer (IC) of no special type	115
Invasive lobular cancer	28
Ductal carcinoma in situ (DCIS)	11
Synchronous IC + DCIS	63
Tumor location	
Upper-outer quadrant	79
Upper-inner quadrant	7
Lower-outer quadrant	27
Lower-inner quadrant	25
Central	15
Size	
Median (interquartile range), mm	24 (16-33)
Grade	
Well differentiated	17
Moderately differentiated	91
Poorly differentiated	24
Unknown	21
Estrogen Receptor	
Negative	20
Positive	133
Progesterone Receptor	
Negative	34
Positive	119
HER2	
Negative	115
Positive	28
Staging [n/N (%)]	
0	11
I	58
II	68
III	16
Surgical treatment [n (%)]	
Surgery guidance	
Wire guide	23
Intraoperative ultrasound	67
Radio-guided occult lesion localization	30
Palpation	26
Radiofrequency seed	7
Chest wall perforator flap type	
Lateral intercostal artery perforator	100
Anterior intercostal artery perforator	21
Medial intercostal artery perforator	20
Thoracodorsal artery perforator	6
Lateral thoracic artery perforator	6
Skin paddle	
Presence of skin paddle	60
Fully de-epithelialized	93
Axillary Surgery	
Not performed	4
Sentinel lymph node biopsy	118
Axillary lymph node dissection	31
Margin status	
≥ 1 mm	139
On ink	14
Involved margins management	
Re-excision	6
Mastectomy	4
Radiotherapy	4
Complications	
Total complicated cases	26
Seroma	15
Haematoma	4
Liponecrosis	5
Surgical site infection	1
Wound dehiscence	1
Drain	
Not positioned	90
Positioned	63
Contralateral symmetrization surgery	
Not performed	149
Performed	4
Hospital stay	
Day Surgery	5
12-24 hours	136
More than 24 hours	12
Adjuvant therapies [n (%)]	
Adjuvant Radiotherapy	
No	10
Yes	143
Adjuvant Endocrine Therapy	
No	29
Yes	124
Adjuvant Chemotherapy	
No	110
Yes	43
Recurrences	
No	149
Local	3
Distant	1
Vital status	
Alive	152
Dead	1
Death due to breast cancer	0
Death not due to breast cancer	1

1987958 - Which complications can be predicted by The Modified 5-item Frailty Index in breast cancer patients undergoing oncoplastic surgery?

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Background/Objective: Preoperative evaluation of breast cancer patients undergoing surgery is crucial for understanding postoperative outcomes, especially for those undergoing reconstructive procedures such as oncoplastic surgery. The modified 5-item frailty index (mFI) is an easy tool that has been validated in predicting postoperative complications across various specialties. The authors aimed to evaluate the mFI is in predicting postoperative outcomes in oncoplastic surgery.

Methods: Patients with breast cancer undergoing oncoplastic surgery from 2005 to 2020 were included from the National Surgical Quality Improvement Program Database (NSQIP). The mFI score was calculated by assessing comorbidities, including hypertension, diabetes, respiratory disease, heart failure, and functional status (0-5 scale; 1 point per condition). Multivariate logistic regression assessed each risk factor for overall, wound, operative, and medical complications.

Results: 6086 breast cancer patients undergoing oncoplastic surgery were included, 53.7% had an mFI of 0, 34.3% had an mFI of 1, and 12.0% had an mFI of 2 or more. A higher mFI (mFI ≥2 vs. 1 vs. 0) was associated with higher age (67.24 vs. 66.05 vs. 56.53, p< 0.001), steroid use (4.5% vs.2.5% vs. 1.6%, p< 0.001), higher ASA classification (2.78 vs. 2.46 vs. 2.12, p< 0.001), surgery in more recent years (2016-2020, 70.6% vs. 65% vs. 62%, p< 0.001), lower hematocrit (38.47% vs. 39.78% vs. 39.39%, p< 0.001), and hypoalbuminemia (10.3% vs. 3.5% vs. 4.2%). Moreover, a higher mFI score was related to higher rates of overall (7.7% vs. 4.5% vs. 4.3%, p< 0.001), wound (4.4% vs. 2.1% vs. 1.5%, p< 0.001), and medical complications (1.7% vs. 0.7% vs. 0.1%). Superficial surgical site infection (3.9% vs. 1.6% vs. 1.0% p< 0.001), UTI (1.2% vs. 0.2% vs. 0%), as well as number of readmissions (4.5% vs. 1.9% vs. 1.7%, p< 0.001) were associated with higher frailty. Multivariate analysis adjusted for age, mFI, smoking, ASA, year of surgery, and operative time, showed that the mFI demonstrated to be a risk factor for overall (mFI ≥2 vs. 0, OR=1.67, 95%CI: 1.141-2.433, p=0.008), wound (mFI ≥2 vs. 0, OR=1.728, 95%CI: 1.013-2.947, p=0.045), medical complications (mFI ≥2 vs. 0, OR=5.240, 95%CI:1.331-20.630, p=0.018). There were no differences between patients with mFI 0 and 1. Moreover, mFI was not a predictor of operative complications.

Conclusions: A mFI ≥2 is the strongest predictor of overall complications. These patients have five times more risk of developing medical complications, and a 70% additional risk for wound complications compared to healthy patients. Patients with mFI 1 have similar outcomes compared to healthy patients. Preoperative discussion, counseling, and potential measures to avoid complications should be carried out with patients with mFI scores ≥ 2.

1988284 - Implementation of Breast Intraoperative Oncoplastic (BIO) Form to Improve Multidisciplinary Management of Oncoplastic Breast-Conserving Surgery (OBCS)

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Background/Objective: Given the additional tissue removal and significant parenchymal rearrangement in oncoplastic breast-conserving surgery (OBCS), oncoplastic specimen labeling and orientation are crucial for identifying the location for re-excision of positive margins or occult disease and for delineating the original tumor bed for radiotherapy. Furthermore, unoriented specimens with occult disease may complicate treatment decisions. The BIO form is a documentation template where tumor and oncoplastic specimens are drawn on a breast diagram. We previously described the high feasibility of implementing the BIO form. The purpose of this study is to evaluate the impact of BIO form implementation.

Methods: We conducted a single-institution retrospective review of OBCS cases from January 2016 to May 2024. Operative notes and pathology reports were reviewed for labeling of oncoplastic specimens, defined as tissue resected after completion of lumpectomy and margin resection, from either the ipsilateral or the contralateral breast. Location specification refers to quadrant or clockface location in the breast. Cases before November 2023 were defined as pre-BIO form implementation.

Results: A total of 371 breasts (172 were only contralateral to lumpectomy side) underwent surgery, yielding 324 breasts with oncoplastic specimens. 314 breasts (165 patients) were pre-implementation, and 57 breasts (29 patients) were post-implementation. Post-implementation, 29 breasts (50.9%) had a completed BIO form. BIO form use was associated with significantly higher rate of oncoplastic specimen location documentation (71% with BIO form vs. 29% without, $p< 0.05$) and trended towards a higher rate of specimen orientation (32% vs. 27%, $p=0.59$). This increase was higher in ipsilateral cases – location specified 93% with BIO form vs 45% without ($p< 0.05$) and orientation specified 50% vs 45% ($p=0.74$) (Table 1). Of the 199 breasts that underwent both lumpectomy and reconstruction, the positive margin rate was 14.6%, (29 breasts; 10 DCIS and 19 invasive carcinoma). There were 27 positive margins without the BIO form and 2 with BIO form. Among the 21 positive margin cases with oncoplastic specimens and without a BIO Form, 8 (38%) had location specified and management included mastectomy (n=1), re-excision (n=4), or no surgery (n=3). For the 13 (61.8%) without location specification, 2 underwent mastectomy, 9 re-excision, and 2 no surgery. All 2 cases with positive margin and a BIO form were managed with re-excision. Of the 324 oncoplastic specimens, 7.7% (n=25) contained occult disease (15 ipsilateral DCIS, 6 ipsilateral invasive carcinoma, 2 contralateral DCIS, and 2 contralateral invasive carcinoma). Without BIO form, 12 (54.6%) lacked location and 10 (45.5%) lacked orientation. Of specimens without location documentation, management included mastectomy (n=4), re-excision (n=1), and no further surgery (n=7). With BIO Form use in 3 occult disease cases, none lacked location and 2 lacked orientation of oncoplastic specimens; management included mastectomy (n=1), re-excision (n=1), and no further surgery (n=1).

Conclusions: Oncoplastic specimen location documentation improved with the new BIO form initiative. Consistent oncoplastic specimen documentation facilitated multidisciplinary communication and local-regional management of breast cancer. Efforts to increase consistent utilization of the BIO form are ongoing. Future research is ongoing evaluating the role of the BIO form in radiation therapy planning.

Table 1. Oncoplastic specimen labeling practices without and with use of the BIO form. Ipsilateral breast refers to the side with DCIS or invasive carcinoma that underwent OBCS. Contralateral breast refers to the side undergoing symmetrizing procedure. Among the 371 breasts, 47 did not result in oncoplastic specimen.

	Total (n,%) n=371	Total			Ipsilateral Breast			Contralateral Breast		
		Without BIO Form n=342	With BIO Form n=29	p value[1]	Without BIO Form n=184	With BIO Form n=15	p value[1]	Without BIO Form n=158	With BIO Form n=14	p value[1]
Total Oncoplastic Specimens	324 (87%)	296 (87%)	28 (97%)	-	152 (83%)	14 (93%)	-	144 (91%)	14 (100%)	-
Location Specified	105 (32%)	85 (29%)	20 (71%)	0.0001*	68 (45%)	13 (93%)	0.0006*	17 (12%)	7 (50%)	0.0001*
Orientation Specified	90 (28%)	81 (27%)	9 (32%)	0.59	69 (45%)	7 (50%)	0.74	12 (8.3%)	2 (14%)	0.36
Location and Orientation Specified	69 (21%)	60 (20%)	9 (32%)	0.14	52 (34%)	7 (50%)	0.24	8 (5.6%)	2 (14%)	0.22

[1]Chi squared test or Fisher's exact test (n<5)

1988622 - Does implementation of oncoplastic breast surgery impact patient reported outcomes following breast-conserving surgery?

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Background/Objective: Evaluation of patient-reported outcomes (PRO's) following surgery is essential, especially as surgical techniques evolve. Surgeons are increasingly utilizing oncoplastic breast surgery (OBS) in patients desiring breast conservation, allowing for the removal of large tumors while maintaining cosmetic appearances. While OBS has been suggested to improve satisfaction with breast appearance compared with traditional breast-conserving surgery (BCS), there are few studies adequately comparing these techniques. Furthermore, more extensive surgery may negatively impact quality of life. This study aimed to evaluate PRO's following BCS and OBS. We speculate that patients undergoing OBS will be more satisfied with the appearance of the breast, but with diminished chest wall quality of life.

Methods: Patients undergoing traditional BCS by a single surgeon (CB) between January 1, 2013 and December 31, 2020 were retrospectively evaluated utilizing the BREAST-Q questionnaire. Prospective evaluation of PRO's occurred between June 1, 2020 and September 30 2023, which also coincided with the routine use of OBS in their practice. Modules assessed included Satisfaction with Breasts (SatBr), Physical Well-being (PhWb), Psychosocial Well-being (PsyWb), and Sexual Well-being (SxWb). The 1-year post-operative BREAST-Q scores from the prospective OBS group were compared with the retrospective BCS cohort. Demographic and pathologic information were collected from electronic medical records of responders in both cohorts. Patients were excluded if they had previous breast implants or reduction, a subsequent mastectomy or cosmetic procedure, recurrent or metachronous breast cancer, developed distant metastasis, or were non-fluent in English. The Mann-Whitney test was utilized to assess for differences in baseline characteristics between groups, and a t-test was utilized to compare group means for BREAST-Q scores.

Results: 89 patients undergoing BCS were eligible for inclusion, with 51 agreeing to participate, and 35 (68.6%) completing the survey. 42 patients undergoing OBS (level 1) were compared with the BCS cohort. The time between surgery and survey response was greater for the BCS group (8 years) than the OBS group (1 year). Baseline characteristics between the two groups were similar including age and BMI, as well as the use of radiation and chemotherapy. Tumor size in participating patients did not differ in those undergoing OBS and BCS (1.2 cm vs 1.6 cm; $p = 0.62$). SatBr scores were higher following OBS (mean = 77.5) than BCS (mean =69.5) but did not reach statistical significance ($p = .063$). On the contrary, PhWb of chest scores were lower following OBS (mean = 75.0) than BCS (mean = 81.0) but not statistically significant ($p = .17$). PsyWb scores were similar for both surgical groups (80.0 vs 83.2; $p = .44$).

Conclusions: Implementation of oncoplastic surgical approaches did not impact patient reported outcomes following breast conservation surgery. Further validation in a larger cohort of patients is required.

Other

1979621 - Identifying and Characterizing CTCs in ER-Positive Breast Cancer Patients May Lead to Novel Discoveries Surrounding Late Recurrence

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Background/Objective: Estrogen receptor-positive (ER+) breast cancer poses a significant risk of late recurrence, with about a 40% recurrence rate over 20 years. Current methods struggle to predict resistance to endocrine therapies in time for effective intervention. We propose a novel approach to detect circulating tumor cells (CTCs) as early indicators of estrogen resistance in ER+ breast cancer. By using a custom-designed fluorescence in situ hybridization (FISH) platform that aligns with each patient's unique tumor-specific genomic changes, we aim for high specificity in CTC detection. This strategy offers a potential window for early intervention, redefining how recurrence and treatment efficacy are monitored in real time.

Methods: This study, approved by the IRB, enrolled breast cancer patients of various subtypes to monitor CTCs over time. Tumor samples were analyzed for somatic copy number alterations (SCNAs) using Affymetrix™ Oncoscan arrays, and blood samples were collected pre-treatment and at multiple points during and after treatment. CTCs were isolated via a size-based filtration device and characterized with FISH probes customized to the genomic profile of each patient's tumor. Cells with SCNA-positive FISH signals were classified as true CTCs. CTC samples also underwent multiplex immunofluorescence (mIF) for CD45, EpCAM, and ER. Cells that were CD45+/EpCAM-neg were defined as WBCs, while any CD45-/EpCAM+/ER+ or - cell was defined as a CTC.

Results: Primary tumors showed a correlation between genetic complexity (SCNA counts) and aggressive subtypes. Pre-treatment samples detected CTCs in 83% of patients, while 78% of post-treatment samples contained CTCs. Among high-risk subtypes, recurrence within one year correlated with CTC presence post-treatment. Fifty-three percent of our entire cohort were ER+ patients. FISH-positive CTCs were detected in 100% of our Luminal A/B patients before treatment, and all patients tested were found to have CTCs six to twelve months post-treatment while on anti-estrogens suggesting minimal residual disease (MRD). The presence of these cells suggest they may be estrogen resistant. The majority of Luminal A/B tumors have a small population of cells noted to be ER-neg. In order to better understand these CTCs, mIF was used to evaluate for the expression of ER. Multiplex IF identified a complex pattern of ER+ and ER-neg cells, even within a patient sample. CTCs were identified to have CD45-neg/EpCAM+/ER-neg as well as CD45-neg/EpCAM+/ER-positive CTCs. This data suggests mechanisms of estrogen-resistance are likely heterogeneous.

Conclusions: Customized tumor-specific FISH accurately identified true CTCs, predicting one-year recurrence in high-risk subtypes. Surprisingly, ER+ patients, especially those with luminal A/B subtypes on hormone therapy, showed detectable CTCs post-treatment without clinical recurrence, potentially indicating dormant disease. Identification by mIF of ER-neg and ER-positive CTCs,

indicate one mechanism of estrogen-resistance was the loss of the ER. Taken together, these findings support the use of custom FISH probes for accurate and specific identification of MRD in ER+ patients. These insights into mechanisms of hormone-resistance, tumor dormancy, and recurrence mechanisms in ER+ breast cancer offer a pathway toward more effective monitoring and personalized interventions, aiming to improve long-term outcomes in patients.

Table 1: Summary of CTC evaluation across all subtypes

ID	Stage (AJCC 8th edition)	SCNA			Ki67 (%)	CTCs Pre-Treatment			CTCs Post-Treatment		
		gain	loss	total		CTCs	Total Cells	% + for CTC	CTCs	Total Cells	%+ for CTC
LUMINAL A											
14	IA	1	1	2	9	YES			YES		
						9	3,093	0.29%	14	5526	0.25%
8	IA	4	1	5	9	YES			NOT ANALYZED		
						11	7221	0.15%			
6	IA	5	1	6	8	YES			YES		
						8	5429	0.15%	19	7173	0.26%
31	IA	11	4	15	11	YES			NOT ANALYZED		
						9	1900	0.47%			
12	IA	24	0	24	9	YES			NOT ANALYZED		
						5	13142	0.04%			
1	IB	5	3	8	26	YES			YES		
						15	1577	1.02%	6	4548	0.13%
LUMINAL B											
2	IA	3	17	20	15	NO			NOT ANALYZED		
						0	2740	0.00%			
13	IIA	20	21	41	30	YES			YES		
						2	1144	0.17%	8	10981	0.07%
HER2 + (ER +)											
11	IA	18	38	56	21	YES			YES		
						19	16809	0.11%	12	29476	0.04%
16	IA	73	25	98	40	YES			RECURRANCE		
						10	4649	0.22%			
TNBC											
15	IB	25	39	64	90	NO			YES		
						0	771	0.00%	11	22769	0.05%
25*	IIA	4	3	7	70	YES			NO		
						7	13338	0.05%	0	296	0.00%
23*	IIIA	49	0	49	80	YES			NO		
						14	5912	0.24%	0	346	0.00%
29*	IIIC	44	40	84	90	YES			YES		
						3	8590	0.03%	2	14102	0.01%
49*	IIA				60	YES			RECURRANCE		
						5	2112	0.24%			

1978790 - Lessons Learned from the Interprofessional Mindfulness Practices Advancing Cancer Teamwork (IMPACT) Study

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Background/Objective: Burnout is a pressing problem in oncology that affects team dynamics, provider and staff retention, and quality of care. Mindfulness-based interventions (MBIs) can decrease burnout and improve well-being, however, the majority of MBI research focuses on the individual rather than the interprofessional team. We used an MBI focused on team resilience to train interprofessional oncology teams to address burnout and improve teamwork. We hypothesized that a team-focused MBI would improve teamwork and well-being while also being feasible and acceptable for oncology teams.

Methods: At a single-institution cancer center, we conducted a prospective cohort study with interprofessional oncology team members in Breast, Gynecologic, and Gastrointestinal Oncology who work collaboratively in a clinic setting. This study was IRB approved by the institution as minimal risk. Providers who opted in and consented to participate underwent a team resilience MBI involving four monthly, one-hour training sessions offered during the lunch hour by an MBI and team resilience expert. Sessions were hybrid (in-person and virtual), synchronous, and recorded. Participants completed pre- and post-intervention surveys on teamwork, burnout, stress, resilience, and flourishing (Edmonson's Psychological Safety Scale for Teams, Maslach Burnout Scale 2-Item, Perceived Stress Scale, Connor-Davidson Resilience Scale 2-Item, and Flourishing Index). Acceptability, Appropriateness, and Feasibility of Intervention Measures and short-answer feedback was collected post-intervention. Paired t-tests compared pre and post outcomes. Descriptive statistics analyzed the feasibility, acceptability, and appropriateness, while thematic analysis evaluated qualitative feedback.

Results: Out of 135 invited, 21 (16%) participants enrolled, consisting of clinic nurses, nurse managers, social workers, advanced practice providers, pharmacists, radiation oncologists, and surgical oncologists. The majority (57%) were 22-54 years of age with varied years of work experience (36% with >20 years). At baseline, participants scored high on team psychological safety (mean 5.16, SD 1.02) measured by Edmonson's Psychological Safety Scale. 31% of participants had burnout on the Maslach Burnout 2-Item. Follow-up was low with 6 respondents (29%) completing the post-intervention survey. Session attendance also diminished with 12 people attending the 1st session with 6 online views, to 1 person in attendance with 1 online view for the last session. There were no significant differences ($p>0.05$) when comparing pre- and post- teamwork, stress, burnout, resilience, and flourishing. Measures of Acceptability (mean 4.38, SD 0.38), Appropriateness (mean 4.33, SD 0.52), and Feasibility (mean 4.04, SD 0.62) of Intervention were high. In feedback, participants reported improved mindfulness, increased knowledge regarding building work relationships, and desiring more colleague participation.

Conclusions: Participants from interprofessional oncology teams had high team psychological safety at baseline and almost a third were burnt out, consistent with reported burnout ranges in oncology. Intervention efficacy could not be concluded with low participation. We anticipated higher retention based on prior studies, however, our implementation approach requires re-evaluation. Those who participated in follow-up reported high acceptability, appropriateness, and feasibility of the

intervention. This study highlights the need to focus on population-specific factors when implementing and studying MBIs for optimal engagement. Further research is necessary to understand the best implementation approach for team-specific MBIs in multiprofessional oncology teams.

1979297 - Evaluating Treatment Approaches and Survival Outcomes in Adenoid Cystic Carcinoma of the Breast: Insights from the NCDB

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Background/Objective: Adenoid cystic carcinoma (ACC) is a rare form of breast cancer, accounting for less than 0.1% of cases. Despite its often triple-negative status (TN), ACC generally has a favorable prognosis. Due to its rarity, available literature is limited to small studies and case reports. Surgical management, including breast conservation surgery (BCS) or mastectomy, remains the main treatment, but there is no consensus on established treatment guidelines for ACC.

Methods: A retrospective review was conducted using the National Cancer Database (NCDB) from 2004 to 2021. Patients were identified using the ICD-O-3 histology code 8200/3 for primary breast sites (codes C500–C509). Primary outcomes included clinicopathological features, treatment modalities, and overall survival (OS) outcomes, stratified by hormone receptor (HR) status.

Results: A total of 2,396 patients with ACC were identified. Of these, 96% were older than 40 years, and most cases occurred in Non-Hispanic White patients (82.1%), followed by African Americans (12.3%). The majority presented with clinical tumor stages T1 (64.8%) or T2 (25.2%) and clinical nodal stage N0 (88.8%). HR-negative (HR-) status was observed in 74.1% of patients, and only 0.6% were HER2 positive. Lymphovascular invasion was absent in 62.5% of cases. Surgical treatment was the primary modality, with 69.9% undergoing BCS and 27.4% undergoing mastectomy. No significant difference in management was observed based on HR status ($p = 0.58$). From 2012 to 2021, 67.4% of patients underwent sentinel lymph node biopsy (SLNB), with 13.5% requiring subsequent axillary lymph node dissection (ALND). Chemotherapy was omitted in 85.4% of patients, while 55% received radiation therapy. Among HR positive (HR+) patients, 43.1% received endocrine therapy. The mean OS was 178 months for Stage I, 174 months for Stage II, and 85 months for Stage III, with Stage III patients showing a statistically significant lower OS ($p < 0.001$). Analysis from 2004 to 2021 showed consistent trends in surgical treatment patterns, with an increasing use of SLNB from 2017 to 2021. Comparison of chemotherapy versus no chemotherapy revealed no significant difference in OS ($p = 0.72$), and there was no difference in OS with chemotherapy based on HR status ($p = 0.47$).

Conclusions: Adenoid cystic carcinoma requires meticulous management to achieve a favorable prognosis. In our cohort, nearly half of the patients received radiation therapy, while endocrine therapy for HR+ disease was underutilized compared to expectations. Surgical intervention remains the cornerstone of treatment, with no significant difference in OS between breast or axillary management, consistent with findings in invasive ductal and lobular carcinomas. However, chemotherapy did not demonstrate an impact on OS in this patient population, unlike its established effect in triple-negative or HER2-positive ductal/lobular breast cancers. This suggests that

chemotherapy may be omitted from treatment regimens for ACC. These results may contribute to the refinement of management guidelines for ACC.

Table 1: Treatments for ACC Hormone Positive vs Hormone Negative

	Overall	HR-	HR+	p
Total (n)	2288	1777	511	
Breast surgery				
None	55 (2.4)	42 (2.4)	13 (2.5)	0.58
Partial mastectomy	1600 (69.9)	1246 (70.1)	354 (69.3)	
Mastectomy	627 (27.4)	483 (27.2)	144 (28.2)	
Unknown	6 (0.3)	6 (0.3)	0 (0.0)	
Margin status				
Negative	1522 (95.1)	1184 (95.0)	338 (95.5)	0.34
Positive	67 (4.2)	54 (4.3)	13 (3.7)	
Unknown	11 (0.7)	8 (0.6)	3 (0.8)	
Axillary surgery				
None	298 (19.0)	236 (19.5)	62 (17.5)	0.84
SLNB alone	1055 (67.4)	811 (67.0)	244 (68.7)	
ALND ± SLNB	211 (13.5)	162 (13.4)	49 (13.8)	
Unknown	2 (0.1)	2 (0.2)	0 (0.0)	
Axillary surgery among cN0 patients				
None	281 (18.8)	223 (19.3)	58 (17.2)	0.83
SLNB alone	1024 (68.7)	787 (68.3)	237 (70.1)	
ALND ± SLNB	184 (12.3)	141 (12.2)	43 (12.7)	
Unknown	2 (0.1)	2 (0.2)	0 (0.0)	
Chemotherapy				
No	1955 (85.4)	1503 (84.6)	452 (88.5)	0.05
Yes	268 (11.7)	224 (12.6)	44 (8.6)	
Unknown	65 (2.8)	50 (2.8)	15 (2.9)	
Radiation				
No	964 (42.1)	748 (42.1)	216 (42.3)	0.98
Yes	1258 (55.0)	977 (55.0)	281 (55.0)	
Unknown	66 (2.9)	52 (2.9)	14 (2.7)	

1982967 - Breast Surgeons' Perspectives of Telehealth Visits in Breast Clinic

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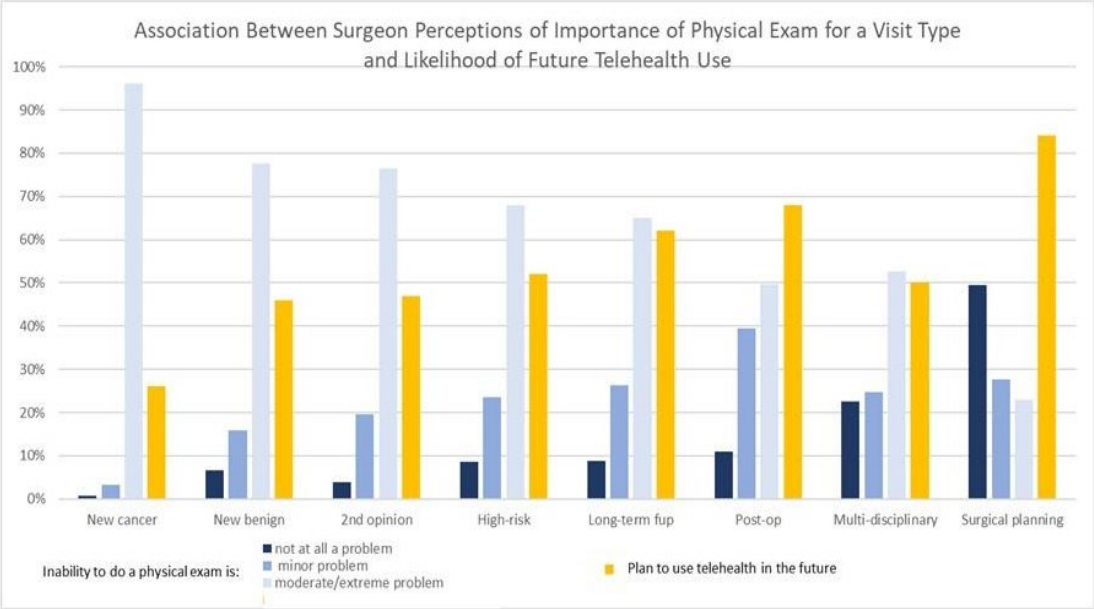
Background/Objective: The COVID-19 pandemic provided an opportunity to advance the use of telehealth. Many specialties have continued to use telehealth due to the ability to provide patients easier access with reduced travel and the opportunity to perform the visit from home or work. However, breast surgeons have cited concerns regarding the lack of a physical exam. As restrictions for in-person care have lifted, it is not known how surgeons currently use and plan to use telehealth. The objective was to assess breast surgeons' use and perspectives of telehealth.

Methods: Surgeon members of the American Society of Breast Surgeons were invited via email to anonymously complete a REDCap survey (5/25/2023-7/14/2023). The survey elicited surgeons' characteristics (categorical responses), and experience with telehealth (current and future use). Questions also assessed whether the inability to perform a physical exam with telehealth poses a problem (not at all, minor, moderate/extreme) and whether that perception differs by visit type (e.g., new benign, new cancer, new high-risk, new second opinion, surgical planning, post-operative, long term follow-up, multidisciplinary). Descriptive statistics summarized surgeon characteristics. Chi-square tests were used to assess the association between use of telehealth and surgeon characteristics, and between perceived importance of physical exam and likelihood of future telehealth use (for each visit type).

Results: Of the 267 surgeons that opened the survey, 17 did not answer any questions and 1 only answered surgeon characteristic questions (final sample size n=249). The majority were in practice 20+ years (53%) and 83% reported their practice was >80% breast. Most had experience with telehealth (82%). Surgeons who did not use telehealth (n=45) were more likely to be older (42% of non-users were >65 years versus 12% of users, $p< 0.001$). Surgeons were most likely to have used telehealth for surgical planning (64%), post-op (61%), and long-term follow-up (60%) visits. They were least likely to have used telehealth for multi-disciplinary (8%), 2nd opinion (25%), and new cancer (30%) visits. Surgeons reported that inability to perform a physical exam was a moderate/extreme problem for most visit types, ranging from 23% for surgical planning to 96% for new cancer visits (Figure). Perceived importance of a physical exam was significantly associated with likelihood of future use of telehealth (Figure, $p< 0.05$ for all visit types).

Conclusions: Although breast surgeons utilize telehealth, the inability to perform a physical exam was perceived to be a significant limitation. Breast surgeons perceived that telehealth may have a role for visits where physical exam is deemed less necessary (e.g., surgical planning or post-operative visits). Conversely, the role of telehealth was felt to be more limited when the physical exam is important (e.g., new cancer and new benign visits). Telehealth can improve access for patients who cannot physically travel to a clinic due to transportation/distance from care, socioeconomic factors, and/or work/family limitations. Future research should focus on patients' perspectives of telehealth, particularly for individuals with barriers to in-person visits. Telehealth will remain an important tool and the impact of a physical exam on surgical decision-making in the virtual setting should continue to be evaluated.

Figure 1: Association Between Surgeon Perceptions of Importance of Physical Exam for a Visit Type and Likelihood of Future Telehealth use



1987410 - Newly diagnosed breast cancers: How do they differ after benign breast disease compared to the general population?

Amy Degnim[1], Monica Price[2], Robert Vierkant[1], Tanya Hoskin[1], Matthew Jensen[1], Bryan McCauley[1], Denice Gehling[1], Jessica Fischer[1], Kuth Lohani[1], Lisa Seymour[1], Laura Pacheco-Spann[2], Mary Mrdutt[1], Celine Vachon[1], Stacey Winham[1], Derek Radisky[2], Mark Sherman[2]

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Background/Objective: Women diagnosed with benign breast disease (BBD) experience increased breast cancer (BC) risk compared with women in the general population; however, the pathologic characteristics of BCs after BBD have not been compared to those in the general population in contemporary studies. We compared features of BC diagnosed after BBD in a large contemporary cohort to characteristics of BC diagnosed in the general population as this information may be helpful in counseling patients with BBD.

Methods: We identified women within the Mayo Clinic BBD Cohort diagnosed with histologically confirmed BBD from 2002-2013 who developed an incident BC from 2010-2021, enabling biomarker comparisons with registry records. BCs diagnosed within 6 months of BBD were excluded. BC was classified as hormone-receptor positive (HR+) if estrogen and/or progesterone receptors were detected in ≥1% of BC cells. HER2 status was classified as positive with an IHC score of 3+ or FISH amplified. BC characteristics were compared with those occurring in the Iowa Surveillance, Epidemiology, and End Results (SEER) cancer registry for the same years. As HER2 data was only available in SEER starting in 2010, comparisons were restricted to 2010-2021. Stage of disease was categorized as ductal carcinoma in situ (DCIS, Tis), localized (T1-3, NX-N0), regional (T4 and/or N1-3), or distant (M1). Associations were carried out using chi-square tests or Fisher exact tests as appropriate.

Results: Among 4,819 women in our cohort diagnosed with BBD between 2002 and 2013, we identified 283 BCs from 2010-2021 (median interval 8.1 years after BBD). Median age at BC diagnosis was 63 years, with 67 (24%) BCs diagnosed by age 55. In SEER, 35,361 BCs were diagnosed 2010-2021. A higher percentage of BCs after BBD were DCIS compared to SEER BCs (28% vs 16%, $p< 0.001$); however, HR expression in DCIS was similar between BBD and SEER respectively: ER+ 84% vs 85%, $p=0.78$; PR+ 80% vs 76%, $p=0.37$; and HR+ 88% vs 87%, $p=0.73$. In the BBD cohort, invasive BCs were more frequently localized at presentation (80% BBD vs 68% SEER, $p=0.004$), and less frequently presented with regional (17% vs 26%, $p=0.004$) or distant disease (4% vs 6%, $p=0.004$, Figure 1). Invasive BCs occurring in the BBD cohort were less frequently HER2+ (8% vs 14%, $p=0.02$) or triple-negative compared to SEER (4% vs 11%, $p< 0.001$, Figure 1).

Conclusions: We observed differences in the BCs that occur after BBD compared to those occurring in the general population. Among patients with BBD, the percentage of DCIS is higher, and among invasive BCs the percentages of HER2+, triple negative, regional and distant disease are lower. Delineating reasons for these differences may have implications for monitoring rates, surveillance and management.

Figure 1

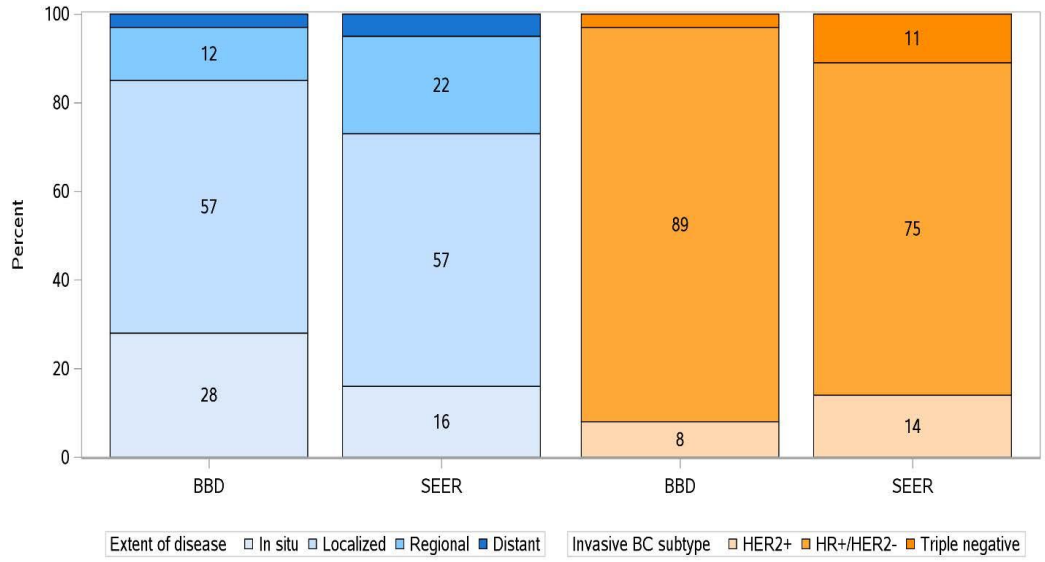

Figure 1: Extent of disease (in blue) amongst all BC, and BC subtype (in orange) amongst invasive BC, for BBD cohort vs Iowa SEER from 2010-2021.

1988653 - Breast Cancer Diagnosis, Management, and Outcomes in a Tertiary-Care Center in Lebanon

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Background/Objective: Breast cancer is the most common cancer in women globally, and it is particularly common in the WHO Eastern Mediterranean Region (EMRO). In 2022, the median age at diagnosis for female breast cancer was 62 years in the United States, compared to 45.4 years in Arab countries. In Lebanon, where the age-standardized incidence of breast cancer is the highest in the EMRO region, this study intends to examine the demographics, diagnostic techniques, and management of the disease.

Methods: At the American University of Beirut Medical Center (AUBMC), a retrospective chart review was conducted on all patients who were diagnosed between January 2010 and December 2016 with biopsy-proven non-metastatic breast cancer. Females over the age of eighteen who were treated at AUBMC for proven non-metastatic breast cancer met the inclusion criteria. Information was gathered about surgical procedures, diagnostic imaging techniques, clinicopathological traits, and oncologic results. SPSS version 23 was used for the statistical analysis, and $P < 0.05$ was chosen as the significance level.

Results: A total of 750 women were included. At diagnosis, the median age was 50 years old (range: 26–88), and the median body mass index was 26.71 kg/m². The majority of patients had breast cancer in its early stages when they first presented (Stage I: 34.6%, Stage II: 48.1%, Stage III: 17.3%). The most common histopathological type was invasive ductal carcinoma (88.3%). Ultrasound (91.6%) and mammography (94.6%) were the most commonly used diagnostic imaging methods, with core needle biopsy accounting for 93.4% of cases. Adjuvant chemotherapy (60.2%) and neoadjuvant chemotherapy (26.6%) were used as treatment, and radiation was administered to 76.9% of patients. Notably, compared to earlier stages (Stage I: 98.8%, Stage II: 98%), stage III illness was substantially linked to decreased overall survival (OS) rates (92.6%; P=0.002). Neoadjuvant treatment was associated with better survival outcomes (OR = 0.034, p = 0.005), and OS and DFS were significantly predicted by tumor grade and axillary involvement. The disease-free survival (DFS) rate was 92.9% and the overall survival (OS) rate was 97.3% after five years.

Conclusions: This study highlights that breast cancer in Lebanon affects women at a younger age, with high survival rates due to effective treatment protocols, particularly neoadjuvant chemotherapy for advanced cases. Compared to Western populations, these findings suggest a need for age-tailored screening in Lebanon to improve early detection. Future efforts should focus on refining local guidelines and implementing national screening programs.

1988627 - Metaplastic breast cancer characteristics and patterns of reoccurrence: A Single institution Experience

Baraah Mohamed[1], Haydee del Calvo[2], Fatemeh Shojaeian[3], Nancy Buderer[4], Olutayo Sogunro[5]

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Background/Objective: Metaplastic breast cancer (MtBC) is a rare type of aggressive breast cancer that represents less than 1 % of invasive breast cancers. MtBC has multiple pathological subtypes, including squamous, sarcomatoid, spindle, adenosquamous, and mixed metaplastic. Given the rare nature of the disease, there is limited information available on the behavior of this cancer and no well-defined recommendations for treatment, we aim to investigate the clinicopathological characteristics of metaplastic breast cancer, including overall survival and patterns of recurrence in a single institution.

Methods: We conducted a retrospective review of 91 patients who presented with metaplastic breast cancer from 2009 to 2024. We collected patient-specific data, clinicopathological data, and survival data. Factors such as age, gender, race, BMI, menopausal status, and genetic mutations, receptor status, stage, and treatment were collected. Time to recurrence, medical and surgical treatment, follow-up, and time to death were also collected. Data are described with frequency counts and percentages. Product-limit survival estimates were calculated using months from diagnosis until last follow-up or death.

Results: Our population consisted of 91 females with a mean age of diagnosis of 60 years. 67% of the population were Caucasian, 27% Black, and the remaining 6% were categorized as other or missing. 72% had a BMI >25, and 78% were postmenopausal. The majority of the patients had no germline genetic mutations. The most common MtBC subtype was spindle cell. MtBC was estrogen, progesterone, and Human epidermal growth factor (Her2) negative in 90%, 97%, and 89 % of the patients, respectively. The mean Ki67 was 26%, and 81 % of our patients had grade 3 tumors. Patients underwent variable treatment modalities, including surgery, radiation, chemotherapy, immunotherapy, and endocrine therapy. 50% of patients underwent a lumpectomy, 24% a simple mastectomy, and 1% did not have surgery. 33% had undergone sentinel lymph node biopsy (SLNB), 18% had axillary lymph node dissection (ALND), 3% had targeted axillary surgery, and 5% had no axillary surgery. 77% of the patients underwent chemotherapy, of which 41% received neoadjuvant chemotherapy. Of the patients who underwent neoadjuvant chemotherapy (n= 27), 7 had a complete pathological response (26%). A recurrence rate of 36% was seen in the population, of which 41% had distant metastasis, with a median time to recurrence being 12 months. The 12-month, 36-month, and 60-month overall survival rates were 93.9%, 81.3%, and 79.2%, respectively.

Conclusions: Our study demonstrated that MtBC exhibits aggressive oncologic behavior, commonly with triple-negative receptor status, high Ki-67, and high grade. The distant metastatic pattern of recurrence was more common, indicating an aggressive nature of the disease. The pathological complete response rate with neoadjuvant chemotherapy use was also interesting and further studies investigating the effects of neoadjuvant chemotherapy in MtBC are needed to create a standardized regimen.

Table.1 Recurrence patterns by subtypes

Recurrence Patterns by Subtype

			Recurrence Pattern (n=29)			
Subtype	**Total No. Patients with this Subtype**	**No. Patients with a Recurrence (%)**	**Local**	**Regional**	**Distant**	**Multiple**
Squamous cell carcinoma	14	6 (43%)	0	0	3	3
Spindle cell carcinoma	17	4 (24%)	1	1	2	0
Adenosquamous	2	0 (0%)	0	0	0	0
Mixed metaplastic	8	2 (25%)	1	0	0	1
Others	39	17 (44%)	4	1	7	5
TOTAL	80	29	6	2	12	9

11 missing subtype

1987804 - The Use of Hemostatic Agent to Forego Drain Placement in Breast Surgery

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Background/Objective: Patient dissatisfaction with standardized Jackson Pratt (JP) drain placement is widely known in breast surgery and the mitigation of postoperative complications such as seroma formation, hemorrhage, and surgical site with the usage of drains is questionable. We introduced a novel technique to utilize a hemostatic agent (CP, HEMOBLAST™ Bellows) to either decrease or forego drain usage in patients undergoing lumpectomy, mastectomy without formal reconstruction, or axillary dissection; the frequency of complications postoperatively was evaluated in comparison to those without the agent.

Methods: After obtaining institutional review, we performed a retrospective cohort study at our academic institution, including adult female patients undergoing lumpectomy, mastectomy without formal reconstruction, or axillary dissection by a single surgeon, from 2022-2024. Data collected included demographic data, surgical indications, type of operation, use of CP, presence of JP drains, time to drain removal, postoperative complications (hematoma, seroma, abscess, wound dehiscence), and readmission rates. We performed Mann Whitney U tests and Kruskal Wallis tests for continuous variables and Chi-square tests for categorical variables using SPSS 27.

Results: A total of 63 patients met inclusion criteria: mean age was 59.5 and mean BMI was 28.2. 35 patients received CP, and 28 patients did not receive CP. All were discharged on post-operative day zero with adequate pain control and post operative education. We found 51.4% of patients receiving CP did not require intraoperative drain placement. Those patients receiving CP who did have a drain had a decreased mean drain time by 2 days ($p=0.049$). We observed no significant difference in complication rates, including hematoma, seroma, or wound dehiscence. The elimination of drains did not have a statistically significant difference in complication risk ($p=0.270$), with procedure type not significantly impacting drain outcomes ($p=0.067$) or overall complication rates ($p=0.880$). Only patient BMI was found to be directly associated with postoperative risk of aspiration for seroma ($p=0.041$).

Conclusions: The use of CP in breast surgery shows potential in eliminating the need for intraoperative JP drains in patients, without statistical increase in complication rates. The ability to forego drain placement in some breast surgery patients will likely lead to higher patient satisfaction. Further studies evaluating patient reported outcomes could be considered.

Table 1: Outcomes for Breast Surgery Patients

Table 1: Outcomes for Breast Surgery Patients							
	No CP			**CP**			
	N*	**n****	**%**	**N***	**n****	**%**	***p Value***
Drain Presence	*28*	*28*	*100%*	*35*	*18*	51.4%	<.001
Hematoma	28	0	0%	35	1	2.9%	1.00
Abscess/Wound Dehiscence	28	0	0%	35	0	0%	<.001
Aspiration Procedure	28	3	10.7%	35	6	17.1%	0.786

**N= total # of patients in the group*
***n= # of patients with specific complication*

1988593 - Breast Cancer (BC) Staging: Should Real World Ki67 Data Be a Consideration?

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Background/Objective: BC staging is based on extent of disease (TNM) and factors associated with prognosis (grade, biomarkers (ER/PR/HER2 and OncotypeDX®). Ki67, a nuclear marker of cellular proliferation, correlates with patient outcomes and could be used in staging. However, its use is limited by analytic issues and interobserver variability. Therefore, we aim to investigate if Ki67 may further refine prognostic estimates for patients with non-metastatic invasive BC.

Methods: The study included patients diagnosed with clinical prognostic Stages I-III BC with Ki67 levels reported who did not receive neoadjuvant therapy in the National Cancer Database (NCDB; PUF 2021). Ki67 data collection in the NCDB began in 2018, although there is no central path review and reporting is not required. Overall, 41.6% of cases had Ki67 reported (2018-2021). Ki67 scores were categorized as high ≥30%, moderate 6-29%, or low ≤5%. Differences across groups were tested using the chi-square test for categorical variables and analysis of variance (ANOVA) for continuous variables. The Kaplan-Meier method was used to estimate overall survival (OS), and log-rank tests were used to test for differences. A Cox Proportional Hazards model was used to estimate the association of the Ki67 with OS after adjustment for available covariates; hazard ratios (HR) and 95% confidence intervals (CI) reported.

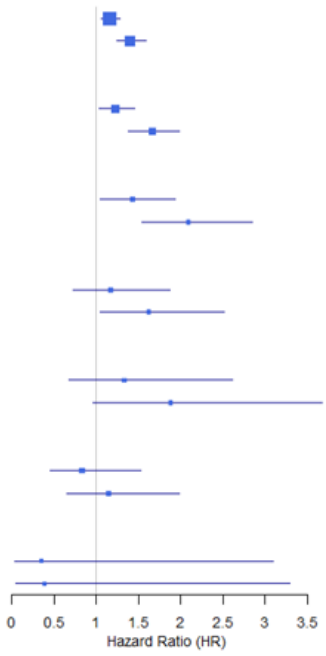
Results: 177,999 patients met inclusion criteria with 24.5% high, 54.7% moderate, and 20.7% low Ki67. Median follow-up was 35.3 months (95% CI 35.2 – 35.4). Patients in all 3 subgroups were of similar age (median [IQR] 65.0 [55.0-72.0]). Ductal histology (vs lobular or other) was more common among those with high Ki67 scores (88.7% vs moderate 78%, low 72.6%; $p< 0.001$), as were grade 3 (high 60.6% vs moderate 12.2%, low 4.39%; $p< 0.001$) and triple negative (ER-/PR-/HER2-) disease (high 19% vs moderate 2.65%, low 1.5%; $p< 0.001$). Patients with high Ki67 scores were less likely to have T1 (66.1% vs moderate 78.7%, low 85.3%; $p< 0.001$) or N0 disease (91.1% vs moderate 95.1%, low 97.2%; $p< 0.001$). After stratifying by prognostic stage (IA-IIIC), the unadjusted OS for patients within each Ki67 subgroup was progressively worse with higher Ki67 scores for Stages IA-IIB (all log rank $p< 0.001$). With Stage III disease, Ki67 scores were less likely to further stratify patients with increasing stage (IIIA, $p=0.013$; IIIB, $p=0.072$; IIIC, $p=0.47$). After adjustment, a higher Ki67 score was associated with worse OS (reference low vs moderate HR 1.2 [95% CI 1.11-1.3] vs high HR 1.6 [95% CI 1.46-1.75]). When stratified by individual prognostic stages, higher Ki67 scores were similarly associated with OS for patients with Stages IA-IIB disease (all overall $p< 0.05$), but not Stages IIIA-IIIC (all overall $p>0.05$), after adjustment (Figure). After applying the AJCC staging guidelines for OS, 11.7% of patients would be re-staged according to their Ki67 status.

Conclusions: In Stage IA-IIB BC, high Ki67 scores appear to be a poor prognostic indicator of survival in a real-world setting. Despite documented variability in reporting, practice reported Ki67

may assist in refining prognostic estimates for patients with Stages I-IIB BC, although clinical significance should be further investigated.

Table 1. Forest plot of results from Cox proportional hazards modeling evaluating the association of Ki67 (high, moderate, low) with overall survival, stratified by prognostic stage (IA-IIIC). All models adjusted for chemotherapy, radiation therapy, immunotherapy, endocrine therapy, age, race/ethnicity, comorbidity score, education level, income level, insurance type, facility type, facility location, and community type. *Indicates statistical significance (p<0.05).

Stage	Ki67 Group	HR (95% CI)	P Value	Overall P Value
IA (N = 93669)				<0.001*
	Low	Ref		
	Mid	1.16 (1.06-1.28)	0.001*	
	High	1.40 (1.24-1.59)	<0.001*	
IB (N = 24927)				<0.001*
	Low	Ref		
	Mid	1.23 (1.03-1.46)	0.025*	
	High	1.66 (1.38-1.99)	<0.001*	
IIA (N = 10625)				<0.001*
	Low	Ref		
	Mid	1.43 (1.05-1.94)	0.022*	
	High	2.09 (1.54-2.85)	<0.001*	
IIB (N = 4884)				<0.001*
	Low	Ref		
	Mid	1.17 (0.73-1.88)	0.510	
	High	1.62 (1.05-2.52)	0.031	
IIIA (N = 889)				0.063
	Low	Ref		
	Mid	1.33 (0.68-2.62)	0.404	
	High	1.88 (0.96-3.68)	0.068	
IIIB (N = 787)				0.248
	Low	Ref		
	Mid	0.83 (0.45-1.53)	0.560	
	High	1.14 (0.65-1.99)	0.644	
IIIC (N = 246)				0.622
	Low	Ref		
	Mid	0.35 (0.04-3.1)	0.346	
	High	0.39 (0.05-3.3)	0.389	



1986107 - Ultrasound guided delivery of dendritic cell immunotherapy enhances immune cell infiltration and primes the breast tumor microenvironment

Camille Baumrucker, Amy Aldrich, Nicole Harris, Paige Aiello, Hyo Han, Ricardo Costa, Hatem Soliman, Susan Hoover, David Detz, Nazanin Khakpour, John Kiluk, Laura Kruper, Christine Laronga, Melissa Mallory, Marie Lee, Brian Czerniecki

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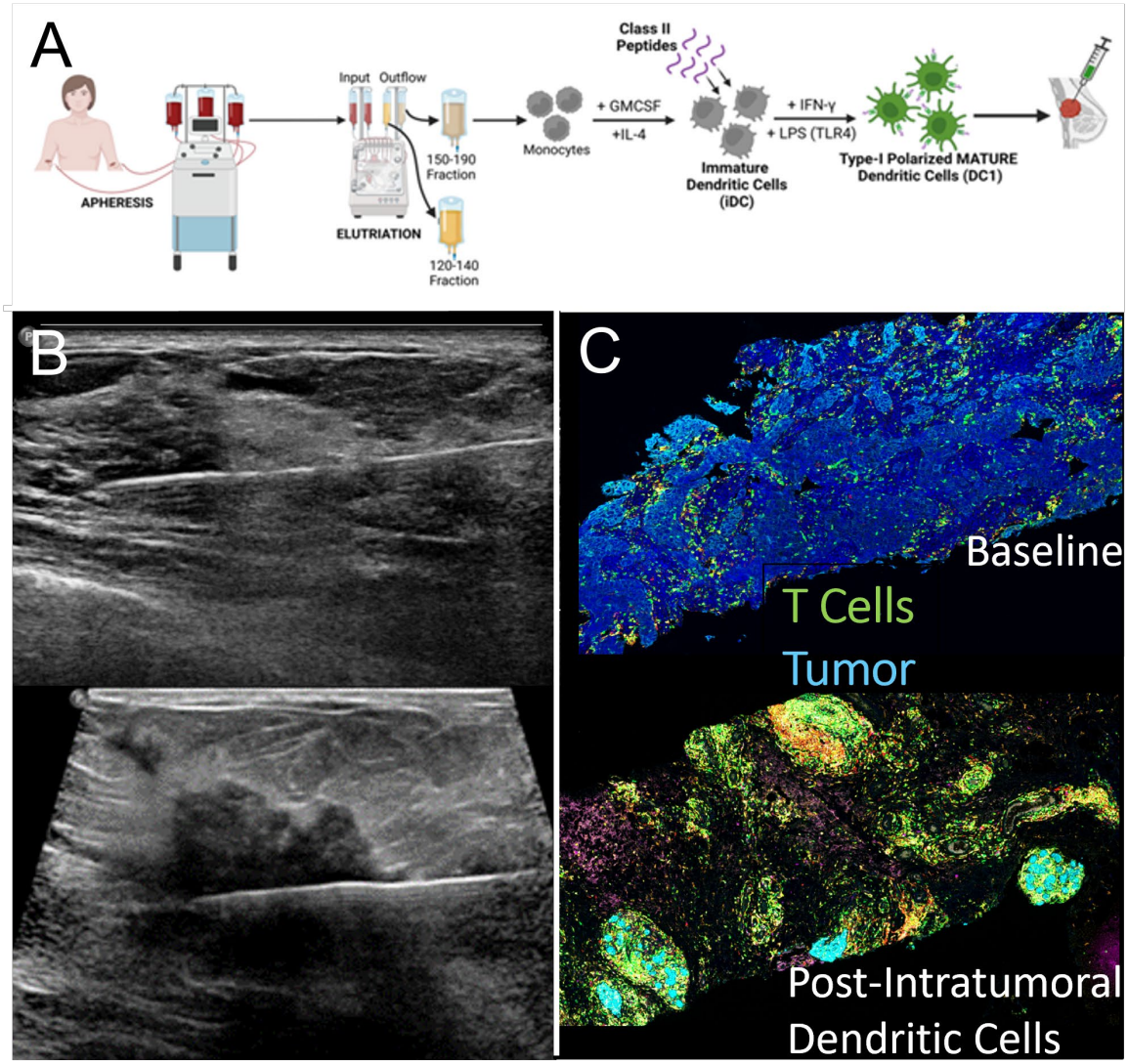
Background/Objective: Breast cancer (BC) remains the most common cancer among women, necessitating innovative treatment strategies particularly for difficult to treat subtypes such as triple negative breast cancer (TNBC). Immunotherapy has gained traction recently as a potential strategy to elevate the infiltration of innate and adaptive immune cells in the tumor microenvironment (TME) and to eliminate the tumor or prime it for subsequent therapy. Prior and current work has indicated that the most effective strategy for dendritic cell (DC) immunotherapy is to inject the cells directly into the tumor, compared to intranodal or subcutaneous injection. This study describes ultrasound-guided intratumoral (IT) DC therapy and the resulting impactful anti-tumor response within the breast TME.

Methods: HER2+, ER+/-, and TNBC patients were enrolled in NCT05325632, NCT03387553 or NCT05504707 respectively. Patients received IT DCs prior to chemotherapy. A subset of HER2+ patients also received Trastuzmab and Pertuzumab during this time. TNBC patients received IT DCs but did not receive antibodies. Using ultrasound guidance, DCs of varying doses (20e6 or 50e6 in 1ml or 100e6 in 2ml) were injected across the diameter of the breast tumors. Tumor needle biopsies and MRIs were obtained at baseline and post-IT DC. Multiplex immunofluorescence was completed on FFPE biopsies to evaluate innate and adaptive immune cell infiltrates. Slides were imaged with the Vectra®3 (AKOYA) and loaded into HALO Image Analysis Platform (Indica Labs, New Mexico) for quantitative image analysis. For each marker, a positivity threshold within the nucleus or cytoplasm is determined based on visual intensity and the entire image set was analyzed with the created algorithm.

Results: Patients had minimal adverse events (AEs) following IT injections, with the main AEs being expected flu-like symptoms (fever, chills, headache, body aches) for up to 48 hours post-injection. A dose response was apparent in HER2+ patients, where the higher dose (100e6) of DCs drove more immune cells into the tumor. T cells (CD4+ and CD8+) and natural killer T cells (NKTs) had an enhanced recruitment trend in HER2+ patients receiving 100e6 DCs (16.9%, 3.08% change, respectively). A total of 28 HER2+ patients have received 100e6 IT DCs. Of these, about 75% of patients show evidence of an objective response to immunotherapy on MRI. In contrast, TNBC patients demonstrated only a small increase in NKTs while T cell infiltration decreased (0.06%, -7.18% change respectively). Interestingly, MRIs from TNBC patients still indicate that DC immunotherapy is having an anti-tumor effect, but these MRIs were obtained following the DC injections and one chemotherapy infusion. Thus, the tumor response cannot be fully attributed to immunotherapy alone.

Conclusions: Overall, ultrasound-guided IT DCs are safe and show promise for continued development of BC therapy. There may be differences in induction of immune responses depending on the subtype of BC. Future studies are warranted to investigate if the use of IT DCs can deescalate chemotherapy regimens given to patients.

Figure 1: Ultrasound Guided Dendritic Cell Immunotherapy. A: Generation of human dendritic cells from apheresis. B: Ultrasound guidance of intratumoral injections. C: Immunofluorescence stains of HER2+ tumor biopsies demonstrating influx of T cells.



1987443 - "THIS IS HURTING ME": ADDRESSING THE HARMFUL CONSEQUENCES OF VAGINAL LASER THERAPY IN BREAST CANCER SURVIVORS THROUGH A SURGEON-LED SEXUAL HEALTH AFTER CANCER PROGRAM

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Background/Objective: Two randomized sham-controlled trials did not show a benefit to intravaginal CO2 laser therapy advertised as a painless option to treat genitourinary syndrome of menopause (GSM). We sought to describe the breast cancer patient experience during and after vaginal CO2 laser therapy in a surgeon-led sexual health after-cancer program.

Methods: Patients presenting with GSM to the MUSIC Sexual Health After Cancer Program (Menopause, Urogenital, Sexual Health and Intimacy Clinic) for female cancer survivors during the study period of 2020-2024 underwent a pelvic exam and completed survey instruments including the validated Female Sexual Distress Scale (FSDS). During pelvic exam, practitioners also evaluated patients' Adapted Vulvovaginal Exam Score; AVES>3 indicated severe genitourinary anatomic disruptions. Sexual dysfunction was defined as FSDS >/=11. Investigators compared AVES and FSDS scores between patients who did and did not undergo vaginal laser treatment and between patients who reported improvement versus worsening or no change of symptoms after undergoing vaginal laser treatment. The study sample experience was then qualitatively compared to the publicly-accessible online repository of the FDA's Manufacturer and User Facility Device Experience (MAUDE) that includes post-market reports of harm.

Results: 132 female cancer survivors presented for treatment of sexual dysfunction during the study period, and 17 were vaginal laser patients (VLP). 15 had undergone both a pelvic exam and completed the questionnaires. The mean number of CO2 laser treatments received per patient was 3.5 (1.5). 87% of VLP reported persistence or worsening of GSM after treatment, including 100% of VLP who had 6 treatments (Table 1). All 10 of 15 VLP on aromatase inhibitors at the time of CO2 laser reported persistent or worsening symptoms treatment. 12 of 15 (80%) had vaginal stenosis, agglutination, or scarring on pelvic exam, among other findings, reflected in AVES scores. Mean FSDS of VLP was 38 (range 17-46), indicating severe sexual health-related distress. All patients found to have anatomic disruptions on pelvic exam were treated with a combination of non-hormonal and hormonal moisturizers with mechanical dilation to reverse and prevent vaginal stenosis. The MAUDE event reporting system review for this treatment included themes of severe or excruciating pain, disability, worsening of symptoms, scar tissue, and thoughts of suicide.

Conclusions: Genitourinary anatomic disruptions and sexual dysfunction are underreported and undertreated in the female cancer patient population. Breast cancer patients may be particularly vulnerable to the marketing of providers offering cash-based vaginal CO2 laser treatments. The present analysis suggests that breast cancer patients, specifically those on aromatase inhibitors, are more likely to sustain serious injury, and very likely to have severe sexual dysfunction-related distress in the time period following treatment. Ongoing work seeks to evaluate non-surgical therapies to reverse the scarring and vaginal stenosis identified in vaginal CO2 laser survivors.

Table 1: Clinical and Treatment Characteristics of Vaginal Laser Patients (VLP)

Table 1: Clinical and Treatment Characteristics of Vaginal Laser Patients (VLP)				
	Vaginal Symptoms after CO2 Laser			P-Value
	Total	Worse	Better	
	15 (100)	13 (86.7)	2 (13.3)	
Mean Age at diagnosis (SD)	45.88 (8.45)	43.69 (7.4)	46.5 (6.3)	0.624
Mean Number of Treatments (SD)	3.5 (1.51)	3.42 (1.5)	4 (1.4)	0.632
Surgical Iatrogenic Menopause N(%)				
No	8 (53.3)	6(75)	2(25)	0.155
Yes	7 (46.7)	7(53.8)	0	
BC Stage N(%)				
Stage I	10 (76.9)	10 (100)	0	**0.01**
Stage II	2 (15.4)	1 (50)	1(50)	
Stage IV	1 (7.7)	0	0	
Hormone receptor positive N (%)				
No	2 (13.3)	2(100)	0	0.551
Yes	13 (86.7)	11(84.6)	2 (15.4)	
History of Vaginal or Systemic Hormone Use N(%)				
No	5 (33.3)	3 (60)	2(40)	**0.032**
Yes	10 (66.7)	10 (100)	0	
Concurrent Endocrine Therapy Use during CO2 Laser Treatments N(%)				
No	6(40)	6 (100)	0	0.215
Yes	9(60)	7 (77.8)	2(22.2)	
Stenosis, Agglutination or Scarring on Exam N(%)				
No	3(20)	2(66.7)	1(33.3)	0.255
Yes	12(80)	11(91.7)	1 (8.3)	
Mean AVES (SD)	10.31 (4.6)	11.77 (3.6)	4 (4.2)	**0.016**
Mean FSFI Score (SD)	9.41(7.9)	10.16 (8.0)	8.55 (9.9)	0.802
Mean FSDS Score (SD)	37.45 (8.4)	37.4 (8.8)	38 (-)	0.95

1987833 - Can Wearables Enhance Upper-Limb Rehabilitation After Breast Cancer Surgery?

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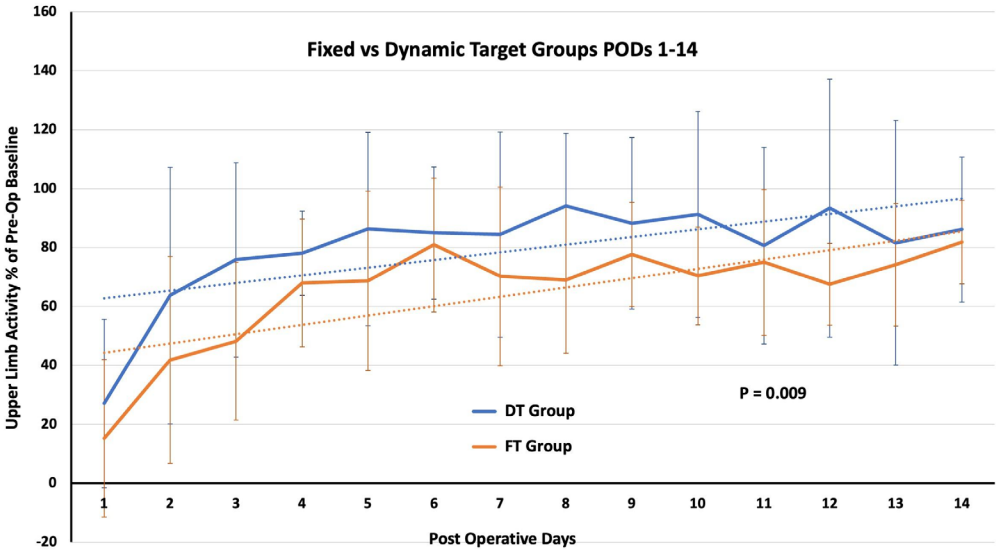
Background/Objective: Axillary surgery remains mainstay for staging of breast cancer (BC) and is associated with shoulder dysfunction including pain and decreased shoulder range of movement (ROM) in up to 67% of patients 3 years after surgery. Structured post-operative exercise programs have been shown to decrease pain and lymphoedema, and improve shoulder ROM and health related quality of life (QoL). Despite this, access to physiotherapy remains limited. Wearable sensing platforms for self-directed rehabilitation have been validated in orthopedics and stroke medicine, but not following BC surgery. This study aims to evaluate the acceptability of wearables amongst BC patients, determine efficacy in assessment of post-operative upper-limb (UL) recovery and whether wearable-driven feedback enhances rehabilitation.

Methods: A prospective single-center observational study was conducted in a tertiary breast unit in London, United Kingdom. Patients undergoing breast and axillary surgery were invited to wear a smartwatch with a pre-installed tailor-made "OnTrack" software application on their operated side, pre-operatively and for a minimum of 10-weeks post-operatively. "OnTrack" provides tactile (vibration) and visual feedback with push notifications promoting UL exercise. Progress, target-setting, and feedback is remotely provided by clinicians. Patients also completed UL function (DASH), pain-score and QoL (EQ-5D-5L) questionnaires peri-operatively, along with structured interviews. Half of the patients were randomized to receive fixed upper-limb activity (ULA) targets of 60 minutes per day (FT group), and half to receive enhanced feedback with dynamic increasing targets (DT group) based on their ULA.

Results: 18 female patients undergoing axillary surgery (17 sentinel node biopsy, 1 axillary lymph node dissection) with a mean age of 59.7 years (SD 5.4) were recruited. Patients wore smartwatches for 11.2 days on average pre-operatively to compute baseline ULA. Post-operatively, recovery was computed as an increase in ULA as a percentage of pre-operative baseline. At 16 weeks follow-up (mean 77.1 days, SD 15.6) mean compliance with the intervention was 89.4% (SD 17.9). ULA dropped post-operatively from 100% to 21.2% on post-operative day (POD) 1 and gradually increased. The largest ULA increase was observed between PODs 1 and 2 (mean 21.2% vs 52.8%, P=0.001). Mean ULA did not return to baseline even at 14 weeks post-operatively (mean 84.8%, SD 18.9). Patients in the DT group had significantly higher ULA within the first 2 post-operative weeks compared to the FT group (mean 78.5% vs 64.9% P=0.009). DT reached the recovery plateau more rapidly than the FT group (POD 3, mean 75.9% SD 33 vs POD 5, 68.7% SD 30.5). There was no significant correlation between post-operative ULA and DASH (R=-0.175, P=0.55), EQ-5D-5L (R=-0.049, P=0.87) and pain scores (R=-0.182, P=0.53). All patients found feedback highly motivating and would recommend "OnTrack" to other BC patients.

Conclusions: This study provides evidence for the acceptability of wearables amongst BC patients. It confirms the feasibility and efficacy of wearables in measuring UL recovery post BC surgery and provides preliminary evidence that wearable driven personalized feedback enhances post-operative recovery. A randomized controlled trial comparing wearables to current usual care is now required to demonstrate clinical and cost effectiveness.

Figure 1: Fixed vs Dynamic Target Groups PODs 1-14



1987630 - Human-Assisted Learning: How Artificial Intelligence Performs on the BESAP

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Background/Objective: The use of artificial intelligence in the medical field is rapidly advancing. Large language models (LLMs), such as OpenAI's ChatGPT and Google's Gemini, have shown potential to assist with medical education. Understanding the capacities and limitations of these novel technologies is key to determining guidelines for proper use. This study aims to assess the ability of ChatGPT-4o and Gemini when provided with a fellowship-level breast surgery multiple choice examination.

Methods: ChatGPT-4o and Gemini were presented with the full scope of 379 multiple-choice questions from the Breast Surgery Education and Assessment Program (BESAP) question bank. Accuracy was assessed as a total score of percent correct. The LLMs were also asked to report the level of confidence in each answer (5 = high confidence and 1 = no confidence). To assess the quality of answer explanations, a random sample of 30 questions accurately answered by both LLMs was generated and evaluated by two board-certified breast surgeons, using a comprehensive evaluation scale consisting of three criteria: concordance, comprehensiveness, and correctness.

Results: ChatGPT-4o answered all questions (n=379) while Gemini answered 86% (n=326) of questions, as it was unable to interpret questions containing human images. The overall accuracy of ChatGPT-4o and Gemini was 77.3% (293/379) and 73.6% (240/326), respectively. From the subset of questions answered by both LLMs (n=326), ChatGPT-4o was significantly more accurate than Gemini (79.8% vs. 73.6%, P< 0.001). On bivariate analysis, ChatGPT-4o was least successful in questions pertaining to pathology (18/30, 60% correct, P=0.018) and most accurate in the field of medical oncology (28/30, 93% correct, P=0.029). On multivariate analysis, ChatGPT-4o's accuracy was associated with questions pertaining to surgery (OR: 4.52; 95% CI 1.09-18.8) and medical oncology (OR: 6.13; 95% CI 1.20-31.40). The accuracy of ChatGPT-4o and Gemini were both associated with self-reported confidence (OR: 2.14; 95%CI 1.23-3.71 and OR: 1.74; 95%CI 1.00-3.01). On independent review of the answer critiques by two board-certified breast surgical oncologists, explanations provided by BESAP were superior to both LLMs, while Gemini performed slightly better than ChatGPT-4o across all criteria included in the assessment scale - concordance, comprehensiveness, and correctness. Full results displayed in Table 1.

Conclusions: LLMs demonstrate relatively high but not perfect accuracy when answering multiple-choice questions on the BESAP exam. Without human prompting or preparation, both LLMs performed comparably to the fellow passing score of 75%, thus demonstrating the potential of these platforms as they evolve. However, in their current state LLMs are not flawless. Our study demonstrated certain gaps in the capabilities of LLMs such as interpretation of patient images as well as the provision of factually accurate and comprehensive answer explanations. In an era in which both patients and physicians increasingly utilize artificial intelligence tools, one must maintain a degree of caution when relying on the information generated.

Table 1. Comparison of ChatGPT and Gemini performance on the American Society of Breast Surgeons Breast Education Self-Assessment Program (BESAP) self-assessment questions.

Table 1. Comparison of ChatGPT and Gemini performance on the American Society of Breast Surgeons Breast Education Self-Assessment Program (BESAP) self-assessment questions.								
	ChatGPT				Gemini			
Topic	Total questions	Number correct	Percent correct (%)	P-value*	Total questions	Number correct	Percent correct (%)	P-value*
Risk Assessment & Genetics	30	20	66.7%	0.147	30	20	66.7%	0.364
Basic Breast Imaging	30	20	66.7%	0.147	7	7	100.0%	0.109
Advanced Breast Imaging	15	11	73.3%	0.708	11	9	81.8%	0.530
Pathology	**30**	**18**	**60.0%**	**0.018**	12	7	58.3%	0.221
Benign Disease	30	22	73.3%	0.588	25	18	72.0%	0.848
Surgery 1	30	21	70.0%	0.319	29	21	72.4%	0.877
Surgery 2	30	27	90.0%	0.084	30	23	76.7%	0.691
Oncoplastic Breast Surgery	20	13	65.0%	0.177	18	10	55.6%	0.074
Medical Oncology	**30**	**28**	**93.3%**	**0.029**	30	25	83.3%	0.205
Radiation Oncology	30	24	80.0%	0.714	30	21	70.0%	0.637
Survivorship	15	14	93.3%	0.131	15	12	80.0%	0.566
Ethics and Professionalism	14	11	78.6%	0.908	14	12	85.7%	0.848
Core Measures	15	14	93.3%	0.131	15	13	86.7%	0.240
Palliative Care	15	14	93.3%	0.131	15	11	73.3%	0.979
Anesthesia and Pain Management	15	12	80.0%	0.800	15	11	73.3%	0.979
Clinical Trials	30	24	80.0%	0.714	30	20	66.7%	0.364
Total questions answered by both LLMs	379	293	77.3%	NA	326	240	73.6%	NA
LLM Confidence (5/5)	**268**	**220**	**82.1%**	**0.000**	**191**	**149**	**78.0%**	**0.034**
Questions with images	**54**	**34**	**63.0%**	**0.007**	**2**	**1**	**50.0%**	**0.477**
*p-values represent the probability that there is no association between the subcategory and the accuracy measured by chi^2.								

1987437 - Evaluating the effectiveness of regular physical examinations in post-treatment breast cancer surveillance

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Background/Objective: Current post-treatment surveillance for breast cancer survivors, as outlined by the National Comprehensive Cancer Network, consists of regular history and physical examinations every four to six months for five years then annually thereafter. Given the time commitment and expenses that accompany frequent in-person visits, the primary objective of this study was to assess the yield of routine clinical exams in disease recurrence recognition, with a secondary objective of comparing the effectiveness of clinical exam in identifying metachronous primary breast malignancies versus other modes of detection.

Methods: Women >18 years of age with a diagnosis of Stage 0-III breast cancer were identified retrospectively from a single-institution database. The study included patients surgically treated for a primary breast malignancy between January 2019 and December 2023, with at least one surgical center survivorship encounter on record. Individuals with a history of ipsilateral breast cancer or prophylactic mastectomy prior to the study period were excluded, as were those whose therapeutic operation was performed at an outside institution.

Results: The study population included 3459 patients with 3602 breast cancer diagnoses (109 synchronous bilateral; 34 metachronous second primary). There were 629 (17.46%) in-situ carcinomas and 2973 (82.54%) invasive malignancies. In total, 129 women (3.73%) experienced a recurrence event: 60 were diagnosed with a locoregional recurrence (LRR), 60 with distant recurrence, and 9 with LRR and distant recurrence. Of the 129 documented relapses, 9 (7.0%) were identified on physical examination: 5 at the time of a dedicated surveillance visit with medical oncology, 2 by plastic surgery during reconstruction follow-up, and 2 by primary care. No recurrence events were identified during a surgical office surveillance visit. Other modes of initial detection included 32 (24.8%) patient-reported events, 33 (25.6%) by screening breast imaging, and 55 (42.6%) through other radiological studies. The median time to recurrence was 22 months (range 4—59). Additional clinicopathologic characteristics are summarized in Table 1. In total, 34 (1.0%) of women were diagnosed with a metachronous primary malignancy of the contralateral breast during the study period. Of these 34 cases, 2 (5.9%) were identified on physical examination: 1 at the time of a dedicated surveillance visit in the surgery office and 1 by gynecology. Other modes of detection included 6 (17.6%) patient-reported events and 26 (76.5%) by breast imaging (25 screening studies, 1 interval MRI for a BIRADS3 finding). Overall, the results revealed the yield of dedicated surveillance clinical exams to be 0.14% for relapse events and 0.03% for metachronous malignancies.

Conclusions: Routine clinical examination during the survivorship period was a low yield modality for detecting secondary breast events in this population. Consideration for telemedicine visits and decreased frequency of clinical exams could reduce the follow-up burden for breast cancer survivors.

Table 1: Clinicopathologic characteristics of recurrence cohort (n = 129)

Table 1 Clinicopathologic characteristics of recurrence cohort (n = 129)

	Clinical Exam	Patient-Reported	Screening Imaging	Other Imaging Study
Sample size	9	32	33	55
Mean age at diagnosis (years)	69.4	58.8	67.8	57.1
Index Cancer Subtype				
Ductal Carcinoma In Situ	1 (11.1%)	1 (3.1%)	9 (27.3%)	0
HR + HER2 –	5 (55.6%)	19 (59.4%)	17 (51.5%)	30 (54.55%)
HR + HER2 +	0	0	3 (9.1%)	2 (3.64%)
HR – HER2 +	0	2 (6.25%)	1 (3.0%)	2 (3.64%)
HR – HER2 –	3 (33.3%)	10 (31.25%)	3 (9.1%)	21 (38.18%)
Median time to recurrence (months)	21	18	26	20
Recurrence type				
Locoregional	5 (55.6%)	22 (68.8%)	31 (94.0%)	2 (3.6%)
Distant	2 (22.2%)	5 (15.6%)	1 (3.0%)	52 (94.6%)
Locoregional and Distant	2 (22.2%)	5 (15.6%)	1 (3.0%)	1 (1.8%)
Cause-Specific Deaths	4 (44.4%)	8 (25.0%)	1 (3.0%)	29 (52.7%)

1987339 - HER2-low Invasive Breast Cancer – A Biochemically and Prognostically Distinct Subgroup

Dawn Cox[1], Mackenzie Lesh[2], Mirisha Sheth[3], Deepa Halaharvi[1], Syed Mohsin[1], Mark Cripe[1]

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Background/Objective: The treatment of breast cancer has dramatically changed over the past few decades. Invasive carcinomas of the breast express varying levels of the HER2 protein. The identification of HER2 positive pathology signifies more aggressive disease, and subsequently a target for anti-HER2 therapy. Historically, HER2 has been reported as positive or negative and more recently, a new classification known as HER2-low has been identified. The purpose of this study is to compare the clinicopathological differences between HER2-low and HER2-negative non-metastatic breast cancers. Previous studies have been unable to show distinct characteristics for HER2-low cancers and suggest that hormone receptor status may have a greater influence. We hypothesize that HER2-low breast cancers will have a distinct pathological and prognostic profile, specifically a higher rate of lymph node positivity and worse prognosis when compared to their HER2-negative counterparts. Additionally, we hypothesize that the HER2-low subgroup will remain distinct even when stratified by hormone receptor status.

Methods: A retrospective chart review was performed from January 2014 to April 2024 at our multi-hospital institution. During this ten year period, 1,502 patients were identified with breast cancer. Three hundred and ninety-seven patients met inclusion criteria, which included: female gender, age ≥ 18 years, and HER2- negative/HER2- low newly diagnosed breast cancers that had not received neoadjuvant chemotherapy. FISH testing is routinely performed on patients at our institution, regardless of their IHC score. HER2 negativity is defined as 0 on IHC and FISH amplification negative and HER2-low is defined as 1+ or 2+ on IHC and FISH amplification negative. Among the 397 patients included in the study, 84 were HER2-negative and 313 HER2-low. Chi-squared statistical analysis was performed for each variable of the cancer profile.

Results: HER2-low breast cancers comprise 78.8% of total breast cancer patients included in the study. When comparing tumor pathologic features between HER2-negative and HER2-low patients, we note a statistically significant difference in hormone receptor status (estrogen and progesterone) ($p = 0.0001$), final TNM Stage ($p = 0.029$), tumor grade ($p = 0.0001$), Ki67 value ($p = 0.0001$), and Oncotype DX® score ($p = 0.003$). There appears to be a trend towards higher all-cause mortality at 10 years ($p = 0.080$). There is not a statistically significant difference in the tumor size ($p = 0.273$), nodal status ($p = 0.114$), tumor multifocality ($p = 0.893$) or the presence of lymphovascular invasion ($p = 0.687$) between HER2-negative and HER2-low patients.

Conclusions: Historically, HER2-positive breast tumors have found to harbor more aggressive features and HER2 targeted therapy has dramatically improved overall survival in this patient population. We hypothesize that HER2-low non-metastatic breast cancer patients may also have more aggressive disease at diagnosis and may derive benefit from HER2 targeted therapy. Our data confirms that non-metastatic HER2-low breast cancers tend to have more aggressive pathologic profile, including a greater TNM stage, higher tumor grade, and higher Ki67 levels than most HER2-negative cancers. Future studies are needed to evaluate potential additional HER2 therapies for these patients.

1988063 - Retrospective Evaluation of Reported Stressors on the NCCN Distress Thermometer In Breast Cancer Patients

Julia Alexieva[1], Melissa Rangel[1], Julie Wecsler[2], Lilia Lunt[1], Alison Coogan[1], Hannah Forristall[1]

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Background/Objective: The National Comprehensive Cancer Network (NCCN) distress thermometer (DT) is a validated tool used to quantify the level of patient distress and assess quality of psychosocial stressors. Data on which type of psychosocial stressors are most reported for breast cancer patients is lacking. There is also a paucity of data around how these stressors evolve throughout treatment. Previously we conducted a retrospective study evaluating breast cancer patient self-reported distress scores at various time points in their care. Our current study was conducted with the objective of identifying which categories of stressors are most important to patients and how they change throughout treatment course.

Methods: From July through October 2024, breast cancer patients at Cook County Hospital were screened using the NCCN distress thermometer to capture distress scores (DS) and asked to rank distress categories in levels of importance. All patients had a breast cancer diagnosis, had undergone breast surgery and had completed all initial therapy including surgery, radiation, and chemotherapy at least one year prior to clinic visit. Patients were asked to complete the NCCN DT survey rating distress retrospectively, considering at time of diagnosis, mid-treatment and at current surveillance visit. We then asked them to identify which stressors were most impactful and rank them accordingly. Demographic and cancer characteristic data were collected with retrospective chart review.

Results: Practical and physical concerns were the most reported source of distress for both English and Spanish speaking patients (35.7% and 38.1% respectively). Though English speaking participants had lower distress scores at time of survey, there was not a significant difference (1.6 vs 4, p=0.18). Distress reported at time of diagnosis and mid treatment were similar between these groups. Physical concerns were more commonly reported mid treatment (50%) and during remission (42.9%), while practical concerns were more likely at the time of diagnosis (42.9%) and mid diagnosis (35.7%). Patients who underwent chemotherapy treatments had significantly higher distress scores at time of taking the survey compared to those who did not have chemo (4.8 vs 1.4, $p< 0.03$).

Conclusions: Our results suggest there are certain factors that may be contributing more to distress at different time points. Physical concerns, such as pain and appearance, and practical concerns, such as financial and treatment options, may be an area that can be targeted to ameliorate patient distress at particular time points. In addition, distress scores among patients who underwent chemotherapy tended to be higher, highlighting a patient population that may benefit from more targeted interventions aimed at support outside of the clinic setting.

1988282 - Oncologic Outcomes after Ovarian Stimulation for Fertility Preservation in Women with Estrogen Receptor-Positive Breast Cancer

Jennifer Chen[1], Irene Peregrin-Alvarez[2], Laurie McKenzie[1], Terri Woodard[1], Helen Johnson[1]

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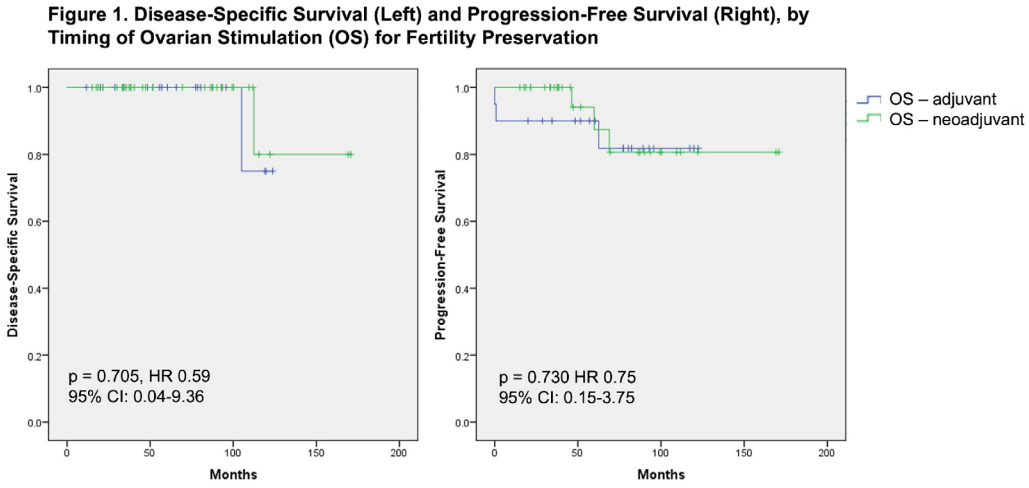
Background/Objective: The oncologic safety of ovarian stimulation (OS) for fertility preservation following surgical resection of estrogen receptor (ER)-positive breast cancer is well established. However, data are limited for OS in the neoadjuvant setting. OS prior to surgery poses a theoretical risk for disease progression and dissemination given the presence of an in-situ hormone-responsive tumor. We aimed to evaluate oncologic outcomes of patients with ER-positive breast cancer undergoing neoadjuvant (before surgery) versus adjuvant (after surgery) OS.

Methods: This was a retrospective, single-institution study of patients with ER-positive breast cancer who underwent OS from 2014-2024. Clinicopathologic, fertility preservation, and outcomes data were abstracted from the EMR. Fisher's exact, Chi-square, and Mann-Whitney U tests were used to compare group differences. Survival outcomes were estimated using the Kaplan-Meier method and groups were compared with log-rank test and Cox proportional hazards model.

Results: Of 55 patients, 2 were excluded due to inadequate follow-up. Overall, 53 patients underwent 59 fertility preservation cycles. Median age was 33 years (IQR 30-36) and BMI was 25.2 kg/m2 (IQR 22.8-29.5). Two (3.8%) had DCIS and 51 had invasive disease (96.2%), which was largely ductal (47, 92.2%), high grade (29, 56.9%), PR-positive (44, 84.3%), HER2-negative (29, 56.9%), and clinical Stage I-II (43, 84.3%). Thirty-three (62.3%) underwent neoadjuvant OS and 20 (37.7%) underwent adjuvant OS. Most underwent random start protocols (45, 75%) and 70% (35) received concomitant letrozole to lower estradiol levels during stimulation. Median peak estradiol level was 607.7 pmol/ml (IQR 400.0-1358.8) with median 13.0 (IQR 7-21) total oocytes and 11.0 (IQR 5-16) mature oocytes retrieved and median 11.0 (IQR 7-14.5) oocytes and 4 (IQR 1.5-5) embryos cryopreserved. Compared to patients undergoing adjuvant OS, those undergoing neoadjuvant OS had higher rates of node-positive (51.5% vs. 20.0%, p = 0.048), HER2-positive (57.6% vs. 16.7%, p = 0.007), and high-grade (73.3% vs. 38.9%, p = 0.026) disease, and were more likely to receive letrozole (82.1% vs. 54.5%, p = 0.035). Peak estradiol levels and oocyte and embryo yield were similar between cohorts. For the adjuvant OS cohort, median time from diagnosis to surgery was 32.0 days (IQR 21.5-66.0). Most patients undergoing neoadjuvant OS underwent neoadjuvant systemic therapy (NST, n=31, 93.9%), with median 46.0 days (IQR 37.3-79.5) from diagnosis to NST initiation. All patients receiving NST demonstrated treatment response with a mean 78.4% (SD 22.8) reduction in tumor volume by imaging (29 US, 3 MRI, 1 CT). At a median follow-up of 5.5 years (95% CI 3.2-7.8), there were 2 breast-cancer specific deaths, 4 recurrences (1 locoregional, 3 distant), and 2 disease progression events among 4 neoadjuvant and 4 adjuvant OS patients. There were no significant differences in disease-specific survival and progression-free survival by OS timing (Figure 1).

Conclusions: In this cohort of patients with ER-positive breast cancer, there were no events of disease progression during neoadjuvant OS for fertility preservation. Long-term oncologic outcomes were similar between patients who underwent neoadjuvant versus adjuvant OS. Our results support the oncologic safety of neoadjuvant OS among patients with ER-positive breast cancer receiving standard of care treatment.

Figure 1. Disease-Specific Survival (Left) and Progression-Free Survival (Right), by Timing of Ovarian Stimulation (OS) for Fertility Preservation



1988000 - Impact of Local/Institutional and Regional Geographic Factors on Variation in Breast Cancer Surgical Decision Making

Stephanie Serres[1], Zachary Whitham[2], Melanie Lopez[3], Ashley Quinn[1], Nisha Unni[1], Deborah Farr[1], Ann Marilyn Leitch[1], Anvy Nguyen[1], Rachel Wooldridge[1], Anthony Froix[1], Shruti Zaveri[1]

[1]University of Texas Southwestern Medical Center, Dallas, TX, [2]University of Texas Southwestern, Dallas, TX, [3]University of Texas Medical Center, Euless, TX

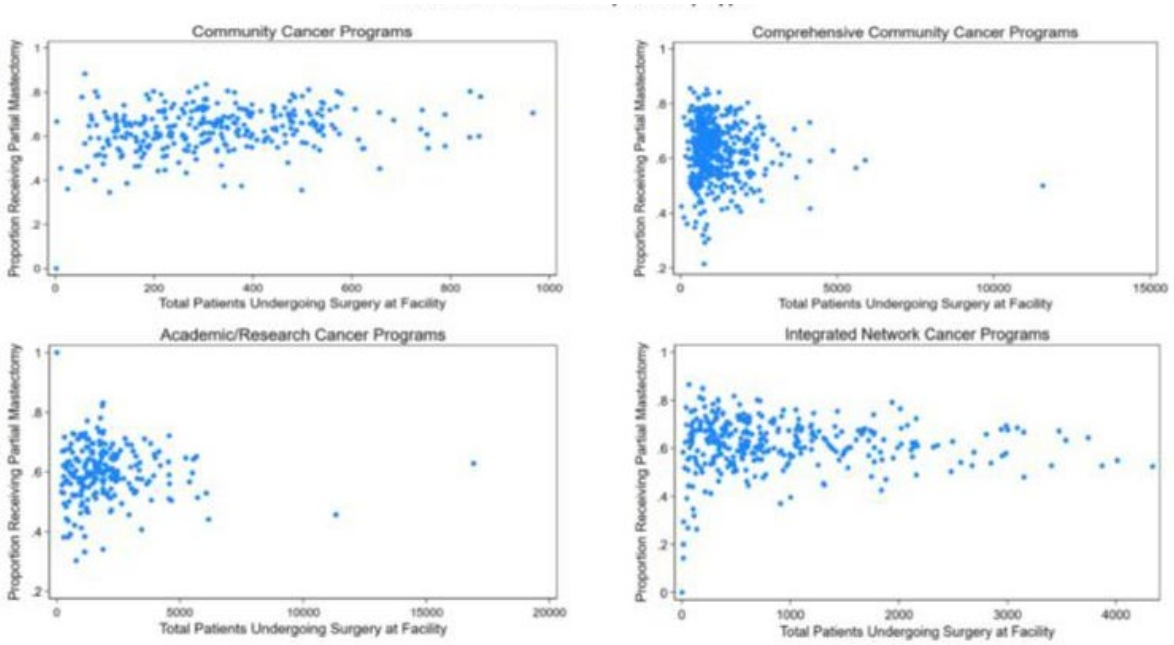
Background/Objective: Prior studies have demonstrated variation in breast cancer surgical decision making, with patient demographic, clinical, geographic, and surgeon related factors impacting rates of breast conservation. The present study aimed to assess hospital level variation in surgical management of non-metastatic breast cancer.

Methods: We conducted a retrospective cohort analysis of patients diagnosed with Stage 0 through 3 breast cancer undergoing surgery from 2012 to 2021 using the National Cancer Database. The proportion of patients treated with breast conservation versus mastectomy was compared between facility type, geographic region, and facility volume (divided into quartiles), while controlling for demographic and clinical variables. Among those having a mastectomy, we also considered the proportion of patients undergoing bilateral compared to unilateral mastectomy.

Results: Of the 1,324,259 patients treated with surgical management, 66.3% (949,893 patients) underwent breast conservation. When considered at an individual facility level, proportions of patients treated with breast conservation ranged from 0% to 100% (median 61.7%, IQR 55.8-67.4%, Figure). Patients treated in the Northeast were most likely to have breast conservation, and those in the South were least likely (71.1% versus 62.0%, respectively; Midwest 65.8%, West 65.4%; < 0.001). Facilities with the highest volume of breast cancer patients were most likely to have higher proportions of breast conservation, whereas those in the with the lowest volume had the lowest proportion of breast conservation (65.6% and 60.7% respectively, 64.5% in second quartile, 63.5% in third quartile; p< 0.001). Significant variation was noted in treatment facility type, with community hospitals having the highest rates of breast conservation (71.1%), compared to comprehensive community cancer centers (65.7%), integrated cancer centers (65.4%), and academic/research centers (64.5%, p< 0.001). Of those who underwent mastectomy, patients treated in the South (35.5% compared to 31.8% in the Northeast, 32.9% in the West, and 34.9% in the Midwest), higher volume centers (38.3% compared to 32.6% in first quartile volume centers, 37.5% in second quartile volume centers, and 36.6% in third quartile volume centers), and in integrated cancer centers (36.6% compared to 28.3% in community cancer centers, 31.9% in academic cancer centers, and 35.8% in comprehensive community cancer centers) were more likely to undergo bilateral mastectomy (p< 0.001). In multivariate analyses, facility type, geographic region, and higher facility volume remained significant predictors of increased rates of breast conservation despite controlling for factors such as clinical stage.

Conclusions: Significant variation exists in surgical management of non-metastatic breast cancer with regards to rates of breast conservation, unilateral mastectomy, and bilateral mastectomy. Given variation at the local and geographic level, practice patterns may be driven by hospital level factors such as hospital level care coordination, tumor board discussions, and individual practice approaches.

Figure 1: Hospital Level Variation in Surgical Decision Making: Proportion of Patients Undergoing Breast Conservation by Facility Type



1988020 - A Cohort Study of Pregnancy-Associated Breast Cancer: Presentation, Treatment and Outcomes of Breast Cancer During Pregnancy or Postpartum Period

Jessica Bilz[1], Ashley Quinn[2], Malcom Su[1], Ang Gao[1], Poorni Manohar[1], Shruti Zaveri[2], Stephanie Serres[2], Anthony Froix[2], Rachel Wooldridge[2], Deborah Farr[2], Ann Marilyn Leitch[2]

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Background/Objective: Pregnancy-associated breast cancer is general term for breast cancer diagnosed during pregnancy, after delivery or during breastfeeding. While rare, it is the most common malignancy during pregnancy. We aimed to characterize presentation, treatment, and outcomes of pregnancy-related breast cancer (during pregnancy) (PrBC) versus postpartum breast cancer (PPBC) at a university medical center and affiliated safety-net hospital.

Methods: We queried our institutional electronic medical record for patients diagnosed with PrBC and up to two years after delivery (PPBC) between January 2007 and August 2024. The cohorts were compared by their clinical and histologic characteristics, stage, treatment, and outcomes. Further subset analyses were completed to compare outcomes between the university and safety-net hospital.

Results: 50 patients with PABC were identified; 30 PrBC patients and 20 PPBC patients. Patients with PPBC were older at presentation than PrBC patients (37 vs. 34, p=0.028). No difference in race was observed between pregnancy cohorts, but a larger Hispanic population was seen at the safety-net hospital (61.11% vs 3.13%, p< 0.001). There were no differences in the stage at presentation (p=0.47), grade (p=1.00) or receptor status (p=0.83) among the two pregnancy cohorts. The majority were hormone receptor positive, HER2 negative (n=21,43.75%). 64% of PrBC patients were node positive compared to 36.8% in the PPBC group. Distant metastatic disease was seen in 16.7% of the PrBC group and 5% of the PPBC group. Both pregnancy cohort groups had similar surgical management; mastectomy 63.0% and sentinel lymph node biopsy 64.4%. Only 27.78% of PrBC patients had a complete pathologic response (pCR) after neoadjuvant chemotherapy (NAC) compared to 57.14% in the PPBC group. PrBC patients at the safety-net hospital presented with larger tumors, higher grade, and more aggressive receptor status (p< 0.001, p=0.03, p=0.02) compared to the university hospital. There was no difference in receipt of chemotherapy, radiation or immunotherapy in the PrBC group between the two centers (p=0.49, p=0.96, p=0.82). PrBC patients at the safety-net hospital more often received hormone therapy compared to the university hospital (76.9% vs.31.25, p=0.01). Regarding sequencing of treatment, 62.50% of the PrBC patients received (NAC) ± surgery before delivery followed by further therapy postpartum, as most patients (53.3%), presented in the first trimester. However, 50% of the safety-net hospital patients did not initiate cancer treatment until after delivery compared to 2% in the university hospital. Overall, pregnancies resulted in 36.7% premature births, 46.7% full–term births, and 16.7% spontaneous abortion or terminations. There was no difference in overall survival or disease-free survival between pregnancy cohorts or treatment centers at 5-year follow-up.

Conclusions: Despite similar oncologic outcomes in these relatively small cohorts, the PrBC cohort represents a more challenging group with required differences in sequence of treatment modalities. The PrBC group presented with more regional and distant metastasis compared to the PPBC group and higher than national averages of 25% and 6%, respectively. PrBC with local disease had lower 5-year survival than national 86 versus 99%. These data indicate the continued challenge of early detection in both cohorts and need for more effective systemic treatment in the PrBC cohort.

Table 1: Pregnancy Cohort Characteristics

Variable	PrBC (N=30)	PPBC (N=20)	All (N=50)	P-Value
Age at Diagnosis(N=50)	34.067±4.675	37.150±4.804	35.300±4.921	0.028
Race			N=50	0.461
1-WHITE(N=21)	10(33.33%)	11(55.00%)	21(42.00%)	
2-BLACK(N=12)	8(26.67%)	4(20.00%)	12(24.00%)	
3-ASIAN(N=5)	3(10.00%)	2(10.00%)	5(10.00%)	
4-HISPANIC(N=12)	9(30.00%)	3(15.00%)	12(24.00%)	
T Stage (clinical)			N=49	0.072
cT1(N=8)	3(10.00%)	5(26.32%)	8(16.33%)	
cT2(N=21)	13(43.33%)	8(42.11%)	21(42.86%)	
cT3(N=11)	10(33.33%)	1(5.26%)	11(22.45%)	
cT4(N=3)	2(6.67%)	1(5.26%)	3(6.12%)	
cTIS(N=6)	2(6.67%)	4(21.05%)	6(12.24%)	
N Stage (clinical)			N=49	0.204
cN0(N=23)	11(36.67%)	12(63.16%)	23(46.94%)	
cN1(N=22)	15(50.00%)	7(36.84%)	22(44.90%)	
cN2(N=3)	3(10.00%)	0(0.00%)	3(6.12%)	
cN2A(N=1)	1(3.33%)	0(0.00%)	1(2.04%)	
Grouped Stage			N=50	0.153
ANYM1(N=6)	5(16.67%)	1(5.00%)	6(12.00%)	
T1-T4N0M0(N=22)	10(33.33%)	12(60.00%)	22(44.00%)	
T1-T4N1M0(N=22)	15(50.00%)	7(35.00%)	22(44.00%)	
Receptor Status			N=48	0.828
HR+/HER2+ (N=11)	8(26.67%)	3(16.67%)	11(22.92%)	
HR+/HER2-(N=21)	13(43.33%)	8(44.44%)	21(43.75%)	
HR-/HER2+ (N=3)	2(6.67%)	1(5.56%)	3(6.25%)	
HR-/HER2- (N=13)	7(23.33%)	6(33.33%)	13(27.08%)	
Breast Surgery			N=46	0.187
none(N=7)	6(21.43%)	1(5.56%)	7(15.22%)	
Partial mastectomy(N=10)	4(14.29%)	6(33.33%)	10(21.74%)	
Total mastectomy(N=29)	18(64.29%)	11(61.11%)	29(63.04%)	
Axillary Surgery			N=45	0.369
none(N=7)	6(22.22%)	1(5.56%)	7(15.56%)	
SLNBx(N=29)	16(59.26%)	13(72.22%)	29(64.44%)	
ALND (N=9)	5(18.52%)	4(22.22%)	9(20.00%)	
Radiation			N=50	0.907
none (N=22)	13(43.33%)	9(45.00%)	22(44.00%)	
received (N=28)	17(56.67%)	11(55.00%)	28(56.00%)	
Chemotherapy			N=50	0.047
none (N=8)	2(6.67%)	6(30.00%)	8(16.00%)	
received(N=42)	28(93.33%)	14(70.00%)	42(84.00%)	
Hormone Therapy			N=48	0.768
none (N=24)	14(48.28%)	10(52.63%)	24(50.00%)	
received (N=24)	15(51.72%)	9(47.37%)	24(50.00%)	
immunotherapy			N=46	1.000
none (N=24)	13(50.00%)	11(55.00%)	24(52.17%)	
received (N=22)	13(50.00%)	9(45.00%)	22(47.83%)	
Response to NAC			N=25	0.297
partial(N=9)	8(44.44%)	1(14.29%)	9(36.00%)	
complete(N=9)	5(27.78%)	4(57.14%)	9(36.00%)	
none(N=7)	5(27.78%)	2(28.57%)	7(28.00%)	
Trimester presented			N=30	
1(N=16)	16(53.33%)	0(0%)	16(53.33%)	
2(N=9)	9(30.00%)	0(0%)	9(30.00%)	
3(N=5)	5(16.67%)	0(0%)	5(16.67%)	
Obstetric outcome			N=30	
Pre-term (N=11)	11(36.67%)	0(0%)	11(36.67%)	
Spontaneous Abortion(N=3)	3(10.00%)	0(0%)	3(10.00%)	
Full Term (N=14)	14(46.67%)	0(0%)	14(46.67%)	
Terminated (N=2)	2(6.67%)	0(0%)	2(6.67%)	

1988122 - The Association Between Fertility Treatments and Development of Breast Cancer

Heather Fennell[1], Jesse Casaubon[2]

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Background/Objective: The increased risk of breast cancer (BC) with exogenous hormone use, such as hormonal contraceptives and hormone replacement therapy, is well studied. Hormone based fertility treatments are another source of exogenous hormones. Despite its use since the 1970s, little is known about the risk of BC associated with fertility treatments. A meta-analysis by Cullinane suggested no increased risk of BC with fertility treatments; however, this study excluded high-risk patients from review. Our study aims to assess the risk of BC after fertility treatment use in high-risk patients.

Methods: A retrospective cohort analysis of 691 patients from a single institution's High-Risk Clinic (HRC) from January 2013 to December 2021 was performed. High-risk patients were defined as those with 20% or greater life-time risk of developing breast cancer as predicted by the Tyrer-Cuzick Model. Patients with a diagnosis of BC prior to high-risk clinic consult were excluded. Exposure to fertility treatments was determined from history documentation and was not limited to the dates of HRC consultation. Statistical analyses were performed using T-test and Fisher exact test for continuous and categorical variables, respectively. Data was recorded in REDCap. This protocol was approved by the Institutional Review Board.

Results: 691 patients were evaluated and 126 excluded for BC prior to establishment with HRC or missing data leaving 565. The reason for HRC referral was family history of cancer (67.6%), personal diagnosis of genetic mutation (1.3%), personal history of atypical breast lesion (19.5%), or a combination (11.6%). The mean Tyrer-Cuzick score was 22.6 in both FT and non-FT patients. 9.5% of HRC patients utilized fertility treatments (FT) and 90.5% did not (non-FT). None of the FT patients developed breast cancer (mean follow-up 81.5 months). 19 patients (3.7%) of non-FT developed breast cancer. Six FT developed atypia (3 ADH and 3 LCIS). This was clinically lower than the rate of atypia in the HRC patients who did not undergo fertility treatments (non-FT) though not statistically significant ($p=1.0$). Pregnancy was reported in 92.6% of non-FT patients and 74.9% of FT patients. The mean number of pregnancies among the non-FT patients and the FT patients was 2.96 and 2.69, respectively. FT patients had a median age of first pregnancy of 30, while the median age of non-FT patients at first pregnancy was 26 ($p< 0.001$). Therefore, age at first birth and number of pregnancies did not seem to influence BC development.

Conclusions: Fertility treatments were not associated with the rate of BC or atypia in high-risk patients. Despite these patients having slightly different BC risk factors, they do not appear to have an increased rate of cancer diagnosis. More granular data including type fertility treatments used and duration would bolster the results in future study.

1987899 - The Obesity Paradox: can obesity improve breast cancer outcomes?

Andrew Francis, Mallika Datta, Matthew Ambrosio, Kandace McGuire

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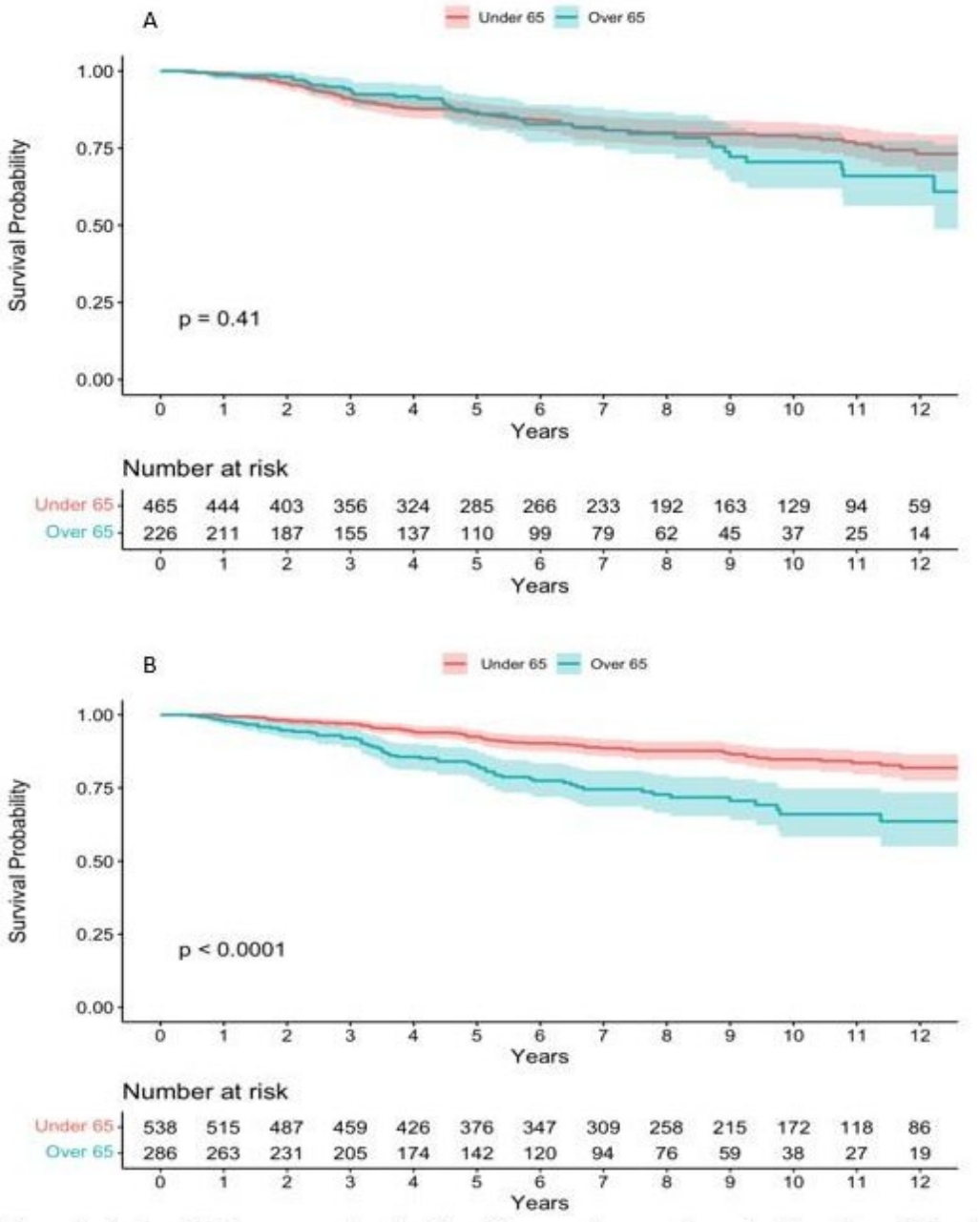
Background/Objective: Obesity is an important risk factor for the development of breast cancer. Moreover, it is associated with higher rates of mortality, disease recurrence, and treatment-related complications. Recent studies have indicated that specific subsets of obese breast cancer patients may experience better outcomes, particularly those with specific breast cancer phenotypes. This phenomenon has been referred to as the "obesity paradox" and has been observed in various other cancers. We aim to further investigate this concept by assessing the survival differences between obese and nonobese breast cancer patients. We will also explore whether breast cancer phenotype or advanced age influences the outcomes for these groups.

Methods: We conducted a single-institution retrospective review of patients aged ≥18 diagnosed with invasive breast cancer between 2009-2023. Patients with metastatic disease were excluded. Obesity was categorized according to the WHO definition, with a BMI greater than 30.0 kg/m² categorized as obese. Our primary outcomes were overall survival (OS) and recurrence-free survival (RFS), compared between obese and nonobese patients. We analyzed demographic and clinicopathological characteristics using Pearson's Chi-squared test and the Welch Two Sample t-test. Kaplan-Meier estimates and the log-rank test were used to evaluate OS and RFS. We also conducted subgroup analyses based on breast cancer subtypes (Luminal A, Luminal B, HER2-enriched, Triple-positive, and Triple-negative) and advanced age (over 65 years).

Results: We identified 1,515 patients meeting our selection criteria, with 691 (45.6%) classified as obese. While obese patients were more likely to have grade 3 tumor histology (36.3% vs. 28.5%), all other demographic and clinicopathologic characteristics were similar across groups. There were no significant differences in OS or RFS between the groups, though obese patients showed a trend toward decreased overall survival ($p = 0.075$). Among obese patients, those with Triple-positive disease had an higher 10-year OS and RFS rates compared to other phenotypes, a trend not seen in nonobese patients. Notably, obesity had a positive effect on older patients, with no significant differences in OS ($p = 0.41$) or RFS ($p = 0.82$) for obese individuals. In contrast, significant differences were found in OS ($p < 0.001$) and RFS ($p < 0.001$) among nonobese patients.

Conclusions: The obesity paradox is an emerging phenomenon in cancer patients, particularly in early and locally advanced breast cancer, where the relationship between obesity and outcomes is complex. While obese patients generally face worse overall survival, it appears to have a protective effect on patients with advanced age. Additionally, obese patients with Triple-positive breast cancer often perform better than nonobese counterparts. Further research on factors such as body composition is needed to better understand these relationships.

Figure 1: Kaplan-Meier curves showing the difference in overall survival for obese (A) and nonobese patients stratified according to advanced age.



1988806 - A novel nomogram to predict mortality risk for Invasive Lobular Carcinoma with High Nodal Tumor Burden

Anna Beck, Ashley Woodfin, Nicci Owusu-Brackett, Laura Bozzuto, Meeghan Lautner, Heather Neuman, Lee Wilke

University of Wisconsin, Madison, WI

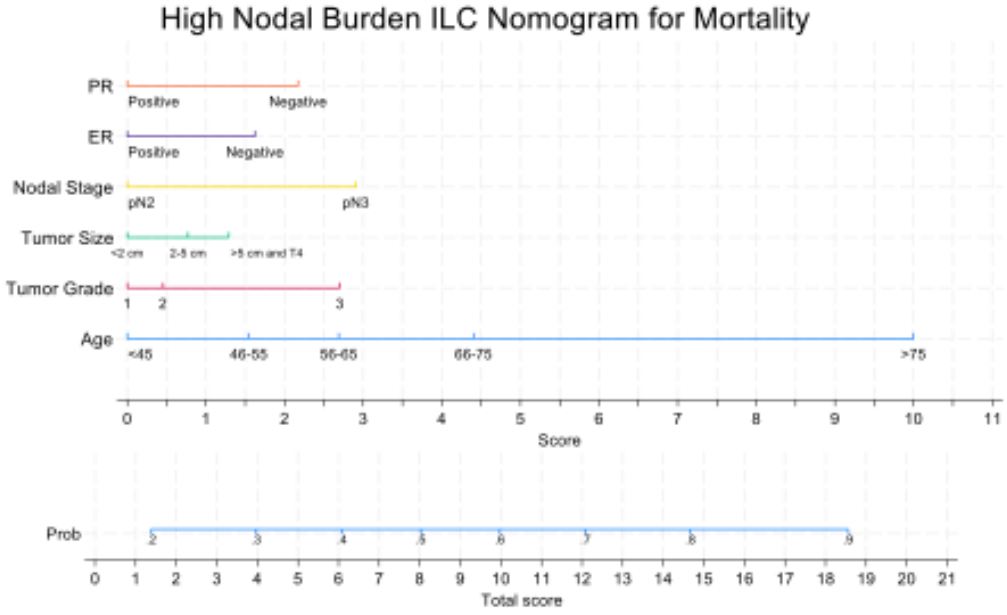
Background/Objective: Invasive lobular carcinoma (ILC) is classically hormone receptor positive and thought to be less responsive to chemotherapy. However, for patients with ILC who present with significant nodal disease, chemotherapy remains the standard of care. We therefore sought to identify clinical characteristics in patients with ILC and high nodal burden of disease that are associated with overall survival and could be utilized to evaluate adjuvant therapy impact.

Methods: The National Cancer Database (NCDB) was queried for all female patients with invasive lobular carcinoma with pN2 (4-9 positive lymph nodes) and pN3 (>9 positive lymph nodes) without metastatic disease from 2004-2017 . A univariate logistic regression for overall survival was performed with clinical variables within the entire cohort. Statistical significance was defined with alpha set at 0.05. Clinical and pathologic variables significant with p value < 0.001 on univariate logistic regression were selected. Only patients with Estrogen (ER) and/or Progesterone Receptor (PR) positive, HER2 negative ILC without any missing significant variables were then utilized to develop a nomogram to predict risk of mortality at any point during follow up using the nomolog program in Stata/SE 18.0. The final model was developed with a priori selected clinical and pathologic variables utilizing 90% of patients as the training cohort. Internal validation was performed with the remaining 10% of patients.

Results: Within NCDB, 11,519 patients with ILC and pN2 or pN3 disease were identified of whom 4682 (40.6%) had died at last follow up. Mean age was 61.7 (SD 11.6). Over half of patients had pT1 or pT2 disease (54.3%); 57.5% had pN2 disease and 42.5% had pN3 disease. 53.2% were ER and/or PR+ HER2 negative and were utilized for the nomogram development. Higher age, tumor grade, race, pT stage, pN stage, negative ER and PR status were all significantly associated with increased risk of death on univariate analysis ($p< 0.05$) while receipt of chemotherapy and endocrine therapy were protective ($p< 0.001$). Utilizing the selected patients who were ER and/or PR positive and HER2 negative without missing data (n=8025), the nomogram was developed in the training cohort (n=7222) (Figure 1) with AUC of 0.70 for overall survival and 0.62 in the validation cohort (n=803). Specifically in patients who did not receive chemotherapy, when the developed nomogram was used to predict overall survival, AUC was 0.69 in the training cohort (n=1449) and 0.69 in the validation cohort (n=104).

Conclusions: In patients with ER and/or PR+ HER2 negative ILC and high nodal tumor burden, clinical and pathologic features are significantly associated with overall survival and can be captured utilizing the developed nomogram in this present study. External validation as well as evaluating additional treatment related variables will be next steps in further nomogram development and implementation.

Figure 1. Nomogram for risk of mortality in ER and/or PR+ HER2 negative ILC with High Nodal Disease Burden



1987892 - Low Incidence of Tumor Upstaging with a Surgery First Strategy for Clinical T1N0 HER2+ or Triple Negative Breast Cancer

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Background/Objective: Advantages of a surgery first (SF) approach in clinical T1N0 triple negative (TN) or HER2+ breast cancer include providing pathologic information and staging that may alter subsequent treatment, whereas a neoadjuvant chemotherapy (NAC) approach can provide information about response to treatment that would be lost with SF. The primary aims of this study are to determine if upfront surgery for clinical T1N0 TN and HER2+ breast cancer leads to unanticipated upstaging adjuvant treatments compared to a NAC based strategy, and to determine the incidence of pathologic upstaging with a SF strategy.

Methods: Retrospective chart review of a prospectively maintained single health system's breast surgery database was performed on all patients aged 18-80 with clinical T1N0 TN or HER2+ breast cancer between 2018-2020. Exclusion criteria included patients not eligible for surgery or chemotherapy based on medical comorbidities and use of neoadjuvant endocrine therapy only. Pathologic upstaging with SF was defined as conversion to pathologic tumor size > 2 cm and/or pathologic axillary node involvement. Statistical analysis was performed using Wilcoxon rank sum test, Fisher's exact test, and Pearson's Chi-squared test.

Results: 148 patients met inclusion criteria. 65 patients (44%) had TN and 81 (54%) were HER2+. Of these, the majority underwent SF (110; 74%) vs NAC (38; 26%). In comparison to patients who underwent SF, the NAC cohort was younger and had larger tumors (See Table 1). More patients underwent lumpectomy in the SF cohort compared to the NAC cohort (N=73; 66% vs N=19; 50%) . Two (2%) patients in the SF cohort were pathologically upstaged with the discovery of axillary node metastasis. Both underwent lumpectomy with sentinel lymph node biopsy, one each with HER2+ and TN breast cancer. Neither patient required regional nodal irradiation (RNI), axillary lymph node dissection (ALND), or additional adjuvant therapies based on these findings. Of the SF group, no patient received ALND or RNI, while one ALND and RNI were performed in the NAC cohort (p=ns).

Conclusions: While an SF approach loses information regarding response to treatment, the incidence of tumor upstaging with SF for clinical T1N0 HER2+ or TN breast cancer is low and is unlikely to lead to more extensive surgery or changes in adjuvant therapy, while also confirming clinical stage. Future aims are to expand our dataset to confirm these findings.

Table 1. Oncologic Characteristics and Clinical Outcomes by Management Strategy of Clinical T1N0 HER2+/Triple Negative Breast Cancer

	Neoadjuvant Chemotherapy	Surgery First	*p*
	N=38 (25.7%)	N=110 (74.3%)	
Median Age at Surgery (y)	53	58	0.009
Age Range at Surgery	31-76	33-82	
Cancer Subtype			
Invasive Ductal Carcinoma	38(100%)	106 (96%)	0.573
HER2+	19 (50%)	62 (56%)	0.41
Triple Negative	19 (50%)	47 (43%)	0.711
Median Initial Tumor Size (mm)	12	7.5	0.07
Surgery First and Upstaged			
T > 2 cm	-	0	
N1mi/N1	-	2 (1.8%)	
Lumpectomy	19 (50%)	73 (66%)	0.051
Mastectomy	19 (50%)	36 (33%)	0.075
Sentinel Lymph Node Biopsy	37 (95%)	107 (97%)	0.606
Axillary Lymph Node Dissection	1 (2.6%)	0 (0%)	0.262
Regional Nodal Irradiation	1 (2.6%)	0 (0%)	0.262

Table 1. Oncologic Characteristics and Clinical Outcomes by Management Strategy of Clinical T1N0 HER2+/Triple Negative Breast Cancer

1987730 - Automating the Segmentation, Date Extraction, and Classification of Multi-Report PDFs in Breast Surgery Outside Medical Records Using Generative AI

Shivam Damani[1], Ben Hinton[1], Tanner Hunt[1], Nick Lawrence[1], Kurt Miller[1], Mindy Rice[1], Kevin Peterson[1], Alexander Ryu[1], Sarah McLaughlin[2]

[1]Mayo Clinic, Rochester, MN, [2]Mayo Clinic, Jacksonville, FL

Background/Objective: Background: Many breast cancer patients undergo initial diagnosis and work up at imaging centers separate from hospital systems where they will receive comprehensive multidisciplinary treatment. To avoid repeat testing, hospital systems must gather patients' outside medical records (OMRs). These OMRs often arrive as multi-report PDFs containing diverse and unsorted documents including imaging and clinicopathologic data. This disorganized format creates a complicated review process and requires time-consuming, mentally taxing effort to locate relevant information. The inefficient workflow increases the risk of delayed care and adds to provider frustration, as clinicians must sift through disorganized content to extract necessary details for patient management. Objective: We sought to automate the segmentation of multi-report PDFs, extract relevant document dates, and classify individual documents by type: such as imaging reports, pathology findings, and clinical notes, specific to breast cancer care. This automated approach seeks to streamline the review process, reduce the time required for manual review, and improve provider satisfaction, ultimately enhancing patient care delivery.

Methods: Methods: Optical Character Recognition (OCR) was used to extract text from each page of the OMR PDFs. The extracted text was processed using the Gemini 1.5 generative AI model to segment PDFs into individual, categorized reports, extract relevant dates, and classify documents by type (e.g., mammograms, pathology reports, clinical notes). The dataset used for this project consisted of 1,303 PDF documents, each containing varying report types and document lengths, providing a diverse sample for evaluating segmentation, date extraction, and classification accuracy.

Results: Results: The automated solution demonstrated high accuracy in segmenting breast health–related reports and classifying documents into relevant categories, meeting clinical expectations for efficiency and precision. Date extraction reliably captured key timelines, like pathology result dates, ensuring that time-sensitive information is readily accessible. Among 45 medical records reviewed by initial pilot users, only 2 classification errors and 1 dating error were observed, indicating a high level of accuracy for generative AI features. Providers reported that the streamlined process reduced the time needed to review OMRs, increased satisfaction, and improved workflow efficiency by making crucial patient information more accessible. Our internal review corroborated these findings, noting an overall accuracy rate of 90–95% for document segmentation, classification, and date extraction (Table 1).

Conclusions: Conclusion: This enhanced OMR processing solution addresses the challenges of handling unstructured, multi-report PDFs in breast cancer care. By combining OCR with the Gemini 1.5 generative AI model, the project demonstrates that AI tools can effectively support document segmentation, date extraction, and classification without the need for extensive fine-tuning. This automation reduces manual effort and alleviates the cognitive burden associated with manually sorting and reviewing complex records, improving both workflow efficiency and provider satisfaction. By ensuring that critical patient information is well-organized and readily accessible, the solution

enhances the quality of care. Future integration with large language models for summarization could further optimize document management and care delivery.

Table 1: Results of Segmentation and Classification Accuracy

Task	F1 Score
Document Splitting	0.95
Document Categorization	0.96
Date Extraction (+/- 3 days)	0.90

1988493 - Religious Affiliation, Surgical Choice, and Adjuvant Therapy Compliance in Women with Early-Stage Breast Cancer

Lauren Kerivan[1], McKenna Coatney[2], Jamie Wagner[3], Christa Balanoff[3], Elizabeth Jeffers[3], Lyndsey Kilgore[3], Julie Broski[4], Kelsey Larson[3]

[1]University of Kansas Medical Center, Rochester, MN, [2]Kansas City University - College of Osteopathic Medicine, Kansas City, KS, [3]University of Kansas Cancer Center, Overland Park, KS, [4]University of Kansas Medical Center, Kansas City, KS

Background/Objective: While religion and spirituality have been shown to play an important role in illness adjustment, coping, and quality of life for patients with breast cancer, the effect of a patient's religious affiliation on both surgical choice and adjuvant treatment adherence has not been evaluated. The aim of this study was to determine the association between religious affiliation and breast cancer surgery selection (breast conservation versus mastectomy) and compliance with adjuvant treatment recommendations in women with early-stage breast cancer.

Methods: This retrospective cohort study included women >18 years of age with clinical Stage 0-IIB (T0-2, N0-1, M0) breast cancer, who underwent surgical resection of the primary tumor at the University of Kansas Medical Center from January 2013 to January 2023. Patient demographics, tumor characteristics, clinical staging, operation performed, recommended adjuvant therapy (i.e. chemotherapy, radiotherapy and/or endocrine therapy) and accepted adjuvant treatment(s) were reviewed. Multivariable logistic regression was used to model the odds of acceptance of recommended breast-conserving surgery and adherence to recommended adjuvant therapy as functions of religious affiliation, as well as other sociodemographic and clinicopathologic factors.

Results: Of the 348 women included for analysis, 252 (72.4%) self-identified with a religious affiliation, while 96 (27.6 %) identified as non-religious/unaffiliated (e.g. none/secular, atheist, agnostic). In the religious group, unspecified Christianity (N=80, 23%) was most common, followed by Catholicism (N = 70, 20.1%) and Mainline Protestantism (N=41, 11.8%). Non-Christian religions (e.g., Judaism, Buddhism, Islam, and Hinduism) collectively accounted for about 0.9% of the sampled population. While all patients were eligible for breast-conserving surgery based on oncologic factors, 284 patients (81.6%) ultimately proceeded with this approach with the remaining 64 (18.4%) patients choosing to undergo mastectomy. Rates of compliance with recommended adjuvant chemotherapy, radiotherapy, and endocrine therapy at 1 year were 90.9 % (N=90/99), 96.6% (N=285/295), and 96.7% (N=294/304), respectively. While not associated with patient operative choice, religious affiliation was a positive independent predictor of overall compliance with adjuvant treatment recommendations (OR=2.44; 95% CI, 1.05-5.56; P=0.034) on multivariable analysis. Additional predictors of breast-conserving surgery selection included older age (OR=1.13; 95% CI, 1.10-1.18; P=< 0.001), low histologic grade (1 vs 3; OR=3.57; 95% CI, 3.39-3.99; P=0.008), and tumor unifocality (OR 3.01; 95% CI, 1.06-8.19; P=0.032).

Conclusions: To our knowledge, this is the first study to evaluate religious affiliation as an independent predictor of multidisciplinary treatment compliance in patients with early-stage breast cancer. The likelihood of patients accepting breast conservation is in keeping with national guidelines and is not associated with religious affiliation. Considering adjuvant therapy significantly decreases recurrence and improves survival after breast cancer surgery, researchers should continue to explore the association between religious affiliation and positive health behaviors as a route to understand and promote multidisciplinary treatment adherence.

1988296 - Comparative Evaluation of Digistain and Oncotype DX in Predicting Metastasis-Free Survival in Early-stage Hormone-Receptor Positive Breast Cancer: A Randomized Study at Charing Cross Hospital

Hemmel Amrania[1], Arnav Gautam[2], Zamzam Al-Khalili[2], Manveer Sroya[2], Charles Coombes[2], Darius Francescatti[3], Chris Phillips[2], Anthony Magliocco[4], Nick Wright[5], Louise Jones[5], Abeer Shabaan[6], Chang Yoo Young[7], Swapnil Rane[8]

[1]Digistain, Newport Pagnell, England, United Kingdom, [2]Imperial College London, London, England, United Kingdom, [3]Rush University Medical Center, Syracuse, NY, [4]University of Florida, Orlando, FL, [5]Barts Cancer Institute, London, England, United Kingdom, [6]Queen Elizabeth Hospital Birmingham, Birmingham, England, United Kingdom, [7]Catholic University, Korea St Vincent Hospital, Suwon-si, Seoul-t'ukpyolsi, Republic of Korea, [8]Tata Memorial Hospital, Mumbai, Maharashtra, India

Background/Objective: Genomic tests for risk stratification in Stage I-II, hormone receptor-positive, HER2-negative breast cancer are well-established tools for guiding adjuvant therapy decisions. Among these, Oncotype DX is the most widely adopted. Recently, Digistain, a novel risk stratification technology, has emerged as an alternative. Utilizing mid-infrared spectroscopy, Digistain measures chromosomal instability, a key indicator of tumor aggressiveness. Its reagent-free approach enables faster turnaround times and significantly reduces costs compared to genomic tests like Oncotype DX. This study evaluates the predictive accuracy of Digistain versus Oncotype DX in forecasting metastasis-free survival, aiming to determine which test offers superior sensitivity.

Methods: We conducted a double-blind study in which 233 lymph node-negative patients from Charing Cross Hospital, previously assessed with Oncotype DX, were randomly selected and re-evaluated using Digistain. The primary outcome measured was metastasis-free survival, with a median follow-up duration of six years.

Results: A comparison of risk classifications between Digistain and Oncotype DX showed alignment across all patient samples. Low-risk classification, defined as a < 10% likelihood of recurrence, included 50% of patients according to Oncotype DX and 44% according to Digistain (adjusted for missing data). Importantly, every patient identified as low-risk by Oncotype DX was also categorized as low-risk by Digistain, underscoring a high level of agreement between the two methods. Additionally, the findings suggest that Digistain may offer improved sensitivity over Oncotype DX. One patient classified as low-risk by Oncotype DX but high-risk by Digistain later developed metastatic breast cancer in < 5 years. Although based on a single case, this outcome hints at Digistain's potential for heightened sensitivity, possibly providing a more accurate assessment of metastasis risk and enhancing its value in clinical decision-making.

Conclusions: These results suggest that Digistain shows considerable promise as an alternative to Oncotype DX, offering potentially superior sensitivity in assessing metastasis risk. The alignment in identifying high-risk patients, combined with the detection of a case overlooked by Oncotype DX, emphasizes Digistain’s potential to enhance clinical decision-making. Its ability to improve risk stratification could lead to more precise, personalized treatment strategies in breast cancer care, ultimately contributing to better patient outcomes.

1988616 - Mind-Body practices for patients undergoing breast surgery: A pilot study (Mind Body Study)

Rohini Kotha[1], Ryan Tang[2], Sugriva Forsyth[1], Rahul Mhaskar[2], Veena Jajoo[2], Cindy Yeoh[1], Paige Aiello[1], Nicole Harris[1], Brian Czerniecki[1], Marie Lee[1], Susan Hoover[1], Nazanin Khakpour[1], John Kiluk[1], Melissa Mallory[1], Christine Laronga[1], Laura Kruper[1], Christine Vinci[1]

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Background/Objective: Breast cancer is the most common cancer globally, and its diagnosis and surgery often cause significant psychological distress. Mind-body interventions like meditation have shown promise in improving postoperative outcomes. This study evaluates the implementation of two meditation techniques, Nadi Shuddhi (NS) and Isha Kriya (IK), during the perioperative period in breast cancer patients. Both techniques, which focus on breath and thought, may reduce stress, anxiety, and depression. While the meditation techniques are effective in other populations, this study is the first to assess their feasibility, acceptability, and impact on psychological well-being in breast cancer surgery patients.

Methods: The Mind Body Study (MBS) is an IRB-approved prospective pilot feasibility trial involving participants 18 years or older with a detectable breast lesion (via mammogram or ultrasound) scheduled for breast surgery at our institution. After informed consent, participants completed a baseline survey on demographics, stress- the Perceived Stress Scale (PSS), and anxiety/depression- the Hospital Anxiety and Depression Scale (HADS). They participated in a Zoom session to learn NS and IK meditation techniques and practiced daily for four weeks (two weeks pre- and two weeks post-surgery). Weekly compliance surveys tracked meditation completion. PSS and HADS were reassessed preoperatively and four weeks post-surgery. Participants also completed a satisfaction survey and brief phone interview. Feasibility (recruitment, retention, measure completion, meditation engagement) and acceptability (satisfaction, skill use) were evaluated through a priori benchmarks and interviews. Data were analyzed using descriptive statistics and one-way repeated measures ANOVAs.

Results: The study is currently ongoing, and the results presented are preliminary from 25/30 participants. All participants were female, predominantly White (80%), with a mean age of 57.68 ±10.78. The majority were married or partnered (68%). Feasibility was met with 100% enrollment of eligible participants, 92% attending the Zoom session, and 64% completing all questionnaires. 71.65% of participants practiced daily meditation at least 4 days per week throughout the study. Acceptability was high, with 100% of participants finding the study satisfactory and 68.4% enjoying the meditation practices. In phone interviews, most participants reported positive experiences, with many suggesting that the meditations should be offered earlier in cancer care. The PSS score decreased significantly from baseline to preop and postop (19.47 ± 7.720 vs. 15.00 ± 6.047 vs. 15.60 ± 6.998, p=0.005). Although PSS scores were significantly reduced from baseline to preop and postop, there was a small, non-significant increase from preop to postop. The HADS scores decreased significantly from baseline to preop, but there was no significant change between baseline and postop or preop and postop (14.40 ± 7.763 vs. 9.60 ± 6.642 vs. 11.33 ± 8.415, p=0.004).

Conclusions: The study demonstrates that NS and IK are both acceptable and feasible as prehabilitation interventions for breast cancer surgery. These techniques resulted in a significant reduction in stress, anxiety, and depression prior to surgery. These findings should be confirmed in a large-scale randomized controlled trial.

Table 1: Measurable Benchmarks in MBS

Measurable Benchmarks			
Area of Interest	Description of Outcome	Measure and/or Expected Outcome	Achieved outcome
Feasibility	Enrollment	≥ 50% of eligible participants enroll	100%
	Introduction Session Attendance	≥ 70% of patients attend the first web-based meditation instruction class	92%
	Measure Completion	≥ 60% of enrolled participants complete all questionnaires	64%
	Adherence to Meditations	≥ 60% of participants perform the daily practices at least 4 days a week throughout the study.	71.65%
Acceptability	Satisfaction Survey responses	≥50% enjoy performing the practices	68.4%
		≥60% participants consider it worthwhile to participate in the study	100%
	Phone interview	Qualitative data from participants	Wish it was offered earlier, had more energy after the practices, helped with healing. Will continue to practice daily.

Figure 2: Measurable Benchmarks in MBS

Measurable Benchmarks			
Area of Interest	Description of Outcome	Measure and/or Expected Outcome	Achieved outcome
Feasibility	Enrollment	≥ 50% of eligible participants enroll	100%
	Introduction Session Attendance	≥ 70% of patients attend the first web-based meditation instruction class	92%
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	Adherence to Meditations	≥ 60% of participants perform the daily practices at least 4 days a week throughout the study.	71.65%
Acceptability	Satisfaction Survey responses	≥50% enjoy performing the practices	68.4%
		≥60% participants consider it worthwhile to participate in the study	100%
	Phone interview	Qualitative data from participants	Wish it was offered earlier, had more energy after the practices, helped with healing. Will continue to practice daily.

1988580 - Characteristics and Long-Term Outcomes of Lobular Versus Ductal Inflammatory Breast Cancer

Jennifer Chen, Salyna Meas, Vanessa Sarli, Joshua Upshaw, Wendy Woodward, Anthony Lucci

The University of Texas MD Anderson Cancer Center, Houston, TX

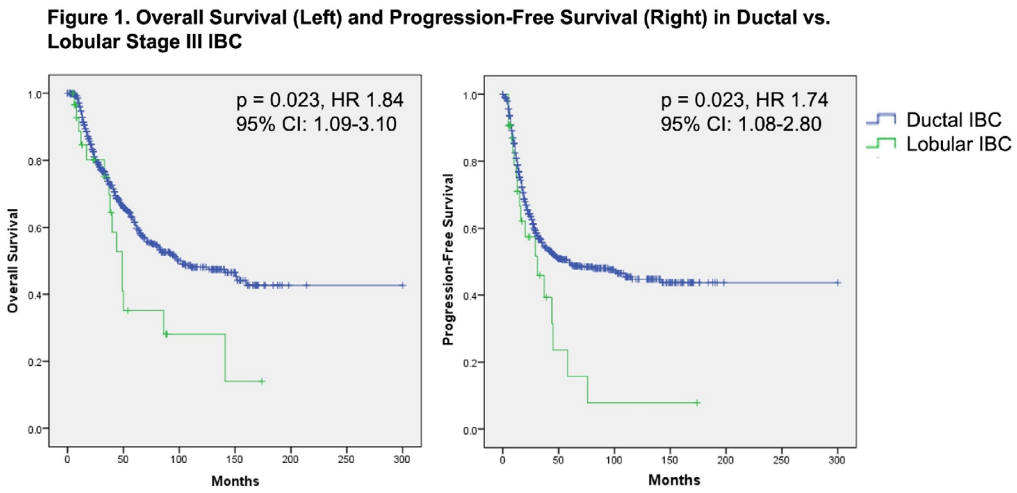
Background/Objective: While lobular invasive breast cancer has emerged as a distinct clinicopathologic entity, lobular subtype in inflammatory breast cancer (IBC) remains poorly characterized. We aimed to compare clinicopathologic features and long-term outcomes among patients with lobular versus ductal IBC.

Methods: This was a retrospective review of a single-center institutional IBC registry from 1998-2024. Chi-square and Mann-Whitney U test were used to compare differences between groups. Univariate and multivariate logistic regression and Cox proportional hazards models were fitted to identify features associated with lobular IBC and compare outcomes by histology.

Results: Of 1065 IBC patients, mean age was 50.0 (SD 12.3) and BMI was 30.8 kg/m2 (SD 7.1). Patients were 78.8% (837) Non-Hispanic White, 9.6% (102) Non-Hispanic Black, 6.4% (68) Hispanic, and 3.3% (35) Asian. 64% (682) were Stage III and 34.8% (369) Stage IV. Majority had node-positive (968, 90.9%), high grade (718, 70.7%), HR-positive/HER2-negative (334, 31.4%) or triple negative (352, 33.1%) disease. 1018 (95.6%) had ductal and 47 (4.4%) had lobular histology. Trimodality therapy rates included 97.4% neoadjuvant systemic therapy, 76.4% modified radical mastectomy, and 72.2% adjuvant radiotherapy. Compared to ductal IBC patients, those with lobular IBC were older (mean age 54.9 vs. 49.8, $p = 0.003$) with higher ER and PR positivity ($p = 0.028$ and 0.004, respectively), lower grade (grade 1-2: 57.4% vs. 26.6%, $p < 0.001$), and no lymphovascular invasion ($p = 0.028$). While clinical node status was comparable between ductal and lobular groups, lobular IBC patients were more likely to have higher pathologic nodal burden (pN3: 53.1% vs. 20.2%, $p = 0.001$) with twice as many positive lymph nodes at resection as ductal IBC patients (10.6 vs. 5.4, $p = 0.002$). Lack of LVI, lower grade, and higher pathologic nodal burden remained significantly associated with lobular histology on multivariate logistic regression. Among Stage IV patients, there were no significant differences in overall survival (OS) and progression-free survival (PFS) by histology ($p = 0.505$ and 0.767, respectively). Among Stage III patients, those with lobular IBC demonstrated significantly worse OS (HR 1.84, 95% CI: 1.09-3.10, $p = 0.023$) and worse PFS (HR 1.74, 95% CI 1.08-2.80, $p = 0.023$) compared to ductal IBC patients (Figure 1). On multivariate Cox regression controlling for age, grade, HR and HER2 receptor status, and nodal status, lobular histology was an independent predictor of poor prognosis for both Stage III and IV IBC patients.

Conclusions: In this large cohort of IBC patents, clinicopathologic features associated with lobular IBC reflect those seen in non-inflammatory invasive lobular disease. Despite its low prevalence, the significantly poor prognosis observed in lobular versus ductal IBC warrant further investigation into additional drivers of disease biology for this distinct IBC subtype.

Figure 1. Overall Survival (Left) and Progression-Free Survival (Right) in Ductal vs. Lobular Stage III IBC



1988782 - Differences in Treatment and Survival for Secondary Triple Negative Breast Cancer in Premenopausal Women

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Background/Objective: Breast cancer is the most common cancer in premenopausal women. As the number of cancer survivors living in the United States continues to rise with improvements in treatment and screening, cancer survivors are developing secondary cancers. Triple negative breast cancer (TNBC) is a more aggressive type of breast cancer that has an increased incidence in premenopausal women. Women diagnosed with a secondary TNBC, defined as a new TNBC after any prior cancer, have worse overall survival (OS) and breast cancer specific survival (BCSS) compared to those diagnosed with a primary TNBC. This is especially true for premenopausal women of Hispanic and non-Hispanic (nH) Black race/ethnicity. Primary and secondary breast cancers have distinct characteristics, but there are currently no guidelines on how to treat a secondary TNBC. Therefore, we aim to identify and differentiate the treatments used for secondary TNBC and evaluate if treatment differences are associated with survival differences.

Methods: This is a population-based, retrospective cohort study of women aged 15-50 years, diagnosed from 2003-2019 with either a primary TNBC (N= 9220) or secondary TNBC (N=682). Data was obtained from the California Cancer Registry, including abstraction of treatment text fields not routinely available for research. We compared treatments for secondary vs primary TNBC using multivariable logistic regression, with results presented as adjusted odds ratios (OR) and 95% confidence intervals (CI). We examined OS and BCSS with multivariable Cox proportional hazards regression models and results are presented as adjusted hazard ratios (HR) and CI.

Results: Of women with a secondary TNBC, 48.5% were nH-White and 31.6% were Hispanic. Anthracycline based regimens were predominantly used to treat primary TNBCs, with Adriamycin, Cytoxan, and Taxol (ACT, 47.3%) being most common. The majority of secondary TNBCs were either treated with no chemotherapy (27.3%) or a non-anthracycline based regimen, with Taxotere and Cytoxan (TC, 23.9%) being utilized most. ACT was used less frequently for secondary TNBCs (20.7%) than primary TNBCs. Women with a secondary TNBC were two-times more likely to undergo a mastectomy (vs lumpectomy) than women with a primary TNBC [OR 2.01 (CI: 1.61, 2.50)]. Women with a secondary TNBC were also less likely to receive neoadjuvant (vs adjuvant) chemotherapy [OR 0.61 (CI: 0.49, 0.77)]. Women with secondary TNBC had worse OS if treated with no chemotherapy or TC (vs ACT), but had no difference in BCSS by treatment type than women with primary TNBC. Hispanic and nH-White women with secondary TNBC had worse OS [HR 1.81 (CI: 1.37, 2.39); HR 1.30 (CI: 1.02, 1.66)] and BCSS [HR 1.99 (CI: 1.52, 2.61); 1.32 (CI: 1.32, 1.68)], than women with primary TNBC; however, this survival difference was not seen in nH-Black or Asian women with secondary TNBC.

Conclusions: Differences in treatment for secondary TNBC, specifically the use of no chemotherapy or the use of non-anthracycline based chemotherapy regimens, may be associated with worse OS. Our findings suggest the need for further exploration into the decisions about the use of chemotherapy, such as the consideration for chemotherapy at earlier stage disease, as this may have implications on OS.

1988896 - Real-world application of ACOSOG Z11102: how many patients can be spared mastectomy?

Frances Phang[1], Anna Weiss[2], Brian Finkelman[2], Jessica Gooch[2], Bradley Turner[2], Ann Olzinski-Kunze[2], Kristin Skinner[2], Daniel Kim[2], Kimberly Gergelis[2], Fabiola Pierre[2]

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Background/Objective: Alliance ACOSOG Z11102 demonstrated multiple lumpectomies with adjuvant radiation is safe for multiple ipsilateral cancers (MIBC). The margin positivity and conversion to mastectomy rates were 32% and 7%, respectively. The aim of this study is to evaluate the applicability of this trial in practice. We performed a single institution review of patients with MIBC to determine candidacy for breast-conserving surgery (BCS) using the inclusion criteria for Z11102, rates of re-excision and conversion to mastectomy in real-world data, and the intervening breast tissue between tumors.

Methods: We performed a chart review of hormone receptor-positive MIBC within our institutional database between 11/2010 and 04/2023. The following characteristics were collected and analyzed: number and size of foci, clinical stage and surgery type. Surgical specimen slides were re-reviewed by two pathologists to assess distance between foci and presence of the following pathology within intervening tissue: ductal carcinoma in situ (DCIS), atypical ductal hyperplasia (ADH), atypical lobular hyperplasia (ALH), lobular carcinoma in situ (LCIS) and flat epithelial atypia (FEA).

Results: There were a total of 158 MIBC patients who met study criteria. The median number of foci was 2 (1 - 5). The median size of the largest foci was 1.8cm (0.4 -15). The most common clinical stage was 1 (67%). There were 87 patients treated initially with mastectomy and 71 with BCS. Of 71 BCS patients, 32 (45%) underwent re-excision and/or conversion to mastectomy. 11/32 (34%) had successful re-excisions while 21/32 (66%) underwent mastectomy. Successful BCS rate was 50/71 (70%); and conversion to mastectomy rate was 21/71 (30%). Applying the ACOSOG Z11102 criteria, 40 of 87 (46%) patients who underwent mastectomy would have been eligible for BCS. We then compiled a representative sample of 35 patients by random selection. In this group, the median number of foci was 2 (1-5) and median size of largest foci was 1.7 cm (0.7 - 11.5). The average distance between foci was 2.3 cm (0.4-10.5). There were 24 patients treated initially with mastectomy and 11 with BCS. Of 11 BCS patients, 8 (73%) underwent re-excision and/or conversion to mastectomy. 2/8 (25%) had successful re-excisions while 6/8 (75%) underwent mastectomy. Successful BCS rate was 5/11 (45%), and conversion to mastectomy rate was 6/11 (55%). On review of the intervening tissue, 13 (37%) had no pathologic findings, 17 (48%) DCIS, 3 (8%) ALH, 1 (2.8%) ADH, 1 (2.8%) LCIS and 1 (2.8%) additional carcinoma. Factoring in these intervening findings, among the subset reviewed by pathology, 11 of 24 (45%) who underwent mastectomy could have been appropriate BCS candidates.

Conclusions: We found that 45% of patients with MIBC could have received multiple lumpectomies as their initial surgery instead of mastectomy, including when intervening tissue was examined for pathology that may warrant excision. The impact of ACOSOG Z11102 is significant and allows many more patients to avoid the burden of mastectomy; however, patient selection is critical for successful BCS as re-excision and mastectomy conversion rates may be higher in real-world practice than the clinical trial setting.

1990063 - Utilization of tumor specific circulating DNA to detect recurrence in breast cancer patients

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Background/Objective: Despite recent advances in breast cancer treatment many patients treated with curative intent will develop metastatic disease. National guidelines, NCCN, recommends similar surveillance guidelines for Stage I-III breast cancer patients including periodic clinical exams and mammography. Recent studies have reported on the success of utilizing circulating tumor DNA (ctDNA) in the surveillance setting in multiple solid tumor types to identify early recurrence prior to imaging or symptom presentation. This study reviews our experience utilizing tumor specific circulating tumor DNA in the surveillance setting of breast cancer patients. The intent of this study is to investigate the utilization of tumor specific ctDNA as an important addition to surveillance monitoring.

Methods: After IRB approval a retrospective chart review was performed of breast cancer patients who had primary treatment at our cancer center. Patients who had blood draws for tumor specific ctDNA after surgery for curative intent were identified. Patients then underwent routine clinical follow-up and mammography per guidelines. They also had serial ctDNA blood draws. Patients were excluded if they had metastatic disease prior to their surgery or if they had not had at least two resulting lab draws post-surgery. Patients were monitored to assess for evidence of disease recurrence. Elevation of ctDNA or presentation of symptoms prompted additional radiographic work-up to evaluate for metastatic disease.

Results: From August 2021 to October 2024, 226 breast cancer patients' charts were reviewed, and 132 patients were eligible for the study. Of these 111 patients (84%) had non-detectable ctDNA and had no evidence of disease based on clinical exam or mammogram and remain disease free. Nineteen patients (14%) had a positive ctDNA during their follow up surveillance. These patients underwent physical exam and additional radiographic workup with PET scan or whole-body CT scan. Fifteen (79%) of the positive ctDNA patients had evidence of disease recurrence on additional work up. Four patients had detectable ctDNA but no evidence of radiographic or clinical evidence of progression and are under close surveillance. Two patients had non-detectable ctDNA but were found to have recurrence on clinical exam or radiographic exam. There were a total of 17/132 (13%) patients who developed tumor recurrence during the study period. Of the patients who developed recurrence the first indicator of recurrence was an elevated ctDNA in 15/17 (88%) and only 2/17 were detected on clinical exam or mammography. One patient was noncompliant and had not had ctDNA drawn for > 1 year prior to clinical recurrence. CtDNA was 88.2 % sensitive and 96.5% specific when utilized for detecting recurrence.

Conclusions: Early detection of recurrent disease allows for early therapeutic intervention and improvement in disease free survival. This study investigates the utilization of tumor specific ctDNA in a follow up setting for breast cancer patients and its utility in detecting recurrent disease. CtDNA was the first indicator of tumor

1956779 - Collaborative Intelligence: Assessing the Role of Advanced Artificial Intelligence in Decision-Making Support and Agreement for Breast Cancer Tumor Boards

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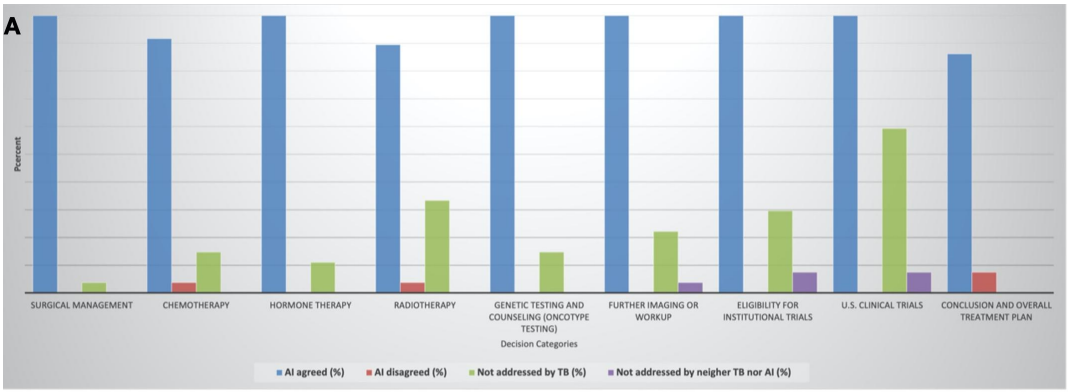
Background/Objective: Artificial intelligence (AI), particularly large language models (LLMs), have shown promise as a clinical decision support tool in structured medical scenarios. Studies have shown ChatGPT's capability in passing the ABSITE exam, assisting in tumor board (TB) decisions for head and neck cancers, simplifying imaging reports, and assisting with breast imaging decisions. However, despite these promising capabilities, its application in more complex scenarios such as breast TB, where additional collaborative decision making is required, remains unexplored. The study aims to compare the recommendations provided by ChatGPT-4 with those made by the multidisciplinary TB, analyzing agreement rates and identifying any potential benefits or pitfalls of integrating AI into clinical decision-making.

Methods: We conducted a prospective evaluation of 27 breast cancer patients who were discussed at a randomly TB conference at our institution. Patient data were anonymized and collected by an uninvolved individual to ensure objectivity before being entered into ChatGPT-4 (Fig 1-B) AI generated recommendations in nine key treatment categories: surgical management, chemotherapy, hormone therapy, radiotherapy, genetic testing, further imaging, clinical trial eligibility, and overall treatment plans. An independent breast surgeon, uninvolved in TB discussions, rated agreement levels between AI and TB recommendations. We also assessed the potential added value of AI in areas not addressed by TB.

Results: Among the 27 patients (26 female, 1 male, average age 60.4 ± 13.1 years, average tumor size 2.1 ± 1.7 cm), postoperative assessments upgraded the stage in 4 cases. High agreement rates were seen in surgical management (26 out of 26, 100%), hormone therapy (24 out of 24, 100%), genetic testing (23 out of 23, 100%), institutional trial eligibility (17 out of 17, 100%) and US trial eligibility (9 out of 9, 100%). Chemotherapy agreement reached 95.7% (22 out of 23), radiotherapy 94.4% (17 out of 18), and overall treatment plans 92.6% (25 out of 27) (Fig 1.A). Discrepancies arose in two cases: one in chemotherapy, where a 49-year-old with hormone-positive invasive ductal carcinoma had residual disease < 1 mm post-neoadjuvant treatment; AI did not suggest additional chemotherapy, contrasting with TB's recommendation. In radiotherapy, AI omitted a recommendation for a 76-year-old male with encapsulated papillary carcinoma and invasive ductal carcinoma, diverging from TB's recommendation due to male breast cancer treatment debates. AI provided recommendations in categories not addressed by TB, including radiotherapy (33.3%), U.S. clinical trials (59.3%), and further imaging requirement (22.2%), indicating its utility in supplementing TB discussions.

Conclusions: This study demonstrates substantial agreement between AI recommendations and TB decisions in breast cancer management, particularly in surgical management, hormone therapy, genetic counseling, further testing, and trial eligibility. Minor discrepancies appeared in two cases: one involving adjuvant chemotherapy following neoadjuvant treatment and the other regarding radiation therapy for male breast cancer, reflecting field-specific debates rather than significant errors. AI may also add insights in areas not explicitly addressed by the TB. Findings suggest AI's potential to enhance decision-making, though providing updated trial eligibility criteria before each case could improve alignment. Further research is recommended to refine AI's role in oncologic collaboration.

Figure 1: A) Detailed Comparison of AI and Tumor Board Decisions with Addressed and Unaddressed Categories. B) Outlines the initial instructions provided to ChatGPT-4 for structuring recommendations based on patient information.



B

Outlines the initial instructions provided to ChatGPT-4 for structuring recommendations based on patient information.

The input began with the following: I have a list of breast cancer patients that we would like to discuss during the tumor board. For each patient, I will provide the relevant clinical and diagnostic information, including:

- Age (in years)
- Clinical History
- Family history
- Radiologic Findings (mammography, ultrasound, MRI if applicable)
- Size (cm)
- Breast density
- Needle biopsy Pathology Results (FNA or CNB of breast tissue and/or lymph nodes)
- Biomarkers: ER, PR, HER2, Ki67 (with percentage of positivity, if available)
- Additional Imaging Requirements (if needed)
- Preoperative Staging
- Surgical Pathology Results (if surgery has been performed)
- Final Stage and Grade
- Oncotype (if applicable)
- Genetic Testing Results
- Surgical Treatment (received or planned)
- Complications (received or planned)
- Chemotherapy (received or planned)
- Hormone Therapy (received or planned)
- Radiotherapy (received or planned)

Some sections might be incomplete due to pending decisions or inapplicability. Please review the provided information carefully and share your recommendations for the following:

- Surgical Management
- Chemotherapy
- Hormone Therapy
- Radiotherapy
- Genetic Testing and Counseling (if applicable), Oncotype Testing (if it needs to be sent)
- Further Imaging or workup (MRI, PET scan, bone scan, consult other teams, or etc.)
- Eligibility for Institutional Trials (I will provide our institution trials eligibility and details)
- U.S. Clinical Trials
- Follow-up and Monitoring Plan
- Conclusion and Overall Treatment Plan

We will first start with a list of ongoing trials at our institution. I will present the patient information one at a time. Please let me know when you are ready to begin.

1965927 - Treatment Sequence Trends and Predictors of Pathologic Upstage in Triple Negative Breast Cancer

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Background/Objective: Clinical trials have demonstrated benefits of neoadjuvant chemotherapy in triple negative breast cancer (TNBC) including de-escalation of surgery and assessment of tumor biology to guide adjuvant therapy. The National Comprehensive Cancer Network (NCCN) recommends NAC for larger tumors or nodal involvement. We sought to determine the treatment sequence among TNBC patients who met NCCN eligibility criteria for NAC and identify characteristics associated with pathologic upstaging after upfront surgery, reflecting a missed opportunity for preoperative therapy.

Methods: A retrospective cohort study was conducted using the National Cancer Database. Women, ages 18-89, diagnosed with TNBC between 2010-2020 with a clinical Stage T1-3, N0-3, M0 were included. We used descriptive statistics to report patient demographic and treatment trends. Subset analyses included women with cT< 2 cm, N0 tumors who underwent upfront surgery to determine what proportion of patients pathologically upstaged based on tumor size and/or nodal status.

Results: 141,546 women were included in the analysis, of which 81,960 (57.9%) underwent upfront surgery and 59,586 (42.1%) underwent NAC. Among those who underwent surgery first, 85.5% met NCCN eligibility criteria for consideration of NAC; majority of which were cT1cN0 tumors. Most women eligible for NAC but who underwent upfront surgery instead were older. There was an increase in use of NAC over the study period (2010-2020). The subset analyses of women with clinical stage cT< 2 cm included 46,004 patients who underwent upfront surgery, of which 5.6% were pathologically upstaged based on tumor size and/or nodal status. The majority of these patients (77.5%) were pathologically upstaged from cN0 to pN+.

Conclusions: 85% of women who underwent surgery first met NCCN criteria for receipt of NAC. Pathologic upstaging in the breast and axilla further presented a missed opportunity for NAC among an additional 5.6% of patients. Consistency in eligibility criteria and clinical or radiographic staging may provide standardization around receipt of preoperative systemic therapy.

1965623 - The effect of same-day discharge after mastectomy on short-term patient-reported outcomes

Madeline Higgins[1], Laura Helmkamp[2], Brandon Bellen[3], Sudheer Vemuru[1], Monica Adams[4], Kathryn Colborn[1], Laura Leonard[5], Victoria Huynh[5], Christodoulos Kaoutzanis[6], Katie Egan[3], Nicole Christian[1], Christine Fisher[3], Hannah Parris[1], Sarah Tevis[1]

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Background/Objective: Same-day surgery (SDS) following mastectomy, with or without immediate reconstruction, is safe in appropriately selected candidates with multiple studies reporting similar rates of post-operative complications, unplanned ED visits, and 30-day readmissions. Patients discharged on the same day report lower anxiety, less psychological distress, decreased recovery time, and improved quality of life compared to hospitalized patients. The BREAST-Q is a validated patient-reported outcome (PRO) measure that evaluates patient satisfaction and quality of life using multiple domains, including Psychosocial Wellbeing. Given evidence of lower anxiety and distress in breast cancer patients undergoing same-day mastectomy, we hypothesized that breast cancer patients who underwent SDS would report higher psychosocial wellbeing compared to those admitted post-operatively.

Methods: A prospectively maintained longitudinal PRO registry was used to identify female breast cancer patients who underwent mastectomy, with or without immediate implant-based reconstruction, between June 2019 and September 2024. Patients who underwent lumpectomy, had flap-based reconstruction, or were ASA class 3 or 4 were excluded. Pre-operative, 2-week and 3-month post-operative responses to the following BREAST-Q domains were included: Satisfaction with Breasts (SB), Psychosocial Wellbeing (PsyW), Physical Wellbeing (PhW), Sexual Wellbeing (SW), and Satisfaction with Surgeon. The primary outcome was the change in PsyW scores from baseline to 2-weeks and 3-months post-operatively. Descriptive statistics were utilized. Changes in PROs were calculated by subtracting each subject's baseline value from their follow-up value. Satisfaction with surgeon scores were dichotomized to greater than 90 (high satisfaction) versus less than 90. The SDS group was compared to the admitted group with t-tests.

Results: Seventy-three breast cancer patients with a baseline PRO score and at least one postoperative PRO score were included in the analysis. The median age was 47 years (IQR 42.5-58.5 years). Overall, most patients were pre-menopausal (52.1%), ASA class 2 (98.6%), clinical Stage 0-I (61.6%), did not receive neoadjuvant chemotherapy (68.1%) or undergo a full axillary dissection (84.7%), and underwent breast reconstruction (79.5%). There were no significant differences in patient and clinical factors between patients discharged on the same day versus patients admitted overnight after mastectomy. Forty-seven percent of patients were discharged from the hospital on the same day as their mastectomy. There were no significant differences in PRO scores for SB, PsyW, PhW, SW among groups (Table 1). All patients reported similar trajectory in these PRO domains. Most patients reported high satisfaction with their surgeon (69.1% at 2-weeks and 66.7% at 3-months

after surgery) and there were no significant differences in satisfaction with surgeon between groups at either time point.

Conclusions: SDS after mastectomy does not significantly impact short-term breast cancer patient PsyW, SB, PhW, or SW. Patients in both groups report similar declines in wellbeing and satisfaction domains 2-weeks post-operatively followed by similar recovery in all domains by 3-months after surgery. Patient satisfaction with their surgeon is high and was not impacted by SDS. While the sample size of this cohort is a limitation, greater accrual over time will increase the sample size. These data may help inform patients considering SDS following mastectomy.

Table 1: Change in Psychosocial Wellbeing (PsyW), Satisfaction with Breasts (SB), Physical Wellbeing (PhW), or Sexual Wellbeing (SW) patient reported outcome scores from baseline to 2-weeks or 3-months after same day mastectomy discharge versus hospital admission.

	Overall N (%) n=73	Overnight N (%) n=39	Same-day discharge N (%) n=34	P-value
PsyW, change baseline to 2 weeks	-7.5 (22.2)	-8.5 (19.7)	-6.3 (24.9)	0.68
SB, change baseline to 2 weeks	-18.1 (28.3)	-20.9 (30.4)	-14.9 (25.9)	0.40
PhW, change baseline to 2 weeks	-34.8 (24.9)	-35.0 (24.9)	-34.5 (25.5)	0.95
SW, change baseline to 2 weeks	-21.8 (24.4)	-24.7 (20.7)	-18.5 (28.0)	0.34
PsyW, change baseline to 3 months	-2.2 (19.5)	-1.5 (19.1)	-3.1 (20.6)	0.77
SB, change baseline to 3 months	-8.8 (24.5)	-7.2 (26.7)	-11.3 (21.2)	0.56
PhW, change baseline to 3 months	-13.6 (22.8)	-15.5 (24.2)	-11.0 (21.1)	0.48
SW, change baseline to 3 months	-16.5 (21.4)	-20.8 (18.8)	-10.6 (23.8)	0.10

1952333 - Identifying Oncologists' Barriers to Discussing Sexual Health Concerns with Breast Cancer Patients

Allison Nielsen[1], Madeline Higgins[2], Monica Adams[3], Sarah Leslie[4], Lauren A. Zimmaro[2], Laura Bozzuto[5], Tara Spivey[6], Kristin Rojas[7], Chandler Cortina[8], Alicia Heelan[9], Helen L. Coons[10], Erin Baurle[2], Sarah Tevis[2]

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Background/Objective: Sexual health side effects, such as vaginal dryness and changes in breast sensation, are among the most common and distressing consequences of breast cancer treatment, however, patient-provider discussions of these concerns are often insufficient or omitted. Although previous studies have identified barriers for breast cancer patients when discussing sexual concerns – such as discomfort or differing communication preferences – there is limited understanding of perceived barriers experienced by oncologists. This study utilized an online survey to explore clinician-specific barriers to discussing sexual health in the setting of breast cancer treatment, in which we hypothesized that barriers may include lack of or inadequate training, structural constraints within clinical settings, and clinician comfort discussing the topic.

Methods: A 42-item survey was developed and distributed across seven collaborating institutions to radiation, medical, and surgical oncologists who treat patients with breast cancer. The survey assessed clinicians perceived barriers to discussing sexual health concerns with breast cancer patients including patient characteristics, structural limitations within the clinic, and clinician confidence in their knowledge and ability to treat sexual health side effects. Descriptive statistics were utilized.

Results: From December 2023 to October 2024, 25 oncologists (response rate = 52%) practicing in radiation (n=10), medical (n=7), or surgical (n=8) oncology completed the survey (Table 1). Most respondents were Caucasian, female, heterosexual, and married. Only three (12%) physicians reported prior sexual health training. When asked about the importance of discussing sexual health side effects with patients, 72% considered it 'important,' while 20% deemed it 'essential'. Nearly half of physicians 'strongly agreed' or 'agreed' that they felt less comfortable discussing sexual concerns with patients when others were present. The most frequently reported barriers to discussing sexual concerns included perceived lack of time, forgetfulness, inadequate education, or the perception that sexual health is a low patient priority. Fewer than half of participants felt 'very confident' in their knowledge of sexual health side effects. Over 70% reported feeling 'somewhat' or 'not at all' confident in their knowledge of and ability to provide treatment options for these side effects. Finally, oncologists across specialties felt they would 'definitely' (32%) or 'probably' (48%) participate in sexual health-related training if available and that specific sexual health training would encourage them to initiate these discussions.

Conclusions: Our study revealed that while breast cancer providers align on the importance of discussing sexual health with breast cancer patients, various barriers hinder these discussions and limit treatment of sexual concerns. Over 75% of physicians caring for breast cancer patients felt a lack of confidence in their ability to provide sexual health treatment options. Indeed, a third of these oncologists endorsed a need for additional education, and an interest in participating in sexual health-focused training if available. Future studies may garner a larger sample to delineate barriers, both broad and specialty-specific, to discussions of sexual health concerns and use this data to inform intervention development. Ultimately, further research will support clinicians' knowledge and confidence in addressing and managing the evolving sexual health priorities of breast cancer patients throughout treatment and survivorship.

Table 1. Select data from survey responses. % = frequency of total responses (n=25)

TABLE 1. Select data from survey responses.
% = frequency of total responses (n=25)

Barriers to Discussion		*Demographics*	
Lack appropriate education to counsel	32%	Caucasian	72%
Do not feel comfortable	4%	Asian	24%
Forget to bring up	52%	Female	84%
Not enough time	68%	Married	88%
Not a priority for me	4%	Heterosexual	92%
Not a priority for the patient	28%	Medical Oncology	28%
Not my role/ responsibility	12%	Surgical Oncology	32%
Other	20%	Radiation Oncology	40%
Rate your confidence in the following regarding sexual health side effects.	**Very confident**	**Somewhat Confident**	**Not at all Confident**
Knowledge of	44%	48%	8%
Ability to discuss	44%	48%	8%
Knowledge of treatment options	28%	52%	20%
Ability to provide treatment options	20%	48%	32%
	Strongly Agree, Agree	**Neither Agree nor Disagree**	**Strongly Disagree, Disagree**
My relationship with my patient (whether positive or negative) affects my comfort discussing sexual health side effects	28%	20%	52%
I feel **less** comfortable discussing sexual health side effects with patients in the presence of others	44%	24%	32%
I feel **less** comfortable discussing sexual health side effects with patients when using a translator	20%	28%	52%
I feel **less** inclined to discuss sexual health side effects with a patient who I perceive to have lower health literacy	4%	24%	72%
I feel **less** inclined to discuss sexual health side effects with a patient with a poor prognosis	48%	16%	36%
I feel **more** comfortable referring patients to other resources about sexual health side effects than discussing them	20%	24%	56%
I feel **more** inclined to discuss sexual health side effects when a patient expresses concerns about physical appearance	62%	28%	12%
I feel **more** inclined to discuss sexual health side effects when a patient is in a relationship	20%	40%	40%
I feel comfortable discussing sexual health side effects with a patient who may be a different…	**Strongly Agree, Agree**	**Neither Agree nor Disagree**	**Strongly Disagree, Disagree**
Age	72%	8%	20%
Race/Ethnicity	80%	4%	16%
Gender identity	72%	8%	20%
Sexual orientation	76%	8%	16%
Relationship status	80%	8%	12%
Religion/Spirituality	60%	16%	24%
Cultural values	64%	24%	12%
Native language	56%	32%	12%
Political values	64%	20%	16%

1968093 - Does Multidisciplinary Clinic Impact Rates of Breast-Conserving Therapy?

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Background/Objective: Previous studies have identified factors associated with lower rates of breast conservation therapy (BCT), but the impact of multidisciplinary clinic (MDC) on patient surgical choice has not been documented. We hypothesized that patients who underwent MDC consultation with surgical, medical, and radiation oncologists would have increased BCT rates compared to patients seeing providers separately.

Methods: A single institution, retrospective chart review was conducted of patients diagnosed with Stage 0-III breast cancer in 2023 who were offered BCT. Patients were separated into four cohorts based on initial clinical consultation: (1) three-provider MDC with Breast Surgical Oncology (BSO), Medical Oncology (MO), Radiation Oncology (RO); (2) BSO+RO in MDC; (3) BSO+MO in MDC; and (4) BSO only. Wilcoxon rank sum tests and chi-square or Fisher's Exact tests compared clinicopathologic factors and the primary outcome of interest (BCT versus mastectomy) between cohorts with $p< 0.05$ statistically significant.

Results: Overall, 520 patients were offered BCT at their consultation with 425 (81.7%) ultimately undergoing BCT and the other 95 (18.3%) choosing mastectomy. BCT and mastectomy patients were similar with respect to baseline demographics and clinicopathologic factors. The type of initial consultation was significantly associated with differing BCT rates (p=0.015) (Table 1). Specifically, BCT was highest for patients participating in three-provider MDC (BCT rate 89%), and BSO+RO in MDC (BCT rate 86%). In contrast, BCT was lower when patients did not see RO in MDC, including patients seen by both BSO+MO in MDC (BCT rate 78%) and BSO alone (BCT rate 77%).

Conclusions: Our study confirms that the type of providers patients see during their initial breast cancer consultation impacts surgical choice. Specifically, patients have higher rates of BCT when they participate in an MDC visit that includes RO. We recommend broader implementation of breast cancer MDC that includes RO alongside BSO, to support BCT acceptance in eligible patients.

Table 1 Primary Outcome: BCT Rates vs Mastectomy Rates

Table 1 - Primary outcome

Outcome Chosen	Total	Breast Conserving Therapy [1]	Mastectomy [1]	p-value[2]
Initial Consultation				0.015
3 providers in MDC	156	139 (89%)	17 (11%)	
BSO + MO in MDC	103	80 (78%)	23 (22%)	
BSO + RO in MDC	51	44 (86%)	7 (14%)	
BSO only	210	162 (77%)	48 (23%)	

[1]n (%)

[2]Pearson's Chi-squared test

1968360 - Bibliometric Analysis of Breast Surgical Oncology Fellowship Programs: Program Placement Correlates with Resident Research Output

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Background/Objective: Resident research is a criterion identified by program directors (PDs) as important in the breast surgical oncology (BSO) fellowship match. Bibliometrics is a statistical method used to analyze and quantify scholarly productivity. The goals of this study are to identify the importance of scholarly activity for upcoming BSO fellows and to use Bibliometrics to compare resident research output (RRO) with BSO fellowship placement.

Methods: The Society of Surgical Oncology (SSO) website was utilized to identify BSO fellowships for 2023. Programs that featured information on BSO fellows were exclusively selected for analysis. RRO was defined as total publications, number of focused BSO publications, and number of citations. Scopus, Google Scholar, and ResearchGate were scanned for the program fellows' bibliometric data to collect RRO. Program, fellow, and bibliometric data were analyzed with RRO using t-tests, chi-squared tests, and multivariate regression models through Jamovi software tool.

Results: There were 64 SSO-approved BSO fellowships analyzed, with most accepting one fellow per year (70%). 46 (72%) of BSO fellowships were at academic training centers, 16 (25%) were at university-affiliated training centers, and 5 (3%) were at community training centers. 80% of BSO fellowships were at "US News Top 25 Best Hospitals for Cancer". 39 fellow names were displayed on 30 (47%) of the fellowship websites and comprised our study group. Most of the fellows (60%) came from an academic or university-affiliated general surgery residency. In our study group, 49 (77%) fellowship programs featured a dedicated SSO website section about research. The average number of publications upon matriculation for BSO fellows was 2, with an average of 1 publication within breast surgery journals. The median number of citations for an incoming fellow was 7. A higher number of prior resident publications and citations was correlated with fellows who matched at programs affiliated with "US New Top 25 Best Hospitals for Cancer" ($p < 0.01$), fellowships with a dedicated SSO website section on research ($p < 0.05$), and programs with a larger number of fellows per year ($p < 0.05$). Geographic region and type of training program had no significant impact on research output.

Conclusions: Most BSO fellowships are at academic or university-affiliated training centers. Considering 50% of fellow publications being specialty-specific, the dynamic/evolving field of breast cancer, and the emphasis on research by BSO fellowships, breast surgery research is integral for general surgery residents pursuing a BSO fellowship. Analysis of a larger and more complete set of research profiles along with further investigation of resident, fellow, and program contributions to research advancement may create opportunities for even more enriched training environments.

1971229 - The Dual Surgeon Bilateral Mastectomy Approach: A Single Institution Analysis of Productivity and Complications

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Background/Objective: Dual surgeon (DS) bilateral mastectomy (BLM) is an approach in which two attending breast surgeons simultaneously perform mastectomies, with one surgeon operating on each side. There is a lack of research on DSBLM and its impact on surgeon productivity and operative time (OT). This study aimed to evaluate the total breast surgeon OT for DSBLM and compare this to modeled single surgeon (SS) OT for BLM, in addition to comparing the complication rates of primary and secondary surgeon sides.

Methods: This is a single-center retrospective chart review of patients who underwent simple/total, skin-sparing, or nipple-sparing DSBLM from 2021 to 2023 for breast cancer or prophylaxis. Patients who underwent reconstruction (with implants or tissue expanders) or no reconstruction were included. Patients who underwent nerve grafting, flap reconstruction, or had Stage IV disease, were excluded. Total OT and 30-day complication rates were obtained. OT was defined as the time from surgeon entry to surgeon exit from the operating room (OR). Primary surgeon OT included time for axillary surgery. Because our center had few SSBLM cases, the SSBLM case time was modeled as the median OT for the primary surgeon added to the median OT for the secondary surgeon.

Results: 285 cases were included. In all cases of unilateral cancer, the primary surgeon operated on the side with cancer. The median OT for the primary surgeon was greater than the median OT for the secondary surgeon (102 ± 33 vs 76 ± 31 minutes). Thus, the actual median OT for DSBLM was 102 minutes (primary surgeon simultaneous with secondary surgeon). The modelled time for SSBLM was 178 minutes. Complication rates were comparable between the primary surgeon and secondary surgeon sides except for seromas, which were more common on the primary surgeon side (8.1% vs 3.9% p=0.034). Figure A illustrates how DSBLM leads to more operations completed in a day compared to the SSBLM. For a 7 AM–5 PM day, assuming 30 minutes for OR turnover, and 90 minutes for reconstruction, one surgeon operating in one OR would be able to complete two BLM with reconstruction in a day. When two breast surgeons use two ORs, they can complete four BLM with reconstruction, one BLM without reconstruction, and two smaller cases.

Conclusions: Our findings suggest that the DS approach to BLM reduces OT and increases productivity compared to the SSBLM approach. No significant differences in complications were noted between primary and secondary surgeon sides except seromas (likely due to axillary surgery). DSBLM and availability of two ORs have an amplifying effect, since with two ORs the abbreviated time for DSBLM (compared to SSBLM) allows for more efficient use of both rooms. Improved efficiency in use of OR time should contribute to shorter time to surgery, a metric that has been linked to risk of recurrence and improved patient satisfaction. Reduced time to surgery and improved productivity could be extrapolated to more cancers treated in a year. These data can be used to advocate at the institutional level for approaches that will support more timely patient care.

Figure 1: Modeled Operating Room Days

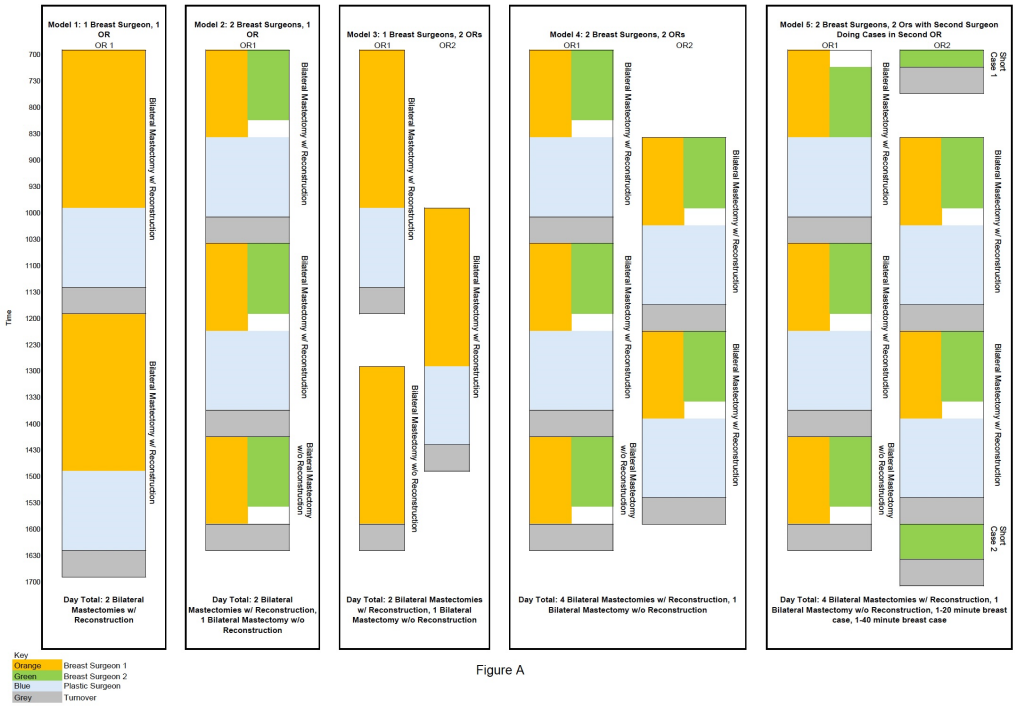

Figure A

Patient Education

1979334 - Leaving Less to the Imagination: The Impact of Pre-operative Videos on Patient Education in Breast Cancer Surgery.

Jieun Newman-Bremang[1], Amy Bazzarelli[1], Melina Deban[1], Carol Dingee[1], Elaine McKevitt[2], Rebecca Warburton[1], Jin-si Pao[1]

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Background/Objective: Physician-patient communication around breast cancer surgery has been associated with some challenges, as newly diagnosed patients often have difficulty processing information around their treatment at the time of their surgical consultation. Previous studies have shown positive impact of video-based education on treatment knowledge. The objective of this study is to investigate the role of pre-operative videos on patient preparedness for surgery, in comparison to the nurse-led education sessions delivered by videoconference meetings.

Methods: Patients undergoing breast cancer surgery over the age of 18 at our institution were offered either nurse navigator-led educational sessions or access to web-based pre-operative videos which is password protected. Every patient, regardless of the group assignment, was provided with a patient education booklet outlining pertinent information about their operation. Pre-operative videos were created in collaboration with the surgeons and the nursing team and included information on the entire perioperative course from preparation to recovery. Patients who consented to the study were reached by e-mail with a link to the survey following their post-operative visit. Survey questions included ease of access, whether the materials were understandable, patients' understanding of the perioperative process, patients' understanding of the operative procedure, preparedness for surgery, whether their questions and concerns were addressed adequately, as well as overall satisfaction with the pre-operative education. The questions were answered using a 5-point Likert scale. Study data were collected and managed using REDCap electronic data capture tools hosted at the University of British Columbia. Descriptive analysis was performed using Microsoft Excel.

Results: A total of 21 patients from the nurse-led education group (NL) and 25 patients from the video-led education group (VL) completed the survey. Patients found that the pre-operative education materials were easy to access in both NL (90.5%) and VL (96%) groups. Both groups reported that the materials were easy to understand (95.2% NL vs 100% VL), that they had a good understanding of the perioperative process (100% NL vs 96% VL) and the operative procedure planned for them (95.2% NL vs 96% VL). There was a small difference between the groups on whether the patient felt prepared for their operation (95.3% NL and 84% VL), and whether they felt that their questions and concerns were adequately addressed (95.3% NL and 84.6% VL). Patients were generally satisfied with the pre-op education that they received prior to their surgery (100% NL and 92.3% VL).

Conclusions: Pre-operative patient education videos allow breast cancer patients to review the information regarding their surgery at their own pace and time. This study showed that patients undergoing breast cancer surgery demonstrate a high level of understanding and satisfaction with their pre-operative education whether it is delivered by nurse navigators or by videos. Nurse-led pre-op

education sessions are associated with a significant and ongoing demand on resources. Technology-driven solutions such as pre-operative videos designed to improve patient education may reduce the burden on the nursing staff and potential cost savings.

Table 1: Post-op survey questions

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The preoperative education materials were easy to access.					
The preoperative education materials were easy to understand.					
The preoperative education materials improved my understanding of the process of having surgery.					
The preoperative education materials improved my understanding of the breast surgical procedure that my surgeon recommended.					
I felt prepared for breast surgery after I reviewed the preoperative education materials.					
I am satisfied with the preoperative education I received regarding my surgery.					
My questions and concerns about surgery were addressed and answered.					

[Table 1] Post-op survey questions

1976556 - Evaluating Trends in Fertility Counseling Among Reproductive-Age Patients with Breast Cancer

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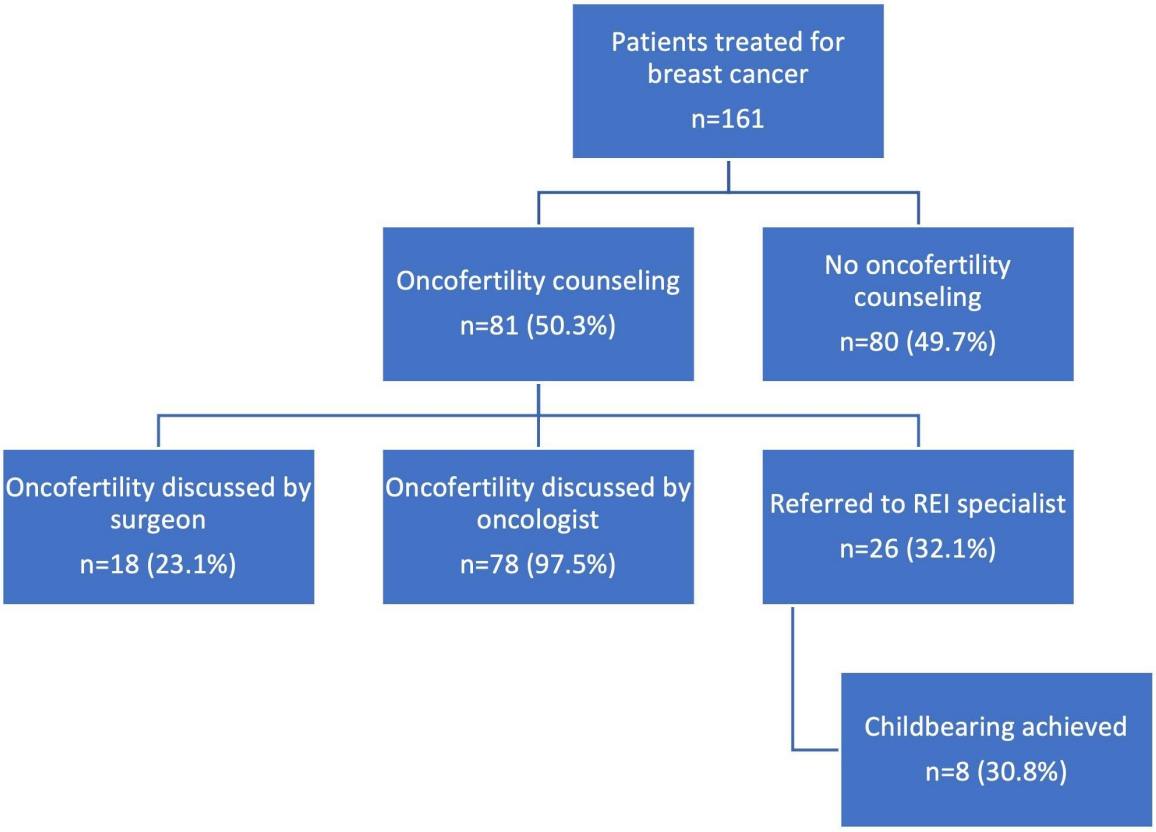
Background/Objective: Breast cancer is the most common cancer among women, with increasing incidence in women 40 years and younger. As improvements in breast cancer therapies continue to increase survival, the effect on quality of life including treatment-related infertility remains a paramount concern for young breast cancer patients. Despite increasing emphasis on oncofertility as a standard of care, the provision of fertility preservation remains suboptimal. This study aimed to evaluate the practice of oncofertility counseling and referral patterns at our institution to identify and address potential barriers to fertility preservation in this population.

Methods: A retrospective analysis was performed of women 40 years and younger who were treated for breast cancer from 2014 to 2023 at a single-institution academic medical center. Patient demographics, tumor and treatment characteristics, occurrence of oncofertility counseling (OC), referral to a reproductive endocrinologist (REI), and subsequent childbearing were evaluated.

Results: Of 161 patients 40 years and younger treated for breast cancer at our institution, 81 (50.3%) received OC by a healthcare provider while 80 (49.7%) did not. Of those who did receive OC, 97.5% were counseled by their oncologist, while only 23.1% received OC by their breast surgeon. Only 1 patient (1.2%) received OC exclusively by her breast surgeon. Twenty-six out of 81 women (32.1%) who received OC were referred to an REI specialist, and 8 (30.8%) of these women subsequently achieved successful childbearing. Patients who received OC tended to be younger (35 vs 38 years, $p< 0.001$) and nulliparous (45.7% vs 18.8%, $p< 0.001$). While 71.2% of patients without children received OC, only 40.1% of patients with children received OC ($p< 0.001$). Patients with cT2 or larger tumors and regional nodal disease were more likely to receive OC (both $p< 0.05$), as were those who received neoadjuvant chemotherapy (74.1% vs 43.8%, $p< 0.001$) or who were involved in a clinical trial (30.9% vs 8.8%, $p=0.01$). There was no difference in OC between patients receiving adjuvant chemotherapy or endocrine therapy ($p>0.05$). There was no difference in disease recurrence or survival between patients who received OC or referral to REI ($p>0.05$).

Conclusions: The current provision of OC is disproportionately provided by medical oncology to younger, nulliparous patients with more advanced disease in the setting of neoadjuvant chemotherapy. However, many other breast cancer patients stand to benefit from OC and increased access to fertility preservation, given the common use of adjuvant cytotoxic and endocrine therapies that also impact reproductive health. The role of breast surgeons in the early care of breast cancer patients offers a unique underutilized opportunity for OC and early referral to REI specialists that should be harnessed for the benefit of these patients. Efforts should thus be made for all healthcare providers to be prepared to discuss the impact of patients' breast cancer diagnoses and potential treatments on future fertility to maximize patient education, support, and access to fertility preservation.

Figure 1: Patients who received oncofertility counseling and resulting outcomes



1988197 - IDECIDE Breast Surgery Patient Decision Aid: Development and Testing of a Quality of Life-Integrated Decision Support Tool

Monica Adams[1], Jakob Durden[2], Sarah Leslie[3], Sudheer Vemuru[2], Madeline Higgins[2], Daniel Matlock[2], Maria Baimas-George[2], Clara Lee[4], Kathryn Colborn[2], Christine Fisher[5], Nicole Christian[2], Christodoulos Kaoutzanis[6], Katie Egan[6], Sarah Tevis[2]

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Background/Objective: Surgery is the primary treatment for early-stage breast cancer, with breast-conserving surgery and mastectomy offering similar survival. Patients weigh personal preferences against treatment outcomes when making this choice. Shared decision-making (SDM) promotes active patient involvement, and patient decision aids (PDAs) support this process by presenting benefits and risks aligned with patient values. However, many PDAs lack long-term quality of life (QoL) data. To address this, we developed and tested the IDECIDE Breast Surgery PDA, which integrates QoL data from previous breast cancer patients.

Methods: The PDA was developed with a systematic, iterative process based on the Ottawa Decision Support Framework and follows the International Patient Decision Aids Standards (IPDAS) criteria. The PDA was tested for understandability, actionability, and acceptability using a survey and semi-structured interviews of breast cancer patients in survivorship. Breast cancer clinicians completed the same survey as patients with an added component to address the appropriateness of content, development process, and effectiveness of the PDA. Descriptive statistics were used to review survey responses. Semi-structured interviews were transcribed verbatim before three researchers applied a thematic rapid coding analysis.

Results: Survey data. Nine patients completed the survey and 7 completed the interview. Patients' mean understandability was 98.7% and mean actionability was 92%. All patients (100%) rated the length and amount of information as "just right." Eight-nine percent of patients rated the PDA as "balanced" in presenting treatment options and 88.9% of patients reported the PDA would have been helpful when making their own surgical decision. Clinicians' (n=6) mean understandability was 100% and mean actionability was 95.2%. All clinicians (100%) rated the length of the PDA as "just right," and 83.3% of clinicians rated the amount of information as "just right." All clinicians (100%) found the PDA to be "balanced" in presenting treatment options. Clinicians averaged 42.5 (±3.4) on a 46-item IPDAS Criteria. In open ended responses, clinicians recommended including information on contralateral breast surgery and addressing specific concerns related to anti-endocrine therapy for DCIS patients. Semi-structured patient interview data. Three major themes were identified: experience with the PDA, QoL, and suggestions for PDA. In their experiences with the PDA, patients confirmed their survey responses by expressing positive sentiment regarding clarity of information, amount of information, language and terminology, organization, visual aids, and a lack of surgical bias. Regarding the QoL component, patients reported their understanding of the QoL data, the inclusion of patient values, and the retrospective impact of the PDA on their initial surgical decision. Patient suggestions for the PDA included additional content and details, formatting recommendations, timing of delivery recommendations, and recommendations regarding the QoL component. See Table 1 for themes, sub-themes, and sample quotes.

Conclusions: We developed and tested a breast surgery PDA that integrates QoL data from previous patients, addressing a critical gap in PDAs. The PDA was rated highly by both patients and clinicians for understandability, actionability, and balance in presenting treatment options. Future work will focus on making recommended changes and pilot testing the PDA among newly diagnosed breast cancer patients.

Figure 1: Themes, subthemes, and example quotes

Table 1. Themes, Subthemes, and Example Quotes

Theme	Sub-theme	Example Quote
Decision Aid Experience	Clarity of Information	I think it's very easy to understand the language, the graphs.
	Amount of information	I anticipated it would be longer and more in depth, but I thought it was really had this great information, and it was laid out very well, and I thought it was the perfect length.
	Language and Terminology	I liked that it was nice and clear. It really broke it down for people who don't understand medical terminology, I think it makes it a little more clear for them to try and make their pros and cons list.
	Organization	I liked the way it was organized it. It gave like the brief description, followed by like, here are your options, one column, second, column, risks, side effects, you know, box for questions for your doctor. I thought it was good.
	Visual Aids	I actually liked the very first picture where you show somebody in a crossroads. You know, two paths, either you're going to go to the right or you're going to go to the left. I kind of liked the fact that she wasn't old. In other words, most of us that are going through this are a little elderly, and so therefore this kind of shows that it's people of all ages that this will affect not just somebody that is older. I would think if you put somebody that was older in that spot, the older people-- or the younger people themselves --would think, hmm, have an old people's problem. So by putting someone younger in there. I think it helps the younger person and as an older person, it didn't even bother me.
	Surgical Bias	I thought it was pretty balanced. I didn't come out of it feeling like it was biased towards one or the other.
Quality of Life (QoL)	Understanding of QoL Data	I understood it very well. I think it was it the little ribbons, and doing it that way, I think it's very helpful, because I think it kind of gives you a really good side by side comparison.
	Patient Values	I think the life after is the big one that kind of lets you look at your values. I think that's, that's the big one. I think that's one that kind of hits home. So I think that does a really good job of it.
	Impact on Decision Making	Well, yes, it would have been helpful to me. I think it's just another tool in the toolbox to make a decision you have your family, yourself, your surgeon and and this would be another good tool to have and to be able to refer back to also while you're making that decision.
Suggestions for Decision Aid	Content and Detail	I think it would be interesting to have more of the detailed options for the mastectomy side of it, as far as mastectomy, you know, single sided mastectomy, double mastectomy, going flat, breast implant versus deep flap, like having those lists of actions.
	Format	I think you probably should be either option of you know, a physically like one that somebody can take home, especially if you have like an older patient. as well as the digital. I think I'm going to stand by my have the physical one, and then have the QR code scan.
	Timing of delivery	I would say before the meeting, because I think it's helpful to-- I mean-- even though they tell you not to do it, everybody Googles, you know, gets on and Googles everything and starts looking at different things. And, you know, I think you can always find whatever information you want to support what you want to do, but I think that having this, you know, if they had called me and said, you know, you have breast cancer, this is your meetings in two weeks. Here's some information. Look at this. Don't go on Google. Look at this. You know, that would have been super helpful for me, because I think I it would have--you know-- the lifestyle, the different surgeries, and then I think I would have been able to go to the meeting more informed and have different questions and asking about certain parts of the surgery and the procedure, and I know that that's a tough one, because you don't know what you're gonna even if you're able to have a lumpectomy or mastectomy before that. But I think since those are the two decisions, or the decision you're going to have to make, if you get to make it-- it's a good-- it would be a really good tool.
	QoL Component	I don't know if I liked that little ribbon thing. I don't really like that. I don't know, doesn't it just kind of, it's like a blob of colors. I understand that it's like the breast cancer ribbon, but emotional health.

1988711 - Evaluating the Accuracy of ChatGPT-Simplified Breast Pathology Reports: A Study on Relevancy, Completeness, and Clinical Fidelity

Samhita Bheemireddy[1], Sarah Leslie[2], Jakob Durden[3], George Burnet[3], Zain Aryanpour[3], Ashlyn Fong[3], Madeline Higgins[3], Samantha Greenseid[4], Lauren McLemore[3], Gande Li[3], Randy Miles[5], Nancy Taft[5], Sarah Tevis[3]

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Background/Objective: Breast pathology reports exceed the recommended reading level for patient-facing materials. Patients independently reviewing their breast pathology reports uploaded to their patient portals may misinterpret the contents of their reports. Generative artificial intelligence (AI), specifically ChatGPT, can improve the readability of breast pathology reports to the recommended sixth-grade reading level for patient-facing materials. However, it is critical that ChatGPT-simplified reports accurately reflect the material present in the source report. This study aims to determine the accuracy of ChatGPT-simplified breast pathology reports, which, to our knowledge, no studies have investigated.

Methods: Nine deidentified patient breast pathology reports were input into ChatGPT-4.0 with a prompt specifying they be simplified to a 6th-grade reading level. A Flesch-Kincaid Reading Level assessment determined these reports were simplified to the correct reading level. A panel of physicians with experience in breast surgery and pathology graded the AI-simplified reports using a four-point scale to assess factual correctness, relevancy of medical information, and inclusion of additional information not in the source report (Table 1) and were asked to explain their scores. Mean scores and standard deviations for each report were calculated. The scores were further stratified by each rubric category and highlighted sections were examined across graders for consistency.

Results: ChatGPT-simplified reports received an overall average score of 3.59 (SD ± 0.17) (Table 1). The reports scored an average of 3.62 (SD ± 0.31) in factual correctness, 3.27 (SD ± 0.44) in the relevancy of information included in the reports, and 3.89 (SD ± 0.11) for the addition of information not in the source reports (Table 1). The highest average scores were reported for the additions category (simplified reports seldom included additional information not present in the original report) and the lowest scores were reported for the relevance of the included information category (simplified reports omitted clinically relevant information) (Table 1). Graders noted two distinct instances in which ChatGPT included interpretations of findings that conflicted with graders' interpretations. Notably, ductal carcinoma in situ with less than a 2-millimeter surgical margin was interpreted by ChatGPT as a negative result when national consensus guidelines consider this a positive margin and mandate re-excision.

Conclusions: ChatGPT omitted clinically relevant considerations of national standards known to providers interpreting the reports that would warrant further discussions with patients of secondary procedures. Reports that were not factually correct may have misinterpreted the gross findings in the reports as it simplified the information to a lower reading level. Future studies should assess the impact of ChatGPT prompt development on AI-generated report accuracy to prevent dissemination of inaccurate reports to patients. Future studies may also incorporate perspectives from a wider range of

medical specialties to assess whether specialists differ in their assessment of information deemed clinically relevant to patients.

Table 1. ChatGPT Simplified Report Accuracy Grading Rubric and Results

Table 1. ChatGPT Simplified Report Accuracy Grading Rubric					
Criteria	**4**	**3**	**2**	**1**	**Results (Mean ± SD)**
Factual Correctness	All statements are factually correct	Most statements are factually correct	Some statements are factually correct	No statements are factually correct	**3.62 ± 0.31**
Relevancy of Included Information	All relevant medical information is included	Most relevant medical information is included	Some relevant medical information is included, but an equal amount is missing	No relevant medical information is included	**3.27 ± 0.44**
Addition of Information	There is no additional information that was not present in the source report	There is some additional information that was not present in the source report	A significant portion is new information that was not present in the source report	The entire simplified report is new information	**3.89 ± 0.11**
Overall Score					**3.59 ± 0.17**

1988742 - Assessing Quality and Reliability of Online Consumer Health Information for High Risk, Pre-Malignant and Malignant Breast Pathology

Malk Beydoun, Kavita Jain, Brigitte Baella Olivieri, Katie Carsky, Paul Baron

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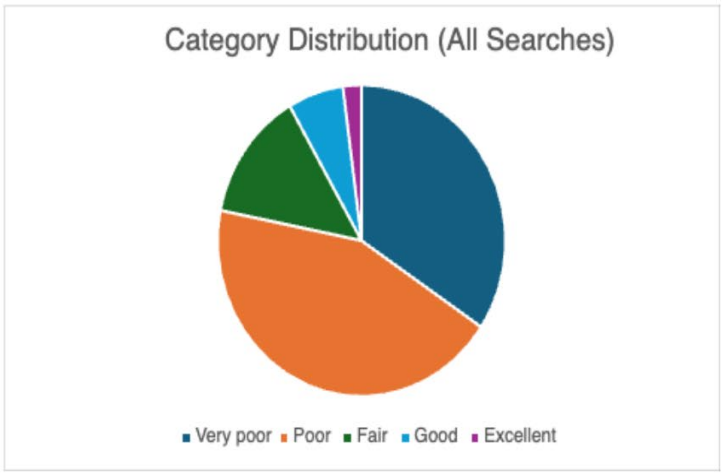
Background/Objective: Online consumer health information is becoming increasingly accessible to patients worldwide, with over 80% of searches being done with Google. Patients are researching their diagnoses and possible treatment options even prior to consultation with health care providers, however given the multitude of agencies (private, government, academic, etc.), the content of information is not standardized across the available resources. Thus, with the increased prevalence of online health information, we aim to assess the quality of reliability of online consumer health information for high risk, pre-malignant, and malignant breast pathology.

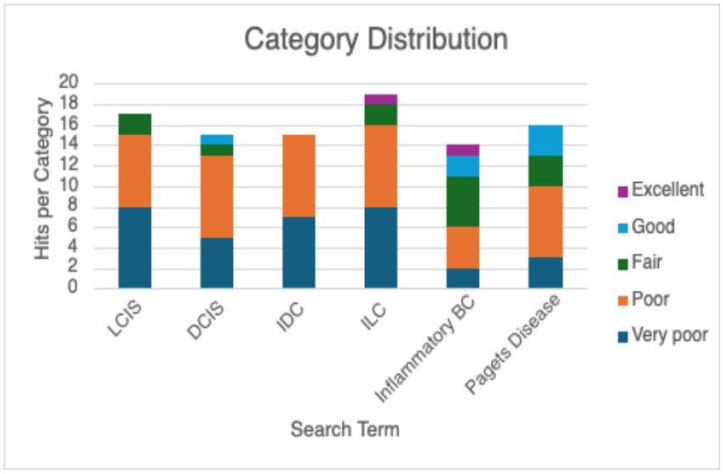
Methods: We used Google to search the following terms “LCIS,” “DCIS,” “Invasive Ductal Carcinoma,” “Infiltrating Lobular Carcinoma,” “Inflammatory Breast Cancer,” and “Pagets Disease of the Breast.” Inclusion criteria were any websites within the first two pages of the Google Search, including the “Google Snippet” if available. Exclusion criteria were duplicate websites, advertisements, incorrect topics, log-in requirement, and if it required payment. Websites were evaluated using the DISCERN tool, which is a validated scoring system which can assess both the reliability and quality of consumer health information. Each website was scored by two independent reviewers. The DISCERN Score includes 40 points for reliability, 35 points for quality, and 5 points for an overall rating of the website. For each diagnosis, the mean DISCERN score, mean reliability, and mean quality scores were calculated.

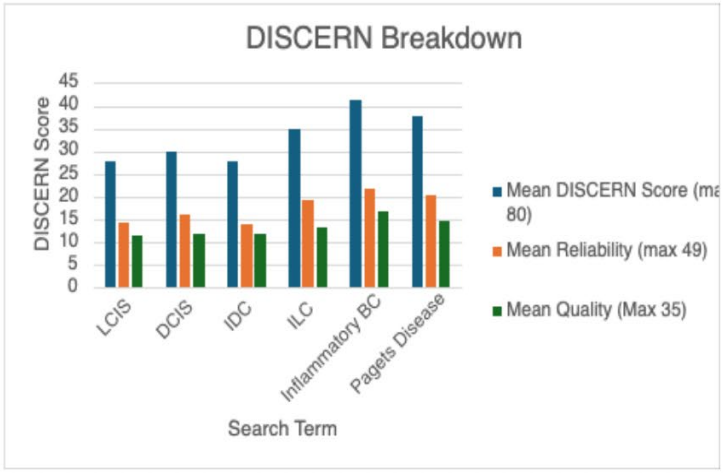
Results: In the first two pages, each Google search resulted in 18 to 20 websites, 14 to 19 met inclusion criteria. The most common DISCERN rating was poor and mean scores, which ranged from 27.6 to 41.1. Mean reliability scores ranged from 13.8 to 21.6 and mean quality scores ranged from 11.5 to 16.7. The most common ratings were "poor" (43.75%) and "very poor” (34.375%), which equate to scores between 27-38 and < 27, respectively.

Conclusions: The use online search engines to garner health information regarding high risk, pre-malignant, and malignant breast pathologies and their treatments is continually rising. Most websites available for patient consumption is very poor to poor, with only two websites deemed excellent. With this knowledge, there is an obvious need to create evidence-based online health information for patients that is easy to understand and contains accurate and thorough information regarding the diagnoses and treatment. The DISCERN tool may even be used as a template to create a high quality and reliable resource.

Figure 1: Assessing Quality and Reliability of Online Consumer Health Information for High Risk, Pre-Malignant, and Malignant Breast Pathology Figure 1







1988792 - Post-operative opioid use and pain perception in patients undergoing breast surgery

Molly Nyren[1], Emma Spitz[2], Mu Jin[2], Margaret Lillie[3], Julia Selfridge[1], Chris Agala[2], Kristalyn Gallagher[1]

[1]University of North Carolina Chapel Hill, Chapel Hill, NC, [2]UNC Chapel Hill School of Medicine, Chapel Hill, NC, [3]Lineberger Comprehensive Cancer Center, Carrboro, NC

Background/Objective: Breast cancer patients undergoing oncologic surgery may be at risk for postoperative opioid misuse. Multiple studies have found that healthcare providers overprescribe opioids on discharge, contributing to potential narcotic medication misuse or dependence. The purpose of this study is to gain insight into patient perception and use of postoperative opioid pain medications in breast surgery patients. We hypothesized that narcotic pain medications might not be necessary for postoperative pain control following most breast surgical procedures.

Methods: This prospective, qualitative study of breast cancer patients ≥18 years old provided patients undergoing breast surgery (excisional biopsy: EB, breast conservation: BCS, mastectomy +/- reconstruction: M) with a survey questionnaire on post-operative prescription opioid use, non-narcotic pain medication use, and reported pain using the Wong-Baker FACES pain rating scale. Participants provided pain scores from post-operative day (POD) 0, POD2, and POD7. Patient demographics, including age, gender, race, and cancer-specific demographics, were captured using a retrospective electronic medical record (EMR) review. The demographics, pain scores, and morphine milliequivalent (MME) used and prescribed were compared by surgery type using Fisher's exact test, Kruskal-Wallis rank sum test, and Pearson's Chi-square test. Bivariate and multivariate linear regressions were used to compare risk factors and MME prescribed/used and post-operative pain.

Results: Of the 241 participants who completed the survey, the majority had BCS (N=130), followed by EB (N=55), and M +/- reconstruction (N=56). 72% of patients were Caucasian (N=174), 22% were African American (N= 52), and 3.7% (N=9) were Hispanic/Latino. Mean age was 58 years (SD: 15). Oxycodone (N=129; 54%) or Tramadol (N=112; 46%) was prescribed post-operatively, and 47% of patients reported taking no opioids (N=113). Only 25% of the M cohort reported not taking opioids compared to 53% and 54% of the EB and BCS cohorts, respectively (p=0.005). The EB and BCS cohorts required less MME compared to mastectomy (EB: 10 MME (SD:14), BCS: 9 MME (SD: 13), and M: 43 MME (SD: 47), p< 0.001). When comparing patients who took opioids vs did not take opioids, mean pain scores were 4.6 (SD: 2.9) and 3.8 (SD 2.5) on POD2 for the patients who took oxycodone and tramadol respectively, but only 2.3 (SD: 2.3) for patients who took no opioids (p< 0.001). In covariate analysis, the only risk factor associated with higher MME usage was mastectomy, with an average of 27 (95% CI: 19-35) more MME used compared to BCT.

Conclusions: Greater than 50% of patients undergoing EB or BCS did not require opioid medications and reported significantly less pain compared to their counterparts who took opioids. This suggests that opioids may not be necessary for many patients undergoing breast surgery. Mastectomies with or without reconstruction, have higher pain post-operatively, but only by approximately 1 point on the Wong-Baker FACES scale and 25% of these patients also did not require opioids, suggesting that this population may also be a target for lower opioid prescribing practices.

1988707 - Comparing Quality and Reliability of Online Consumer Health Information for Breast Pathology by Search Engines versus Artificial Intelligence

Kavita Jain, Malk Beydoun, Brigitte Baella Olivieri, Katie Carsky, Paul Baron

Lenox Hill Hospital, New York, NY

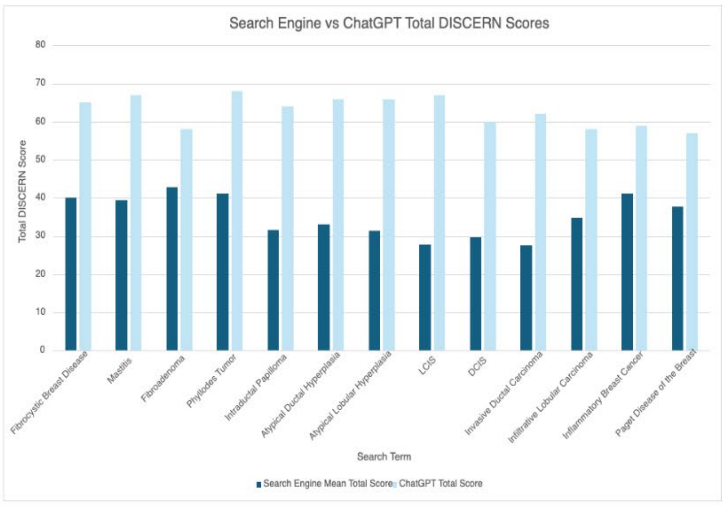
Background/Objective: With the introduction of artificial intelligence (AI), there has been an increasing number of patients turning to AI platforms such as ChatGPT for information regarding health diagnoses due to its user-friendly interface and ease of access. With nearly 10 million users to date, it is evident that AI is a key source of health information alongside traditional search engines like Google. Given the continued uptrend, we aim to evaluate the quality and reliability of information from ChatGPT compared to conventional search engines for various benign, high risk, pre-malignant, and malignant breast pathologies and how we may improve patient education.

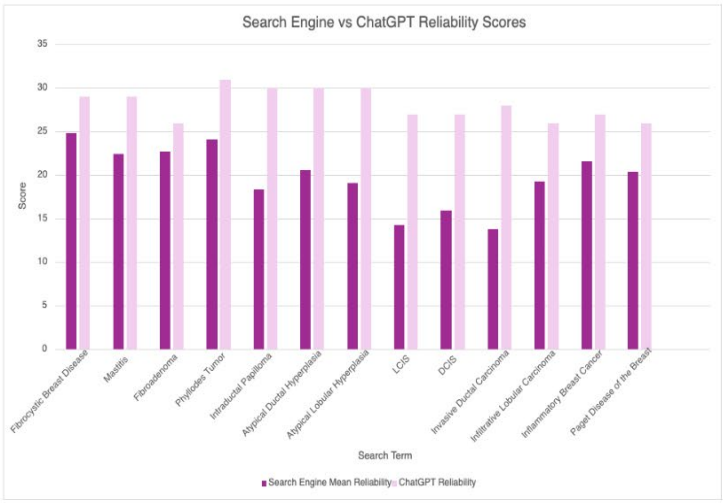
Methods: A Google search was done for the terms “Fibrocystic Breast Disease”, “Mastitis”, “Fibroadenoma”, “Phyllodes Tumor”, “Intraductal Papilloma”, “Atypical Ductal Hyperplasia”, “Atypical Lobular Hyperplasia”, “LCIS”, “DCIS”, “Invasive Ductal Carcinoma”, “Infiltrating Lobular Carcinoma”, “Inflammatory Breast Cancer”, and “Pagets Disease of the Breast”. The DISCERN tool, a validated scoring system developed to assess the reliability and quality of consumer health information, was used to evaluate websites on the first two pages of the Google Search. Websites were excluded if they were duplicates, advertisements, incorrect topics, required a log-in, and if payment required. Each website was scored by two independent reviewers. For each diagnosis, ChatGPT-4 Omni was “asked” two standardized questions, and answers were evaluated using the DISCERN tool. The prompt for reliability asked for a summary of the designated pathology, aims of the response, resources used with dates of production, and additional sources of information. The prompt for quality asked for a description of treatments and mechanics, risks, benefits, effects on quality of life, effect if no treatment, and support for shared decision making. For each diagnosis, the mean DISCERN score, mean reliability, and mean quality scores were calculated and compared to the respective score for ChatGPT generated responses using unpaired t-tests with a two-tailed $p< 0.05$ and CI of 95%.

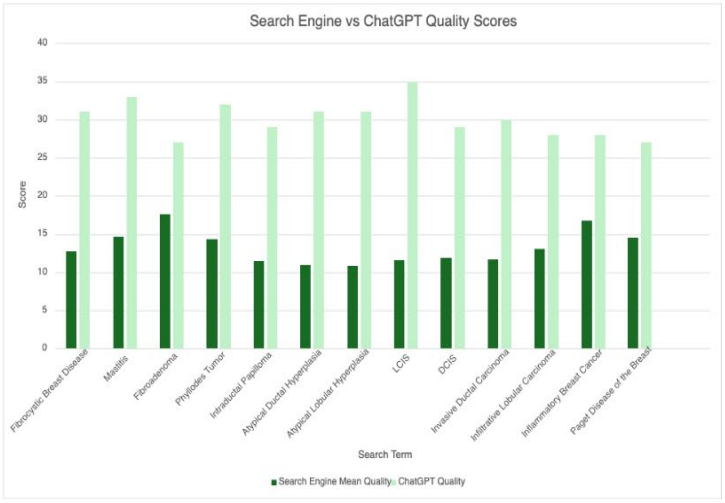
Results: Each term produced 10-17 hits in the first two pages, after excluded studies were removed and inclusion criteria met; one response was recorded for ChatGPT per diagnosis. Mean total DISCERN scores for each diagnosis ranged from 31.46 to 42.94, which ranges from Poor to Fair rating. 11% were rated “Good” (score between 51-62), 34% were rated “Fair” (score between 39-50), 32% were rated “Poor” (score between 27-38), and 23% were rated “Very Poor” (score under 27). No websites were rated “Excellent” (score > 62). Mean scores for reliability were higher than for quality.

Conclusions: AI provides a promising alternative resource for patients seeking health information regarding their benign, high risk, pre-malignant and malignant breast diagnoses. AI platforms like ChatGPT are intuitive to use, and when compared to results from a common search engine, provide patients with more reliable and higher quality information. Given the need for improved sources of online consumer health information, using the DISCERN tool and AI may aid in the creation of enhanced resources and overall improved patient education.

Figure 1


Search Engine vs ChatGPT Total DISCERN Scores
Total DISCERN Score
80
70
60
50
40
30
20
10
0
Fibrocystic Breast Disease
Mastitis
Fibroadenoma
Phyllodes Tumor
Intraductal Papilloma
Atypical Ductal Hyperplasia
Atypical Lobular Hyperplasia
LCIS
DCIS
Invasive Ductal Carcinoma
Infiltrative Lobular Carcinoma
Inflammatory Breast Cancer
Paget Disease of the Breast
Search Term
Search Engine Mean Total Score
ChatGPT Total Score


Search Engine vs ChatGPT Reliability Scores
Score
35
30
25
20
15
10
5
0
Fibrocystic Breast Disease
Mastitis
Fibroadenoma
Phyllodes Tumor
Intraductal Papilloma
Atypical Ductal Hyperplasia
Atypical Lobular Hyperplasia
LCIS
DCIS
Invasive Ductal Carcinoma
Infiltrative Lobular Carcinoma
Inflammatory Breast Cancer
Paget Disease of the Breast
Search Term
Search Engine Mean Reliability
ChatGPT Reliability


Search Engine vs ChatGPT Quality Scores
Score
40
35
30
25
20
15
10
5
0
Fibrocystic Breast Disease
Mastitis
Fibroadenoma
Phyllodes Tumor
Intraductal Papilloma
Atypical Ductal Hyperplasia
Atypical Lobular Hyperplasia
LCIS
DCIS
Invasive Ductal Carcinoma
Infiltrative Lobular Carcinoma
Inflammatory Breast Cancer
Paget Disease of the Breast
Search Term
Search Engine Mean Quality
ChatGPT Quality

Phyllodes

1988715 - Prognostic factors associated with recurrence in malignant phyllodes tumors: Results from Latin American cancer institute

Maria Ramos Perez, N/A[1], Augusto Ordoñez-Chinguel[2], Martín Falla-Jimenez[1], Julio Abugattas-Saba[3], Jorge Dunstan Yataco[1], Jose Manuel Cotrina Concha[1], Mercedes Bravo-Taxa[3], Zaida Morante-Cruz[1], Gustavo Sarria[4]

[1]Instituto Nacional de Enfermedades Neoplasicas, Lima, Peru, [2]Clinica Auna, Lima, Peru, [3]Instituto Nacional de Enfermedades Neoplásica, Lima, Peru, [4]University Hospital, Bonn, Nordrhein-Westfalen, Germany

Background/Objective: To evaluate the prognostic factors of recurrence in malignant Phyllodes Tumor in patients treated at the National Institute of Neoplastic Diseases during the period 2000 to 2020.

Methods: We selected and enrolled patients treated of Malignant Phyllodes Tumor from Stadistic and Epidemiology database of Institute National of Cancer (Lima, Peru) between 2000 and 2020; one case of bilateral MPT was excluded. A descriptive analysis was performed using frequencies, percentages, and summary measures (mean, median, minimum, maximum, interquartile range). Estimates of OS (Overall Survival) and LRFS (Local recurrence- free survival) were made with Kaplan-Meier method and Logrank test for evaluating differences in survival according to characteristics of interest.

Results: A total of 159 patients with malignant Phyllodes Tumor were evaluated, with the median age being 45 years; of the total, 73% received initial surgical treatment with mastectomy vs 27% breast conservation surgery (BCS). A total of 14.5% of the last group underwent margin widening. The median tumor size was 12 cm and most patients had cellular atypia (78.6%), mitotic index greater than 10 mitoses/HPF (69.8%), tumor necrosis (50.3%), presence of heterologous elements (27.7%), and free margins (81.1%). The most frequent heterologous elements were Liposarcoma differentiation (13.6%). Regarding systemic treatment, 10.7% received chemotherapy, and 16.4% received radiotherapy, and 26.4% received both. Out of total patients, 34 deaths were recorded, the OS for 12, 36, 60 and 120 months was 92%, 77%, 77% and 50%. Recurrence was documented in 45 cases (28.3%); The median follow-up time, for LRFS was 33 months with a range from < 1 month to 223 months. The LRFS at 12, 36, 60, and 120 months 82%, 68%, 66%, and 63% respectively. We found significative differences in OS and LRFS depending of type of surgical treatment (higher in BCS), tumor size (OS was better in tumors less of 10 cm), and free-tumor margins (better results of LRFS). Otherwise, the LRFS in patients who had positive margins who underwent margin widening or mastectomy was higher than patients with positive margins with surveillance. There was no significant difference in OS or LRFS in patients who received adjuvant treatment vs those who had surgery alone.

Conclusions: In malignant phyllodes tumors, larger tumor size and margin involvement were seen to be factors associated with recurrence, while the presence of heterologous elements or tumor necrosis did not show an increase in the risk of recurrence. Surgery remains the gold standard of treatment, and

OS in patients with BCS was higher than in those who underwent mastectomy. Adjuvant treatments do not improve LRFS or OS compared to those who receive surgery alone.

Table 1: Estimates of recurrence-free survival according to study variables

Estimates of recurrence-free survival according to study variables

	N (events)	12m	36m	60m	120m	p-value
All patients	159 (45)	82%	68%	66%	63%	—
Age						0.83
<50	107 (31)	81%	66%	66%	62%	
>=50	52 (14)	85%	70%	66%	—	
Surgical treatment						0.51
Conservation	43 (11)	85%	73%	73%	65%	
Mastectomy¢	116 (34)	81%	65%	63%	63%	
Axillary Lymphadenectomy						0.15
Yes	21 (7)	61%	61%	61%	—	
No	138 (38)	85%	69%	67%	64%	
Tumoral size, cm						**0.0079**
<=10	61 (10)	90%	81%	81%	81%	
>10	88 (31)	78%	58%	55%	55%	
Cellular Atypia						**0.018**
Mild	3 (2)	33%	33%	—	—	
Moderate	63 (15)	88%	75%	72%	65%	
Severe	59 (15)	81%	69%	69%	—	
No	3 (2)	67%	—	—	—	
Mitotic rate						0.71
<4	5 (1)	75%	75%	75%	—	
5-9	17 (3)	87%	78%	78%	78%	
>10	111 (30)	83%	71%	68%	64%	
Tumoral Necrosis						0.95
Present	80 (23)	85%	68%	65%	—	
Absent	43 (12)	80%	67%	67%	—	
Heterologous elements						0.051
Present	44 (17)	73%	56%	56%	56%	
Absent	96 (21)	86%	76%	73%	—	
Surgical Margins						0.78
Tumor-Free	129 (36)	81%	68%	66%	62%	
Positive margins	28 (8)	89%	67%	67%	67%	
Margins and widening						**0.022**
Positive margins + Widening/Mastectomy	16 (2)	100%	84%	84%	—	
Positive margins + Follow-up	11 (6)	73%	45%	45%	45%	
Distance of surgical margins						0.62
<=1	32 (9)	82%	65%	65%	—	
>1-5	35 (8)	87%	71%	71%	71%	
>5	38 (7)	86%	79%	79%	—	
Adjuvant Treatment						0.63
QT	17 (3)	85%	74%	74%	74%	
RT	26 (5)	88%	78%	78%	—	
QT-RT	42 (13)	78%	67%	67%	—	
No	74 (24)	81%	63%	60%	55%	

Quality Measures

1982227 - Hospital and Demographic Factors Associated with Endorsement of Psychological Distress Symptoms in Newly Diagnosed Breast Cancer

Stephanie Serres[1], Song Zhang[1], Adam Yopp[1], Heather Neuman[2], Deborah Farr[1], Heather McArthur[1], Amit Singal[1], Sandi Pruitt[1], Shruti Zaveri[1], Ann Marilyn Leitch[1], Anvy Nguyen[1], Stevany Saxon-Filipe[1], Anthony Froix[1], Rachel Wooldridge[1], Carolyn Smith-Morris[1]

[1]University of Texas Southwestern Medical Center, Dallas, TX, [2]University of Wisconsin School of Medicine and Public Health, Madison, WI

Background/Objective: A diagnosis of breast cancer can result in a range of psychological distress, with over 40% of patients experiencing depression, anxiety, or both within 6 months of diagnosis. National quality standards recommend all patients have psychosocial distress screening as a component of high-quality care. The Patient Health Questionnaire for Anxiety and Depression (PHQ-4) has been used to assess psychological distress in breast cancer patients, but little data exist on distress levels with this measure. The present study aimed to assess levels of PHQ4 screening positivity among a diverse sample of newly diagnosed breast cancer patients.

Methods: We conducted a retrospective cohort analysis of patients with newly diagnosed Stage 0 through IV breast cancer from 2019 to 2023 treated at two distinct settings, one tertiary care referral center and one safety-net health system. Patients with completed PHQ4 scores on their initial visit with either surgical or medical oncology were included. The PHQ4, a 4-question self-report screening for anxiety and depression, was considered positive with a mild to severe score (≥3). Univariate and multivariate logistic regression were used to identify factors associated with higher distress screening scores.

Results: Of 4,117 patients, 61.4% and 38.6% were treated at the tertiary care referral center and the safety-net health system, respectively. Overall, 19.2% reported psychological distress. Rates of PHQ4 screening positivity was significantly higher for those treated at the tertiary care referral center (24.8% vs. 10.4% at safety-net health system, $p< 0.0001$, Table 1), White patients (20.3% vs. 15.3% in Black or African American patients, $p= 0.0135$), and non-Hispanic patients (22.0% versus 12.8% in patients of Hispanic ethnicity, $p< 0.0001$). Younger age was associated with increased likelihood of a positive distress screen (mean age of positive vs. negative screen: 54.7 years vs. 56.7 years, respectively, $p=0.0001$). Differences between male and female patients (13.0% vs. 19.3%, respectively, $p=0.45$) and married and non-married patients were not statistically significant in univariate analyses (20.1% vs. 19.3%, respectively, $p=0.07$). Significant differences were noted between payors, with patients with private insurance and Medicare reporting the highest PHQ4 screening positivity (29.0% and 18.8%, respectively), whereas those with other government insurance (15.2%), Medicaid (10.1%), and those who were uninsured (9.2%) reporting lower rates of distress on the PHQ4 ($p< 0.0001$). We built the multivariate logistic model for positive distress screening through stepwise variable selection. Statistically significant covariates in the final model included hospital setting ($p< 0.0001$), age ($p< 0.0001$), marital status ($p=0.0010$), and payor ($p=0.0001$), while race and gender dropped out.

Conclusions: Significant differences were seen in self-reported anxiety and depression symptoms in newly diagnosed breast cancer patients. Given the significant differences observed in PHQ4 scores in patient populations who might be expected to have significant distress, the PHQ4 instrument may not be an adequate screening tool to successfully identify distress across a broad range of newly diagnosed breast cancer patients. To meet national guideline criteria for comprehensive evaluation of breast cancer patients, further work should be done to elucidate best practices for identification of distress in diverse populations.

Table 1: Proportion of PHQ4 Screening Positivity Among Different Groups of Newly Diagnosed Breast Cancer Patients

Proportion of PHQ4 Screening Positivity Among Different Groups of Newly Diagnosed Breast Cancer Patients					
	Positive Screen	Percent Positive	Negative Screen	Percent Positive	p-value
Safety Net Hospital	165	10.4%	1425	89.6%	<0.0001
University Hospital	626	24.8%	1901	75.2%	
White	581	20.3%	2281	79.7%	0.0135
Black or African American	144	15.3%	798	84.7%	
American Indian or Alaska Native	4	28.6%	10	71.4%	
Asian or Pacific Islander	61	21.3%	225	78.7%	
Other	0	0.0%	2	100.0%	
Unknown by Patient	1	9.1%	10	90.9%	
Hispanic/Spanish Origin	168	12.8%	1144	87.2%	<0.0001
Non-Hispanic Non-Spanish Origin	575	22.0%	2036	78.0%	
Unknown if Hispanic	48	24.7%	146	75.3%	
Male	3	13.0%	20	87.0%	0.4514
Female	788	19.2%	3306	80.8%	
Private Insurance/ Managed Care	400	29.0%	980	71.0%	<0.0001
Medicaid	24	10.1%	214	89.9%	
Medicare	183	18.8%	789	81.2%	
Not insured	83	9.2%	818	90.8%	
Other Government	37	15.2%	207	84.8%	
Insurance Status Unknown	12	16.4%	61	83.6%	
Married	390	20.1%	1555	79.9%	0.0681
Not Married	335	19.3%	1401	80.7%	
Unknown	66	15.2%	368	84.8%	

1987458 - Investigating nursing perceptions of using ipsilateral arm for venipuncture and blood pressure measurement in patients who have undergone breast cancer surgery

Heba Elassar[1], Anna Kobzeva-Herzog[1], Yilan Jiangliu[1], Michael Cassidy[2], Andrea Merrill[3]

[1]Boston University Medical Center, Boston, MA, [2]Boston University Chobanian & Avedisian School of Medicine Boston Medical Center, Boston, MA, [3]Sentara Martha Jefferson Hospital, Charlottesville, VA

Background/Objective: The practice of avoiding venipuncture or blood pressure measurements in the arm ipsilateral to breast cancer surgery has traditionally been thought to mitigate the risk of lymphedema development. Growing research has shown that this practice is not necessary in most cases, although institutional policy and common nursing practice has continued to perpetuate the avoidance of using the ipsilateral arm. Our aim was to understand the perceptions among nurses who commonly care for patients who undergo breast cancer surgery to inform policy change.

Methods: A focus group was conducted with 32 pre-operative and post-anesthesia care unit (PACU) nurses at a single institution. Participants filled out a survey to assess initial perceptions and then participated in a 30 minute-long focus group to explore the survey questions in more depth. The anonymous survey information was uploaded to a secure database.

Results: All 32 participants identified as working in the PACU or the pre-operative area. Half of the participants noted preference for using the non-operative side for placement of peripheral IV or blood pressure cuff, and 37.5% reported they'd allow the patient to indicate their preference. 81.2% expressed learning the concept of avoiding the operative side while in nursing school or during their early career. When asked about the institution's policy, 14 of the 32 total participants reported not knowing the policy, while 7 of the 15 who indicated knowing the policy referenced it incorrectly. 81.2% of participants agreed that a policy change, physician order, or a post-surgery physician-signed card clarifying post-surgical arm use would increase their comfort level of using the affected arm.

Conclusions: Our findings demonstrate that the practice of avoiding the ipsilateral arm for venipuncture is still ingrained in nursing education and may be reinforced by institutional policy and patient preference. There are multiple opportunities to change practice, including patient education, institutional policy change, and physician order sets.

1983810 - Breast surgery: art or science? Survey of 36 experienced breast surgical oncologists

Vincent Reid[1], Linsey Gold[2], Eric Brown[2], Joseph Peterson[3], Allison DiPasquale[4], Anne Peled[5], Walton Taylor[6], Barry Rosen[7]

[1]Mercy Medical Center, Cedar Rapids, IA, [2]Comprehensive Breast Care, Troy, MI, [3]SimBioSys, Inc., Chicago, IL, [4]Medical City Dallas Hospital, Dallas, TX, [5]Sutter Health, San Francisco, CA, [6]Texas Health Surgical Specialists, Dallas, TX, [7]Advocate Health Care, Barrington, IL

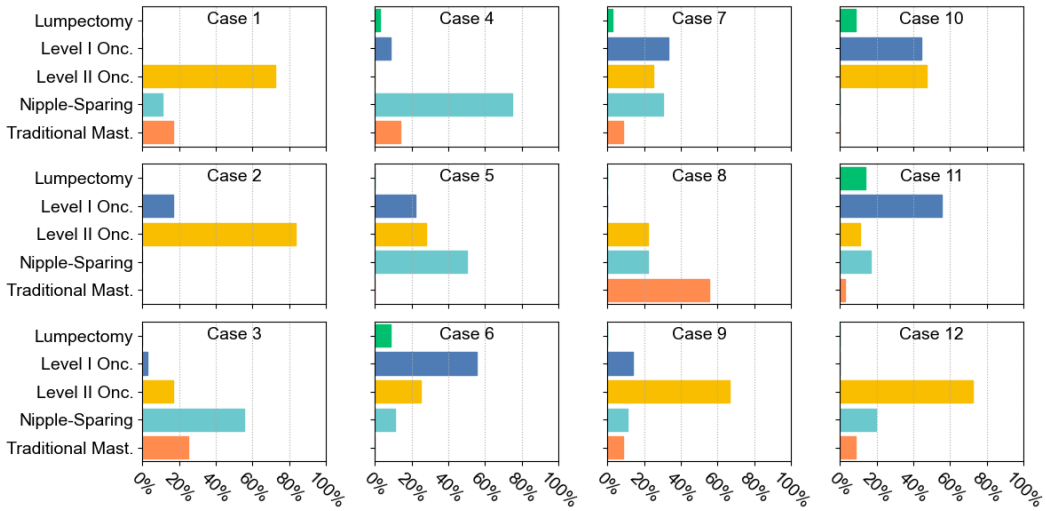
Background/Objective: It is our hypothesis that the operation a woman has for breast cancer may be more dependent on the surgeon she sees rather than her intrinsic disease.

Methods: We tested this hypothesis by surveying a group of experienced breast surgical oncologists with twelve patient case-studies, including relevant clinical data, MRI images, and patient photographs. All case-studies included multifocal tumors. Respondents were asked to select their recommended operation from amongst the following five choices, assuming that all patients were otherwise-healthy, and desired the smallest operation with the best cosmetic outcome: lumpectomy; level I oncoplastic lumpectomy; level II oncoplastic lumpectomy; nipple-sparing mastectomy, and; traditional mastectomy. Respondents were also asked to estimate what percentage of the breast, to the nearest decile, would need to be removed.

Results: There were 36 subjects (20 female, 16 male), with an average of 19 years of post-training clinical practice. We calculated each surgeon's breast conservation (BCS) rate, which varied between 33%–91% (median 66%). No statistically significant association was found between BCS recommendation and years of practice ($p=0.16$; t-test), or participant sex ($p=0.89$). We found significant variation in the specific operation chosen; no pair of participants chose the same plan across all patients, and only one pair had the same recommendations for BCS versus mastectomy. The likelihood that any two physicians would agree on any surgical plan was 42%±15%; when looking at lumpectomy vs. mastectomy, the likelihood was 71%±16%. Consistency of BCS versus mastectomy recommendation was assessed by Cohen's kappa (κ) and found to be fair ($\kappa = 0.38\pm0.27$), but not likely to be moderate ($\kappa< 0.4$; $p< 0.01$) or good ($\kappa< 0.6$; $p< 5x10^{-80}$). The consistency of individual surgery type was assessed by intraclass correlation coefficient (ICC). An ICC of 0.43 (95% CI: [0.26, 0.69], $p < 1x10^{-42}$) was found, corresponding to fair agreement (0.4–0.59) across subjects. Significant variability was also observed in estimated percentage of breast to remove: 28%±12%. Strikingly, the average coefficient of variation (standard deviation over average) for the percentage of breast removed was 0.50±0.14. The ICC for estimated percent of breast removed was 0.48 (95% CI: [0.31, 0.74], $p < 1x10^{-48}$), again corresponding to a fair agreement (0.4–0.59).

Conclusions: It is clear that even amongst an experienced group of breast surgical oncologists, there is significant variation in surgical recommendations. This was evident in the specific type of breast-conserving operation, type of mastectomy, and the choice between breast conservation or mastectomy. Indeed, our results indicated that a patient like those included in the study would receive a different second opinion 58% of the time when considering all five surgical options, and 29% of the time when considering BCS versus mastectomy. Breast cancer surgical planning appears to be more of an art than science, and lends itself well to further study to understand the degree of implicit bias in recommendations, and the development of surgical planning tools to reduce variation.

Table 1: Significant Variation in the Surgical Operation Chosen by Survey Participants



1988047 - Characterizing the General Surgery Experience of Future Breast Surgeons: A Multi-Institutional Study from the US ROPE Consortium

Anna Reagan[1], Polina Zmijewski[2], Lauren Postlewait[3], Deborah Farr[4], Jitesh Patel[1], Joseph Kim[1], Irada Ibrahim-zada[1], Veronica Jones[1], Alexander Cortez[5], Leah Winer[1]

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Background/Objective: Breast oncologic and surgical care have undergone remarkable transformation over the last 50 years. Given its increasing complexity, breast surgery is now a separate subspecialty practice, with the first breast surgical oncology (BSO) fellowship established in 2003. Still, expertise in breast surgery remains central to general surgery training, as evidenced by the ACGME's minimum requirement of 40 breast cases and the inclusion of breast disease among the ABS Entrustable Professional Activities. In this multicenter study, we examined breast surgery operative experience of general surgery residents, with particular focus on graduates pursuing BSO fellowship.

Methods: Demographics, program characteristics, and ACGME case logs were collected for graduates from 20 general surgery residency programs in the US Resident OPerative Experience (ROPE) Consortium from 2010 to 2020. BSO fellowship matriculants (BSO Group) were compared to those entering other surgical fellowships or general surgery practice upon graduation (Non-BSO Group).

Results: Among 1343 graduates over the 10-year study period, 45 (3.4%) matriculated into BSO and 1298 (96.4%) pursued other fellowships or general surgery practice. In contrast to the Non-BSO Group, the majority of BSO fellowship matriculants were female (89% v 34%, $p< 0.0001$). Other demographic variables were similar between the BSO and Non-BSO Groups, including median age (33 v 33) and race/ethnicity (68.9% v 68.7% white; 15.6% v 15.6% underrepresented minorities; all $p>0.05$). Program characteristics were similar between groups, with the majority of the BSO Group from university-based programs (87% v 93%), affiliated with an NCI-designated cancer center (67% v 69%) and a similar number with a co-located BSO fellowship (47% v 42%, all $p>0.05$). Resident operative experience was then compared by both case designation and domain. Overall, the BSO Group logged significantly fewer median total procedures (976 v 1039), consisting of reduced surgeon junior (717 v 748) and teaching assist cases (31 v 41, all $p< 0.05$). Surgeon chief cases were similar between groups (230 v 235, $p>0.05$). Upon examining specific case domains, breast was the only area in which the BSO Group logged significantly greater cases (74 v 50, $p< 0.0001$), despite similar exposure to a dedicated breast surgery rotation (64% v 64%) and BSO-trained faculty (82% v 84%; both $p>0.05$) among cohorts. In adjusted analysis, female sex (OR 12.8, CI 4.88-33.73), increased breast cases (OR 1.04, CI 1.03-1.05), and lower resident operative volume (OR 6.83, CI 2.35-19.87; all $p< 0.05$) were independently associated with BSO fellowship matriculation.

Conclusions: In this multicenter study, we identified that future breast surgeons perform about 50% more breast cases compared with other general surgery residency graduates. However, they also graduate with fewer total cases and reduced experience in all domains aside from breast. This may signify that BSO fellowship matriculants develop early interest in breast surgery and tailor their training by performing more breast cases at the cost of a broader general surgery experience. These findings are relevant to current conversations in surgical education regarding the role of early

specialization in training. Further mixed-methods studies are needed to understand these findings and their implications for trainees pursuing careers in breast surgery.

1988277 - Variation in Guideline Concordant Care of Inflammatory Breast Cancer; Local, Regional, and Surgical Volume Considerations

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Background/Objective: Aggressive trimodal therapy consisting of neoadjuvant chemotherapy (NACT), modified radical mastectomy (MRM) without reconstruction, and post-mastectomy whole-breast radiation (PMRT) is considered standard of care for inflammatory breast cancer (IBC) and has been shown to provide survival benefit. Prior studies have shown significant deviation from standard of care, with only 1 in 3 patients receiving guideline concordant care. The aim of this study was to characterize contemporary national trends in overall and surgical management of IBC and variations in practice at a granular facility level.

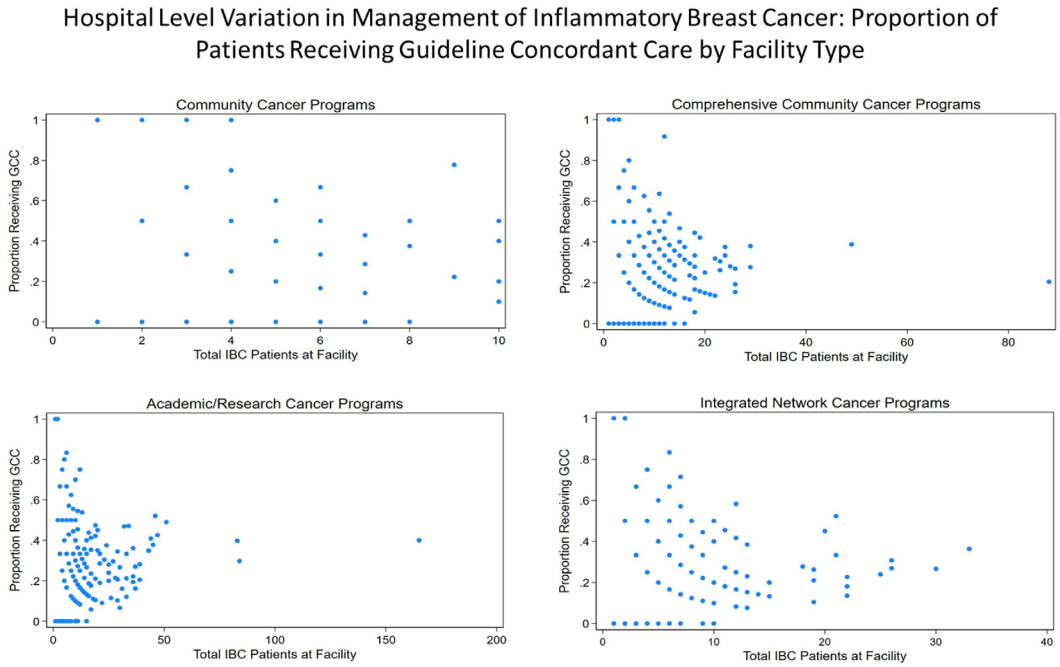
Methods: The National Cancer Database was used to identify patients with IBC diagnosed between 2012-2021. Patients with de novo Stage IV disease were excluded. Patients were stratified based on receipt of guideline concordant care (GCC) defined as treatment with NACT, MRM, and PMRT. Criteria for guideline concordant surgical care was not met if the patient underwent partial mastectomy, skin/nipple-sparing mastectomy, reconstruction at the time of the index case, prophylactic contralateral mastectomy, or if they did not have an axillary lymph node dissection. The proportion of patients treated with guideline concordant care was compared between facility type, geographic region, and facility volume, while controlling for demographic and clinical variables via univariate and multivariate analyses.

Results: A total of 8,651 nonmetastatic IBC patients were identified within the study period. Of those, 8.1% were treated at a community cancer program, 38.7% at a comprehensive community cancer program, 34.4% at an integrated network cancer program, and 18.8% at an academic/research cancer program (including NCI-designated comprehensive cancer centers). Overall, only 26.3% (2,275 patients) received GCC. Among those who did not meet GCC, 51.6% did not receive neoadjuvant chemotherapy, 66.1% had non-standard breast surgery, 34.5% did not have an ALND, and 44.0% did not have PMRT. There was significant variation in GCC of IBC based on facility type ($p< 0.001$). Despite treating the highest volume of IBC patients, comprehensive community cancer programs had a significantly lower proportion of IBC patients receiving overall GCC (23.8% compared to 29.9% at academic/research programs, $p< 0.001$). Similarly, there is significant regional variation in treatment of IBC—despite the highest volume of IBC patients in the South, facilities in the South had the lowest proportion of patients meeting overall GCC (25.2% compared to 28.8% in the Northeast, $p< 0.014$). When considered at a local hospital level, proportions of patients receiving overall GCC ranged from 0 to 100% (median 25%, IQR 14.3-37.5%), and 0 to 100% of surgical GCC (median 46.7%, IQR 33.3-60.0%).

Conclusions: Significant variation exists in management of IBC, leading to a large percentage of patients receiving guideline discordant care. Given significant variation at the facility level,

interventions targeting hospital level factors such as local care coordination and multidisciplinary tumor board engagement may be needed to improve standardization of care for IBC patients.

Figure 1: Hospital-Level Variation in Management of Inflammatory Breast Cancer: Proportion of Patients Receiving Guideline-Concordant Care by Facility Type



1988793 - Affective Forecasting in Breast Cancer Surgery: Assessing Patient Predictions of Quality of Life and Decision-making Between Breast-Conserving Therapy and Mastectomy

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Background/Objective: Treatment decisions for breast cancer are complex and often depend on patients' ability to predict their future feelings and quality of life, a process known as affective forecasting. While breast-conserving therapy (BCT) and mastectomy offer similar oncological outcomes for early-stage breast cancer, mastectomy is more invasive, involves a longer recovery, and often requires additional cosmetic procedures. Despite being eligible for BCT, more patients are choosing mastectomy, often due to fear of recurrence and possibly without full awareness of the differences in long-term quality of life (QoL) between procedures. This study aimed to examine how well patients with breast cancer predict future QoL after lumpectomy or mastectomy, with the goal of supporting shared, informed decision-making that aligns with patients' values and optimizes long-term survival.

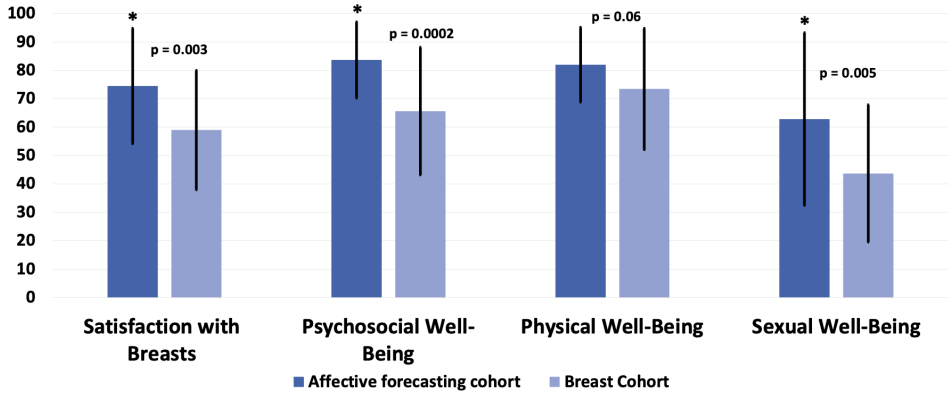
Methods: Two groups of women with Stage 0-III breast cancer were surveyed longitudinally across four BREAST-Q survey QoL domains (0-100 scales): (1) satisfaction with breasts, (2) psychosocial well-being, (3) physical well-being, and (4) sexual well-being. The "breast cohort" (N = 202) consisted of women who had already undergone BCT, mastectomy without reconstruction, or mastectomy with reconstruction and reported their actual QoL outcomes at 6 months and 1-year post-surgery. The "affective forecasting cohort" (N = 35) included women who had not yet undergone surgery and were asked to predict their future QoL in these domains at 6 months and 1 year if they underwent BCT, mastectomy without reconstruction, or mastectomy with reconstruction. Mean QoL scores between the affective forecasting and breast cohorts were compared using two-tailed t-tests across all four domains.

Results: We found no significant difference in the BCT or mastectomy without reconstruction groups between affective forecasting and actual QoL across the four domains at 6-month or 1-year time points. At 6 months, women predicting outcomes for mastectomy with reconstruction overestimated their future satisfaction with breasts (predicted: 63.17 v actual: 48.40, $p = 0.01$). At 1-year women predicting outcomes for mastectomy with reconstruction overestimated their future satisfaction with breasts, psychosocial well-being, and sexual well-being (Figure 1).

Conclusions: Women considering mastectomy with reconstruction may benefit from preoperative counseling that provides a more realistic perspective on QoL outcomes, especially regarding body image, psychosocial well-being, and sexual well-being. Incorporating affective forecasting into pre-surgical discussions may facilitate informed decision-making and align patient expectations with realistic post-surgical experiences.

Figure 1

Figure 1. Comparison of 1-year affective forecasting versus actual post-operative BREAST-Q quality of life scores in women following mastectomy with reconstruction



* Indicates a significant difference between cohorts ($p<0.05$)

1988570 - Optimizing Breast Cancer Care Across an Integrated Healthcare System

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Background/Objective: Shifting payor and demographic dynamics have led to the creation of health system networks with patients seeking specialty cancer care at system affiliate locations expecting the same quality as the primary, often academic location. We sought to align a community affiliate hospital breast cancer program with the parent NCI-academic workflows and patient care treatment models to improve patient outcomes through specialty trained provider initial work up and treatment recommendations.

Methods: An NCI-academic institution added a new suburban community hospital to its health system in 2023. A fellowship-trained breast surgical oncologist (BSO) was deployed at the community hospital replacing the prior non-specialty general surgeon. The affiliate site was fully integrated into the overarching multidisciplinary breast cancer program. Programmatic policies and practice models were aligned to those of the NCI-academic institution, including one common nurse navigation team, all patient care pathways, benign and malignant multidisciplinary conferences, breast pathology, and breast radiology diagnostic workup. Combination cases with plastic reconstructive surgery were performed with NCI-academic reconstructive surgeons using two rooms to optimize allocated operating room (OR) time. Breast surgical oncology consultation volume; change in histopathology, imaging findings, and surgical treatment recommendations; and OR utilization were assessed.

Results: A fellowship trained BSO was deployed at a new community hospital affiliate in a multidisciplinary clinic (MDC) with an established community medical oncologist and radiation oncologist one day/week. Twenty-one clinics were held with 56 MDC visits during the seven-month evaluation period. In addition, the BSO completed 21 surgeon-only consultations. There was a 174% difference in breast cancer specific consultation volume for the BSO compared to the prior general surgeon. Pathology review was completed by the breast pathologist at the parent NCI site that resulted in a 27% change in histology and 17% change in prognostic markers. Breast radiology work up changed the surgery plan in 41% of patients with 31% having additional sites of disease and 40% with clinically meaningful increase in size. Moreover, an additional biopsy was needed in 28% of patients. The first quarter OR block utilization average was 108%. There was a 67% increase in operative volume between the BSO and prior general surgeon.

Conclusions: The future of healthcare should be directed towards treating patients in the right place, at the right time. Studies show breast cancer treatment changes in 43% of patients that obtain a second opinion at an NCI-designated cancer center, with significant changes attributed to disease-specific pathology and radiology evaluation. Furthermore, patients treated by disease-specific surgeons have improved outcomes and long-term survival. Our results illustrate how patient care outcomes were improved by overcoming barriers related to pathologic accuracy, comprehensive diagnostic imaging work up, and efficiency of breast surgical oncology time in clinic and OR. An integrated health system model that assures community-based NCI-level excellence using specialty trained providers in key disciplines alongside comprehensive implementation of policies can positively impact patient care outcomes and improve the efficiency of breast cancer care.

1988626 - Breast Surgery Seed Localization Effect on Patient Wait Times and Outcomes – a Quality Improvement Study

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Background/Objective: Patients with non-palpable breast lesions require tumor localization. Wires are placed under image guidance on the day of surgery. This may result in operating room delays and decreased operating room (OR) efficiency. Seed localization allows for localization techniques to occur ahead of surgical date to decouple the localization and surgical procedures. We examined the impact of this change on OR and radiology efficiency and effect on margin status.

Methods: Data was gathered retrospectively from September 2022 to June 2023. Patient hospital arrival and operative start times, surgical start and stop times, as well as margin status were captured from clinical records. Localization procedure start and stop times were gathered from radiologic records. Patient wait times, surgical times and localization times were calculated in minutes and compared between those who had wire localization (WL) or seed localization (SL).

Results: A total of 197 patients underwent WL and 199 underwent SL. Day of surgery patient wait times for surgery start decreased from 350 minutes with WL to 198 minutes with SL, a decrease of 43%. Localization procedure times remained similar (21 minutes for WL, 19 minutes for SL) as did operative times (52 minutes for WL, versus 54 minutes for SL). Positive margin rates for WL were 19.9% vs 17.1% for SL.

Conclusions: The introduction of seed localization decreased the time patients need to wait in the perioperative area on the day of their surgery, resulting in improved operating room efficiency. Procedure times remained stable, as did positive margin rates.

Figure 1: Outcomes for wire localization versus seed localization procedures

Wire localization (WL) patients (197) and seed localization (SL) patients (199) from September 2022 to June 2023

	WL (n=197)	SL (n=199)
Mean Day of Sx Wait Times (min)	350	198
Mean Radiology Placement Times (min)	21	19
Mean Operative Times (min)	52	54
Positive Margin Rate	19.9%	17.1%

1988652 - Enhanced Recovery Protocol for Same-Day Discharge After Mastectomy: A Scalable Multidisciplinary Framework for Diverse Postoperative Settings

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[1]The University of Kansas Medical Center, Kansas City, KS, [2]University of Kansas Cancer Center, Overland Park, KS, [3]University of Kansas Medical Center, Overland Park, KS

Background/Objective: Current literature suggests that enhanced recovery after surgery (ERAS) principles can be applied to discharge planning for mastectomy patients with and without reconstruction as the risk for post-operative readmission is low; however, a tangible framework has not been established resulting in many overnight hospitalizations. We sought to develop a multidisciplinary enhanced recovery protocol (ERP) that would allow successful same-day discharge following mastectomy.

Methods: A single academic institution retrospective chart review was performed of patients undergoing mastectomy from August 2023 through December 2023. All mastectomies were performed after implementation of the ERP. The ERP was developed by a multidisciplinary team of breast surgical oncologists, plastic reconstructive surgeons, anesthesiologists, and perioperative nurses. Phase I of the protocol focused on case preparation including 1) preoperative identification of barriers to same-day discharge, 2) complexity of case and case length, and 3) patient comorbidities. Phase II established day of surgery discharge criteria including 1) minimum observation time, 2) ambulation goals, and 3) tolerance of oral intake. Primary outcome was rate of readmission for postoperative complications within the immediate 72-hour postoperative period of initial surgery. Postoperative complications included hematoma, infection, reoperation, and poor pain control. The secondary outcome of interest was rate and indication of unplanned overnight hospitalization. Exclusion criteria included patients who had a planned admission due to comorbidities, extensive disease with expected case complexity, and prolonged anesthesia time.

Results: 175 patients undergoing mastectomy met inclusion criteria with 139 (79.4%) discharged the same day as mastectomy. The other 36 (20.6%) had an unplanned overnight hospitalization. Within the cohort, 97 (55.4%) had bilateral mastectomy, 22 (12.6%) had an axillary lymph node dissection, and 127 (72.6%) had immediate reconstruction with plastic surgery. The overall readmission rate was 1.14% (n=2), both for postoperative hematoma. There were 4 (2.3%) postoperative hematomas requiring operative intervention for the entire cohort. 2 (1.1%) patients were readmitted within 72-hours following same-day discharge and 2 (1.1%) were identified in the postoperative recovery room utilizing the ERP. The 36 (18.8%) unplanned overnight hospitalizations consisted of 2 (1.1%) following hematoma evacuation, 5 (2.9%) for postoperative pain management, 5 (2.9%) for patient preference, 11 (6.3%) due to postoperative sedation such that ERP criteria were not met, 13 (7.4%) for anesthesia recommendation.

Conclusions: Our enhanced recovery protocol demonstrates the feasibility of same-day discharge in patients undergoing mastectomy with low rates of postoperative complications and readmissions similar to rates reported in the literature. This suggests no increased risk of same-day mastectomy discharge when compared to traditional overnight hospitalization. This study provides a scalable framework for patients undergoing mastectomy with and without reconstruction to support same-day discharge. Utilizing the enhanced recovery protocol in the setting of a multidisciplinary team collaboration can provide more patients the opportunity to recover at home.

1988385 - Retrospective Evaluation of Fine Needle Aspiration Accuracy and Factors Influencing Upgrade Rates in Diagnosing Axillary Lymph Node Metastasis in Breast Cancer Patients

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Englewood Health, Englewood, NJ

Background/Objective: Fine-needle aspiration (FNA) is a widely used technique for assessing axillary lymph node (LN) involvement in breast cancer, recognized for its minimally invasive nature and cost-effectiveness. Although FNA demonstrates high specificity, its sensitivity is often lower compared to core-needle biopsy (CNB), which has shown superior diagnostic accuracy. This disparity prompts our investigation at our institution to evaluate not only the diagnostic performance of FNA but also the factors influencing upgrade rates in the diagnosis of axillary LN metastasis. By identifying these factors, we aim to enhance the accuracy of preoperative staging in breast cancer patients.

Methods: This retrospective study reviewed medical records of new diagnosed breast cancer patients aged 18 and older who underwent FNA of the axillary LN under ultrasound guidance followed by axillary surgery for surgical biopsy evaluation at our institution from 2022 to 2024. Exclusion criteria included patients with prior axillary surgery or radiation, those who received neoadjuvant chemotherapy post-FNA, incomplete medical records due to pursuing surgical intervention at other institutions, or patients not eligible for surgery.

Results: Of the 163 FNA axillary LN initially reviewed, 97 patients were excluded, leaving 69 patients with metastatic LN in the FNA that met the criteria for neoadjuvant chemotherapy or chemotherapy for Stage 4 disease. A total of 66 patients were ultimately enrolled in the study, with 41 having a negative FNA result and 25 a positive FNA result. Among the 41 patients with negative FNA results, 14 showed different types of LN involvement in the final surgical biopsy, including 11 with macrometastasis (mean number of positive nodes 1.14, with an average macrometastasis tumor size of 6.1 mm) and 4 patients with either isolated tumor cells (ITC) or micrometastasis. The FNA of lymph nodes showed a sensitivity of 64.1%, specificity of 100%, positive predictive value of 100%, negative predictive value of 65.9%, and an overall accuracy of 78.8%. When ITC were categorized as a negative upgrade, the sensitivity increased to 69.4%, with maintained specificity of 100%, positive predictive value of 100%, negative predictive value of 73.2%, and an overall accuracy of 83.3%. Among the patients with negative FNA results who underwent upgrades, one had micrometastasis and three had ITC in the final surgical biopsy, which describes the limitations of FNA in detecting smaller or less obvious metastases. Younger age and lymphovascular invasion were significant predictors of LN upgrade ($p< 0.05$), whereas LN size was not significantly associated with upgrade status. The macrometastasis significantly increases the likelihood of a positive FNA lymph node result, while micrometastases and ITC do not show a significant effect. One patient with a negative FNA, who had an irregular and lobulated LN, underwent CNB, which revealed positive results that correlated with the surgical biopsy findings (Table 1).

Conclusions: Younger age and lymphovascular invasion were identified as significant predictors of LN upgrade in breast cancer patients with negative FNA results. These findings highlight the importance of considering these factors to improve the diagnostic accuracy, highlighting the benefits of using alternative diagnostic modalities, such as CNB, for potentially more reliable results.

Table 1: Characteristics of FNA Lymph Node Upgrades in Patients with Breast Cancer

Characteristics		Tumor upgrade		P value
		Yes (n=11)	No (n=30)	
Age (Mean ± SD)		50.9 ± 15	63 ± 13.4	**0.02**
LN size (cm ± SD)		1.32 ± 0.42	1.07 ± 0.43	0.13
Multifocal (n, %)		3 (27.3)	3 (10%)	0.16
Lymphovascular invasion		4 (36.3%)	2 (6.7%)	**0.03**
Family history of breast or ovarian cancer		4 (36.3%)	16 (53.3%)	0.44
Biomarkers	ER (Mean %, SD)	95.5 ± 9.2	84.1 ± 32.7	0.27
	PR(Mean %, SD)	78.09 ± 35.1	49.8 ±43.4	0.06
	HER2 (0/1)	0	0.13 ± 0.35	0.20
	Ki67 (Mean %, SD)	14.4 ± 9.3	24.1 ± 25.0	0.22

1971867 - Breast Center Amalgamation and its Impact on Cancer Quality Standards

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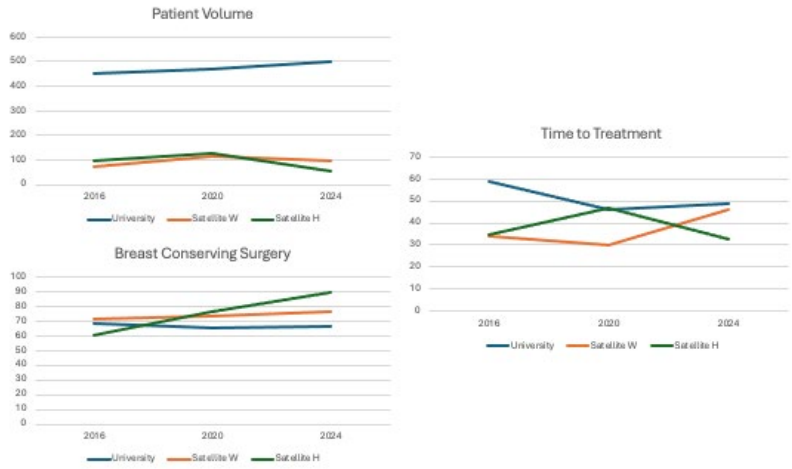
Background/Objective: Since 2010, the healthcare system in the United States has undergone significant consolidation. This has included the incorporation and acquisition of smaller hospitals and independent physicians into large healthcare systems. In theory, larger systems should be better positioned to negotiate favorable insurance rates to leverage economies of scale in order to deliver increased value. Data regarding the impact of these changes, however, are mixed, and include some decreased costs, increased centralization of procedures, and longer patient travel distances for specialty care. There is limited data on breast surgical care. Data regarding the impact of the amalgamation of three accredited, multi-disciplinary breast centers into a large academic healthcare system is presented.

Methods: Retrospective review evaluated multiple factors to include patient demographics, breast surgical volume, treatment modalities, time to treatment, reconstruction rates, participation in clinical trials. Data was evaluated prior to and after the amalgamation of the breast centers in 2020 to explore trends at the two satellites (Satellite W and Satellite H) versus the main medical center (University).

Results: With the amalgamation of the 3 National Accreditation Program for Breast Center (NAPBC) credited breast centers, breast surgery faculty were integrated into the 3 centers to provide clinical, operative and programmatic leadership coverage. This approach facilitated coverage at all sites in an equitable manner and allowed patients to access care at the satellites (W-288 bed hospital; H-128 bed hospital) or at the main academic center (738 bed hospital). Surgeons who had previously practiced at the satellites were not retained in the new system. Patient volume initially decreased by up to 37% at the satellites and then stabilized (Fig 1, NS $p=0.24$) while remaining unchanged at the University. Breast conservation rates increased with amalgamation (Fig 1, NS $p=0.26$) and time to treatment increased (Fig 1, NS $p=0.28$). Quality metrics including sentinel node biopsy for Stage I/II patients, receipt of adjuvant therapies, and pre-operative needle biopsy rates were unchanged.

Conclusions: Health care system amalgamation does lead to an initial decrease in patient volume, time to treatment appears to increase, and overall standard quality metrics did not change within this East Coast based system. Though none of these changes were statistically significant, this is likely a reflection of the overall high quality care that had previously been established in the breast centers. Amalgamation of satellite hospitals does not impact the patient volume of the main university center. These are important dynamics for patient satisfaction, healthcare recruitment, and fiscal planning. Administrators and clinicians need to prepare for these potential fluctuations to allow for successful amalgamation.

Figure 1


Patient Volume
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200
100
0
2016
2020
2024
University
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Satellite H
Time to Treatment
70
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University
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1963738 - Developing a quality measure for omission of sentinel lymph node biopsy (SNB) in women age 70 or older with hormone receptor-positive (HR+) invasive breast cancer (IBC) undergoing breast-conserving surgery (BCS)

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Background/Objective: The Commission on Cancer (CoC) and National Accreditation Program for Breast Centers (NAPBC) are developing a quality measure to de-escalate the utilization of sentinel node biopsy (SNB) in women age 70 or over with hormone receptor (HR+) invasive breast cancer (IBC). Several national guidelines and randomized studies have highlighted the low value of SNB in selected women with early-stage breast cancer. We queried the National Cancer Data Base (NCDB) for trends in omission of SNB in this patient population and performance rates by facilities, as CoC/NAPBC quality measures are facility-based measures.

Methods: A total of 157,477 patients from the NCDB met the inclusion criteria of age 70 and over, IBC AJCC cT1, HR+, HER2neu negative, grade I-II and undergoing breast-conserving surgery (BCS). Trends in omission of SNB were examined from 2012-2022, as were facility factors most strongly associated with the omission of SNB. Estimated performance rates by facility (the proportion of patients in whom SNB was omitted at a facility) were examined from 2021-2022 to capture the most contemporary performance. The proportion of patients with tumor positive nodes stratified by tumor factors was examined.

Results: From 2012-2022, SNB was omitted in 32,804 (20.8%) of eligible patients. In 2012, SNB was omitted in only 1,403 (14%) of patients, compared to 2,982 patients (19.2%) when Choosing Wisely was endorsed by the American Society of Breast Surgeons in 2018, versus 6,608 patients (36.9%) in 2022. There was significant variability in omission of SNB by facility factors: 37% of high-volume facilities (>250 cases/year) omitted SNB compared to 16% of low volume facilities (<=100 cases/year) ($p< 0.001$), 40% of academic/research facilities omitted SNB compared to 15% of community facilities ($p< 0.001$), and 48% of facilities in the New England region compared to 13% in the West North Central region omitted SNB ($p< 0.001$). Two hundred forty-nine facilities (22.6%) are omitting SNB on at least 50% of their eligible patients, 164 facilities (14.9%) on 60% of their patients, 89 facilities (8.1%) on 70% of their patients, and 36 facilities (3.3%) on 80% of their patients. Of those cases that underwent a SNB, 8.2% had at least one positive node. Tumor positive lymph nodes were 8.2% among grade I-II tumors, 8.0% for patients with ductal cancers versus 9.0% for lobular cancers, and 8.3% for patients with ER+PR+ versus 7.3% for ER+PR- tumors.

Conclusions: Only approximately a quarter of CoC facilities are omitting SNB for women age 70 or older with a HR+, cT1 IBC on at least 50% of eligible patients despite a tumor positive node rate under 10%. These findings indicate an opportunity for quality improvement and provider education.

1972871 - Post-Operative Breast Surgery Outcomes After Initiation of Enhanced Recovery After Surgery Protocol at a Single Center Facility

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Background/Objective: Enhanced Recovery After Surgery (ERAS) protocols involving multimodal care pathways have increased in popularity in abdominal, thoracic and orthopedic surgery in the past decade, initially implemented for large major surgeries. Now, ERAS protocols lead to shorter length of stay, fewer postoperative complications, decreased readmissions, and decreased hospital cost in lower risk surgery. However, in breast surgery ERAS protocols are underutilized. The purpose of this study is to examine length of stay, opiate use, and 30 day return to the emergency department (ED) in patients undergoing a mastectomy at a single institution with the implementation of a new ERAS protocol.

Methods: We conducted a single institution retrospective review of patients undergoing unilateral or bilateral mastectomy in 2023 after implementation of an ERAS protocol. Outcomes for patients treated by two breast surgeons who implemented the ERAS protocol were compared to patients of a third breast surgeon who did not implement the protocol. Our ERAS protocol includes pre-operative education on smoking cessation and nutrition, preoperative pectoral nerve block and antiemetics, intra-operative Ketorolac and limiting intra-operative narcotics and intravenous fluids (IVF), and in post anesthesia care unit (PACU) discontinuing IVF and drain teaching. Patients excluded were those younger than 18 years old. Demographic data including gender, sex, body mass index (BMI), smoking status, diabetes, American Society of Anesthesiologists (ASA) physical status of classification system was obtained from the electronic medical record (EMR). Post-operative outcomes including day of discharge, length of stay, postoperative morphine milligram equivalents (MME) prescribed and returns to the ED within 30 days were collected and compared between the control and comparison group.

Results: A total of 86 patients were included with 56 patients whose surgeons implemented the ERAS protocol (comparison group), and 30 patients whose surgeon did not implement the ERAS protocol (control group). There was no significant difference between the cohort demographics including percentage of patients undergoing bilateral mastectomy (46.4% vs. 50%, $p = 0.756$) and patients undergoing unilateral mastectomy (51.8% vs. 50%, $p = 0.756$). Amongst those in the ERAS group, 51.8% were discharged home the same day as surgery vs. only 10% in the non-ERAS group. On average the ERAS group was treated with 9.45 MME in PACU, the non-ERAS group treated with 11.72 MME ($p = 0.483$) and discharged home with similar MME (106.4 vs 108.7). Within 30 days the ERAS group had more ED visits (2 (3.57%) vs 0 (0%) however 1 ED visit was unrelated to breast surgery. Within 30 days there was 1 readmission for a hematoma (1.79%) in the ERP group vs 0% in the non-ERP group.

Conclusions: Our study found mastectomy patients who underwent a newly implemented ERAS protocol had no difference in 30-day complications, ED visits or re-admissions in comparison to patients utilizing the standard protocol. We also found ERAS protocol to lead to a decreased length of stay and had similar postoperative narcotic prescription requirements. ERAS protocols can be successfully implemented in a busy breast surgery practice and are associated with safe same day discharge in patients undergoing mastectomy.

Table 1: Demographics

Table 1: Demographic comparison

Table 1			
	ERAS (N = 56)	Non-ERAS (N = 30)	P-value
Gender, n (%)			0.326
Female	56 (100%)	29 (96.67%)	
Male	0 (0%)	1 (3.33%)	
Age (years)			0.833
N	58.39	57.77	
Standard deviation	11.80	13.68	
BMI			0.153
N	28.57	30.87	
Standard deviation	7.23	6.90	
Smoking status, n (%)			0.261
Yes	3 (5.36%)	4 (13.33%)	
No	53 (94.64%)	26 (68.67%)	
Diabetes, n (%)			
Yes	4 (7.14%)	5 (16.7%)	0.225
No	52 (92.9%)	25 (83.3%)	
ASA, n (%)			
1	0	1 (3.33%)	
2	43 (76.8%)	16 (53.3%)	
3	13 (23.2%)	13 (43.3%)	
4	0	0	
Surgery, n (%)			0.756
Bilateral mastectomy	26 (46.4%)	15 (50%)	
Unilateral mastectomy	29 (51.8%)	15 (50%)	
Reconstruction, n (%)			
None	27 (48.2%)	13 (43.3%)	
Expanders	25 (44.6%)	15 (50%)	
Direct to implant	4 (7.14%)	0	
Other	0	2 (6.67%)	

Radiation

1975227 - Recent Trends in Accelerated Partial Breast Irradiation Use for Ductal Carcinoma In Situ after Breast-Conserving Surgery: A National Cancer Database Study

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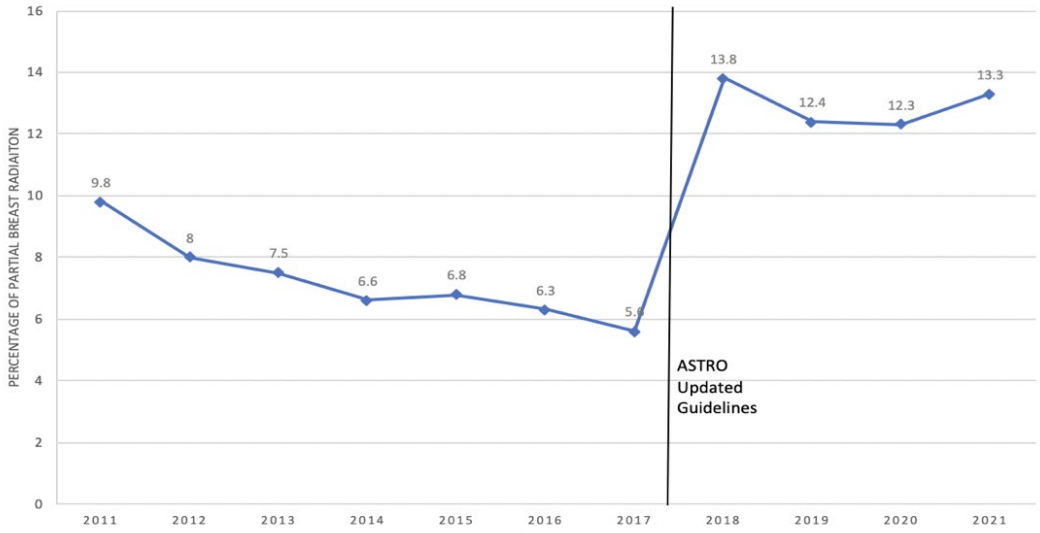
Background/Objective: The use of adjuvant radiation in patients with ductal carcinoma in situ (DCIS) is well established. Breast-conserving surgery (BCS) followed by whole breast irradiation (WBI) is comparable to mastectomy in terms of ipsilateral breast tumor recurrence (IBTR). Several recent randomized controlled trials have demonstrated that accelerated partial breast irradiation (APBI) is noninferior to WBI with regards to IBTR in appropriately selected patients. It allows for reduced radiation exposure, decreased skin toxicity and shortening of treatment duration. The 2009 American Society for Radiation Oncology (ASTRO) consensus statement excluded DCIS in the criteria for patients suitable for accelerated partial breast irradiation (APBI). However, the 2017 updated ASTRO guidelines did include patients with DCIS who were age 50 or older, with screen-detected, low to intermediate nuclear grade DCIS, tumor size ≤ 2.5 cm and negative resection margins ≥ 3mm. This study examines current trends in APBI utilization for DCIS and evaluates if there was a significant change in the proportion of patients receiving APBI since the 2017 ASTRO consensus update.

Methods: A retrospective study utilizing the National Cancer Database was performed including adult patients with breast DCIS between 2011-2021. Trends in APBI use, concordance between 2017 ASTRO guideline and factors related to APBI use were examined

Results: A total of 123,237 DCIS patients were included, of whom 12,228 (9.9%) underwent APBI and 111,009 (90.1%) underwent WBI. APBI utilization for DCIS increased from 7.2 % (2011-2017) to 13 % (2018-2021) following the ASTRO consensus statement update. In patients aged 50 or older with low to intermediate grade DCIS ≤ 2.5 cm, APBI utilization increased from 8.8% to 15.5%. After 2017, the strongest factors influencing APBI use were age at diagnosis, facility type, tumor grade, tumor size and ER status. APBI use was higher in age ≥ 50 (13.56%) compared to < 50 (9.71%). Patients in academic facilities were more likely to receive APBI than those in non-academic institutions (15.4% vs. 12%). APBI use was higher in low (15.8%) and intermediate grade (13.5%) compared to high grade (11.4%). In terms of tumor size, ≤ 25 mm had higher APBI use (13.7%) compared to > 25 mm (9.7%). APBI was used in a higher percentage of ER positive (13.9%) compared to ER negative (10.7%) patients.

Conclusions: Since ASTRO updated the APBI consensus guidelines in 2017 there has been an increase in the utilization of APBI for DCIS. Key factors influencing APBI use align with the updated guidelines, including age at diagnosis, tumor grade, and tumor size. Additionally, facility type emerged as a significant factor, with academic centers more likely to adopt APBI. ER positive DCIS had a higher percentage of APBI use. These trends demonstrate concordance between clinical practice and the updated 2017 ASTRO consensus guidelines, highlighting the impact of evidence-based guidelines on treatment decisions

Figure 1: Trends in Accelerated Partial Breast Irradiation Use



1988053 - Intraoperative Radiation (IORT) for Breast Cancer: Does One Size Fit All?

Abigail Brooks[1], Jana Fox[1], Fardeen Bhimani[2], Yu Chen[1], Keyur Mehta[1], Wolfgang Tome[2], Maureen McEvoy[1], Anjuli Gupta[2], Jessica Pastoriza[1], Ethan Ravetch[1], Brooke Hassan[1], Sheldon Feldman[1]

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Background/Objective: Intraoperative Radiation (IORT) is a form of partial breast radiation in which radiation is delivered to the lumpectomy bed at the time of surgery. This is a patient-centered technique that avoids multiple cycles of radiation. Patient selection for IORT has traditionally followed ASTRO guidelines, which categorize patients into three groups based on histopathological factors: suitable, cautionary, and unsuitable. IORT is mainly administered to patients in the 'suitable' group, and multiple studies have documented its outcomes in this population. However, there is a paucity of literature evaluating the efficacy of IORT in patients classified as 'unsuitable' or 'cautionary,' who typically present with higher-grade tumors, larger tumor sizes, or lobular breast cancers. Therefore, our study aims to assess the outcomes of IORT in this higher-risk patient population.

Methods: A retrospective chart review was conducted in 277 patients treated with IORT between 2/2018 to 2/2023. Patients were divided into 2 cohorts (i) suitable (based on ASTRO suitable criteria) and (ii) unsuitable (based on ASTRO cautionary/unsuitable criteria). The unsuitable cohort is characterized by age < 50, pathologic tumor size >2cm, presence of lymphovascular invasion, lobular pathology, DCIS >2.5cm, ER – , HER2+, grade 3, positive surgical margin or margin < 2mm. Log-rank tests analyzed adjuvant whole breast radiation, local recurrence, and overall survival.

Results: A total of 277 patients underwent IORT based on clinical staging. Of those 277 patients, after pathologic staging, 129 were considered suitable and 148 were considered unsuitable. In the unsuitable cohort, the median age was 65.4 years and the median BMI was 29.5kg/m2. 22 of the 148 patients considered unsuitable based on pathological staging received WBI after IORT. 4 of the 129 patients who were considered suitable based on pathological staging received WBI after IORT. Furthermore, the 277 patients who received IORT were compared in the suitable vs unsuitable in terms of local recurrence and overall survival. For both suitable and unsuitable the combined recurrence rate was 3%. For the suitable group the recurrence rate was 3.9%. For the unsuitable group the recurrence rate was 0%. Prior to excluding for WBI, the absolute number of local recurrences in suitable vs unsuitable was 5 and 0, respectively. After excluding patients with adjuvant WBI, local recurrence between the two groups was not statistically significant ($p = 0.31$). Moreover, overall survival did not significantly differ between suitable and unsuitable groups ($p = 0.93$). The median follow-up times were 27.8 months for the suitable group and 25.5 months for the unsuitable group.

Conclusions: Our study demonstrates that the applicability of IORT may extend beyond the traditional 'suitable' group. We observed no significant difference in local recurrence or overall survival between suitable and unsuitable patients with over two years of follow-up, supporting the potential benefits of broadening IORT eligibility criteria. Nonetheless, additional studies with larger sample sizes and longer follow-up periods are necessary to bolster our findings and inform guideline modifications.

Table 1: Comparing Suitable vs Unsuitable Patients Based on ASTRO Criteria

Unsuitable Demographics		
Total Patient		148
Median Age (years)		65
Median BMI		29.5
Race		
White		32
Black		37
Asian		3
Other		56
Declined To Answer		20
Laterality		
Right		74
Left		74
Pathology		
IDC		97
DCIS		22
IDC + DCIS		1
ILC		8
ILC + IDC		4
Other Ductal Carcinomas		16
Median Pathological Size (cm)		1.5
Median Applicator Size (cm)		3.5
Received Neo-endocrine		4
Received Adjuvant Radiation Therapy		36
Received Pre-Op MRI		66
Suitable Patients ASTRO Criteria		
Age (years)	≥ 50	132
Tumor Size (cm)	≤ 2	125
LVI	No	114
Histology	IDC	137
Pure DCIS	≤ 2.5 cm	19
ER	Positive	137
HER2	Negative	113
Grade	1 to 2	129
Surgical Margins (mm)	≥ 2 mm	122
EIC	No	84
Positive LN	No	111
Focality	Unicentric	137
Unsuitable Patient ASTRO Criteria		
Age (years)	< 50	3
Tumor Size (cm)	> 2	36
LVI	Yes	20
Histology	ILC / ILC + IDC	12
Pure DCIS	> 2.5 cm	4
ER	Negative	3
HER2	Positive	13
Grade	3	36
Surgical Margins (mm)	Positive or < 2 mm	50
EIC	Yes	27
Positive LN	Yes	21
Focality	Multicentric	1

1988288 - Association between post-mastectomy radiotherapy and patient-reported outcomes in patients with and without immediate reconstruction – a retrospective cohort study

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Background/Objective: Although a detrimental effect of post-mastectomy radiotherapy (PMRT) on patient-reported outcomes (PROs) in patients with breast cancer (BC) undergoing immediate reconstruction has been documented, the impact of PMRT on patients without reconstruction remains less clear. The objective of this study was to assess the association between PMRT and PROs.

Methods: Patients with Stage 0-III BC who underwent mastectomy (including conventional mastectomy, nipple-sparing mastectomy [NSM], and skin-sparing mastectomy [SSM]) with or without immediate reconstruction at a Swiss university hospital between 01/2013-12/2023 with at least one prospectively collected postoperative BREAST-Q PRO questionnaire, were identified from a prospectively maintained institutional database. The outcomes of interest included the identification of differences in PROs between those who underwent PMRT versus those who did not.

Results: Of 243 eligible patients, 30.9% (75/243) underwent PMRT, while 69.1% (168/243) did not. The median time to PRO assessment was 30.4 months, without differences between the groups (p=0.100). The median age was 54 years in patients who received PMRT, and 58 years in those who did not (p=0.126). Patients who received PMRT exhibited a higher BMI (median BMI with PMRT 24.6, without PMRT 23.1, p=0.033). Furthermore, patients who received PMRT exhibited a more advanced clinical and pathological tumor stage (cT2/cT3/cT4 with PMRT 72.0%, without PMRT 39.3%; pT2/pT3/pT4 with PMRT 64.0%, without PMRT 32.1%), as well as a higher clinical and pathological nodal burden (cN+ with PMRT 60%, without PMRT 12.5%; pN+ with PMRT 74.7%, without PMRT 16.1%). This correlates with a higher rate of axillary dissection in patients who received PMRT (56.0%) compared to those who did not (11.3%). The frequency and type of breast reconstruction were comparable between the groups (p=0.614), with 41.2% of patients not undergoing immediate breast reconstruction. Patients who received PMRT were more likely to have undergone neoadjuvant chemotherapy (with PMRT 25.3%, without PMRT 11.9%, p=0.013), adjuvant chemotherapy (with PMRT 44.0%, without PMRT 15.5%, p< 0.001), and adjuvant endocrine therapy (with PMRT 80.0%, without PMRT 63.7%, p=0.011). Moreover, regional nodal irradiation was administered to a greater proportion of patients who underwent PMRT (81.3%) compared to those who did not (4.2%; p< 0.001). No difference in surgical morbidity was observed in the short-term (< 30 days after surgery; with PMRT 20.0%, without PMRT 22.0%, p=0.615) or long-term assessments (with PMRT 30.7%, without PMRT 23.2%, p=0.266). The assessment of postoperative PROs revealed a reduction in physical well-being (median score with PMRT 82.5, without PMRT 92.0, p=0.013) and psychosocial well-being (median score with PMRT 87.0, without PMRT 100, p=0.038) following PMRT. No differences in breast satisfaction or sexual well-being were identified.

Conclusions: In conclusion, PMRT seems to negatively impact PROs, regardless of whether immediate breast reconstruction is performed.

Table 1: Postoperative Breast-Q scores in patients with or without post-mastectomy radiotherapy

	With PMRT (n=75)	Without PMRT (n=168)	p-value
Breast satisfaction, n(%)	74 (98.7%)	166 (98.8%)	
Median, IQR	64.0 (53.0-86.0)	64.5 (51.5-100)	0.912
Physical well-being, n(%)	74 (98.7%)	167 (99.4%)	
Median, IQR	82.5 (72.0-92.0)	92.0 (76.0-100)	0.013
Psychosocial well-being, n(%)	75 (100%)	167 (99.4%)	
Median, IQR	87.0 (66.0-100)	100 (72.5-100)	0.038
Sexual well-being, n(%)	48 (64.0%)	114 (67.9%)	
Median, IQR	56.5 (44.5-90.5)	70.0 (46.0-100)	0.122

PMRT – post-mastectomy radiotherapy; IQR – interquartile range

Reconstruction

1981683 - Impact of Implants on Breast Surgical Outcomes

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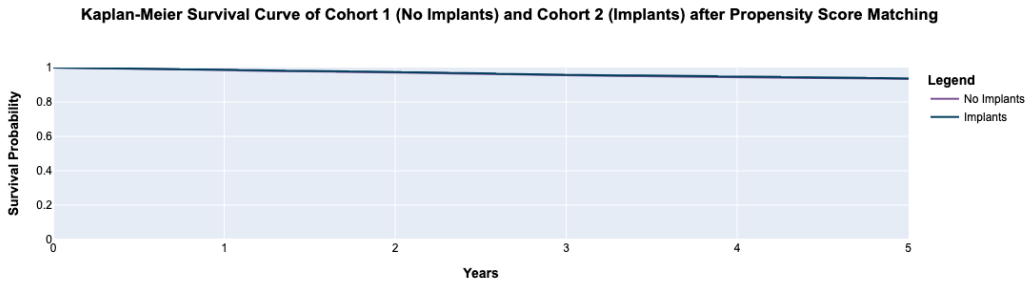
Background/Objective: Breast augmentation is one of the most common cosmetic surgeries, with nearly 300,000 performed in the U.S. annually. Despite the increasing rates of breast augmentation, there is limited research on the outcomes in patients with preexisting implants who are diagnosed with breast cancer (BC). We hypothesize that BC patients with prior implants are more likely to receive a mastectomy due to smaller breast size, close proximity of a lesion to the implant capsule, or fear of capsular contraction after radiation. Furthermore, we hypothesize that overall survival (OS) and local recurrence (LR) risk with breast conservation surgery (BCS) is no different with or without implants.

Methods: We used the TriNetX database to conduct a retrospective search for women ≥18 years old diagnosed with BC. Stage IV and T4 patients were excluded. Two cohorts were created, those with non-autologous breast implants at least one year prior to BC diagnosis and those without. Patients' propensity scores were matched based on age, BMI, tobacco use, stage, tumor size (T), radiation history, pregnancy status, genetic risk, and comorbidities. We compared the risk of mastectomy. We then used the two previously created cohorts and included BCS to both. The same propensity score matching algorithm was used. Our outcomes of interest were 5-year local recurrence (LR) and overall survival (OS).

Results: 880,575 patients without implants and 31,795 patients with implants were identified, with 28,414 patients per cohort after matching. Matched patients without implants had a higher risk of mastectomy compared to patients with implants (OR 5.6, 95% CI, 5.2-6.2, p=< 0.0001). For our second study, 168,684 BCS patients without implants and 10,762 BCS patients with implants were identified, with 10,043 patients per cohort after matching. Patients without implants who underwent BCS had no difference in 5-year OS (KM analysis: 94% vs. 94%, p=0.5) and LR (OR 0.82, 95% CI, 0.64-1.1, p=0.12).

Conclusions: Matched Stage 1-3, T1-T3 BC patients with prior breast augmentation are not more likely to receive a mastectomy compared to nonaugmented patients for BC treatment. Furthermore, those who undergo BCS do not have a higher risk of mortality or LR than their matched cohort without implants. We conclude that breast implants should make no difference in the decision for mastectomy or BCS.

Figure 1: Kaplan-Meier Survival Curve of Cohort 1 (No Implants) and Cohort 2 (Implants) after Propensity Score Matching



1983049 - Access to immediate breast reconstruction during breast cancer treatment: A population-based study

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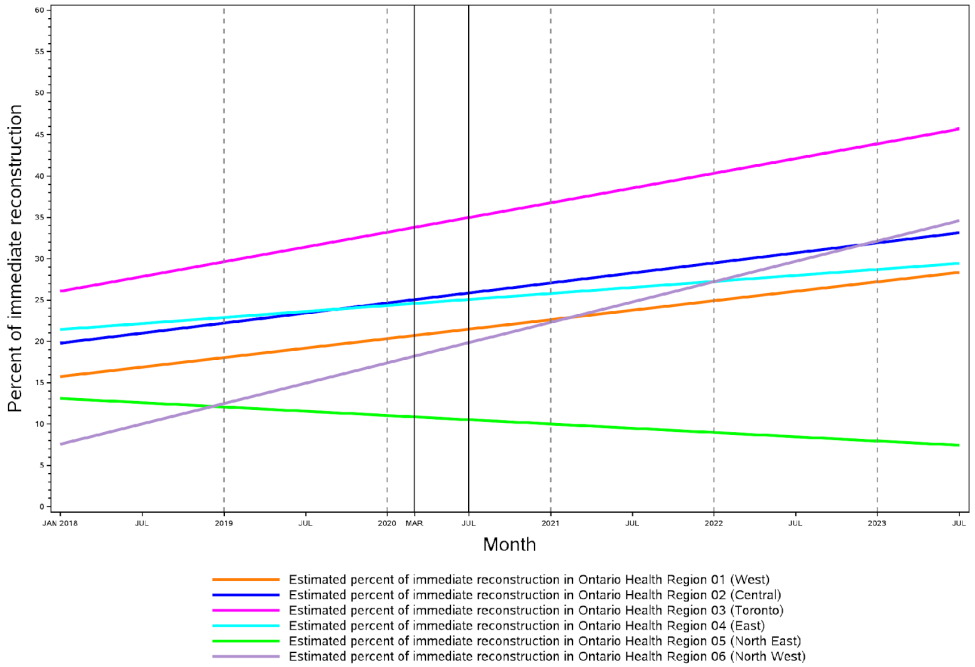
Background/Objective: There has been an effort to increase access to immediate breast reconstruction (IBR) for breast cancer (BC) in Ontario, Canada over the past decade. Previous studies have demonstrated that patients from equity-deserving groups such as those living in rural areas or from low socioeconomic status are less likely to receive breast reconstruction. The objective of this study is to explore temporal trends, regional variations, and socioeconomic variables among BC patients undergoing mastectomy with or without IBR, over a five-year period in Ontario.

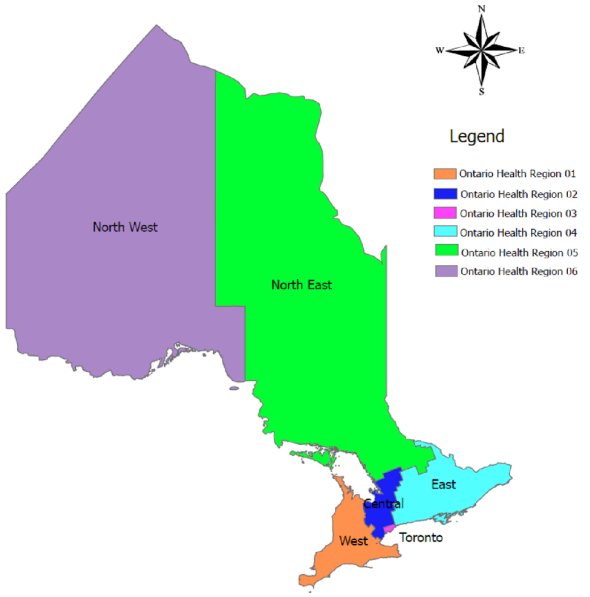
Methods: We identified all breast cancer patients in Ontario, Canada who underwent a mastectomy between January 2018 and July 2023. The percentage of patients who had IBR was calculated on a monthly basis and compared across the six Ontario Health (OH) regions to understand regional variation. Multivariable logistic regression was used to determine the odds of receiving IBR based on a patient's residence and over time adjusting for socioeconomic covariates.

Results: Among the 21,933 BC patients who underwent a mastectomy, 26.3% (n=5,758) received IBR. There was variability across the six OH regions, ranging from 10.5% to 36.3%. On multivariable analysis, the odds of having IBR increased by 17% (aOR 1.17, 95% CI 1.14-1.19) with each increasing year. However, there were significant differences in rates of increase between regions (Figure 1). Patients residing in all other areas of the province were significantly less likely to receive IBR compared to patients who resided in the most populous city, OH region 3 – Toronto, with the lowest odds in OH region 5 – North East (aOR 0.22, 95% CI 0.18 – 0.28). Compared to patients who were most deprived, the odds of receiving IBR increased with increasing material income quintile (Q1 aOR 2.07, 95% CI 1.85 – 2.31; Q2 1.53, 95% CI 1.36-1.71; Q3 1.36, 95% CI 1.21-1.52; Q4 1.20, 95% CI 1.06-1.35). Patients who were immigrants also had lower odds of IBR compared to non-immigrants (aOR 0.70, 95% CI 0.65 -0.77).

Conclusions: Despite the presence of a universal healthcare system, there is inequitable access to IBR in Ontario based on a patient's geographic location, socioeconomic, and immigration status. These disparities suggest systemic factors play a significant role in patient access to IBR during BC treatment. Further work is needed to understand these variables and enable more equitable access to IBR.

FIGURE 1: Percentage of mastectomies with immediate reconstruction per month by Ontario Health Region





1985951 - Effects of Radiation on Latissimus Dorsi Flaps for Breast Cancer Reconstructive Surgery

Rebecca Martin[1], Angelis Vazquez Perez[2], Sami Ferdousian[3], Anne Kearney[4], Patricia Wehner[4], Jennifer Son[5], Ann Hu[6], Rajan Negassa[6], Finn Tobias[6], David Song[2], Kenneth Fan[2], Samer Jabbour[7]

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Background/Objective: One of the mainstays of breast cancer treatment is surgical resection with reconstruction. There are numerous types of reconstruction that plastic surgeons have developed over the years including the latissimus dorsi flap. Radiation is also a common treatment in breast cancer management, although there is a paucity of data published on the effects of radiation on the surgical reconstruction outcomes of the latissimus dorsi flap. In this study, we aim to look at the effects of radiation specifically on latissimus dorsi flaps. We hypothesized that irradiated latissimus dorsi flaps would have the highest rates of wound complications, as well as increased postoperative fat grafting and revision surgeries, followed by flaps that were placed in previously irradiated fields, with flaps never exposed to radiation having the lowest rates.

Methods: A retrospective chart review was performed on female patients between the ages of 18-89 years old who underwent latissimus dorsi flap reconstruction after surgery for breast cancer between 2017 and 2022. Data collected included demographics, tumor characteristics, stage at diagnosis, genetic testing, surgeries performed, flap complications, postoperative fat grafting, revision surgeries, and recurrence status. Donor site morbidities were not evaluated for this study. Descriptive statistics were calculated for all patient data. Continuous variables were compared using the Kruskal-Wallis Test. Pearson's chi-squared ($\chi 2$) or Fisher's exact tests ($n< 5$) were employed for categorical variables as appropriate.

Results: 62 breasts in 56 patients were included in the study. All patients were female and ages ranged from 35 to 78, with the average age being 58.6. Flaps that underwent radiation were performed in women who were older (average 66.5) with a higher Charlson Comorbidity Index than flaps in the no radiation and preoperative radiation groups ($P = 0.023$ and 0.023 respectively). There was no statistical difference when looking at BMI, type of cancer, BRCA status, tumor biology, or endocrine therapy. Patients who underwent radiation prior to their reconstruction were more likely to have undergone chemotherapy (80%, $p = 0.004$). When evaluating outcomes, there was no statistical difference in length of stay, any complication, flap necrosis, seroma or hematoma formation, infection, or the number of postoperative fat grafting procedures that were performed. There was a trend for irradiated flaps to have more partial flap necrosis, seroma formation, and overall complications, however, this did not reach statistical significance.

Conclusions: Our preliminary results suggest that radiation has a minimal effect on the outcome of latissimus dorsi flaps performed after breast cancer surgery. However, this study is limited by its sample size, and continued data collection is ongoing. Ultimately, these findings will help guide

physician counseling of breast cancer patients who need to undergo radiation about their reconstructive options.

Table 1. Patient Outcomes

	Total Lat Flap recons	No radiation	Pre-reconstruction radiation	Post - reconstruction radiation	p-value
Outcomes	**n = 62 breasts, 56 patients**	**n = 35 breasts (56.5%)**	**n = 17 breasts (27.4%)**	**n = 10 breasts (16.1%)**	
Any complication	14 (22.6%)	7 (20%)	2 (11.8%)	5 (50%)	0.065
Partial flap necrosis, however there was a 100% flap success rate	4 (6.5%)	2 (5.7%)	1 (5.9%)	1 (10%)	0.801
Seroma	4 (6.5%)	2 (5.7%)	0	2 (20%)	0.178
Hematoma	1 (1.6%)	0	1 (5.9%)	0	0.435
Delayed healing	3 (4.8%)	3 (8.6%)	0	0	0.733
Dehiscence	6 (9.7%)	4 (11.4%)	1 (5.9%)	1 (10%)	1.000
Skin necrosis	1 (1.6%)	1 (2.9%)	0	0	1.000
Infection	1 (1.6%)	0	0	1 (10%)	0.161
Total fat grafting stages (mean [SD])	1.7 [0.8]	1.7 [0.8]	1.9 [0.8]	1.7 [0.8]	0.635
Follow up months, (median [IQR])	12.5 [11.2]	10.7 [14.3]	12.2 [8.6]	16.6 [7.4]	0.093

1980707 - Comparison of Secondary Procedures and Complications Between Sub-Pectoral and Pre-Pectoral Implant-Based Breast Reconstruction: A 5-Year Retrospective Analysis

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Background/Objective: Implant-based breast reconstruction (IBR) remains the most widely used method for breast reconstruction following mastectomy. However, there is significant variability in the choice between sub-pectoral and pre-pectoral approaches, with ongoing discussions regarding their respective benefits and drawbacks. The pre-pectoral approach has gained popularity in recent years for its potential to reduce post-operative pain, eliminate animation deformity, and promote a more natural-looking reconstruction. This study aims to compare the frequency of secondary procedures required to improve the aesthetic outcome between sub-pectoral and pre-pectoral IBR.

Methods: A retrospective cohort study was conducted on patients who underwent either sub-pectoral IBR between January 2014 to June 2017 or pre-pectoral IBR from November 2016 to December 2019, performed by a single surgeon at a tertiary breast unit. The primary outcome measure was the number of secondary procedures performed to improve the aesthetic and a secondary outcome measure was post-operative complications at 5-years of follow up.

Results: A total of 388 one-stage IBRs were analyzed (sub-pectoral: 194 in 113 patients; pre-pectoral: 194 in 117 patients). The median age was the same in both cohorts, 43.0 years (IQR 17.5) vs 43.0 years (IQR 17.5); p= 0.722, with a similar BMI; 22.4 kg/m2 (IQR 3.1) vs 22.0 kg/m2 (IQR 3.5); p= 0.795. Overall, the frequency of secondary procedures at a 5-year follow-up interval was comparable between the two groups (53.1% for sub-pectoral vs. 53.6% for pre-pectoral; p = 0.650). Among the most common secondary procedures, pocket revisions were more frequent in the sub-pectoral group (9.3% vs. 2.6%; p = 0.005), while implant exchanges showed no significant difference (5.7% vs. 3.1%; p = 0.216). Fat grafting was performed at similar rates between the groups (23.7% for sub-pectoral vs. 26.3% for pre-pectoral; p = 0.736). There was no significant difference in reported complications between the two groups (20.1% vs 22.2%; p=0.709) with a low implant loss rate of 5.2% in both cohorts (p =1.000) (Table 1).

Conclusions: At a follow-up interval of 5 years, there was no significant difference in the need for secondary aesthetic procedures between sub-pectoral and pre-pectoral IBR. Pre-pectoral IBR did not significantly increase the need for fat grafting or the number of post-operative complications. These findings suggest that pre-pectoral IBR is a safe and effective alternative to sub-pectoral reconstruction.

Table 1. Surgical Complications following subpectoral and pre-pectoral IBR (percentages calculated based on total number of mastectomies)

	Sub-pectoral (%)	Pre-pectoral (%)	p
No. of implants	*194*	*194*	
Seroma	11 (5.7 %)	9 (4.6%)	0.495
Inflamed skin	14 (7.2%)	9 (4.6%)	0.273
Infection	13 (6.7%)	9 (4.6%)	0.372
Haematoma	4 (2.1%)	4 (2.1%)	1.000
Skin flap necrosis	8 (4.1%)	7 (3.6%)	0.795
Wound dehiscence	12 (6.2%)	20 (10.3%)	0.196
Implant loss	10 (5.2%)	10 (5.2%)	1.000
Nipple necrosis	14 (7.2%)	12 (6.2%)	0.679

1987625 - Revisions Reversed: One-Step Direct-to-Implant Outperforms Two-Step Tissue Expanders- Our Institutional Experience

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Background/Objective: Immediate breast reconstruction following mastectomy is essential for breast cancer care. As nipple-sparing mastectomies (NSM) become more common, one-stage reconstruction (SSR) using direct-to-implant (DTI) is increasingly considered a viable alternative to two-stage reconstruction (TSR) with tissue expanders (TE). This study compares the outcomes of DTI using acellular dermal matrix (ADM) to the traditional TE technique, with a particular focus on revision rates.

Methods: A retrospective chart review was conducted for all patients undergoing immediate DTI reconstruction using ADM at a single institution from January 2011 to July 2023. Demographic data and clinical outcomes were assessed by breast. Primary outcomes included acute complications (within 30 days postoperatively), unplanned implant or TE removal, capsular contracture, revision rate, and cancer recurrence. A sub-group analysis was performed on patients who had a history of radiation and those who did not. Multivariate models were used to assess the impact of significant co-variates identified in univariate analysis on these outcomes.

Results: A total of 641 patients with 1,155 breasts underwent immediate breast reconstruction. Of these, 631 received SSR (DTI) and 525 received TSR (TE). The TSR group had significantly higher body mass index (26.0 vs. 23.6 kg/m², $p< 0.001$), and higher rates of smoking (7.1% vs. 3.3%, $p=0.031$) and diabetes (10.3% vs. 4.8%, $p=0.008$) compared to the SSR group. The TE group had a significantly higher incidence of radiation history (25.2% vs. 17.6%, $p=0.002$). Median mastectomy specimen weight was significantly higher in the TSR group (540 g vs. 343 g, $p< 0.001$). While the overall incidence of acute complications was similar between groups (20.4% for TE vs. 16.5% for DTI, $p=0.085$), the TSR group had a significantly higher rate of flap necrosis (6.9% vs. 2.4%, $p< 0.001$). The SSR group had a significantly lower incidence of unplanned implant or TE removal (12.2% vs. 17.8%, $p=0.008$) and a significantly lower revision rate (25% vs. 45%, $p< 0.001$). No significant difference was observed between groups in terms of cancer recurrence (5.9% for both groups, $p=0.970$). In subgroup analyses of radiated and non-radiated breasts, the TE group continued to demonstrate significantly higher rates of mastectomy flap necrosis and revision regardless of radiation history. In the non-radiated subgroup, unplanned implant extrusion was significantly higher for the TE group (15.8% vs. 10.8%, $p=0.025$), while this difference was not observed in the radiated sub-group. Multivariate analysis revealed that TSR was independently associated with higher odds of unplanned implant extrusion (Odds Ratio [OR]: 1.7, Confidence Interval [CI]: 1.1-2.6, $p=0.014$) and revision surgery (OR: 2.4, CI: 1.8-2.3, $p< 0.001$), but did not significantly affect capsular contracture, flap necrosis, or recurrence rates.

Conclusions: One-stage direct-to-implant (DTI) reconstruction following mastectomy demonstrates superior outcomes compared to the two-stage tissue expander (TE) technique, particularly in terms of lower revision rates. SSR is associated with fewer acute and long-term complications, including reduced rates of flap necrosis, unplanned implant removal, and the need for revision surgeries. These findings suggest that SSR may be a more favorable option for immediate breast reconstruction in patients undergoing mastectomy.

Table 1: DTI vs TE Clinical Outcomes

DTI vs TE Clinical Outcomes				
	Total	**DTI**	**TE**	**P-Value**
	No. (%)	**No. (%)**	**No. (%)**	
	1,155 (100.0)	631 (54.6)	525 (45.4)	
Acute Complications (≤30 days)				
Any	211 (18.3)	104 (16.5)	107 (20.4)	0.085
Seroma	60 (5.2)	28 (4.4)	32 (6.1)	0.203
Hematoma	28 (2.4)	20 (3.2)	8 (1.5)	0.071
Dehiscence	19 (1.7)	9 (1.4)	10 (1.9)	0.521
Delayed Healing	87 (7.5)	40 (6.3)	47 (8.5)	0.092
Mastectomy Flap Necrosis	51 (4.4)	15 (2.4)	36 (6.9)	**<0.001***
Cellulitis	23 (2.0)	12 (1.9)	11 (2.1)	0.811
Surgical Site Infection	20 (1.7)	7 (1.1)	13 (2.5)	0.075
Return to OR	72 (6.2)	39 (6.2)	33 (6.3)	0.935
Unplanned Implant/TE Removal	170 (14.7)	77 (12.2)	93 (17.8)	**0.008***
Time to Removal, days (median [IQR])	172.5 [363]	168 [612]	177 [329]	0.74
Capsular Contracture	132 (11.4)	62 (9.8)	70 (13.4)	0.06
Revision	394 (34.1)	158 (25.0)	236 (45.0)	**<0.001***
Follow-up duration, months (median [IQR])	27.3 [43.7]	26.4 [37.8]	28.8 [47.9]	**0.025***
Cancer Recurrence	68 (5.9)	37 (5.9)	31 (5.9)	0.97

1987847 - Comparison of Surgical Complications with Direct-to-Implant vs. Tissue Expander Reconstruction after Wise Pattern Skin-Sparing Mastectomy

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Background/Objective: Background: Wise Pattern Mastectomy is a common incision utilized in patients with large, ptotic breasts undergoing skin-sparing mastectomy and immediate breast reconstruction (IBR). This incision pattern is associated with an increased risk of delayed wound healing and skin necrosis which may be further influenced by the type of IBR performed. We compared surgical complications in patients undergoing IBR with Direct-to-Implant (DTI) vs. Tissue Expander (TE) after Wise Pattern Skin-Sparing Mastectomy (WSSM).

Methods: Patients who underwent WSSM and IBR from 2019-2023 were selected. Patient characteristics, clinical features, and surgical complications were compared between patients who underwent DTI vs. TE IBR. Multivariable logistic regression analysis was performed to identify factors associated with major complications [surgical site infection (SSI), skin necrosis requiring reoperation, and reconstruction loss] and any 30-day complication controlling for patient age, race, ethnicity, body mass index (BMI), presence of diabetes, tobacco use, neoadjuvant chemotherapy (NAC), reason for mastectomy, axillary surgery, mastectomy weight, and type of reconstruction.

Results: A total of 144 patients who underwent 217 mastectomies were evaluated: 73 bilateral (51%) and 71 unilateral (49%); 117 DTI (54%) and 100 TE (46%). (Table) Most patients were ≥ 50 years old (64%), White (83%), Hispanic (64%), and had a BMI < 30 kg/m2 (58%). NAC was utilized in 35% of patients. The reason for mastectomy was cancer in 64%, and axillary surgery was performed in 66% of cases. The mastectomy weight was ≥1000 grams in 41% of cases. Major complications occurred in 21% of cases: SSI in 12% (DTI 15% vs. TE 9%), skin necrosis requiring reoperation in 11% (DTI 12% vs. TE 10%), and reconstruction loss in 13% (DTI 15% vs. TE 10%). SSI and skin necrosis requiring reoperation were associated with reconstruction loss (SSI p=<.001, skin necrosis p=<.001). Multivariable analysis showed that breast weight ≥1000 grams was associated with major complications (OR 2.82, 95% CI 1.27-6.26, p=.011) and Hispanic ethnicity, current smoking, and DTI reconstruction were associated with any 30-day complication (Hispanic ethnicity: OR 3.33, 95% CI 1.62-6.87, p=.001; current smoking: OR 5.57, 95% CI 1.05-29.02, p=.044; DTI: OR 2.40, 95% CI 1.31-4.40, p=.005).

Conclusions: In patients undergoing WSSM with IBR, mastectomy weight ≥1000 grams was associated with an increased likelihood of major complications and Hispanic ethnicity, current smoking, and DTI reconstruction were associated with an increased likelihood of any 30-day complication. These factors should be considered when counseling patients regarding risk of complications and plans for IBR after WSSM.

Table 1

Table. Patient Characteristics, Clinical Features, and Surgical Outcomes

	Total	DTI	TE	*p*
Patients	144 (100%)	74 (51%)	70 (49%)	
Age				0.923
< 50 years	52 (36%)	27 (36%)	25 (36%)	
≥ 50 years	92 (64%)	47 (64%)	45 (64%)	
Race				0.617
White	119 (83%)	61 (82%)	58 (82%)	
Black	24 (17%)	12 (16%)	12 (17%)	
Other	1 (0.7%)	1 (1%)	0 (0%)	
Ethnicity				0.923
Hispanic	92 (64%)	47 (64%)	45 (64%)	
Non-Hispanic	52 (36%)	27 (36%)	25 (36%)	
BMI				0.159
< 30 kg/m^2	84 (58%)	39 (53%)	45 (64%)	
≥ 30 kg/m^2	60 (42%)	35 (47%)	25 (36%)	
Diabetes				0.160
Yes	14 (10%)	10 (14%)	4 (6%)	
No	130 (90%)	64 (86%)	66 (94%)	
Tobacco Use				0.381
Current	7 (5%)	4 (5%)	3 (4%)	
Never	104 (72%)	56 (76%)	48 (69%)	
Former	33 (23%)	14 (19%)	19 (27%)	
NAC				0.915
Yes	50 (35%)	26 (35%)	24 (34%)	
No	94 (65%)	48 (65%)	46 (66%)	
Mastectomy Procedures	217 (100%)	117 (54%)	100 (46%)	
Reason for Mastectomy				0.581
Risk Reduction	78 (36%)	44 (38%)	34 (34%)	
Cancer	139 (64%)	73 (62%)	66 (66%)	
Axillary Surgery				0.618
None	73 (34%)	41 (35%)	32 (32%)	
SLNB	115 (53%)	62 (53%)	53 (53%)	
ALND	29 (13%)	14 (12%)	15 (15%)	
Breast Weight				0.052
<1000 grams	128 (59%)	62 (53%)	66 (66%)	
≥1000 grams	89 (41%)	55 (47%)	34 (34%)	
Complications				
SSI	26 (12%)	17 (15%)	9 (9%)	0.211
Reoperation for Skin Necrosis	24 (11%)	14 (12%)	10 (10%)	0.645
Reconstruction Loss	28 (13%)	18 (15%)	10 (10%)	0.238
Major Complication	46 (21%)	26 (22%)	20 (20%)	0.690
Any 30-day Complication	93 (43%)	60 (51%)	33 (33%)	**0.007**

DTI=Direct to implant, TE=Tissue expander, BMI=Body mass index, NAC=Neoadjuvant chemotherapy, SLNB=Sentinel lymph node biopsy, ALND=Axillary lymph node dissection, SSI=Surgical site infection

1988834 - Impact of Diabetes on Complications in Free Flap Breast Reconstruction: A National Analysis

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Background/Objective: Diabetes is known to negatively impact wound healing; however, the risk profile of autologous breast reconstruction (ABR) after mastectomy in diabetic patients has not been clearly delineated. This study evaluates the correlation between diabetic status, insulin dependence, and complication rates in ABR across a large national database.

Methods: Patients who underwent autologous reconstruction using free tissue transfer were identified from the 2009-2022 National Surgical Quality Improvement Program (NSQIP) database. They were categorized into non-diabetic (ND), non-insulin-dependent diabetes (NIDDM), and insulin-dependent diabetes (IDDM) cohorts. Primary outcomes included 30-day complications, readmission, and reoperation. Categorical variables were analyzed using Chi-square tests, and multivariable logistic regression analysis was performed.

Results: Among 17,640 ABR patients, 227 had IDDM (1.3%), 894 had NIDDM (5.1%), and the remainder did not have diabetes (93.6%). The IDDM cohort demonstrated the highest rate of surgical site infection (15.0%), followed by NIDDM (11.0%) and ND (7.0%) ($p < 0.001$). Wound dehiscence occurred more frequently in both IDDM (4.8%) and NIDDM cohorts (3.9%) than in ND (1.8%) ($p < 0.001$). Thirty-day readmission rate was highest in IDDM patients (12.3%), followed by NIDDM (7.5%) and ND (5.3%) ($p < 0.001$). Reoperation rate was also significantly elevated in IDDM (15.4%) compared to NIDDM (14.0%) and ND (11.4%) groups ($p = 0.015$). Hospital length of stay was prolonged in IDDM (4.5 days) and NIDDM (4.0 days) compared to ND (3.8 days) ($p = 0.006$). Compared to ND, risk of all-cause complication was higher in NIDDM (OR: 1.34, 95% CI: 1.15–1.56, $p < 0.001$) and IDDM (OR: 1.48, 95% CI: 1.12–1.96, $p = 0.007$) (Table 1).

Conclusions: Diabetic patients undergoing breast reconstruction with free tissue transfer experience significantly higher rates of infections, wound dehiscence, and readmission compared to patients without diabetes. These risks further increase for patients with insulin dependence. While diabetes is not a contraindication to breast free flaps, diabetic patients interested in flap reconstruction after mastectomy must be thoroughly counseled regarding their elevated risk profile.

Table 1. Multivariable Logistic Regression Analysis of Postoperative Outcomes by Diabetes Status

Table 1. Multivariable Logistic Regression Analysis of Postoperative Outcomes by Diabetes Status

Outcome	Non-diabetic	NIDDM	IDDM
All-cause complications	1.00 [reference]	1.34 [1.15–1.56]*	1.48 [1.12–1.96]*
Surgical site infection	1.00 [reference]	1.25 [0.99–1.57]	1.81 [1.24–2.64]*
Dehiscence	1.00 [reference]	1.57 [1.08–2.29]*	2.00 [1.06–3.75]*
Readmission	1.00 [reference]	1.12 [0.86–1.47]	1.95 [1.30–2.95]*
Reoperation	1.00 [reference]	1.04 [0.84–1.28]	1.25 [0.87–1.81]

Comparison of postoperative outcomes between non-diabetic, non-insulin-dependent diabetes mellitus (NIDDM), and insulin-dependent diabetes mellitus (IDDM) patients. Odds ratios (OR) and 95% confidence intervals are presented for each outcome, with non-diabetic patients as the reference group. Asterisks (*) denote statistically significant results ($p < 0.05$).

1988588 - Scrolling For Support: The Role of TikTok in Breast Reconstruction Education and Support

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Background/Objective: In the past decade, social media platforms like TikTok have become influential in healthcare by enabling individuals to share resources, personal narratives, and knowledge, particularly regarding complex medical decisions such as breast reconstruction after breast cancer. Despite the availability of multidisciplinary support from healthcare providers, many newly diagnosed breast cancer patients experience significant distress and seek additional resources elsewhere such as support networks, online forums, and social media applications like TikTok. For providers, understanding TikTok's role in facilitating discussions about breast reconstruction is crucial to providing comprehensive breast cancer care. This study aims to explore the types of breast cancer and reconstruction content available on the platform and to analyze how individuals engage with this content.

Methods: A prospective content analysis of TikTok videos, identified by directly querying the platform using "#BreastReconstruction" and "#BreastCancer," was performed in July 2024. The top 200 videos that best matched these search terms were analyzed for author credentials, video engagement (in number of views, likes, comments and saves), video sentiment, and content. Videos were viewed, analyzed, and sorted by three independent reviewers. Unrelated videos or those not in English were excluded from video analysis. Kruskal-Wallis tests assessed quantitative measures of video engagement (mean ± standard deviation) among video content categories ($p=0.05$).

Results: A total of 168 videos were included. Most videos were authored by breast cancer patients (70.8%, N=119) and reconstructive breast surgeons (26.2%, N=44). Patient videos showed varied sentiments towards reconstruction: 53% positive, 25% neutral, and 26% negative. Surgeon-authored content was largely neutral (80%). Videos fell into six categories: experience-sharing (45.2%), educational (27.9%), empowerment (13.1%), entertainment (10.1%), advocacy (3%), and promotional (0.6%). There were significant differences in engagement between different video categories: views ($p=0.0252$), likes ($p=0.000786$), and comments ($p= 0.00219$). Videos aimed at empowering breast cancer patients were the most popular, averaging 622,960 views, 12,971 likes, 398 saves, and 578 comments per video. Experiential videos had the most saves on average, with 534.58 saves per video, while advocacy videos had the most comments on average, with 711 comments per video.

Conclusions: TikTok is a valuable resource for breast cancer patients considering breast reconstruction, offering a wide range of content from personal journeys to patient education and empowerment. Our findings underscore the platform's significant role in fostering engagement, with empowerment and experiential videos yielding the most interactions. These findings follow the trend of social media's growing integration with healthcare as seen in other specialties such as plastic surgery and dermatology. Breast surgeons and providers should recognize TikTok's role in patient education and leverage insights from social media to bridge informational gaps and enhance patient care in the clinical setting.

Table 1: Mean Engagement for TikTok Videos Under "#BreastReconstruction #BreastCancer" Sorted by Content

Mean Engagement for TikTok Videos Under "#Breast Reconstruction #BreastCancer" Sorted by Content					
Content	**N**	**Views**	**Likes**	**Saves**	**Comments**
Advocacy	5	69191.80 ± 138632.97	4974.40 ± 10195.60	356.80 ± 736.93	711.00 ± 1498.19
Educational	47	100765.60 ± 274366.10	2956.11 ± 11000.86	59.68 ± 89.38	39.79 ± 69.60
Empowerment	22	622860.30 ± 1494971.00	12970.68 ± 26480.70	398.09 ± 1041.81	578.36 ± 1453.88
Entertainment	17	81620.53 ± 126883.30	2053.76 ± 4079.06	75.94 ± 179.03	99.00 ± 192.66
Experiential	76	89557.14 ± 255793.20	3622.53 ± 15241.41	534.58 ± 3563.47	149.26 ± 406.09
Promotional	1	1061.00	9.00	0.00	0.00
P-value		*0.02523*	*0.0007864*	*0.1636*	*0.002186*
Mean Total	**168**	**160594.17 ± 604694.00**	**4520.23 ± 15528.47**	**328.96 ± 2430.04**	**185.57 ± 659.29**

1988811 - Breast Reconstruction Outcomes in Salvage Mastectomy After Prior Breast Conservation Therapy: A Meta-Analysis

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Background/Objective: Breast reconstruction after mastectomy in patients with prior lumpectomy and radiation presents unique challenges, as implant-based (IBR), autologous (AR), and combined autologous-implant reconstruction (AIR) may all be offered, with wide variability in reported success rates across the literature. Given recent advances in both the autologous reconstruction landscape and changes in implant placement techniques, we conducted a systematic review to better characterize outcomes and guide counseling in this population.

Methods: A systematic review was performed according to PRISMA guidelines, utilizing PubMed, Web of Science, Embase, and Scopus databases. Studies published through July 2024 were included by two independent reviewers if the study reported reconstruction type and surgical outcomes in patients requiring mastectomy following lumpectomy and radiation. Categorical variables were analyzed using the Chi-square test, and post-hoc pairwise comparisons were performed using the Bonferroni correction.

Results: Of 391 screened articles, 11 studies including 580 patients met inclusion criteria. Time from breast-conserving therapy to mastectomy ranged from 44 to 180 months, with prior radiation dose varying from 4800 to 6070 cGy. IBR was performed in 22.9% of patients, AR in 35.5%, and AIR in 41.6%. Pooled analysis revealed a significant difference in reconstruction failure rates between groups: 18.7% in IBR, 4.6% in AR, and 3.8% in AIR ($p < 0.001$). Post-hoc pairwise analysis confirmed that IBR failure rates were significantly higher than AR ($p = 0.001$) and AIR ($p < 0.001$). Reoperation rates also differed significantly: 24.8% in IBR, 27.7% in AR, and 16.2% in AIR ($p = 0.010$). AR had a higher reoperation rate than AIR ($p = 0.003$), while no significant differences in reoperation were found between IBR and the other two groups. Severe capsular contracture (Grade III and IV) was more prevalent in IBR than in AIR (21.6% vs 8.1%, $p = 0.002$) (Table 1). Patient satisfaction was assessed in six studies, with one study of 137 patients reporting the highest satisfaction rates with AR: 67.7% general satisfaction and 66.2% aesthetic satisfaction, compared to 57.1% for IBR in both categories and 66.7% general satisfaction and 55.6% aesthetic satisfaction for AIR. Available BREAST-Q data demonstrated higher scores in AIR for breast satisfaction, psychosocial, physical, and sexual well-being than in IBR. Aesthetic outcomes were more favorable in AR than AIR, with one study reporting higher satisfaction in abdominally-based flaps compared to latissimus dorsi with implant.

Conclusions: Autologous and autologous-implant reconstructions demonstrate lower failure rates and lower incidence of severe capsular contracture compared to implant reconstruction in patients requiring mastectomy after prior lumpectomy and radiation. No significant differences were identified in success rates between AR and AIR groups. Autologous reconstruction yielded higher patient satisfaction and more favorable aesthetic outcomes. Our findings suggest that autologous options remain safer even in the context of remote radiation, which can help guide reconstructive counseling in this complex patient population.

Table 1. Pooled Outcomes and Post-hoc Pairwise Comparisons with Bonferroni Correction

Table 1. Pooled Outcomes with Post-hoc Comparisons using Bonferroni Correction

Outcome	Implant	Autologous	Autologous-Implant	p-value
Reconstruction failure	18.7%	4.6%	3.8%	**<0.001***
IBR vs AR	18.7%	4.6%	-	**0.001****
IBR vs AIR	18.7%	-	3.8%	**<0.001****
AR vs AIR	-	4.6%	3.8%	0.714
Reoperation	24.8%	27.7%	16.2%	**0.010***
IBR vs AR	24.8%	27.7%	-	0.561
IBR vs AIR	24.8%	-	16.2%	0.043
AR vs AIR	-	27.7%	16.2%	**0.003****
Surgical site infection	8.2%	5.6%	2.0%	0.073
IBR vs AIR	8.2%	-	2.0%	0.039
Severe capsular contracture	21.6%	-	8.1%	**0.002***
Mastectomy flap necrosis	10.9%	10.2%	11.8%	0.906

Abbreviations: Implant-based reconstruction (IBR), autologous reconstruction (AR), and combined autologous-implant reconstruction (AIR).

*Significant p-value < 0.05

**Significant p-value for post-hoc pairwise comparison with Bonferroni correction ($p < 0.017$)

1988840 - National Trends and Outcomes in Autologous Breast Reconstruction: An Eleven-Year Analysis

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Background/Objective: Autologous breast reconstruction (ABR) with free tissue transfer has significantly advanced over the last decade, particularly with regards to surgical efficiency and enhanced recovery protocols. This study evaluates whether such trends are reflected on a national level.

Methods: Patients who underwent ABR were identified from the 2011-2022 National Surgical Quality Improvement Program (NSQIP) database and stratified by year of surgery in 3-year periods: 2011–2013, 2014–2016, 2017–2019, and 2020–2022. Primary outcomes included operative time, length of hospital stay, and 30-day postoperative complications. ANOVA, Chi-square and multivariable logistic regression analyses were performed.

Results: A total of 17,504 patients were identified across the four time periods: 2,045 patients in 2011–2013, 3,412 in 2014–2016, 5,191 in 2017–2019, and 6,867 in 2020–2022. Notably, the number of flaps performed increased by 236% from the earliest to the most recent group. Mean operative time decreased from 8.1 ± 3.0 to 7.6 ± 2.9 hours ($p < 0.001$), and length of stay steadily decreased from 4.5 ± 8.4 to 3.4 ± 2.2 days ($p < 0.001$). Additionally, reoperation rates declined from 12.2% to 10.9% ($p = 0.016$) and readmission rates fell from 6.6% to 5.0% ($p = 0.005$). Transfusion requirements also significantly decreased in the latest cohort compared to the early cohort (7.6% vs 12.1%, $p < 0.001$). Venous thromboembolism rates did not significantly vary between cohorts (1.5% vs 1.3%, $p = 0.630$). In contrast, the rate of surgical site infection rose from 5.1% to 9.5% ($p < 0.001$). In adjusted analyses comparing 2020–2022 to 2011–2013, logistic regression demonstrated significantly lower odds of reoperation (OR: 0.82, 95% CI: 0.70–0.96, $p = 0.016$) and readmission (OR: 0.73, 95% CI: 0.59–0.89, $p = 0.003$), whereas risk of SSI increased (OR: 1.94, 95% CI: 1.57–2.31, $p < 0.001$).

Conclusions: ABR outcomes in recent years demonstrate significant reductions in length of hospitalization, need for transfusions, and likelihood of reoperation. However, the increase in surgical site infection warrants further investigation into contributing factors and donor site risks. For all patients considering flap reconstruction after mastectomy, it is important that patient counseling regarding microsurgical breast reconstruction, particularly by non-microsurgeons, reflect the current state of national outcomes rather than potentially outdated conceptions.

1971338 - Surgical Outcomes after Goldilocks Mastectomy

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Background/Objective: Patients who are morbidly obese or have multiple comorbidities have few reconstructive options following mastectomy for breast cancer. The Golidlocks mastectomy (GLM) is an alternative surgical approach that utilizes a Wise pattern incision to create a de-epithelialized inferior skin flap that is formed into a small breast mound or flat closure so that acceptable cosmesis with minimal cutaneous deformity is achieved. The purpose of this study was to assess operative characteristics along with short- and long-term outcomes of GLM to better understand patient selection as well as the safety and efficacy of the procedure.

Methods: This is a case series using data from a Northeastern urban cancer center electronic medical record, which included adult female breast patients who had GLM performed between January 2016 and September 2022. Descriptive statistical analysis, including median values, interquartile ranges (IQR), and percentages, was conducted with SAS software v9.4.

Results: We identified 130 patients who met the inclusion criteria (see Table 1 - Demographic and Clinical Characteristics). A total of 46.9% and 53.1% underwent unilateral and bilateral GLM, respectively. The rates of SLNB and ALND were 78.3% and 26.1%, respectively. The median operative time including nodal procedures was 169 (IQR 127-211) minutes for unilateral and 245 (IQR 169-321) minutes for bilateral GLM. The median length of stay was 1 (IQR 0-6) day with a median drain duration of 10 (IQR 4-16) days. Regarding short-term outcomes, 7.7% required an urgent return to the operating room and 6.2% were readmitted post-discharge. The rates of surgical site infection, seroma, and hematoma were 3.1%, 12.3%, and 5.4%, respectively. The rates of skin flap necrosis and wound dehiscence were both 8.5%. In terms of long-term outcomes, 14.6% required additional imaging of an ultimately benign mass, with 47.9% of that group undergoing biopsy. In total, 8.5% of patients underwent delayed formal reconstructive surgery, with a median time to this procedure of 5 (IQR 1-9) months.

Conclusions: Our study found that GLM is a safe and efficacious procedure in a population with significant comorbidities. This procedure represents a good option for patients who otherwise may not be candidates for formal reconstruction. Looking ahead, we intend to assess patient-reported outcomes and collect data from a more recent population after 2022.

Table 1 - Demographics and Clinical Characteristics

Median age, years (IQR)	65 (56-72)
BMI	
Overall median (IQR)	33.0 (27.3-38.6)
BMI groups (relative %)	
18.5-24.9	10.1
25.0-29.9	14.0
30.0-34.9	33.0
35.0-39.9	32.0
>40.0	12.3
Comorbidities (%)	
DM	27.7
HTN	62.3
HLD	48.5
CAD	7.7
CVD	3.9
PAD	0.8
Bleeding disorder	0.0
Hypercoagulable disorder	3.1
Chronic lung disease	19.2
History of MRSA	1.5
Tobacco use (relative %)	
Current	13.9
Prior	36.2
None	50
Illicit drug use (relative %)	
Current	3.1
Prior	0.0
None	96.9
Alcohol use (relative %)	
Current	46.9
Prior	1.5
None	51.5
Genetic testing (%)	
Total tested	56.2
Negative	38.3
BRCA	7.3
PTEN	0.0
TP53	2.2
CDH1	1.1
STK11	0.0
PALB2	0.6
CHEK2	1.7
ATM	1.7
BRIP1	0.0
NBN	0.8
RAD51D	0.0
BARD1	0.0
P16	0.0
MUTYH	0.0
MLH/MSH/MSH6/PMS2	1.7
Type of cancer present on pathology (%)	
DCIS	63.1
LCIS	14.6
IDC	60.8
ILC	13.9
Inflammatory	2.3
Other invasive cancer	8.5
Receptor status (relative %)	
ER+ / PR+ / HER2-	63.2
ER- / PR - / HER2-	14.5
ER- / PR- / HER2+	4.3
ER+ / PR + / HER2+	11.6
Anatomical staging of breast cancer (relative %)	
DCIS Stage 0	22.2
Stage 1	37.3
Stage 2	29.4
Stage 3	10.3
Stage 4	0.8
Prior breast cancer history (%)	
No history	79.8
History of ipsilateral cancer (with radiation)	12.1 (80.0)
History of contralateral breast cancer	8.0
Breast cancer treatment (%)	
Neoadjuvant therapy, any type	38.5
Neoadjuvant endocrine therapy	28.0
Neoadjuvant chemotherapy	70.0
Adjuvant chemotherapy	26.9
Adjuvant radiation	24.1
Adjuvant endocrine therapy	66.3

1970201 - Factors affecting implant salvage in patients with complications after post-mastectomy implant-based reconstruction

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Background/Objective: Implant-based reconstruction (IBR) accounts for the majority of post-mastectomy reconstruction. Complications lead to poor patient satisfaction, and if the implant requires removal, this can lead to poor self-image and significant psychosocial stress. If reconstruction is able to be preserved in the setting of complications through implant salvage or exchange, it may negate such situational anxiety. We aimed to assess factors affecting the ability to salvage IBR complications. We hypothesized antibiotic administration would improve salvage rates.

Methods: All patients undergoing mastectomy with immediate IBR from 1/2012-1/2023 were retrospectively identified using CPT/ICD10 codes from a regional hospital system. Patients requiring surgery for post-mastectomy IBR complications were identified. Patient demographics, operative characteristics, reconstruction characteristics, indications for implant re-operation, operative cultures, antibiotic use, treatment modalities, and salvage outcomes were collected and evaluated using Chi-square, Kruskal-Wallis, and multivariate logistic regression.

Results: 6,901 patients had post-mastectomy IBR. 184/6901 (2.7%) had complications requiring re-operation. 18/184 (9.8%) patients had implant salvage or exchange, and 166/184 (90.2%) underwent removal. Between removal and salvage/exchange groups, there were no differences in patient characteristics, operative characteristics at index reconstruction, preoperative chemotherapy or radiation, or type of implant. Of those who underwent re-operation, 133/184 (72.3%) were re-operated on for infectious complications. Additional indications for re-operation include skin complications with implant exposure and expander rupture. Patients who underwent implant removal had higher rate of IBR infection as the indication for re-operation (77.7% v 22.3%, $p< 0.0001$). There was no difference in pre-operative or post-operative antibiotic administration, antibiotic route or duration, and culture positivity between the groups that had implant salvage vs. implant removal.

Conclusions: There are low rates of implant salvage in the setting of post-IBR complications requiring re-operation. Antibiotic administration does not influence the ability for implant salvage once the decision is made to go to the operating room, despite infection being the primary reason for inability to salvage. Further work needs to be done to try to improve salvage rates among IBR complications after mastectomy.

Table 1: Factors affecting implant salvage in post-mastectomy implant based reconstruction

	Removed (N=166)	**Salvaged or Exchanged** (N=18)	**Total** (N=184)	**p-value**
Reconstruction type, n (%)				0.7410[2]
Direct to implant	16 (9.6%)	3 (16.7%)	19 (10.3%)	
No reconstruction	12 (7.2%)	0 (0.0%)	12 (6.5%)	
Tissue expander	136 (81.9%)	15 (83.3%)	151 (82.1%)	
Flap	2 (1.2%)	0 (0.0%)	2 (1.0%)	
Infection, n (%)				**<0.0001[2]**
No	37 (22.3%)	14 (77.8%)	51 (27.7%)	
Yes	129 (77.7%)	4 (22.2%)	133 (72.3%)	
Pre-removal/salvage antibiotic, n (%)				0.0874[2]
No	35 (21.1%)	7 (38.9%)	42 (22.8%)	
Yes	131 (78.9%)	11 (61.1%)	142 (77.2%)	
Post-removal/salvage antibiotic, n (%)				0.1882[2]
No	57 (34.3%)	9 (50.0%)	66 (35.9%)	
Yes	109 (65.7%)	9 (50.0%)	118 (64.1%)	
Positive operative culture, n (%)				0.3230[2]
No	62 (44.6%)	5 (62.5%)	67 (45.6%)	
Yes	77 (55.4%)	3 (37.5%)	80 (54.4%)	
Not taken	27	10	37	

1967540 - Short Term Safety of B-Lite® Implants in Breast Reconstruction for Breast Cancer Patients- a Single Center Experience

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Background/Objective: Nipple and skin-sparing mastectomy in larger breasted women are at increased risk of compromised flap vascularity due to the thin, stretched skin flaps, which can lead to nipple, areola or skin necrosis, delayed wound healing and implant loss. A higher breast volume is a significant patient-related predictor for complications in expander or direct to implant (DTI) reconstruction, and the heavier implant required to replace such volume may also increase the risk of complications. The B-Lite® breast implant (Polytec, Germany) is an alternative to conventional breast implants with a cohesive silicone gel bonded with lightweight microspheres resulting in a 25% reduction in weight compared to traditional silicone implants which have a near 1:1 volume to weight ratio. All prior studies focus on its use in the augmentation setting. Our aim was to assess the complication rates for B-Lite® implants for immediate breast reconstruction (IBR) in patients with breast cancer or undergoing risk reduction (RR) surgery and implant exchange (IE). The primary endpoint was implant-loss at 3 months benchmarking against the UK Immediate Breast Reconstruction audit (iBRA) and National Mastectomy and Breast Reconstruction Audit (NMBRA) figures of 9%.

Methods: Clinical audit committee approval was granted. Retrospective data from a prospectively maintained database at the Royal Marsden Hospital was used to analyze details of patients who had B-Lite® implants inserted from 1st January 2019- 31st January 2024. Patients were divided into two groups: IBR with DTI surgery and patients undergoing IE with B-Lite® implants.

Results: Eighty implants were placed in 47 patients. There were 56 IBR and 24 IE. The median age was 48 years (IQR 39-54), and median BMI was 25 kg/m2 (IQR 23.2-33.1). Two patients were active smokers, and 2 patients had diabetes or immunosuppression. Five patients had had radiotherapy prior to surgery. The median breast weight for immediate breast reconstruction was 543g (IQR 342-971) and median implant volume used was 485cc (IQR 395-550). In total, 2 (2.5%) implants were lost and 3 (3.75%) implants were successfully salvaged within the first 3 months of insertion (Table 1). Of these, 4 were IBR and 1 was IE. The reasons for implant unplanned intervention were infection (n=2), implant exposure (n=2), and red breast with presumed infection (n=1). Cultures grew Staphylococcus aureus in one patient; the remainder of the cultures were negative.

Conclusions: Our study demonstrated an acceptable 3-month implant loss rate of 2.5% with B-lite® implants despite many in our population having risk factors such as high BMI, high breast weight or previous radiotherapy. B-Lite® implants offer an acceptable option for women with large breasts undergoing implant reconstruction.

Table1. Summary of results

Parameter	Values
Total number	
Patients	47
Implants	80
Age, years (median, IQR)	48 (39-54)
Risk factors (per patient)	n=47
Active smoking	2 (4.25%)
Diabetes/Immunosuppression	2 (4.25%)
BMI kg/m^2 (median, IQR)	25 (IQR 23.2-33.1)
Neo-adjuvant systemic therapy	12 (25.5%)
Previous radiotherapy (per breast)	5/80 (6.25%)
Type of surgery (per breast)	n=80
Immediate reconstruction	56 (70 %)
Implant exchange	24 (30%)
Surgical factors (per breast)	
Breast weight (gm) (median, IQR)	542.5 (342-971)
Mesh usage (if immediate)	42/56 (75%)
Implant volume (cc) (median, IQR)	485cc (395-550)
Implant loss at 3 months	n=80
Loss	2 (2.5%)
Urgent Salvage	3 (3.75%)
Infection	2 (40%)
Skin ulceration	2 (40%)
Presumed infection (red breast)	1 (20%)

1963416 - Is Pre-pectoral Implant Reconstruction Associated with Better Physical Well Being?

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Background/Objective: Improvements in mastectomy techniques, implants, and devices for implant support have enabled a resurgence in pre-pectoral implant reconstruction. One of the drivers of this shift is a perception among patients and physicians that retro-pectoral implants cause more physical morbidity. Although studies have shown more rapid early recovery among patients who undergo pre-pectoral reconstruction, little is known about whether this approach improves long-term physical outcomes.

Methods: A prospectively maintained database was used to identify patients who underwent immediate implant-based postmastectomy reconstruction. Patients who underwent radiation treatment or who failed to complete implant reconstruction were excluded. Demographic and clinical characteristics, including postoperative complications, were analyzed. BREAST-Q surveys were sent to patients 12-24 months following completion of reconstruction. Bivariate independent t-test and Chi-square analysis were used to compare pre-pectoral and retro-pectoral cohorts.

Results: 168 patients were identified. 78 (46.4%) completed questionnaires and met inclusion criteria for the study. 33 patients had retro-pectoral implants and 45 patients had pre-pectoral implants. Non-responders had a similar proportion of implant positions to responders (p=0.32). The median time between mastectomy and completion of the BREAST-Q survey was 21 months (IQR, 20-23 months). Patients with retro-pectoral reconstruction were older (56 ± 13 vs. 50 ± 13 years, p=0.048) and had higher BMIs (27.8 ± 7.3 versus 24.2 ± 3.8 kg/m2, p=0.012) and were less likely to have undergone direct-to-implant reconstruction (48.9 vs. 81.8%, p=0.003). There were no other significant clinical or demographic differences between groups. BREAST-Q chest well-being data showed no significant difference in long term chest wall morbidity among retro-pectoral and pre-pectoral cohorts (see table).

Conclusions: For many patients, pre-pectoral reconstruction confers aesthetic benefits, including better projection and more stable implant and nipple position. However, there remain patients for whom a retro-pectoral approach is more suitable due to the risks of rippling and implant visibility. Surgical decision making should continue to be individualized according to anatomic and disease-specific factors as well as surgeon and patient preference. However, patients should be reassured that their long-term physical well-being is unlikely to be affected by which technique is chosen.

Table 1: BREAST-Q Physical Well-Being Module

BREAST-Q Physical Well-Being Module			
	Retro-pectoral (N=33)	**Pre-pectoral (N=45)**	**p-value**
Chest Well-Being Score, mean (higher is better)	79.8 ± 18.0	80.6 ± 19.2	0.76
Chest Well-Being Questions, percent answering "All" or "Some of the Time"			
Pain in the muscles of your chest?	27%	18%	0.55
Difficulty lifting or moving your arms?	27%	20%	0.79
Difficulty sleeping because of discomfort in your breast area?	30%	31%	0.97
Tightness in your breast area?	49%	36%	0.39
Pulling in your breast area?	52%	47%	0.67
Nagging feeling in your breast area?	31%	29%	0.87
Tenderness in your breast area?	24%	38%	0.43
Sharp pains in your breast area?	24%	31%	0.30
Aching feeling in your breast area?	21%	36%	0.40
Throbbing feeling in your breast area?	15%	13%	0.30
Swelling of the arm (lymphedema) on the side(s) that you had your breast surgery	9%	24%	0.27

SLN

1986691 - Axillary Sentinel Lymph Node Biopsy Can be Omitted in Favorable Histologic Subtypes of Breast Cancer: Mucinous, Tubular, and Secretory Carcinomas

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Background/Objective: Axillary surgery de-escalation in breast cancer (BC) continues to evolve, with recent randomized trial data, such as the SOUND trial, demonstrating equivalent distant disease-free survival when omitting sentinel lymph node biopsy (SLNB) in cT1 (< 2 cm), clinically and ultrasound node-negative BC. Compared to invasive ductal and lobular carcinomas, favorable histologic subtypes of BC (FHSBC), including mucinous, tubular, and secretory carcinomas, have an excellent long-term prognosis. However, robust data on the utility, positivity rate, or survival impact of SLNB in FHSBC are lacking.

Methods: We analyzed FHSBC from the National Cancer Database (2004–2020) and compared them to traditional invasive ductal and lobular BC histologies. The FHSBCs included were mucinous, tubular, and adenoid cystic/secretory carcinomas. We collected demographic, clinicopathological, and facility data. SLNB data from 2018 onwards were assessed, and from 2004-2018, we used five or fewer regional nodes examined as a surrogate for SLNB. The primary endpoints were SLNB positivity rate and overall survival. To control for confounding factors, we performed 1:1 propensity matching using machine learning eXtreme Gradient Boosting (XGBoost) and calculated Cox proportional hazard regressions to assess the impact of SLNB on overall survival (hazard ratio, HR).

Results: The study identified 3,690,015 patients with BC between 2004-2020. We found 53,616 BC patients with mucinous, 17,822 with tubular, and 2,799 with secretory carcinomas. We compared FHSBC to 2,745,946 BC patients with traditional invasive BC histology. The median age of the FHSBC group was older than traditional histologies (67 vs. 61 years-old). The rate of performance of SLNB in the FHSBC group was 82.4% vs. 72.6% in traditional histologies and 73.8% across all histologies (Fig. 1A). The overall rate of SLNB positivity in the FHSBC group was 6.6% vs. 21.0% in traditional histologies and 20.2% across all histologies (Fig. 1B); chi-square testing revealed statistically significant differences in each ($p< 0.001$). Machine learning XGBoost 1:1 model was created on SLNB being performed or not, which showed 80.9% accuracy [95% CI (80.3%-81.6%); a measure of the model's correctness] on previously unseen testing data, with a Kappa value of 0.231, indicating fair predictive accuracy that surpassed random chance. This outperformed traditional logistic propensity matching modeling, which had a Kappa of 0.103, indicating only slight predictive accuracy compared to random guessing. XGBoost 1:1 propensity matched FHSBC groups resulted in 4,738 matched patients, 2,369 who received SLNB and 2,369 who did not. Overall survival analysis using SLNB data from 2018 onwards revealed a HR of 1.33 [95% CI (1.19-1.48); $p< 0.001$; Fig. 1C], indicating worse overall survival in FHSBC patients who underwent SLNB compared to those who did not.

Conclusions: In this U.S. hospital-based retrospective analysis, patients with favorable histologic subtypes of BC (mucinous, tubular, and secretory carcinomas) showed a low SLNB positivity rate

(6.6%). Using a novel XGBoost 1:1 propensity score matching to adjust for confounders, patients with FHSBC who underwent SLNB had a surprising worse survival. In the absence of prospective trials, these findings support omitting SLNB axillary staging in FHSBC, potentially reducing morbidity, healthcare costs, and, as suggested by these data, improving survival.

Figure 1

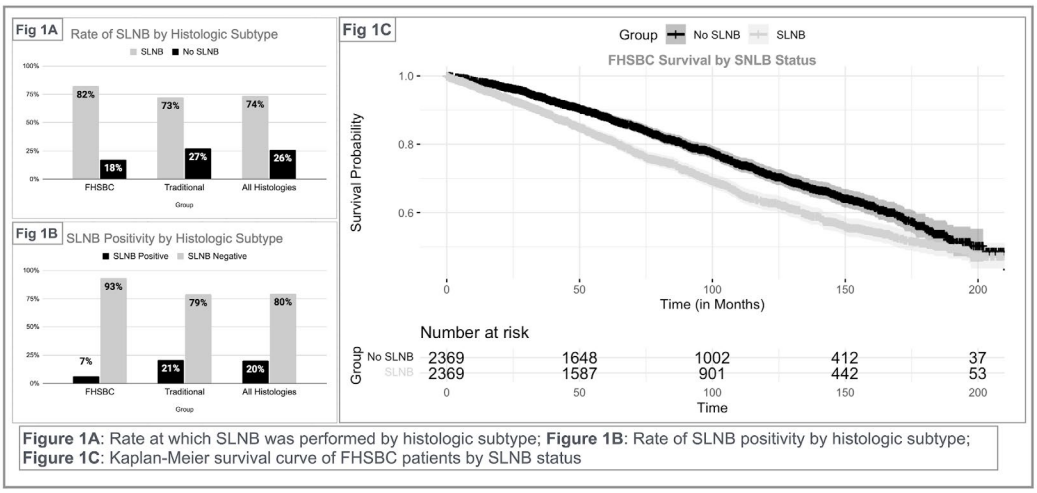

Figure 1A: Rate at which SLNB was performed by histologic subtype; **Figure 1B**: Rate of SLNB positivity by histologic subtype; **Figure 1C**: Kaplan-Meier survival curve of FHSBC patients by SLNB status

1985214 - Upfront Tailored Axillary Surgery (TAS) for Clinically Node-Positive HR+/HER2- Breast Cancer: A Population-Based Cohort

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Background/Objective: Tailored axillary surgery (TAS) involves selective reduction of axillary nodal burden by combining sentinel lymph node biopsy (SLNB) with targeted removal of positive node(s) by palpation or localizer use. TAS is emerging as an alternative to axillary lymph node dissection (ALND) in patients with node-positive breast cancer undergoing upfront surgery, but outcome data is lacking.

Methods: We identified all patients with cT0-3N1 HR+/HER2- breast cancer receiving upfront surgery in Alberta, Canada from 2017-2024. Those treated with TAS as initial axillary surgery were included for analysis. Logistic regression was used to characterize factors associated with TAS attempt vs. upfront ALND. Primary outcomes of interest were i) rate of completion ALND (cALND), ii) axillary recurrence rate with TAS alone and iii) rate of referral to rehabilitation therapy for arm symptoms after TAS. Kaplan Meier analyses were performed to evaluate recurrence-free recurrence (RFS) and overall survival (OS).

Results: Among 777 cT0-3 cN1 HR+/HER2- patients receiving upfront surgery, 124 (16.0%) had planned TAS. Median age was 61 years (IQR: 51-71), median pathologic tumor size was 2.3 cm (IQR: 1.6-3.5 cm) and 42.7% had grade 3 disease. Nodal disease was palpable in 53 (42.7%) patients and non-palpable imaging-detected in 71 (57.3%). Factors associated with TAS attempt vs. upfront ALND included later year of surgery, geographic region, smaller cT size and imaging-detected (vs. palpable) nodal disease (all $p< 0.05$ in multivariable model). Nearly all (96.8%) TAS procedures included a SLNB, and a wire or seed localizer was used in 38 (30.6%) patients. Intra-operative nodal evaluation was rare (3.3%). The median number of TAS nodes retrieved was 4 (range: 1-12, IQR: 3-5). The rate of cALND was 22.6% (95%CI: 16.1-30.7%) (Table). Among those treated with TAS alone, 84.4% had < 3 positive nodes while 15.6% had 3 or more. In patients with cALND, the median number of total positive nodes was 6 (IQR: 2-9) and 88.5% had additional disease in the ALND specimen. Among the 96 patients treated with TAS alone, most received adjuvant RT (89.6%) and endocrine therapy (88.5%) and 50% received adjuvant chemotherapy. At median follow-up of 22.0 months (IQR: 7.1-37.7), there was 1 (1.0%; 95%CI: 1.8-5.7%) axillary recurrence in a patient with pT3 grade 3 disease and 1/4 positive TAS nodes. The 2-year RFS was 87.2% (95% CI: 75.6-93.5%) and 2-year OS was 92.5% (95%CI: 82.6-96.9%). A referral to rehabilitation therapy for arm symptoms was made for 25.0% (95%CI: 17.4-34.5%) of patients with TAS alone vs. 42.3% with cALND ($p=0.08$). Symptoms prompting referral in TAS alone patients were range of motion deficit (13.5%), lymphedema (8.3%), cording (2.1%) and pain (1.0%).

Conclusions: In this real-world cohort of cN1 HR+/HER2- breast cancer patients, selective use of TAS led to omission of ALND in 77% of patients with a low rate of axillary recurrence (1.0%). These data support the oncologic safety of this approach while level I evidence from the TAXIS trial is awaited. Notably, short-term arm morbidity occurred in at least 25% of patients after TAS, warranting attention during follow-up.

Table 1. Reason for cALND among 124 patients with attempted TAS

	Frequency (%)
Immediate cALND	
Failed mapping	4 (3.2)
Extensive palpably abnormal disease	15 (12.1)
>2 positive nodes by frozen section	2 (1.6)
Delayed cALND	
>2 positive nodes on final TAS pathology	7 (5.6)
TOTAL cALND	**28 (22.6)**

1987292 - Omission of Axillary Lymph Node Dissection in Patients with ER+/HER2- Breast Cancer with 3-5 Positive Nodes Undergoing Adjuvant Systemic Therapy and Radiation Does Not Impact Overall Survival: A National Cancer Database Analysis

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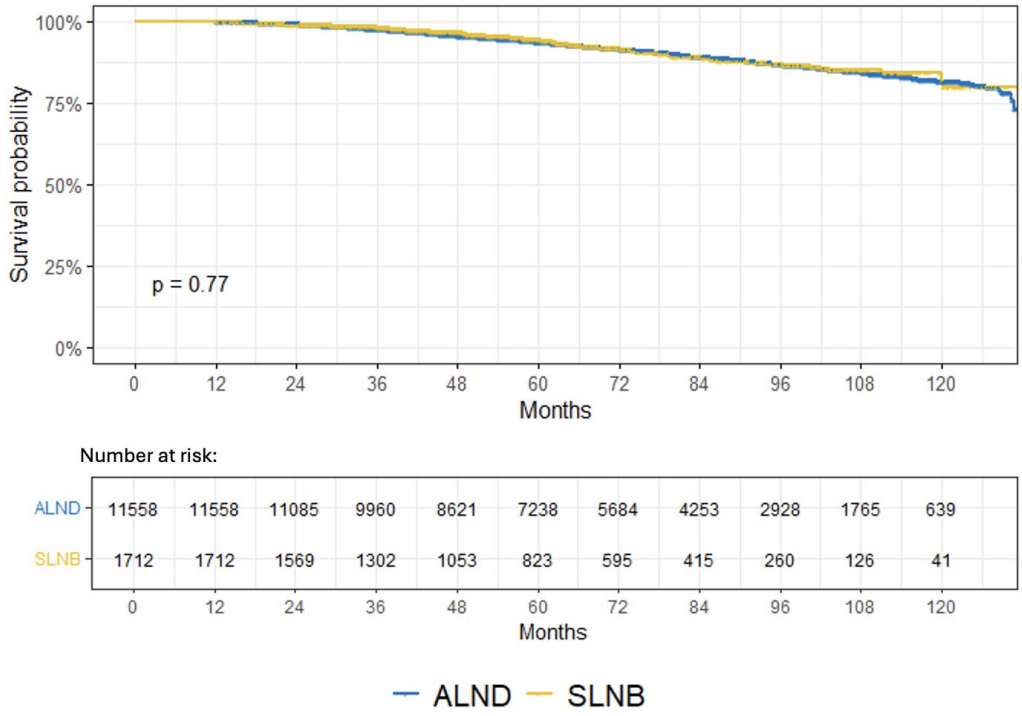
Background/Objective: Background: In recent years, clinical practice guidelines have evolved to de-escalate axillary surgery in breast cancer patients with limited nodal involvement based on studies showing reduced morbidity without compromising survival. The ACOSOG Z0011, SENOMAC, and AMAROS trials established the safety of omission of axillary lymph node dissection (ALND) in patients with 1-2 positive lymph nodes (LN) on sentinel LN biopsy (SLNB). However, the benefit to ALND in patients with 3-5 positive LNs in the setting of adjuvant radiation and systemic therapy remains debated. This study examines national trends in the use of ALND versus SLNB in this subgroup and evaluates associated survival outcomes. Objective: To assess national patterns in axillary surgery and their impact on survival in patients with pathologic T0 through T2 (pT0-2) estrogen receptor positive (ER+), human epidermal growth factor receptor 2 negative (HER2-) breast cancer with 3-5 positive LNs.

Methods: Using data from the National Cancer Database (NCDB) from January 2012 to December 2021, we identified patients with pT0-2 ER+/HER2- breast cancer who underwent upfront surgery with 3-5 positive LNs on surgical pathology. Patients who did not receive adjuvant endocrine therapy (ET), chemotherapy (CT), and radiation (RT) were excluded, in addition to those with unknown type of LN surgery. We compared patients who had ALND (including ALND alone or SLNB + ALND) versus SLNB alone according to the 2012 coding for LN surgery.

Results: Among the 13,270 patients included in this study, 1,712 (12.9%) had SLNB and 11,558 (87.1%) had ALND. The proportion of patients who had ALND decreased by 18.3% during the study period from 93.4% in 2012 to 75.1% in 2020. Compared to the ALND group, the SLNB group had a higher proportion of patients with 3 positive LNs (63.1% vs 43.1%, $p< 0.001$), Charlson Comorbidity Index (CCI) score of 0 (87.4% vs 84.4%, $p = 0.001$), pT1 tumor (42.8% vs 35.4%, $p< 0.001$), well-to-moderately differentiated tumor (72% vs 66.9%, $p< 0.001$), absence of lymphovascular invasion (LVI, 42.7% vs 36.3%, $p< 0.001$), and lobular histology (16.5% vs 12.7%, $p< 0.001$). There was no significant difference in overall survival (OS) between the SLNB and ALND groups (adjusted HR 1.0, $p=0.77$), adjusting for age, CCI, tumor grade, and LVI.

Conclusions: Despite the National Comprehensive Cancer Network (NCCN) guidelines recommending ALND in the setting of 3 or more positive LNs, national rates for ALND have decreased in patients with 3-5 positive LNs over the last decade. Here, we present results from an NCDB analysis showing no difference in OS with omission of ALND in patients with ER+/HER2- breast cancer with 3-5 positive LNs, supporting the de-escalation of axillary surgery in carefully selected patients who received adjuvant radiation and systemic therapy. Additional studies and randomized-controlled trials are needed to further evaluate the need for ALND in this population.

Figure 1: Overall Survival of Patients with pT0-T2 ER+/HER2- Breast Cancer with 3-5 Positive LNs Stratified by Extent of Axillary Management



1988121 - Evaluation of Indocyanine Green Injection for Sentinel Lymph Node Identification in Breast Cancer Patients with Lymphatic Disruption

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Background/Objective: Several tracers are currently used for sentinel lymph node (SLN) detection in breast cancer. Although radioisotope and lymphazurin blue have been reliable tracers, Indocyanine Green (ICG) is emerging as a potential alternative. Many patients have disruption of lymphatic pathways from prior surgery, neoadjuvant chemotherapy, large hematomas post-biopsy, or prior radiation, making dual tracing and optimizing tracer methods crucial. Lymphazurin blue has limitations, including anaphylactic reactions, contraindication in pregnancy and in patients undergoing axillary reverse mapping, thereby inhibiting its use as the second tracer for breast injection. In this study, we update our experience with use of ICG to assess its non-inferiority to lymphazurin blue as a tracer in patients who have disrupted lymphatic pathways.

Methods: There was a total of 79 patients who underwent SLN biopsy at our institution from 2022-2024. All patients were injected with 3 tracers (radioisotope, lymphazurin blue, and ICG) prior to SLN biopsy. The patients were stratified based on prior disruption of lymphatic pathways (44 patients with and 35 patients without lymphatic disruption). The detection rate (DR) of lymph nodes (LN) and false negative rate (FNR) of metastatic LN were compared among the overall cohort and between disruption groups. False negative rate is the tracer's failure to identify a metastatic LN identified by either of the other 2 tracers. The data was analyzed using Extension McNemar's Test and accounted for both the correlation between the results of the tracers, but also the intra-cluster correlation between the results of lymph nodes from the same patient.

Results: Overall, 297 SLNs were detected, with 9.09% (27/297) having metastasis. Lymphazurin blue DR and FNR were 66% and 18.5%, respectively. ICG DR and FNR were 81.7% and 18.5%. Radioisotope DR and FNR were 89.9% and 14.8%. There was a significant difference in DR between Lymphazurin blue and ICG (p=0.0022), Lymphazurin blue and radioisotope (p=0.000019), and ICG and radioisotope (p=0.0295). There were no statistical differences in FNR between the tracers: Lymphazurin blue vs ICG (p=1), lymphazurin blue vs radioisotope (p=0.574), or ICG vs radioisotope (p=0.713). Within the disruption group, there were 175 SLNs detected with 6.8% (12/175) having metastasis. Lymphazurin blue DR and FNR were 59.4% and 16.7%, respectively. ICG DR and FNR were 80.5% and 8.3%. Radioisotope DR and FNR were 85.6% and 8.3%. There was a significant difference in DR between lymphazurin blue and ICG (p=0.0085) and lymphazurin blue and radioisotope (p=0.0019), but there was no statistical difference between ICG and radioisotope (p=0.365). There were no statistical differences in FNR between the tracers: lymphazurin blue vs ICG (p=0.583), lymphazurin blue vs radioisotope (p=0.342), or ICG vs radioisotope (p=1). In the disruption group, 83% (10/12) of metastatic lymph nodes were detected by all three tracers and 100% with any one tracer alone.

Conclusions: ICG combined with radioisotope is a reliable method for dual tracer sentinel lymph node detection in breast cancer patients who have lymphatic disruption, those who have contraindication to lymphazurin blue, or for patients in whom reverse axillary mapping is planned.

Table 1: DR and FNR by tracer

Total Cohort

Tracers	Detection Rate	False Negative Rate
Lymphazurin Blue	66%	18.5%
ICG	81.7%	18.5%
Radioisotope	89.9%	14.8%

Disruption Group

Tracers	Detection Rate	False Negative Rate
Lymphazurin Blue	59.4%	16.7%
ICG	80.5%	8.3%
Radioisotope	85.6%	8.3%

1987854 - Is Targeted Removal of a Core-Needle-Biopsied-Negative Axillary Lymph Node in the Setting of Newly Diagnosed Breast Cancer Indicated

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Background/Objective: Increased usage of dedicated axillary ultrasounds and MRIs in newly diagnosed breast cancers have resulted in more preoperative needle biopsies of axillary lymph nodes. Accepted practice guidelines exist regarding management of biopsy-proven positive axillary lymph nodes at the time of surgery. However, there is currently no recommended practice recommendations regarding abnormal axillary lymph nodes with negative core biopsy results and the preferred management of these at the time of surgery. We sought to review the incidence of needle-biopsy-proven negative lymph nodes being positive for malignancy on final surgical pathology and the utility of targeted removal at the time of surgery.

Methods: A single-institution retrospective review was performed between 2021-2023. Newly diagnosed breast cancer patients who underwent surgery at our institution and had a concordant needle-biopsied-negative abnormal axillary lymph node preoperatively were included. Abnormal axillary lymph nodes included both imaging detected suspicious nodes and/or concerning adenopathy on physical exam. Needle biopsy results of abnormal lymph nodes with no lymphoid tissue or those deemed discordant by the radiologist were excluded. Metastatic or same-side breast cancer recurrences were also excluded. Patient and tumor characteristics were collected. Biopsy-site changes and/or identification of the biopsy clip on final pathology were used to identify the previously needle-biopsied-negative lymph nodes. Treatment effect (in patients who received neoadjuvant therapy) and/or active tumor present on pathology was used to classify positive disease in the lymph nodes on final surgical results. For our study, isolated tumor cells (ITCs) were categorized as a positive lymph node on final pathology. This study was IRB-approved.

Results: A total of 71 patients were identified meeting criteria. Patient and tumor characteristics are shown in Table 1. Of the 71 patients, 93% (66/71) underwent surgical lymph node sampling with sentinel lymph node biopsy. Five patients did not undergo lymph node surgical sampling at the time of surgery and there were no axillary node dissections. The biopsied-negative lymph node was contained in the lymph node sampling in 50% (33/66) of cases. Of the procedures where the biopsied lymph node was in the surgical specimens, 91% (30/33) indicated the lymph node was considered a sentinel lymph node (hot and/or blue) by operative report. Only two cases had targeted localization techniques used to intentionally excise the clipped node regardless of mapping results. Of the preoperatively needle-biopsied-negative lymph nodes removed in our cohort, only two cases had evidence of tumor found on surgical pathology in the biopsied lymph nodes – 1 macromet and 1 ITC. This results in a false negative rate of 6%. No axillary recurrences were noted in this cohort to date. Three patients developed distant metastases and one had disease recur locally in the breast dermis at their surveillance visit.

Conclusions: Our study indicates that concordant preoperatively needle-biopsied-negative lymph nodes rarely contain evidence of metastases on final surgical pathology. This suggests that routine targeting of these biopsy-proven-negative lymph nodes may not be warranted given the low false negative rate. Efforts to localize these lymph nodes for targeted excision, separate from standard sentinel lymph node mapping, may not be routinely indicated.

Table 1: Patient and Tumor Characteristics

	N=71 (%)
Age	Mean = 55 (23-85)
Gender	
Female	71 (100%)
Male	0 (0%)
BMI:	Mean = 30 (21-48)
Tumor Type	
Ductal	66 (93%)
Lobular	3 (4%)
Mixed/Other	2 (3%)
Grade	
1	13 (18%)
2	18 (25%)
3	40 (56%)
Tumor Receptors	
ER+/HER2-	34 (48%)
ER+/HER2+	10 (14%)
ER-/HER2-	25 (35%)
ER-/HER2+	1 (1%)
Other	1 (1%)
Clinical Stage	
DCIS	3 (4%)
I	31 (44%)
II	35 (49%)
III	2 (3%)
IV	0 (0%)
Neoadjuvant Therapy	
Yes	33 (46%)
No	38 (54%)
Needle Biopsy	
Core	71 (100%)
FNA	0 (0%)
Palpable by Surgeon	
Yes	24 (34%)
No	46 (65%)
Not Documented	1 (1%)
Lymph Node Clipped at Time of Biopsy	
Yes	70 (99%)
No	1* (1%)
Lymph Node Removed at Time of Surgery	
Yes	33 (46%)
No	38 (54%)
Pathologic Tumor Size	
pCR	13 (18%)
DCIS	1 (1%)
T1	45 (63%)
T2	10 (14%)
T3	2 (3%)
T4	0 (0%)
Pathologic Nodal Stage	
pCR/N0	53 (75%)
N0(ITC)	3 (4%)
N0(mi)	2 (3%)
N1	8 (11%)
No SLN performed	5 (7%)

*no clip placed because performed by interventional radiology due to location of lymph node

1987769 - Omission of Lymph Node Sampling in cT1cN0 Patients with Breast Cancer Undergoing Mastectomy: Implications for SOUND trial implementation

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Background/Objective: The SOUND trial (Sentinel Node vs Observation After Axillary Ultra-Sound) indicated that patients undergoing lumpectomy with early-stage (cT1) breast cancer and negative preoperative axillary ultrasound (US, i.e., cN0) could safely omit sentinel lymph node biopsy (SLNB) despite 13.7% of patients with negative US having positive lymph nodes (LN+) on SLNB. However, it is unclear how often occult nodal disease would be found among trial-eligible patients undergoing mastectomy. This study aims to identify characteristics of SOUND-eligible patients undergoing mastectomy and to assess the risk and implications of clinically significant occult lymph node involvement in these patients.

Methods: We identified females ≥18 years old who underwent mastectomy for cT1N0M0 invasive breast cancer diagnosed 2010-2021 in the National Cancer Database. Patients who underwent lumpectomy, received neoadjuvant therapy, met Choosing Wisely guidelines for SLNB omission (≥70 years old), and had missing data were excluded. We used chi-square, ANOVA, and Kruskal-Wallis tests to detect differences and estimate associations between patient demographics, disease characteristics, and pathological findings at surgery. Clinically significant LN+ disease was defined as having ≥4 LN+, a threshold above which postoperative management including axillary lymph node dissection and chemotherapy are routinely recommended. Multivariate logistic regression was utilized to evaluate the association of patient demographics, tumor subtype, and being LN+ with odds of chemotherapy receipt.

Results: 80,520 patients met inclusion criteria: median age 60y, Non-Hispanic (NH) White=65,110 (80.9%), NH Black=7,187 (8.9%), Hispanic=4,227 (5.2%), Asian/Pacific Islander= 3,767 (4.7%), American Indian/American Alaskan =229 (0.3%). 16.4% (N=13,199) of patients were LN+: 88.7% had 1-3 LN+, and 11.3% had ≥4 LN+. Across HER2+ and triple-negative (TN) subtypes, chemotherapy receipt was >80% for LN+ patients regardless of whether 1-3 or ≥4 were involved, but there was a significant difference in rates of chemotherapy receipt between HR+/HER2- patients with 1-3 vs ≥4 LN+ (58.6 vs 91%, $p< 0.001$). After adjustment, likelihood of receiving chemotherapy with LN+ disease was significantly higher among patients with HER2+ (vs HR+/HER2-: OR 5.90 95% CI 4.88-7.18) and Grade 3 disease (vs Grade 1: OR 4.09 95% CI 3.57-4.69), and among patients with ≥4 LN+ (vs 1-3 LNs: OR 2.50, 95% CI 1.49 – 4.26, all $p< 0.001$). Among those with HR+/HER2- disease, patients with ≥4 LN+ were significantly more likely to receive chemotherapy than patients with 1-3 LN+ (OR 2.9 95% CI 1.65 – 5.23, $p < 0.001$), a distinction that was not observed among patients with HER2+ and TN disease.

Conclusions: Among SOUND-eligible patients undergoing mastectomy, 16.4% of patients were LN+ and < 2% had ≥4 LN+. However, being LN+ was associated with increased odds of chemotherapy receipt for patients with HER2+ and grade 3 disease, and HR+/HER2- patients with ≥4 LN+ were

significantly more like to receive chemotherapy vs patients with less nodal disease. Our findings suggest that for a small subset of cT1cN0 mastectomy recipients, SLNB omission may result in undertreatment.

Table 1: Multivariate Logistic Regression of Mastectomy and Lymph Node Positive Group Receiving Chemotherapy

Table1: Multivariate Logistic Regression: Mastectomy and LN+ Group Receiving Chemotherapy

	Analytic Cohort = 13,056				
		Odds Ratio	**Confidence Interval**	**P-Value**	**Type 3 P-Value**
Race/Ethnicity					
	NH White	Reference			0.32
	AI/AN	0.66	(0.34 – 1.30)	0.22	
	Hispanic	1.06	(0.89- 1.27)	0.52	
	Asian/PI	1.20	(0.97 – 1.48)	0.10	
	NH Black	1.01	(0.88 1.17)	0.87	
Insurance	Private	Reference			<0.001
	Government	0.79	(0.72- 0.87)	<0.001	
	Uninsured	0.91	(0.69 – 1.25)	0.55	
Subtype	HR+/HER2-	Reference			<0.001
	HER2+	5.90	(4.88 – 7.18)	<0.001	
	TNBC	5.04	(3.94 – 6.53)	<0.001	
Grade	1	Reference			<0.001
	2	1.76	(1.59 – 1.95)	<0.001	
	3+	4.09	(3.57- 4.69)	<0.001	
Histology	Ductal	Reference			0.15
	Lobular	1.08	(0.98 – 1.19)	0.10	
	Other	0.92	(0.71 – 1.20)	0.53	
Age Groups	<50	Reference			<0.001
	50-59	0.72	(0.60 – 0.87)	<0.001	
	60-69	0.40	(0.37- 0.44)	<0.001	
	70-79	0.16	(0.11 – 0.21)	<0.001	
	80+	0.02	(0.01 – 0.03)	<0.001	
Lymph Nodes positive	1-3	Reference			0.002
	4+	2.50		<0.001	
Pathological N	pN0	Reference			0.004
	pN1	1.15	(0.80 – 1.65)	0.44	
	pN2	2.83	(1.28 – 5.37)	0.002	
	pN3	4.47	(2.12 – 9.57)	<0.001	

1988769 - Defining complete axillary node burden in cT1/T2 cN0 patients undergoing primary surgery with mastectomy and 3 positive sentinel nodes

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Background/Objective: Multiple landmark trials have been published in the past decade identifying opportunities to safely minimize axillary surgery in cases of limited nodal metastasis. This led the American Society of Breast Surgeons (ASBrS) to release official consensus guidelines on axillary management for breast cancer patients in 2022. Within these guidelines, sentinel lymph node biopsy (SLNB) without axillary lymph node dissection (ALND) is deemed appropriate for those with cT1-2N0 disease having primary mastectomy with 1-3 positive SLNs and receiving axillary radiotherapy, as these patients meet AMAROS and OTOASOR criteria to defer ALND. However, the consensus statement does note that the data for 3 positive SLNs may be insufficient, as 95% of patients in the AMAROS trial only had 1-2 positive SLNs. We aim to define our institution's final axillary burden in patients undergoing mastectomy with 3 positive SLNs to investigate the possibility of omitting ALND in this cohort.

Methods: Our institutional IRB approved prospective breast cancer database was queried for all cT1-T2, cN0 cases who underwent primary surgery with mastectomy, SLNB and ALND from 1996 to 2023. Patient demographics, clinical characteristics, tumor biology, and clinical/pathologic staging were recorded.

Results: We identified 189 cT1/T2 cN0 patients who underwent mastectomy with SLN biopsy revealing 1-3 positive SLNs with completion ALND. Across the cohort, the total nodes removed per case following ALND ranged from 1 to 40 (mean 14.6 additional nodes removed). Of these 189 patients, 102 (54%) had additional nodal disease on ALND, which is consistent with published data (ranging from 40-60%). The number of additional positive non-sentinel nodes, if present, ranged from 1-28 (mean 4.1). When stratified by pathologic N-stage, final surgical pathology defined 67 cases as pN1 (65.7%), 22 as pN2 (21.6%), and 13 as pN3 (12.7%). When stratified by number of positive SLNs, 137 cases had 1 positive SLN (72.5%), 41 had 2 positive SLNs (21.7%), and 11 had 3 positive SLNs (5.8%). Of the 11 cases with 3 positive SLNs, 8 cases (72.7%) had non-sentinel node disease on completion ALND, ranging from 3 to 28 additional positive nodes.

Conclusions: At our institution, 189 patients undergoing primary mastectomy with positive SLNs met AMAROS/OTOASOR criteria to safely avoid ALND. Of the patients with 3 positive SLNs, the cohort noted to potentially have insufficient data within the available trials, 8 patients (72.7%) had non-sentinel node disease. Although our numbers are low, our data suggests non-sentinel node disease burden is high in patients with 3 positive SLNs. Larger, multicenter studies are needed to more thoroughly investigate the locoregional recurrence and long-term survival of patients with 3 positive SLNs who undergo axillary radiotherapy without ALND.

Table 1

	Additional positive non-sentinel nodes			
	0	1	2	≥3
1 SLN+ n = 137 (72.5%)	73	27	13	24
2 SLN+ n = 41 (21.7%)	11	8	4	18
3 SLN+ n = 11 (5.8%)	3	0	0	8
Total	87 (46%)	35 (18.5)	17 (9%)	50 (26.5%)

Table 1: Additional positive non-sentinel node distribution among 1 SLN+, 2 SLN+, and 3 SLN+ cases

1988472 - Applicability of SOUND Criteria to Patients Undergoing Mastectomy

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Background/Objective: The SOUND trial showed noninferiority between sentinel lymph node biopsy (SLNB) and its omission in patients with cT1N0 invasive breast cancer (BC) who have a negative preoperative axillary ultrasound and a plan to undergo breast-conserving surgery and radiotherapy. In their analysis, < 1% of women underwent mastectomy. We hypothesize that SOUND can be expanded to women who undergo mastectomy.

Methods: This single institution retrospective study reviewed data from patients with cT1N0 BC diagnosed between 2009-2023 who underwent mastectomy and SLNB. Patients with previous cancer or bilateral BC were excluded. Positive SLNs were defined as those with micrometastasis or macrometastasis. Patient and tumor characteristics, axillary disease, recurrence, adjuvant treatment recommendations, disease-free survival (DFS), and overall survival (OS) were analyzed. Kaplan-Meier method was used to estimate DFS and OS.

Results: A total of 315 patients met SOUND criteria (cT1N0, negative preoperative axillary ultrasound or indeterminate imaging with negative preoperative biopsy). Median age was 54 (30-87) and median tumor size was 13 (1-20) mm. Of 315, 19 (6%) had a positive SLNB: 13 (68%) with macrometastasis and 6 (32%) with micrometastasis. None of the patients had >3 positive SLN. Of those with positive SLN, 13 (68.4%) received post-mastectomy radiation therapy (PMRT). Reasons for PMRT included positive lymph nodes in addition to presence of extracapsular nodal extension and/or lymphovascular invasion. Four (1.3%) patients with negative SLNB underwent PMRT, three (1%) for positive margins and one (0.3%) for close margins. Out of 19 patients with positive SLNB, 9 (47%) received adjuvant chemotherapy (AdC), secondary to HER2-positive disease (n=4) or high-risk features (n=5), and 10 (53%) did not receive AdC secondary to low-risk recurrence score (RS) on genomic testing. With a median follow-up of 54 months (IQR 25-91), there were 9 (2.8%) local, 2 (0.6%) regional, and 2 (0.6%) distant recurrences. None of the patients with positive SLNB developed a recurrence. Recurrences were noted in patients with an aggressive phenotype, close margins, or early termination and/or denial of adjuvant systemic therapy. Out of 13 recurrences, three were triple negative and ten were hormone receptor positive (HR+) /HER2 negative BC. Of the ten HR+ recurrences, two received AdC secondary to high RS, while eight did not receive AdC (all had low RS except one patient who declined adjuvant treatment). Of the ten HR+ recurrences, two declined endocrine therapy and one stopped treatment early. There were 16 (5%) deaths, of which 4 (1.3%) were secondary to BC. DFS and OS were estimated as 91% and 90%, respectively.

Conclusions: Our data demonstrates that patients with cT1N0 BC and a negative preoperative axillary ultrasound who undergo mastectomy as primary surgery had low rates of positive SLN, disease recurrence, and BC related mortality. We advocate for continued multidisciplinary discussion to determine SLNB omission in this patient population.

Table 1. Baseline Patient and Tumor Characteristics

Characteristic	Patients, No. (%) (n=315)
Age at surgery, y	
<70	269 (85.4)
≥70	46 (14.6)
Histology	
Ductal	265 (84.1)
Lobular	41 (13.0)
Other	9 (2.8)
Pathologic tumor size	
pT1mic or pT1a	25 (8.0)
pT1b	86 (27.3)
pT1c	204 (64.7)
Number of positive SLNs	
0	292 (92.6)
1	15 (4.7)
2	3 (1.4)
3	1 (0.3)
Grade	
1	62 (19.6)
2	172 (54.6)
3	81 (25.7)
ER status >1	284 (90.1)
PR status >1	254 (80.6)
ERBB2 status overexpression	43 (13.7)
Triple negative	18 (5.7)
Adjuvant Chemotherapy	82 (26.0)
Adjuvant Endocrine Therapy	258 (82.0)

1988801 - Incidence of occult nodal metastases in small, clinically node negative early-stage triple negative breast cancer patients undergoing upfront surgery

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Background/Objective: Neoadjuvant chemotherapy (NAC) is the standard of care for patients with Stage II triple negative breast cancer (TNBC), i.e., those with clinically positive lymph nodes and/or tumors > 2 cm as pathologic complete response (pCR) is associated with improved survival outcomes. However, controversy remains around the most appropriate sequence of treatment for TNBC patients with tumors between 1-2 cm with under- or over-treatment being a constant worry. To address this controversy, our study aimed to assess the incidence of pathologic nodal metastases (pN+) in patients with cT1c cN0 TNBC undergoing upfront surgery, with the goal of identifying clinical factors that could help discern patients who might benefit from NAC.

Methods: A retrospective cohort study was conducted at two academic cancer centers in Montreal, Canada. Adult patients with Stage I-III triple negative breast cancer were included in the initial cohort from 2005 to 2023. We then identified patients who were clinically node negative and who had cT1c tumors. Demographic, clinical, and histopathologic data were extracted from the institutional databases. Descriptive statistics were used to summarize the data, and univariate regression analyses were performed to identify predictors of pathologic nodal metastases using a priori chosen clinical covariates.

Results: Overall, 125 women with cT1c cN0 TNBC met the inclusion criteria. The mean age at diagnosis was 64.3 + 13.6 years. Following upfront surgery, only 2 patients (1.6%) were found to have occult nodal metastases on final pathology (pN+). Of 79 patients who had a preoperative axillary ultrasound (AUS), 87% (n=67) of patients with pN0 disease had no suspicious lymph nodes whereas 100% (n=2) of patients with pN+ had evidence of suspicious lymph nodes. There were no statistically significant preoperative factors, i.e., size, lymphovascular invasion, grade, or nodal involvement on AUS, associated with nodal involvement at surgery.

Conclusions: In the largest Canadian cohort of TNBC patients to date, we observed a 1.6% incidence of occult nodal metastases in those with cT1c cN0 disease, indicating it as a rare event in this population. No significant preoperative predictors of nodal involvement were identified, although a negative axillary ultrasound may help affirm node-negative status. These findings suggest a limited role for NAC in most patients within this subgroup. However, further research with a larger sample size is necessary to confirm these results and enhance treatment stratification.

1965692 - Contemporary trends in axillary surgery for ER-positive, HER2-negative breast cancer stratified by neoadjuvant endocrine therapy, neoadjuvant chemotherapy, or upfront surgery

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Background/Objective: De-escalation of axillary surgery for hormone receptor-positive (HR+)/HER2-negative breast cancer has gained traction in parallel with increased use of neoadjuvant endocrine therapy (NET), but the guidelines for axillary management in this group is still ill-defined. To this end, the National Cancer Database (NCDB) was used to evaluate contemporary axillary management for patients treated with NET compared to those receiving neoadjuvant chemotherapy (NAC) or undergoing upfront surgery.

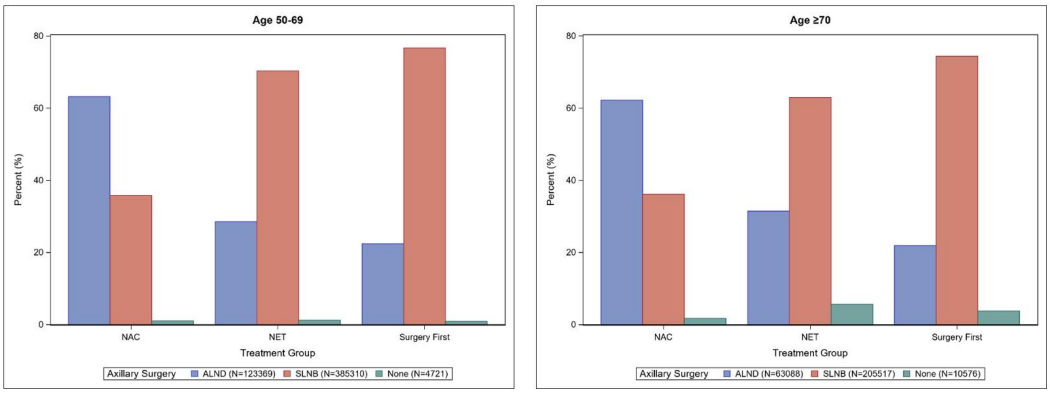
Methods: Female patients aged ≥50 with clinical T1-4, N0-1, M0, ER+/HER2- breast cancer (2012-2021) were selected from the NCDB. Age was categorized as 50-69 or ≥70. Patients were divided into three groups based on treatment/sequence: receipt of NET, receipt of NAC, or upfront surgery. Axillary surgery was categorized as sentinel lymph node biopsy (SLNB) alone, axillary lymph node dissection (ALND), or no axillary surgery. Patient characteristics were compared using chi-square tests for categorical variables and analysis of variance for continuous variables. Logistic regression was used to identify factors associated with ALND compared to SLNB or no axillary surgery. Odds ratios (ORs) and 95% confidence intervals (CIs) were reported.

Results: 792,581 patients met inclusion criteria with 513,400 (64.8%) aged 50-69 and 279181 (35.2%) aged ≥70. Most patients presented with cT1 (77.2%) and cN0 (93.3%) disease. The most common histology was invasive ductal carcinoma (73.4%), and the majority were grade 1 or 2 (31.2% and 51.9%, respectively). Most patients underwent surgery first (94.3%), with 2.6% undergoing NAC and 3.1% receiving NET. Overall rate of ALND decreased from 35.0% in 2012 to 13.5% in 2021. Patients aged 50-69 had lower rates of ALND when undergoing surgery first (22.4%) or NET (28.5%) compared to those receiving NAC (63.2%, $p< 0.001$). A similar trend was seen in the ≥70 age group with ALND rate 21.9% for surgery first vs 31.4% for NET, compared to a rate of 62.2% for those receiving NAC ($p< 0.001$). This trend held when adjusted by tumor stage. Among patients aged ≥70, those who received NET (vs upfront surgery or NAC) were the most likely not to undergo any axillary surgery with rates of 5.6%, 3.7%, and 1.7%, respectively ($p< 0.001$). After adjustment, patients age ≥70+ were slightly less likely to undergo ALND compared to the younger group [OR 0.95 (95% CI 0.94-0.96)]. Median time from diagnosis to treatment was shortest in the NET group at 0.95 months (IQR 0.53 - 1.68) compared to NAC at 1.18 months (IQR 0.82 - 1.68) or surgery first 1.18 (IQR 0.79 - 1.71, $p < 0.001$).

Conclusions: The potential for de-escalation of axillary staging, particularly in older patients with ER+/HER2- invasive carcinoma, is promising. Patients selected for NET have rates of axillary surgery at levels more closely resembling those undergoing upfront surgery while ALND remains at higher rates for patients treated with NAC. This divergence could potentially be explained by the notion that only a portion of NET is received upfront, making the significance of persistently positive nodes less

informative and not necessarily indicative of treatment resistant disease. Further studies are needed to refine axillary management guidelines for those receiving NET.

Figure 1: Axillary Surgery Rates by Treatment Group and Age: 50-69 Years (left) and ≥70 Years (right)



SLN/NAC

1979738 - Real World Evidence of MammaPrint® and BluePrint® utility for informing axillary surgery decisions in the neoadjuvant setting

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Background/Objective: Decisions on the extent of axillary surgery (axillary lymph node dissection [ALND] vs. sentinel lymph node dissection [SLND]) in HR+HER2- early-stage breast cancer (EBC) primarily depend on clinical features including age, T-stage, and N-stage. The role of genomics in this decision-making is unclear. The NBRST and I-SPY2 trials demonstrated that risk-of-distant-recurrence and molecular subtyping signatures, MammaPrint and BluePrint, respectively, can predict distinct pathological Complete Response (pCR) rates to neoadjuvant chemotherapy (NCT) in HR+HER2- EBC. Here, we evaluated the association of MammaPrint and BluePrint with the likelihood of achieving pCR (ypT0/isN0) and avoiding ALND in patients with HR+HER2- EBC.

Methods: Patients enrolled in the prospective FLEX Registry of Real-World Data (NCT03053193) with HR+HER2- EBC, treated with NCT and with surgical treatment information were included (n=603). MammaPrint classified breast tumors as Low, High-1 (H1), or High-2 (H2) Risk. BluePrint, together with MammaPrint, classified tumors as Luminal A-, Luminal B-, HER2-, or Basal-Type. Differences in clinical characteristics, pCR rates, and type of nodal dissection across MammaPrint and BluePrint subtypes were assessed by Chi-squared or Fisher's exact tests. Multivariate logistic regression assessed the associations MammaPrint and BluePrint with pCR likelihood and avoiding ALND, adjusting for clinical factors.

Results: Among NCT-treated patients with HR+HER2- EBC, most were postmenopausal (61%), had T2+ tumors (78%), had nodal involvement (59%), and were treated with anthracyclines (62.8%). MammaPrint classified 60 (10%) tumors as Low-Risk, 333 (55%) as H1-Risk, and 210 (35%) as H2-Risk. Age, menopausal status, and race were comparable across groups. Most H2 tumors (77%) had ER% staining ≥10%, were more likely to be Grade 3 (79%; $p< 0.001$), express >20% Ki67 (78%; $p< 0.001$), and were more often associated with breast-conserving surgery ($p=0.04$) compared to H1 and Low-Risk tumors. Patients with H2 tumors were significantly more likely to achieve a pCR (27.5%)

compared to Low-Risk (4.3%) or H1-Risk (8.1%; p< 0.0001). Addition of BluePrint showed patients with H2/Basal-Type tumors had the highest pCR (39.3%; p< 0.0001). Multivariate analysis revealed that patients with H2 (p=0.046) or Basal-Type (p=0.013) tumors were significantly more likely to achieve pCR when accounting for age, menopausal status, T-stage, and N-stage. H2 was also significantly more likely to avoid ALND (74.8%) compared to patients Low-Risk (58.3%) and H1 tumors (67.9%; p=0.018). BluePrint revealed patients with H2/Basal-Type had the highest rates of undergoing SLND (Table). Multivariate analysis revealed that patients with H2/Basal-Type tumors were significantly associated with likelihood of avoiding ALND (OR=0.20; p=0.008). Nodal involvement at presentation was strongly associated with undergoing ALND (N1 vs. N0: OR=3.66, p< 0.001; N3 vs. N0: OR=7.53, p=0.008).

Conclusions: The significantly lower likelihood of patients with H2 or Basal-Type tumors undergoing ALND may be due to higher pCR rates to NCT, enabling downstaging and less invasive axillary surgery. I-SPY2 showed that patients with MammaPrint H2 tumors achieve even greater pCR rates with emerging treatments such as immunotherapy, which is currently under evaluation in the Phase-III SWOG S2206 trial. These results suggest the importance of genomic testing on the core needle biopsies of patients with HR+HER2- EBC for informed pre-operative decision making.

Table 1: Association of undergoing ALND with MammaPrint and BluePrint Genomic Testing Results

MammaPrint + BluePrint	ALND (n=176)	SLND (n=386)	None (n=18)	Total* (n=580)	p-Value
Low Risk Luminal A	25 (41.7%)	31 (51.7%)	4 (6.7%)	60	0.002
High 1 Luminal B	102 (32.2%)	205 (64.7%)	10 (3.2%)	317	
High 2 Luminal B	31 (34.1%)	58 (63.7%)	2 (2.2%)	91	
High 2 Basal	18 (16.1%)	92 (82.1%)	2 (1.8%)	112	

* High 1 Basal (n=8), High 2 HER2 (n=2), BP not requested (n=13) excluded

1987485 - Is the clipped node enough? Successful retrieval and false negative rate of the clipped node after neoadjuvant chemotherapy

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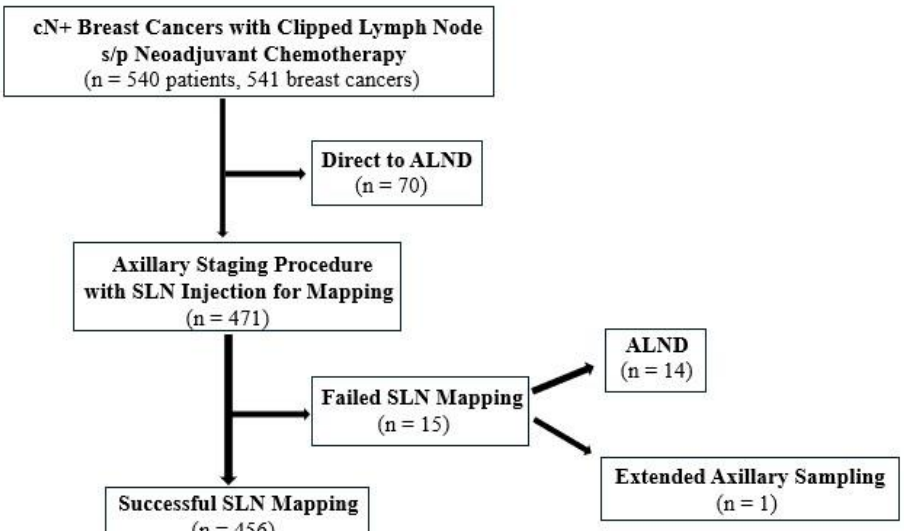
Background/Objective: The biopsy-proven positive axillary lymph node is often clipped prior to neoadjuvant chemotherapy (NAC). Various techniques exist to decrease the false negative rate (FNR) of axillary staging post-NAC. Questions regarding the value of clipped node localization persist. We evaluated the frequency that the clipped node is a sentinel lymph node (SLN) and the FNR of the clipped node during axillary staging within a contemporary NAC cohort.

Methods: Consecutively treated patients with cT0-4c biopsy-proven node positive (cN+) breast cancer who had a clip placed and were treated with NAC and definitive surgery were identified from a prospectively maintained surgical database (9/2016-7/2024). Axillary staging procedure included SLN surgery or targeted axillary dissection (TAD; localization and excision of the clipped node + SLN surgery). Frequency of the clipped node being a SLN was determined. FNR of the clipped node versus all nodes removed during axillary staging procedure (SLN or TAD) was estimated with 95% confidence intervals via the Wilson method. Groups were compared using Fisher's exact or Wilcoxon rank-sum tests.

Results: We identified 541 breast cancers in 540 patients. 70 (12.9%) were managed with ALND without SLN mapping and were excluded from primary analysis (18 ypN0, 52 ypN+). 471 underwent an axillary staging procedure with SLN injection performed (403 cN1, 22 cN2, 46 cN3). 15 patients failed to map, of which 14 underwent ALND and 1 had extended axillary sampling (removal of the clipped node and 4 surrounding nodes). The clipped node was retrieved in 426/456 (93.4%) patients with successful SLN mapping +/- TAD (40/52 [76.9%] SLN; 386/404 [95.5%] TAD, $p< 0.001$). In the 30 patients where the clipped node was not retrieved (12 SLN, 18 TAD), a completion ALND was not performed in 21 (20 ypN0, 1 ypN+). Completion ALND was performed in 9/30 (all 9 ypN+), and the clip was identified in the ALND specimen for 8/9 patients (7 clipped node positive, 1 unknown). Of 426 patients with successful SLN mapping +/- TAD and clipped node retrieval, the clipped node was a SLN (hot, blue or palpable) in 365 (85.7%) patients (37/40 SLN, 328/386 TAD). Median number of nodes retrieved during the axillary staging procedure was 4 (range 1-14) and did not differ for TAD versus SLN. Among 394 (190 ypN0, 204 ypN+) patients who had the clipped node and additional non-clipped nodes removed during SLN/TAD, as well as a known clipped node status, FNR of the clipped node was 5.4% (95% CI: 3.0-9.4%). When considering ITCs in the clipped node as positive residual disease, FNR was 4.9% (95% CI: 2.7-8.8%). Overall, there were 2 axillary recurrences; both in patients with clipped nodes retrieved.

Conclusions: In a contemporary cohort of cN+ patients treated with NAC, the clipped node was retrieved and was a SLN in the majority of cases. Furthermore, compared with additional nodes removed during axillary staging, the clipped node FNR was low (5.4%), thus supporting the potential use of selective clipped node removal in an attempt to further minimize axillary surgery.

Figure 1: Rate of Clipped Node Retrieval and FNR in a Contemporary NAC Cohort



	TAD (n = 404)	SLN Surgery (n = 52)
% clipped node retrieved	95.5% (386/404)	76.9% (40/52)
% clipped node = SLN	85.0% (328/386)	92.5% (37/40)
FNR clipped node vs nodal status including all nodes retrieved during SLN/TAD procedure	5.4% (95% CI: 3.0-9.4%)	

1988510 - Axillary Management in Breast Cancer Patients with Positive Sentinel Lymph Nodes Following Neoadjuvant Chemotherapy

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Background/Objective: Currently patients with biopsy-proven axillary disease undergoing neoadjuvant chemotherapy (NAC) must undergo completion axillary lymph node dissection (cALND) if there is residual disease in the sentinel lymph nodes (SLN). The objectives of this study were to evaluate the frequency of involved non-SLN during cALND after NAC and whether clinical, radiologic and pathologic characteristics can predict non-SLN involvement.

Methods: We performed a retrospective cohort study of all adult female breast cancer patients presenting with biopsy-proven axillary metastasis who received NAC between 2012 and 2024. Patients with residual nodal metastases (ypN+) who underwent SLN biopsy (SLNB) or targeted axillary lymph node dissection (TAD) followed by cALND were selected for study inclusion. Patients were grouped by the presence or absence of positive non-SLN at cALND (cALND+ vs cALND-). Clinical, radiologic and pathologic data were compared between groups and univariate and multivariate analyses were used to identify predictors of additional lymph node (LN) involvement.

Results: Overall, 67 ypN+ patients were included in the study; 34 (50.7%) had cALND+. The median age was 52 years (IQR:41-63); 13 (19%) ypN+ patients had triple negative breast cancer (TNBC), 11(16%) had HER2+ breast cancer, and 43 (64%) had ER+/HER2- breast cancer. Most patients (78%) received anthracycline and taxane-based chemotherapy regimens. Five (7.5%) patients had a pathological complete response (pCR) in the breast. All patients with pCR had grade III tumors on pre-NAC biopsy (p=0.009) and 4 (80%) patients with pCR had TNBC (p=0.009). Patients in the cALND+ group were more likely to have three or more suspicious nodes on baseline pre-treatment axillary ultrasound (US) (38% vs 12%, p=0.040) and have fewer LN excised during SLNB/TAD (p=0.031). The presence of SLN extra-capsular extension (ECE) was significantly associated with cALND+ (59% vs 30% p=0.019). A size of SLN ECE >2mm was associated with cALND+ (p=0.020). The median SLN ratio was 1 (IQR: 0.6-1) in the cALND+ group and 0.40 (IQR:0.33-0.5) in the cALND- group (p=< 0.0001), indicating that a greater number of negative SLNs was associated with a lower likelihood of cALND+. Independent predictors of cALND+ on multivariate analysis included the number of abnormal LN on pre-treatment axillary US (OR=9.14, 95% CI: 1.49–78.1, p=0.026), SLN ratio greater than 0.5 (OR=17.2, 95% CI: 4.7–80.9, p=< 0.001) and SLN ECE (OR=5.48, 95% CI: 1.24–30.3, p=0.033).

Conclusions: This study proposes a number of factors that can predict lack of non-SLN involvement in initially node positive patients who undergo neoadjuvant chemotherapy and have ypN+ disease on sentinel lymph node biopsy or targeted axillary dissection. Larger studies are needed to evaluate whether these factors can identify sufficiently low-risk patients for omission of cALND.

Table 1: Clinical, Radiologic and Pathological Characteristics of Patients with Axillary Disease and Treated with Neoadjuvant Chemotherapy

Clinical, Radiologic and Pathological Characteristics of Patients with Axillary Disease and Treated with Neoadjuvant Chemotherapy

	Overall, N = 67	cALND-	cALND+	P-value
Age, years				0.40
<50	29 (43%)	16 (48%)	13 (38%)	
≥50	38 (57%)	17 (52%)	21 (62%)	
Clinical T Stage				0.54
I	13 (19%)	8 (24%)	5 (15%)	
II	49 (73%)	22 (67%)	27 (79%)	
III	5 (7.5%)	3 (9.1%)	2 (5.9%)	
No. Suspicious Nodes on pre-treatment Axillary US				**0.040**
1	38 (57%)	23 (70%)	15 (44%)	
2	12 (18%)	6 (18%)	6 (18%)	
≥3	17 (25%)	4 (12%)	13 (38%)	
Histologic Subtype				0.11
Ductal	63 (94%)	33 (100%)	30 (88%)	
Lobular	4 (6.0%)	0 (0%)	4 (12%)	
Biologic Subtype				0.61
ER+/PR+, HER2-	43 (64%)	20 (61%)	23 (68%)	
HER2	11 (16%)	5 (15%)	6 (18%)	
TNBC	13 (19%)	8 (24%)	5 (15%)	
Histologic Grade				0.18
1	2 (3.0%)	1 (3.0%)	1 (2.9%)	
2	43 (64%)	18 (55%)	25 (74%)	
3	22 (33%)	14 (42%)	8 (24%)	
Breast Surgery				0.18
Mastectomy	35 (52%)	20 (61%)	15 (44%)	
Partial Mastectomy	32 (48%)	13 (39%)	19 (56%)	
In-Breast pCR				0.20
Presence	5 (7.5%)	4 (12%)	1 (2.9%)	
Absence	62 (92.5%)	29 (88%)	34 (97.1%)	
No. SLN Excised				**0.031**
1	14 (21%)	3 (9.1%)	11 (32%)	
2	14 (21%)	6 (18%)	8 (24%)	
≥3	39 (58%)	24 (73%)	15 (44%)	
No. Invovled SLN				0.23
1	34 (51%)	19 (58%)	15 (44%)	
2	24 (36%)	12 (36%)	12 (35%)	
≥3	9 (13%)	2 (6.1%)	7 (21%)	
Median SLN Ratio	0.50 (0.33, 1.00)	0.40 (0.33, 0.50)	1.00 (0.60, 1.00)	**<0.001**
SLN ECE				**0.019**
Presence	30 (45%)	10 (30%)	20 (59%)	
Absence	37 (55%)	23 (70%)	14 (41%)	
SLN ECE Size				**0.020**
<2mm	15 (50%)	8 (80%)	7 (35%)	
>2mm	15 (50%)	2 (20%)	13 (65%)	

1987949 - Sentinel Lymph Node Ratio: A Valuable Predictor of Recurrence in Breast Cancer Patients with Persistent Node-Positive Disease after Neoadjuvant Chemotherapy

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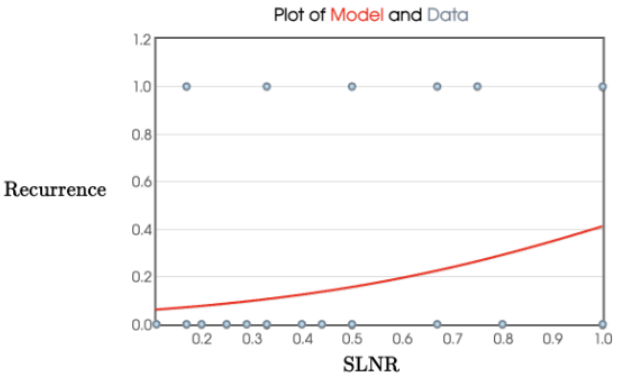
Background/Objective: The role of axillary sentinel lymph node biopsy (SLNB) is constantly evolving in the management of breast cancer. In the era of de-escalating axillary surgery, the status of the axilla, especially after neoadjuvant chemotherapy, continues to be an important prognosticator for disease recurrence and mortality. While positive nodes confer worse outcomes, the sentinel lymph node ratio (the ratio of positive to total sentinel lymph nodes, SLNR) as a prognostic factor for breast cancer outcomes has not been well studied. The aim of this study was to evaluate SLNR in patients with persistently positive nodes after completion of neoadjuvant chemotherapy. A secondary objective was to investigate whether clipping the lymph nodes would affect outcomes.

Methods: A retrospective chart review was performed to identify clinically node positive female breast cancer patients diagnosed between 1/1/2015 and 12/31/2021 and treated with neoadjuvant chemotherapy (NAC) who were found to have persistent nodal disease on SLNB. Extracted data included patient demographics, placement of lymph node clip, NAC regimen, tumor characteristics, clinical and pathologic nodal stage, SLNB results, adjuvant radiation, and locoregional and distant recurrence. A univariate logistic regression was performed to assess the relationship between the SLNR and the likelihood of recurrence. Fisher's exact tests were utilized to compare dichotomized variables with recurrence. All statistical analyses were run using IBM SPSS statistics at a significance level of 0.05.

Results: A total of 552 breast cancer patients were identified who received NAC and underwent SLNB. Forty-seven (8.5%) patients met study inclusion criteria. The mean age of diagnosis was 52.48 years. Forty-one (87%) were hormone receptor positive, 15 (31.91%) were Her2 positive, and 5 (10.64%) were triple negative. The average number of retrieved total sentinel lymph nodes was 4.38, and that of positive sentinel lymph nodes was 2. The regression analysis (figure 1) predicted that an increase of 0.1 in the SLNR was associated with an increase in the odds of recurrence by 42.4%, which was statistically significant ($p = 0.033$) and correctly classified 80.9% of cases. Fisher's exact test showed that a ratio of > 0.5 was significantly associated with recurrence (high SLNR, $p=0.021$). Overall, 15 of 47 (32%) patients had a high SLNR. Of these, 6 of 15 (40%) exhibited recurrence. Of those without high SLNR, 3 of 32 (9.4%) exhibited recurrence. Two of 27 (7.4%) patients with clip placement exhibited recurrence whereas 7 of 20 (35%) patients without clip placement exhibited recurrence. This was statistically significant (Fisher exact test, $p=0.026$). On the other hand, there was no statistically significant association between recurrence and axillary lymph node dissection (ALND) ($p=0.465$) or radiation ($p=0.211$).

Conclusions: This study showed that after neoadjuvant chemotherapy, a high SLNR is associated with higher rate of recurrence. This supports the use of SLNR as a prognostic indicator of recurrence. Interestingly, a lower risk of recurrence was noted in patients who had a clipped node but not in those who underwent ALND or radiation. More studies examining the predictive value of SLNR are needed to evaluate these findings further.

Figure 1: Linear Regression Analysis of SLNR and recurrence



Overall: 9 Successes, 38 Failures

Model Fit

Chi-Square $= 4.5391$ $df = 1$ p-value $= 0.0331$

Variable	Coefficient	Standard Error	p-value	Odds Ratio	95% Confidence Interval
SLNR	2.6559	1.2893	0.0394	14.2382	(1.1376, 178.2004)
Constant	-3.0109	0.9335	0.0013		

1971799 - Implementation and feasibility of targeted axillary dissection in node-positive breast cancer after neoadjuvant therapy in Mexico: a Retrospective analysis.

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Background/Objective: Targeted axillary dissection (TAD) is a surgical procedure that has revolutionized the approach to managing positive axillary lymph nodes in patients with breast cancer who receive neoadjuvant therapy, both for staging and treatment. This novel technique allows for a more directed evaluation of the axilla while minimizing the morbidity associated with traditional axillary lymph node dissection (ALND). TAD has emerged as a valuable alternative for select patients, offering improved staging accuracy and reduced complications, while offering the equivalent results of an ALND.

Methods: Medical records of patients with T1-3 tumors and biopsy-confirmed N1-2 were reviewed. A clip was placed at the time of the US biopsy. All patients received neoadjuvant therapy as appropriate. Mammograms, axillary US, and MRI were performed in all patients per institutional protocol. Procedure Positive clipped nodes were marked preoperatively with a US-guided wire. Our radiology team placed the wire 2-3h before surgery in our institution. We used double mapping agents: technetium-99m sulfur colloid and blue dye, which were injected before and at the time of surgery, respectively. The wire-marked node was removed at surgery, and radiographic proof of the specimen containing the previously placed clip was obtained. All radioactive and blue-tied nodes were also removed.

Results: A total of 22 patients fulfilled the criteria, mean age was 45. The clinicopathological characteristics are detailed in Table 1. The most common subtype was TNBC: 68% (15/22), followed by HR (+) / HER2 (+): 23% (5/22). Marked nodes were retrieved in 100% (22/22). The average number of SLN was 2.4 (1-4), the mode was 2, and in 63% of patients ≤2 nodes were retrieved. The clipped node corresponded with a SLN in 86% (19/22) of patients. A frozen section was performed in all clipped nodes; 2 were positive and ALND was completed. In the final pathology report, 4 nodes of 4 patients were positive; 2 were not previously identified in the frozen section, and ANLD was completed in another surgical procedure. This represents an FNR for frozen section of 10% (2/20). Of the 4 patients with ypN1, the molecular subtypes were: 1 patient HR (+) / HER2 (-), 1 patient HR (+) / HER2 (+), and 2 patients TNBC. The type of surgery was similar; 11/22 (50%) partial mastectomy and 11/22 (50%) simple mastectomy.

Conclusions: Our identification rate with the wire allowed the removal of the clipped node in 100% of the patients, better than what was reported in the literature (77-97%). The clipped node was SLN in 86%, similar to what is reported (65-88%) in the literature. In this series, TAD allowed the removal of less than 3 nodes in 63% of patients. To our knowledge this is the first study describing TAD in Mexico, we show TAD is a viable methodology in centers in Mexico, and the protocol used allowed us to complete the objective of identifying and removing the marked lymph node plus the sentinel lymph nodes. This technique should be considered in our country to avoid axillary dissection in candidate patients.

Table 1

Table 1	
Clinicopathologic characteristics	
Age, mean (range)	45 (26-68)
T	(%)
1	7 (32)
2	11 (50)
3	4 (18)
N	
1	19 (86)
2	3 (14)
Subtipe	
HR (+) / HER2 (-)	1 (4.5)
HR (+) / HER2 (+)	5 (23)
HR (-) / HER2 (+)	1 (4.5)
TNBC	15 (68)
SLN (number of nodes)	**(%)**
1	5 (23)
2	9 (40)
3	3 (14)
4	5 (23)

Stage IV

1988256 - The Relationship Among Stage IV Triple Negative Breast Cancer and Regional Lymph Node Metastases

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Background/Objective: Clinical, pathological, and genetic evidence indicates that breast cancer (BC) typically invades peri-tumoral vessels, spreading first to regional lymph nodes (LNs) before metastasizing to systemic sites. However, some patients develop systemic metastases without LN involvement. Observing a trend of fewer LN metastases in triple-negative breast cancer (TNBC) patients, we hypothesized that Stage IV TNBC may represent a subtype in which the pathway to systemic metastasis bypasses the LNs entirely.

Methods: We examined all TNBC and ER+/PR+/HER2/neu negative BC patients with lymphovascular invasion (LVI) within our vertically integrated healthcare system. Data were drawn from a long-term, prospectively maintained database from 1995–2022. Patients excluded from the study included men, BC recurrences, and instances of missing pathological or molecular information. All clinicopathologic and molecular categorical data, including histologically confirmed ALN and systematic metastases, were analyzed statistically using both parametric and non-parametric tests, as appropriate for each variable. Statistical significance was set at $p < 0.05$.

Results: A total of 446 patients with LVI: 91 (20%) TNBC and 355 (80%) ER+/PR+/HER2/neu negative were compared. The median age (interquartile range) of the study cohort was 60 (51-70). Patients were predominantly white (228, 59%). 19 (21%) of TNBC patients developed systemic metastases compared to 37 (10%) of ER+/PR+/HER2/neu negative patients (p=0.003). Patients with TNBC and LVI were more likely to have systemic metastasis compared to the ER+/PR+/HER2/neu negative patients with LVI (OR: 3.730, 95% CI: 1.545-9.006, p=0.003). 34 (37%) TNBC patients developed LN metastases compared to 199 (57%) ER+/PR+/HER2/neu negative patients (p=0.001). These TNBC patients were less likely to have LN metastasis than ER+/PR+/HER2/neu negative patients with LVI (OR: 0.456, 95% CI: 0.284-0.73, p=0.001).

Conclusions: Patients with TNBC whose tumors display LVI are significantly less likely to have ALN metastases but have an increased risk of systemic metastasis, which is consistent with existing literature that suggests that TNBC has a higher propensity for early distant spread, even in the absence of regional nodal involvement. If we could identify molecular, genetic, or biochemical markers in primary tumors that predict which patients are more prone to systemic metastasis without LN involvement, we could potentially avoid sentinel LN biopsy in this subgroup.

1977503 - Comparative Outcomes of Trimodal Therapy vs. Chemotherapy Alone in Older Adults (≥65 Years) with Metastatic Inflammatory Breast Cancer

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Background/Objective: Older adults with breast cancer, particularly those with metastatic inflammatory breast cancer (mIBC), often face undertreatment due to competing health risks, overall functional decline, polypharmacy, and cognitive impairment, making the benefits of trimodal therapies unclear. This study examines survival outcomes for older adults with mIBC in the National Cancer Database (NCDB), comparing those who receive chemotherapy alone to those undergoing trimodal treatment.

Methods: Patients aged ≥65 years diagnosed with mIBC between 2010 and 2020 were identified in the NCDB. Univariable analysis compared sociodemographic and clinical characteristics between adults receiving chemotherapy alone versus trimodal therapy. Overlap Propensity Score Weighting Cox proportional hazard models, a propensity score method used to mimic randomized controlled trials, were fitted to account for confounding from age, Charlson-Deyo score, molecular subtype, and metastatic site (bone-only, brain-only, liver-only and lung-only). Trimodal therapy was defined as receipt of modified radical mastectomy, chemotherapy, and radiation therapy.

Results: Of the 893 older adults in the cohort, 141 (15.8%) received trimodal therapy and 752 (84.2%) received chemotherapy alone. The median age of all the older adults in the sample was 71 years (interquartile range (IQR): 68-76). Patients receiving trimodal therapy were significantly younger (median 69 (IQR: 66-73) vs. 72 years (IQR: 68-77), $p< 0.0001$) and had fewer than two metastatic sites at diagnosis compared to chemotherapy-only patients (91.4% vs 70.7%, $p< 0.0001$). Notably, bone-only metastasis was more common in patients receiving trimodal therapy compared to chemotherapy-only (60.6% vs 39.3%, $p< 0.0001$). There was no significant difference in comorbidity scores between the two groups ($p=0.0785$). Patients who received trimodal therapy had a 40% lower hazard of death compared to patients who only received chemotherapy (aHR: 0.60, 95% CI: 0.48-0.74). Moreover, patients who received trimodal therapy demonstrated a significantly longer median overall survival (36.2 months vs 26.2 months) compared to patients who received chemotherapy alone. Survival curves for each group diverged after approximately 18 months of follow-up.

Conclusions: In older adults with metastatic IBC, trimodal therapy is associated with a significant improvement in overall survival compared to chemotherapy alone. These findings support the integration of locoregional therapies with systemic chemotherapy in the management of metastatic IBC, particularly for older patients with limited metastatic burden. Further prospective studies are warranted to confirm these results and refine treatment strategies for older populations.

Figure 1: Comparative Outcomes of Trimodal Therapy vs. Chemotherapy Alone in Older Adults (≥65 Years) with Metastatic Inflammatory Breast Cancer

1984227 - A Systematic Review of the Economic Acceptability of Pertuzumab in early versus late settings of HER2-positive breast cancer

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Background/Objective: The use of humanized antibody Pertuzumab in breast cancer patients overexpressing the Human Epidermal Growth Factor-2 (HER2) receptor in the primary and metastatic setting has shown significant clinical benefit in multiple clinical trials. However, economic evaluations of Pertuzumab treatment have demonstrated conflicting results regarding its cost-effectiveness in this patient population. The objective of this study was to assess all current economic evaluations of Pertuzumab in patients with primary versus metastatic breast cancer, and to provide an overview of the cost effectiveness of Pertuzumab in these settings.

Methods: A systematic review of economic evaluations of Pertuzumab in breast cancer patients indexed on Ovid MEDLINE, EMBASE, CINAHL EBSCO and Cochrane was conducted. Studies were subdivided into those assessing Pertuzumab in early breast cancer with high-risk patients and in patients with metastases. Only full text original articles which were written in the English language and reported and compared cost-effectiveness analyses (specifically incremental cost-effectiveness ratio (ICER)) of Pertuzumab in combination with Trastuzumab +/- another chemotherapeutic drug vs no additional Pertuzumab in the treatment of HER2-positive breast cancer were included. Articles which did not include economic evaluations specifically examining Pertuzumab, did not report ICERs, or which assessed the economic utility of particular drug treatment sequences including Pertuzumab were excluded. Posters, conference presentations, opinion pieces and abstracts where no full text articles were available were also excluded. All studies were assessed for risk of bias using the QHES instrument.

Results: A total of 888 articles were retrieved from Ovid MEDLINE, PubMed and Embase with an additional 70 articles were gathered from CINAHL EBSCO and Cochrane. Following removal of duplicates, 570 articles were screened by title, resulting in 330 screened by abstract and a total of 72 full-text articles screened for final inclusion. A total of 5 studies assessing the cost-effectiveness of Pertuzumab in the early breast cancer setting and 8 studies in the metastatic setting were included in the final analysis. Pertuzumab was found to be cost-effective in the early breast cancer setting almost universally, but generally not cost-effective in the metastatic setting due to increased lifetime costs and ongoing healthcare system demands from patients requiring chronic treatment with Pertuzumab.

Conclusions: To the authors' knowledge, this is the first systematic review to assess the cost-effectiveness of Pertuzumab across all its currently-approved indications in breast cancer patients. It encompasses settings ranging from early breast cancer to metastatic disease, and the included studies are of high quality. The primary data support that Pertuzumab provides significant clinical benefit to patients in all settings, and is safe for extended use in patients who can be maintained without progression in the metastatic setting. Pertuzumab consistently produces high pathological complete response (pCR) rates and has a significant impact on long term patient health outcomes and survival. For patients with early breast cancer with high-risk features, the lower lifetime costs associated with Pertuzumab treatment make it cost- effective. However, in patients with metastatic breast cancer, the cost associated with ongoing treatment of this expensive monoclonal antibody therapy argues against the economic viability of Pertuzumab.

1988558 - Complications in Patients with De-Novo Metastatic Breast Cancer Undergoing Surgery

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Background/Objective: Despite a lack of survival advantage conferred by surgery for de-novo metastatic breast cancer, select patients may still undergo surgical intervention including surgery for the breast tumor and/or mastectomy. Whether patients with Stage IV breast cancer have an increased risk of postoperative complications is unclear. This study aims to evaluate the complication rate following breast surgery in patients with de-novo metastatic breast cancer and associated delays in resuming systemic therapy.

Methods: This was an IRB-approved, retrospective cohort study. Our institution's tumor registry and electronic health records were used to identify de-novo metastatic breast cancer patients who underwent surgery between 2016 and 2023. Clinicopathologic characteristics, operative records, and any complication captured in the 90-day postoperative period were assessed.

Results: Out of 520 patients with de-novo metastatic breast cancer, 69 underwent surgery; forty (58%) underwent breast and/or axillary surgery, 21 (30.4%) mastectomy, and 8 (11.6%) both. The median age at diagnosis was 55 years (Range: 27 to 86) with a median follow-up of 31 months. Of 48 patients who underwent breast surgery, 4 had a lumpectomy (8.3%) and 44 had a mastectomy (91.7%), of which 19 (43.2%) had reconstruction. Axillary lymph node dissection was carried out in 34 patients (70.8%), sentinel lymph node biopsy in 7 patients (14.6%), and for 7 patients (14.6%) axillary surgery was not performed. Complications included seroma (n=4; 44.4%), lymphedema (n = 1; 11.1%), pulmonary embolism (n = 1; 11.1%), flap necrosis (n = 1; 11.1%), axillary web syndrome (n = 1, 11.1%), and cellulitis (n = 1; 11.1%). Five patients (55.6%) with breast surgery complications had a delay in resuming systemic therapy. The median time to resuming treatment in patients with a complication was 55 days (Range: 13 to 100) vs. 21 days (Range: 2 to 81) in patients without a complication.

Conclusions: About 10% of de-novo metastatic breast cancer patients will experience a postoperative complication that will impact their time to resuming systemic therapy. Understanding this impact could help when counseling Stage IV breast cancer patients on the decision to perform breast surgery, particularly with a lack of evidence demonstrating a survival benefit.

1988930 - Surgery, Survival, and Disease Progression For HER2+ Metastatic Breast Cancer

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Background/Objective: The role of locoregional therapy for de novo metastatic breast cancer (MBC) is controversial. Several randomized controlled trials have shown that locoregional therapy does not appear to improve survival but may improve local control. Patients with HER2+ MBC are more likely to experience a durable distant disease response as compared to HER2- MBC and there is debate as to whether surgery for this select subset of patients is indicated. The objective of this study was to examine if surgery was associated with survival or disease progression (local and distant) advantage for patients diagnosed with de novo HER2+ MBC.

Methods: We performed an institutional retrospective review of de novo Stage IV HER2+ breast cancer patients diagnosed between 2011-2023. The data collected included patient demographics, clinical staging and histologic subtype, number of metastases, receipt of systemic chemotherapy and HER2-targeted therapy, breast and axillary surgery, survival and progression outcomes. Descriptive statistics were represented by percentages and median (IQR). Unadjusted logistic regression was used to determine associations between surgery and disease progression. Survival analyses (Kaplan-Meier and Cox regression) were used to examine the association between surgery and survival time.

Results: A total of 99 patients were identified. Median age at diagnosis was 51 years. Sites of metastatic disease at presentation included bone 48.5%, lung 22.2%, lymph nodes 35.4%, liver 32.3%, and brain 6.1%. Most patients had either one (50.0%) or two (33.7%) metastatic sites at diagnosis. Initial HER2-directed therapy included trastuzumab plus pertuzumab (72.3%), trastuzumab (17.0%), or trastuzumab emtansine (T-DM 1) (3.2%). Chemotherapy regimen most received was Paclitaxel (27.4%). 44.4%(44/99) of patients underwent surgery. Of those who underwent surgery, 72.7% underwent mastectomy and 27.3% underwent lumpectomy. Of those who underwent axillary surgery, 51.6% had ALND and 48.4% had SLNB. Indications for surgery included curative intent (45.5%) and local control (36.4%). Median time from diagnosis to surgery was 7.7 months (5.9, 16.3). Prior to surgery, there were similar rates of local disease progression on imaging in “no surgery” vs “surgery” groups (25.6% vs. 36.6%, p=0.28). Patients undergoing surgery trended towards reduced distant disease progression as compared to no surgery (40.0% vs 60.0%, p=0.06), but there was no significant difference in local disease control (15.0% local progression after surgery vs 25.6% local progression in no surgery group, p=0.24). Those undergoing surgery appeared to have improved median survival vs those without surgery, (>150mo vs 47.9mo (HR: 0.19, 95% CI, 0.09-0.40), although this was not statistically significant.

Conclusions: We found that, although surgery was commonly performed for HER2+ MBC, surgery not associated with significant improvement in local disease control as compared to receipt of systemic therapy alone. Additionally, there was no significant improvement in survival associated with surgery in HER2+ MBC. The trends toward improved distant disease control and median survival in those undergoing surgery likely reflect a selection bias to offer surgery in patients with more favorable response to systemic therapy. Further studies are needed to understand the role of surgery in HER2+ MBC.

Table 1. Demographics, Disease progression, and Survival in HER2+ MBC

	Overall	No Surgery	Surgery	p-value
n	99	55	44	
Age, median(IQR)	51 (39, 64)	56 (43, 66)	47 (38, 59.25)	0.04
Disease Site	99	55	44	
Bone	48 (48.5%)	30 (54.5%)	18 (40.9%)	0.18
Lung	22 (22.2%)	16 (29.1%)	6 (13.6%)	0.07
Nodes	35 (35.4%)	26 (47.3%)	9 (20.5%)	0.01
Liver	32 (32.3%)	19 (34.5%)	13 (29.5%)	0.60
Brain	6 (6.1%)	6 (10.9%)	0 (0.0%)	0.99
# sites	99	55	44	
mean (sd)	1.6 (0.9)	1.9 (0.9)	1.2 (0.7)	<0.001
0 sites	4 (4.1%)	1 (1.9%)	3 (6.8%)	
1 site	49 (50.0%)	18 (33.3%)	31 (70.5%)	
2 sites	33 (33.7%)	24 (44.4%)	9 (20.5%)	
>2 sites	12 (12.2%)	11 (20.4%)	1 (2.3%)	
HER2 therapy	94	54	40	0.15
Trastuzumab	16 (17.0%)	12 (22.2%)	4 (10.0%)	
Trastuzumab + Pertuzumab	68 (72.3%)	35 (64.8%)	33 (82.5%)	
Trastuzumab + Emtansine	3 (3.2%)	1 (1.9%)	2 (5.0%)	
Chemo regimen	95	52	43	0.01
Paclitaxel	26 (27.4%)	17 (32.7%)	9 (20.9%)	
Docetaxel	13 (13.7%)	6 (11.5%)	7 (16.3%)	
Docetaxel, Carboplatin	10 (10.5%)	2 (3.8%)	8 (18.6%)	
Taxotere	5 (5.3%)	4 (7.7%)	1 (2.3%)	
Indication	91	47	44	
No indication	45 (49.5%)	45 (95.7%)	0 (0.0%)	
Curative	20 (43.5%)	0 (0.0%)	20 (45.5%)	
Local control	16 (34.8%)	0 (0.0%)	16 (36.4%)	
STOP HER2	1 (2.2%)	0 (0.0%)	1 (2.3%)	
Unknown	9 (19.6%)	2 (100.0%)	7 (15.9%)	
Breast Surgery type	99	55	44	
No surgery	55 (55.6%)	55 (100.0%)	--	
Mastectomy	32 (72.7%)	--	32 (72.7%)	
Lumpectomy	12 (27.3%)	--	12 (27.3%)	
Axillary Surgery	90	55	35	
No surgery	59 (65.6%)	55 (100.0%)	4 (11.4%)	
ALND	16 (51.6%)	--	16 (51.6%)	
SLNB	15 (48.4%)	--	15 (48.4%)	
Time to surgery (mo), median (IQR)	7.72 (5.93, 16.3)	--	7.72 (5.93, 16.3)	
Disease progression				
Distant, n (%)	37/91 (40.7%)	30/50 (60.0%)	16/40 (40.0%)	0.06
Local, n (%)	26/84 (31.0%)	11/43 (25.6%)	6/40 (15.0%)	0.24
Mortality				
Breast Cancer Death	43 (41.0%)	32 (58.2%)	10 (22.7%)	<0.001
Time to breast cancer death (mo), med (IQR)	68.3 (60.7, Inf)	47.9 (26.8, 60.9)	NA	<0.001
Overall Death	44 (41.9%)	33 (60.0%)	10 (22.7%)	<0.001
Time to overall death, med (IQR)	68.3 (60.7, Inf)	47.9 (26.8, 60.9)	NA	<0.001

1957106 - Impact of postpartum diagnosis on outcomes of women with Stage IV inflammatory breast cancer

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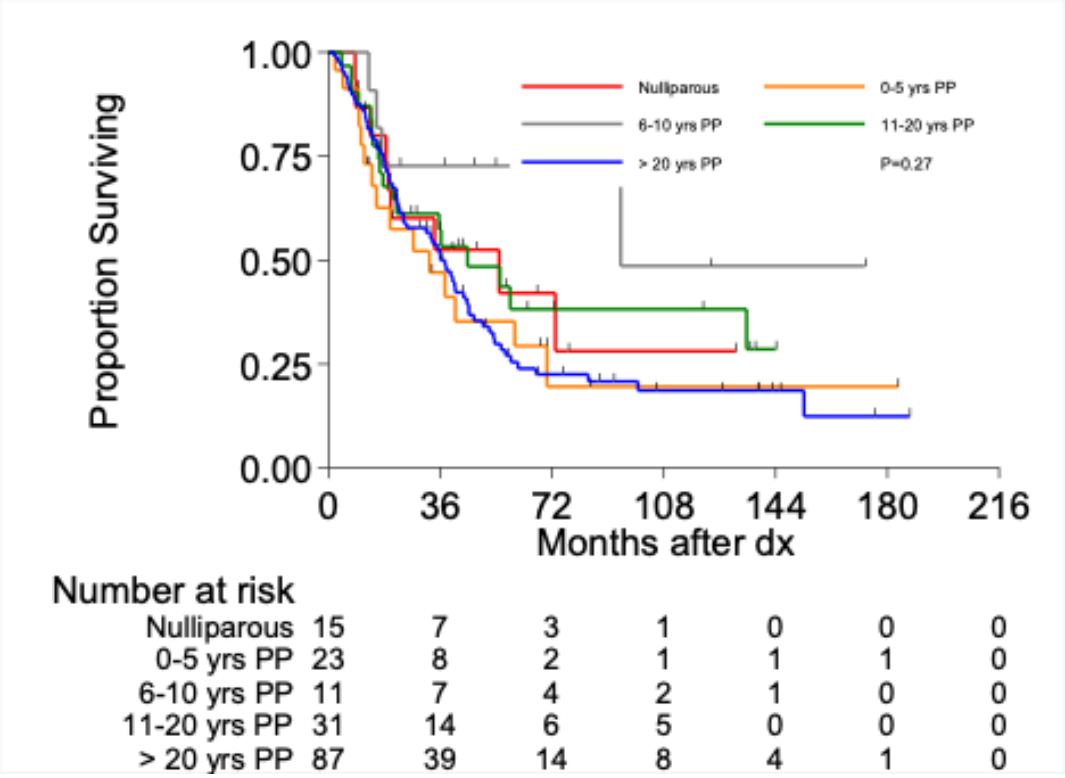
Background/Objective: Breast cancer diagnosed within 5-10 years of childbirth, known as postpartum breast cancer, is associated with poor prognosis. Involution of mammary glands in the weaning period creates a pro-inflammatory microenvironment; this promotes tumorigenesis, similar to inflammatory breast cancer (IBC). Despite mechanistic similarities, there are limited data on the intersection of postpartum breast cancer and IBC, particularly for patients with Stage IV disease. This study aims to evaluate the impact of postpartum diagnosis on outcomes of patients with de novo stage IV IBC.

Methods: A retrospective analysis of a single-center IBC registry (2007-2023) was performed. Clinicopathologic, treatment, and survival data were collected. Clinical stage was subclassified into IVA, IVB, IVC, and IVD per the staging system by Plichta et al. Reproductive history was obtained from patient completed questionnaires. Years postpartum was calculated from age at diagnosis and age at last pregnancy. Overall survival (OS) was estimated by the Kaplan-Meier method and subgroups were compared by the log rank test.

Results: Among 202 patients with Stage IV disease, 35 were excluded due to incomplete reproductive history. Of the remaining 167 patients, the median age was 51 years (IQR 42-60) and the majority were White (n=123, 74.1%). Most patients had grade 3 disease (n=112, 67.1%) with ductal histology (n=148, 88.6%). 62 (37.1%) patients had HR+/HER2- disease, 24 (14.3%) had HR+/HER2+ disease, 30 (17.9%) had HR-/HER2+ disease, and 51 (30.5%) had HR-/HER2- disease. Forty (24.0%) patients had Stage IVB disease whereas 47 (28.1%) had Stage IVC and 80 (47.9%) had Stage IVD disease. Fifteen (8.9%) were nulliparous, 23 (13.8%) were 0-5 years postpartum, 11 (6.6%) were 6-10 years postpartum, 31 (18.6%) were 11-20 years postpartum, and 87 (52.1%) were >20 years postpartum. Postpartum groups differed significantly by age ($p< 0.01$): the median age was 50 (IQR 37-54) for nulliparous patients; among parous patients, age was lowest for patients 0-5 years PP (median 36, IQR 29-39) and highest for those >20 years PP (median 59, IQR 52-67). Postpartum groups did not differ significantly by race, grade, histology, subtype, or Plichta stage group. Median follow-up was 82.8 months. Median OS for the overall cohort was 37.9 months (IQR 32.9-49.8), and 3-year OS was 52.5% (95% CI 45.3-60.9). As expected, median OS was shortest for patients with Stage IVD disease (19.6 months versus 45.1 months for Stage IVC and 94.0 months for Stage IVB, $p< 0.01$). OS did not differ significantly by postpartum group ($p=0.27$; Figure 1).

Conclusions: In this cohort, postpartum diagnosis did not significantly impact survival outcomes in patients with de novo Stage IV IBC. This contrasts with prior studies of postpartum patients with non-inflammatory breast cancer. Our findings suggest that the aggressive characteristics of IBC outweigh the poor prognosis associated with a postpartum diagnosis. Future studies to better characterize the biological underpinnings of postpartum breast cancer and IBC are warranted.

Figure 1. Overall Survival of patients with de novo Stage IV inflammatory breast cancer, by postpartum (PP) group.



Number at risk

Nulliparous	15	7	3	1	0	0	0
0-5 yrs PP	23	8	2	1	1	1	0
6-10 yrs PP	11	7	4	2	1	0	0
11-20 yrs PP	31	14	6	5	0	0	0
> 20 yrs PP	87	39	14	8	4	1	0

Time to Treatment

1988761 - Implementation of a Wireless Localization Program For Patients with Birad 4C and 5 Lesions Undergoing Image Guided Biopsies

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Background/Objective: Breast cancer surgery requires coordination of care with breast imaging. Traditionally, non-palpable lesions were marked with a biopsy clip, and then a wire localization was performed the day of surgery. This process can lead to inefficiency. More recently developed wireless localization systems have been shown in the literature to be an accurate and reliable way to localize non-palpable breast lesions. Benefits include reduced re-excision rates, improved accuracy of targeting lesions, and increased patient satisfaction. Our institution initially adopted a wireless localization program to uncouple pre-operative procedures from day of surgery to improve operating room efficiency. A secondary benefit came with FDA approval of SAVI SCOUT localization (SSL) at the time of biopsy. The goal of this study is to analyze the outcomes of women undergoing SSL at the time of image guided biopsies for BIRAD 4c and 5 breast imaging.

Methods: A retrospective review between 2022-2024 was conducted at a single institution. Patients with BI-RADS 4C or 5 lesions were included in the study. Variables including timing of placement of SSL, time from initial biopsy to treatment, follow up, and outcomes were collected via chart review.

Results: 389 patient charts were reviewed, with 241 patients undergoing surgery at our institution. 222 patients had an SSL in the breast, of those, 72% of SSL were placed at the time of initial biopsy. Only 3% of SSL placed at initial biopsy (5 patients) were lost to follow up or ended up having surgery at an outside hospital. There was no significant difference in mean time to treatment from initial biopsy between patients that did and did not have upfront SSL (51 vs 52 days, respectively). 87.3% of patients who had SSL placed at time of initial biopsy had a diagnosis of cancer on biopsy. 2.5% were high-risk lesions, while 9.5% were benign that did not require surgical excision. Of the patients who an SSL placed at the time of biopsy, 40% underwent a lumpectomy and 31% had a mastectomy.

Conclusions: Our single institution's experience with wireless localization placement at the time of biopsy revealed several advantages. Our results show that most patients that underwent SSL went on to have surgical treatment at our institution. Our breast imagers coded BIRAD 4c and 5 lesions were able to successfully predict need for excision in 89.8% of patients. Although there was not a significant difference in time to treatment, there was improved efficiency for breast imaging allowing for more available procedure spots decreasing wait times for biopsies. Placing the localizer at time of biopsy reduces the number of procedures for the patient with less disruption during a stressful time limiting potential complications including infection and hematoma. Our group’s previous work demonstrated the benefit of SSL for operative efficiency and accuracy, with new data supporting it is benefit when done at time of biopsy.

1988535 - Timeliness of Breast Cancer Diagnosis and Surgery in a High-Risk Breast Cancer Clinic

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Background/Objective: Minimizing diagnostic and therapeutic delays not only improves patient-centered outcomes (i.e. reduced anxiety/stress) but has been shown to reduce morbidity/mortality and increase overall survival in women with breast cancer. Using wait times as a proxy for the above established outcomes, this study aimed to determine the effectiveness of organized breast assessment in a high-risk clinic, as well as identify factors associated with longer time to diagnosis and time to surgery in each clinical setting.

Methods: A single-center retrospective analysis of all adult women with Stage 0-III breast cancer who underwent primary surgical resection from 2014 to 2021 was performed. Eligible patients were identified through an institutional database and stratified into two cohorts based on participation in the authors' high-risk breast cancer surveillance program (high-risk cohort) or receipt of general care (general care [GC] cohort). Multivariable logistic regression was used to examine associations of diagnostic and operative wait times with patient demographics, screening characteristics (i.e. first abnormal screen type, mammographic density), assessment characteristics (i.e. total assessment procedures), and prognostic factors (i.e. tumor histology, stage, etc.) by care pathway. Diagnostic delay was defined as having a breast cancer diagnosis >7 weeks after first abnormal imaging. Operative delay was defined as undergoing primary surgery >8 weeks from first biopsy confirming a breast cancer diagnosis.

Results: A total 3,918 patients were included for analysis, of whom 58 (1.5%) were assessed through the high-risk breast cancer program and 3,860 (98.5%) assessed through routine general care. The mean age at screening was 55.7 years with no significant differences in age distributions between pathways. Women in the high-risk cohort were more likely to be non-Hispanic, white (89 % vs 78 %; $p< 0.001$) and have a family history of breast cancer (59% vs 33%; $p< 0.001$) than the GC cohort. Compared to those receiving general care, patients in the high-risk cohort were significantly more likely to have their first biopsy within 3 weeks of first abnormal imaging (vs >3; OR=1.15; 95% CI 1.08–1.32; p=0.008), have < 4 total assessment procedures (OR=1.34; 95% CI, 1.21–1.49; p=0.02), and receive a diagnosis within 7 weeks of abnormal mammogram (OR=1.22; 95% CI, 1.70–2.07; p=0.034). Overall median wait times from abnormal screen to diagnosis were 19 days (IQR=14–39) for women in the high-risk cohort and 26 days (IQR=20-51) in the general care cohort (p=0.001). No difference in the median wait times from diagnosis to surgery was observed between clinical contexts (31 vs 32 days; p=0.36).

Conclusions: Our results demonstrate that participation in a high-risk breast cancer surveillance program is associated with shorter wait times to diagnostic resolution but not with reduced time to surgical treatment. As surgical delays are multifactorial in nature, future studies should include qualitative assessments of both patients and providers to evaluate perceived barriers to timely surgery for patients with operable breast cancer.

1988943 - Success of Kidney Transplantation after Breast Cancer

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Background/Objective: Women awaiting kidney transplant are routinely screened for breast cancer. However, its detection can significantly impact a patient's eligibility for transplant and cause delays or even disqualification from the procedure. With improvements in breast cancer outcomes, we hypothesized that patients with a history of breast cancer can be more aggressively transplanted.

Methods: We identified patients with breast cancer who also underwent kidney transplantation through Oncoshare, a de-identified research tool comprised of electronic medical records of Stanford Healthcare and multiple sites of the community-based Sutter-Palo Alto Medical Foundation healthcare system. Date and age at the time of breast cancer diagnosis, tumor stage, date of kidney transplant, type of donor, and time interval between both events were collected

Results: Seven cases were identified with characteristics detailed in table. One patient had a prior liver transplant before she developed invasive breast cancer with subsequent hepatorenal failure followed by a local recurrence and liver and kidney transplant. A second patient developed lung cancer 15 years after kidney transplant and died of this disease. The remaining 5 women survived without cancer recurrence for 11 to 18 years of follow up and only one underwent a second kidney transplant. There was no association between the type of donor, stage of disease and survival without recurrence

Conclusions: In our small cohort, only one patient experienced breast cancer recurrence, while six survived beyond 11 years post-transplantation. These encouraging results highlight the need for more research on breast cancer recurrence after organ transplantation. Additional data could support expanding transplant eligibility for patients with a history of breast cancer, improving life expectancy and quality of life for these patients.

Tumor Genetics

1975266 - Impact of Discordant Oncotype DX and MammaPrint Results on Adjuvant Chemotherapy Decisions in Early-Stage Breast Cancer

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Background/Objective: Gene expression analysis with genomic tests such as Oncotype DX and MammaPrint has helped clinicians decide which patients will likely benefit from adjuvant chemotherapy in addition to endocrine therapy. Our study aimed to review clinical practices in our patient population and ultimately determine which genomic test was more prominently used in guiding chemotherapy treatment.

Methods: This is a retrospective single institution study of our early-stage breast cancer patients between 2011 and 2024 who had undergone both Oncotype and MammaPrint testing. Only patients with early-stage (T1-2, N0-1), ER-positive and HER-negative breast cancer were included. Genotype results were then correlated with medical oncology recommendations for adjuvant systemic chemotherapy.

Results: A total of 82 patients were analyzed. The average age at diagnosis of our patients was 59.9 years (31-83 years old) and most patients were ER/PR-positive (90.2%), Stage I (91.5%) and node negative (64.6%). Among patients with a High Risk MammaPrint (n=32) only 56.3% (n=18) received chemotherapy and of these 7 (21.9%) had low risk Oncotype scores. Of the patients (n=14) that didn't receive chemotherapy in the High Risk MammaPrint group, 92.9% (n=13) had a low risk Oncotype score and one patient refused chemotherapy. Patients with Low Risk MammaPrint (n=43) were given chemotherapy in 5 (11.6%) patients, four of which had high-risk Oncotype scores. In this group though 3 patients had high risk Oncotype score but did not receive chemotherapy. None of those with Ultra Low Risk scores received chemotherapy and only one had a high-risk Oncotype score. In the cohort of women < 50-years old (n=17), chemotherapy should have been recommended in 12 women based on their high risk Oncotype scores. However, three of those women had Low Risk MammaPrint and one had Ultra Low Risk MammaPrint results, and all did not receive chemotherapy. Interestingly, of the five patients that would not have received chemotherapy based on their Oncotype score, two had High Risk MammaPrint results and received adjuvant chemotherapy. Overall, the recommendations for or against chemotherapy were concordant between both genotyping products in 65.9% of the cases while therapeutic correlation was only in 64.3%. However, 40.6% of patients with High-Risk MammaPrint were not offered chemotherapy with low Oncotype risk scores and only 20% of patients with high risk Oncotype scores didn't receive chemotherapy with Low/Ultra Low risk MammaPrint.

Conclusions: In women with early-stage breast cancer who have both Oncotype Dx and MammaPrint genomic tests to help guide decision making for adjuvant chemotherapy treatment, our data suggest that when recommendations are discordant between the two tests, it appears that clinicians are more likely to provide chemotherapy based on the Oncotype scores.

1988791 - Immunomodulatory Effects of Intraoperative Radiation Therapy (IORT) in Patients with Breast Cancer

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Background/Objective: In addition to the lethal effects on cancer cells, radiotherapy can modulate the tumor microenvironment (TME) by stimulating or suppressing the antitumor immune response. The overall impact of radiotherapy likely depends on many factors, including the breast cancer molecular subtype and the modality and dose of radiotherapy. These mechanisms have not been explored in intraoperative radiotherapy (IORT), and it is unclear if a localized single high dose of radiation can contribute to immune activation or suppression. We previously reported TME unique immune response in specimens treated with IORT when compared to tissue without IORT. Here, we explored the molecular changes in the TME before and after IORT in patients with early-stage breast cancer.

Methods: We selected a cohort of patients with early-stage breast cancer who underwent breast-conserving surgery with immediate IORT and required margin re-excision for close or positive margin. RNA sequencing was performed in paired samples from the primary surgical (pre-IORT) and the re-excision (post-IORT) specimens. Differential gene expression, gene ontology biological process pathway analysis, and immune cell deconvolution (using the xCell algorithm) were performed using differentially expressed genes in the paired samples before and after IORT.

Results: Paired samples from a cohort of patients with HR-positive/HER2-negative (N=5), HER2-positive (N=4), and triple-negative (N=1) before and after IORT were included. Overall, we identified 2,950 differentially expressed genes (DEG): 1,445 upregulated and 1,505 downregulated ($p< 0.05$) between pre-IORT and post-IORT samples (Figure 1A). The gene ontology analyses using those DEGs showed that post-IORT samples were significantly associated with the enrichment of several immune pathways, such as T-cell activation, leukocyte migration, and phagocytosis ($p< 0.001$, Figure 1B). Direct radiation exposure in the post-IORT specimens was reflected by the downregulation of several pathways associated with the regulation of double−strand break repair via homologous recombination and nuclear division ($p< 0.001$). Using the xCell algorithm, we found a higher immune score in breast tissues exposed to IORT than in pre-IORT samples ($p< 0.03$, Figure 1C). No difference was found in the stromal score between the two cohorts ($p=0.09$). Finally, we inferred a significantly higher abundance of dendritic cells, monocytes, and macrophages M2 and decreased enrichment of CD8+ naïve T-cells.

Conclusions: Intraoperative radiation therapy (IORT) in breast cancer patients induces significant immunomodulatory effects in the tumor microenvironment, characterized by enhanced immune pathways such as T-cell activation, leukocyte migration, and phagocytosis. Despite an overall increase in immune cell infiltration, the immune profile post-IORT shows a complex balance with an increase in M2 macrophages and a decrease in CD8+ naïve T-cells, elements typically associated with immune regulation and potential immune evasion. These findings suggest that while IORT activates an immune response, further strategies may be needed to sustain and amplify this response to optimize antitumor immunity and potentially improve therapeutic outcomes.

Figure 1. Immune-related transcriptomic changes before and after IORT.

Figure. Immune-related transcriptomic changes before and after IORT

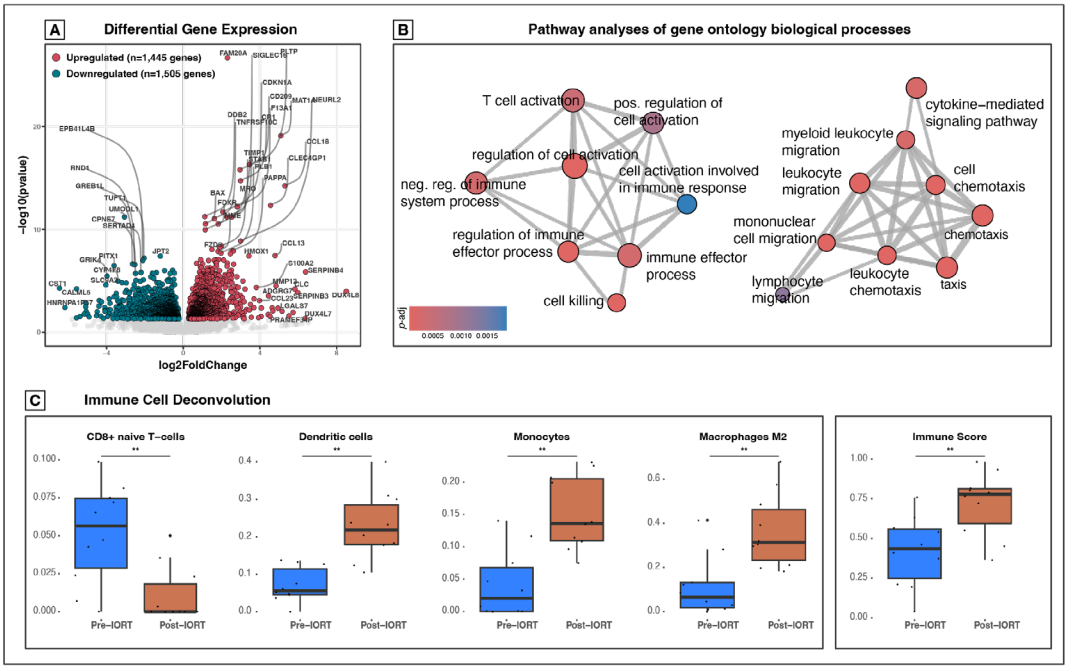


Figure A. Volcano plot showing the differentially expressed genes (DEG) between pre-IORT and post-IORT samples. **B.** Network plots showing significantly upregulated pathways. The color guide represents the p-adjusted values. **C.** Boxplots showing differences between non-IORT and IORT cohorts in immune cell enrichment and immune score, as determined by the xCell digital portrayal algorithm. IORT, intraoperative radiation therapy.
**adjusted *p*-value < 0.05

E-Posters

Friday, May 2, 2025, 6:00 pm - 7:30 pm

Age Extremes

1987548 - Perioperative Optimization of Senior Health (POSH): A Novel Pathway for Interdisciplinary Management of Frail Older Adults Undergoing Breast Surgery

Susan McKendry, Rebecca Tang, Adhithri Rajaragupathi, Matthew Russell, Sindhura Pulluru, Hiroko Kunitake, Masaya Higuchi, Francys Verdial

Massachusetts General Hospital, Boston, MA

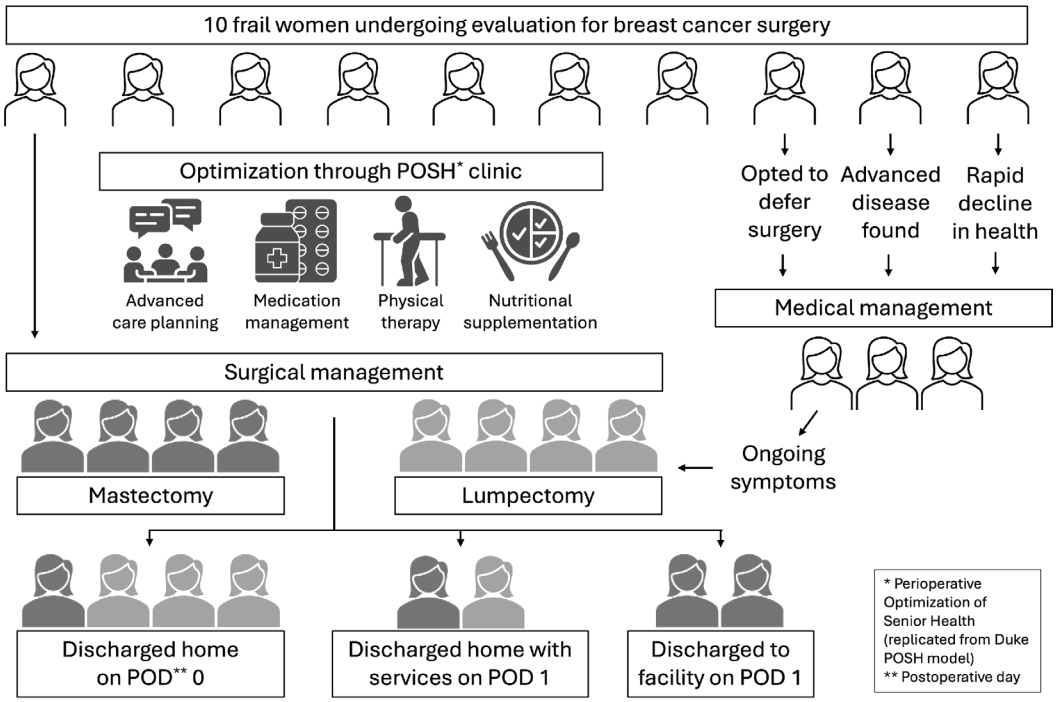
Background/Objective: Nearly half of all women with breast cancer are 65 years and older, and this proportion is expected to increase. The Perioperative Optimization of Senior Health (POSH) clinic was established to address geriatric vulnerabilities and improve postoperative outcomes in frail older adults by providing comprehensive preoperative geriatric assessments, delivering individualized anticipatory guidance with interdisciplinary input, implementing targeted risk-reduction strategies, and aligning care with patient goals. We describe the results of comprehensive perioperative optimization of frail older women who underwent breast cancer surgery.

Methods: Older patients under consideration for breast cancer surgery enrolled in the POSH clinic (June 2022 – May 2024) were retrospectively identified. Descriptive statistics were used to summarize the findings of preoperative geriatric assessment, risk-reduction interventions employed, and postoperative outcomes.

Results: Of 114 total patients evaluated in the POSH clinic, 10 women were planned for breast cancer surgery (median age 83.5 years, range 77-93). Most patients (n=9) had early-stage disease and one patient had Stage 3 breast cancer. Patients were identified as mildly frail on average, average Charlson Comorbidity Index score was 7 (corresponding to a predicted 1-year mortality rate 85%), and 80% of patients exhibited polypharmacy. Two patients were found to have cognitive impairment and seven were at risk of malnutrition. After evaluation in the POSH clinic, the most common recommendations for optimizing care involved advanced care planning (80%), followed by medication adjustments (60%), physical therapy (30%), and nutritional guidance (20%). Two patients did not undergo surgery after initial evaluation in the POSH clinic: one had findings suspicious for metastatic disease and was treated with endocrine therapy and one was transitioned to hospice care after a rapid decline in health despite ongoing breast symptoms. Of patients who underwent surgery, four patients underwent partial mastectomy, and four underwent total mastectomy. Postoperatively, 50% of patients were discharged home on the day of surgery. The other four (three after total mastectomy and one after partial mastectomy) were discharged after a planned overnight stay to coordinate services. Of these, two patients were discharged home with services, and two were discharged to an inpatient rehabilitation facility before subsequently returning home. Postoperatively, there were no documented surgical complications, 30-day readmissions, or 90-day mortalities.

Conclusions: Following interprofessional comprehensive perioperative optimization through the POSH clinic, frail older adults underwent breast surgery with low postoperative morbidity and mortality. The POSH model facilitates early identification of patients who may benefit from preoperative interventions and postoperative services addressing geriatric vulnerabilities and aligning care with patient goals to foster a smooth and safe recovery from surgery.

Figure 1. Optimization and courses of breast cancer surgery patients through the POSH clinic



1988326 - Impact of Frailty on Treatment Decision-Making in Breast Cancer Patients

Daniel Kamna[1], Douglas Hanes[2], Kristen Massimino[3], Sarah Walcott-Sapp[3]

[1]Oregon Health & Science University, Portland, OR, [2]Earle A Chiles Research Institute and Providence Research Network, Portland, OR, [3]Providence Cancer Institute, Portland, OR

Background/Objective: To determine if frailty status affects receipt of standard of care (SOC) treatment for DCIS (ductal carcinoma in situ) or invasive breast cancer (IBC) independent of patient age.

Methods: Female patients ≥60 years old with DCIS or IBC on core needle biopsy treated at our institution in 2015 were reviewed retrospectively (n=390) to avoid the change in guidelines surrounding sentinel lymph node biopsy as a confounding variable. Disease stage, histopathology, comorbidities, treatments, and disease-free and overall survival were recorded. Receipt of SOC chemotherapy, endocrine therapy, surgery, and radiation per National Comprehensive Cancer Network guidelines was determined by the senior investigator. Frailty was calculated using the modified frailty index (mFI) comprised of 11 variables associated with surgical outcomes. High frailty was defined as ≥0.18 (≥2/11 variables). Univariate and multivariate analyses were used to explore associations between age, frailty, and receipt of SOC.

Results: 266 patients were categorized as "low frailty" and 124 as "high frailty". Mean age was 68 (63, 75) (low frailty: 67 [63, 72), high frailty: 71 [66, 79.25]; $p < 0.001$) and mean frailty score was 0.1. 72 patients had DCIS alone and 318 had IBC. 94%, 88%, 82%, and 23% of patients received surgical, endocrine, radiation, and chemotherapy SOC respectively. 73% received the overall SOC. 98% had no locoregional or distant recurrence and 84% were alive at mean follow up of 84.5 months (range: 4.1-116.3). Receipt of overall SOC treatment differed between low and high frailty patients (78% vs 60%; OR=0.44, p=0.0004). Older patients were less likely to receive SOC therapy in both frailty groups (low: OR=0.94, $p< 0.0001$, high: OR=0.55, p=0.024). Adjusting for covariates showed significance between age and frailty (Low: OR=0.95, $p< 0.012$; High: OR=0.89, $p< 0.001$). In the low frailty group, (83%) received SOC radiation versus the high frailty group (79%), though not significantly (OR=0.77, p=0.33). Age was not a significant factor in receipt of SOC radiation in univariate (low: OR=1.01, p=0.8, high: OR=0.97, p=0.29) and multivariate (low: OR=1.00; p=0.95 high: OR=0.98, p=0.54) analyses. Chemotherapy SOC decreased with age in the low frailty group (OR=0.95; p=0.037) but not the high (OR=0.98; p=0.47), which differed on multivariate analysis (low: OR=0.93, p=0.004; high: OR=0.92, p=0.024). Endocrine therapy SOC was not affected by either frailty (p=0.33) or age (p=0.97) in univariate or multivariate analysis. Surgical SOC did differ between low and high frailty groups (96% vs 89%; OR=0.34; p=0.01), and age had a significantly negative effect in both frailty groups (low: OR=0.89, $p<.0001$, high: OR=0.86, p=0.0001). Age remained the only significant factor when adjusting for covariates (OR=0.88, $p<.001$).

Conclusions: It was found that age played a significant role in receipt of overall, chemotherapy, and surgical SOC for breast cancer; however, age did not impact receipt of radiation or endocrine therapy in the high or low frailty groups. Frailty may be a better guide for decision making than age in determining individualized treatment recommendations for breast cancer patients.

1988931 - Treatment of Triple Negative Breast Cancer in Patients Over Age 70: An NCDB Analysis

Nicole Goldhaber, Sophie Chung, Lauren Longo, Julie Le, Sarah Blair, Sara Grossi

UC San Diego Health, San Diego, CA

Background/Objective: Patients aged 70 and older with triple negative breast cancer (TNBC), a particularly aggressive subtype of breast cancer, are less likely to undergo surgical resection and receive systemic treatment compared to younger patients. Our study aims to further describe the patterns of treatment received in this unique population.

Methods: Using the National Cancer Database, patients aged 70 and older with a diagnosis of TNBC from 2012-2020 were selected. Patients were categorized by demographics including age and comorbidities, treatment received (i.e.. surgery, radiation, chemotherapy) and clinical stage of disease at the time of diagnosis. Descriptive statistical analyses were performed. One- and five-year survival analysis is ongoing.

Results: 19,256 patients were identified that met the inclusion criteria for the study. 6,032 (31.3%) patients underwent mastectomy; 11,855 (61.6%) underwent lumpectomy. 85.4% of patients underwent axillary surgery, of whom 68.0% underwent sentinel lymph node biopsy (SLNB) and 17.4% underwent axillary lymph node dissection (ALND). Differences in management were noted by age within the study cohort (Table 1). Of patients who underwent lumpectomy, 82.2% underwent SLNB, 8.4% ALND, 80% adjuvant radiation, 66.3% chemotherapy. Of patients who underwent mastectomy, 55.0% underwent SLNB, 39% ALND, 32% adjuvant radiation, 69% chemotherapy. Of patients who were clinical T-Stage 2 and above, notably 28% did not receive chemotherapy despite known benefits in this group, and 48% did not receive adjuvant radiation. Interestingly, as comorbidity score increased, likelihood to undergo breast conservation decreased, likelihood to forgo axillary surgery increased, likelihood to receive adjuvant radiation and/or chemotherapy decreased.

Conclusions: Our findings reveal that elderly patients with TNBC are more likely to undergo breast conservation. Of patients who underwent breast conservation, the majority underwent adjuvant radiation. Within the stud cohort, older patients and those with more comorbidities were more likely to forego multimodal treatment including adjuvant radiation and chemotherapy, even when presenting with T2 and above disease. These insights highlight the importance of personalized treatment planning for elderly women with TNBC, balancing cancer control with quality-of-life considerations.

Table 1. Demographic and clinical features of patients over 70 years old diagnosed with triple negative breast cancer who met inclusion criteria for this study.

	All included (n= 19,256; 100%)	Age 70-74 (n = 8,916; 46.3%)	Age 75-79 (n = 5,142; 26.7%)	Age 80-84 (n = 2,886; 15.0%)	Age 85-89 (n = 1,505; 7.8%)	Age 90+ (n= 814; 4.2%)
Gender	Female: 19,202 (99.7%) Male: 54 (<1%)	Female: 8,895 (99.8%) Male: 21 (<1%)	Female: 5,124 (99.7%) Male: 18 (<1%)	Female: 2,877 (99.7%) Male: 9 (<1%)	Female: 1,499 (99.6%) Male: 6 (<1%)	Female: 814 (99.8%) Male: 1 (<1%)
Age	75 (median) 72, 80 (IQR)	72 (median) 71, 73 (IQR)	77 (median) 75, 78 (IQR)	82 (median) 81, 83 (IQR)	87 (median) 86, 88 (IQR)	■
Race	White: 15,172 (79.4%) Black: 3,243 (17.0%) Non-black/Non-white: 698 (3.7%)	White: 6,949 (78.6%) Black: 1,554 (17.6%) Non-black/Non-white: 339 (3.8%)	White: 4,036 (79.0%) Black: 901 (17.6%) Non-black/Non-white: 175 (3.4%)	White: 2,298 (80.2%) Black: 459 (16.0%) Non-black/Non-white: 109 (3.8%)	White: 1,231 (82.3%) Black: 220 (14.7%) Non-black/Non-white: 45 (3.0%)	White: 664 (82.6%) Black: 109 (13.6%) Non-black/Non-white: 31 (3.9%)
Insurance	Medicare: 16,733 (87.8%) Private: 1,864 (9.8%) Medicaid: 292 (1.5%) Other government insurance: 94 (<1%) Not insured: 76 (<1%)	Medicare: 7,567 (85.7%) Private: 1,056 (11.9%) Medicaid: 123 (1.4%) Other government insurance: 44 (<1%) Not insured: 34 (<1%)	Medicare: 4,532 (89.0%) Private: 421 (8.2%) Medicaid: 86 (1.7%) Other government insurance: 31 (<1%) Not insured: 21 (<1%)	Medicare: 2,551 (89.3%) Private: 228 (8.0%) Medicaid: 51 (1.8%) Other government insurance: 11 (<1%) Not insured: 15 (<1%)	Medicare: 1,353 (90.8%) Private: 108 (7.2%) Medicaid: 21 (1.4%) Other government insurance: 5 (<1%) Not insured: 3 (<1%)	Medicare: 736 (91.4%) Private: 52 (6.5%) Medicaid: 11 (1.4%) Other government insurance: 3 (<1%) Not insured: 3 (<1%)
Charlson-Deyo	0: 14,337 (74.5%) 1: 3,286 (17.1%) 2: 997 (5.2%) 3: 636 (3.3%)	0: 6,752 (75.7%) 1: 1,470 (16.5%) 2: 419 (4.7%) 3: 275 (3.1%)	0: 3,819 (74.3%) 1: 919 (17.9%) 2: 255 (5.0%) 3: 149 (2.9%)	0: 2,092 (72.7%) 1: 523 (18.2%) 2: 161 (5.6%) 3: 110 (3.8%)	0: 1,077 (71.6%) 1: 256 (17.0%) 2: 104 (6.9%) 3: 68 (4.5%)	0: 603 (74.1%) 1: 119 (14.6%) 2: 58 (7.1%) 3: 34 (4.2%)
Clinical T- stage	cT1: 10,254 (53.3%) cT2: 6,680 (34.7%) cT3: 1,214 (6.3%) cT4: 1,108 (7.1%)	cT1: 5,144 (57.7%) cT2: 2,880 (32.3%) cT3: 487 (5.5%) cT4: 405 (4.5%)	cT1: 2,830 (55.0%) cT2: 1,746 (33.9%) cT3: 303 (5.9%) cT4: 263 (5.1%)	cT1: 1,427 (49.4%) cT2: 1,074 (37.2%) cT3: 192 (6.7%) cT4: 193 (6.7%)	cT1: 601 (39.9%) cT2: 631 (41.9%) cT3: 127 (8.4%) cT4: 146 (9.7%)	cT1: 259 (31.8%) cT2: 349 (42.9%) cT3: 105 (12.9%) cT4: 101 (12.4%)
Primary Surgery	Lumpectomy: 11,855 (61.6%) Mastectomy: 6,032 (31.3%) No Surgery: 1,369 (7.1%)	Lumpectomy: 5,863 (65.8%) Mastectomy: 2,614 (29.3%) No Surgery: 439 (4.9%)	Lumpectomy: 3,259 (63.4%) Mastectomy: 1,603 (31.2%) No Surgery: 280 (5.4%)	Lumpectomy: 1,649 (57.1%) Mastectomy: 976 (33.8%) No Surgery: 261 (9.0%)	Lumpectomy: 736 (48.9%) Mastectomy: 579 (38.5%) No Surgery: 190 (12.6%)	Lumpectomy: 354 (43.5%) Mastectomy: 261 (32.1%) No Surgery: 199 (24.4%)
Axillary Surgery	Sentinel Lymph Node Biopsy: 13,087 (68.0%) Axillary Dissection: 3,351 (17.4%) None: 2,818 (14.6%)	Sentinel Lymph Node Biopsy: 6,783 (76.1%) Axillary Dissection: 1,449 (16.2%) None: 684 (7.7%)	Sentinel Lymph Node Biopsy: 3,697 (71.8%) Axillary Dissection: 917 (17.8%) None: 528 (10.2%)	Sentinel Lymph Node Biopsy: 1,768 (61.2%) Axillary Dissection: 571 (19.8%) None: 547 (19.0%)	Sentinel Lymph Node Biopsy: 677 (45.0%) Axillary Dissection: 285 (18.9%) None: 543 (36.1%)	Sentinel Lymph Node Biopsy: 168 (20.6%) Axillary Dissection: 129 (15.8%) None: 517 (63.5%)
Radiation	Radiation: 11,474 (60.0%) No Radiation: 7,782 (40.4%)	Radiation: 5,889 (66.0%) No Radiation: 3,027 (34.0%)	Radiation: 3,277 (63.7%) No Radiation: 1,865 (36.3%)	Radiation: 1,562 (54.1%) No Radiation: 1,324 (45.9%)	Radiation: 580 (38.5%) No Radiation: 925 (61.5%)	Radiation: 644 (79.1%) No Radiation: 170 (20.9%)
Chemotherapy	Chemotherapy: 12,624 (65.6%) No Chemotherapy: 6,632 (34.4%)	Chemotherapy: 7,292 (81.8%) No Chemotherapy: 1,624 (18.2%)	Chemotherapy: 3,622 (70.4%) No Chemotherapy: 1,520 (29.6%)	Chemotherapy: 1,294 (44.8%) No Chemotherapy: 1,592 (55.2%)	Chemotherapy: 346 (23.0%) No Chemotherapy: 1,159 (77.1%)	Chemotherapy: 71 (8.7%) No Chemotherapy: 743 (91.3%)

Benign

1987290 - Factors Influencing Recurrence Rates in Idiopathic Granulomatous Mastitis: A Single Center Experience from a Low Middle Income Country

Syeda Maryam Kazmi, N/A, Sana Zeeshan, Muhammad Mehmood Riaz

Aga Khan University, Karachi, Sindh, Pakistan

Background/Objective: Idiopathic granulomatous mastitis (IGM) is a rare chronic inflammatory condition of the breast that usually affects women of childbearing age. Common presentations include breast lumps, tenderness, ulceration and abscess formation. The condition is often misdiagnosed as breast cancer and despite the advent of standardized treatment guidelines, disease management remains varied in our setting leading to unsatisfactory outcomes. We aimed to review the clinical practice related to management of IGM in a tertiary care hospital of Karachi, Pakistan in order to identify its clinical presentation, management approach and response to treatment in terms of recurrence.

Methods: A retrospective observational study was conducted at a tertiary care center in Karachi, Pakistan. Cases were retrieved from the pathology database from January 2017 to April 2022. Patients age ≥ 18 years with histologically proven IGM were included. Patient demographics, clinical presentation, management approach and response to treatment were recorded and they were followed up for 6 months after completion of treatment.

Results: A total of 48 cases were included. All of them were females with a mean age of 35 years. Family history of breast cancer was reported in 2.1% of patients. 75% of patients had a suspicion of cancer at presentation. The most common presentations included lump (40%), pain (35%), and abscess like presentation (22%). The majority of cases (71%) had granulomatous inflammation on histopathological examination. Half of the patients (50.5%) presented with advanced stage disease (Stages 3 and 4), as per the clinical staging established in the international guidelines for granulomatous mastitis. The most common site of involvement was the upper outer quadrant with no side preponderance. 45.8% of patients were treated medically whereas 41.7% underwent surgical intervention as well, with quadrantectomy being the most common procedure. Medical treatment included non-steroidal anti-inflammatory drugs (NSAIDs) (81.2%), oral corticosteroids (43.8%) and immunosuppressants (25%). A lower risk of recurrence was noted in patients treated with immunosuppressants and those that had responded to treatment with NSAIDs. No significant correlation was identified with the duration of treatment. Patients having an abscess-like presentation were more likely to have recurrence.

Conclusions: This study highlights the difficulties of managing IGM, often clinically misunderstood as malignancy due to its varied presentations. Among our patients, the recurrence rate exceeded 40%, with abscess-like presentation, response to NSAIDs, and immunosuppressant use as significant predictors identified at six months on multivariate analysis. While international guidelines recommend steroids as first-line therapy, NSAIDs were predominantly used in our patients, achieving a 69% response rate. Moreover, treatment with NSAIDs and immunosuppressants was associated with a lower recurrence risk, suggesting their potential benefit in cases where steroids are unsuitable. These findings emphasize the need for tailored therapeutic strategies to reduce recurrence and enhance

outcomes in IGM. Further studies are warranted to validate these results and explore additional risk factors within our population.

Table 1: Multivariate Logistic Regression Analysis for Predictors of Recurrence at 6 months

Predictors	Odds Ratio (95% Confidence Interval)	p- value
Abscess like presentation	6.56 (1.17 -36.67)	<0.001
Responded to NSAIDs	0.05 (1.1- 10.81)	<0.001
Responded to Immunosuppressants	0.02 (1.86- 31.11)	<0.001

1988586 - Is Surgery a Lasting Solution for Idiopathic Granulomatous Mastitis?

Christina Bae, Cameron Jackson, Reece Kimball, Daniel Milgrom, Steven Colquhoun, Danny Yakoub, Alicia Arnold

Medical College of Georgia, Augusta, GA

Background/Objective: Idiopathic granulomatous mastitis (IGM) is a rare benign, chronic inflammatory condition characterized by non-caseating granulomas and micro-abscesses in the breast lobules with an incidence rate of 0.37%. Treatment strategies vary widely, ranging from conservative approaches – such as observation, antibiotics, steroids, and methotrexate – to more extensive surgical interventions. This study aims to evaluate the impact of proper surgical management on recurrence-free outcomes in patients with treatment-resistant IGM.

Methods: A single-institution retrospective cohort study was conducted, identifying patients who underwent surgical intervention between 2017 and 2024 with pathologically confirmed IGM. Surgery did not include simple incision and drainage procedures. Surgical intervention was defined by resection or unroofing of involved granulomas with mobilization and closure of healthy breast tissue over a drain for definitive treatment. Patient demographics, clinical characteristics, and treatment details were evaluated, with the primary outcome being the number of recurrence-free days after definitive surgical debridement.

Results: Thirteen patients underwent surgical intervention for IGM, with an average age of 36.4 years at presentation. The most common initial presenting symptoms of IGM were breast pain and swelling (n=11), and a significant number had skin ulceration (n=6). Patients underwent an average of 3.8 non-surgical treatments, including antibiotics, steroids, and in-office incision and drainage (I&D) prior to surgical debridement. Two patients had a recurrence in the ipsilateral breast following their initial surgery, but all achieved complete resolution (CR) after repeat debridement. Eleven patients have not yet had a recurrence since their procedure, and the current average number of recurrence-free days for the primary breast was 672 days, with ongoing long-term follow-up planned. Two patients developed contralateral breast involvement, a known sequelae of IGM, and both achieved CR with surgical debridement, with an average recurrence-free duration of 859 days.

Conclusions: Although conservative measures should be considered initially, postponing surgical intervention for resection/unroofing breast granulomas for IGM may lead to an uncomfortable and prolonged disease course without definitive solution. Concerns about cosmetic outcomes often drive conservative management; however, careful incision planning, mobilization of healthy tissue, and closure over a drain can optimize both clinical and cosmetic results, yielding excellent long-term results.

Table 1: Patient Breakdown of IGM Treatment

Patient ID	Laterality Left (L) or Right (R) Breast	Conservative Interventions (#)	Surgical Intervention	Recurrence? Yes (Y) or No (N) If yes, treatment.	Time Disease-Free since Surgery (Days)
1	L	4	I&D, Debridement, Nipple correction, Drain placement	N	177
1	R	2	I&D, Debridement, Drain placement	N	84
2	R	17	Debridement, Excisional biopsy, Drain placement	N	156
3	L	4	I&D, Drain placement	N	396
4	R	3	Ultrasound guided duct excision, Tissue rearrangement	N	468
5	R	2	I&D, Debridement, Tissue rearrangement, Drain placement	N	171
6	L	0	Debridement, Tissue rearrangement, Drain placement	Y Prednisone x1	1016
7	L	1	Debridement, Tissue rearrangement, Drain placement	N	740
8	R	4	Debridement, Drain placement	N	18
9	R	3	Partial mastectomy, Tissue rearrangement, Drain placement	N	305
10	L	4	Debridement, Tissue rearrangement, Drain placement	N	1190
11	L	7	Debridement, Drain placement	N	279
12	L	4	Debridement, Drain placement	N	1710
12	R	1	Debridement, Drain placement	N	1634
13	R	3	I&D, Drain placement	Y Surgery x5, Antibiotics x8	21
13	L	2	N/A	N	N/A

Complications

1987904 - Incidence of axillary web syndrome, pain, and other functional complications after axillary lymph node dissection in breast cancer patients

Kristen Williams[1], Katherine Lecroy[2], Margaret Lillie[3], Kristalyn Gallagher[4], Chris Agala[5], David Ollila[5], Sasha Knowlton[4], Philip Spanheimer[4], Julia Selfridge[4]

[1]University of North Carolina School of Medicine, Huntersville, NC, [2]University of North Carolina School of Medicine, Charlottesville, VA, [3]Lineberger Comprehensive Cancer Center, Carrboro, NC, [4]University of North Carolina, Chapel Hill, Chapel Hill, NC, [5]UNC Chapel Hill School of Medicine Chapel Hill, NC

Background/Objective: Axillary lymph node dissection (ALND) remains a commonly utilized procedure for breast cancer patients with bulky nodal disease and patients with residual disease after neoadjuvant systemic therapy. We sought to evaluate the incidence of axillary web syndrome (AWS, also referred to as "cording"), paresthesia, restricted range of motion, neck or shoulder weakness, as well as complications such as seroma, bleeding, and infection that could affect functional status and quality of life.

Methods: A retrospective medical record review was performed on breast cancer patients from an academic institution from 2017 to 2021 that underwent ALND. Clinicopathologic information was collected to assess the patients for disease staging and nodal burden, neoadjuvant and adjuvant therapies, surgical complications, and incidence of specific axillary sequelae after ALND. Surgical complications and axillary symptoms related to surgery were identified based on documentation in physical therapy or other clinical records. Descriptive statistics were utilized to evaluate the incidence of select axillary outcomes within the study population.

Results: A total of 278 patients met inclusion criteria. 98.6% of patients were female. 58.5% had clinical N1 staging, 9.4% were cN2, and 6.8% were cN3. 58.3% underwent neoadjuvant chemotherapy and 15.8% were treated with neoadjuvant endocrine therapy. 9.4% of those included underwent ALND for axillary recurrence. 75% of patients received axillary reverse lymphatic mapping at the time of surgery. 87.9% of patients received adjuvant radiation. Post-operative seroma was noted in 13.0% of patients, while 5.4% were treated for infection, and 0.7% were reported to have hematoma requiring operation. 50.9% of these patients underwent a documented physical therapy evaluation within six months of surgery. 18.2% reported neck or shoulder weakness and 41.4% experienced pain in these locations. 40.9% reported axillary and upper extremity paresthesia. 60.1% reported restricted range of motion and 50.9% experienced axillary web syndrome related to surgery.

Conclusions: Post-operative sequelae such as AWS, paresthesia, neck or shoulder weakness and pain, as well as reduced range of motion were common after ALND in this patient population. Physical therapy utilization was high. These outcomes may be under-reported and should be accounted for when counseling patients for ALND.

Table 1: Clinical Characteristics and Treatment Course of Patients in this study (N = 278)

Clinical Characteristics and Treatment Course of Patients in this study (N = 278)	
AJCC Clinical Tumor Staging	
Stage 0	1 (.36%)
Stage IA	13 (4.68%)
Stage IB	15 (5.40%)
Stage IIA	47 (16.91%)
Stage IIB	63 (22.66%)
Stage IIIA	43 (15.47%)
Stage IIIB	25 (8.99%)
Stage IIIC	22 (7.91%)
Stage IV	2 (.72%)
Prior Breast Surgery	49 (17.63%)
Prior Axillary Surgery	23 (8.27%)
Neoadjuvant Treatment	
Chemotherapy	162 (58.27%)
Radiation	2 (.72%)
Endocrine Therapy	44 (15.83%)
Immunotherapy	46 (16.55%)
Menopausal Status	
Pre	88 (31.65%)
Post	180 (64.75%)
Comorbidities	
DM related organ damage	4 (1.44%)
Moderate to Severe CKD	13 (4.68%)
Smoking Status	
Never	183 (65.83%)
Former	70 (25.18%)
Current	25 (8.99%)

1988013 - Antibiotic Prophylaxis in Breast Cancer Surgery without Reconstruction: a Systematic Review and Meta-Analysis

Brooke Mazur-Ng[1], Ekaterina Kouzmina[2], Colleen Kerrigan[3], Gary Ko[2], Rina Lee[2], Matin Arabkhari[2], Simran Sandhu[4], Marie-Félixe Granger[5], Philip Lam[6], David Lim[7]

[1]McMaster University, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]Princess Margaret Cancer Centre, University Health Network, Toronto, ON, Canada, [4]National University of Ireland Galway, Toronto, ON, Canada, [5]Université de Sherbrooke, Sherbrooke, PQ, Canada, [6]University of Toronto and Sunnybrook Health Sciences Centre, Toronto, ON, Canada, [7]Women's College Hospital, Toronto, ON, Canada

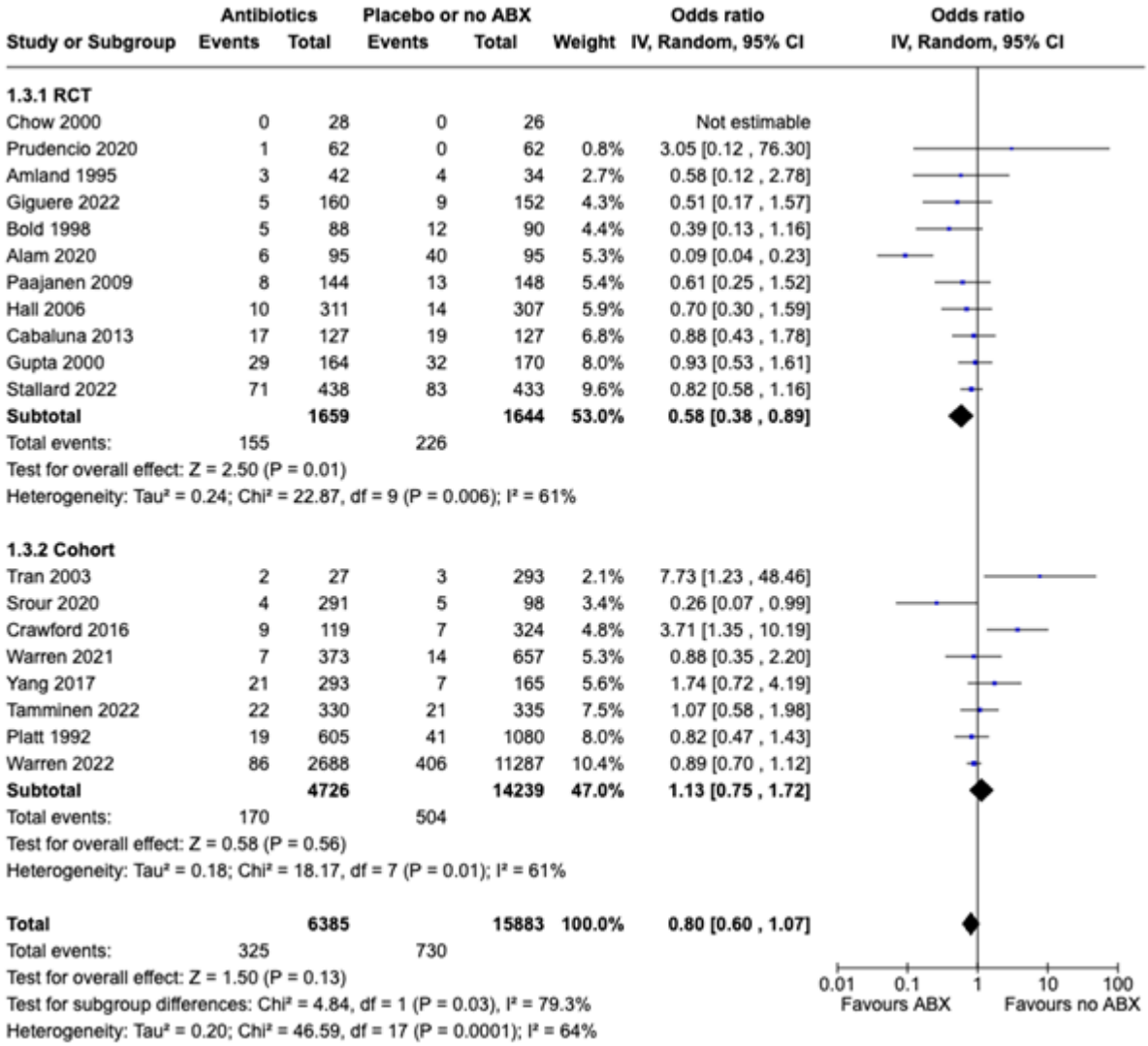
Background/Objective: Administering antibiotics prophylactically in surgery is a routine practice to prevent surgical site infection (SSI). However, antibiotic use has drawbacks, such as antibiotic resistance, increased costs, and potential antibiotic-related complications. Although breast cancer surgeries are relatively 'clean,' a high and variable SSI rate is still observed. SSIs in these surgeries often lead to worse post-surgical outcomes, including delayed adjuvant treatment, higher costs, and re-operation. This review investigates the impact of antibiotic prophylaxis in breast cancer surgeries.

Methods: A literature search was conducted with the assistance of an academic librarian using Web of Science, MEDLINE, Embase, and CENTRAL databases. Randomized controlled trials (RCTs), cohort studies, and case-control studies investigating patients undergoing breast cancer surgeries and receiving perioperative antibiotic prophylaxis were included. We excluded patients having immediate reconstruction or cosmetic breast surgeries including reduction mammoplasty. Comparisons were based on receipt of antibiotic prophylaxis and post-surgical outcomes (i.e., SSI incidence, etc.). Two reviewers independently screened each study, extracted data, and appraised the quality of selected studies. Quality assessment was performed using the Cochrane Risk of Bias (ROB) tool for RCTs and the Newcastle-Ottawa Scale (NOS) for non-randomized studies. Our data was synthesized in a narrative review, and a meta-analysis was performed where applicable. The Mantel-Haenszel fixed effects model was applied for analyses with low heterogeneity, and the inverse variance random effects model for those with high heterogeneity.

Results: Among 7377 studies, 25 studies dating from 1992 to 2023 met eligibility criteria and were reviewed. Of these, four were excluded due to poor quality. Three were not included in the meta-analysis due to incomparable patient groups and outcome measures, totaling 6385 included participants. In the narrative review, antibiotic prophylaxis did not significantly reduce SSI in patients undergoing lumpectomy overall but was effective in patients with a body mass index (BMI) ≥ 25. For mastectomy patients, antibiotics had a variable impact on SSI rates (one study showed a protective effect, four showed an insignificant protective effect, and three showed no effect). Ten studies that examined multiple breast cancer surgery types (e.g. lumpectomy, mastectomy, etc.) showed high variability in antibiotic effectiveness and a lack of consensus. In a meta-analysis, antibiotics were found to have no effect on preventing SSIs (odds ratio (OR) 0.80 [0.60, 1.07]). There was a protective effect in the RCT studies (OR 0.58 [0.38, 0.89]); however, no significant difference was found in cohort studies (OR 1.13 [0.75, 1.72]). Additional analysis of a subgroup of patients who had mastectomy only found an insignificant reduction in SSI rates.

Conclusions: Antibiotic prophylaxis may significantly reduce the incidence of SSI and may be most effective in patients with BMI over 25. Ambiguity remains due to significant study heterogeneity and lack of consensus, particularly in cohort studies and regarding other risk factors such as diabetes and localization methods. A large, contemporary multi-center RCT on antibiotic prophylaxis in breast surgery without reconstruction is warranted.

Figure 1. Any antibiotics versus none or placebo, separated by study type (RCT and cohort). Inverse variance random effects model used due to high I^2 value.



1988144 - Nerve transection with muscle embedding during mastectomy: a novel surgical technique to decrease postoperative mastectomy pain syndrome.

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Background/Objective: Mastectomy is a procedure that is being increasingly performed for both curative and risk reducing reasons. A common sequela after mastectomy is the development of postmastectomy pain syndrome (PMPS), defined as persistent pain present three months after the procedure. PMPS affects up to 25-60% of patients after mastectomy. Its etiology is poorly understood but believed to be iatrogenic, secondary to injury of the sensory T4 and T5 spinal nerves with subsequent neuroma formation. Recently, attempts have been made to dissect these nerves to re-establish sensation with nerve grafting. In this abstract, we propose a novel surgical technique to prevent neuroma formation for patients who are not candidates for sensation preserving surgery.

Methods: We performed an IRB approved case series evaluating patients who had undergone T4 or T5 spinal nerve reimplantation during mastectomy. Nerve endings were identified in the lateral tissue plane during mastectomy, dissected out to allow for adequate length, transected sharply, crushed, and then embedded into muscular tissue. Immediate intraoperative and postoperative data was collected from the EMR including, presence of complications, and postoperative pain. Long-term outcomes including self-reported pain, need for opioids and need for referral to pain management were recorded.

Results: 37 patients had dedicated transection of sensory nerves with muscle embedding during mastectomy between 2022-2024, with follow up ranging from 3-16 months. Mean age was 56.2 years, ranging from 29 to 76 years. Mean BMI was 29.8 (24-32). Three patients were smokers. Risk factors for chronic postoperative pain included preoperative use of opioids or methadone (3), personal history of IV drug abuse (1), anxiety (14), depression (8), other psychiatric history (4). Cancer was the indication for the procedure for most patients (n=33, 89%). The most common surgical technique was simple mastectomy without immediate reconstruction (n=22, 59%). Of the 15 patients who had immediate reconstruction, 10 had skin sparing and 5 had nipple sparing mastectomy. Bilateral procedures were done for 23 patients (62%). Of these, 7 had nerve embedding bilaterally, and 16 had unilaterally. Axillary surgery was performed for 30 patients (29 sentinel lymph node biopsies, 1 axillary node dissection). 20 nerves were inserted into serratus anterior muscle, 12 into pectoralis major and 4 into pectoralis minor. The muscle was not specified for another 3 patients. Average length of stay was 0.8 days, ranging from 0 to 5 days. Postoperative complications such as seroma, hematoma or infection were experienced by 11 patients (29%). In the immediate postoperative period, 4 patients reported transient nipple sensation or the feeling of a letdown. One patient, who had unilateral treatment, noted less pain at the treated side. One patient only used opiates three months after the procedure for pre-existing chronic neuropathic pain.

Conclusions: Nerve transection with muscle embedding during mastectomy is a novel technique that was performed successfully in this patient cohort with good postoperative pain outcomes. Additional data is still needed to evaluate the long-term outcomes of the treatment and compare it to alternative surgical techniques.

1987898 - Seroma Reduction with Interi, a Novel internal Negative Pressure System, in Aesthetic Flat Closure Mastectomy

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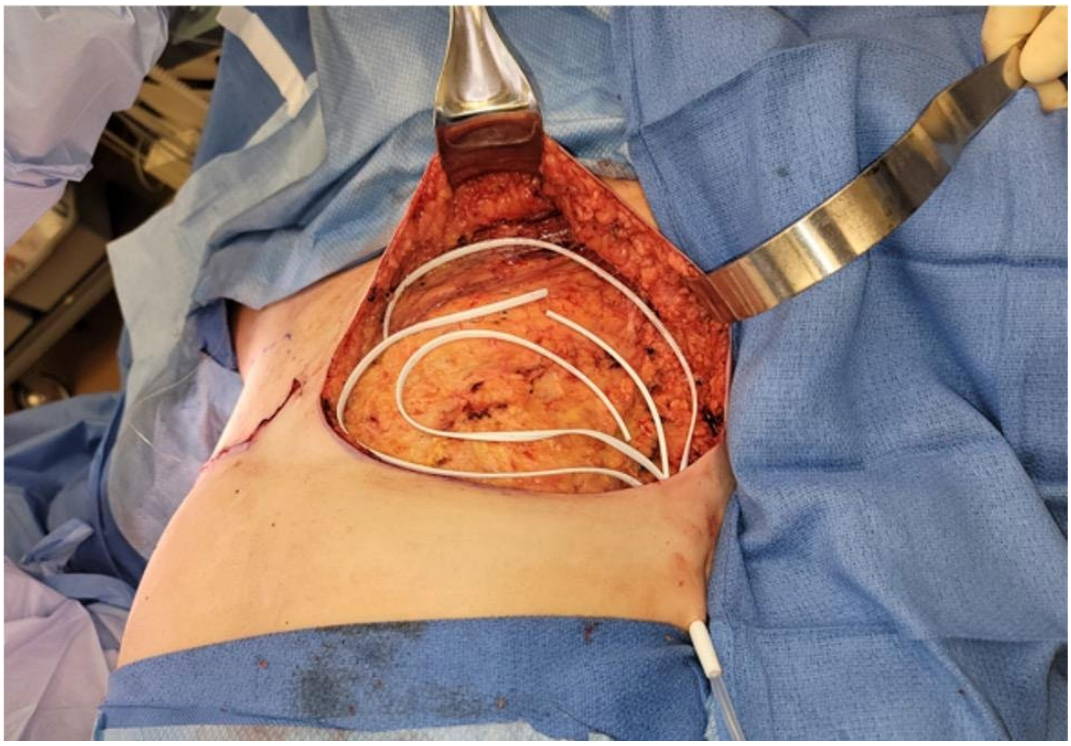
Background/Objective: This study evaluated the safety and effectiveness of the Interi System compared with standard drains in patients undergoing aesthetic flat closure mastectomy. The Interi System is an internal negative pressure delivery system with an internal manifold of four "peel-apart" channel branches connected to an external therapy unit. Interi simultaneously delivers continuous negative pressure of 125mm Hg to tissue planes and removes excess fluid, leading to immediate elimination of dead space within this interface. Based on this mechanism of action, it is expected that Interi has the potential to improve internal surgical wound healing, leading to a reduction in seroma, edema, and other complications compared to standard drains.

Methods: Consecutive patients undergoing mastectomy followed by incisional closure performed by the author (R.P.) between 12/2018 – 4/2024 were included in this study. Patients undergoing immediate breast reconstruction following mastectomy were excluded. Patients were divided into two cohorts for analysis, based on receiving either standard surgical drains or Interi System at the time of wound closure following mastectomy. In patients receiving Interi, branches of the Interi manifold were placed in the subcutaneous space to achieve maximal coverage within the site. The manifold tubing exited the skin inferolateral to the incision (Figure 1) and was attached to a therapy unit. Patients were discharged with replacement therapy units and taught to monitor fluid level and exchange therapy units when full. Patient records were reviewed and data on demographics, comorbidities, neoadjuvant radiation, type of mastectomy, mastectomy specimen weight, postoperative complications, and drain or Interi manifold duration were retrieved, tabulated, and compared between the two cohorts.

Results: A total of 28 patients (46 breasts) were included in this study: 14 patients (22 breasts) in the Interi cohort and 14 patients (24 breasts) in the standard drain cohort. Patients were well matched in all demographic and procedure-related variables. Mean length of follow-up for the Interi patients, the most recent cohort, was 10 months. Complications developed in 10 breasts (45.5%) in the Interi group and 16 breasts (66.7%) in the standard drain group ($P = 0.234$), including seromas (9.1% vs 41.7%) and minor wound complications (33% vs 38%). The incidence of seroma was significantly lower in the Interi group ($P = 0.018$). No infection, hematoma, or reoperation occurred in either group. Interi duration was shorter than drains (15.8 vs 18.2 days) ($P = 0.208$). The Interi System is single-use, disposable mechanical system operating without batteries or alarms. Interi patients did not report difficulties using the system or unexpected pain during use. Patients received a fanny-pack to hold the therapy unit allowing for return to normal activities in and out of the home.

Conclusions: The Interi System is a safe and effective therapy for patients undergoing aesthetic flat closure mastectomy. By providing continuous internal negative pressure to deep tissue planes, Interi System offered significant improvement over current standards of care for seroma prevention in mastectomy surgery.

Figure 1: Interi System manifold branches in mastectomy surgical site with single exit site inferolateral to the incision.



1967566 - Treatment Outcomes of Complex Surgical Breast Wounds Utilizing Fully Synthetic Electrospun Fiber Matrix

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Background/Objective: Common breast procedures can result in complex, recalcitrant surgical wounds that require comprehensive wound management whether performed for benign, malignant, or cosmetic purposes. Complex wounds can be difficult to heal due to paucity of tissue or underlying co-morbidities or active disease that impedes wound healing. Complex wounds with prolonged healing are at higher risk of developing infection. Other chronic wounds such as diabetic foot ulcers and venous leg ulcers have been extensively studied, and commonly acellular dermal matrices have been applied to accelerate wound healing. The nature of biologic materials can run the risk of inducing a chronic inflammatory response. An alternative option is synthetic electrospun fiber matrix (SEFM), which is composed of polyglactin 910 and polydioxanone. As the SEFM degrades via hydrolysis, a local acidic wound environment forms while promoting cellular ingrowth and neovascularization. This study examines the use of a fully synthetic electrospun fiber matrix (SEFM) in the treatment and management of various complex surgical complications following breast procedures.

Methods: Patient data was collected utilizing a retrospective review of medical records of a surgeon with a special interest in surgical breast and oncology procedures. Patients with a complex breast wound resulting from simple mastectomy with or without radiation, reduction mammoplasty, oncoplastic or fungating wounds from January 2022 to October 2024 were identified. Inclusion criteria included: 18 years or older, no known allergies to polyglactin 910 or polydioxanone, and received at least one SEFM application in sheet or particulate form.

Results: A total of 9 patients with 10 wounds were identified. The breakdown of wound etiology was as follows: 3 (30%) mammoplasty, 2 (22%) simple mastectomy with radiation, 2 (22%) simple mastectomy without radiation, 1 (11%) oncoplastic, and 1 (1%) fungating breast cancer on therapy. All (100%) wounds had failed previous standard of care therapies. Some patients had co-morbidities known to negatively affect the wound healing process: such as diabetes, obesity, and immunosuppressants. Time to goal of definitive treatment or closure depended on wound etiology. Two (22%) of women who had mastectomy and radiation had a reduction in wound size but were ultimately referred to plastics for flaps to accelerate closure and minimize infection. The remaining patients, n = 7 (78%), did not need additional surgical procedures. There were no complications related to the SEFM treatment.

Conclusions: Time to post-operative wound closure can be vital when determining a patient's treatment plan for a chronic or serious illness. Reducing the time needed to heal surgical wounds can mean earlier progression to adjuvant therapies or simply an increase in quality of life. The successful treatment of these 9 wounds with the SEFM after failing previous therapies afforded the patients the ability to quicker wound healing without negatively affecting any underlying conditions. The use of SEFM offers an alternative to accelerate wound healing in hard to heal wounds in an at risk population.

CPM

1987468 - Implementation of an interactive decision aid for women considering contralateral prophylactic mastectomy: A pilot study

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Background/Objective: Despite evidence of no oncologic benefit and related attempts to discourage the practice, average-risk patients diagnosed with unilateral breast cancer continue to request and consider contralateral prophylactic mastectomy (CPM).The goal of this pilot study was to develop and assess the effectiveness of a novel patient decision aid (PDA) in improving informed shared decision-making regarding CPM.

Methods: A mixed methods approach was utilized to develop a PDA for patients requesting CPM. Semi-structured interviews and surveys were administered by a nurse interventionist from 2020-2022. The PDA was administered to patients at a comprehensive breast care center that required a unilateral mastectomy and were requesting CPM. Patients with advanced stage cancer or a pathologic mutation were excluded. The PDA was administered following initial surgical consultation and then reviewed at the pre-treatment counseling visit. The Decisional Conflict Scale (DCS) was administered pre-post PDA and the Decision Regret Scale (DRS) was administered 6-8 weeks postoperatively.

Results: Twenty-one patients enrolled, 5 patients completed qualitative study measures only and 5 were lost to post-surgical follow-up. Following PDA use, 2 of the initially undecided participants (67%) established a preference, with 2 electing to proceed with CPM. Of the participants with an initial preference, 1 changed from CPM to single mastectomy. Prior to the PDA, the average decisional conflict score among participants was 9% (range 0-30%) compared with 0% after the PDA. Prior to the PDA, the average uncertainty subscale was 19% (range 0-100%) compared with 0% after. Only 16 participants completed the Decision Regret Scale (DRS). DRS scores were low with 56% (9/16 patients) scoring 0; no regret (N=16, min-max 0-90, mean = 12). One participant endorsed high regret, scoring 90 on the DRS post single-mastectomy without reconstruction. All patients (16/16) endorsed a need for increased psychosocial support at the time of first surgical consultation that participated in the semi-structured interview. Participants (16/16) reported that previous social network histories or perspectives related to cancer informed their decision and wanted a structured dialogue to include these experiences in the clinical discussion.

Conclusions: The PDA effectively reduced decisional conflict for women considering CPM. Participants found it helpful for shared decision-making and provided an opportunity to discuss their thoughts in a supportive, structured approach.

Table 1. Participant characteristics

Age (years)	N=21, min-max 25-78, mean = 53
Sex, female	21 (100.0%)
Self-reported race/ethnicity	
White	17 (81%)
African American	2 (10%)
Asian	2 (10%)
Marital Status	
Partnered	13 (62%)
Single	5 (24%)
Divorced or Separated	2 (10%)
Widowed	1 (5%)
Primary language, English	18 (86%)
Highest level of school completed	
High school	6 (29%)
Associate degree	1 (5%)
Bachelor's degree	7 (33%)
Graduate degree	7 (33%)
Family income, ≥ $80,000 per year	14 (67%)
Insurance status, insured	21 (100.0%)
Pre-intervention Surgical Preference	N=15
Unilateral Mastectomy	3
CPM	10
Unsure	2
Post-intervention Surgical Preference	N=15
Unilateral Mastectomy	5
CPM	10
Unsure	0
Surgical Procedure Received	N=19
Unilateral Mastectomy	5 (26%)
CPM	14 (74%)

Contralateral prophylactic mastectomy (CPM)

DCIS

1953446 - The Association between Surgical Margins and Local Recurrence in Women with ductal carcinoma in situ treated with Breast-Conserving Therapy: observational study

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Background/Objective: The incidence of DCIS (DCIS) constitutes 25% of the newly identified breast cancers. Approximately 35% of DCIS cases are detected in asymptomatic women during routine mammography screening. The 20-year breast-cancer-specific mortality rate was 3.3%. Breast-conserving surgery(BCS), followed by radiotherapy, is the treatment of choice. However, an adequate margin for BCS remains unclear. Therefore, we need to investigate the relationship between the margin distance and cancer recurrence.

Methods: A total of 4,355 patients with DCIS were assessed between January 1, 2010, and January 31, 2020. Of these, 4,123 patients who had invasive ductal carcinoma co-existing DCIS and who were treated with mastectomy were excluded. Thus, 232 patients with pure DCIS treated with BCS were included. All distant radial margins were measured.

Results: A total of 232 patients with DCIS underwent breast-conserving surgery,169 patients received whole breast radiotherapy, and 63 did not. Most patients received hormone therapy, and as indicated, the median follow-up was 73 months. Recurrence was observed in seven patients. Among them, four had margins less than 2 mm, while the others had margins > 2 mm. There were no significant differences in disease-free survival (DFS) among the margin statuses.

Conclusions: Margins wider than 2 mm did not demonstrate a reduction in local recurrence for women receiving adjuvant whole-breast radiation therapy, supporting the recommendation of a negative margin threshold for surgical management of DCIS.

Table 1. The nearest margin factors associated recurrence

Table 6 Summary of patients who have recurrence.

Number	Age	Grade	ER (%)	PR (%)	HER2	Ki67 (%)	Nearest margin(mm)	Endocrine treatment	RT	Recurrence	DFS(months)
1	46	1	98	98	-	-	1	Yes	Yes	Local	69
2	64	2	95	80	0	5	1	Yes	Yes	Systemic	41
3	54	2	0	0	-	0	4	No	Yes	Local	73
4	54	3	0	0	3+	60	3	no	Yes	Local	39
5	38	2	80	90	0	10	1	Yes	Yes	Local	102
6	40	2	10	0	0	20	7	Yes	Yes	Local	69
7	49	2	80	20	3+	5	2	Yes	Yes	Local	46

Disparities

1978161 - Bridging the Gap: Incidence of Receptor Positivity by Age and Secondary Characteristics in Young Women with Breast Cancer in Rural Appalachia

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Joan C. Edwards School of Medicine at Marshall University, Huntington, WV

Background/Objective: Socioeconomic disparities faced by young women with breast cancer in rural Appalachia is well described within the literature as contributing to increased morbidity and mortality. Little is documented, however, on the incidence of specific receptor types based on age grouping within this population. In this study, we quantified receptor positivity incidence among women ≤40 years and >40 years as well as any contributing secondary factors.

Methods: A retrospective chart review was performed of women < 50 years diagnosed with any breast cancer from 2012-2022 living in rural Appalachia via electronic medical record from a single institution. Exclusion criteria was a Stage 4 initial diagnosis. Women were categorized as very young women (≤40 years) and young women (>40 years). Analyses were conducted at the patient level through statistical analytic software SAS 9.4. Descriptive statistics were performed. Logistic regression analysis explored the association between age group and hormone receptor status, adjusting for tumor characteristics and social factors. We used both univariable and multivariable analysis to control the effect of each variable.

Results: Of 408 women, 107 were classified as very young women (age 26-40, 26.2%) and 301 were young women (age 41-49, 73.8%). Very young women had a higher prevalence of grade 3 tumors (67.7%, p=0.025) and presented with Stage II disease (35.6%, p=0.004) whereas young women had a higher prevalence of presenting with grade 2 tumors (75.5%, p=0.025) and Stage I disease (78.5%, p=0.004). The incidence of estrogen and progesterone receptor positivity was higher in young women compared to very young women (74.1% and 63.6%, p=0.013) and (62.1% and 54.2%, p=0.025), respectively. There was no significance of incidence between age groups and HER2 positivity (p=0.331). Secondary factors such as lower tumor stage and lower node status contributed to a higher likelihood of estrogen and progesterone positive receptors (Stage 0: p=0.0012) (Stage 1: p=< 0.0001) and decreased likelihood of HER2 positive receptors (p=0.027), respectively. Those who smoked had a reduced likelihood of estrogen receptor positivity (p=0.028) while those who drank alcohol had a reduced likelihood of estrogen (p=0.043) and progesterone positive receptors (p=0.001).

Conclusions: Young women (>40 years) had lower grade and stage tumors along with higher incidence of having estrogen and progesterone positive receptors at initial diagnosis as compared to their younger counterparts (≤40 years). While this is consistent with current literature on young women with breast cancer, it is new data for both young women and very young women in rural Appalachia. Rural Appalachian women < 50 who drank alcohol had a reduced likelihood of having estrogen and progesterone receptor positivity which contrasts with the current literature. The age grouping and results within our study underscores the need for not only better guidelines specific to very young women living in rural Appalachia but also the exploration of potential environmental factors as the driving cause for cancers in our area. Future studies need address sustainable

interventions for earlier diagnosis of very young women within this at-risk population and potential environmental causes.

1983519 - Feasibility of Same Day Mastectomy Discharge in a Safety Net Hospital in Memphis, TN

Linnea Cripe[1], Imani Sweatt[2], George Michael[2], Saskya Byerly[2], Martin Fleming[2], Ashley Hendrix[2], Miriam Tsao[3]

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Background/Objective: Prior to the pandemic, patients undergoing mastectomy were typically admitted overnight for observation, pain control, and next day wound check in our healthcare system. The objective of this study is to assess the feasibility and safety of same day mastectomy discharge necessitated during covid for patients based on clinical and social determinants of health (SDH) in a safety net hospital.

Methods: A retrospective study was performed for patients who underwent mastectomy at this Memphis hospital between 2021- 2024. Demographics, clinical characteristics, SDH and outcomes were abstracted, and patients were stratified into two groups: same day discharge and admission following mastectomy. Univariate statistical analysis was performed for the two groups.

Results: 44 charts were reviewed with 26 (59.0%) patients discharged on the day of surgery and 18 (41.0%) patients admitted following surgery. Clinically, 61.1% of patients admitted underwent bilateral procedures versus 52.0% of patients who were not admitted (p value = 0.7). There were nearly equivalent rates of sentinel lymph node biopsy between the two groups (88.5% versus 88.9% p value = 1). Neoadjuvant chemotherapy, pain control pre or post operatively, and tumor size were all found not to be statistically significant indicators of same day discharge. Comparing social determinants between the two groups, patients who were not admitted had a higher rate of employment (70.0%) compared to those who were admitted (42.9%) (p value = 0.1). Patients admitted lived closer to the hospital as compared to patients who were discharged on the day of procedure (8.2 miles versus 10.6 miles, p value = 0.2). Primary language, disability status, alcohol or tobacco use, food or transportation insecurity were all found not to be statistically significant indicators of same day discharge.

Conclusions: Same day discharge is achievable for patients undergoing mastectomy at safety net hospitals due to improvements in pain management and SDH screening. Prior to operation, patients should have appropriate screening of social determinants to better understand who may benefit from admission following procedure.

1987891 - Leveraging Technology to Strengthen Breast Cancer Care Teams in Western Kenya

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Background/Objective: Breast cancer is the leading cancer diagnosis in Sub-Saharan Africa and outcomes are disproportionately poor. Inadequate access to healthcare services, limited number of breast cancer specialists and poor infrastructure compound the high burden of disease. Initiative Extension for Community Healthcare Outcomes (iECHO) is a telehealth education platform that utilizes a hub-and-spoke model; the hub team consists of specialty experts while local healthcare providers participate as spoke members. iECHO cohorts meet regularly via videoconferencing for a brief didactic lecture followed by a case presentation and facilitated discussion. The aim of this study is to leverage the impact of iECHO to bring together experts at a referral facility and local health facility to support providing quality specialty care within a resource stratified setting.

Methods: This retrospective analysis of prospectively gathered data from between October 2022 and December 2023, analyzes the impact of iECHO activities using descriptive statistics. Data was collected on iECHO initiated activities such as number of patients screened for breast cancer at the participant sites, number and cadres of staff who attended the iECHO, multi-disciplinary team discussions (MDT) held, topics discussed and areas of improvement in breast cancer management.

Results: A total of 105 participants attended the iECHO sessions, with the largest group comprising nurses (n=31, 29.50%), followed by physicians (n=20, 19.00%) and physician assistants (n=6, 5.70%). 58(55.2%) participants were from the national referral center, 21(20%) at the county level facility selected for development, and 26(24.8) at other sites. Thirty-five sessions of MDTs were held consisting of medical oncologists, radiation oncologists, breast surgeons, radiologists, and other allied professionals discussing care and improving treatment outcomes of patients through expert opinions. Through thematic analysis, key insights emerged on addressing financial barriers and enhancing patient care through accessible imaging and histology interpretation, emphasizing the importance of integrated diagnostic approaches. With the support of the cohort, the county facility began a multidisciplinary breast cancer clinic with representation from surgery and medical oncology in July 2023. 114 patients were seen in this clinic in the first six months. Numbers of patients seen annually at the referral center remained similar to prior years.

Conclusions: The utilization of the iECHO model presents an evolutionary approach to support breast cancer teams in Western Kenya. By creating capacity building among healthcare workers, enhancing real-time consultations with the resources available at a referral center, and increasing cancer awareness in the community, the iECHO platform can help bridge the gap in breast cancer management. Upscaling of iECHO through partner collaboration among healthcare stakeholders, policymakers, and communities is integral if the full potential of iECHO on breast cancer management is to be realized.

1987973 - Do disparities in race and income level exist with regards to the application of Oncotype DX?

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Background/Objective: Oncotype Dx is a useful tool to predict the recurrence risk in patients with early HR+/HER2- breast cancer, which helps to determine those patients who may benefit from chemotherapy. It has contributed successfully to an appropriate de-escalation of medical therapy and has become a standard of care test to assess the appropriateness of chemotherapy in the adjuvant setting. Our goal was to assess whether there was a disparity in the use Oncotype DX, especially among race and income level.

Methods: Using the SEER Medicare database, we analyzed breast cancer patients diagnosed from 2012 to 2017. Inclusion criteria were: HR+/HER2- phenotype, clinical Stages I and II in post-menopausal women, and Stage 1 cancers in pre-menopausal women. We used the exclusion criteria from Exact Sciences (insert source) and excluded those with incomplete staging. Differences in the application of the Oncotype DX test with regards to race and income level were studied using chi-square. Clinical significance was designated as a percentage difference greater than 2%.

Results: 133,435 patients were included. Of these, 99.1% were females, and 32.2% had Oncotype. The median age was 70 years (range 27-100). Most patients had invasive ductal carcinoma (81.0%) followed by invasive lobular carcinoma (12.5%). Among them, 67.8% were Stage I and 32.2% as Stage II. When comparing subgroups based on the use of Oncotype Dx, White race had a lower application rate (83.6% vs. 84.1%, $p=0.036$), compared to African-Americans (8.9% vs. 8.5%, $p=0.036$). Similarly, patients with ≥10% poverty index showed a lower frequency (46.2% vs. 47.5%, $p< 0.001$).

Conclusions: There was no clinically significant disparity in race and income level with regards to the application of Oncotype DX. This lack of disparity in the use of Oncotype DX in hormone positive breast cancer patients is reassuring to see as chemotherapy treatment regimens trend towards appropriate de-escalation.

1988540 - Should we stop surgically staging the axilla in Black women with DCIS? Our single institution experience with sentinel node biopsy

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Background/Objective: Surgical excision continues to be the mainstay of treatment for ductal carcinoma in situ (DCIS), with or without axillary staging. While sentinel node biopsy (SLNB) is generally recommended in the setting of mastectomy, it is occasionally also performed per surgeon discretion in the setting of high histologic grade, tumor size and/or mass-forming disease. Upgrade rates to invasive disease continue to hover in the 20-25% range in the literature, likely preventing routine de-escalation of axillary surgery in this population. While Non-Hispanic Black (NHB) women are known to be diagnosed with DCIS at older ages, it is unclear how axillary management differs in this population. DCIS, even when presenting with microinvasion, consistently yields low percentages of clinically actionable axillary disease. Additionally, the recently published SOUND trial argued in favor of axillary de-escalation in selected patients with invasive disease and negative preoperative imaging, particularly whenever the lack of pathological information does not affect the treatment plan. As we continue to de-escalate axillary staging in patients with invasive disease, we wondered whether continued use of SLNB in DCIS was warranted.

Methods: After IRB approval, we retrospectively identified NHB women diagnosed with DCIS on core needle biopsy from January 2020 to May 2024 at our institution, which serves a predominantly Black patient population. Patients that had concurrent invasive cancer on CNB were excluded. Descriptive statistics were used to analyze the rate of cancer upstaging on final pathology as well as trends in axillary management.

Results: A total of 58 patients met inclusion criteria, with a mean age of 59.4. All patients (100%) were self-identified NHB women. 50/58 (86.2%) were post-menopausal. 25/58 (43.1%) underwent mastectomy, while 33/58 (56.9%) underwent breast conservation. Patients who underwent mastectomy were more likely to have multicentric lesions on imaging ($p< 0.001$). There was no statistically significant association between type of surgery and presence of a mass on either imaging or exam. SLNB was performed in all 25 patients who underwent mastectomy, while 8/33 (24.2%) undergoing breast conservation had surgical axillary staging($p< 0.001$). A total of 3/58 (5.2%) patients upgraded to invasive disease on final surgical pathology – 2/3 of these underwent lumpectomy without SLNB initially and required a second visit to the operating room for axillary staging. No patients, including the 3 upstaged cases, had positive sentinel nodes on final pathology.

Conclusions: Our analysis of NHB women with DCIS showed a low rate (5.2%) of cancer upstaging on final pathology as well as no axillary metastases when SLNB was performed. This data argues against use of SLNB in this population, even in the setting of mastectomy. In the post-SOUND trial era of continued axillary de-escalation for invasive disease, our data puts into question the role of axillary surgery, with its accompanying morbidity, in Black women presenting with DCIS on core biopsy. Further studies with larger cohorts are warranted.

Table 1. Trends in Axillary Management of DCIS in a Black patient population.

Trends in Axillary Management of DCIS					
Type of Surgery		Mastectomy	Breast Conserving	Total	P value
N		25	33	58	
SLNB					<0.001*
Yes		25	8	33	
No		0	25	25	
Mass-forming					0.73
Yes		3	5	8	
No		22	28	50	
Tumor Burden					<0.001*
Single		15	32	47	
Multifocal/centric		10	1	11	
Final Pathology					0.726
DCIS		24	31	55	
Invasive cancer		1	2	3	
Axillary Metastasis					
Yes		0	0	0	
No		25	8	33	

1988778 - The influence of hormone therapy and BRCA mutation on development of breast carcinoma in young transgender patients

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Background/Objective: Patients with gender identity disorder as defined by DSM-IV often utilize hormone treatments to reduce symptoms of gender dysphoria. However, the long-term effects of such gender-affirming hormone therapy are not well characterized. In addition, transgender individuals are often excluded from conventional clinical studies and standard screening, which may lead to missed malignancies. Breast cancer in transgender individuals, both female-to-male (FM) and male-to-female (MF), is relatively rare. However, previously rare cancers such as highly invasive breast cancer in individuals under the age of 40 have become more predominant in recent years. In this study, we describe the case of the youngest identified female-to-male transgender patient with breast cancer along with a literature review to assess risk factors for the development of breast cancer in young transgender patients.

Methods: We performed a comprehensive literature search to identify cases of transgender patients diagnosed with breast carcinoma from 1968 to 2024, compiling demographic, gender-affirming hormone therapy, histologic, hormone marker, medical treatment, surgical treatment, and recurrence information. Statistical analysis was performed using Fisher's exact test.

Results: We identified 50 cases of transgender patients that met inclusion criteria. Three cases were not able to be included due to lack of access. Of the 47 remaining cases, 25 were FM and 21 were MF. Of the FM patients, 22 (91.7%) underwent hormone therapy with testosterone and 13 (52%) had undergone gender-affirming bilateral mastectomies prior to cancer diagnosis. Of the MF patients, 20 (90.9%) underwent hormone therapy with estrogen. The median age of diagnosis was 47.1 years (range 27 to 77). The median tumor size was 1.95 cm (range 0.16 to 7). Of the 40 patients that underwent surgical intervention, 9 (22.5%) underwent breast-conserving surgery while the remaining 30 (75%) underwent total, modified, or radical mastectomy. Young transgender patients with breast carcinoma, defined by age < 40, were more likely to be BRCA1 positive while older patients were more likely to be BRCA2 positive but this difference was not statistically significant ($p=0.43$, $p=0.11$). No significant difference in disease severity was found between patients who received gender-affirming hormone therapy and those who did not ($p=0.57$). This remained true when comparing patients who received specifically estrogen ($p=0.64$) or testosterone ($p=1.0$).

Conclusions: Transgender individuals face unique health risks, particularly when undergoing gender-affirming medical or surgical treatments. The subset of transgender patients with breast cancer is small, making research analysis low-powered and challenging. Current screening guidelines from the American College of Radiology are based on limited data in the transgender population, extrapolated from conventional guidelines in cis women, and may miss younger patients. Further investigation is needed to include these patients in the preventative care process to decrease disease morbidity and lessen barriers to care.

1988832 - Real-World Evaluation of Oncotype DX in Non-Hispanic Black Women with ER+/HER2- Breast Cancer

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Background/Objective: Oncotype DX (ODx), a 21-gene genomic assay, plays a critical role in determining adjuvant chemotherapy benefits in early-stage ER+/HER2- breast cancer. However, the assay's validation studies, including TAILORx, have predominantly focused on Non-Hispanic White (NHW) women, with Non-Hispanic Black (NHB) women constituting less than 8% of the study populations. This underrepresentation has implications for ODx's predictive accuracy in NHB women, who often experience distinct tumor biology and higher mortality rates compared to NHW women with the same clinical profiles. Retrospective analyses from databases like SEER and NCDB suggest that NHB women with similar ODx scores to NHW women may experience poorer outcomes, indicating possible limitations in ODx's predictive power across populations. Northwell Health Cancer Institute (NHCI), serving a large and diverse patient cohort, offers an invaluable opportunity to investigate ODx's real-world application and performance within a representative population. By analyzing data from the Northwell Health Cancer Registry, we aim to assess ODx utilization, treatment decisions, and outcomes specifically in NHB women, ultimately informing best practices in genomic testing for diverse populations.

Methods: Using Northwell Cancer Institute's tumor registry across 14 cancer centers, NHB and NHW women diagnosed with cT1-2N0-1 ER+/HER2- breast cancer treated at NHCI from 2005 to 2023 were identified. Demographics, tumor characteristics, ODx scores, treatment regimens (chemotherapy, endocrine therapy), and outcomes (recurrence, mortality) were compared for each cohort. Logistic regression was used to identify factors influencing ODx testing. Chi-square tests and logistic regression to compare treatment patterns by ODx score. Kaplan-Meier and Cox proportional hazards models to compare outcomes between NHB and NHW women within ODx categories.

Results: The Northwell Health Cancer Institute comprises 14 cancer centers across New York City and Long Island, NY, providing a unique opportunity to examine Oncotype Dx in a diverse population across urban, suburban, and rural settings. 12,065 women with ER/PR+ HER2- T1-2,N0-1, M0 were eligible for ODx testing between 2005-2023, including 1126 Non-Hispanic Black women. 40% of all NHB and NHW women had ODx recorded during this time. When comparing the two largest cohorts of affected women, NHB and NHW women, differences of utilization and prognostic accuracy were apparent in urban, suburban, and rural settings within lower New York State.

Conclusions: This study utilizes a diverse NY population to assess whether ODx recurrence scores are as prognostic in NHB women as they are in NHW women and how ODx-guided treatment decisions correlate with actual outcomes. Given NHB women's generally poorer outcomes, despite similar or even lower ODx scores, this research is crucial for ensuring equitable treatment strategies across patient populations.

1988948 - Demographics Effect of Breast Cancer in Private Practice

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Background/Objective: In the United States, African American and Hispanic groups have the highest mortality rates from breast cancer unequally compared to other races. This disparity can stem from the low number of healthcare facilities in areas where these minorities live, cultural upbringings and language barriers by hindering effective communication and delaying the recognition of symptoms and/or the reluctancy of addressing their symptoms.

Methods: In this retrospective study, we gathered 150 African American women and 150 Hispanic women we have treated for breast cancer between 2019 to 2024 at our private practice. We compared and analyzed their age, staging, and timing in which they seek breast care. Examined the hurdles that African Americans and Hispanics face in breast care management and seek to discover approaches that could advantage these subsets of the population.

Results: Our research revealed that Hispanics and African Americans are 60% more likely to fight against a more aggressive breast cancer compared to any other race or ethnicities. Black African women were diagnosed at An average age of 58 while Hispanic women diagnosed with and average age of 60. This was less than the average age of 62 compared to the white counter parts. The tumor sizes measured in these populations were larger on average, which indicates the need for more invasive surgical procedures leading to higher risks. Breast surgeons encounter unique challenges with these demographic groups as cultural influences can significantly impact treatment choices and outcomes. 25% of the 150 Black women studied were diagnosed with in Situ breast cancer meaning that a smaller fraction of Black women is diagnosed at an early stage compared to advanced stages leading to poor prognosis. Hispanic women were shown to have a high incidence of advanced stage disease accounting for more than 70% of the 150 Hispanic women. As a result of these percentages, tackling this important demographic disparity could substantially help the largest minority groups in the country.

Conclusions: In conclusion, we demonstrated the desperate need of a higher focus in these demographics in which many ideas are discussed for example, increasing accessibility to healthcare facilities including private practices, specialist speaking the same language, and educating patients on preventative measures. Reviewing the current data from medical literature has revealed a significant area for improvement in understanding the barriers faced by these patients, which this study helps evaluate possible effective interventions for impactful outcomes. Keywords: Breast cancer, minority women, outcomes, disparities, African American women, Hispanic women, poor prognosis

1961825 - Disease-Specific Barriers to Breast Cancer Screening Guideline Adherence Among Hidradenitis Suppurativa Patients

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Background/Objective: The American Cancer Society recommends annual breast cancer screening with mammography starting at age 40-45. Previous studies have found that patients with hidradenitis suppurativa (HS) affecting the breasts are less likely to breastfeed. Furthermore, mammography pain-related anxiety has been associated with decreased surveillance adherence among breast cancer survivors. As such, patients with HS affecting the breasts may also face disease-specific barriers to adhering to mammography guidelines. This study aims to assess the adherence to breast cancer screening guidelines among HS patients and to define any disease-specific barriers such as breast involvement on this adherence.

Methods: A retrospective chart review cohort study was conducted in the Dermatology department of an academic medical center from 2019-2024 on female patients with HS who were seen in clinic; mammography records were assessed between 2015-2024. Statistical analysis was performed using Multivariate Poisson regression.

Results: 669 patients were followed for a median of 9.1 (interquartile range 5.3-11.1) years. Median adherence to annual surveillance was 32% (interquartile range 0-60%), with 64% of patients receiving any screening. Hurley Stage 3 (rate ratio [95% CI]: 0.88 [0.77-0.99] vs Stage 1) and Medicaid insurance (0.82 [0.70-0.98] vs commercial insurance) were associated with decreased frequency of screenings. HS involvement of the breasts, Hurley stage of the breasts, age, race, and personal or family history of breast cancer were not significantly associated.

Conclusions: Patients with HS face disease-specific barriers to adherence to breast cancer surveillance guidelines in real-world practice. These barriers include disease severity and insurance type, highlighting disparities in healthcare access within this patient population. However, HS involvement of the breasts did not result in differences in adherence. This study suggests that HS results in overall disease-specific barriers limiting access to breast cancer screening beyond breast involvement.

1972384 - Association Between County Poverty Level and Late-Stage Breast Cancer Cases in North Carolina

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Background/Objective: Our main objective is to analyze the association between county poverty level and late-stage female breast cancer cases in North Carolina. Our secondary objective is to analyze the association between race and late-stage breast cancer cases in NC.

Methods: Using the publicly available cancer data tables through the National Cancer Institute and United States Census data, we categorized each NC county by 2020 poverty level (< 10%, 10-14.9%, 15-19.9%, or >20%). NCI data reports include data from 2016-2020. We looked at the Age-Adjusted Incidence Rate of Breast Cancer per 100,000 by county level poverty category, as well as percentage range of cases in counties with late-stage diagnoses by county level poverty category. We also looked at Age-Adjusted Incidence Rate of Breast Cancer per 100,000 and percentage range of cases with late-stage diagnoses by race.

Results: We found a clear relationship between county poverty level and cases of late-stage breast cancer diagnosis. More impoverished NC counties had a greater percentage of cases diagnosed at a late stage, relative to counties with a lower poverty level. In counties with the highest poverty level (>20%), between 28.3.7-45.5% of all cases of breast cancer were diagnosed at a late stage, relative to only 21.4-20.9% in the counties with a poverty level between 10-14.9% and 23.7-35.5% of cases in less impoverished counties. The same linear relationship is seen for Age-Adjusted Incidence Rate of Breast Cancer and county level poverty. There is an inverse relationship between the count of all breast cancer cases in counties and poverty level. The most well-off counties see the highest counts of overall breast cancer, while the poorest are the lowest; however, the percentage of late-stage cases has the opposite relationship with poverty level. This suggests that women in the poorest counties may have delayed screenings, and/or poorer access to medical care, resulting in more late-stage diagnoses. We also see a relationship between late-stage diagnoses among Black women as compared to White, although overall count of all breast cancers is lower among Black Women, this could be related to state racial makeup.

Conclusions: In North Carolina, there is a relationship between counties with more poverty and a higher percentage of late-stage breast cancer cases. In addition, Black women also have a higher percentage of late-stage breast cancer compared to White women, despite having a lower overall count of breast cancers. This may suggest women in poorer counties and Black women have limited access to preventative care. Our study also showed that less impoverished counties have a higher count of breast cancer overall and a lower percentage of late-stage breast cancers suggesting increased access to screening and earlier detection compared to poorer counties. Based on our results, there should be a focus on establishing more preventative measures in more impoverished communities. A limitation of this study is that incidence of late-stage breast cancer is reported as an average incidence per county. Therefore, we chose to represent our data as a percentage range rather than an average to better depict the number of cases.

Table 1: Results

Table:

Report for North Carolina by County 2016-2020	NC Average Annual Count (all counties)	Range of Age-Adjusted Incidence Rate of Breast Cancer per 100,000	Average Annual Count of Breast Cancer	% Range of Cases with Late-Stage Diagnosis
Race				
White	1877	(18.6-64.4) 45.8	20.89	21.3-46.4%
Black	719	(27.6-83.4) 55.8	12.05	23.27-58.2%
Percentage of Poverty in County				
Low (<10%)	-	(18.6-49.5) 30.9	56.33	23.7-35.5%
Medium-Low (10-14.9%)	-	(28.7-62.4) 33.7	35.67	21.4-40.9%
Medium-High (15-19.9%)	-	(30.1-62.9) 32.8	22.79	24-45.7%
High (>20%)	-	(33.3-66.3) 33	13.74	28.37-45.5%

Genetics

1974481 - Perspectives on Prophylactic Breast Surgery from a Midwestern Hospital System High-Risk Genetic Multidisciplinary Clinic

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Background/Objective: With increasing availability of genetic testing, more women will be diagnosed as high-risk gene carriers prior to a breast cancer diagnosis. Their options for risk reduction include chemoprevention, high risk screening, and prophylactic surgery. We observed a relatively low (< 10%) uptake in preventative surgery in our large Midwestern community cancer center. This study seeks to understand the factors that contribute to this shared decision-making process.

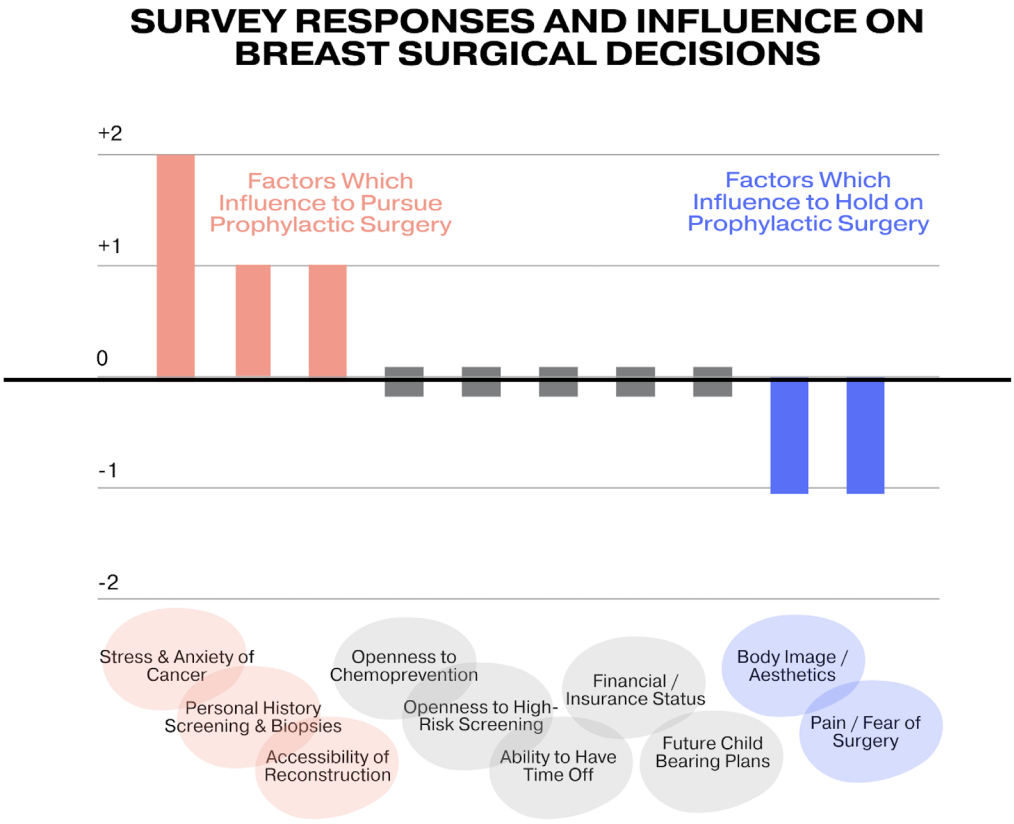
Methods: An IRB approved survey was distributed to BRCA1, BRCA2, or PALB2 mutation carriers enrolled in our high-risk genetic multidisciplinary clinic (MDC). This anonymous survey included demographic data and ranking ordinal variables regarding impact on decision for prophylactic surgery or continued high-risk screening. Statistics were completed in R Studio including demographic analysis and Spearman's correlation.

Results: The survey was sent through Epic MyChart to 213 patients enrolled in hereditary MDC with 29 (13.6%) responses. All respondents were female with average age of 47.3 +/-15.9 (range 22-81). Patients identified as Caucasian 89.7%, African American 6.9%, and biracial 3.4%. Genetic mutations included BRCA1 (24.1%), BRCA2 (58.6%), BRCA1 and BRCA2 (3.4%), PALB2 (13.8%). Most patients had their testing completed 1-5 years (62.1%), 5-10 years (20.7%), < 1 year (13.8%), and >10 years prior to survey (3.4%). The majority had not undergone any surgery (65.5%); meanwhile, 6.9% had bilateral prophylactic mastectomy, 20.7% had a unilateral cancer diagnosis with CPM, and 6.9% had a diagnosis of cancer without prophylactic surgery. In this high-risk population, 41.4% had a previous biopsy, 75.9% had relatives with breast cancer (20.7% with 4 or more), and 31.0% had a previous breast cancer related death in the family. Survey results influencing patients to pursue prophylactic surgery or continue screening are attached (Figure). Predictably, the availability of reconstruction was an asset in considering prophylactic surgery; however, future body image was a factor to defer. Future screening and chemoprevention did not significantly influence patients; however, personal experience with high-risk screening and biopsy encouraged surgical consideration. Ultimately, fear of a future cancer diagnosis had the most significant impact. Significant correlations included increased interest in prophylactic surgery with increasing age rather than chemoprevention (rho=0.442, p=0.016), when considering future childbearing (rho=0.543, p=0.002), and overall increased interest in prophylactic surgery (rho=0.393, p=0.035). We also had significant correlations with Caucasian population and interest in prophylactic breast surgery secondary to a history of biopsies and screening (rho=0.431, p=0.02) and the stress of a future cancer diagnosis (rho=0.497, p=0.006).

Conclusions: To appropriately counsel patients on prophylactic surgery, a breast surgeon must understand the perspective of the high-risk gene carriers. Many personal factors influence this decision which can evolve throughout a patient's lifetime. To best support them as they weigh their

individual risk of breast cancer, we should advocate for availability of reconstruction and perioperative resources. to minimize unknowns. Our study focuses on patient-centered perspectives for consideration of prophylactic surgery at a single institution. Future studies could address patient-oriented concerns to increase patient access to prophylactic surgery.

Figure 1. Survey Responses and Influence on Breast Surgical Decisions.



1987739 - Comparative Analysis of Genetic Screening Practices in General Surgery and Breast Surgery

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Background/Objective: Genetic testing is an important aspect of breast cancer care. The guidelines for genetic testing continue to evolve and indications have expanded in recent years.

Methods: This is a retrospective review of prospectively collected data from the Legacy Cancer Institute Tumor Registry between January 2021 and December 2022. Patients with a primary diagnosis of breast cancer in this time period were included. Patients without documentation of genetics referral, operating surgeon, or deleterious mutation status were excluded from relevant statistics. Descriptive statistics and Chi-square testing was performed.

Results: A total of 1,255 patients met inclusion criteria. 1,043 (83.1%) were treated by a breast surgeon and 212 (16.9%) were treated by a general surgeon. Breast surgeons referred 959 (92.0%) of their patients to genetics whereas general surgeons referred 154 (72.6%) of their patients to genetics ($p< 0.0001$). Rate of detection of deleterious mutations in cancer susceptibility genes was similar between the two surgeon groups. For those treated by a breast surgeon, 126 patients (13.7%) were found to have a deleterious mutation compared to 20 patients (14.2%) of those treated by a general surgeon ($p=0.88$).

Conclusions: Breast surgeons referred a much higher proportion of their patients for genetic testing. The rate of detection of deleterious mutations was similar between those referred by breast surgeons and general surgeons, however. There may be an opportunity for education of general surgery colleagues to expand their referral practices.

1987771 - The Effects of Guideline Concordant Genetic Testing in Surgery Choice for Breast Cancer Patients

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Background/Objective: It is well known that inherited mutations in genes such as BRCA1, BRCA2, and CHEK2 result in an elevated risk of developing breast cancer. Genetic testing to identify such mutations has increased in accessibility and efficiency, aiding patients and physicians in managing a breast cancer diagnosis. With the expanded use of genetic testing, patients now have access to a growing pool of data that can inform their treatment and management decisions. We aimed to ascertain how genetic testing results and history of cancer influence patient's choices for surgery in an active cancer diagnosis.

Methods: Patients diagnosed with new or recurrent breast cancer from April 2019 to April 2024 who underwent genetic testing following expanded ASBrS guidelines at a single institution were included. We performed a retrospective chart review to retrieve patient demographic information and characteristics. Demographic and clinical characteristics were summarized with descriptive statistics, while univariate and multivariate logistic regression was used to assess the association between surgery choice and patient factors including personal and family history of cancer along with genetic testing results.

Results: 934 patient charts were reviewed. 925 patients were included in the analysis who planned or underwent lumpectomy or mastectomy. Patient characteristics are demonstrated in Table 1. 864 (93.5%) patients received genetic testing prior to or on the day of surgical consultation and 60 (6.5%) patients received it after surgical consultation. 524 (56.6%) patients chose to undergo lumpectomy and 401 (43.4%) chose mastectomy. Out of 188 patients with a personal history of cancer, 103 (54.79%) patients had breast cancer and 85 (45.21%) had other cancers. Patients with a personal history of any cancer were significantly more likely to undergo a mastectomy compared to patients with no personal history (OR 1.37; 95% CI 0.99-1.9). Furthermore, patients with a family history of any cancer also tended to undergo mastectomy (OR 1.25; 95% CI 0.72-2.17). Compared to patients with positive genetic testing results, patients with negative genetic testing results were significantly less likely to undergo mastectomy (OR 0.58; 95% CI 0.37-0.92) as were patients with VUS results from genetic testing (OR 0.51; 95% CI 0.32-0.83).

Conclusions: Patients with a personal history of cancer or positive genetic testing results tend to undergo mastectomy, suggesting that factors beyond tumor characteristics are increasingly influential in surgical decision-making. With increasing access to their genetic data, patients with breast cancer are tasked with navigating a host of factors when deciding between mastectomy or breast-conserving surgery. Shared decision-making is essential to help patients understand their individual risk profiles and align them with surgical choices. Further study is needed to elucidate the extent and rationale behind how patients utilize genetic testing results and personal history to influence their surgical choices and whether these decisions align with recommended surgical therapy.

Table 1. Descriptive Statistics of Patient Characteristics by Surgery Choice*

Table 1. Descriptive Statistics of Patient Characteristics by Surgery Choice*

Patient Characteristics	Total	Surgery Choice	
		Lumpectomy	Mastectomy
No. of Patients (%) *	925 (100)	524 (56.6)	401 (43.4)
Age at Diagnosis (years)			
(Min, Max)	(26, 85)	(26, 85)	(27, 85)
Mean (SD)	58.2 (12.3)	61.1 (11.2)	54.4 (12.8)
Median (Q1, Q3)	59 (49, 68)	62 (54, 69)	54 (44, 65)
Gender, n (%)			
Male	5 (0.5)	2 (0.4)	3 (0.7)
Female	920 (99.5)	522 (99.6)	398 (99.3)
Ashkenazi Jewish Ancestry, n (%)			
Yes	8 (0.9)	5 (1)	3 (0.7)
No	917 (99.1)	519 (99)	398 (99.3)
Breast Cancer, n (%)			
Invasive	783 (84.6)	454 (86.6)	329 (82)
DCIS	142 (15.4)	70 (13.4)	72 (18)
Laterality of Cancer, n (%)			
Unilateral	877 (94.8)	514 (98.1)	363 (90.5)
Bilateral	48 (5.2)	10 (1.9)	38 (9.5)
Hormone Receptor Status, n (%)			
Invasive, ER-/PR+/HER2-	4 (0.4)	1 (0.2)	3 (0.7)
Invasive, ER-/PR-/HER2-	99 (10.7)	51 (9.7)	48 (12)
Invasive, ER+/HER2-	588 (63.6)	354 (67.6)	234 (58.4)
Invasive, ER-/HER2+	26 (2.8)	12 (2.3)	14 (3.5)
Invasive, ER+/HER2+	66 (7.1)	36 (6.9)	30 (7.5)
DCIS, ER+	109 (11.8)	58 (11.1)	51 (12.7)
DCIS, ER-	33 (3.6)	12 (2.3)	21 (5.2)
Metastatic Disease, n (%)			
Yes	180 (19.5)	61 (11.6)	119 (29.7)
No	745 (80.5)	463 (88.4)	282 (70.3)
Personal History of Cancer, n (%)			
No	737 (79.7)	430 (82.1)	307 (76.6)
Yes	188 (20.3)	94 (17.9)	94 (23.4)
Family History of Cancer, n (%)			
No	59 (6.4)	37 (7.1)	22 (5.5)
Yes	866 (93.6)	487 (92.9)	379 (94.5)
Genetic Testing Results, n (%)			
Positive	88 (9.5)	38 (7.3)	50 (12.5)
Negative	556 (60.1)	317 (60.5)	239 (59.6)
VUS	281 (30.4)	169 (32.3)	112 (27.9)

*Excluded patients with Surgery Choice = 'Other/Unable to Find' (n = 9).

1984501 - Decision making trends of patients with positive genetic testing results for genes with increased breast cancer risk

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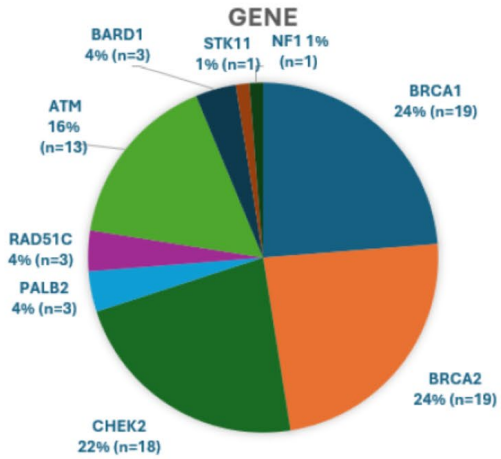
Background/Objective: The purpose of this study is to investigate decision-making trends of patients after receiving positive genetic testing results for genes associated with an increased risk of breast cancer. In this era where we are currently doing panel testing for 30-70+ genes associated with increased cancer risk, we hypothesized that diagnosis with a higher penetrance breast cancer gene (BRCA1, BRCA2, TP53, PTEN, CDH1, or STK11) would be associated with more aggressive intervention (bilateral mastectomy) than a lower penetrance breast cancer gene.

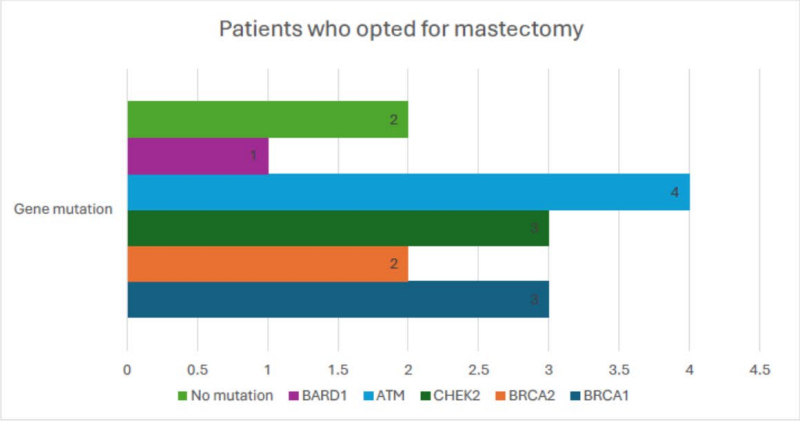
Methods: Retrospective chart review was done of patients at least 18 years of age, who received positive genetic testing results associated with increased breast cancer risk between January 2021 and December 2023. All patients received counseling and/or testing through our hospital's genetic counselor. The patients identified for this study tested positive for a gene defined by NCCN as being associated with an increased breast cancer risk, including: BRCA1, BRCA2, PALB2, ATM, CHEK2, RAD51C, RAD51D, BARD1, CDH1, NF1, PTEN, and STK11.

Results: 80 patients were found to test positive for genetic mutations (62 female and 18 male). The distribution of genes is in the pie chart. Of the 80 patients identified with gene mutations, 13 were lost to follow up (leaving 67 patients with follow-up available.) In the 67 patients who were followed, 36 patients were diagnosed with cancer (28 breast cancer, 3 pancreatic, 1 melanoma, 2 ovarian, 1 prostate, and 1 thyroid.) Of the 28 patients diagnosed with breast cancer identified in the sample, 11 patients opted to have bilateral mastectomies. Thirteen patients of the 67 total patients had bilateral mastectomies (19.4%) while the rest opted for observation. Of the 13 patients who opted for surgery with bilateral mastectomy, eleven had been diagnosed with breast cancer (two were prophylactic mastectomies.) Of the 11 patients that opted for mastectomies, 3 patients had BRCA1 genes and 2 had BRCA2 genes (high penetrance genes), while 3 patients had CHEK2, 4 had ATM, and 1 had BARD1 genes (moderate or low penetrance genes.)

Conclusions: Patients with a gene mutation were more likely to select bilateral mastectomy after a breast cancer diagnosis, regardless of whether they were found to have a high or low penetrance breast cancer gene.

Figure 1: Gene Distribution





1986412 - Point-of-care genetic testing models among patients at risk of hereditary breast cancer: A systematic review

Brandie Heald[1], Holly LaDuca[2], Deborah Hartzfeld[1], Gebra Cuyun Carter[1], Karen White[3], Heather Johnson[1]

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Background/Objective: Despite American Society of Breast Surgeon guideline recommendations to offer hereditary cancer testing (HCT) to all patients with breast cancer, approximately 74% of eligible patients do not receive it. To increase utilization of testing, care teams have implemented strategies to increase access and uptake of HCT such as point-of-care (POC) testing by non-genetics healthcare providers. The objective of this systematic review was to summarize the models used to implement POC HCT among patients with or at increased risk of cancer and to describe the outcomes of these programs. The present analysis summarizes the subset of studies relevant to breast cancer.

Methods: Following PRISMA guidelines, we searched PubMed-Medline and Embase to identify peer-reviewed manuscripts published between 1/1/2014 and 3/29/2024 that investigated POC models among patients with or at increased risk of cancer. Outcomes of interest included: uptake of HCT, provision of medical and/or surgical treatment, turnaround time for HCT, uptake of post-test genetic counseling, and uptake of cascade testing. We excluded studies involving a genetics provider in pre-test processes and those not written in English.

Results: The initial search identified 2582 articles across all cancers. Of these, we evaluated the full text of 73 articles and extracted data from 52, 18 of which were relevant to breast cancer. After quality assessment, 14 articles from 12 studies were included in the analysis. There were four cross-sectional studies, four quasi-experimental studies, three randomized control trials and one cohort study. Half the studies took place in the United States, while the remainder occurred in the United Kingdom (2), Australia (2), Norway (1), and Sweden (1). Methods employed for pre-test education included physician or nurse-mediated conversations (7), digital assets (3), and written materials (2). The majority of studies (8) involved patients with a current or prior diagnosis of breast cancer. Uptake of HCT, which was assessed in ten studies, was 35.1% to 100% in patients with breast cancer (6) and 18.2% to 88.9% in at-risk populations who met guidelines-based testing criteria (4). Five studies of breast cancer patients reported that HCT results impacted management, including 55% to 100% of patients employing results to make surgical decisions. Five studies incorporated a control arm that utilized traditional pre-test genetic counseling, two of which showed higher rates of HCT uptake at POC.

Conclusions: This review identified a diverse set of studies evaluating different POC models for the delivery of HCT in countries across the globe. Among patients with breast cancer, uptake of testing was generally high, and, when evaluated, the results were shown to impact patient management. The studies support the use of POC models to facilitate the receipt of HCT by patients with or at increased risk of breast cancer. Opportunities for future work include the optimization of these models in different settings to address the needs of individual patient populations.

1988713 - Factors Influencing Choice of Surgical Intervention in BRCA Patients Diagnosed with Breast Cancer

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Background/Objective: Total mastectomy, including the use of contralateral prophylactic mastectomy, is consistently the most commonly observed surgical approach for BRCA-associated breast cancer in the United States. There are many elements, including media influence and family experience, that impact a patient's choice of surgery. The aim of this study is to identify factors associated with the decision to pursue breast conservation over mastectomy in BRCA carriers.

Methods: Retrospective review of an IRB-approved prospective database was performed to identify patients enrolled in our institution's breast cancer database between 1/2010 and 5/2024, who tested positive for BRCA mutations. Demographic information, breast-cancer risk factors, lifestyle habits, in-depth surveillance details, as well as clinical, pathological, and treatment information were collected for each patient. Descriptive analyses were conducted in the R statistical software program to compare patients who decided to pursue breast conservation with those who underwent mastectomy, and consisted of frequencies, proportions, standard deviations and associated 95% Confidence Intervals. Comparisons of continuous variables were based on t-tests, categorical variables were compared using Chi Square tests.

Results: Our database identified 173 patients who tested positive for any BRCA mutation. The average age at diagnosis was 50 years (SD 12 years) and the majority (80.3%) of patients identified as Caucasian. The majority of patients had infiltrating ductal carcinoma (69.9%) and the mean invasive tumor size was 1.48 cm (SD 1.0 cm). Of the 173 total patients, 113 underwent mastectomy and 60 chose breast conservation. Patients in the mastectomy cohort were significantly younger (47 years v 55 years, $p< 0.01$). While race and education level were not significantly different between the two groups, household income was significantly higher in the mastectomy cohort ($p< 0.01$). The patients who chose breast conservation had a significantly higher number of mammograms ($p=0.002$) over a prior 6-year time frame. There was no significant difference in tumor histology ($p=0.33$), size ($p=0.15$), or grade ($p=0.54$) between the two groups.

Conclusions: Within our cohort of BRCA-positive patients diagnosed with breast cancer, the majority (65%) chose to undergo mastectomy as opposed to breast conservation. While tumor characteristics did not significantly influence the type of surgery performed, lower household income, older age, and greater number of screening images performed were associated with breast conservation. This association between younger age and mastectomy may be explained by a younger woman's desire to avoid years of testing and stress associated with maintaining their breast tissue. Older women may view their follow up differently, and may recognize that breast cancer is generally a less aggressive disease when it occurs in older age groups. This recognition may increase their acceptance of breast-conserving surgery. It is critical to uncover how lower income affects a patient's decision regarding cancer surgery, and further investigation is warranted to evaluate if health literacy is a factor. Understanding the impact of psychosocial factors on patient decision-making is an important aspect of providing informed, appropriate, and equitable care to breast cancer patients.

Imaging

1980712 - Clinical Applications and Diagnostic Utility of Whole-Body PET/CT with [F-18]Fluoroestradiol in Early-Stage Breast Cancer: A Single Institution Experience

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Background/Objective: Patients diagnosed with breast cancer may undergo staging with whole-body PET/CT utilizing fluorodeoxyglucose (FDG) to identify metabolically active tumor cells. In 2020, a novel radiotracer, [F-18] fluoroestradiol (FES), became available to image estrogen receptor (ER)-positive tumors. To date, there are limited real-world data on the indications and clinical utility of FES-PET/CT in the evaluation of early-stage ER-positive breast cancer.

Methods: We retrospectively identified all patients who underwent FES-PET/CT at our institution between January 2020 and December 2023. Chart review was performed to determine clinicopathologic characteristics and indications for undergoing FES-PET/CT in patients with Stage I-III breast cancer. For those with pre-operative FES-PET/CT we determined how often FES-PET/CT identified disease in the breast and/or regional nodes. Additionally, we determined how often FES-PET/CT identified distant disease in those found to have metastases, and concordance with FDG-PET/CT when available.

Results: Of 59 patients who underwent whole-body FES-PET/CT during the study period, 32 had Stage I-III breast cancer prior to imaging and comprised our study cohort. Median age was 63 years (range 34-83), and 31 tumors (96.9%) were ER+. Tumor histology was invasive lobular carcinoma (ILC) in 75.1% (n=24), and the majority had Stage I disease (40.6%), followed by Stage II (37.5%), and Stage III (37.5%). The indications for obtaining FES-PET/CT included staging at the time of initial diagnosis (n=18, 56.3%), evaluating signs/symptoms of distant disease >6 months after breast surgery (n=8, 25%), and staging at the time of local recurrence (n=6, 18.8%). A total of 11 patients with known ER+ disease in the breast underwent FES-PET/CT prior to breast surgery (8 for initial staging and 3 for restaging after local recurrence). Of these, 8 (72.7%) demonstrated FES uptake in the breast (all ILC) while 3 (27.2%) did not. Of these pre-operative cases, 4 had biopsy-proven positive axillary nodes prior to surgery, of which 2 cases showed FES uptake and 2 did not. Out of the 32 cases, a total of 4 patients (12.5%) were found to have distant metastases resulting in upstaging to Stage IV. Of note, all had ILC. Among the 4 patients with metastatic disease, 3 had FES-avid metastases (2 with bone metastases, 1 with peritoneal metastases), while 1 had FES-negative bone metastases. For the 3 patients with FES-avid metastases, 2 had negative FDG-PET/CT (one performed concurrently, and one 4 months prior to FES-PET/CT) and 1 case had concordant findings. For the single patient with FES-negative metastases, FDG-PET/CT was also negative three months prior.

Conclusions: In this real-world cohort, whole-body FES PET/CT demonstrated utility in ER-positive breast cancer evaluation and was most often used for staging at the time of initial diagnosis of ILC. While whole-body FES-PET/CT was less useful in the evaluation of local disease in this small cohort, we found value in the detection of metastatic disease. In patients with lobular breast cancer, FES-PET/CT was able to detect distant metastases in cases where FDG-PET/CT did not. However, the role of FES-PET/CT in staging of early-stage HR+ breast cancer warrants further investigation.

1988225 - Impact of Formal Review of Outside Breast Imaging Studies on Patient Retention and Institutional Resources

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Background/Objective: Formal review of outside breast imaging studies is time consuming, and the volume has increased in recent years. We sought to evaluate the impact formal interpretation of outside breast imaging studies had on patient breast care and subsequent utilization of institutional resources.

Methods: An IRB-approved retrospective review was performed identifying patients presenting for review of outside breast imaging studies between February 2021 and December 2021. Patients were eligible for a formal review of outside studies if they met the following requirements: outside breast imaging studies performed within the previous 6 months with either current breast cancer diagnosis, a BI-RADS 4 or BI-RADS 5 finding, or planned image-guided breast procedure. Imaging modalities/studies formally reviewed included mammography, breast/axillary ultrasound, breast MRI, image guided breast procedures, and breast specimen images. The treatment plan and subsequent care were analyzed to determine whether the patient actually received the recommended diagnostic evaluation and/or treatment at our institution.

Results: We evaluated 100 consecutive patients who underwent formal review of outside breast imaging studies during the study period. This included 61 patients who had a newly diagnosed breast cancer, 5 patients with recurrent cancer, 9 patients referred for surgical excisional biopsy, and 25 patients referred for image guided biopsy. 92% (92/100) of patients underwent additional diagnostic breast imaging, 26% (26/100) underwent image guided biopsy, and 66% (66/100) underwent breast surgery at our facility. 12% (12/100) of patients underwent breast surgery at an outside facility. 20% (20/100) did not undergo surgery, and 2% of patients' care was unknown (2/100). Among 66 patients who underwent surgery at our institution, 87.9%(58/66) sought subsequent post-surgical care within our institution through the following departments: Medical Oncology/Genetics (68.2%, 45/66), Diagnostic Radiology (63.6%, 42/66), Breast Surgery (47%, 31/66), Radiation Oncology (42.4%, 28/66), and/or Plastic Surgery (18.2%, 12/66). Among patients who did not undergo surgery at our institution (n=32), additional follow-up care with Breast Surgery (12.5%, 4/32), Medical Oncology (12.5%, 4/32), Diagnostic Radiology (25%, 8/32), Radiation Oncology (6.3%, 2/32), and Plastic Surgery (3.1%, 1/32) was consistently less utilized.

Conclusions: The vast majority of patients (92%) presenting for review of outside breast imaging studies subsequently received additional care within our institution, demonstrating that outside imaging reviews serve as a valuable entry point for patient retention. Patients who underwent surgery at our institution most commonly obtained further care through the following departments, in descending order: Medical Oncology/Genetics, Diagnostic Radiology, Breast Surgery, Radiation Oncology, and Plastic Surgery.

1988634 - Axillary Lymph Node Screening in BIRADS 5 Breast Cancer

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Background/Objective: Staging, treating, and downstaging the axilla in malignant breast cancer has been an evolving process that has been trailblazed by the Z011 trial (2017), transitioning management of the axilla away from axillary lymph node dissection (ANLD) towards sentinel lymph node biopsy (SNLB)(Giuliano et.al, 2017). With a clear need to prevent the morbidity of SLNB/ALND and obtain a detailed diagnosis quickly and efficiently to expedite treatment plans, the goal of our study is to determine the sensitivity and specificity of ultrasound in staging the axilla prior to finalizing a treatment plan.

Methods: Using the PENRADS system we previously targeted women over 18 with BIRADS 5 diagnostic imaging and pathologic confirmation of malignancy who visited our institution from 2018 to 2020 (n=103). This updated study includes additional data from 2021-2023 (n=165, total n=268). A preoperative positive axillary node was classified by a positive biopsy. A negative preoperative node was classified by either a negative axilla on imaging or a negative core biopsy. We compared the preoperative biopsies to final surgical pathology. Tumor biology and hormone receptor status were also used to stratify results, and more specifically the ability to downstage the axilla with neoadjuvant chemotherapy.

Results: We observed a 94% success rate (previously 92%) in screening axillary lymph nodes at the time of diagnostic imaging with BIRADS 5. Ultrasound sensitivity 47.6% (previously 35.5%) and specificity 89.9% (previously 87.9%) were calculated independent of tumor biology. The rate of false negative axillary ultrasound was 26%; triple negative cancer was 75% and 20% for ER+/PR+ invasive ductal carcinoma (IDC). Previously, patients who underwent neoadjuvant therapy revealed a 67% downstage rate in patients with ER+ /PR+ IDC and a 57% downstage rate in ER+/ PR+/HER2 + IDC. However, with expanded data we observed 10% and 43% downstage respectively.

Conclusions: With the even higher rate of patients having their axilla screened at the time of BIRADS 5 imaging, it is clear that our institution is continuing to take the necessary steps to limit delays in the treatment for our patients. Surprisingly we continued to observe a low sensitivity rate due to a large rate of false negatives. While this rate is lower than expected, we believe it is due to radiographically undetectable tumor burden in the axilla. As we further analyze the expanded data, we plan to explore associations with specific tumor types and corresponding rates of axillary disease undetectable by ultrasound. This is becoming more relevant as the discussion to omit SLNB in post-menopausal women with hormone positive cancers is becoming increasingly popular (Davey, et. Al, 2023). The hope of this study is to further contribute to the advancement in axillary management in breast cancer and decrease morbidity.

1988642 - Intraoperative tumor and lymph node localization using real-time radio-ultrasound-guidance

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Background/Objective: Intraoperative localization during breast-conserving surgery is critical for complete tumor resection and sentinel lymph node identification. Hand-held gamma probes have widely been used for intraoperative localization of radiolabeled lesions and are sufficient for confirming that radiolabeled lesions are present. However, with poor resolution and lack of intraoperative visualization, these probes do little to aid in the determination of the best surgical approach or to fully resect lesions. To combat these challenges, we developed an innovative real-time, dual-modality imaging system that combines and co-registers an ultrasound transducer with a new type of high-resolution, focused gamma probe (Figure 1). Unlike existing gamma probes, the focal point on a focused gamma probe enables precise localization of 'hot spots' within the ultrasound imaging plane, making it possible to simultaneously visualize radiolabeled lesions within the anatomy. The hybrid system was also modularly designed meaning the focused gamma probe could be connected to any clinically available ultrasound transducer using an easy, clip-on receptacle. The objective of this study was to validate the radio-ultrasound-guided system and assess the spatial resolution and sensitivity in a breast phantom study.

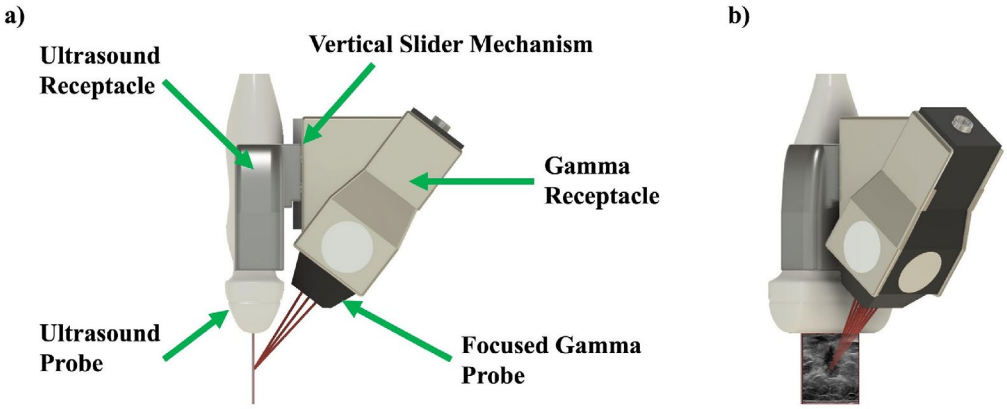
Methods: An agar-based breast mimicking phantom with a radioactive inclusion was created to test the radio-ultrasound-guided system. The radioactive inclusion was a 2 mm diameter, low-activity radioactive source located approximately 2 cm deep in the phantom that emitted gamma photons in a clinically relevant range (122 keV). The phantom was imaged multiple times using the radio-ultrasound-guided system. First, the device was guided by hand with the intent of locating the radioactive inclusion, confirming that lesions could be visualized in real-time. The second set of experiments utilized a precision stage to move the hybrid system in fixed increments to assess the spatial resolution and sensitivity.

Results: Using the hybrid image, which consisted of a semi-transparent overlay of the radioactivity in a co-registered region in the ultrasound image, the radioactive inclusion in the breast phantom was localized in real-time. From testing, it was found that the system was spatially sensitive to both the axial depth and lateral position of the radioactive source within the image. The focused gamma probe provided a 5.3 mm lateral resolution, 10.2 mm axial resolution, and a sensitivity of 3.2 cps/kBq when the lesion was a couple of centimeters deep. Importantly, the ultrasound image quality was consistent with manufacturer standards for a given imaging protocol.

Conclusions: The radio-ultrasound-guided system effectively combines molecular and anatomical imaging for precise, real-time localization of radiolabeled lesions. The modular, hand-held design of the radio-ultrasound-guided system should fit seamlessly into clinical workflow; the system maintains all the functionality of the existing modalities with the addition of the overlaid hybrid image. Importantly, in addition to high-resolution ultrasound images, the radio-ultrasound-guided system provides precise, spot detection of radiolabeled lesions with a resolution that is almost 10 times better than existing gamma probes while maintaining high sensitivity. Overall, the radio-ultrasound-guided

system has potential to improve intraoperative localization and enable clinicians to more accurately identify cancerous lesions from benign tissue in real-time in the operating room.

Figure 1: a) Model of the radio-ultrasound-guided system, with the co-registered region between the gamma probe focal region (red) and the ultrasound imaging plane depicted in (b).



1988730 - Automated Breast Ultrasound Utilization as adjunctive tool for breast cancer screening: A single Center experience

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Background/Objective: Screening mammography has been shown to be effective in reducing breast cancer mortality in women, yet detection rates in women with dense breasts have been cited as low as 30-48% with screening mammography alone. ABUS has been employed for multiple advantages including relatively low cost and good tolerability for patients, while automating the process has reduced the variability that is dependent on personnel performing and interpreting the scans.

Methods: We used data from our electronic health records to identify women screened for breast cancer within our health system over an 18-month period from 2021-2023. We used multivariate regression analysis to establish associations between age, race, insurance status , and additional diagnostic testing, cancer diagnosis..

Results: Within our population of 7,007 women identified as having dense breast tissue on screening mammography, only 2095 (29.9%) went on to have supplemental screening with ABUS. We found that 1,860 (89%) of patients undergoing ABUS screening resulted in BIRADS 1 score. 1,785 (85%) were found to have heterogenous breast density, while only 310 (15%) had extremely dense breasts. The average age for women who underwent ABUS screening was not significantly different compared to those who did not have an ABUS exam. Surprisingly, 20% of all women who did not undergo ABUS were later referred for diagnostic mammogram based on initial screening findings, while only 8.7% of the women who completed an ABUS exam underwent such imaging ($p< 0.001$). Women who received ABUS screening were less likely to be Black or Hispanic, and were more likely to be married. ABUS screening was more likely to be completed in patients with commercial insurance (53% vs 45%) compared to Medicare/Medicaid or self-pay.

Conclusions: Within our institution, ABUS utilization is not dispersed evenly through our patient population. Our findings suggest that a patient-centered approach to breast cancer screening is necessary to reduce the potential for harm among vulnerable populations.

1988940 - Comparing the Diagnostic Accuracy of Intraoperative Specimen Mammography and Pathological Analysis : A Single Center Prospective Study.

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Background/Objective: Breast cancer is the most diagnosed cancer in women worldwide and adequate surgical margins are critical for enhancing long term survival and local control. Although pathological analysis is the gold standard to assess margin sufficiency, intraoperative digital specimen mammography (IDSM) enables real-time evaluation of resected tissues and subsequently allows immediate re-excision when necessary. The hypothesis of this study is that specimen mammography has sufficient diagnostic accuracy of insufficient margins in comparison to pathological analysis.

Methods: This single center prospective study has been including all patient eligible for a breast cancer surgery and the CHUM (Centre hospitalier de l'Université de Montréal) in Montreal, Canada, starting from March 2024. All selected cases undergo a IDSM analysis during their surgery. The interpretation of the specimen mammography is compared with the pathological analysis regarding the sufficiency or insufficiency of surgical margins and whether additional resection is indicated.

Results: 189 cases have been enrolled in the study to this day. The majority of procedures were partial mastectomies (55%). Of the 26 specimens identified as having radiologically positive or close margins, 12 were true positive. Of the 163 specimens identified as having radiologically negative margins, 147 were true negatives. IDSM demonstrated a sensitivity of 42.9% (95% CI 24.5-62.8%) and a specificity of 91.3% (95% CI 85.9%-95.2%). The positive predictive value of IDSM is 45.2 (95% CI 30.7-62.4%) and the negative predictive value is 90.2 (78.1-89.0%).

Conclusions: The single center prospective study demonstrated that IDSM has a high specificity and low sensitivity in assessing the sufficiency of margins in breast cancer surgeries. These findings are align with previous studies. The high positive predictive value of this imaging technic allows for it to be considered a pertinent tool to guide margin evaluations in the operating room. Further analysis remains necessary to understand how lesion characteristics can affect the diagnostic accuracy of IDSM. It is also pertinent to analyze the level of agreement between surgeon and radiologists in regards to the interpretation of IDSM.

1990036 - Concordance of Radiologic Imaging Modalities and Pathologic Tumor Size in Patients with Invasive Lobular Carcinoma

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Background/Objective: Invasive lobular carcinoma (ILC) is often difficult to detect on conventional breast imaging and physical exam, and positive margin rate for ILC after breast conservation therapy can range anywhere from 12-60% as reported in literature. Magnetic Resonance Imaging (MRI) has a higher sensitivity than mammography, but its use is not recommended for all cases. The goal of this study was to determine which imaging modality has the highest rates of concordance of size on imaging when compared to size on final surgical pathology.

Methods: We conducted a single institution retrospective chart review of all patients diagnosed with ILC who underwent surgery at our institution from 2017-2023. We recorded the maximum tumor size as reported on each preoperative imaging modality and compared these estimated sizes to the final size measured on the pathology report.

Results: There were 84 patients who met inclusion criteria. 64.3% were Caucasian and 33.3% were African American. The median age amongst all patients was 66.5. 51 patients underwent mammogram with estimated size reported. Mammography was found to underestimate tumor size by 11.2% with a mean difference of -5.8mm ($p < 0.001$). Ultrasound (n=64) was found to underestimate tumor size by 17.6% with mean difference of -8.5 mm ($p < 0.001$). MRI (n=60) was found to have no statistically significant difference between imaging size and final pathologic size. Both mammography and ultrasound show positive correlations between size on imaging and size on final path, but consistently underestimate size. Of note, each imaging modality became less accurate as tumor size increased.

Conclusions: MRI was shown to be the most accurate imaging modality that can be used in the assessment of ILC. It is a useful adjunct in pre-operative assessment of ILC, especially in the setting of larger tumors where mammography and ultrasound are less accurate. Although the utilization of MRI in breast cancer is not a new phenomenon, our results emphasize the importance of considering MRI when evaluating tumor size in ILC, which can impact treatment planning.

1990265 - AI-driven Image Analysis System for Intraoperative Breast Surgery specimens: Preliminary Results

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Background/Objective: Intraoperative imaging evaluation of breast surgical specimen has been widely used in breast surgery practice to identify the biopsy clip and localization device (such as Savi clip or localization wire). No current imagers have the Intraoperative Imaging Automated Process to give machine-based reading of the specimen. Therefore, we aim to establish the AI-driven intraoperative imaging analysis system for real-time identification of the targeted biopsy marker and localization device.

Methods: Retrospectively, the intraoperative imaging of 53 patients underwent lumpectomy from our institution were obtained. Radiographic motifs of the biopsy marker/savi clip/wire were selected and differentiated from the background for computer vision and machine learning via university certified and HIPPA compliant application programming interface. All training and testing images were obtained from deidentified public resource. The study group images were not used for training or testing to ensure the validity. To evaluate AI's performance, we used R to calculate and infer its receiver operating characteristic (ROC) against the manual review label, including the accuracy, true positive rate (TPR), positive predicted value (PPV), and area under the ROC curve (AUC) in identifying existence of each type of marker, as well as the C-index in terms of counting the numbers of the markers. Confidence intervals (CIs) of these metrics are computed using bootstrap.

Results: A total of 26 external images were used for training (biopsy clip 10; savi clip 8, wire 8), and two additional images were used for testing for each object. The AI training process was 30 minutes after commands. Among 53 intraoperative images in the study group, breast surgeon and radiologist identified total of: 56 of biopsy clips, 33 of savi clips, and 22 of wires in all specimens. The same group of imaging underwent AI driven analysis to identify the target objects. The average time for AI analysis of each imaging is < 1 second. Accuracy (and its CI) of AI analysis on the identification of biopsy clip is 0.528 [0.296, 0.660], versus savi clip 0.566 [0.434, 0.698], and wire 0.792 [0.698, 0.906]. AI's TPR in identifying biopsy clip is 1.000 [1.000, 1.000], savi clip 0.917 [0.714, 1.000], and wire 0.818 [0.545, 1.000]. AI's PPV in identifying biopsy clip is 0.510 [0.372, 0.647], savi clip 0.333 [0.167, 0.488] and wire 0.500 [0.278, 0.722]. AI's AUC in identifying biopsy clip, savi clip and wire are 0.754 [0.696, 0.823], 0.641 [0.540, 0.733], 0.721 [0.601, 0.838]. In addition, AI counts of the biopsy clip, savi clip, and wire respectively achieve the C-indices of 0.572 [0.327, 0.782], 0.667 [0.583, 0.744], and 0.751 [0.636, 0.866]. Among the AI-identified objects, the trained AI returns an average confidence of recognition 54%, 56%, and 54% respectively for the biopsy clip, savi clip, and wire.

Conclusions: The trained AI-driven Intraoperative Image Analysis System could provide a real-time interpretation of intraoperative images that achieves comparable TPR as manual review. However, due to the heterogeneity of localization devices, larger training models can lead to higher accuracy. Further training in precise identification may be applied to more extensive radiographic interest.

1988763 - Accuracy of Breast MRI in Comparison with Postoperative Histopathology in Breast Cancer Patients with Invasive Lobular Carcinoma

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Background/Objective: Invasive lobular carcinoma (ILC) is the second leading type of invasive breast cancer and presents diagnostic challenges. With a subtle, infiltrative growth pattern, clinical signs are commonly atypical. The low sensitivity of conventional imaging modalities for ILC contributes to the barriers to diagnosis and often underestimates the extent of disease. Magnetic resonance imaging (MRI) has emerged as a valuable tool in preoperative surgical planning with a high sensitivity for ILC. However, MRI may overestimate disease size, raising concerns of false positives and potential overtreatment. The aim of this study is to assess the accuracy of tumor size on MRI by comparing it with tumor size on surgical histopathology.

Methods: In this single institution, retrospective cohort study, data was collected from electronic medical records of patients diagnosed with ILC, received a preoperative breast MRI and underwent surgical excision of the tumor between January 1, 2013, and December 31, 2023. Tumor size on MRI and on final surgical histopathology was collected for each patient. A Paired Samples t-Test was used to determine if a statistical difference exists between tumor size on MRI and final surgical histopathology with a significance level of 0.05.

Results: One hundred and thirty-six (136) patients that had preoperative MRI followed by surgical intervention were included. A Paired Samples t Test was used to determine if a statistical difference existed between tumor size on MRI and final surgical pathology. A standard p-value of less than or equal to 0.05 was used for statistical significance. No statistically significant difference was found between preoperative MRI tumor size and final surgical histopathology size ($p=0.14$).

Conclusions: No discrepancy between tumor size on preoperative MRI and final surgical histopathology was identified in this cohort. This suggests that MRI is a reliable tool in surgical planning for excision of invasive lobular carcinoma.

Localization

1984295 - Initial Year of Magnetic Seed Localization: How Did it Stack Up Against Wire and Radioactive Iodine Seed Localization in >400 Breast-Conserving Surgeries?

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Background/Objective: Many patients with early-stage breast cancer are candidates for breast-conserving surgery (BCS). Modern studies are pushing the boundaries on BCS candidacy even further. The most challenging aspect of BCS is avoiding positive margins and subsequent need for re-excision or mastectomy. Margin positivity rates are approximately 20% nationwide. Multiple studies have shown that positive margins increase recurrence rates for both invasive cancer and ductal carcinoma in situ (DCIS). Several tumor characteristics have been well linked with positive margins. Surgical decisions, such as choice for localization, may impact margin positivity. We sought to evaluate our institution's rate of margin positivity with a focus on a potential benefit of magnetic seed localization during its first year of widespread use.

Methods: We conducted a retrospective chart review of all lumpectomy cases performed for invasive and/or in situ cancer in 2022. Bilateral cases were analyzed separately. Cases with multiple unilateral lumpectomies were excluded. We examined 3 types of localization: wire-guided localization (WGL), radioactive iodine seed localization (RSL), and magnetic seed localization (Magseed) (MSL). We excluded those cases which were palpation-guided. We examined additional variables related to tumor pathology as well as pre-, intra-, and post-operative management. Impact on margin positivity was our primary outcome of interest. Re-excision and successful BCS rates were noted. To investigate the relationship between localization and margin positivity, we used a Fisher's exact test to determine group association and a logistic regression to model the log-odds of margin positivity.

Results: This study analyzed 445 lumpectomy specimens. Our margin-positivity rate was 10.1% with 45 specimens having positive margin(s). There were 89 (20%) specimens that used WGL, 52 (11.7%) specimens that used RSL, and 304 (68.3%) specimens that used MSL. MSL had the lowest margin positivity rate (25/304, 8.22%) compared to the other localization types. RSL had the highest margin positivity rate (8/52, 15.4%). These results were not statistically significant ($p = 0.1215$). MSL trended towards a reduction in margin positivity over RSL, using WGL as the standard (MSL OR = 0.57, $p = 0.139$; RSL OR = 1.17, $p = 0.755$). In total, 48 (10.8%) patients underwent re-excision, and 432 (97.1%) achieved successful BCS.

Conclusions: During its first year of rapid widespread use across our institution, MSL proved to be a non-inferior localization method in comparison to RSL and WGL. It was also the most popular choice for localization amongst our surgeons. The ease of placement and intra-operative use, along with the avoidance of radioactivity and dislodgement, are benefits of MSL over RSL and WGL. Our data suggests that MSL may even help reduce the rate of margin positivity. Additional cases of RSL and WGL from earlier years may need to be examined to support this conclusion.

Figure 1. Margin positivity rates across each localization type

Localization type, n (%)				
	WGL	RSL	MSL	Fisher's exact test, p-value
Negative margins	77 (86.52%)	44 (84.62%)	279 (91.78%)	p-value = 0.1215
Positive margins	12 (13.48%)	8 (15.38%)	25 (8.22%)	
Total	89 (20%)	52 (11.69%)	304 (68.31%)	

1990019 - Ability to See: 10 Year Series on Utilization of Ultrasound Guidance in Breast Procedures

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Background/Objective: The reliability and versatility of ultrasound as a means of real time visualization is well-documented by many specialties. It has been proven as an accurate and reliable instrument in localization for breast lesions. The aim of this review is to update the data on the effectiveness and reliability of ultrasound as a leading method for intraoperative localization of breast lesions.

Methods: This ten-year institutional review board (IRB) approved single institution retrospective review from May 2014 - September 2024. Electronic medical record (EMR) data keyword search was used to identify ultrasound utilization in mastectomy, partial mastectomy, lumpectomy, or excisional biopsy performed in the operating room. Intraoperatively, a Phillips L12-5 and L15-7io linear array transducers were utilized to localize breast lesions that correlated with preoperative clinical exam, mammogram, ultrasound, and/or magnetic resonance imaging (MRI).

Results: A total of 2,305 patients underwent breast procedures that utilized ultrasound guidance. Of these patients, 2,021 (87.7%) patients underwent intraoperative ultrasound guidance alone for lesion localization and 284 (12.3%) patients underwent needle localization, supplemented by ultrasound guidance. The final lesion and biopsy clips were confirmed using specimen radiography. All biopsy site changes or residual disease were confirmed on final pathology. Demographics and procedural information were collected for all patients who underwent a procedure with CPT codes: 19301, 19302, 19303, 19120, 19083, or 76998 between May 2014 and September 2024 (n=2305).

Conclusions: The ability to see is paramount to a surgeon's planning and surgical execution. This ten-year data for utilization of ultrasound guidance supports its pivotal role as an accurate and reliable method for localization of breast lesions. It allows for improved work flow, minimizes the need for additional procedures or localization devices for patients, while delivering reproducible accuracy.

1988767 - Comparative Outcomes of SmartClip Nonradioactive Seed versus Savi Scout Radar Localization for Excision of Breast Lesions

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Background/Objective: The advent of wireless localization techniques in the surgical excision of breast lesions provides the benefit of reducing patient discomfort, risk of transection, migration, and eliminates the need for same-day radiology coupling with surgical scheduling. Among these, is the Savi Scout (SS) surgical guidance system (Cianna Medical, Aliso Viejo, CA), which uses radar localization, and is proven to have comparable outcomes to traditional wire localization, although the radar signal can be weakened or disrupted when exposed to certain lighting or deactivated when in close proximity to electrocautery. The EnVisio Navigation System SmartClip (SC) (Elucent Medical, Eden Prairie, MN), is a novel technique which generates a distinctive electromagnetic signature detected on a transducer placed on the surgeon's electrocautery device, which is then displayed on a wireless screen. This study aims to compare our institution's experience with the SC versus the SS localization technique for excision of breast lesions.

Methods: An IRB-approved single-institution retrospective review was performed for all consecutive adult female patients that underwent SmartClip™ (SC) or Savi Scout (SS) localization for excision of breast lesions between February 2022 to April 2024. A review of the electronic medical record was used to collect demographic variables, and specimen tumor and nodal characteristics were collected using institutional synoptic reporting based on the 8th Edition protocol. Patients with incomplete charts or missing data were excluded. Descriptive statistics between the two cohorts were compared using student t-tests, Pearson's chi-square tests, or Fisher's exact tests as appropriate, with a significance level of 0.05. Analysis was performed using SAS Software (Version 9.4, Cary NC).

Results: Of the 347 patients who met the inclusion criteria, localization via SC was used in 224 (64.6%) patients, and via SS in 123 (35.45%), respectively. On average, the patients in the SC group were significantly older at the time of surgery and lower rates of previous ipsilateral breast surgery. Patients in the SC group had higher rates of DCIS (28.1% vs 15.4%, $p=0.007$), IDC (19.6% vs 5.7%, $p< 0.001$), and IDC with DCIS (10.3% vs 3.3%, $p=0.021$); and higher rates of ER+ or PR+ tumors compared to patients in the SS group (38.8% vs 16.3%, $p< 0.001$). No significant difference in HER2+ or triple negative tumors were seen between both groups. In subgroup analysis for breast cancer specimens, patients in the SC group had significantly smaller average specimen volumes excised compared to SS (62.1 cm3 vs 42.7 cm3, $p=0.029$). No significant difference was seen in positive margin, close margin, or reoperation rates between both groups.

Conclusions: At our institution, patients who underwent breast lesion excisions using SC nonradioactive seed localization were more likely to be of older age, and with higher rates of detected malignancy and hormone positive tumor markers compared to SS radar localization. In a subgroup analysis for breast cancer specimens, positive margin, close margin, and reoperation rates were found to equivalent. Further analysis with clinical-pathology matched cohorts is needed to improve the comparability of between the two localization techniques.

Table 1. Demographics, pathology, and operative outcomes per localization technique

Variables	All (n = 347)	Savi Scout (n = 123)	Smart Clip (n = 224)	P value
Age (yrs), mean (SD)	55.1 (17.3)	48.6 (16.4)	58.7 (16.8)	**<0.001**
BMI (Kg/m^2), mean (SD)	28.6 (6.2)	28.1 (5.6)	28.9 (6.5)	0.248
History of ipsilateral breast surgery, *n* (%)	49 (13.1)	25 (20.3)	24 (12.1)	**0.013**
Pathology, *n* (%)				
Non-proliferative	207 (59.7)	84 (68.3)	123 (54.9)	**0.015**
Atypia	61 (17.6)	17 (13.8)	44 (19.6)	0.172
LCIS	15 (4.3)	1 (0.8)	14 (6.3)	**0.023**
DCIS	82 (23.6)	19 (15.4)	63 (28.1)	**0.007**
IDC	51 (14.7)	7 (5.7)	44 (19.6)	**<0.001**
IDC with DCIS	27 (7.8)	4 (3.3)	23 (10.3)	**0.021**
ILC	6 (1.7)	0 (0)	6 (2.7)	0.093
Mixed IDC/ILC	3 (0.9)	0 (0)	3 (1.3)	0.555
IMC	1 (0.3)	0 (0)	1 (0.4)	1
Tumor characteristics, *n* (%)				
ER+ or PR+	107 (30.8)	20 (16.3)	87 (38.8)	**<0.001**
HER2+	5 (1.4)	1 (0.8)	4 (1.8)	0.659
Triple negative	5 (1.4)	2 (1.6)	3 (1.3)	1
Tumor size, mean (SD)	1.4 cm (1.0)	1.5 cm (1.0)	1.4 cm (1.0)	0.913
Specimen volume, mean (range)	38.6 cm^3 (0.2 – 571.8)	31.4 cm^3 (0.6 – 571.8)	42.7 cm^3 (0.2 – 230.3)	**0.027**
Device characteristics, *n* (%)				
Excised within primary specimen	333 (96.0)	119 (96.7)	214 (95.5)	0.583
Excised in same specimen as biopsy chip	315 (90.8)	117 (95.1)	198 (88.4)	**0.038**
Sent as separate gross specimen	14 (4.0)	3 (2.4)	11 (4.9)	0.393
Retrieved as additional margin	9 (2.6)	2 (1.6)	7 (3.1)	0.171

Variables in cancer specimens	All (n = 118)	Savi Scout (n = 21)	Smart Clip (n = 97)	P value
Type of breast cancer (biopsy or pathology), *n* (%)				
Invasive cancer	49 (41.5)	11 (52.4)	38 (39.2)	0.265
DCIS	82 (68.9)	19 (90.5)	63 (64.9)	**0.021**
Tumor size, mean (SD)	1.4 (0.8)	1.3 cm (0.6)	1.4 cm (0.9)	0.906
Specimen volume, mean (range)	63.9 cm^3 (0.2 – 571.8)	71.6 cm^3 (14.1 – 571.8)	62.1 cm^3 (0.2 – 230.3)	**0.029**
Device characteristics, *n* (%)				
Excised within primary specimen	112 (94.9)	19 (90.4)	93 (95.9)	0.307
Excised in same specimen as biopsy chip	104 (88.1)	18 (85.7)	86 (88.7)	0.705
Sent as separate gross specimen	8 (6.8)	1 (4.8)	7 (7.2)	1
Retrieved as additional margin	6 (5.1)	0 (0)	6 (6.2)	0.589
Excision characteristics, *n* (%)				
Positive margin	9 (7.6)	2 (9.5)	7 (6.9)	0.661
Close margin	44 (37.3)	10 (47.6)	34 (33.6)	0.280
Reoperation	13 (11.0)	4 (19.0)	9 (8.9)	0.244

P-value calculated using Student t-test, Fisher exact test/Pearson's chi-square test. Bold text = significant

1956277 - Comparison of Two Non-Radioactive Wireless Localization Technologies for Removal of Non-Palpable Breast Lesions: SCOUT® Radar Reflector and Pintuition® Magnetic Seed

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Background/Objective: Multiple non-radioactive wireless localization devices, including the SCOUT® radar reflector (SCOUT), are available as alternatives to wires for removal of non-palpable breast lesions. The Pintuition® magnetic seed (Seed) is a newer device utilizing a magnetic marker encapsulated in nickel-free titanium. This is the first study to compare surgical and pathological outcomes of SCOUT with Pintuition Seed.

Methods: A retrospective review was conducted of consecutive lumpectomies and excisional biopsies, localized with wireless techniques, performed by a single experienced surgeon between May 2022-July 2024. At our institution, the SCOUT was the only wireless option until June 2023; the Seed was exclusively used for single lesions by this surgeon starting August 2023. Only single-site localization cases were included. Patients with multiple localizations or oncoplastic reconstruction were excluded. The shortest marker depth to skin on mammography was measured independently by a breast radiologist. Patient characteristics, procedure type, lesion characteristics, positive margin and re-excision rates were compared using chi-square or Fisher's exact test for categorical variables and Wilcoxon test for continuous variables. Generalized linear models were used to compare surgery length and specimen volume. Linear regression models analyzed marker depth from skin on mammography. Cases with nodal staging were excluded from surgery length comparisons.

Results: Of the 90 lesions identified, 45 were localized by SCOUT and 45 by Seed. The median age of all patients in the study was 65 years (range 31-88). Age, BMI, surgery type, neoadjuvant therapy, total specimen volume, pathologic cancer size, positive margin and margin re-excision rates did not differ by localization device (Table 1). Compared to SCOUT, a larger proportion of Seed cases were performed for benign and cancer indications, less for atypia (p=0.02). All Seeds were removed on index operation, whereas one SCOUT was not due to absence of signal secondary to a small hematoma. The SCOUT and target lesion were subsequently excised two weeks later upon signal return. Surgery length was significantly shorter for Seed cases (median 37 minutes, Interquartile range (IQR) 30, 45) than for SCOUT (median 50 minutes, IQR 40, 58) (p=0.006). In a multivariable model, adjusting for BMI and pathology, the difference was no longer statistically significant, likely due to the limited sample size. Cancer pathology was associated with 36% longer surgery length for both SCOUT and Seed, compared to benign pathology (p=0.001). Positive margin rates were very low with only one patient in each group needing margin re-excision.

Conclusions: We observed a trend towards shorter operative times with the Seed, even though oncologic performance was similar between Seed and SCOUT. This requires validation with a larger cohort. The Pintuition magnetic seed represents a reliable and effective wireless localization technique and is an excellent alternative to SCOUT. When deciding wireless localization options, the surgeon should consider nuanced features of the case including timing of breast MRI relative to localization, presence of hematoma, and nickel allergy.

Table 1. Patient and lesion characteristics of non-palpable breast lesions localized by SCOUT versus Pintuition Seed

	SCOUT (n=45)	Pintuition Seed (n=45)	P-value
Age, median (range)	66 (33, 88)	62 (49, 71)	0.46
BMI, median (IQR)	27 (24, 31)	28 (24, 32)	0.46
Neoadjuvant	3 (7%)	3 (7%)	> 0.99
Surgery type			0.68
Excisional biopsy	16 (36%)	17 (38%)	
Lumpectomy	10 (22%)	12 (27%)	
Lumpectomy, SNB	17 (38%)	16 (36%)	
Lumpectomy, AD	2 (4%)	0 (0%)	
Indication			**0.02**
Benign	5 (11%)	11 (24%)	
Atypia	15 (33%)	5 (11%)	
Cancer	25 (56%)	29 (64%)	
Pathologic cancer size (mm), median (IQR)	5.4 (0, 12.5)	3.3 (0, 12)	0.82
Marker depth on mammography (mm), median (IQR)	2.7 (1.9, 3.5)	3.5 (2.1, 4.6)	0.18
Removal of target at index operation	44 (98%)	45 (100%)	> 0.99
Total specimen volume (mm^3), median (IQR)	27 (18.2, 43.5)	32.4 (17.1, 48.8)	0.80
Positive margin	1 (2%)	1 (2%)	> 0.99
Margin re-excision	1 (2%)	1 (2%)	> 0.99
Surgery length (min)*, median (IQR)	49.5 (40, 58)	37 (30, 45)	**0.006**

BMI: body mass index; SNB: sentinel node biopsy; AD: axillary dissection; IQR: interquartile range

*Cases with nodal staging were excluded.

Lymphedema

1988907 - Lymphatic-Sparing Sentinel Lymph Node Biopsy To Prevent Breast Cancer Related Lymphedema

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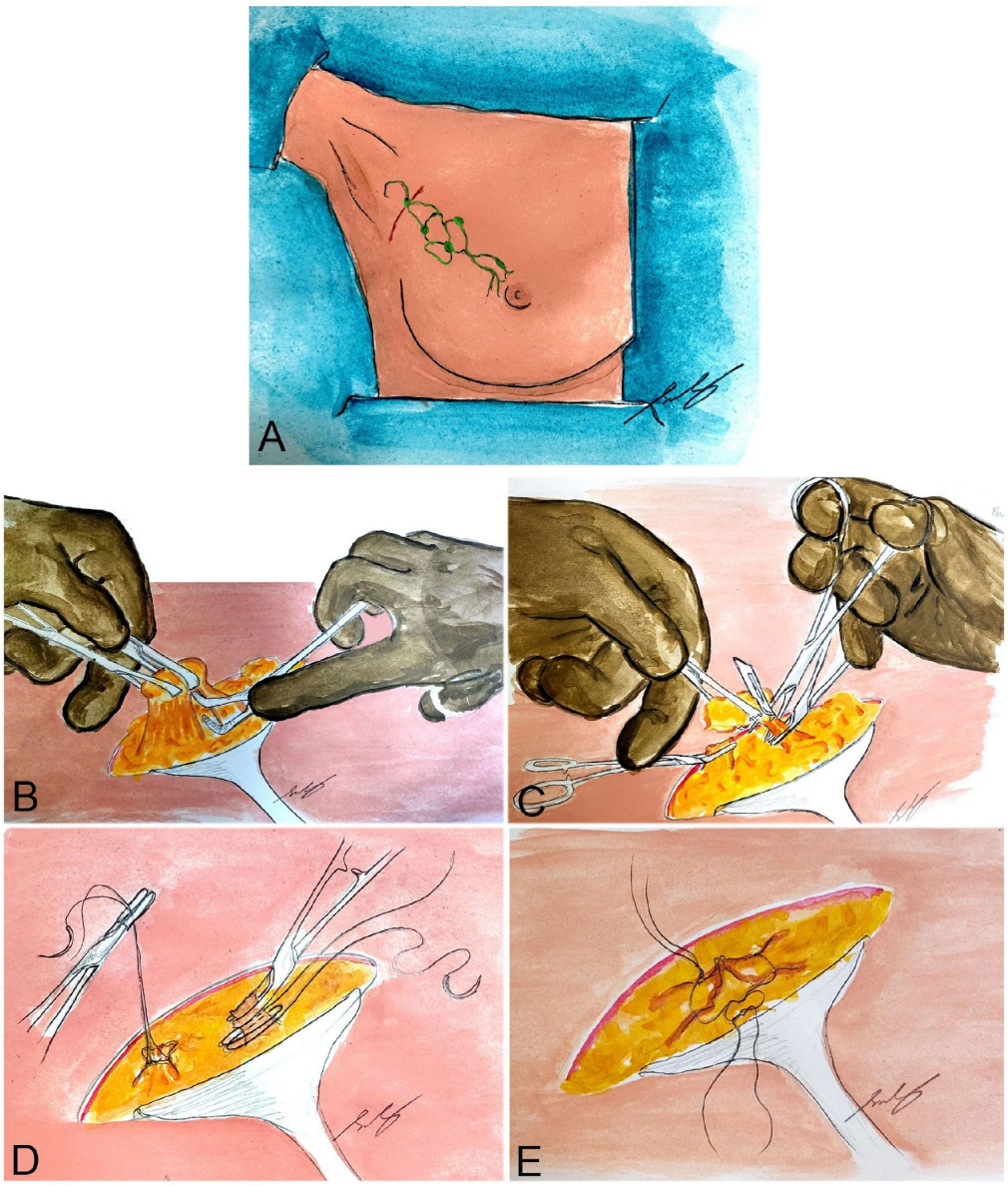
Background/Objective: Breast-cancer related lymphedema (BCRL) is a significant morbidity associated with axillary surgery with a risk of 5-7% in those who undergo sentinel lymph node biopsies. A lymphatic-sparing sentinel lymph node biopsy (LSSNBX) approach allows the surgeon to re-approximate the afferent and efferent lymphatic limbs to promote lymphangiogenesis. This is generally recommended when axillary reverse mapping (ARM) identifies a "cross-over" node which drains both the breast and arm. Without re-approximation, the lymphatic bundles post-node removal are a considerable distance apart. Our concept is that this simple technique can be performed routinely without ARM to refine the technique of sentinel node biopsy. Few studies have evaluated the effects of this approach on lymphedema. We sought to investigate the impact of lymphatic-sparing sentinel lymph node biopsy on BCRL.

Methods: We performed a retrospective review on a prospectively maintained database to identify patients who underwent lumpectomy or mastectomy with lymphatic-sparing SLNB and non-lymphatic-sparing SLNB between January 2017-January 2024. Patient demographics were extracted. Arm volume was measured non-invasively using bioimpedance spectroscopy (BIS) using the SOZO® device. Preoperative and 3-months postoperative SOZO® scores were collected and compared. BCRL was defined as a SOZO® score >10 and increase >6.5 from baseline.

Results: A total of 103 patients were identified: 52 patients had lymphatic-sparing SLNB, and 51 patients had non-lymphatic-sparing SLNB. Patients who had lymphatic-sparing SLNB were older (mean age 61.3±10.23 vs. 58.6±13.3 years), with significantly lower BMI (mean 27.7±6.2 vs 30.6±6.8 kg/m2), and more likely to have had a lumpectomy (80.8% vs 74.5%) than a mastectomy (17.3% vs 25.5%). There were no significant differences between the 2 groups when comparing those who had neoadjuvant chemotherapy, adjuvant chemotherapy, or adjuvant radiation therapy. At 3-months, 36 (69.2%) patients in the lymphatic-sparing group vs. 34 (66.7%) patients in the non-lymphatic-sparing group had follow-up SOZO® measurements and no patients had developed BCRL.

Conclusions: No patients in either group developed BCRL at 3-months postoperative follow-up based on SOZO® scores. We believe LSSNBX is a promising, simple technique that has the potential to eliminate BCRL after sentinel node biopsy. Further studies with greater power and longer follow-up are necessary to further elucidate if the lymphatic-sparing SLNB technique has an impact on BCRL.

Figure 1: Illustration of the Lymphatic-Sparing Sentinel Lymph Node Technique



LSSNBX Technique: A) Dual nodal mapping with ICG and Tc-99m; B-C) Sentinel node dissection with preservation of efferent & afferent lymphatics; D-E) Lymphatic reapproximation

1936311 - Lymphedema Surveillance Methods Following Bilateral Nodal Surgery for Breast Cancer

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Background/Objective: Breast cancer related lymphedema (BCRL) is a potential side effect of nodal surgery and prior studies have identified methods such as bioimpedance spectroscopy (BIS) to objectively identify early-stage lymphedema to provide an opportunity for early interventions to prevent progression. While these studies have validated the use of BIS for surveillance of BCRL in patients with unilateral nodal surgery, there is no data utilizing BIS for detection of BCRL in patients who have had bilateral nodal surgery.

Methods: Retrospective review of a prospectively collected database was performed of female patients at a single academic institution who had bilateral nodal surgery for breast cancer treatment and underwent BCRL surveillance with BIS between 2017 and 2023. Patients who had bilateral BIS measurements prior to any treatment were designated as having a true baseline. Patients who had prior nodal surgery before 2017, surgery at another institution, or had radiation or chemotherapy prior to nodal surgery were designated as not having a true baseline. An elevated BIS reading was defined as a change from baseline greater than 3 standard deviations (>10 points). BIS measurements were correlated with tape measurements and clinical symptoms.

Results: Bilateral nodal surgery was performed in 295 patients, 92 of which had true baseline BIS measurements. Only one patient (1.0%) with a true baseline was formally diagnosed with BCRL. The BIS measurement for this patient did not indicate BCRL and the diagnosis was made by clinical symptoms and tape measurements. In the remaining 203 patients without true baseline BIS, nine patients (4.4%) were diagnosed with BCRL. None of these were identified by BIS, rather all were identified by tape measurements and clinical symptoms.

Conclusions: Despite advancements in BCRL regarding early detection and intervention, with prior studies confirming that BIS is more accurate than tape measurements or clinical symptoms for monitoring of patients, BIS is not a reliable tool for patients who have bilateral lymph node surgery. Our results highlight that patients with bilateral nodal surgery should have tape measurements or volumetric measurements at baseline and for routine BCRL surveillance.

Male Breast Cancer

1988659 - Male Breast Cancer: A Single Institutional Review

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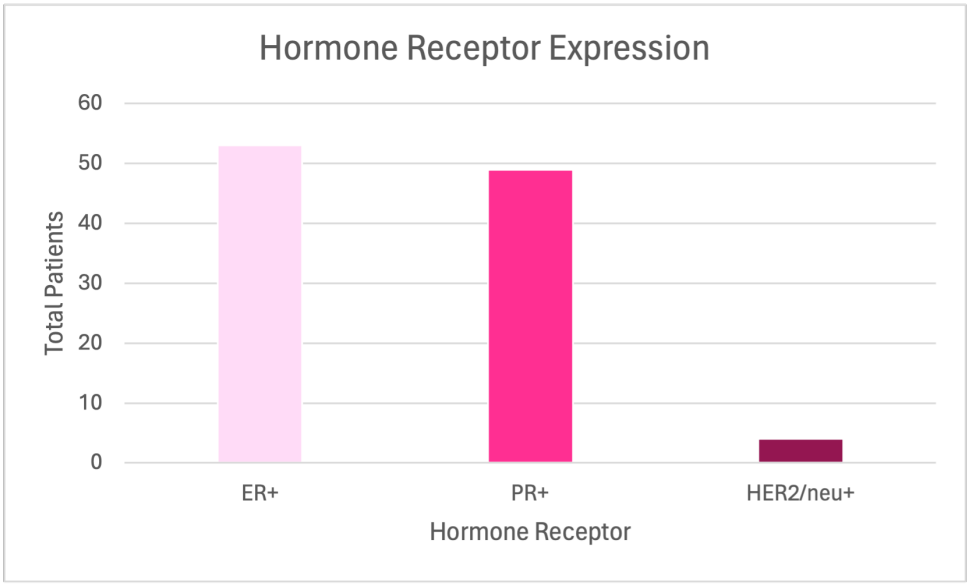
Background/Objective: Although breast cancer is typically categorized as a female cancer, breast cancer occurs in male patients, as well, at a lower incidence. This study focused on a single institutional review of the cases of male breast cancer over a 10-year period.

Methods: A retrospective review was performed of male patients who were diagnosed and treated for breast cancer between January 1, 2012 and December 31, 2022 at a single institution. Clinical, radiological, and histopathological data were collected and statistically evaluated.

Results: A total of 55 men diagnosed with breast cancer were included in the study period (average age 73.2 years, median age 73.5 years). Imaging modalities utilized in the diagnostic work up consisted of mammography 92.7% (51/55), ultrasonography 69.1% (38/55), MRI 5.5% (3/55), and PET-CT 10.9% (6/55). Invasive ductal carcinoma was the predominant pathologic diagnosis for the studied group (98.2%, 54/55). Ductal carcinoma in situ, as well as invasive carcinoma, was identified in 13 patients. Hormone receptor expression, if documented, was assessed in the patients as: estrogen receptor positive 53/53 (100%), progesterone receptor positive 49/52 (94.2%), and HER2/neu positive 4/47 (8.5%). Two patients were found to have synchronous lesions and required neoadjuvant treatment.

Conclusions: Breast cancer, although common amongst cancer diagnoses in women, is a rare disease among men. Male breast cancer may be confounded with benign diseases, causing its detection to be delayed, and presentation to be more advanced at time of diagnosis. Previous studies have shown that the most common type of breast cancer seen in men is invasive ductal carcinoma, accounting for approximately 90% of all male breast cancers, which was similarly identified in this single institutional review. Hormone receptor positivity was significant for the patients studied during this 10-year period, and previous studies have shown that hormone receptor positivity is more prevalent in male breast cancer than female breast cancer. In addition, this study found that mammography and ultrasonography remain the leading imaging modalities in the diagnostic workup of male breast cancer at our institution. Breast cancer behaves differently in males; therefore, a need for multi-center studies with more patients that focus on the treatment, prognosis, tumor biology, and factors influencing survival has been identified.

Figure 1: Hormone Receptor Expression



Margins

1988598 - Beyond the Margin: Investigating the Intersection of Demographics, Tumor Characteristics, and Surgical Techniques in Ductal Carcinoma In-Situ Re-excision

Mollie Ahn

HCA Medical City Health - UNT-TCU, Lewisville, TX

Background/Objective: Literature reports breast ductal carcinoma in situ (DCIS) re-excision rates as an average of 20-30% with some estimates reaching as high as 60%. Despite new technologies of margin verification, re-excision is a dreaded complication. Patient age, breast density, and tumor size have been associated with increased rates of re-excision, although the literature on these factors is limited. No significant correlations are hypothesized to exist, however this study aims to highlight consistent patterns associated with re-excision with the goal of improving the standard of care for DCIS.

Methods: A retrospective analysis was conducted on female patients in Texas with a diagnosis of unilateral DCIS that underwent partial mastectomy between 2016 and 2024. Patient characteristics (e.g. BMI, ethnicity, family history of breast malignancy), tumor characteristics (e.g. hormone receptor status, location, size), and surgical technique (e.g. tumor localization, margin confirmation method) were compared between those who achieved surgical completion after the initial operation and those requiring repeat excision.

Results: A total of 2,975 female patients who had undergone a partial mastectomy for unilateral DCIS between the aforementioned timeframe were identified. A total of 2,341 patients met inclusion criteria, of whom 200 underwent re-excision due to positive margins. No significant difference was identified in ethnicity or BMI between those undergoing single operation or requiring re-excision. Those that required re-excision presented with a higher proportion of left sided DCIS (59.5% vs. 52%). Those with previous history of hormone replacement therapy (HRT) prior to diagnosis were more likely to undergo re-excision (18% vs. 12%). Family history of breast malignancy was correlated with higher rates of re-excision (13%) than those without reported history (9%). Hormone receptor positive tumors had a re-excision rate of 31.5% compared to receptor negative tumors at 3.5%. The most common method of margin verification was through intraoperative x-ray of the pathology specimen in both groups with radioactive seed tumor localization being most common to both. A higher number of re-excisions were identified following wire localization compared to any other method. Very few instances of re-localization or margin verification was used in re-excision surgeries with intraoperative x-ray and frozen sections being the most common if any were utilized.

Conclusions: This study was successful in identifying patient, tumor, and surgical method characteristics that were correlated with positive margins requiring re-excision in the setting of DCIS. The findings indicate that patients with history of HRT with hormone receptor positive tumors are at higher risk for positive margins following initial surgery especially in the setting of wire bracketed localization. These results may allow surgeons to be vigilant in identifying high risk patients for re-excision and optimize surgical technique or employ novel margin verification technology to mitigate need for repeat surgery. These results provide preliminary data and further analysis is currently underway to identify intraoperative surgical techniques and tumor pathology that may also contribute to re-excision rates.

1988388 - Management of Positive Anterior Margins in Breast-Conserving Therapy for Breast Cancer. A systematic review of the literature.

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Background/Objective: There is no consensus on the management of positive anterior margins (PAM) in breast-conserving therapy (BCT). While there is substantial evidence to support margin re-excision for radial margins, there is a paucity of data on PAM and no current standard of care. We systematically review the literature on PAM in BCT for invasive breast cancer and ductal carcinoma in situ to support the development of evidence based clinical guidance.

Methods: A systematic review of the literature published between January 1995 – September 2024 was conducted, reporting on re-excision (RE) rates, yield of residual disease on RE and local recurrence (LR) data relative to surgical (RE) or non-surgical management (NSM) of PAM.

Results: A total of 135 abstracts were screened for suitability. Seven retrospective studies (five single- center, two multi-center) addressed management of PAM in BCT, separate to the management of radial margins. A total of 14,056 patients were included (Table 1). The proportion of PAM in the individual study cohorts extended from 3.12 % to 31.82% and re-excision rates varied widely between 0-94%. The residual yield of disease reported on RE ranged between 4.08% - 13.60% and was not stated to be clinically significant. The median 5-year LR rate (LRR) specified in the studies which assessed NSM was 2.70%. 57% of studies described the use of a boost in addition to adjuvant radiotherapy to account for PAM and 28.5% identified an association between PAM and the rationale to not re-excise, as opposed to RE in radial margin positivity.

Conclusions: The current management of PAM in BCT relies on Level III evidence from observational studies which provide limited long-term data on oncological outcomes. There have been no prospective or randomized controlled trials to support the development of clinical guidelines in relation to surgical (RE) or NSM. With this taken into consideration, the existing literature supports that the NSM of PAM is sufficient based on the low yield of disease on RE and low LRR observed with the use of adjuvant radiotherapy including boost radiation. Further prospective research is essential to strengthen the existing evidence and inform the safety of current practice. This is particularly relevant in the context of oncoplastic surgery, a growing field in breast surgery, where the precision and implications of re-excision is further challenged by the fact that skin incisions are often remote from the tumor site.

Table 1: Summary of Results

Author (Year)	McIntosh (2007)	McCahill (2012)	Mullen (2012)	Alrahbi (2015)	Dixon (2016)	Boundouki (2019)	O'Connel (2019)
Type of Study	Retrospective Observational	Retrospective Observational	Retrospective Observational	Retrospective Observational	Retrospective Observational	Retrospective Observational	Retrospective Observational
Single/Multi-center	Single	Multi	Single	Single	Single	Multi	Single
PAM definition	≤2mm	Tumour at ink	<1mm	<1mm	<1mm	<2mm	<2mm
DCIS/IDC	Both	Both	Both	Both	Both	Both	Both
Patient Number	200	2206	1667	720	1411	6922	930
PAM (%)	23.00%	31.82%	3.12%	14.30%	5.52%	4.00%	6.12%
Re- Excision (%)	0.00%	9.26%	94.23%	8.73%	0.00%	20.5%	38.59%
NSM only (%)	100%	-	-	-	100%	79.42%	-
Yield Re-Excision (%)	NA	NR	4.08%	NR	ND	11.00%	13.60%
Adjuvant RT	Y	NR	NR	Y	Y	Y	Y
Boost RT	Y	NR	NR	Y	Y	N	Y
5-year LRR NSM (%)	3.00%	NR	NR	NR	2.70%	2.72%	NR

NA = Not Applicable NR = Not Reported

NAC

1987284 - Impact of axillary surgery on oncologic outcomes of breast cancer patients treated with neoadjuvant chemotherapy

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Background/Objective: Neoadjuvant chemotherapy (NAC) has made it possible to reduce the extent of both breast and axillary surgery to spare morbidity whilst maintaining oncologic safety. There is no consensus on axillary management after NAC in patients who are clinically node positive or have residual disease after NAC. The primary objective of this study is to describe modern patterns of axillary surgery post NAC at our institution. The secondary objective is to assess oncologic outcomes, including axillary recurrence rate, disease-free survival (DFS), and breast-cancer-specific survival (BCSS), based on the extent of axillary surgery.

Methods: We performed a retrospective cohort study evaluating all female patients who underwent breast-conserving surgery (BCS) or mastectomy after receiving NAC between Jan 2012 to Dec 2019 at our institution. Patients with metastatic disease at diagnosis, bilateral breast cancer, history of breast cancer, synchronous cancers, incomplete NAC and those treated with BCS alone or lost to follow up were excluded. The electronic medical records were used to collect clinical, surgical, radiological, and pathological data of interest plus recurrence and survival data.

Results: There was a total of 334 patients who underwent NAC, 95 of which were node negative prior to NAC. Of 239 patients who were cN+ prior to NAC, 189 were cN1 (79%). 165 (69%) underwent upfront ALND, 51 (21.3%) SLNB and 23 (9.6%) underwent targeted axillary dissection (TAD). 32 patients (19.5%) were node positive after SLNB or TAD and of those 6 underwent cALND. In cN+ patients, nodal pCR was highest in SLNB ($p=0.011$). There was no significant difference in BCSS or DFS at four years between the groups regardless of pre-NAC nodal status. Locoregional recurrence and distant metastases was highest in TAD and lowest in SLNB, although this was not statistically significant. Of the 13 locoregional recurrences observed, 5 were in the axilla (2 TAD, 1 SLNB, 2 ALND), 7 were in the breast and 1 in the ipsilateral supraclavicular nodal basin.

Conclusions: Our study found that survival outcomes were similar regardless of the extent of axillary surgery, in patients who are cN0 and cN+ prior to NAC.

Table 1: Survival outcomes according to cN status prior to NAC and type of axillary surgery

Outcomes	cN0			cN+			
	SLNB only N= 91	Upfront ALND N= 4	*P-value*	SLNB only N = 51	TAD N= 23	Upfront ALND N=165	*P-value*
Breast pCR	32 (35.2%)	0	*0.2966*	23 (45.1%)	6 (26.1%)	54 (32.1%)	*0.176*
Nodal pCR	78 (85.7%)	3 (75.0%)	*0.4774*	34 (66.7%)	10 (43.5%)	71 (43.0%)	*0.0115*
Locoregional recurrence	4 (4.4%)	0	*0.999*	1 (2.0%)	3 (13.0%)	7 (4.2%)	*0.1277*
Distant metastases	8 (8.8%)	1 (25.0%)	*0.1059*	4 (7.8%)	6 (26.1%)	29 (20%)	*0.1064*
Breast-cancer specific survival	86 (94.5%)	3 (75%)	*0.2330*	48 (94.1%)	19 (82.6%)	136 (82.4%)	*0.118*
Disease-free survival (mean, months)	47.7	39.1	*0.291*	45.2	30	44.1	*0.253*

1987860 - Tumor to Nipple-Areolar Complex Distance as a Predictor of Axillary Lymph Node Involvement in Breast Cancer

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Background/Objective: In the era of de-escalation of axillary surgery for breast cancer, determining additional factors predictive of lymph node metastases may help in the clinical decision making of which patients can avoid axillary surgery. The aim of this study was to investigate the prognostic implication of tumor proximity to nipple as it relates to axillary node positivity. Our hypothesis was that primary tumor proximity increases the risk of axillary node positivity.

Methods: We performed retrospective review of a regional hospital cancer database. including all female patients (1/2012-1/2021) age >18 with T stage of T2 or greater, undergoing breast conservation surgery and sentinel lymph node biopsy for invasive ductal carcinoma. Exclusion criteria included Stage IV at diagnosis, recurrent breast cancer and patients with neoadjuvant chemotherapy or radiation. Preoperative mammograms were then reviewed, and longest measurement of tumor to the nipple areolar complex was performed. Additional clinicopathological and treatment information was also extracted. Statistical analysis was done using logistic regression.

Results: 303 patients were identified. For tumors < 5cm from the nipple areolar complex there was a 80% higher chance of lymph node positivity (adjusted OR= 1.80, 95%CI 1.04 – 3.13, p< 0.05). Additional analysis showed as age increased there was a 3% lower chance of lymph node positivity per year of age (OR= 0.97, 95%CI 0.95-0.98, p< 0.005). No other clinicopathologic features were predictive of lymph node positivity.

Conclusions: In conclusion, our analysis shows tumor ≤ 5 cm to the nipple is a significant predictor of lymph node positivity. Younger age at diagnosis is also associated with a higher likelihood of lymph node involvement. This knowledge may be helpful in patient risk stratification in determining which patients can avoid axillary surgery.

Table 1: Association between Tumor distance to NAC and Lymph Node Positivity, Logistic Regression Analysis

Association between Tumor distance to NAC and Lymph Node Positivity, Logistic Regression Analysis				
		95% CI		
	OR	Lower	Upper	P-value
Tumor distance to NAC				0.04
>5cm	REF			
<5cm	1.8	1.04	3.13	
Age				0.001
Per 1 year increase	0.97	0.95	0.99	
Race Ethnicity				0.13
White	REF			
Black	0.63	0.32	1.25	
Other Races	0.53	0.26	1.07	

Abbreviations- CI, confidence interval. OR, odds ratio. NAC nipple areolar complex

NSM

1988353 - Minimizing Complications in immediate implant based Breast Reconstruction: A Comparative Study on the Use of Acellular Dermal Matrix and expander

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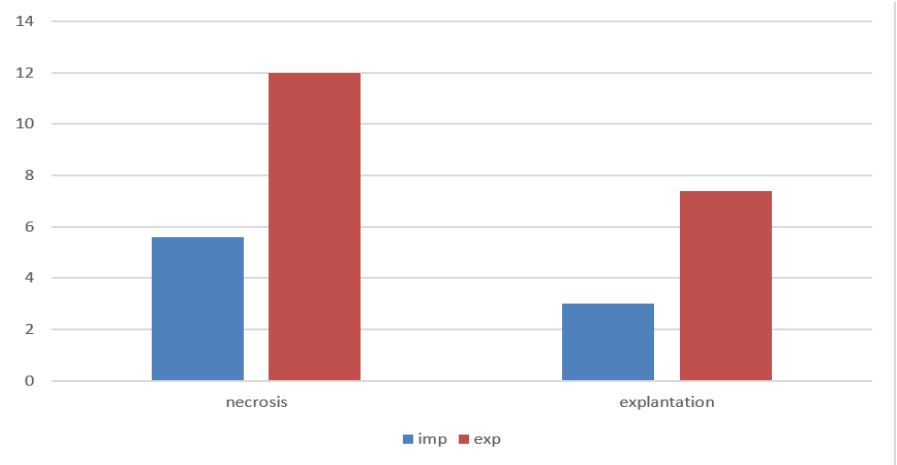
Background/Objective: Giving the rising rates of NSM, and immediate implant based breast reconstruction, we aim to identify the most appropriate surgical strategy that yield improved outcome.

Methods: The present retrospective cohort (March 2010-2024, Tehran) included all women who underwent skin or NAC sparing mastectomy with immediate implant based reconstruction (271 breasts; 167 women). Patients were categorized based on the use of ADM and expander into three groups: group 1) ADM with implant, group 2) ADM with expander, and group 3) No ADM no expander (only implant). The rate of complications, including infection and explantation was compared among the groups using SPSS v.21.

Results: Mean age of the participants was 41.68 ±7.48 years. There were 54, 107, and 110 breasts in groups 1, 2, and 3, respectively. Group 3 had the lowest infection rate (3.63%), while group 2 had the highest infection rate (13.1%), followed by group 1 (11.1%; P=0.04). The frequency of full-thickness Skin Necrosis was the highest in group 1 (16.6%), while no cases were observed in group 3 (P< 0.001). The frequency of explantation was significantly lower in group 3 (16.67%), while group 2 had the highest rate of explantation (2.72%, P< 0.001).

Conclusions: The proposed surgical approach, using a medium projection less than 400 cc breast implant and avoiding both expanders and ADM, can significantly reduce complications and failure rate.

Figure 1: Skin Necrosis and reconstruction failure rate in implant versus expander immediate breast reconstruction following NSM



Oncoplastics

1979666 - Patient Reported Satisfaction Outcomes After Breast Radiation Using Intraoperative Radiation Therapy Vs. External Beam Radiation Therapy

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University of Miami, Miami, FL

Background/Objective: Intraoperative radiation therapy (IORT), is an alternative to postoperative whole breast irradiation for early-stage breast cancer. The aim of this study was to assess patient reported outcomes (PRO) on cosmetic results and radiation related adverse effects after IORT vs. EBRT.

Methods: Patients treated with IORT for DCIS or early-stage breast cancer between 2017-2023 were asked to submit the pre-validated BREAST-Q survey tool for objective aesthetic evaluation. A matching cohort of patients treated with EBRT during the same time interval was also asked to submit the same survey.

Results: 88 patients were included, 56 (63.0%) with invasive ductal carcinoma (IDC) and 32 (36%) with DCIS. 30 (68%) patients with IDC and 14 (31%) patients with DCIS had IORT. Patient satisfaction scores with breast cosmesis was higher in IORT group compared to EBRT(mean, 83.7 versus 74.2; $p = 0.05$). Less radiation related adverse effects were reported after IORT (mean, 7.7) as compared with EBRT (mean,10.6)($p < 0.05$).

Conclusions: This study suggests that in comparison to EBRT, patients treated with IORT have higher satisfaction scores related to breast cosmesis and less radiation related adverse effects.

1983747 - Trans-axillary retro-mammary (TARM) approach of endoscopic breast surgery can make a best performance on radical surgery for early breast cancer, as a result of low-recurrence and better aesthetic results, from 700 surgical cases.

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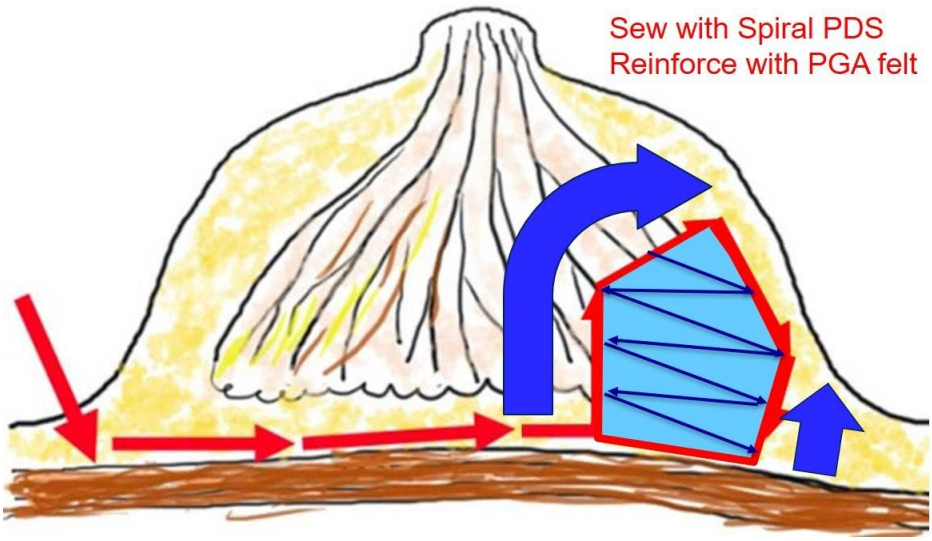
Background/Objective: The conventional breast surgery, including breast-conserving surgery (BCS), makes many long wound scars on the breast with granulated ugly scars. We devised trans-axillary retro-mammary approach (TARM) of endoscopic breast surgery to perform partial and total mastectomy without any wound on the breast. We have performed on more than 700 patients since 2001. We evaluated the long-term results of the aesthetics and curability over 20 years after surgery.

Methods: Endoscopic surgery consists of lumpectomy, mastectomy, sentinel node (SN) biopsy, axillary node dissection, and breast reconstructions. TARM is a single port surgery with an axillary skin incision. The wound length is usually 2.5cm long, but 1cm for SN biopsy. All surgical manipulations are performed under endoscopic view. From the axillary port, the breast tissue is detached from the major pectoral muscle. The mammary gland including the tumor lesions is cut from behind the mammary gland, with clear surgical margin. The resected dead space is remodeled by suture, mobilization, or reinforcement. The postoperative aesthetic results were evaluated by ABNSW scoring system.

Results: Endoscopic breast surgery was performed on 700 patients, breast-conserving surgery on 620 patients, and total mastectomy on 80 patients. The operative cost is very low as the conventional one. There was no serious complication after surgery. The original shapes of the breast were preserved well. The postoperative esthetic results were excellent and better. The sensory disturbance was minimal. All patients expressed great satisfaction. The follow-up is 290 months at maximum. There is 3 locoregional recurrences and 14 distant metastases. 10-year survival rate is 97.5%.

Conclusions: TARM endoscopic breast surgery can be considered as a better surgical procedure, concerning locoregional control and esthetics.

Figure 1: Trans-axillary retro-mammary approach of endoscopic breast surgery



1987751 - Outcomes of oncoplastic surgery vs. breast reconstruction in standard lesions and in locally advanced or multicentric tumors.

Regis Paulinelli[1], Aline Reis[2], Rosemar Rahal[3], Luiz Fernando Ribeiro[1]

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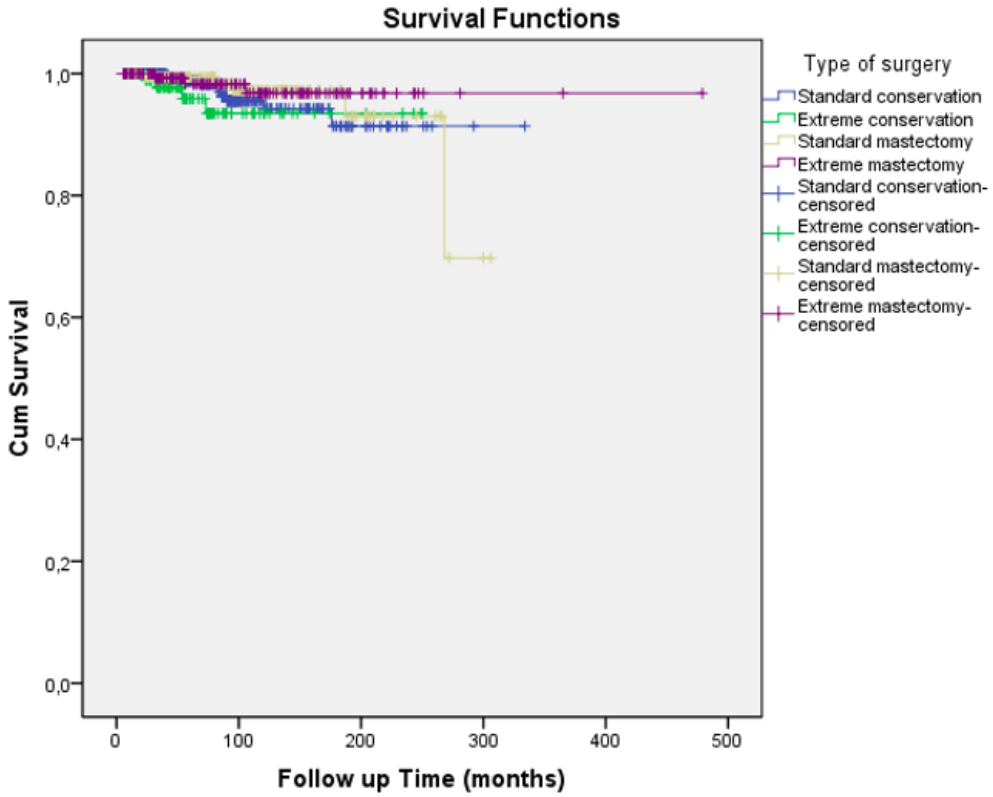
Background/Objective: The oncologic safety and aesthetic outcomes of extreme oncoplastic surgery remain uncertain. This study aimed to compare extreme oncoplasty (EO), partial breast reconstruction for tumors larger than 5 cm or multicentric lesions, with standard oncoplasty (SO), oncoplastic surgery for unicentric T1 or T2 tumors; extreme reconstruction (ER), total breast reconstruction for tumors larger than 5 cm or multicentric lesions; and standard reconstruction (SR), total breast reconstruction for unicentric T1 or T2 tumors.

Methods: Methods: This retrospective cohort study included 866 women with breast cancer or phyllodes tumors who had completed partial or total breast reconstruction at least 6 months after surgery and radiotherapy. Clinical and pathological parameters, complications, surgical techniques, local recurrence rates, and survival were evaluated retrospectively from medical records. Aesthetic outcomes were assessed prospectively using the Harvard scale, Breast-Q, and the BCCT.core software after informed consent. The study was approved by the centers' ethics committees. Data were analyzed using SPSS statistical software.

Results: Among patients with extreme lesions, 128 (42.5%) underwent oncoplasty, and 372 (65.8%) with standard lesions. Invasive ductal carcinoma (82%) was the most common histological type, and 27 (21.1%) had multicentric tumors. The EO group had similar comorbidities but required more often axillary clearance, neoadjuvant chemotherapy, modified personal techniques, contralateral symmetrization, and volume replacement techniques compared to the SO group. The incidence of major complications requiring reoperation was 7.1% for EO, similar to SO (6.64%) but significantly lower than total breast reconstruction patients (21.9% in SR and 25.0% in ER, $p< 0.01$). The mastectomy conversion rate was 5.5% in EO, similar to SO. Intraoperative margin evaluation was more common in EO (52.0%). Positive margin rates were comparable across groups. Mean follow-up was 83.25 months. The number of procedures needed for reconstruction was significantly lower in the conservative groups compared to mastectomy groups. Local recurrence rates were similar for EO and SO, but higher than ER and SR. There was no difference in overall survival. Patients submitted to conservative oncoplastic surgery groups reported higher satisfaction with breasts, outcomes, information, and sexual well-being than mastectomy with reconstruction groups.

Conclusions: Extreme oncoplasty is a feasible and safe option for selected patients with locally advanced or multicentric breast cancer, offering better aesthetic outcomes and less complication rates than total breast reconstruction.

Figure 1. Overall survival among groups (NS)



1987806 - Breast-conserving therapy or mastectomy with breast reconstruction in the treatment of locally advanced and/or multifocal and multicentric breast cancer? A systematic review and meta-analysis

Regis Paulinelli[1], Aline Reis[2], Rosemar Rahal[3]

[1]Araujo Jorge Cancer Hospital, Goiania, Goias, Brazil, [2]UFG, Goiânia, Goias, Brazil, [3]Federal University of Goias, Goiania, Goias, Brazil

Background/Objective: The incidence of locally advanced tumors has decreased in developed countries due to screening programs. However, it remains a significant problem in developing countries. With advancements in neoadjuvant therapy and oncoplastic breast surgery techniques, various groups have sought to preserve the breast in extreme situations, such as locally advanced, multifocal, and multicentric tumors. However, questions remain about its oncological efficacy and safety. The objective of this systematic review and meta-analysis is to evaluate whether Breast-Conserving Therapy (BCT) is feasible for women with multifocal (MF), multicentric (MC), and/or ≥5 cm breast cancer and to compare the outcomes of treatment for patients undergoing mastectomy.

Methods: This systematic review was registered in Prospero CRD42022362765 and conducted based on the PRISMA checklist. The databases searched were Cochrane Library, PubMed, Virtual Health Library (VHL), and Web of Science in May 2024. The terms used were: ((mammoplasty) OR (breast reconstruction) OR (locally advanced breast cancer) OR (multicentric breast cancer) OR (multifocal breast cancer) OR (breast neoplasm) OR (breast cancer)) AND ((conservative treatment) OR (oncoplastic surgery) OR (oncoplasty) OR (extreme oncoplastic surgery)). The risk of bias assessment for cohort studies used the Newcastle-Ottawa Quality Assessment Scale (NOS scale) and for randomized studies, the Cochrane risk-of-bias tool for randomized trials (RoB 2). The Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) system was used to assess the quality of evidence, and the Joanna Briggs Institute for methodological quality of studies. The analysis was performed using the odds ratio algorithm.

Results: This study included ten cohorts and one randomized trial, involving 2,644 women. Of these, 988 underwent BCT and 1,656 underwent mastectomy. The follow-up duration ranged from 1 to 248 months with a mean of 60.2 months. In the NOS scale assessment, six studies were considered high quality and four moderate quality, with the randomized study deemed with some concerns (RoB2). GRADE assessment showed good consistency among the studies. The analysis revealed that BCT was marginally associated with a higher risk of local recurrence (4.5% versus 2.5% - OR=0.61; 95% CI: 0.14-1.09, p=0.012; I2=0%). There were no significant differences in regional recurrence (OR = 0.25; 95% CI: 1.40-0.91, p=0.67; I2=0), metastasis (OR = 0.25; 95% CI: 0.79-0.28, p=0.813; I2=0), and mortality (OR = 0.02; 95% CI: 1.89-1.85, p=0.98; I2=2.1) between the groups.

Conclusions: The results demonstrate that although local recurrence was slightly higher in the BCT group compared to the mastectomy group, there was no statistically significant difference in regional recurrence, metastasis, or mortality between the two surgical treatments. These findings suggest that BCT is a safe alternative to mastectomy for multifocal and multicentric breast cancer or tumors ≥ 5 cm if it's feasibility.

Figure 1. Mortality after extreme conservation and mastectomy.

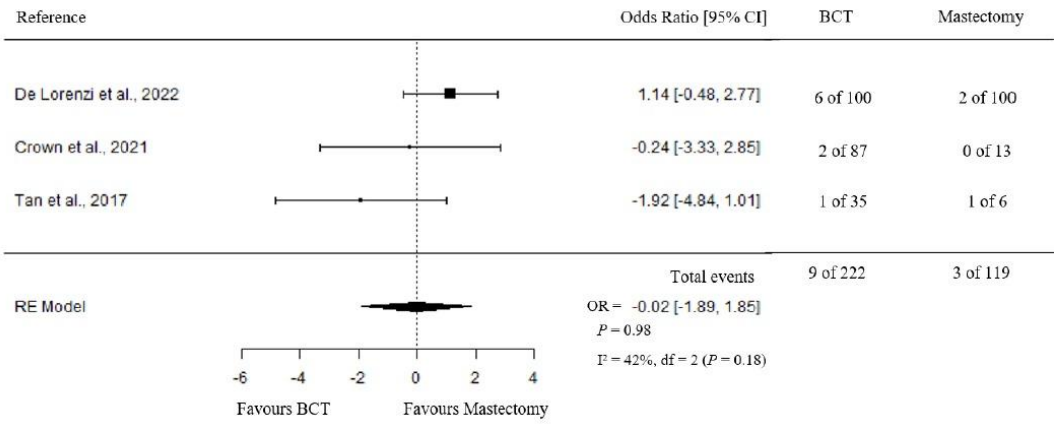


Figure 5: Mortality of BCT versus mastectomy for ≥ 5 cm, multifocal and multicentric breast cancer.

1986961 - Oncoplastic Breast Reduction Excision: Low Local Recurrence Rate, High Margins Clearance

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Background/Objective: Oncoplastic breast conservation is a breast-conserving operation, adhering to oncologic principles and plastic surgical techniques and is quickly becoming mainstream. We report on 1218 patients treated with oncoplastic breast reduction surgery at a single institution between 2008-2024.

Methods: 1218 patients with invasive breast cancer or ductal carcinoma in situ who were candidates for breast conservation were treated with oncoplastic breast reduction surgery. They were collected in a prospective database. Median follow-up was 81 months. Tumor span was defined as the largest dimension of the entire tumor, including all multifocal or multicentric sites. All tumor excision specimens were inked and margins were measured. Local, regional, and distant recurrence were collected as well as overall and disease-specific survival. Kaplan-Meier analysis was used to estimate recurrence and survival probabilities.

Results: The table details and compares tumor span, excision weight, margin widths, recurrences, and deaths. No ink on tumor was achieved in 93.5% of patients on the first excision. The re-excision rate was 6.5%. 10 patients were converted to mastectomy. 1083 patients received whole breast or partial breast irradiation. For the group who accepted adjuvant radiation therapy, the 5-year local recurrence rate was only 2.8%. 125 patients refused additional radiation therapy, although recommended. They were essentially treated with oncoplastic excision alone and their 5-year local recurrence rate was 15.8%.

Conclusions: The overall 5-year local recurrence for all 1218 patients was 4.15% but for those who accepted radiation therapy as part of their local treatment, it was 2.8%. The addition of radiation therapy to breast conservation surgery clearly lowers local recurrence rates. The overall 5-year survival was 98.1% and the breast cancer specific survival was 99% and there was no difference between any subgroup. Oncoplastic excisions generally allow for larger specimen than standard excisions, which accounts for adequate margins by the “no ink on tumor” standard in almost 94% of patients. Breast conservation using oncoplastic reduction excision and radiation therapy is an appropriate approach for most patients with larger and/or ptotic breasts. This cohort of patients is the one of the largest series of breast conservation for breast cancer using oncoplastic reduction excision that we are aware of.

Table 1: Oncoplastic Reduction Excision: Tumor Characteristics, Treatment, and Recurrence and Survival

	Oncoplastic Reduction Excision	5-Year Local Recurrence Probability
N	1218	
Ave Tumor Span	35 mm	
Ave Specimen Weight	136 gm	
# No Ink on Tumor Initial Excision	1139 (93.5%)	
Margin ≥ 1 mm Initial Excision	993 (81.5%)	
Required Second Excision	79 (6.5%)	
TREATMENT		
Converted to Mastectomy	**10**	Too Few
Received Whole or Partial Breast Radiation Therapy	1083	2.8%
Refused Additional Whole Breast Treatment	125	15.8%
All PATIENTS		
# Local Recurrences	67	
# Axillary Recurrences	13	
# Distant Recurrences	37	
# Breast Cancer Deaths	15	
# Any Cause Deaths	40	
5-Year Probability Local Recurrence All Patients	4.15%	
5-Year Probability Axillary Recurrence	0.49%	
5-Year Probability Distant Recurrence	2.47%	
5-Year Probability Breast Cancer Survival	99.0%	
5-Year Probability Overall Survival	98.1%	

1988114 - Effectiveness and safety of Savi Scout radar localization in level II and level III oncoplastic breast conservation surgery.

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Background/Objective: Oncoplastic breast conservation surgery (OBCS) is a safe and effective technique for breast conservation offering better patient satisfaction and psychosocial well-being. The techniques of volume displacement (level I and II) and volume replacement (local perforator flaps) facilitate larger areas of resection favoring both oncological and cosmetic acceptability. For non-palpable breast lesions, the use of Savi Scout radar localization has proven very effective to aid breast conservation, offering a safe rate of margin re-excision. At our center we have transitioned from wire localization to use of Scout during the COVID-19 pandemic. In keeping with a significant volume of oncoplastic work at our center, we aimed to assess the effectiveness of this technique for advanced OBCS including level II volume displacement with contralateral symmetrization as well for partial breast reconstructions (volume replacement, level III) with chest wall perforator flaps.

Methods: Over a period of 28 months from May 2022 to September 2024 we performed 60 OBCS procedures. All procedures were performed by oncoplastic trained breast consultants, individually for ipsilateral cases and teamed together for bilateral cases. A total of 51 volume displacement mammoplasties (19 with contralateral symmetrization) and 9 volume replacement procedures with an intercostal perforator flap were included in the analysis.

Results: The patient cohort (n=60) had a mean age of 62 years (range 38 – 85), with a weak negative correlation between age and BMI, tumor size, and specimen weight. Mean BMI was 27. 12 (range 19 – 45) and mean tumor size was 24.75mm (range: 2.0-80.0 mm). The mean specimen weight after excision was 108 grams. One Scout device was used for 41 cases, while 19 cases were performed using two Scout devices (placed individually in the lesion or by bracketing the lesion). 26 cases received neo-adjuvant chemotherapy (NACT) but its impact on complications and margin involvement was found to be insignificant. Surgical complications were reported in 4 cases (3 with infection and 1 with seroma), with the size of the resection being significantly larger in patients with complications. Our re-excision rate was 8.3% (5/60 cases) with 2 patients ending with a completion mastectomy and 3 with a margin re-excision.

Conclusions: Overall, the analysis provides valuable insights into the successful use of Savi Scout localization for advanced OBCS (level II volume displacement as well as level III partial breast reconstruction), pushing the boundaries of breast conservation and avoiding mastectomy in most cases of T2 and T3 cancers. Both re-excision rate and complication rate remain in the lower spectrum of the accepted values from published literature.

1987928 - Immediate versus Delayed Contralateral Symmetrizing Surgery in Therapeutic Mammoplasty: Results of Survey of the Association of Breast Surgery of Great Britain and Ireland

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Background/Objective: Women undergoing therapeutic mammoplasty (TM) for unilateral breast cancer may experience significant and prolonged asymmetry and so elect for contralateral symmetrizing surgery to improve breast-related quality of life. The traditional view was to perform symmetrization downstream after TM to allow effects of radiation therapy to settle and aid judgements regarding the extent of contralateral symmetrization. Recently, this view has been challenged with new models of service (e.g. dual surgeon / co-operating) to facilitate immediate symmetrization surgery. A recent Association of Breast Surgery of Great Britain and Ireland (ABSGBI) debate left the audience split on whether symmetrizing surgery should be performed immediate with TM or delayed after TM. We surveyed the ABSGBI membership on their views, practices and models of service for symmetrizing surgery.

Methods: Members of the ABSGBI were invited to anonymously complete an electronic survey from 28 February 2024 to 5th November 2024. Invitation was through the ABSGBI survey webs pages [https://associationofbreastsurgery.org.uk/professionals/surveys], supported by personal communication. The survey content included questions about preferences for immediate versus delayed symmetrizing surgery, perceived benefits and harms of each approach, models of service and challenges in delivery of symmetrization surgery. Descriptive statistics were used to analyze the data.

Results: 100 responses were obtained. The majority of respondents were consultant surgeons either with (64.7%) or without (24.7%) formal oncoplastic training (64.7%). Nearly all respondents perform oncoplastic techniques including TM (89.4%). Almost all surgeons felt immediate symmetrizing surgery should be available routinely (95.3%), especially in patients likely to experience significant asymmetry (73.0%). 78.8% of respondents offer symmetrization routinely, of whom 61.9% prefer to do this immediately at index TM, and 36.9% conduct delayed symmetrization mammoplasty downstream. Justifications for delayed symmetrization include better assessment of shrinkage after radiation (42.6%), limited time for immediate symmetrization (25.9%), challenges judging amount of tissue to remove in the immediate setting (9.3%) or other unspecified (22.2%). Regarding immediate symmetrization, a dual team, co-surgeon approach was routinely used in 50.7% and facilitated on a case-by-case basis in 21.9%, whereas a single surgeon immediate staged approach was done in 20.5%, and 6.9% could not offer immediate symmetrization. Barriers to immediate symmetrization and drivers for a delayed approach were predominantly time constraints [“no time”=33.6%, “it would take too long”=32.0%]. The majority ranked cost savings to the healthcare system as the greatest benefit in favor of immediate symmetrization (86.0%), followed by improved symmetry and breast-related quality of life (12%), and single anesthetic (2.0%). Of potential harms following immediate symmetrization, the greatest concern was the theoretical potential for delay to adjuvant therapy (40.3%). 61.7% either clinical equipoise for a randomized trial.

Conclusions: This survey suggests substantial variation in the views, practices and models of service in symmetrizing surgery following TM for breast cancer. Just over half of surgeons prefer immediate symmetrization, and many still advocate for a delayed approach, which suggests more evidence is required regarding the benefits/risks of each approach. Challenges in service delivery (e.g. time constraints on single surgeon) could be overcome using a dual-team, co-surgeon model of care.

1988668 - Detection Rates of Incidental Cancers and Re-excision Rates during Oncoplastic Surgery

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Background/Objective: Compared to breast-conserving therapy (BCT), oncoplastic breast surgery allows for larger resections to maximize oncologic outcome without compromising aesthetics. Few studies compare detection rates of incidental cancers found on these larger resections in oncoplastic surgery compared to the current standard of care, BCT. We aim to report our findings of tumor size, detection rates, and re-excision rates for oncoplastic surgery.

Methods: Consecutive oncoplastic cases by a single surgeon from January 2022 to October 2023 were identified. Patient, tumor, and surgical characteristics were retrieved from retrospective chart review. Incidental cancers were defined as a separate focus of invasive cancer or ductal carcinoma in situ (DCIS) not previously identified on biopsy. Descriptive statistics were used to define preoperative and postoperative tumor sizes, rates of incidental cancer detection, and surgical intervention.

Results: We identified 42 patients, with 18 undergoing volume displacement (VD) oncoplastic surgery, and 24 undergoing volume replacement (VR) oncoplastic surgery. Median preoperative and postoperative tumor size was 1.3cm and 1.2cm, respectively, for VD, and 1.58cm and 1.36, respectively, for VR. Overall detection rate was 43%. Of the 18 VD cases, 8 patients had incidental cancers detected representing a detection rate of 44%. Of the 24 VR cases, detection rate was 42%, with detection of incidental cancers in 10 patients. Of the 18 identified incidental cancers, one was invasive ductal carcinoma and 17 were DCIS. Among patients undergoing VR, re-excision rates were 10.7%.

Conclusions: We report early data from oncoplastic resections demonstrating high detection rates of incidental cancers (overall detection rate (43%) and low re-excision rates for positive margins after oncoplastic resection (10.7%) compared to literature values for BCT ranging 20-40%. Future studies will aim to compare these findings directly with a matched cohort to appropriately compare these detection rates and re-excision rates more formally to BCT.

1908538 - Oncoplastic management of chest wall recurrence after breast cancer with reconstruction: prioritizing oncologic principles while maintaining breast reconstruction

Marina Parapini[1], Eleonora Savia[2], Jenny Claude Millochaud[3], Alejandro Sanchez[2], Claude Nos[3], Isabelle Sarfati[3], Krishna Clough[3]

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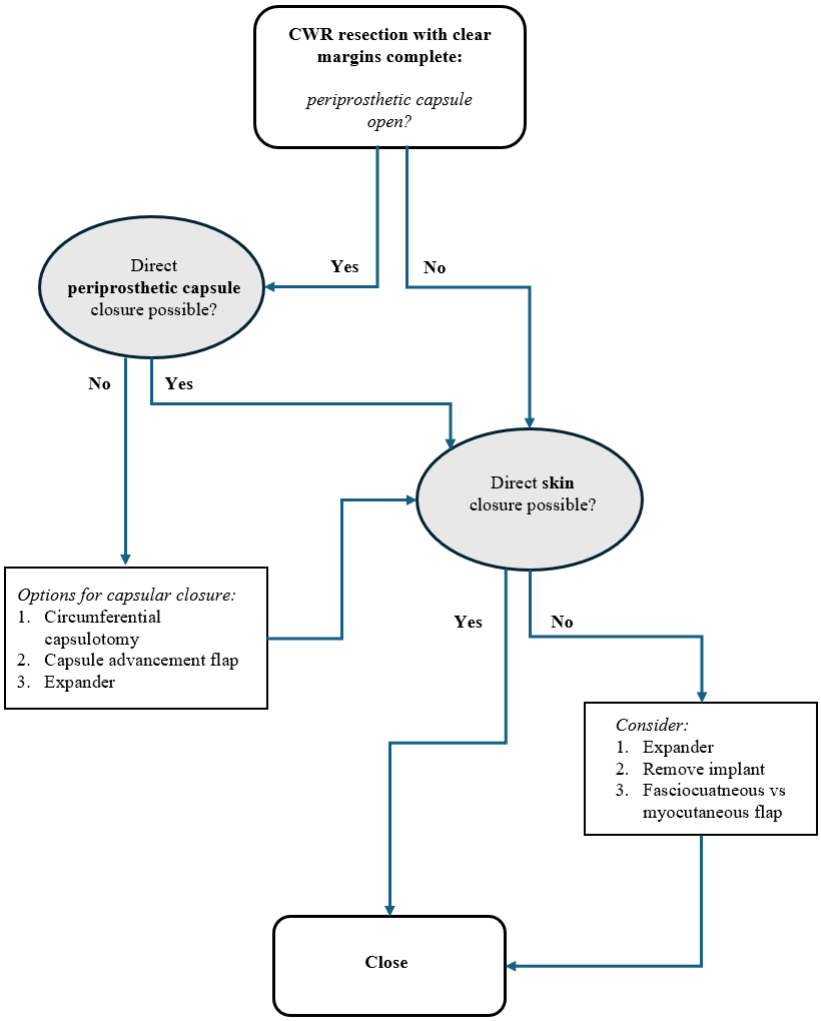
Background/Objective: Chest wall recurrence (CWR) after breast cancer in patients with breast reconstruction (BR) is an increasingly common operative challenge as more patients undergo reconstruction. Treating these CWR patients requires balancing the competing interests of complete excision of the recurrence while not deteriorating the reconstruction, which often required multiple operations to achieve.

Methods: A retrospective chart review at the Paris Breast Center identified 42 consecutive patients with CWR and BR who underwent surgery between 2005 and 2023. Primary outcomes were free margin rates, local control of breast cancer recurrence, and delay to adjuvant treatment. Secondary outcomes were loss of BR.

Results: The majority of patients had immediate reconstruction (n=32, 76%) with implants (n=38, 90%) at the time of their index breast cancer. In the treatment of CWR, upfront surgery occurred in 81% of patients (n=34). Wide excision involving only skin and subcutaneous tissue occurred in 71% of patients (n=30), and direct closure after resection of CWR was possible in 79% (n=33). Free margins were obtained in 100% of cases, maintaining the original reconstruction in 81% of patients (n=34), with no patients experiencing delay to adjuvant treatment.

Conclusions: Treatment of patients with CWR and BR should follow the same principles as for those without reconstruction. This study shows that in our patient population free resection margins without delay to adjuvant treatment was possible in all patients, while still maintaining the BR in 81% of cases.

Figure 1: Approach to management of CWR with implant breast reconstruction and periprosthetic capsule



1971636 - Level 2 Oncoplastic Breast Surgery Improves Quality of Life after Breast Cancer Surgery: A Prospective Quality of Life Study

Ryerson Seguin, Lashan Peiris

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Background/Objective: While breast cancer remains among the most common cancers in women, evolving Oncoplastic techniques have altered the landscape of breast cancer management allowing for a greater focus on patient satisfaction and the appearance of the post-surgical breast without compromising oncologic outcomes. This study demonstrates a significant improvement in Quality-of-Life throughout all domains when utilizing level II Oncoplastic Breast Surgery and provides further evidence to support the incorporation of advanced Oncoplastic training into the Canadian General Surgical Training curriculum.

Methods: The Breast-Q quality of life questionnaire was offered to all patients undergoing Level II Oncoplastic Breast Surgery between March 2018 and May 2021. The questionnaire was given in the pre-operative setting, 3 months post-surgery, and finally 9 months post-surgery. Additional information regarding patient demographics, tumor factors, procedure type, and complications were all collected prospectively.

Results: Of the 65 patients who underwent Level II oncoplastic procedures, the average age at breast cancer diagnosis was 53 (Range 25-74). 75% of patients were non-smokers, and the average BMI of the cohort was 29.9. Masses were self-detected in 57% of cases, and approximately half (53%) were luminal-A. Only 11% of patients underwent neoadjuvant chemotherapy, and 57% of patients required adjuvant systemic therapy after their Oncoplastic resection. Regarding the quality of life, paired T-tests demonstrated statistically significant improvement in all domains, except for sexual function between preoperative baseline measurement to the 3-month post-operative period, but this improved with statistical significance by 9 months post-operation. Finally, of the 65 patients in this cohort, only 3 had complications (2 patients with wound dehiscence and 1 with a hematoma requiring surgical evacuation) and 2 patients had recurrent disease.

Conclusions: This retrospective analysis of a prospectively collated Oncoplastic database adds to the ever-increasing volume of North American data supporting the use of complex Oncoplastic techniques. This series demonstrates improved quality of life across all domains for women undergoing Level II oncoplastic procedures without compromising oncological safety and will help encourage the widespread incorporation of advanced Oncoplastic training into Canadian Surgical Training.

Other

1977020 - Racial Distribution and Management of Idiopathic Granulomatous Mastitis: A Single-Center Descriptive Cross-Sectional Study

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Background/Objective: Idiopathic granulomatous mastitis (IGM) is a rare inflammatory breast disease with unknown etiology and variable clinical manifestations. The epidemiology and treatment of the disease has not been clearly described in the literature. The purpose of this study is to compare racial patterns and results of management of IGM at a tertiary academic center in New York.

Methods: A cross-sectional study was performed on all patients with a diagnosis of IGM from 2018 to 2024 at a tertiary academic center in New York. Patient characteristics such as: age at diagnosis, sex, race, imaging (ultrasound and mammogram BIRADS score), presentation (pain only, painful mass, painless mass, abscess, multiple abscesses, or abnormal imaging), management strategy (observation, non-steroidal anti-inflammatory drugs, antibiotics, steroids, incision and drainage, or excisional biopsy), and outcome (non-recurrence, recurrence, indolence, or lost to follow up) of IGM were recorded. Patients were excluded if they had granulomatous mastitis secondary to systemic diseases (e.g. sarcoidosis), infection (e.g. tuberculosis), or foreign bodies.

Results: Twenty cases of IGM were identified by chart review. Hispanic women were significantly overrepresented in women with IGM ($p< 0.0001$). There was no racial disparity in outcome ($p=0.91$), management style ($p=0.13$), or BIRADS score ($p=0.69$). Hispanic women with IGM were significantly younger (35.14 ± 6.89 years) than white women (53.40 ± 12.20 years) at diagnosis ($p=0.007$). 100% (n=14) of Hispanic women presented with an abscess or abscesses or a painful mass, compared to 60% (n=3) of white women with IGM who presented due to abnormal imaging ($p=0.045$). Management style was associated with significant differences in outcome ($p=0.026$), with 71.43% of patients with no recurrence having had treatment with prednisone (n=5).

Conclusions: Idiopathic granulomatous mastitis is a rare disease without an established treatment paradigm. It is imperative to continue to describe IGM in order to better understand the pathophysiology and clinical manifestations, in hopes of developing an effective treatment strategy. This descriptive cross-sectional study suggests that a racial predilection to IGM exists, specifically affecting mostly Hispanic women who tend to be younger at age of diagnosis than other racial groups. Therefore, it is important to have high clinical suspicion for this disease process in that population. Additionally, we observed that outcome differed by initial management of the disease; specifically, that most patients without recurrence of their disease had been treated with prednisone, contrasting with the available literature. Further studies are needed to discern the specific effect of therapeutic modality on resolution of IGM.

Table 1. Race, presentation, imaging, management and outcomes of IGM patients

Table 1. Race, presentation, imaging, management and outcomes of IGM patients		
Race		
Race (Hispanic/black/white/Asian)	n=	Percent (%)
Asian-Indian	1	5
Hispanic	14	70
white	5	25
Presentation		
abnormal imaging	3	15
abscess	7	35
abscesses	4	20
painful mass	6	30
Ultrasound BIRADS score		
1	1	6
2	3	19
3	5	31
4	7	44
Mammogram BIRADS		
0	1	7
1	1	7
2	2	14
3	5	36
4	5	36
Management (observation, NSAIDs, antibiotics, steroids, incision and drainage, surgery)		
antibiotics	5	25
NSAIDs	1	5
observation	5	25
prednisone	8	40
prednisone, methotrexate	1	5
Outcome (no recurrence, recurrent, indolent, lost to follow up)		
indolent	7	35
lost to follow up	3	15
no recurrence	7	35
recurrence	3	15

1987617 - Evolution of Breast Cancer Treatment over the Last Decade

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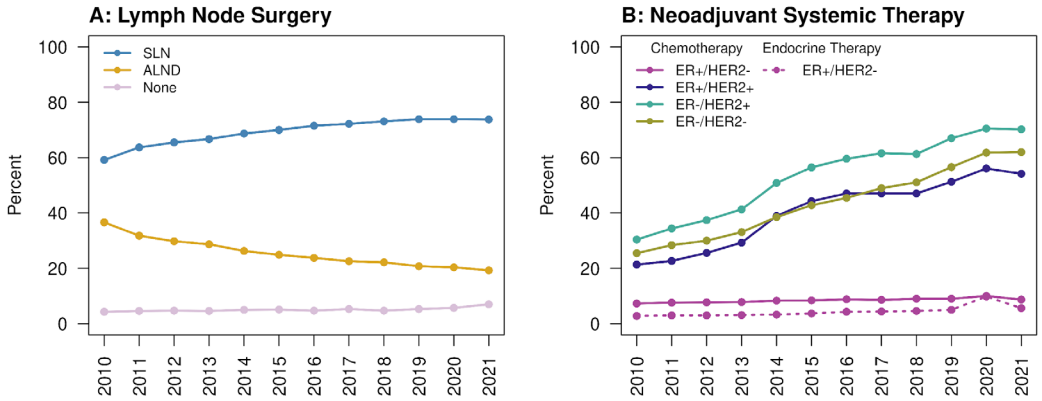
Background/Objective: With the introduction of targeted therapies and the de-escalation of surgical operations, we aimed to describe changes in breast cancer treatment over the past decade.

Methods: The National Cancer Database was queried for patients diagnosed with clinical Stage I-III breast cancer from 2010 to 2021. Patients with metastatic disease and those who did not undergo a breast surgical procedure were excluded. We considered patients having no nodes examined as no axillary surgery, 1-5 nodes examined as sentinel lymph node (SLN) surgery, and ≥6 nodes as an axillary lymph node dissection (ALND). Cochran-Armitage trend tests were used to evaluate surgical management and neoadjuvant systemic therapy use over time. The Kaplan-Meier method was used to evaluate overall survival.

Results: We identified 1,478,362 patients who met criteria. Median age was 61 (IQR:51,70); most frequent stage at diagnosis was clinical Stage I disease (60.5%) followed by Stage II (32.7%) and Stage III (6.8%). 73.7% of patients had ER+/HER2- disease followed by 13.8% HER2+ and 12.5% ER-/HER2-. The majority of patients (62.0%) underwent breast-conserving surgery (BCS) and 38.0% underwent mastectomy. Mastectomy rates declined from 42.3% in 2010 to 34.1% in 2021 ($p< 0.001$). Among patients undergoing mastectomy, rates of reconstruction increased from 36.6% in 2010 to 50.9% in 2021 ($p< 0.001$). A similar increase was seen in rates of contralateral prophylactic mastectomy (31.6% to 45.4%, $p< 0.001$). Among the 94.9% of patients who underwent lymph node surgery, ALND rates decreased (38.2% to 20.7%) while rates of SLN only surgery increased (61.8% to 79.3%, $p< 0.001$) (Figure). This trend was observed across all clinical stages. Omission of axillary surgery significantly increased among clinical Stage I patients (4.3% to 8.7%, $p< 0.001$) while Stage II patients remained stable (4.0% to 4.3%) and Stage III patients slightly decreased (5.5% to 3.5%). Rates of neoadjuvant chemotherapy (NAC) use increased from 2010 to 2021 with the largest increases seen among ER-/HER2+ (30.4% to 70.2%, $p< 0.001$) and ER-/HER2- (25.5% to 62.0%, $p< 0.001$) subtypes. The largest increases in NAC among these subtypes occurred in Stage II patients (ER-/HER2+: 34.1% to 87.7%; ER-/HER2-:30.8% to 80.5%, each $p< 0.001$). Use of neoadjuvant endocrine therapy in ER+/HER2- disease increased from 2.8% in 2010 to 5.6% in 2021, $p< 0.001$. Radiation therapy use in patients treated with BCS declined (87.9% to 82.7%, $p< 0.001$) particularly among patients with Stage I disease (87.9% to 81.6%, $p< 0.001$). Post-mastectomy radiation increased from 33.7% to 37.4% with the largest increase among Stage II patients (37.6% to 44.6%, $p< 0.001$). Adjuvant radiation rates among Stage III patients remained high at 86.0% in 2021 post-BCS and 77.3% post-mastectomy. Ten-year overall survival varied by clinical stage group and biologic subtype (each $p< 0.001$).

Conclusions: The evolution of breast cancer care over the past decade has been significant, with decreased use of ALND across clinical Stages I-III breast cancer and an increase in the use of reconstruction and contralateral prophylactic mastectomy in patients undergoing mastectomy. Furthermore, there has been significant increase in neoadjuvant systemic therapy use, especially among HER2+ and ER-/HER2- biologic subtypes.

Figure 1: Axillary lymph node surgery (A) and neoadjuvant systemic therapy use (B) from 2010-2021 in patients diagnosed with clinical Stage I-III breast cancer



1987710 - Management and Overall Survival Outcomes in over 2,500 patients with Occult Primary Breast Cancer, a National Cancer Data Base Analysis

Nara Tashjian, Courtney Day, Judy Boughey, Mara Piltin

Mayo Clinic, Rochester, MN

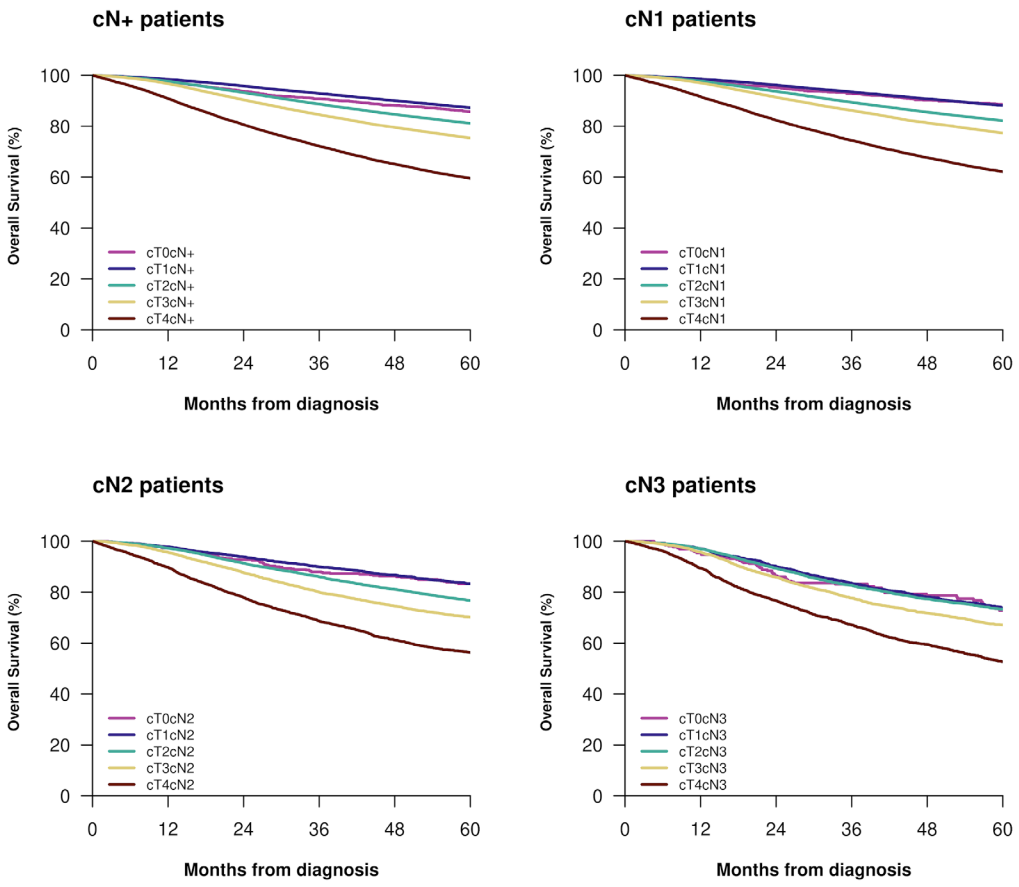
Background/Objective: Counseling patients with occult primary breast cancer (OBC) can be challenging. In melanoma research, studies have shown that when comparing stage for stage, patients with melanoma of unknown primary have improved survival outcomes compared to patients with known primary lesions. This study sought to evaluate the management and overall survival (OS) of patients with OBC compared to patients with primary breast tumors.

Methods: Patients with OBC diagnosed between 2010-2021 were identified from the National Cancer Database. Patients with no clinical tumor (cT0) were classified as OBC. Unknown tumor (cTX) and in situ disease (Tis) were excluded. Sentinel lymph node (SLN) surgery was classified as < 6 nodes examined and axillary lymph node dissection (ALND) as ≥6 nodes. OS was assessed using the Kaplan-Meier method and multivariable Cox proportional hazards models stratified by clinical nodal category.

Results: Of 254,708 patients with cT0-4 tumors and nodal involvement (cN+), 2,680 patients with OBC were identified. Within OBC, the most common tumor type was invasive ductal carcinoma (50.6%, n=1,357) and for each cN category, luminal biologic subtype (estrogen receptor positive (ER+), human epidermal growth factor receptor 2 negative (HER2-) was as follows: cT0cN1 46.7%, cT0cN2 40.7%, cT0cN3 38.9%. High rates of grade III disease were noted, cT0cN163.4%, cT0cN2 72.5%, cT0cN3 80.7%, respectively. Of the OBC patients who had neoadjuvant systemic therapy (NST) data available (n=1,357), 56% were treated with NST (n=763). This was higher with increasing cN category, cT0cN1 49.6%, cT0cN2 68.8%, cT0cN3 78.1%. In OBC patients with definitive breast management data available (n=1,893), 15.0% (n=284) had mastectomy alone, 52.1% (n=986) had radiation alone and 32.9% (n=623) had mastectomy plus radiation. Axillary management was ALND in 65.5% of cT0cN1 patients, 71.9% of cT0N2 and 63.1% of cT0N3, respectively. Five-year OS Kaplan-Meier estimates for patients with cT0N1 were similar to those with cT1N1 disease (88.5% in cT0N1 vs. 88.2% in cT1N1) and better than cT2-4N1. On multivariable analysis, cT1-4N1 had significantly worse survival than cT0N1 (HR: 1.30-3.84, each $p < 0.001$). Patients with cT0N2 disease also had similar 5-year OS to cT1N2 at 83.4% and this was unchanged on multivariable analysis. Patients with cT2-4N2 disease had increasingly poorer overall survival than cT0N2 disease (HR: 1.62-3.02, each $p < 0.001$). In cN3 patients, OS of OBC was 72.8% cT0 vs 73.9% cT1, 73.3% cT2, 67.2% cT3, 52.6% cT4 highlighting an OS similar across cT0-2cN3 with poorer OS for cT3-4cN3 (Figure 1). After adjustment, cT2-cT4N3 patients had worse overall survival compared to cT0N3 patients (HR:1.34-2.52, each $p < 0.02$).

Conclusions: NST and ALND are increasingly utilized in more advanced nodal disease. We demonstrated lower rates than expected of Luminal (ER+/HER2-) tumor biology in OBC. Approximately half of the patients with OBC were treated with radiation alone to the breast and 1/3 with both mastectomy and radiation. Importantly for aiding in counseling patients with OBC, this data demonstrates that 5-year OS in OBC is most similar to those with T1 disease across all cN categories. Additionally, with increasing nodal category we observed a decrease in the effect of T category on OS.

Figure 1. Five-year OS estimates for OBC overall and by cN category



1987280 - A Review of Fluorophores for Fluorescence Guided Surgery in Breast Cancer

Naomi Laskar, Dhurka Shanthakumar, Aidan Pidd, Daniel Elson, Daniel Leff

Imperial College London, London, England, United Kingdom

Background/Objective: Surgical guidance of resection margins during breast-conserving surgery (BCS) is imprecise as it relies almost exclusively on pre-operative imaging and intra-operative tactile and visual perception. 20% of BCS patients require re-excision for positive resection margins causing distress, financial pressures, inferior cosmesis and delays to adjuvant treatment. Significant research has identified novel methods for intra-operative margin assessment. This systematic review examines potential contrast agents, fluorophores, targeting breast cancer which could be used for peri-operative navigation to improve surgical precision.

Methods: Medline, Embase, Scopus, and Web of Science databases were systematically searched using the MESH terms 'breast cancer' AND 'surgery' AND 'fluorophore' AND 'near infrared' on 15/8/2023 with a further search on 22/10/24 to include up-to-date studies. Studies were included if fluorophores were trialled in invasive breast cancer cells, in vivo, in animals or humans. A total of 1944 studies were identified. After screening, duplicate removal and full text review, 65 studies were included. Data was extracted on fluorophore dose, route / model of administration, target and mechanism of action, absorption and emission spectra, details of imaging systems (wavelengths, commercial, custom) and safety side effect profile(s). Exclusion criteria were cell line studies, fluorophores administered ex vivo, and dual systems requiring irradiation, MRI or ultrasound. Studies investigating fluorescence guided surgery (FGS) in residual tumors rather than during primary excision were also excluded. The study was registered on Prospero, CRD42024459723.

Results: 26 preclinical and 7 clinical fluorophores were studied and a total of 494 animals and 734 humans were included. Fluorophores included those in near-Infrared (NIR) I (700-900 nm) and NIR II (1000-1700 nm) wavelengths and were bound to various biomolecules such as monoclonal antibodies (cetuximab, trastuzumab) and epithelial cell adhesion molecules (EpCAM). They targeted receptors and molecules typically upregulated in tumor microenvironments including cathepsins, nucleoin and folate. Tumor-to-background ratios ranged from 0.51, IRDye 800CW-F800, to 58.8, PersL nanoparticles in a shell of manganese dioxide. The studies largely indicated good safety profiles in animals and humans, the most severe adverse reaction being an anaphylactic reaction to pegulicianine. 3 studies administered fluorophores intratumorally, the remainder were intravenous. Doses varied significantly between studies using similar fluorophores. 20 different imaging systems were used across the studies, the most common being In Vivo Imaging System (IVIS, PerkinElmer, Waltham, MA, USA).

Conclusions: FGS is an exciting rapidly evolving field. Many new fluorophores are being developed to target emerging breast cancer markers and the focus should be on optimal dosing and toxicology to allow for clinical translation. Improving fluorescence retention within tissues, depth of tissue penetration and advancements in imaging systems will also greatly increase the likelihood of widespread FGS adoption in breast cancer surgery which will inevitably lead to reduced reoperations and improved patient outcomes.

1987683 - Prognostic Value of Ki67 Expression After Short-Term Presurgical Endocrine Therapy for Primary Breast Cancer.

Iram Shabir[1], Francois Malherbe[2], Ettiene Myburgh[3]

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Background/Objective: This study was aimed to evaluate the impact of neoadjuvant endocrine treatment (NET) on a cohort of hormone receptor (HR)-positive breast cancer patients and the prognostic value of Ki67 to monitor response to treatment.

Methods: A single-center retrospective cohort study analyzed patients treated with NET from January 2022 to December 2023. Data from patient records, radiology, and histopathology were reviewed, focusing on tumor characteristics, including size, lymph node involvement, Ki67 index, and hormone receptor status. Patients were categorized as responders or non-responders based on changes in Ki67 levels.

Results: Among 98 women (101 breast cancers), with a median age of 60 (IQR 51-71.1), all had Stage I or II breast cancer. Most tumors 96/101 (95.0%) were grade 1 & 2. All the tumors were ER-positive, 89/101 (88.1%) were PR-positive, and 5/101 (5.0%) were HER2-positive. The median tumor size remained at 15 mm after NET. Lymph nodes were positive in 22/98, 22.4% of cases on postoperative histology. Chemotherapy was de-escalated in 17/98 (17.3%) of patients based on NET response. The differences in the responder and non-responder groups are presented in the table below.

Conclusions: NET significantly impacts treatment decisions, particularly in reducing the need for adjuvant chemotherapy in hormone receptor-positive breast cancer. The differentiation between responders and non-responders, identified by Ki67 changes, supports NET as a predictive tool for tailored treatment. These results suggest that increased adoption of NET may enhance personalized care, though further research is needed to optimize patient selection and integration into clinical practice.

Table 1: Summary of results

Differences between responders and non-responders			
	Responders (N=61) (IQR)	**Non-responders (N=40) (IQR)**	**P-Value**
Age	62 (57-72)	53.5 (46.5-71)	0.016
Tumour Grade 1 2 3	 13 46 2	 9 29 2	 0.22
ER score	285 (240-300)	285 (240-300)	0.632
PR score	210 (105-270)	232.5 (105-285)	0.947
Ki67 initial	10 (6.5-27.5)	20 (15-32.5)	0.04
Ki67 final	5 (5-10)	20 (15-37.5)	< 0.001
PREDICT breast score	2.2	2.3	0.473
Days on NET	62 (45.5-113.5)	72.5 (56-104)	0.417
Initial tumour size	13 (8-19.5)	17.5 (12-24)	0.011
Final tumour size	12 (9-20)	18 (11-22.5)	0.031

1987943 - Comparison of pectoral block with or without ERAS protocol in female mastectomy patients: a retrospective analysis of opioid use.

Wendy Lim, Nicholas Roth, Emily Sturm, Sowmyanarayanan Thuppal, Kristin Delfino, Melanie Barnard

Southern Illinois University School of Medicine, Springfield, IL

Background/Objective: Enhanced Recovery After Surgery (ERAS) is an evidence-based, multimodal, and multidisciplinary approach known to decrease length of stay, reduce opioid consumption, and promote earlier return to activity and recovery in the peri-operative setting across surgical specialties. Pectoral nerve (PECS) blocks performed under ultrasound guidance have also been shown to reduce pain scores and opioid consumption peri-operatively in breast surgery. There have been few studies investigating the clinical significance of the individual components of an ERAS protocol including regional nerve blocks in breast surgery. To help further elucidate which components of ERAS are independently effective, we proposed to study mastectomy patients who had PECS block alone with those who underwent PECS block along with ERAS protocol. The primary objective of this study is to compare total opioid use in morphine milligram equivalents (MMEs) in the peri-operative setting between female mastectomy patients who received care under an ERAS protocol with PECS block versus those who received PECS block alone.

Methods: This single institution, retrospective study included all female patients ages 18 and older who underwent unilateral or bilateral mastectomy, with or without implant or tissue expander reconstruction for breast cancer or prophylaxis. Exclusion criteria included no pectoral block, male gender, tissue flap reconstruction, partial mastectomies, and mastectomies for indications other than breast cancer and prophylaxis in high-risk cancer patients. Baseline demographic data and clinical information, both outpatient and inpatient, were collected into a REDCap database for statistical analysis with SAS v9.4.

Results: A total of 73 patients with the inclusion criteria were identified from the years 2020-2023. Of these 73 patients, 27 patients received care under ERAS protocol and PECS block (37%) while 46 patients had PECS block alone (63%). Total MMEs were similar between with and without ERAS groups (27.1 vs 30.3 MMEs, $p = 0.438$). Length of stay (0.89 vs 0.96 days, $p = 0.129$) and operative time (285 vs 252 minutes, $p = 0.061$) were similar between the two groups.

Conclusions: This retrospective analysis demonstrated no significant difference in the total MMEs between patients undergoing mastectomies who received PECS block as part of an ERAS protocol versus PECS block alone. No difference was also seen in length or stay and operative time. This highlights the potential critical role that regional nerve blocks play in the effectiveness of ERAS protocol in reducing opioid consumption in mastectomy patients. Larger studies and randomized trials are needed to further investigate which components of ERAS care are more effective than others.

1988376 - Silent Suffering: The Urgent Need for Improved Palliative Care and Opioid Access for Breast Cancer Patients in the Caribbean

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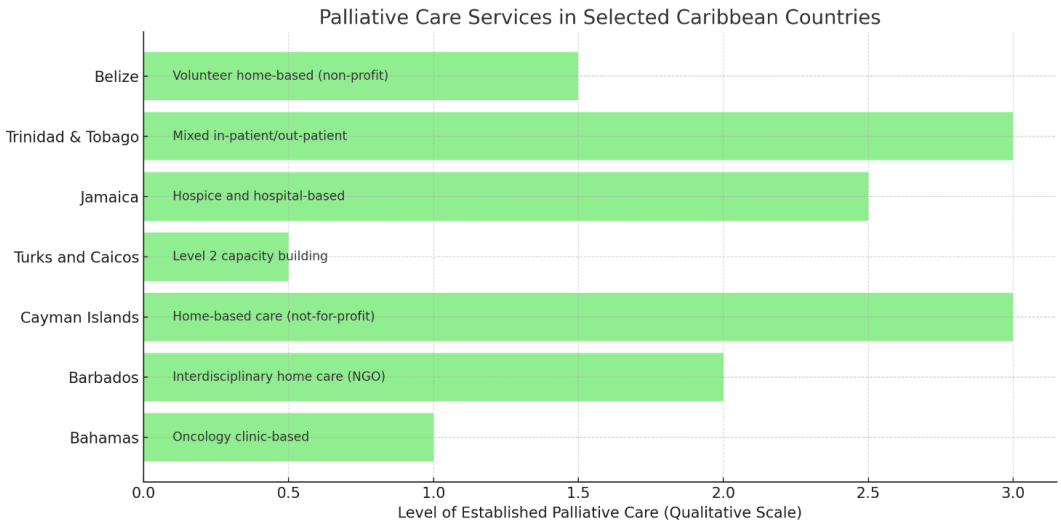
Background/Objective: This study aims to investigate the availability and accessibility of palliative care and opioid-based pain management for patients with advanced breast cancer in the Caribbean, highlighting regional disparities and barriers to effective end-of-life care.

Methods: We analyzed the availability of palliative care services and opioid medications in Caribbean countries, focusing on gaps in healthcare infrastructure, regulatory challenges, and cultural or legal barriers to opioid use. We collected data from national reports, healthcare registries, and published literature.

Results: Our study found that access to palliative care in the Caribbean is severely limited, with some nations, like Haiti, having no palliative care physicians. The Bahamas, which has the highest breast cancer mortality in the region, only has one. Countries with established programs, like Barbados and the Cayman Islands, struggled to expand services beyond limited geographic and population reach due to funding constraints and a lack of trained professionals. Despite the inclusion of at least two forms of opioid medications in most national formularies, their actual use remains significantly lower than global standards—20 times less than the per capita usage in the United Kingdom and 60 times less than the usage in the United States. Barriers included restrictive laws, negative perceptions of opioids, and logistical inadequacies in medication access. In many countries, opioids could only be obtained from hospital pharmacies, further restricting access and stigma and fear of addiction contributed to underprescription and underuse, even when medications were available. These issues were compounded by a lack of provider education in safe opioid prescribing, resulting in unnecessary suffering for patients with advanced disease. These gaps in palliative care result in inadequate care, leaving many patients without the necessary support to manage their symptoms and maintain quality of life.

Conclusions: Access to palliative care and effective pain management for advanced breast cancer patients in the Caribbean is critically inadequate. There is an urgent need for enhanced palliative care services, including professional training, and the development of formal guidelines to address regulatory barriers to opioid access. To address these challenges, we recommend the creation of a resource-specific guide for low- and middle-income countries that focuses on integrating pain medication into palliative care protocols as a central component of treatment. Additionally, we propose a basic level of supportive care for patients with organ-based metastatic disease, which provides site-specific recommendations for managing symptoms and complications in resource-limited settings. These measures are essential to improving the quality of life and ensuring equitable care for patients in the region.

Figure 1: Palliative Care Services in Selected Caribbean Countries



1988211 - Patient Decision Making and Regret following Gender Affirming Mastectomy

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Background/Objective: Transgender and nonbinary (TGNB) adults face complex healthcare decisions for gender-affirming care (GAC) yet decision support resources are limited. Despite the benefits of GAC, factors (e.g. resource access, social network, and state policies) can influence outcomes. While decisional regret after gender-affirming mastectomy (GAM) is rare, it is associated with increased risk of depression and suicidality. This study explored the decision-making process, social support needs, and decisional regret post-GAM.

Methods: Participants who were post-GAM within the last 12 months were recruited via email from the University of Virginia Plastic Surgery Clinic. Data collection included semi-structured interviews, baseline demographic form, clinical history form, the Decision Making Quality Scale (DMQS) and the Decision Regret Scale (DRS).

Results: A total of 24 patients were included in this study. 5 patients reported no social support yet had a DRS score of 0 (mean DRS 4.37 (0-40)).Those who had no support were significantly older ($p < 0.001$) with a mean age of 38.6 compared to a mean age of 24.3 years old in the group who reported having at least one person for social support. One participant had a DRS score of 40 responding "agree" for both "I regret this decision" and "I would go for the same choice if I had to do it over again," noting permanent tradeoffs. Mean DMQS score was 18.67 (14-21) indicating quality decision making.

Conclusions: The findings warrant further research to develop decision and social support interventions to assist TGNB individuals considering GAM.

1987814 - Wearable Devices for Upper-Limb Rehabilitation After Breast Cancer Surgery: A Systematic Narrative Review

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Background/Objective: Axillary surgery for breast cancer (BC) treatment leads to long-term shoulder dysfunction in approximately 67% of patients, up to 3 years post-operatively. This significantly impacts survivors' health-related quality of life (QoL). Current rehabilitation schedules in the United Kingdom are through the provision of exercise leaflets. There remains no unified, structured physiotherapy protocol for postoperative rehabilitation. Research suggests that early, structured exercise programs improve shoulder range of movement (ROM) by up to 35%, reduce pain by up to 30% and improve QoL scores by up to 25%. Given the demand on healthcare resources, wearable devices (WD) offer a promising alternative for remote, self-directed rehabilitation. WD have been validated in orthopedics and stroke medicine, however little is known about their use in BC management. This review explores the current use of WD amongst BC patients and their potential to facilitate post-operative rehabilitation.

Methods: Embase, MEDLINE, the Cochrane Library, and Web of Science were systematically searched up to and including 31st August 2024, for peer-reviewed studies on WD in post-operative rehabilitation of BC patients. Inclusion criteria were limited to studies on WD assessing shoulder dysfunction or promoting upper-limb recovery following BC surgery. MeSH headings were used, and search terms spanned three domains namely wearable technology, rehabilitation and breast cancer. Reference lists of retrieved full-text articles were also hand searched to identify further relevant articles. Key information, including study design, type of WD used, and outcome measures, were extracted and analyzed.

Results: Of 1,278 studies screened, three met the inclusion criteria, encompassing 125 patients. One study utilized the ActiGraph GT3X+® sensor (ActiGraph LLC, Florida, USA) and two utilized the Axivity™ AX3 sensor (Axivity Ltd, Newcastle upon Tyne, UK). The studies demonstrated the feasibility of WD to objectively quantify post-operative upper-limb movement, with a decrease in movement noted to 62.3% of baseline at week 1 on the operated side versus 75.8% of baseline on the non-operated side ($p< 0.005$). Findings also highlighted a significant negative correlation between WD activity data and self-reported upper-limb function scores (Disability of the Arm, Shoulder and Hand (DASH), $R=-0.506$, $p< 0.05$). Moreover, WD detected a greater decline in upper-limb movement after axillary lymph node dissection compared to sentinel node biopsy at week 2 (median 66.4% vs 72.7% of baseline, $p=0.015$). However, current devices lack real-time feedback and monitoring, with data having to be retrospectively downloaded and analyzed. This restricts utility as a rehabilitation intervention tool and limits functionality for motivating patients and promoting recovery.

Conclusions: WD hold promise for breast cancer rehabilitation, particularly in resource-limited settings like the NHS. To date, very limited studies have utilized WD in a BC cohort. These studies have largely focused on quantifying shoulder dysfunction rather than utilizing WD as intervention tools for rehabilitation post BC surgery. Real-time feedback, remote monitoring, and clinician access could enhance adherence, providing a feasible, patient-centered approach to improve post-operative outcomes. Further trials evaluating the efficacy of WD with feedback and remote monitoring are needed to support their integration into NHS protocols for structured breast cancer rehabilitation.

1987946 - Special histological subtypes of breast cancer in Latin/Hispanic Population

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Background/Objective: Special histologic subtypes of breast cancer have a unique biological behavior and outcomes; these represent approximately 25% of invasive breast cancers. Literature have demonstrated that breast cancer histologic and phenotype subclassification varies according to race and populations. Our aim was to describe the clinicopathological characteristics and outcomes of breast cancer with special histological subtypes in Latin/Hispanic Population.

Methods: A retrospective study was conducted. We reviewed medical records from patients with a new diagnosis of breast cancer with special histological subtypes at a single reference cancer center in Peru from 2014 to 2019. Patients with Stages I-IV were included. Survival rates were calculated with Kaplan-Meier curves.

Results: A total of 479 patients were included, the median age at diagnosis was 55 (range 26-89). The majority of patients were from a metropolitan area (59.1%). The most common histologic subtype was lobulillar (34.9%), followed by mucinous (12.7%), papillary (12.5%), apocrine (6.9%), metaplastic (5.4%), medullar (3.8%), cribriform (3.3%), neuroendocrine (0.8%); while the 9.2% and 10.4% had multiple histologic subtypes and others, respectively. 61.6% had moderately differentiated histological grade. The most common phenotype at diagnosis was HR+HER2- (57.7%), followed by Triple negative (13.2%), HR+HER2+ (8.4%), HR-HER2+ (5.0%), HR+ HER2 indeterminate (13.2%). While for final phenotype after neoadjuvant therapy (NAT), HR+HER- (61.7%) was the most common, followed by triple negative (16.3%), HR+HER2+ (11.7%), HR-HER2+ (5.2%), and HR+HER2 indeterminate (5.0%). The 72.3% had initial Ki67 of >20%, while 73.1% maintained a high Ki67 after NAT. Stage at diagnosis showed that the majority of patients were T2 (40.3%), N0 (61.0%); followed by T1 (25.7%), N1 (24.4%). Most of patients were diagnosed at Stage II (40.7%), followed by Stage III (30.5%) and I (24.0%); while for final stage after NAT, the most common was Stage I (64.7%), followed by Stage III (15.9%) and II (13.8%). 48.6% received neoadjuvant therapy, while 51.4% upfront surgery. The majority underwent mastectomy (71.8%). In regards to NAT, 45.9% had chemotherapy, 31.5% hormone therapy, 15.7% anti-HER2 therapy, and 5.8% radiotherapy. While for adjuvant treatment, 72.7% had chemotherapy, 74.1% hormone therapy, 9.4% anti-HER2 therapy, and 76.4% radiotherapy. In terms of outcomes, the 4.2% and 12.7% experienced loco-regional and distant recurrence; 4.4% metastasis to bone; 6.3%, oligometastatic; 2.1%, multiple to solid organs. With a median follow up of 97 months (8 years), the overall survival (OS) rates at 5 and 8 years were 82% and 77%, respectively; with the best OS at 5-year was for patients with cribriform histology (94%) compared to the worst for metaplastic histology (54%).

Conclusions: The distribution of special histologic subtypes of breast cancer in Latino-Hispanic patients has similarities to other populations in terms of frequency, however the triple negative phenotype is less frequent among these patients. Despite similar OS patterns, there were worse OS rates in some histological subtypes in our population, which are most likely due to more advanced stages at diagnosis and limited availability of immunotherapies and targeted therapies.

1988933 - DEHP in IV Bags and Tubing Increases Breast Cancer Risk and Resistance to Chemotherapy. Science Based Advocacy to Improve Our Patients Health

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Background/Objective: DEHP, a type of phthalate, is commonly used in many products, including plastics like PVC to make them softer. DEHP is known to have toxic effects, particularly on the endocrine and reproductive systems. Due to health concerns, the Consumer Product Safety Commission (CPSC) banned several phthalates from children's toys and other childcare items in 2017.

Methods: In California and across the U.S., 70% of IV bags and a large percentage of tubing used by hospitals are made from PVC plastic with DEHP. This phthalate can comprise up to 40% of an IV bag's weight and 80% of tubing, leaching into administered fluids, interacting with treatment and exposing the patient. Studies have shown that DEHP exposure can lead to an increased risk of breast cancer and recurrence, possibly due to modification of the progesterone receptor. Phthalates, such as DEHP, are not bound to the plastic matrix, and therefore can be leached into the adjacent material, including fluids within IV bags. They are endocrine disrupting chemicals, and can bind to the estrogen receptor ((ER) and the progesterone receptor (PR). They have been found to stimulate the epithelial to mesenchymal transition, a cellular process that is strongly associated with progression of breast cancer and metastatic disease. Cohort studies from Denmark and the U.K, showed an increased diagnosis of breast cancer associated with phthalate exposure, while a small nested WHI study did not. In addition, phthalates may increase multidrug resistance to chemotherapy and Tamoxifen through the ABC transporter upregulation. To mitigate these risks, Kaiser Permanente transitioned its entire hospital system to DEHP/PVC-free IV bags in 2012, followed by Loma Linda University and City of Hope in recent years.

Results: To reduce public exposure to DEHP, Breast Cancer Prevention Partners (BCPP) Policy Department strongly supported a California bill to ban DEHP from IV bags and tubing. Despite the industry successfully lobbying for an extension in time to comply, the bill passed both legislative chambers and was signed into law by Governor Newsom on September 25, 2024.

Conclusions: There is power in using evidence-based advocacy in driving public health policy with science, reducing cancer risks, and improving patient's response to treatment.

1988946 - Same-day mastectomies: They're feasible and safe!

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Background/Objective: Same-day mastectomies were initially reported in the literature in the late 1990s, but many institutions and/or surgeons have been slow to adopt the practice. Here, we evaluate 10 years of same-day mastectomies, showing a low admission rate and demonstrating feasibility, safety, and excellent patient outcomes.

Methods: This is a retrospective single institution study of 359 patients who underwent unilateral or bilateral mastectomy, with or without immediate reconstruction, from 2011 to 2021. A chart review was performed, identifying patient demographics, diagnosis, operation(s) performed, and patient outcomes.

Results: Of the 359 patients, 337 (94%) were discharged on the day of surgery. 23 (6.4%) were admitted for at least 1 night. 20 (5.5%) patients had any complication. This included: 8 planned returns to OR for re-excision of margins (2.2%), 5 unplanned/urgent return to OR (1.3%), 7 unplanned ED visits in the 30 day post operative period (1.9%), and 1 re-opening of incision after closure in the OR to evacuate a hematoma (0.2%).

Conclusions: Most patients undergoing mastectomy, with or without immediate reconstruction, have successful outcomes in an outpatient setting. This was in part achieved by establishing measurable milestones to meet prior to discharge from the PACU, including pain control, drain teaching, and providing postoperative instructions in written form. This has led to a negligible need for admission post-operatively as well as a low rate of unplanned ED visits in the post operative period. Of the 23 patients admitted overnight, 13 (56%) were admitted by plastic surgery for overnight observation after reconstruction and had no complications. These admissions ranged from 2011-2013 during the transition period from admission after mastectomy/reconstruction to all outpatient mastectomy/reconstructions. In recent years, admissions after mastectomy, with or without immediate reconstruction are extremely rare. Our data reflects that same-day mastectomies are not only possible, but they are safe and demonstrate a low hospital admission rate and low complication rate.

1988604 - Surgical Breast Oncology Senior Resident Elective

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Background/Objective: Breast surgical oncology is specialized field in general surgery grounded in multidisciplinary collaboration and ever evolving evidence-based practice. General surgery residents tend to gain exposure to the field during the early stages of training, and often are naïve to the complexities of coordination of outpatient care for these patients. A senior resident elective can be valuable for residents interested in pursuing a career in breast surgical oncology. We designed an elective in breast surgical oncology for senior general surgery residents focused on the outpatient multidisciplinary management of breast cancer patients. The goal was to provide career exploration and preparation for a breast surgical oncology fellowship as well as mentorship.

Methods: Senior general surgery residents interested in breast surgical oncology were given the opportunity to rotate on a six-week outpatient elective. The rotation was focused on experiences in breast imaging, medical oncology, radiation oncology and psychosocial oncology. The resident was responsible for presenting patients during tumor board while providing evidence-based recommendations and highlighting relevant clinical trials. This exercise served to re-enforce and broaden their fund of knowledge. The resident also participated in more complex operative cases to gain experience with nipple sparing mastectomies and axillary dissections. The rotation emphasized clinical research with the goal of submission of an abstract to a national meeting.

Results: Participation in the rotation significantly increased residents' confidence and preparedness for fellowship. Feedback indicated an expansion of their fund of knowledge related to the care of a patient with breast cancer and increased confidence in multidisciplinary collaboration. This rotation also allowed for increased operative autonomy and confidence to take junior residents through cases. Focused mentorship also allowed for stronger applications for fellowship with successful match results.

Conclusions: Customizing rotation experiences for residents interested in surgical subspecialties significantly enhances their understanding of the nuances of the field and improves resident education. The implementation of senior level rotation in breast surgical oncology successfully enriched residents' educational experiences and readiness for fellowship. This model highlights the importance of tailored subspecialty rotations in the latter stages of residency, which can fortify both operative competencies and patient management skills.

1988356 - Telehealth Participation Among Breast Cancer Patients During the COVID-19 Pandemic- Predictive Factors and Barriers

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Background/Objective: During the COVID-19 pandemic, telehealth utilization spiked with physician, staff, and patient safety in mind. With this paradigm shift, there was a concern about telehealth usage in vulnerable populations including breast cancer (BC) patients across treatment stages from active treatment to surveillance. The goal of this study was to identify factors associated with telehealth utilization among women with breast cancer during the pandemic.

Methods: Participants were enrolled in a multisite survey conducted at the Ohio State University Comprehensive Cancer Center to assess the impact of COVID-19 on various behaviors, including access cancer related healthcare from June – November 2020. A second survey was conducted from March – July 2021. Baseline characteristics of the sample were described using counts and percentages. Univariable and multivariable logistic regressions were used to examine potential predictors of telehealth utilization, including SEER cancer stage, treatment modality (surgery, radiation, and chemotherapy), race, ethnicity, education, marital status, insurance status, and neighborhood of residence (metro and non-metro county).

Results: Of the 936 with BC identified in this study, 645 were included in this analysis, after removal for missing data points. Overall, telehealth usage was high, with 410 of the 645 using telehealth (64%). Most participants were 50-69 years old (n=398, 62%), White (n=584, 91%), non-Hispanic (n=629 97%), and had higher levels of educational attainment and household income (Table 1). In multivariable analyses, there were several statistically significant factors affecting breast cancer survivors' use of telehealth, including age, education, and treatment modality, with neighborhood of residence approaching statistical significance. Age greater than 70 was associated with an increased use of telehealth (OR: 2.39, [95% CI 1.2-5.14]). Urban living (metro county) approached statistical significance for increased use of telehealth (OR: 1.43, [95% CI 0.98-2.09]). Having undergone surgery was associated with a decreased utilization of telehealth (OR: 0.26, [95% CI 0.07-0.91]). Master's degree or higher was also linked to a decreased utilization of telehealth (OR: 0.37, [95 CI 0.19-0.71]).

Conclusions: With overall high utilization, our analysis indicates that being over 70 years old and living in an urban setting increased breast cancer survivors' likelihood of using telehealth during the COVID-19 pandemic among women with BC. However, having higher educational attainment and surgical intervention decreased the likelihood of telehealth use. Postoperative visits may necessitate in-person office visits based on provider and patient preferences to evaluate potential complications. However, it seems counterintuitive that higher education correlates with lower telehealth use, given that higher education often aligns with greater comfort and familiarity with technology. Further investigation may be warranted to understand why women with higher education are less likely to utilize telehealth. Additionally, it may be valuable to survey postoperative patients on whether incorporating video telehealth options could increase its usage.

Table 1

Table 1: Frequencies, odds ratios and 95% confidence intervals from univariable and multivariable logistic regressions reflecting associations between odds of having ever participated in a telehealth visit since the COVID-19 pandemic and selected factors among 645 female breast cancer participants of the 'Impact of COVID-19' Study

	Frequency*	Univariable	Multivariable
		OR (95% CI)	OR (95% CI)
Age Group			
<40 (referent)	71	/	/
40-49	99	0.78 (0.42-1.45)	0.72 (0.38-1.32)
50-59	194	1.01 (0.58-1.76)	0.97 (0.54-1.76)
60-69	204	1.25 (0.71-2.18)	1.29 (0.72-2.33)
70+	77	2.48 (1.20-5.14)	2.39 (1.13-5.08)
Education			
High School or Less (referent)	57	/	/
Some College/Associate	186	1.12 (0.58-2.18)	1.07 (0.55-2.11)
BS/BA	202	0.63 (0.33-1.21)	0.61 (0.32-1.19)
MS/MA or More	196	0.42 (0.22-0.81)	0.37 (0.19-0.71)
Rural Urban Continuum Code			
Non-Metro (referent)	238	/	/
Metro	407	1.10 (0.80-1.53)	1.43 (0.98-2.09)
Had Surgery?			
No (referent)	21	/	/
Yes	620	0.28 (0.08-0.96)	0.26 (0.07-0.91)
Had Radiation?			
No (referent)	245	/	
Yes	395	1.13 (0.82-1.58)	

* Frequencies may not total to 645 due to missing values.

1988691 - Real-time pain assessment and narcotic use among breast cancer patients utilizing a novel smartphone App-based pill-dispensing device to personalize post-operative pain management

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Background/Objective: Precise assessment of patient's post-operative day (POD) pain is a critical component to avoiding opioid misuse and waste. Studies utilizing questionnaires, pill diaries, and telephone calls are dependent on accurate patient recall and adherence.

Methods: We evaluated patients undergoing mastectomy for breast cancer enrolled in an ongoing prospective pilot study using a password-protected pill-dispensing device controlled by a smartphone application (App). If a pain score was < 4 the machine prompted a nonopioid alternative but if patient declined it would dispense the drug which was predominantly oxycodone 5mg based.

Results: Among 29 patients enrolled we excluded male patients and those not undergoing a breast surgical component. Among the resultant 25 patient cohort the mean age was 55 years old (range: 33-79) and included 10 White, 6 Hispanic, 4 Asian, 3 Black and 2 who identified as other. The majority underwent bilateral mastectomy 21 (84%) and approximately half had intraoperative pectoral nerve block 12 (48%) and sub pectoral tissue expander reconstruction 13 (52%). Seven (28 %) patients did not activate the device nor requested any opioid medications. Among those that did, the median self-reported pain scale on POD 1 was 7 (range: 4-10) and remained as such until POD 7 when it decreased to 6. The median number of daily pills requested was 1 on POD 1 (range 0-4) which increased to 2 (range: 0-6) on POD 2-4, then 1 (range: 0-3) on POD 5-8 and 0 thereafter. Nine patients requested at least a dose on POD 1, 13 on POD 2, 12 on POD 3, 11 on POD 4 and then decreased to steady state of 9 from POD 5-7 followed by subsequent decreases.

Conclusions: There was substantial heterogeneity in pain and narcotic use among patients undergoing mastectomy for breast cancer. While almost one-third of patients had no use, among those that did, approximately half reported significant post pain up to 1 week following surgery requiring an average of 1-2 narcotic pills per day. Using a password-protected self-administered App-based pill-dispenser device with mail return capacity, can significantly aid in monitoring opioid use and disposal. Future efforts to better predict patients who do/do not require narcotics and personalize post-operative pain management is ongoing.

1988786 - The Burgeoning Breast Cancer Burden in Young Asian American Women: A Single Institution Retrospective Cohort Study in Queens, NY

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Background/Objective: The incidence of breast cancer in the U.S. has been increasing in the last decade, with a steeper increase seen in young women and most prominently in young Asian Americans/Pacific Islanders. Given our diverse patient population in Queens, NY, we aim to evaluate the characteristics of young breast cancer patients presenting at our institution to help elucidate trends in this burgeoning population.

Methods: A single institution retrospective cohort study was performed at our breast center. Data was extracted for patients ages 18 to 45 who underwent elective breast surgery between April 2021 and November 2023 for a diagnosis of breast cancer (Stage 0-III). Data obtained include: age, race/ethnicity, preferred language, tumor biology, clinical and pathologic stage, genetic testing results, and surgical and systemic treatments received. Descriptive statistics were performed to determine proportions and trends.

Results: A total of 84 patients were included in our study. In 2021, 17/84 (20.2%) patients presented to our institution, followed by 30/84 (35.7%) in 2022, and 37/84 (44.1%) in 2023. The median age was 42 years (IQR: 5.0). The most prevalent race was Asian American (72.6%), followed by Black (10.71%) and Hispanic (9.52%), White (5.95%), and Other (1.2%). The majority of Asian American patients identified as Chinese ethnicity (80.3%), followed by Korean, Bangladeshi, and Indonesian (3.28% each), then Nepalese, Thai, Burmese, Filipino, Indian, and unknown (1.64% each). The most commonly spoken languages were English (52.4%), Mandarin (39.3%), Spanish (4.8%), Cantonese (1.2%), and both Russian and Nepali (1.2% each). Most patients were diagnosed at an early stage of the disease: Stage 0: 30/84 (35.7%) vs. Stage I: 38/84 (45.2%) vs. Stage II: 12/84 (14.3%) vs. Stage III: 4/84 (4.8%). The most common tumor biology observed was ER/PR+/Her2-, followed by ER/PR+/Her2+, ER/PR-/Her2-, and then ER/PR-/HER2+. Out of the 45 (53.6%) patients who underwent mastectomy (unilateral or bilateral), 11/45 (24.4%) elected not to have reconstruction. Of the 68 (80.9%) patients who underwent genetic testing, 41/68 (60.3%) were negative, 18/68 (26.5%) were found to have a VUS, while 9/68 (13.2%) were positive for a pathogenic mutation. The most frequently identified pathogenic mutations were CHEK2 and BRCA2 2/9 (22.2% each), followed by ATM, RAD51C, BRCA1, RAD51D, and PALB2 c625del 1/9 (11.1%) each).

Conclusions: There is an increasing trend of young breast cancer patients presenting to our institution over the past 3 years. The majority of young women with breast cancer in this study identify as Asian American, with nearly 50% of whom do not report English as their primary language. Most patients presented with early-stage disease (0-II) and a large proportion underwent genetic testing. Given the increasing rates of breast cancer incidence and the complex nature of breast cancer treatments for young women, more research to include diverse patient populations should be done to better understand the cancer trends and treatment needs for this growing population.

1903686 - Dietary referrals for post-treatment breast cancer survivors with a BMI over 27: Surgeons are not having the impact they were hoping to in addressing weight loss

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Background/Objective: Background: Obesity is associated with an increased risk of developing multiple types of cancer, as well as poorer survival outcomes.(1,2,3) Specifically, obesity is associated with a 35-40% increased risk of recurrence and death in breast cancer survivors.(4) Purpose: To evaluate the impact of referring overweight post treatment breast cancer survivors for dietary consultations. References: 1. Goodwin PJ, Stambolic V: Impact of the obesity epidemic on cancer. Annu Rev Med 66: 281-296, 2015 2. Aune D, Sen A, Prasad M: BMI and all-cause mortality: systemic review and non-linear dose-response meta-analysis of 230 cohort studies with 74 million deaths among 30.3 million participants. BMJ 2016;353: i2156 3. Petrelli F, Cortellini A, Indini A: Association of obesity with survival outcomes in patients with cancer. JAMA Network Open: 2021;4(3):e213520 4. Jiralerspong S, Goodwin PJ: Obesity and breast cancer prognosis: evidence, challenges, and opportunities. J of Clinical Oncology 34:35 4203-4216, 2016

Methods: As a quality initiative within our breast cancer program, all patients who were post treatment and had a BMI over 27 were referred for a dietary consultation. We utilized a vendor who accepted insurance and who could offer virtual consultations, so that patients did not have to be seen in the cancer center during business hours. We then reviewed the follow up engagement rate as well as the resultant change in BMI.

Results: Over a 12-month period (Jan 2023 – Dec 2023) 109 patients were referred for dietary consultation. Fifty patients scheduled an appointment (45.9%). Thirty-two patients attended the first appointment (29.4%). Twenty-nine patients attended two or more appointments (26.6%). Twenty-two patients were included with follow up weights (20.2%). Results showed a 1.62% decrease in BMI. (Range: 0.2% -6.46% decrease) Average was a 10 lb. weight loss.

Conclusions: Referral for dietary consultation did result in a decrease in BMI, however we observed very poor patient engagement after the referral was made. If, as surgeons, we are to have a significant impact on breast cancer recurrence by lowering BMI, we need to interact with the patient more frequently than just follow up office visits. Use of technology to remind and confirm appointments might improve patient follow through and increase participation. More studies need to be done to confirm this hypothesis.

1920986 - Developing Trastuzumab Encapsulated Actinomycin D as an Anticancer Antibody Drug Complex

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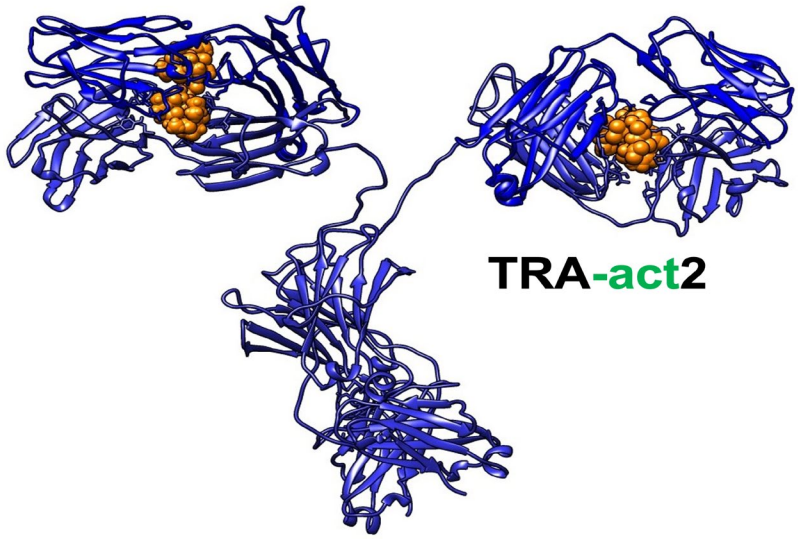
Background/Objective: Anti-Human Epidermal Growth Factor Receptor 2 (HER2) therapies have a profound impact on improving clinical outcomes in breast cancer and several other cancers. This study aimed to develop and characterize a novel antibody-drug complex using a single-protein encapsulation-based drug formulation and delivery platform.

Methods: We developed TR-act2 by encapsulating two Actinomycin-D molecules within a trastuzumab protein. TR-act2 was characterized in vitro using breast and lung cancer cell lines with varying HER2 expression levels. We assessed cellular internalization, cytotoxicity, apoptosis induction, and survival-related signaling pathways using cell viability assays, Western blot analysis, Annexin V apoptosis assays, and Immunofluorescence staining.

Results: TR-act2 showed efficient, time-dependent internalization into breast and lung cancer cells with various HER2 expression levels, and demonstrated potent growth-inhibitory effects. Its cytotoxic effects were HER2-independent, as it induced apoptosis and blocked Akt activation in cancer cells.

Conclusions: TR-act2 may represent a promising therapeutic strategy that is applicable across a range of cancers and independent of HER2 status.

Figure 1: Molecular design of TR-act2



1957669 - Would you Prefer to Undergo Breast-Conserving Therapy or a Mastectomy? Comparison of Perceptions of General and Plastic Surgeons.

Samantha albacete[1], Ashlee Matkin[1], Danielle Dumestre[2], Lashan Peiris[1]

[1]University of Alberta, Edmonton, AB, Canada, [2]Austin Plastic and Reconstructive Surgery, Austin, TX

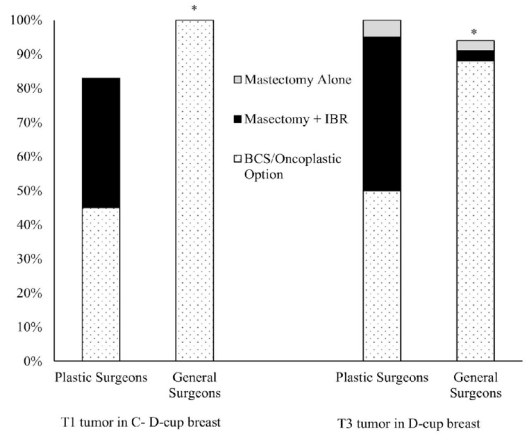
Background/Objective: The standard of care for early breast cancer is either breast-conserving surgery with radiation therapy (BCT) or a mastectomy with or without breast reconstruction. The objective of this study was to explore the personal preferences of general and plastic surgeons in the treatment of early breast cancer.

Methods: A survey was sent to 112 general and 424 plastic surgeons using SurveyMonkey©. There were 35 questions in two sections: demographics and case scenarios exploring personal preferences for treatment. All analyses were performed using the Social Science Statistics website, with a level of significance of $p < 0.05$

Results: For T1 cancers with large tumour:breast volume ratio ($p < 0.00001$), T1 node-positive cancers ($p < 0.00001$) and bilateral small node-negative cancers ($p < 0.00001$), general surgeons preferred BCT compared to plastic surgeons, who favored mastectomy with immediate breast reconstruction (IBR). In T3 node-negative cancers, general surgeons preferred oncoplastic breast surgery, while plastic surgeons who choose to undergo a mastectomy with IBR ($p < 0.00001$). For BRCA mutations there were no differences between surgeons.

Conclusions: This study confirms the differing perceptions of general and plastic surgeons in the treatment of early breast cancer, with more general surgeons preferring BCT whilst the majority of plastic surgeons preferred to undergo a mastectomy with IBR. This personal preference may influence how each specialty counsels patients. This study emphasizes the importance of multidisciplinary discussion and brings awareness to the inherent biases each specialty holds.

Figure 1: Which surgery would you prefer? T1 (<2cm) node-negative breast cancer in a moderate sized (C-D cup) breast, n=42 & 47 (Plastic and General Surgeons), or T3 (5cm) breast cancer in a D-cup breast, node-negative, n= 42 & 32 (Plastic and General Surgeon), *p<0.00001



1953451 - Prognosis and clinical outcome of papilloma neoplasm of the breast: An observational study

Puttiporn Naowaset

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Background/Objective: due to rarity of this subtype, the aim of this study was to investigate the clinicopathological features, treatment, and prognosis of papillary carcinoma of the breast.

Methods: The histopathologic reports of all papillary breast lesion from January 1, 2010, to January 31, 2020, at Ramathibodi hospital were retrieved, comprising a total of 544 reports. Of the 133 (24.44%) histopathologically proved papillary lesions, 411 (75.55%) lesions were excluded from this study due to mixed histopathologic type. The clinical characteristics including age, menopausal status, clinical presentation, the presence of mass, presence of suspicious calcification were recorded. Diagnostic and tumor characteristics including immunohistochemistry, Nottingham grade of tumor, and pathological stage were recorded. Local and systemic treatment including type of surgery, chemotherapy, radiation therapy, anti-hormonal therapy and targeted therapy were recorded. Prognosis including overall and disease-free survival were recorded.

Results: Of 133 papillary lesions, 47 lesions were invasive solid papillary carcinoma, 7 lesions were invasive encapsulated papillary carcinoma, 31 lesions were solid papillary carcinoma, 27 lesions were encapsulated papillary carcinoma, 16 lesions were invasive papillary carcinoma, and 5 lesions were intraductal papillary carcinoma. The mean follow-up period was 64 months, during which we identified 6 cases of recurrence. Additionally, non-cancer-related deaths were observed in 2 patients. There was no significant difference in disease free survival (DFS) among all types, with a rate of 95.49%. Similarly, overall survival (OS) showed no significant difference, with a rate of 98.5%

Conclusions: Papillary carcinoma is a rare variant of breast tumor. All papillary carcinomas, including the invasive types, exhibit an excellent prognosis. It is suggested that invasive papillary carcinoma should be considered a subtype with a favorable prognosis, allowing for minimization of treatment accordingly.

Table 1: Prognosis

Table 4 Prognosis

Prognosis	invasive solid papillary carcinoma (N=47)	invasive encapsulated papillary carcinoma (N=7)	solid papillary carcinoma (N=31)	encapsulated papillary carcinoma (N=27)	invasive papillary carcinoma (N=16)	intraductal papillary carcinoma (N=5)	Total (N=133)	P-value
Death resulting from other causes								0.149
no	46 (97.87)	7 (100)	31 (100)	27 (100)	16 (100)	4 (80)	131 (98.5)	
yes	1 (2.13)	0 (0)	0 (0)	0 (0)	0 (0)	1 (20)	2 (1.5)	
Recurrence								0.191
no	45 (95.74)	7 (100)	30 (96.77)	27 (100)	14 (87.5)	4 (80)	127 (95.49)	
yes	2 (4.26)	0 (0)	1 (3.23)	0 (0)	2 (12.5)	1 (20)	6 (4.51)	

Quality Measures

1973812 - Enhancing Psychosocial Support in Breast Cancer Care: Five Key Questions in Five Minutes with the BATHE Technique

Jessica Means[1], Ted James[1], Samir Mitri[1], Laura Martin Manfroi[1], Shreya Bhasin[2]

[1]Beth Israel Deaconess Medical Center, Boston, MA, [2]New York Presbyterian Weill Cornell Medical Center, New York, NY

Background/Objective: Patients with breast cancer often face significant emotional and psychological challenges throughout their treatment journey, highlighting the need for tailored care approaches. The BATHE technique – an acronym for Background, Affect, Trouble, Handling, and Empathy – is a patient-centered interviewing approach that can be used by healthcare professionals to explore the broader context and personal background associated with a patient's presenting concern. Published data on the outcome of the BATHE technique in breast cancer surgery is lacking, and this approach shows promise in enhancing the well-being of patients by optimizing the physician-patient relationship and placing greater emphasis on the emotional and psychological needs of patients with breast cancer during consultations. The primary objectives of this study are to assess the acceptability, appropriateness, and feasibility of training breast surgeons on the BATHE technique for use with their patients with breast cancer. By evaluating these factors, we aim to determine the practicality and potential benefits and challenges associated with incorporating this technique into routine clinical practice.

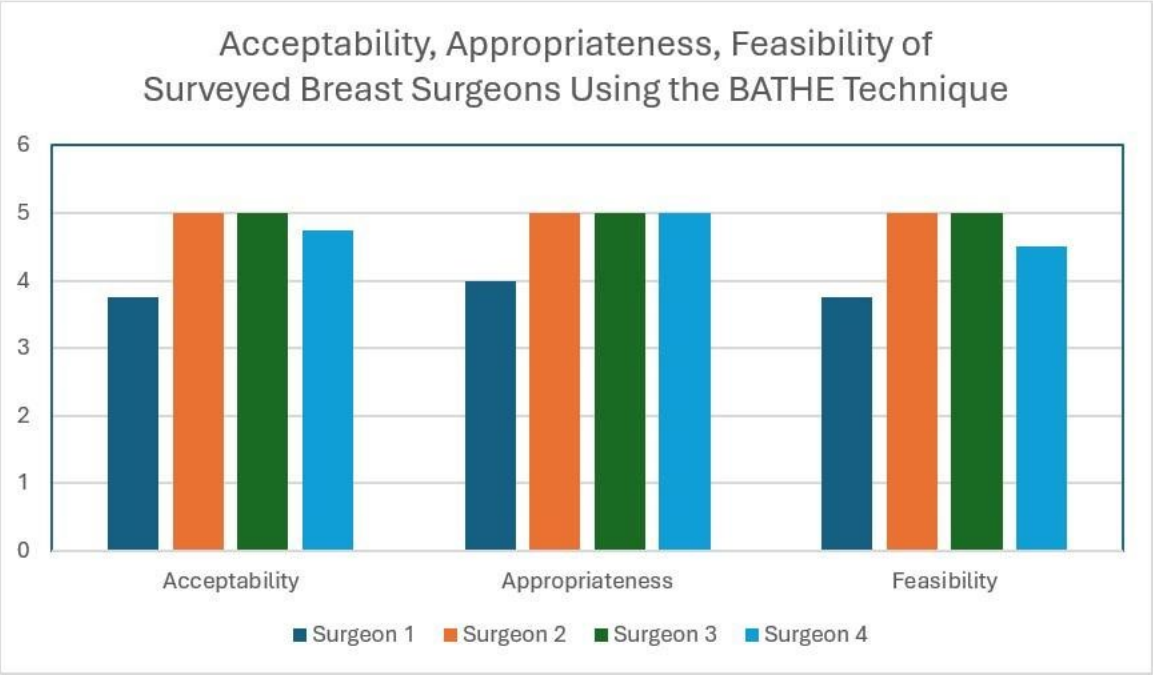
Methods: Breast surgical oncologists affiliated with Beth Israel Lahey Health were recruited to participate. Training in the BATHE technique included written materials on the five BATHE questions, theoretical knowledge, and practical application. Data was then collected using three validated survey instruments: the Acceptability of Intervention, Intervention Appropriateness, and Feasibility of Intervention Measures. Fifteen affiliated breast surgical oncologists were contacted via email; four chose to participate, utilize the technique in their clinics with breast cancer patients, and fill out the 12-question follow-up survey.

Results: [See figure 1.] 75% of surveyed surgeons agreed with the acceptability of the technique, with one surgeon recording a neutral response on one measure. All surgeons (100%) agreed on the appropriateness of the technique by all measures. 75% of surgeons agreed on the feasibility of the technique, with one surgeon with a neutral response on one measure. No surgeons felt that the technique would be unacceptable, inappropriate, or unfeasible by any survey measure.

Conclusions: This pilot study aims to evaluate the implementation and feasibility of training breast surgeons on the BATHE technique for use with patients with breast cancer. In the analysis of literature on the technique, no reports were found on its application within the context of breast cancer care. This absence is significant, considering the potential role of empathetic communication in managing such a complex and emotional diagnosis. By assessing the acceptability, appropriateness, and feasibility of this training, we seek to understand the potential benefits and challenges associated with incorporating the BATHE technique into routine clinical practice with breast surgical oncologists; in the future, this also has the potential for expansion to nurse navigators and social workers, broadening its applicability. The results of this pilot study support the use of BATHE by

breast surgeons in all measured realms – acceptability, appropriateness, and feasibility. While sample size is limited in this pilot study, these results are promising for future expanded investigations and training initiatives, with the goal of enhancing communication, empathy, coping skills, and patient experience in the context of breast cancer treatment.

Figure 1: Acceptability, Appropriateness, and Feasibility of Surveyed Breast Surgeons Using the BATHE Technique



Key:

1 – Completely Disagree

2 – Disagree

3 – Neither Agree nor Disagree

4 – Agree

5 – Completely Agree

1988489 - Easing the burden of Breast surgeons: Evaluating the Role of Breast Physicians in improving quality of care in Breast services

Maryam Nazir[1], Razia Bano[2], Aneeza Shams[3], Faiza Sana[4], Ayesha Rehman[4]

[1]Nisa Breast Care and Cosmetic Centre, Rawalpindi, Pakistan, Islamabad, Pakistan, [2]Nottingham University Hospital NHS Trust, Nottingham, England, United Kingdom, [3]Nisa Breast Care and Cosmetic Centre, Rawalpindi, Pakistan, Punjab, Pakistan, [4]Combined Military Hospital, Rawalpindi, Pakistan, Punjab, Pakistan

Background/Objective: In Pakistan the breast services are consultant led , however in various other countries these services are shared by non-consultant doctors or nurses including advanced care practitioners, advanced nurse practitioners and physicians associates . We introduced the concept of training doctors who did not get the opportunity to specialize in breast surgery but have a keen interest in learning about breast diseases and play their role in breast services .They work with a collaborative approach, under direct or indirect supervision of breast surgeons, improving quality of care and efficiency. The objective of the study was to evaluate the efficacy and outcomes after introducing breast physicians in comparison to the workload seen by consultant breast surgeons in 2017 onwards .

Methods: This was a prospective cross-sectional analytical study aimed at evaluating the impact of introducing breast physicians at two centers breast center in Rawalpindi Pakistan. During the initial phase of the breast center establishment, a single surgeon was responsible for handling the workload of symptomatic cancer, benign conditions, and inpatient cases and surgery. The average load of entitled and private patients was 35 to 40 patients. Keeping in view the risk of errors breast physician role was introduced in 2017. A total of 5 breast physicians has been trained. A feedback questionnaire on the impact of breast physicians in the quality of care was distributed among interdisciplinary specialists, including breast surgeons, pathologists, radiologists, medical oncologists and nurses.

Results: From 2016 to 2023, after the introduction of breast physicians, there was a significant increase in patient capacity and reduced wait times. Breast physicians also helped in streamlining diagnostic procedures, cancer screenings, benign diseases and mastalgia evaluations, giving the surgeons more freedom and focus to triage surgical cases. The percentages of cancer patients diagnosed by breast physicians also showed evidence of concordance. The responses of questionnaire regarding the efficacy of breast physicians indicated a high satisfaction level from the multidisciplinary team.

Conclusions: Breast physicians can prove to be supportive providers in breast care services, collaborating with consultant breast surgeons under direct or indirect supervision.

Table 1: Summary: Breast Physicians training, Skills, Job Description and Patient load shared

PARAMETERS		OUTCOME
Course duration	02 years	4 successfully completed training and certification
Course modules Self-directed learning, weekly lectures, webinars, Workshops Hand on	1. Anatomy & physiology and breast development 2. Benign Breast disease 3. Malignant breast conditions 4. Breast cancer survivorship 5. Leadership Management & Audit clinical governance	4 completed all modules
Assessments Weekly Quarterly Final Exam	Scenario-based MCQs Short SEQ Module summative assessment And TOACS 75% attendance & marks for completion certificate	88% attendance 01 score 85% marks 02 score 82 % 01 scored 76%
Clinical rotations 0 2 weekly	Radiology Pathology Nuclear medicine Clinical and medical Oncology	Completed by all
Surgical skills	Suturing technique Path forms Abscess drainage Minor excision Cysts aspiration Dressing TE expansion Free hand core or punch biopsy	Able to perform cases under local Suturing Manage Abscess Wound, cores seroma TE clinic independently
JD **Independent with minimal supervision**	New referral clinic Mastalgia clinic Abscess clinic Seroma/wound clinic Consenting for simple procedures Breast awareness sessions monthly Coordination for nuclear medicine, radiology, pathology Oncology	Concordance ➢ 78 %
JD with direct supervision	MDT Prep and actions Consenting for oncoplastic & aesthetic procedures	Work with surgeons in oncoplastic and aesthetic clinics
Patient load shared / Year		Significant improvement in patient load sharing Initially Initially 35 patients per clinic now 75 patients in clinic with 2 consultants 12 patients per physicians in independent clinic
2017	201 patients	
2018	375 patients	
2019	595 patients	
2020	965 patients	
2021	1701 patients	
2022	2204 patients	
2023	3264 patients	
2024	3357 patients	

1987742 - Effect of survivorship care plans on compliance in breast cancer patients

Grishma Pradhan[1], Lauren Dori[2], Uma Balasubramanian[2], Lynn Choi[2]

[1]*Albany Medical Center, Menands, NY,* [2]*Albany Medical Center, Albany, NY*

Background/Objective: 11% of females diagnosed with breast cancer will experience local recurrence within the first five years after receiving treatment. This study was performed to establish whether employing a survivorship care plan (SCP) helped improve patient's compliance with surveillance visits.

Methods: A retrospective study was performed on a total of 273 patients from 2017-2023 with two groups of patients: without SCP implementation (2017-2018) and with SCP implementation (2019-2023). A Chi-square test was used to analyze follow-up adherence between the two groups.

Results: Of the total 273 patients analyzed, 171 patients received an SCP, and 102 patients did not receive an SCP. On analysis, there were significant differences in follow-up care between the two groups: at 1 month, 76% of SCP patients followed up vs 61.76% no SCP($p = 0.0123$); at 3 months, 62% SCP vs 38.24% no SCP ($p=0.0001$); at 6 months, 50.88% SCP vs 36.27% no SCP ($p =0.019$); and 1 year, 49.70% SCP vs 28.43% no SCP ($p=0.0006$). This trend is graphically represented in Figure 1.

Conclusions: Our study shows that patients who received a SCP after breast cancer surgery were significantly more likely to follow up and adhere to the surveillance schedule when compared to patients who did not receive SCP. This emphasizes the need for SCP implementation to ensure post-operative follow-up in breast cancer patients.

Figure 1: SCP vs. non-SCP percent patient follow-up, 2017-2023

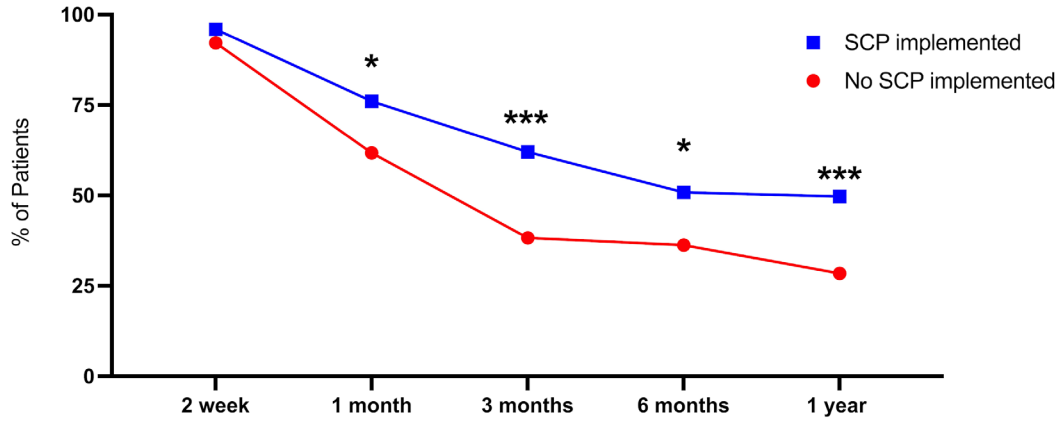


Figure 1: SCP vs. non-SCP percent patient follow-up, 2017-2023

1988074 - Surgical techniques should be developed together: Exploring the introduction of targeted axillary dissection

Ruth Mullan[1], Stuart McIntosh[2], Shelley Potter[3]

[1]Queen's University Belfast, Newtownabbey, Northern Ireland, United Kingdom, [2]Queen's University Belfast, Belfast, Northern Ireland, United Kingdom, [3]University of Bristol, Bristol, England, United Kingdom

Background/Objective: Targeted axillary dissection (TAD) is a new surgical technique introduced to allow more accurate axillary staging in patients converting from cN1 to cN0 following neoadjuvant chemotherapy (NACT) by reducing the false negative rate of sentinel lymph node biopsy (SLNB). New techniques usually evolve before becoming stable, but are often developed by several groups independently, so that any learning is not shared and the optimal way to perform the technique may not be clear. This scoping review aimed to explore the introduction of TAD in the neoadjuvant setting to identify key components of the procedure, to inform an international consensus process to agree how TAD should be performed in node positive patients having primary surgery.

Methods: MEDLINE and Embase were searched from inception-19/08/2024 using a search strategy developed in collaboration with an expert subject librarian. Snowball searching of reference lists was used to identify additional relevant papers. Primary research studies, published in full in English reporting the introduction or evaluation of TAD in patients having surgery following NACT were included. A study-specific proforma was iteratively developed and used to extract study characteristics and verbatim data relating to how TAD was performed including pre-, peri and intraoperative steps, details of any changes to the TAD procedure during the study, including why changes were made, and any information about surgeon training or experience required for study participation. Data were reviewed and categorized using content analysis.

Results: 334 papers were screened; 67 studies met the inclusion criteria. A further 30 were identified from snowball searches. A total of 97 studies were therefore included. Most studies were single center (n=70, 72.2 %) and undertaken in Europe or North America (n=69, 71.1 %). Almost 60% collected data prospectively. Significant heterogeneity was identified in the way the technique was performed with no single step common to TAD procedures across all studies. The most commonly included components of a TAD were marking of the involved lymph node (n=94, 96.9%), inclusion of SLNB (n=82, 84.5%), and confirmation that the marked node had been excised intraoperatively (n=66, 68.0%). There was, however, no consistency in how identified components were performed. For example, sentinel node localization could be performed with either dual tracer technique (35/82, 42.7%) or single tracer (13/82, 15.9%). Similarly, although wire localization of the marked node was used most frequently (31/62, 50%) a variety of techniques were described. There was no consistency in the numbers of abnormal nodes marked prior to NACT. Less than one fifth (17/97, 17.5%) of studies reported surgeons' experience. Nine (9.3%) studies commented on a perceived/reported learning curve and 14 (14.4%) commented on any modifications to the study procedure or why these were made.

Conclusions: Overall, there is no consistency in how TAD is performed in the neoadjuvant setting. A more collaborative approach to the development of new surgical techniques is needed to streamline the introduction of new procedures and ensure they are performed consistently. A consensus approach will be used to agree how TAD should be performed in the primary surgical setting.

1987873 - Preventing Provider Burnout: Using Chat GPT 4.0 to Help Answer Image-Based Patient Questions

Nisha Sondhi[1], Amanda Beneat[2], Anna Jacobs[1], Boris Joutovsky[1], Helen Pass[3]

[1]NYU Langone Hospital - Long Island, Mineola, NY, [2]NYU Langone Health - Long Island, Mineola, NY, [3]NYU Grossman Long Island School of Medicine, Garden City, NY

Background/Objective: Dependance on EMR for patient communication has risen since COVID-19, contributing to increased provider burnout. Patients may have difficulty describing lesions, leading to unnecessary clinic or ED visits. An AI model to address patients' image-based questions could help alleviate provider burden.

Methods: Image-based questions were collected from the Reddit forum r/AskDoctors using search terms "breast," "breast surgery," and "surgical drains." Responses from verified physicians, nurse practitioners (NPs), or physician assistants (PAs) were collected. A breast surgery PA, who is largely responsible for taking patient calls in our practice, was then asked to respond to these same questions as though they were real patients. Finally, the questions and associated images were also entered into ChatGPT 4.0, and responses were recorded. All three response types were blindly graded by PAs with experience in Breast Surgery on quality, accuracy, and empathy.

Results: Four image-based questions relating to surgical complications, breast pain, and skin lesions were posted within the last 5 years. In a survey of 4 breast surgery providers, ChatGPT 4.0 responses performed better than general responses from Reddit in all domains and better than the breast PA responses regarding quality and empathy.

Conclusions: These results suggest an AI model could alleviate the burden of common patient questions, even with visual components. The superior scores in the empathy domain specifically suggest the use of an AI model can still be done without having patients feel that they are not speaking to a real person. This is “proof of concept” for the creation of an AI model capable of responding to postoperative patient questions in breast surgery clinics and will be the focus of future studies.

Figure 1: ChatGPT 4.0 can give accurate, high quality responses to patient questions, will maintaining an empathetic tone.

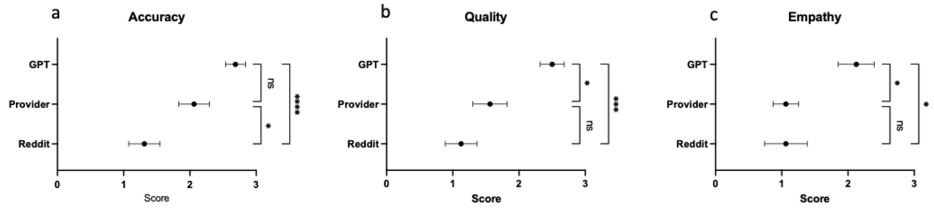


Figure 1. ChatGPT 4.0 can give accurate, high-quality responses while maintaining an empathetic tone.
Accuracy of responses was found to be superior to general provider responses on an online forum but equivalent to a provider in the field with experience answering patient questions (a). In terms of the quality and degree of empathy to the responses (b and c), ChatGPT 4.0 actually performed better than the provider.

1988247 - Analytical Validity of the Digistain Test in the Face of Variable Fixation Times: A Study from Charing Cross Hospital

Hemmel Amrania[1], Arnav Gautam[2], Manveer Sroya[2], Zamzam Al-Khalili[2], Darius Francescatti[3], Chris Phillips[2], William Mathieson[2], Charles Coombes[2]

[1]Digistain, Newport Pagnell, England, United Kingdom, [2]Imperial College London, London, England, United Kingdom, [3]Rush University Medical Center, Syracuse, NY

Background/Objective: Preserving the integrity of genetic material is essential for accurate risk profiling in adjuvant breast cancer therapy. While quantitative PCR-based risk assessments are commonly used, they can be affected by variations in formalin fixation times, which may degrade RNA quality and produce unreliable results. Alternatively, the spectroscopy-based Digistain test offers a different approach to tumor profiling. This study examines Digistain's capacity to deliver consistent and reliable results across a range of fixation times in breast cancer tissue samples, demonstrating its resilience to such pre-analytical variations.

Methods: A total of 233 breast cancer tumor biopsies were collected post-surgery from Charing Cross Hospital. The samples were fixed with recorded durations ranging from 5 to 144 hours. The samples were then analyzed to generate the Digistain index (DI), and its consistency evaluated across the varied fixation times.

Results: The samples were categorized into three groups according to fixation time: 0-24 hours, 24-48 hours, and 48+ hours. To evaluate differences in the Digistain Index (DI) across these groups, an Analysis of Variance (ANOVA) was conducted. The findings showed that DI values did not differ significantly across the groups, with no significant difference in the average DI values based on fixation duration ($p = 0.84$). This consistent performance of Digistain, unaffected by fixation time, suggests its analytical reliability, particularly in scenarios where PCR-based test outcomes could be influenced by pre-analytical factors.

Conclusions: The findings demonstrate the reliability of the Digistain test, affirming its effectiveness in clinical environments with varying fixation durations. This characteristic underscores Digistain's ability to perform accurate risk stratification to guide decisions pertaining to adjuvant therapy, enhancing its potential for widespread use in routine clinical practice.

1988601 - Developing a Breast Cancer Screening Protocol for Solid Organ Transplant: A High-Volume, Single-Institution's Experience

Szu-Aun Long, Catherine Pratt, Patrick Wilkerson, Jenna Whitrock, Shimul Shah, Jaime Lewis, Kristina Lemon, Alicia Heelan

University of Cincinnati College of Medicine, Cincinnati, OH

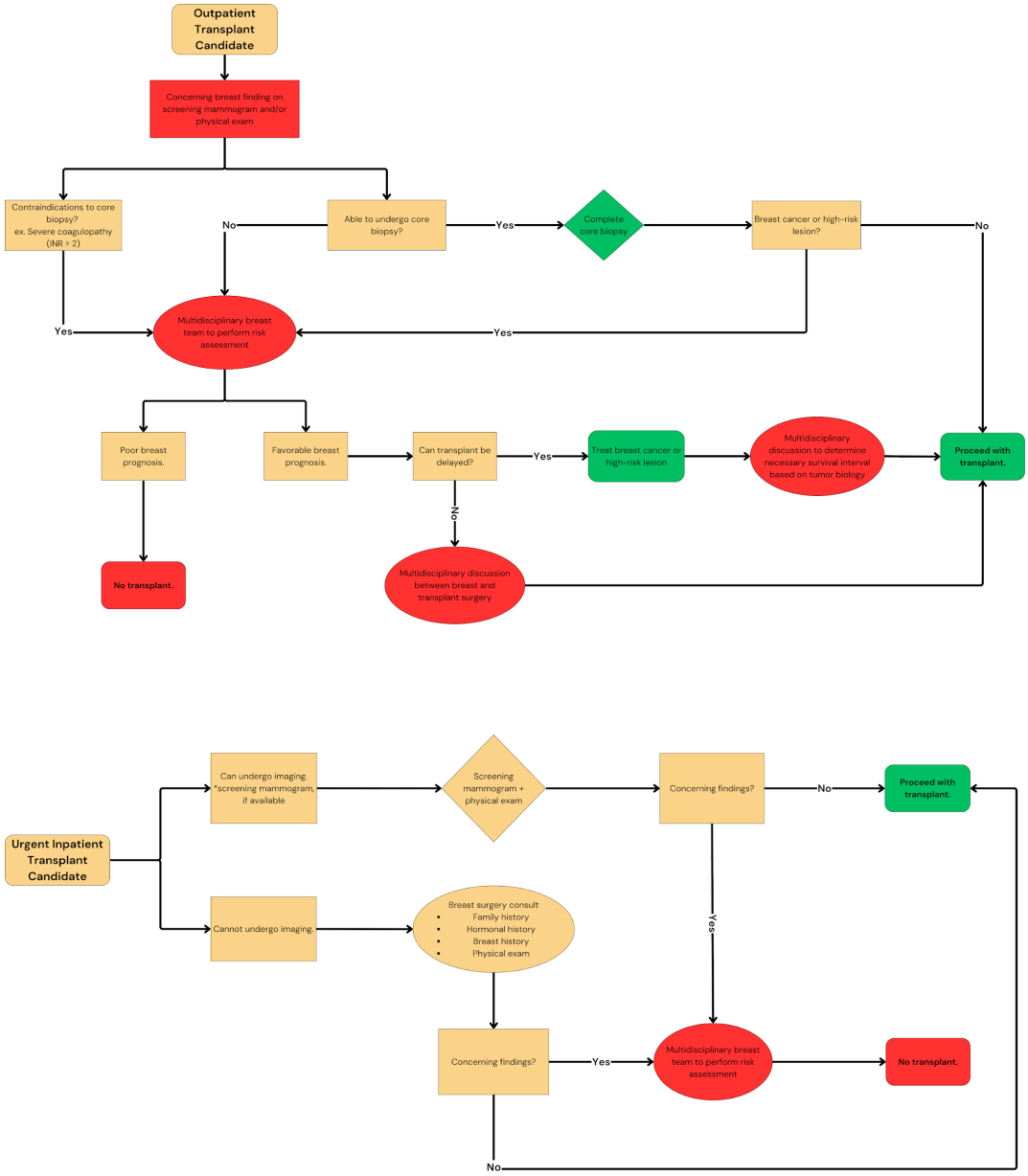
Background/Objective: Although the incidence of breast cancer in solid organ transplant recipients is comparable to the general population, post-transplant patients have worse breast cancer outcomes compared to non-transplant patients. Most transplant centers require that an age-appropriate screening mammogram be performed prior to transplant listing. However, no formal guidelines exist regarding breast cancer screening in the emergent inpatient transplant setting. The aim of this study was to create a breast cancer screening protocol for both elective and urgent transplant candidates based on a single institution's experience.

Methods: Patients who underwent kidney or liver transplantation at a high-volume academic center during 2016-2024 were retrospectively reviewed. Patients were included in this study if there were abnormal breast findings found during transplant workup or if they developed breast cancer within 5 years of transplantation. Protocols detailing the management of abnormal breast findings in the elective or urgent transplant settings were created based on these data (FIGURE).

Results: A total of 16 patients were included in this study, of which 94% identified as White and 88% had private insurance. Of the 16 patients, 6 (37.5%) were listed for urgent inpatient transplant, and 10 (62.5%) underwent outpatient transplant evaluation. Fourteen patients (87.5%) underwent liver transplantation; the most common etiologies were alcoholic cirrhosis and nonalcoholic steatohepatitis. One outpatient renal transplant candidate was diagnosed and treated for breast cancer but died prior to receiving transplantation. Two patients developed breast cancer within 2 years after liver transplantation but were successfully treated. Another liver transplant candidate was diagnosed with breast cancer but underwent transplant first following a multidisciplinary discussion.

Conclusions: This is the first study to detail a protocol for screening solid organ transplant recipients for breast cancer. A clinical breast specialist should be involved when there are abnormal findings found on physical exam, imaging, and/or biopsy during transplant candidacy workup. All high-volume transplant centers should have a protocol for breast cancer screening in patients being evaluated for transplant to avoid missed cancer diagnoses and ensure appropriate care pre- and post-transplantation. Future studies should evaluate the effectiveness of implementing breast cancer protocols in solid organ transplantation workup.

Figure 1: Breast Cancer Protocol for Solid Organ Transplant Candidates



1988732 - Are clinical breast exams obsolete?

Hunter Markle[1], Hannah Stein[2], Katherine Barton, M.D.[3], Jonathan Stephenson[4], Brynn Wolff[1]

[1]UPMC Harrisburg, Harrisburg, PA, [2]UPMC Harrisburg, Hummelstown, PA, [3]UPMC, Mechanicsburg, PA, [4]UPMC, Lewisberry, PA

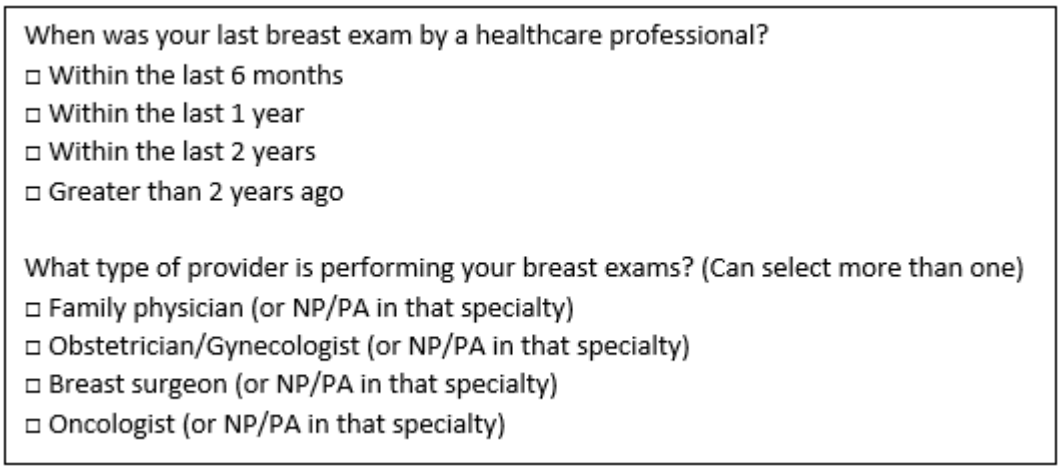
Background/Objective: The National Comprehensive Cancer Network (NCCN) currently recommends an annual clinical encounter with clinical breast exam (CBE) for patients over 40 years old for breast cancer screening, in addition to annual mammography. This study evaluated the compliance of women undergoing screening mammography having annual CBEs. The primary goal of this study was to identify the percentage of women having annual CBEs and any specific populations that were falling out of compliance who could be targeted with interventions to improve compliance.

Methods: We added two questions to the mammography survey pertaining to CBEs (Figure 1) and then analyzed survey responses of women undergoing screening mammography at 3 facilities in central Pennsylvania. Responses to questions relating to the patients' last clinical breast exams were collected along with the date of their last mammogram and demographic data including age, race/ethnicity, and zip code. Patients were split into groups who had a CBE within the last 1 year or greater than 1 year ago.

Results: A total of 4,563 survey responses were analyzed, with 43% of patients not having had a CBE within the last year. 31.3% of participants had not had a CBE within 2 years. The majority (65.9%) of CBEs were performed in the primary care setting by family physicians or obstetricians/gynecologists. Patients that had a CBE within the last year were younger than patients who hadn't (61.6 years vs 64.5 years, $p< 0.0001$). There was a higher percentage of patients over the age of 70 years in the group that hadn't had a CBE within the last year (34.6% vs 24.7%). There was no significant difference in the race distribution between the group having CBEs annually vs not ($p=0.3963$). There was also no significant difference between the residential type (rural vs not) of patients having annual CBEs vs not ($p=0.3963$). Patients having annual CBEs were undergoing more frequent screening mammography than patients not having annual CBEs (15.4 months vs 21.1 months, $p< 0.0001$).

Conclusions: Many women, although undergoing screening mammography, are not having annual CBEs. While we did identify that a higher percentage of patients over the age of 70 were not having annual CBEs, we did not see any significant difference in the timing of CBEs between patients of different races or residential types. The design of this study likely masks some of these differences, as all patients in the study already had access to healthcare to the extent that they were undergoing screening mammography. We need to better understand breast cancer screening in the setting of the general public to learn more about factors that influence compliance with annual CBEs. We plan to implement a free, resident-run breast exam clinic to increase the percentage of women in our community undergoing annual exams. We are also working to add electronic medical record notifications to ensure patients are undergoing adequate breast cancer screening.

Figure 1. Questions added to mammography survey pertaining to CBE.



When was your last breast exam by a healthcare professional?
□ Within the last 6 months
□ Within the last 1 year
□ Within the last 2 years
□ Greater than 2 years ago

What type of provider is performing your breast exams? (Can select more than one)
□ Family physician (or NP/PA in that specialty)
□ Obstetrician/Gynecologist (or NP/PA in that specialty)
□ Breast surgeon (or NP/PA in that specialty)
□ Oncologist (or NP/PA in that specialty)

1960806 - Improving Peri-Operative Efficiency for Patients Undergoing Technetium-99m Injection for Sentinel Lymph Node Biopsy

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Background/Objective: Optimizing peri-operative efficiency can reduce costs, improve patient safety, and increase patient satisfaction. In our institution, for patients undergoing axillary sentinel lymph node biopsy (SLNB) or targeted axillary lymph node dissection (TAD) for breast cancer, technetium 99m sulfur colloid (Tc99m) injection is performed in the nuclear medicine department on the morning of surgery. A delay in operating room (OR) arrival time for patients undergoing Tc99m injection was observed. We sought to examine the efficiency of this process.

Methods: A retrospective analysis was conducted of patients who underwent Tc99m injection prior to SLNB or TAD for a first start case between November 2021 and July 2023 at our institution. The scheduled case start time was compared to the actual OR arrival time along with the proportion of total cases that arrived on time. Only first case procedures were analyzed to most closely reflect efficiency related to the injections and minimize analysis of delays attributable to other reasons. OR delay was assessed with student's t-tests and regression models.

Results: Among 124 procedures analyzed, the average OR time of delay for cases requiring Tc99m injection was 14.4 minutes compared to 7.35 minutes for cases not requiring Tc99m injection ($p=0.001$). Along with time of delay, there was additionally a larger total proportion (80%) of cases delayed when pre-operative Tc99m injection was performed ($p=0.034$).

Conclusions: Our findings demonstrate considerable delays in OR arrival times for patients undergoing Tc99m injection at our institution. Further analysis should be conducted to assess contributing factors, such as transport time to and from the nuclear medicine department. Evaluation of intra-operative injection of Tc99m should be considered and may lead to fewer delays and improved outcomes.

Radiation

1986998 - Intraoperative Radiation Therapy (IORT) With or Without Additional Whole Breast Treatment (WBRx)

Deena Hossino[1], Peter Chen[2], Brian Kim[2], Shane Lloyd[2], Craig Cox[2], Kevin Lin[2], Melvin Silverstein[2]

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Background/Objective: Two prospective randomized trials have shown IORT to be a safe alternative to whole breast radiation therapy (WBRT) following breast-conserving surgery for low-risk patients. Both trials added additional whole breast treatment (WBRx) including WBRT and occasionally mastectomy, for predefined poor pathologic characteristics discovered on final histopathology, as did we. In this analysis, we look at our entire cohort, then subdivide by those who received local therapy only to the area of the tumor versus those who received additional WBRx.

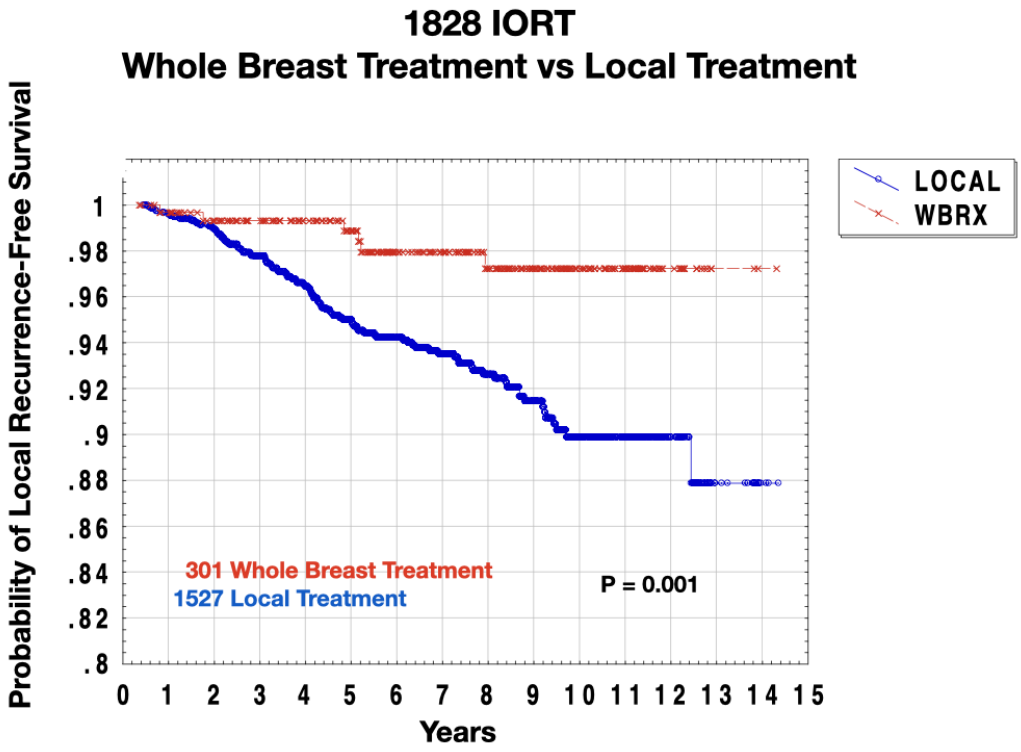
Methods: 1785 patients with 1828 tumors (43 bilateral) were taken to the operating room for IORT. 1752 tumors received IORT. 76 tumors had IORT cancelled in the operating room for positive nodes or technical reasons. Patients were analyzed by intention to treat, then divided into two groups: those who received local treatment only (excision of the tumor plus IORT only [1474] or excision, IORT and re-excision for close margins [n= 45], or excision alone, having refused additional treatment [n=8]). This group totaled 1527 and was compared with 301 tumors that received additional WBRx, (WBRT [n=276] or conversion to mastectomy [n=25]). All ipsilateral breast tumor events were considered local recurrences. Kaplan-Meier analysis was used to predict local recurrence probabilities.

Results: With a median follow-up of 85 months (7.1 Years), the predicted local recurrence rate at 5/10-years for the entire cohort of 1828 tumors was 4.37% and 8.81%. When tumors were divided into two groups, there was a significant difference in local recurrence between patients who received local treatment only versus patients who received additional WBRx ($p = 0.001$). Among the 1527 patients who received local treatment only, there were 99 recurrences and the probability of local recurrence at 5/10-years was 5.01% and 10.01%. Among the 301 patient who received additional WBRx, there were 6 recurrences and the probability of local recurrence at 5/10-years was 1.13% and 2.78% (Figure).

Conclusions: The TARGIT A trial reported a 5-year probability of local recurrence of 2.23% but 30% of their patients received additional WBRx. In this study, the 5-year probability of local recurrence was 4.37% but only 16% of patients received additional WBRx. When corrected for this difference in additional WBRx, the results of the two trials are similar. To better understand what IORT can do by itself, we analyzed the cohort that received local breast treatment only. This cohort of 1527 patients had a 5-year probability of local recurrence of 5.01%. Of these, 888 tumors met ASTROs 2023 criteria as 'Recommended" for partial breast irradiation. This subgroup had a recurrence rate of 3.81% at 5-years. Within the ASTRO recommended group, patients ≥70 years with luminal A tumors and final excision margins ≥2mm had a 5-year local recurrence rate of only 1.67%. IORT is profoundly convenient and less expensive than other methods of whole breast treatment. For selected patients, the

local recurrence rates can be extremely low. Although ASTRO does not support IORT outside of a clinical trial and multicenter registry, we continue to feel it has a role in selected patients.

Figure 1: Whole Breast Treatment vs Local Treatment



Reconstruction

1972927 - Rate of Reconstructive Surgery Following Breast-Conserving Surgery (BCS): Factors Influencing Reconstruction Need

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Background/Objective: Breast-conserving surgery (BCS), including lumpectomy and partial mastectomy, are reasonable alternatives for certain breast cancer patients who do not wish to undergo mastectomy. Many studies have described the rate and factors contributing to breast reconstruction post-mastectomy, however, there is a paucity of studies that describe revision rates post-BCS. Therefore, this study aims to determine the rate of reconstructive surgery after BCS and the factors that contribute to revision surgeries.

Methods: After ethics approval, patients diagnosed with breast cancer from 2002 – 2023 were identified by the Alberta Cancer Registry (ACR). The primary objective was to identify revision surgery rate of all patients, who underwent BCS in Alberta, Canada. Secondary variable assessment included the age, population density of their primary residence, type of revision surgery, tumor stage, presence of comorbidities in BCS-only and revision surgery groups. Statistical analyses including ANOVA, student's t-test, chi-squared tests were performed using SPSS software.

Results: From 2002 – 2023, 50,067 patients underwent BCS with 4,194 undergoing at least a revision breast surgery post-BCS (8.4%, confidence interval 95% of 8.1%). Of revision breast surgeries, 1,780 underwent mastectomy, 36 underwent breast reduction, and 2,378 underwent breast reconstruction (2,011 auto/homograft, 264 augmentations using implant, 29 using distant pedicled flap, and 74 using free tissue transfer). The mean age of patients who underwent revision surgery was 59.95 years, vs 60.42 years in patients, who only had initial BCS ($p = 0.02$). Both BCS-only and revision surgery groups had a greater proportion of patients residing in urban communities (89% and 90%, respectively; $p = 0.03$). Additionally, the number of revision breast surgeries were assessed in 5-year segments. There was a significantly greater frequency of revision surgeries increased in each 5-year segments ($p < 0.0001$; Table 1). No significant differences were identified between the BCS-only and revision surgery groups with respect to the presence of medical comorbidities, including neurological, cardiovascular, respiratory, hepatic, renal, vascular, connective tissue, and immunosuppressive disorders.

Conclusions: This study reveals that 8.4% of patients who underwent BCS from 2002 to 2023 in Alberta subsequently required revision surgery. The most common revisions included mastectomy and breast reconstruction, with a notable increase in revision rates over the study period. Factors such as age and urban residency were associated with higher revision surgery rates, but no significant differences were found regarding comorbidities between the groups. These findings highlight the importance of monitoring patients post-BCS and suggest that urban patients may face different healthcare dynamics influencing their surgical decisions. The data underscores the need for further research to understand the underlying causes of these revisions and to improve patient education and support surrounding post-surgical options, ensuring comprehensive care for breast cancer survivors.

Table 1. The rate of revision surgery post-BCS in 5-year increments from 2002-to-2023

Year of diagnosis	Total Cases	Repeat Surgery	Repeat (%)
2002-2007	11,360	372	3.3%
2008-2013	13,061	878	6.7%
2014-2019	15,427	1,599	10.4%
2020-2023	10,219	1,345	13.2%
Total	50,067	4,194	8.4%

SLN

1980106 - Targeted Axillary Dissection using Magseed® after Neo-adjuvant systemic anti-cancer therapy – surgical, oncological and lymphoedema outcomes at 3-years

Akriti Nanda[1], Evelyn Marshall[2], Dalal Alaradi[2], Mohamed Attia[2], Jennifer Rusby[2], Peter Barry[2], Katherine Krupa[2], Marios Tasoulis[2], William Allum[2], Radhika Merh[2], Gerald Gui[2], Rachel O'Connell[2]

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Background/Objective: Targeted axillary dissection (TAD) has been shown to improve false negative rates (FNR) compared to sentinel lymph node biopsies (SLNB) alone after neo-adjuvant chemotherapy (NAC). Our center has been routinely employing Magseed-guided TAD since 2018 to assist in lymph node localization following NAC. We present our real-world outcomes for lymph node positive (N+) patients at diagnosis who underwent TAD - describing surgical success, oncological safety and lymphoedema clinic referrals.

Methods: A retrospective chart review was conducted on all patients who underwent Magseed placement in the axilla and had NAC from October 2018 to December 2022. Data on clinicopathological factors was collected along with outcomes of intra-operative Magseed localization success, oncological outcomes and morbidity indicators such as referral to lymphoedema/pain clinic. Data is presented using descriptive statistics.

Results: 129 patients received NAC and had Magseed inserted. 36 were TNBC, 62 were HER2 positive, 31 were ER positive/HER2 negative. Median age at diagnosis was 50 (IQR 42-59) years. All Magseeds were recovered and 83% (n=107) were in a lymph node of which 25% (n=27) were not in the sentinel node. 76/129 (59%) patients appeared to have a complete radiological response (rCR) in the axilla on post neo-adjuvant therapy US, however only 55 (72%) of these patients had axillary complete pathological response (pCR). Conversely, while 53/129 (41%) had partial radiological response (rPR) 17 of them (32%) had pCR in the axilla. Thus, imaging and pathology for the axilla were concordant 69% of the time. 90/129 (70%) had TAD only avoiding further axillary surgery, whilst the remaining 39/129 (30%) went on to have axillary lymph node dissection (ALND). The rate of referral to lymphoedema clinic was 8 (20.5%) of the ALND group and 8 (8.8%) of the TAD group (p=0.08 Fisher's exact). Pain clinic referrals were equal at 7.7% in both groups - 3/39 and 7/90 respectively. At median 36 months (min 20-69 max) the recurrence outcomes are shown in Table 1; 6 patients were excluded from the follow-up as were Stage 4 at presentation, 25 were lost to follow-up.

Conclusions: In conclusion, our real world data demonstrates that TAD after NAC can be beneficial to de-escalate axillary surgery. All Magseeds were recovered. In 27 the clipped node was not the sentinel node, demonstrating its known benefit in reducing FNR. Given that post treatment-US are not accurate in identifying post NAC response Magseed-guided TAD is a useful tool to stage the axilla without immediate ALND. In the patient cohort where it appears there is rPR yet there was pCR, the employment of TAD was useful in de-escalating the axilla and avoiding ALND. This cohort may have been overtreated had axillary surgery been decided on post NAC imaging alone. Our study highlights

that TAD, compared to ALND, may reduce the post-operative morbidity lymphoedema incidence whilst maintaining similar oncological outcomes. It is reassuring that there were no axillary recurrences.

Table 1: Oncological outcomes for TAD and ALND using Magseed

	Any recurrence	Regional lymph node recurrence	Local recurrence	Distal recurrence
TAD (n=67)	10	0	5	6
ALND (n=31)	9	2 – both supraclavicular	2	6

1988529 - Omitting Axillary Staging and Radiation: A Retrospective Review of Eligible Breast Cancer Subpopulations

Hannah Stein[1], Melanie Shpigel[2], Hunter Markle[2], Abigail Lukasik[3], Kassey Gonzalez[4], Yijin Wert[5], David Weksberg[6], Renee Aboushi[7], Katherine Barton, M.D.[6]

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Background/Objective: The standard of care traditionally for patients with invasive breast cancer undergoing breast-conserving surgery included an axillary staging procedure and adjuvant radiation. Recently, multiple studies in breast surgery literature have challenged those norms, specifically in postmenopausal patients, with a goal of minimizing adjuvant treatment to improve quality of life. This study analyzes specific patient and tumor characteristics to determine which attributes lend themselves to safely eliminating axillary staging procedures, and furthermore adjuvant radiation. The Choosing Wisely Guidelines and the SOUND trial have demonstrated the safety of omitting sentinel lymph node biopsy, respectively. However, there are very few studies looking at the safety of omitting both axillary staging and radiation. This study aims to find what percentage of patients within a specific subpopulation have occult nodal metastasis with a secondary endpoint determining the risk of local recurrence.

Methods: A retrospective chart review through our institution's Cancer Center database from 2014 to 2024 was performed. Inclusion criteria included female patients with cT1cN0 Her2 negative tumors who underwent breast-conserving surgery and sentinel lymph node biopsy at their index operation who did not require adjuvant chemotherapy. Patients undergoing neoadjuvant chemotherapy or axillary node dissection were excluded. Patients who declined radiation therapy were further selected from this population. A database of age, grade, tumor histology, Ki67%, menopausal status, ER and PR percentages, sentinel nodes positive, invasive tumor size on surgical pathology, and Oncotype DX® scores was created. We collected data on locoregional and distant recurrence within 5 years. Normality tests of continuous variables were performed with a Shapiro–Wilk test.

Results: Of the 233 patients included in the study, 6 patients (2.5%) had occult nodal metastasis. The demographics and tumor characteristics are noted in Table 1. When further filtered through PRIME II inclusion criteria (age > 65), occult positive nodal rate decreased to 1.4%. Applying stricter criteria of patients with T1mi to T1b tumors, the nodal positive rate dropped to 0.6%. Women with invasive tumor size greater than 13 mm had a statistically significant increased risk of occult positive nodes (P=0.05). None of the other parameters resulted in statistical significance. Seven of the 233 patients (3%) had local recurrence within 5 years, and one patient with axillary recurrence (0.4%). No patients were found to have distant recurrences. None of the patients with locoregional recurrences had positive lymph nodes at their index operation.

Conclusions: This retrospective study demonstrates that clinically node negative patients who met this study's criteria have low rates of positive nodes on surgical pathology. Furthermore, this study suggests that a sentinel lymph node procedure does not change local, regional, or distant recurrence rates. The trends of this study are promising for this patient population to be able to safely forgo both lymph node staging and radiation. This study suggests that lymph node staging procedures do not

change recurrence rates as compared to the SOUND, CALGB 9394, and PRIME II trials. Therefore, absence of lymph node staging should not affect the radiation oncologist's decision on whether not to omit radiation.

Table 1: Patient Demographics and Tumor Characteristics

Variable	Category	n	%
Age Group (years)	≥ 65	207	88.84
	50 – 64	22	9.44
	≤ 49	4	1.72
Menopausal Status	Pre-menopause	4	1.72
	Post-menopause	228	97.85
	Perimenopause	1	0.43
Cancer Type	Ductal	176	75.54
	Lobular	33	14.16
	Tubular	2	0.86
	Mucinous	13	5.58
	Colloid	1	0.43
	Mammary	7	3.00
	Papillary	1	0.43
ER Receptor %	100	87	37.34
	<100	146	62.66
PR Receptor %	100	87	37.34
	<100	146	62.66
Tumor Grade	Grade 1	96	41.20
	Grade 2	129	55.36
	Grade 3	8	3.43
Tumor Size	T1Mi	3	1.29
	T1a	59	25.32
	T1b	84	36.05
	T1c	87	37.34
Nodal Status	SLN Positive	6	2.58
	SLN Negative	227	97.42

1988444 - Limiting the SNLB retrieval to three nodes is safe and does not impact axillary staging in early-stage invasive breast cancer

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University of Pittsburgh Medical Center, Pittsburgh, PA

Background/Objective: While recent studies promote omission of sentinel lymph node biopsy (SLNB) in invasive breast cancer (IBC) patients who have a negative preoperative axillary ultrasound, SLNB remains the standard of care for axillary staging in early-stage IBC. In this study, we hypothesize that removing more than three SNL is unlikely to yield useful staging information.

Methods: This single institution retrospective study reviewed data from patients with cT1-T2N0 IBC diagnosed between 2009-2023 who underwent primary surgery and SLNB. Patient and tumor characteristics, type of surgery, and number of SNL were analyzed.

Results: Of 5095 patients with cT1-T2, N0 IBC, 595 (11.6%) had a positive SLNB. Of the patients with < 3 SLN identified, 3579 (89%) were negative and 440 (11%) were positive. Of those with > 3 SLN identified, 921 (86%) were negative and 155 (14.4%) were positive. The removal of more than three nodes did not yield any additional information for this group. Only six patients were found to be node positive only after removal of more than the third SLN. Therefore, retrieval of no more than three SLN yields a false negative rate of 3.8%.

Conclusions: Our data demonstrates that in cT1-2, N0 IBC patients, limiting the SNLB retrieval to three nodes is safe and does not impact axillary staging. This would decrease the likelihood of chronic complications such as lymphedema and pain, and save operative time and expense.

Table 1. Baseline Patient and Tumor Characteristics

Characteristics	Patients, No. (%) (n=5095)
Age at surgery (yrs.)	
<40	158 (3.1)
40-49	791 (15.5)
50-64	2100 (41.2)
≥65	2046 (40.1)
Median (IQR)	61 (17-97)
Sex	
Female	5063 (99.3)
Male	32 (0.6)
Histology	
Ductal	4446 (87.2)
Lobular	649 (12.7)
Pathologic tumor size	
pT1mi or pT1a	596 (11.6)
pT1b	1097 (21.5)
pT1c	2164 (42.4)
pT2	1110 (21.7)
Sentinel lymph node	
≤3	
Negative	3579 (89)
Positive	440 (11)
>3	
Negative	921 (85.6)
Positive	155 (14.4)

1971802 - Near-Infrared Fluorescence Imaging Using Indocyanine Green Dye for Breast Sentinel Lymph Node Mapping Is Associated with Reduced All-Cause Outpatient Revisits

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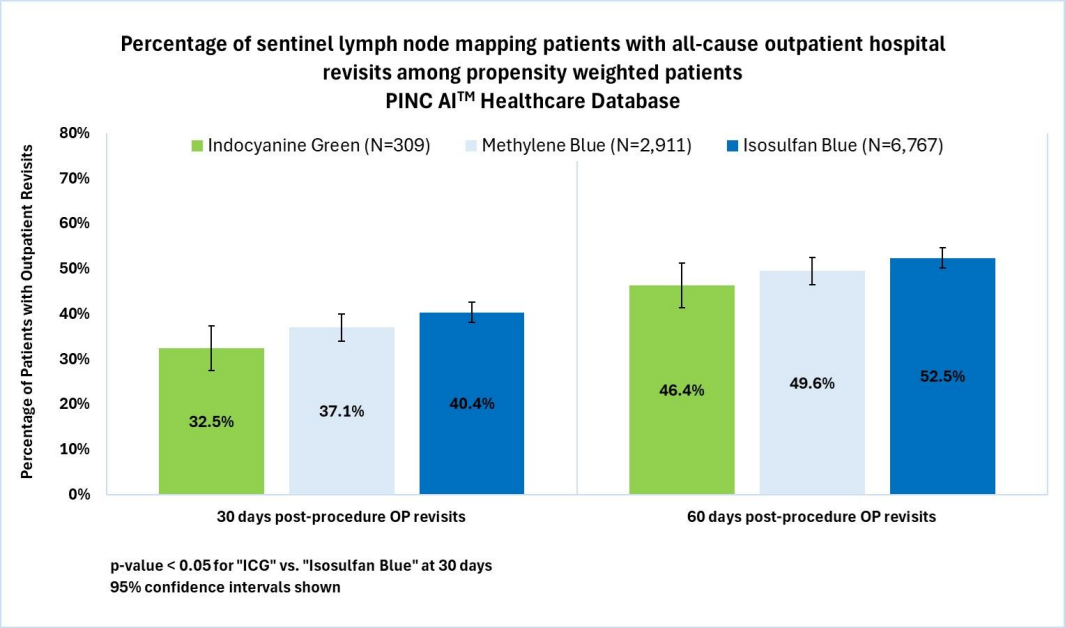
Background/Objective: Outpatient (OP) revisits can place a significant burden on patients and healthcare systems, making them a valuable quality of care measure for breast cancer management procedures, including sentinel lymph node (SLN) mapping. These revisits may arise from complications, insufficient follow-up care, or the need for additional interventions. SLN mapping plays a crucial role in the surgical management of early-stage breast cancer by facilitating accurate cancer staging and treatment planning while potentially reducing invasive axillary lymph node dissection. This procedure involves the visualization of SLNs using dyes such as isosulfan blue (IB), methylene blue (MB), or indocyanine green (ICG), with the choice of dye potentially impacting patient outcomes. Notably, ICG is detected through near-infrared fluorescence imaging. This study aims to identify which SLN mapping dye is associated with lower all-cause OP revisits.

Methods: Female patients 18 years and older with a breast cancer diagnosis that underwent SLN mapping and had an index OP hospital discharge at a U.S. hospital between July 1, 2017 and August 31, 2022 were identified using the PINC AI™ Healthcare Database (PHD). The PHD is comprised of hospital-based, service-level, all-payer information and includes over 1.4 billion outpatient visits and more than 352 million unique patients. Three patient groups were established according to the SLN mapping approach utilized: IB, MB, or ICG. Generalized boosted modeling (GBM) was employed for propensity score weighting to mitigate differences in patient, clinical, and hospital characteristics. GBM can adjust for many covariates and allows for greater model complexity. Stepwise logistic regression with forward selection was used to determine a final fitted model of 30- and 60-day all-cause OP revisits. Adjusted odds ratios (aORs) and 95% confidence intervals (95% CI) were calculated.

Results: In total, 5.6% (n=60,068) of the 1,067,677 adult female patients with a breast cancer diagnosis underwent SLN mapping at their index visit. Of these, 16.6% (n=9,987) utilized IB (n=6,767), MB (n=2,911), or ICG (n=309) and were included in the analysis. The adjusted all-cause OP revisit rates for the propensity-weighted sample (n=910) were 32.5% for ICG, 37.1% for MB, and 40.4% for IB at 30 days and 46.4% for ICG, 49.6% for MB, and 52.5% for IB at 60 days [Figure 1]. After adjusting for covariates, the odds of all-cause OP revisits at 30 days resulted in a reduction of 31%, and the odds of all-cause OP revisits at 60 days resulted in a reduction of 23% among the ICG cohort compared to the IB cohort [30 days: aOR=0.69; 95% CI, 0.54-0.90, p=.005; 60 days: aOR=0.77; 95% CI, 0.61-0.99, p=.038].

Conclusions: Utilizing near-infrared fluorescence imaging using ICG for SLN mapping is associated with a lower percentage of all-cause OP revisits compared to IB. Surgeons may consider implementing near-infrared fluorescence imaging using ICG in their practice to enhance the care journey for early-stage breast cancer patients.

Figure 1: Percentage of sentinel lymph node mapping patients with all-cause outpatient hospital revisits among propensity weighted patients



SLN/NAC

1976477 - The Role of Axillary Lymph Node Dissection in Breast Cancer Patients with Residual Nodal Disease after Receiving Neoadjuvant Chemotherapy

Kristina Shaffer[1], Lilian Harris[1], Lori Gentile[1], Amelia Merrill[1], Lori Kellam[2], Michelle Fillion[3], Peter Turk[1]

[1]Novant Health, Charlotte, NC, [2]Novant Health, Winston-Salem, NC, [3]Novant Health, Wilmington, NC

Background/Objective: While sentinel lymph node biopsy (SLNB) alone in breast cancer patients with limited axillary disease undergoing upfront surgery is well-accepted, there's insufficient data supporting its oncologic safety with residual nodal disease (RND) following neoadjuvant chemotherapy (NAC). Currently, the standard of care is proceeding with complete axillary lymph node dissection (ALND), which is associated with increased morbidity, particularly lymphedema. Accordingly, we evaluated axillary management and outcomes of patients with RND following NAC.

Methods: Patients treated at our institution between 2015-2023 who received NAC and had RND were identified. Patient and tumor characteristics; treatments, including axillary management; and outcomes information were collected. The relationship between axillary management and oncologic outcomes were examined.

Results: Of 155 patients included, median age was 55 years (IQR 46-64), and median follow-up 56 months (IQR 34-73). Most patients had ductal histology 127 (81.9%), were pathologic tumor Stage 1-2 (105, 67.7%) and pathologic nodal Stage 1 (106, 68.4%). The most common receptor pattern was estrogen receptor-positive (ER+), progesterone receptor-positive (PR+), and human epidermal growth factor receptor 2-negative (HER2-), 75 (48.4%); followed by ER-, PR-, and HER2-, 55 (35.5%). A total of 107 (69.0%) underwent mastectomy, 47 (30.3%) lumpectomy, and 138 (89.0%) received adjuvant radiation. Regarding axillary management, 121 (78.1%) underwent ALND, comprising ALND alone and SLNB +/- targeted axillary dissection (TAD) followed by ALND; and 34 (21.9%) underwent SLNB, comprising SLNB +/- TAD. On univariate analysis, there was no difference in overall survival 68.6% vs 70.6% (p=1), any recurrence (local, axillary, or distant) 36.4% vs 35.3% (p=1), or specifically axillary recurrence 9.9% vs 8.8% (p=1), between the ALND and SLNB biopsy groups, respectively. This was also demonstrated on multivariate analysis for overall survival (p=0.64), any recurrence (p=0.29), and axillary recurrence (p=1), when accounting for receptor status, histology, completion of NAC, confirmed retrieval of the biopsy-proven node, residual cancer burden, and receipt of radiation. However, there was a significantly increased rate of lymphedema in the ALND group, 57.9%, versus the SLNB group, 35.3% (p=0.03).

Conclusions: ALND was not associated with improved survival or recurrence risk compared to SLNB in patients with RND following NAC. However, more extensive axillary surgery was found to have a higher rate of lymphedema. These results suggest that SLNB for RND following NAC may be acceptable from an oncologic standpoint. This study is limited due to its retrospective nature. Further data examining this question, such as from the ALLIANCE A011202 trial, will help to further clarify the optimal oncologic management for this group of patients.

1972242 - Use of Magseed® and radioisotope single tracer versus standard dual tracer for targeted axillary dissection in women with clinically node positive converting to node negative breast cancer post neoadjuvant systemic therapy.

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Background/Objective: Advances in multidisciplinary management of breast cancer have allowed the de-escalation of axillary surgery in patients who were previously biopsy proven node-positive (cN+) and after receiving neoadjuvant systemic therapy (NST) become clinically node-negative (ycN-). Targeted axillary dissection (TAD) is one of the recommended approaches to reduce the false negative rates of sentinel lymph node biopsy (SLNB) by removing the pre-NST marked positive lymph node and the sentinel lymph nodes using the dual tracer technique (blue dye and radioisotope) as standard. The aim of this study was to compare the technique of using a Magseed® to remove the pre-NST clipped node and single tracer SLNB (Tc-99m) versus dual tracer SLNB without Magseed®.

Methods: Following local IRB approval, a retrospective analysis of prospectively maintained database was performed using a single-institution database from January 2017 until December 2020 including cN+ breast cancer patients who converted to ycN- post-NST . Patients who were found to have residual nodal disease on histopathology underwent completion axillary lymph node dissection and were excluded from the analysis. Two surgical techniques, i.e. use of Magseed® for localization and retrieval of the pre-NST clipped axillary lymph node with single tracer SLNB versus dual tracer SLNB without the use of Magseed® to facilitate removal of the clipped node were compared. The oncological outcomes between patients in the 2 groups were also assessed.

Results: A total of 53 patients were included in the analysis and were followed up for a median of 32 months (IQR 22-32 months). Of the 34 patients (69.4%) who had TAD using the standard dual tracer and marker clip, there were 2 failed clips removal and the clipped node was found to be the sentinel node in 29 patients (85%). 1 patient (2.9%) developed local breast cancer recurrence and 3 patients developed distal recurrence (8.2%) which resulted in 2 deaths (5.9%). 15 patients (30.6%) had single tracer SLNB and Magseed® to retrieve to clipped node, all of which (100%) were removed with the clipped node being the sentinel node in 13 patients (86.6%). 1 patient (6.7%) had local recurrence, and 2 patients (13.3%) had distal recurrence 1 of which resulted in death (6.7%). There were no axillary nodal recurrences documented in any patients. There was no statistically significant differences in the short-term oncological outcomes between patients who underwent TAD with dual tracer and marker clip and patients who underwent TAD with single tracer and Magseed® as a marker clip (table 1)

Conclusions: Targeted axillary dissection with single tracer and Magseed® appear to be a safe and acceptable option to perform in breast cancer patients converting from cN+ to ycN- post-NST and are candidates for de-escalation of axillary surgery.

Table 1. Oncological outcomes

TAD	Dual tracer SLN and marker clip (n= 34)	Single tracer SLN and Magseed® as marker clip (n=15)	P Value
Local Recurrence	1	1	0.544
Distal Recurrence	3	2	0.631

1988226 - Analysis of the accuracy of frozen section lymph node biopsy in targeted axillary dissection

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Background/Objective: The use of intraoperative frozen section in breast cancer surgery is frequently used to evaluate sentinel lymph nodes to determine the need for axillary dissection. It has been reported that the false negative rates of frozen section are higher in patients undergoing surgery after neoadjuvant chemotherapy. Targeted axillary dissection (TAD) is a method to identify a known positive lymph node after neoadjuvant chemotherapy to assess response to treatment. This study aimed to evaluate the false negative rate in the frozen section of patients undergoing TAD.

Methods: This was a retrospective cohort study of all patients undergoing TAD at a single institution from 2018 to 2024. Pathology data comparing frozen section analysis to permanent pathology was analyzed for concordance and changes in surgical management.

Results: 192 patients were included in this study. The frequency of discordant findings in this group was 10.4%. 18 patients (9.38%) had negative findings in the sentinel nodes on frozen section that later had positive findings on permanent pathology. In these 18 patients, a total of 22 nodes were found to be positive – 7 nodes had isolated tumor cells (ITC), 9 nodes had micrometastases, and 6 nodes had macrometastases. 4 of these 18 patients had an axillary lymph node dissection and all were negative for metastatic disease. 2 patients (1.04%) had positive findings on frozen section that later were negative on permanent pathology. One of the nodes was reported as having ITC and the other was reported as macrometastasis. Both of these patients underwent axillary lymph node dissection during the same operation, and both were negative for metastatic disease.

Conclusions: De-escalation of axillary surgery for breast cancer has become adopted in the adjuvant setting as axillary dissection is associated with increased morbidity including lymphedema, range of motion limitations as well as axillary coding. In patients diagnosed with node-positive disease, neoadjuvant chemotherapy is given to reduce the risk of development of distant disease and downstage the primary tumor and axillary lymph nodes. Axillary management after neoadjuvant chemotherapy typically involves frozen section with completion dissection if the lymph nodes remain positive for carcinoma. Studies have shown that TAD improves accuracy of intraoperative identification of sentinel lymph nodes. However, frozen section analysis in this setting provides a diagnostic dilemma for pathologists as therapy changes may be interpreted as live tumor. Our institutional data found a 10% discordance rate between frozen section reporting and permanent pathology, with 4 patients undergoing a reoperation and 2 patients receiving an unnecessary axillary lymph node dissection. Current trials are underway to determine whether axillary dissection can be de-escalated to only radiation therapy and decrease the risk of surgical complications. Pending the results of these trials, frozen section analysis may no longer be the standard of care if the sentinel lymph nodes can be accurately identified.

Table 1. Frozen and permanent pathology data for all patients.

	Permanent POSITIVE	Permanent NEGATIVE	Total
Frozen POSITIVE	95	2	97
Frozen NEGATIVE	18	77	95
Total	113	79	192

1988905 - Axillary Lymph Node Management in the Era of Targeted Axillary Dissection- Who Should Still Receive a Complete Axillary Dissection?

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Background/Objective: Our practice has consistently been performing targeted axillary dissection(TAD) after neo-adjuvant therapy for pN1 patients since 2016. We recently extended this practice to N2/N3 disease but are still performing modified radical mastectomy for inflammatory breast cancer patients and those with poor response to neoadjuvant therapy. We aimed to review practice paradigms, determine responses to therapy for all receptor types, locoregional and distant recurrence rates, deaths from breast cancer and if impacted by surgical management, and to evaluate if there is a subtype of breast cancer which would best be served by ALND instead of TAD.

Methods: A retrospective chart review of four breast surgeons from our practice was done for all patients who underwent neoadjuvant therapy with presentation of node positive disease from 9/2016 to 11/2022. The data collected included patient demographics, treatment received, biopsy and surgical pathology results, type of surgery, and recurrence or death from breast cancer.

Results: 205 patients were included in the study. Hormone receptor positive patients constituted 64% of the cohort with 70% of those being Her2 negative. Hormone negative, Her2 amplified patients made up 10% of the cohort. Triple negative represented 23%. 3% presented with inflammatory breast cancer. 1% were male and de novo Stage 4 patients were excluded. Age ranged from 31 to 87. 33% had a complete or nodal pathologic response (pCR). Her2 amplified, Hormone receptor negative subtype had the highest pCR rate (75%) with triple negative subtype the second highest rate of pCR (50%). Triple positive patients had a 40% pCR. Hormone receptor positive, Her2 negative had the lowest rate of pCR at 13%. Due to multiple trials overlapping during this time, some patients received neoadjuvant chemotherapy, some received neo-endocrine therapy followed by neoadjuvant chemotherapy, and some received only neo-endocrine therapy. Multigene recurrence score was not routinely done for hormone positive patients. TAD was done for most patients with clinical and radiologic response to treatment. ALND was performed for the inflammatory cancers and anyone with poor clinical/radiologic response to treatment. Recurrence and death from breast cancer data was available for 162 patients and well distributed among subtypes. 16 of 162 patients died from breast cancer. 6 of the 27 recurrences had TAD, 21 had ALND. 2 of the 6 TAD patients had a nodal recurrence (as well as concomitant distant disease), 5 of the 6 TAD patients with recurrence died from breast cancer. The remaining 11 deaths had ALND.

Conclusions: TAD for neoadjuvant patients in our practice is now our standard of care for pN1-3 disease at presentation. 40% of inflammatory breast cancer patients died from breast cancer and these patients should still be treated with ALND due to lack of data on safety of TAD. 40% of our IBC patients had pCR and to date have no evidence of recurrent disease. Type of axillary surgery did not impact recurrence rate or death from breast cancer. We feel it is oncologically appropriate to continue offering neoadjuvant therapy followed by TAD in most pN1 patients, excluding inflammatory breast cancers.

1988744 - Evaluating the benefit of targeted axillary dissection across breast cancer receptor subtypes

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Background/Objective: Historically women with clinically node positive breast cancer patients received an axillary lymph node dissection (ALND). However, advances in neoadjuvant treatment led to downstaging of nodal disease and de-escalation of axillary surgery. ACOSOG 1071 study validated the ability to perform a sentinel lymph node biopsy after neoadjuvant chemotherapy. Targeted axillary dissection (TAD) can allow the clinician to reduce the false negative rate by identifying the clipped node at time of sentinel lymph node biopsy. The aim of this study was to highlight one institution's overall experience with TAD and evaluate whether the benefit of TAD in reducing the number of ALND is consistent across all tumor subtypes.

Methods: This was a retrospective cohort study at a single institution from 2018 to 2024. All patients in this study had clinically node positive breast cancer at the time of diagnosis, had a Savi Scout clip placed in the node, underwent neoadjuvant chemotherapy, and eventually TAD. Patient demographics, tumor characteristics, and pathology results between different tumor subtypes were evaluated using chi-squared and ANOVA tests. $P< 0.05$ was considered statistically significant.

Results: There were 192 patients included in this study. Most patients had hormone receptor (HR) +/HER2- cancer (86/192) and the majority of patients had invasive ductal carcinoma (174/192). Of the 192 patients, 99 of them had a positive clipped node at the time of their surgery and of those patients, 83 of them had macrometastases. 100 patients required ALND and of those, 50 patients had positive nodes on ALND. Patients were also analyzed based on the receptor subtype of their cancer. There was a significant difference in the number of positive clipped nodes and number of macrometastases when comparing between the different receptor subtypes. There was also a significant difference in patients who required ALND; most of them were patients with HR+/HER2- subtype. Significantly fewer patients with HER2+ cancer required ALND. Pathologic complete response (pCR) was also significantly different between the four groups with HR-/HER2+ subtype having the most patients with complete response. HR+/HER2- had the most patients with category III residual cancer burden.

Conclusions: This study focuses on one institution's experience with TAD. HR-/HER2+ cancers were found to have a more favorable outcome as these patients had fewer positive clipped nodes, required fewer ALND, and had higher rates of pCR. Patients with HR+/HER2- were more likely to have positive clipped nodes, need ALND, and have a higher residual cancer burden. While inserting clips in positive nodes has become increasingly common, it is an additional cost and procedure for the patient to undergo. The outcomes of this study suggest that patients with HER2+ subtype may benefit more from clipping positive nodes than patients with HER2- subtypes. However, this study is limited by its small sample size, and larger multi-institutional studies are needed.

Table 1. All data by receptor subtype. HR = hormone receptor.

Variable	HR-/HER2- (n=46)	HR+/HER2- (n=87)	HR-/HER2+ (n=36)	HR+/HER2+ (n=23)	p-value
Age	47.7± 1.7	47.9 ±1.0	51.3 ± 2.2	46.0 ± 2.2	0.27
Race					
White	23 (50%)	55 (63.2%)	20 (55.6%)	12 (52.2%)	0.47
Black	20 (43.5%)	17 (19.5%)	7 (19.4%)	7 (30.4%)	0.02
Other	3 (6.5%)	15 (17.2%)	9 (25%)	4 (17.4%)	0.15
Tumor Subtype					
IDC	44 (95.7%)	74 (85.1%)	35 (97.2%)	21 (91.3%)	0.09
ILC	1 (2.2%)	11 (12.6%)	1 (2.7%)	2 (8.7%)	0.11
Both	1 (2.2%)	2 (2.3%)	0 (0%)	0 (0%)	0.72
Sentinel Lymph Nodes					
Total negative	30 (65.2%)	21(24.1%)	26 (72.2%)	16 (69.7%)	<0.001
Total positive	16 (34.8%)	66 (75.7%)	10 (38.4%)	7 (43.8%)	<0.001
Isolated tumor cells	1 (6.2%)	2 (3.0%)	2 (20.0%)	0 (0%)	0.59
Micrometastasis	2 (12.5%)	6 (9.1%)	1 (10.0%)	2 (12.5%)	0.72
Macrometastasis	13 (81.3%)	58 (87.9%)	7 (70.0%)	5 (31.3%)	<0.001
Required ALND	16 (34.8%)	69 (79.3%)	9 (25%)	6 (26.1%)	<0.001
Positive ALND	7 (15.2%)	40 (45.9%)	2 (5.6%)	1 (4.3%)	0.06
Positive permanent path	19 (41.3%)	76 (87.4%)	10 (27.8%)	8 (34.8%)	<0.001
Residual Cancer Burden					
Pathologic complete response	22 (47.8%)	9 (10.3%)	24 (66.7)	10 (43.5%)	<0.001
I	3 (6.5%)	4 (4.6%)	3 (8.3%)	3 (13.0%)	0.53
II	15 (32.6%)	41 (47.1%)	8 (22.2%)	8 (34.8%)	0.06
III	5 (10.9%)	33 (37.9%)	1 (2.8%)	2 (8.7%)	<0.001

1959603 - Internal Mammary Lymph Node Involvement Following Neoadjuvant Chemotherapy

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Background/Objective: Patients with locally advanced breast cancer and internal mammary lymph node (IMN) involvement do not routinely undergo IMN dissection due to surgical difficulty and increased post-operative complication rate. IMN involvement historically carried a poor prognosis, but with advances in systemic and locoregional therapy options, improved outcomes have been observed. To date, there is limited data regarding final IMN pathology following neoadjuvant chemotherapy and resection. Our study aimed to evaluate pre-operative clinical features of internal mammary lymph nodes and their correlation with pathologic findings following resection.

Methods: We retrospectively reviewed 15 patients with non-metastatic cN3b breast cancer who underwent internal mammary lymph node resection at the time of their definitive treatment from 2011-2024. Staging was completed with positron emission tomography-computed tomography (PET-CT) or magnetic resonance imaging (MRI) where the internal mammary lymph node was found to be suspicious.

Results: The median age of diagnosis was 50 years with a median follow up of 1.09 years. All patients underwent neoadjuvant chemotherapy. Patients either underwent mastectomy (87%) or BCT (13%). All patients underwent axillary surgery: SLN biopsy alone (33.3%, n=5), SLN biopsy with axillary dissection (33.3%, n=5), or axillary dissection (33.3%, n=5). Techniques used for IMN dissection included open 6.7% (n=1), thoracopic 86.7% (n=13), and robotic 6.7% (n=1). Tumor markers were ER+HER2- (66.7%, n=10) and ER-PR-HER- (33.3%, n=5). The IMN was positive for metastatic cancer in 4 patients and all had ER+/HER2- tumor markers. All patients with positive IMN pathology had positive axillary nodal involvement and residual breast cancer on final surgical pathology although both were statistically insignificant (p=0.085, p=0.2747). There was no correlation between the number of IMNs resected and positive IMN pathology (r=-0.199) with a median of 1.5 IMNs resected. The majority of patients (87%) received adjuvant radiation to the breast/chest wall with a median of 40-Gy. The 1 year overall survival, locoregional RFS, and distant metastasis free survival (MFS) was 93%, 100%, and 89%, respectively. Distant metastatic disease was observed in 3 patients and no patients experienced locoregional recurrence. Two of the patients with distant metastatic disease had positive IMNs with an odds ratio of 10 (p=0.079) and the remaining patient had no IMN tissue on final pathology. Restaging with MRI after neoadjuvant chemotherapy demonstrated an accuracy of 73%, positive predictive value (PPV) of 67%, a negative predictive value (NPV) of 75%, sensitivity of 50%, and specificity of 86% when correlated to final IMN pathology. In contrast, PET-CT demonstrated an accuracy of 63%, PPV of 50%, NPV of 67%, sensitivity of 33%, and specificity of 80%.

Conclusions: Correlation between IMN pathology following neoadjuvant chemotherapy had variable accuracy, PPV, NPV, sensitivity and specificity amongst imaging modalities. Positive IMN pathology was associated with residual axillary nodal disease, residual breast cancer, and early distant metastatic disease, but carried favorable locoregional RFS. All patients with residual pathologic internal mammary disease had ER+/HER2- tumor markers. Internal mammary dissection should be considered in patients with an original presentation of an internal mammary lymph node metastases, residual disease after neoadjuvant therapy and the tumor markers ER+HER2-.

Stage IV

1931178 - The applicability of two survival nomograms for surgery in bone-only de novo Stage IV breast cancer

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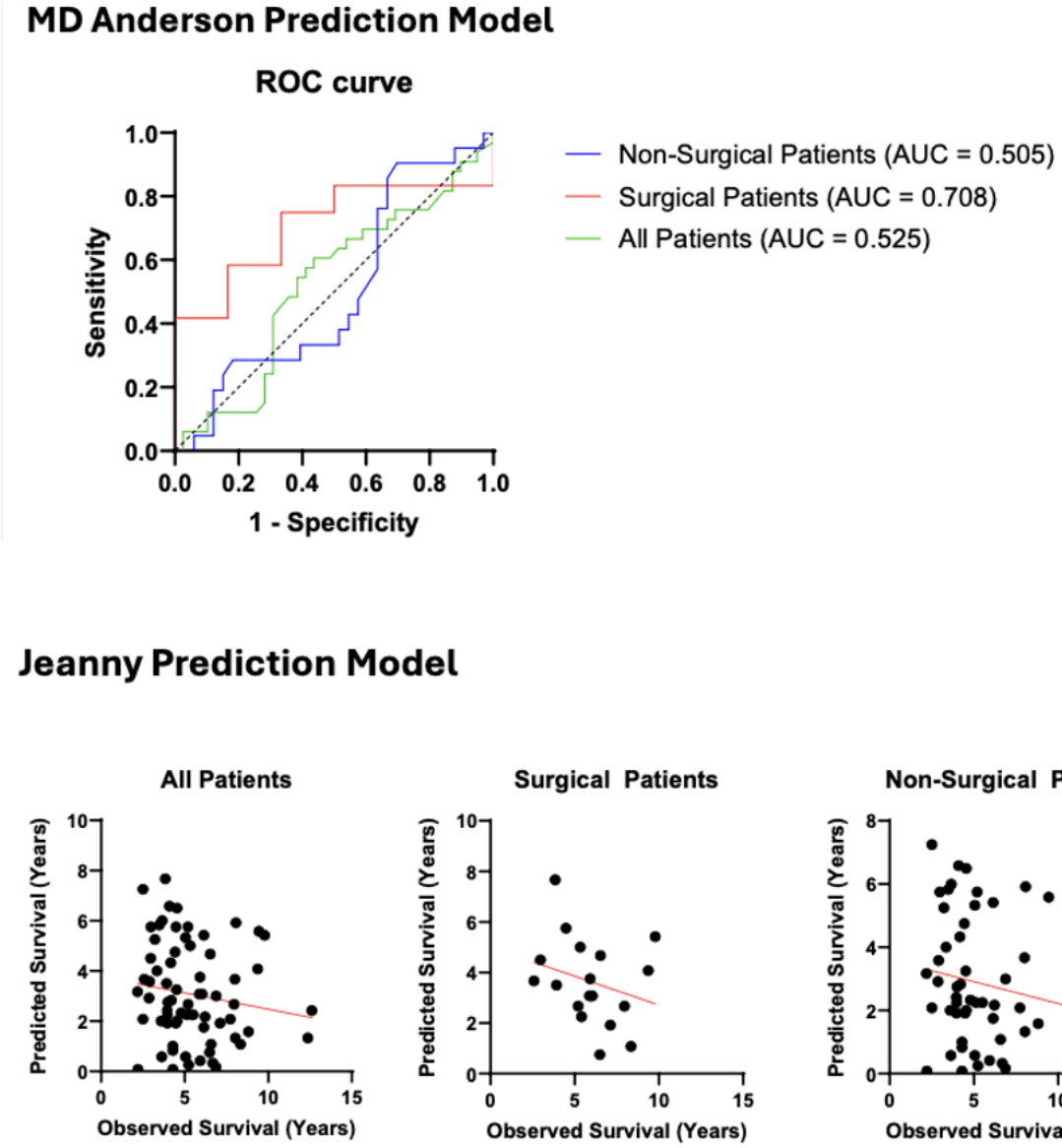
Background/Objective: In the US, breast cancer (BC) is the most frequent malignancy in women, with bone being the most common metastatic site. De novo metastatic BC (dnMBC) constitutes about 6-10% of BC. Survival of Stage IV BC varies dramatically by patient demographics, tumor characteristics, and metastatic site. Patients with bone-only metastases tend to have higher overall- and BC-specific survival. Research has investigated surgery's role in bone-only dnMBC, with results revealing a survival benefit. This study evaluated the ability of two nomograms to predict survival for bone-only dnMBC.

Methods: Patients diagnosed with bone-only dnMBC from 2014-2022 at a single academic hospital were identified and divided based on whether they underwent primary tumor surgery. Patients were inputted into two survival models, MD Anderson [biostatistics.mdanderson.org/BreastCancerSurvival/Calculator_Stage4.aspx] and Jeanny [Prediction calculator (shinyapps.io)]. Statistical analyses were performed for the entire patient population, surgical, and nonsurgical groups.

Results: Seventy-two patients with bone-only dnMBC were identified, with 18 having received primary tumor surgery. The MD Anderson model showed C-indices of 0.612 for all patients, 0.646 for surgical patients, and 0.598 for nonsurgical patients. Brier scores were 0.314 (all), 0.226 (surgical), and 0.342 (nonsurgical). The AUC values were 0.525 (all), 0.708 (surgical), and 0.525 (nonsurgical). Differences in C-indices were not statistically significant (P = 0.647). The Jeanny model's linear regression yielded R2 values of 0.023 (all), 0.074 (surgical), and 0.026 (nonsurgical) with corresponding P-values.

Conclusions: Although the MD Anderson model was more effective in predicting survival in surgical patients, dnMBC requires a more robust prediction model to plan treatment options, including surgery, accordingly.

Figure 1: Breast Cancer Nomogram Analysis



1941210 - Oral Selective Estrogen Receptor Degraders (SERDs) improved Progression-free Survival in ER+, HER2- Metastatic Breast Cancer: A Systematic Review and Meta-analysis

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Background/Objective: This meta-analysis aims to compare the efficacy of standard endocrine therapy versus Oral Selective Estrogen Receptor Degraders (SERDs) in terms of progression-free survival (PFS) in estrogen receptor-positive (ER+), HER2-negative advanced breast cancer patients, based on clinical trials conducted from 2014 to 2024. ER+ breast cancer is the most common subtype of breast cancer, with treatment primarily involving inhibition of ER signaling through either selective estrogen receptor degraders (SERDs) or aromatase inhibitors (AIs). Resistance to AIs often develops due to ESR1 mutations, prompting the use of SERDs. Until 2023, fulvestrant, administered intramuscularly, was the only SERD available. The approval of elacestrant, the first oral SERD, for patients with ESR1-mutated, ER+/HER2- advanced breast cancer, marks a major therapeutic advance, particularly in combination therapy settings.

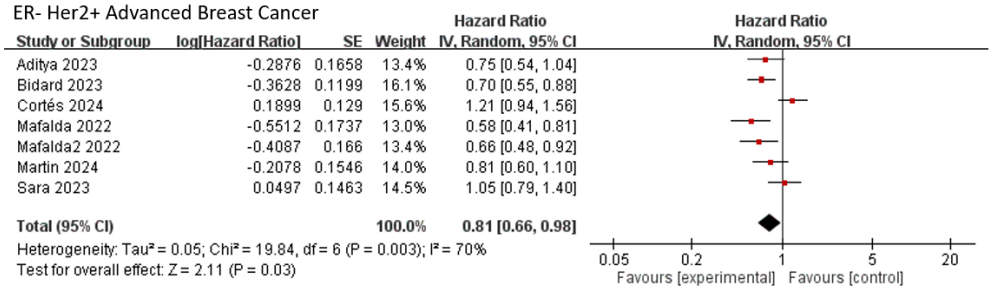
Methods: We conducted a comprehensive literature search using PubMed, Ovid EMBASE, Scopus, clinicaltrials.gov, and the Cochrane Library, identifying relevant studies through keyword and MeSH terms. Non-English studies were excluded. After screening and reviewing 818 unique references, 13 studies were included in the final analysis. Two authors independently assessed the eligibility of the studies, with discrepancies resolved through discussion. Data extraction included hazard ratios (HR) and 95% confidence intervals (CI) for PFS outcomes.

Results: The meta-analysis included 7 clinical trials on oral SERDs and 5 on ESR1 mutation. Oral selective estrogen receptor degraders (SERDs) offer a notable advantage over standard endocrine therapy in treating patients with estrogen receptor-positive (ER+), HER2-negative advanced breast cancer. Overall, oral SERDs reduced the risk of disease progression or death by 19% (HR = 0.81, 95% CI = 0.66-0.98, $p = 0.03$, $I^2 = 70\%$). In patients with ESR1 mutations, the benefit was more substantial, with a 44% reduction in the risk of progression or death (HR = 0.56, 95% CI = 0.44-0.72, $p < 0.00001$, $I^2 = 38\%$). These results suggest that oral SERDs are especially effective in patients with ESR1 mutations, providing a greater and more consistent therapeutic benefit in this group.

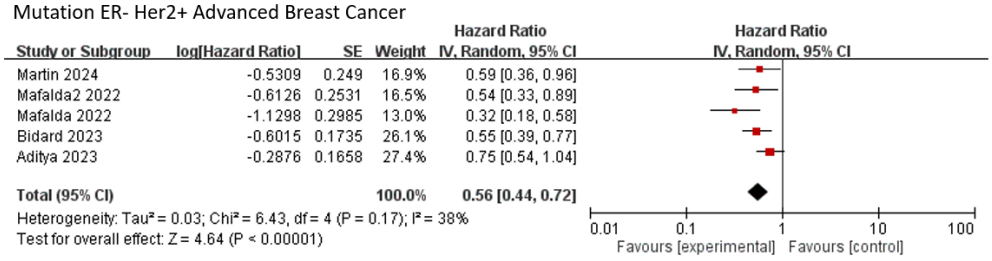
Conclusions: Oral selective estrogen receptor degraders (SERDs) significantly enhance progression-free survival in patients with estrogen receptor-positive (ER+), HER2-negative advanced breast cancer, particularly in those with ESR1 mutations. The substantial reduction in the risk of disease progression or death emphasizes oral SERDs as a more promising and effective option compared to standard endocrine therapy. These findings highlight the potential of oral SERDs to improve clinical outcomes, especially for patients with ESR1-mutated breast cancers.

Table 1: Progression-free Survival Between Oral SERDs and Standard of Care (SOC) in ER+ Her2- Advanced Breast Cancer

Progression-free Survival Between Oral SERDs and Standard of Care (SOC) in ER- Her2+ Advanced Breast Cancer



Progression-free Survival Between Oral SERDs and Standard of Care (SOC) in ESR1 Mutation ER- Her2+ Advanced Breast Cancer



Tumor Genetics

1987332 - High PARG expression indicates aggressive tumor biology in breast cancer

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Background/Objective: The poly (ADP-ribose) glycohydrolase (PARG) protein plays a vital role in DNA replication and repair by hydrolyzing the ribose-ribose bonds in poly(ADP-ribose), reversing the action of the poly(ADP-ribose) polymerases (PARP) enzymes. Given that highly proliferative cancer cells require DNA repair for survival, we hypothesize that high PARG expression in the tumor is associated with aggressive breast cancer biology.

Methods: The gene expression profile of 5255 primary breast cancers from two independent cohorts (METABRIC and SCAN-B) were analyzed for pathway and cell-type enrichment. Thorsson immune landscape scores (from the TCGA cohort of 1082 patients) were compared by PARG expression. The median value of PARG expression was used to divide each cohort into high and low expression groups.

Results: High-PARG cancers were significantly enriched for DNA repair pathways in both METABRIC and SCAN-B cohorts consistently. Cell proliferation-related gene sets (G2M Checkpoint, Myc Targets V1 and V2, E2F targets) were all enriched to high-PARG tumors in both cohorts. Microenvironment heterogeneity was significantly lower in high-PARG tumors. The fraction of stromal cells such as adipocytes, endothelial cells and fibroblasts were smaller with increased PARG expression. In the TCGA cohort, PARG expression was associated with increased homologous recombination defects, aneuploidy score and fraction of genome altered. Reduced number of immune cells were present with elevated PARG expression in METABRIC and SCAN-B cohorts. Similarly, decreased leukocyte fraction and lymphocyte infiltration scores were seen with high-PARG tumors in the TCGA cohort. High PARG expression was associated with nodal metastasis in all three cohorts.

Conclusions: PARG gene expression in breast cancer is associated with highly proliferative tumors that have decreased immune cell infiltration and higher rates of lymph node metastasis.

1988671 - ctDNA in the Neoadjuvant Setting Predicts Response to Treatment in Breast Cancer Patients

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Background/Objective: ctDNA is a new technology where molecular pieces of tumor DNA can be detected by a blood test. Using a tumor informed test, the patient's own tumor is sequenced via whole exome sequence and specific molecular targets are identified allowing a highly personalized method of screening for molecular residual disease throughout the patient's oncology journey. We used this technology in patients undergoing neoadjuvant treatment for breast cancer.

Methods: 23 patients were examined that were undergoing neoadjuvant therapy. ctDNA was collected at the initiation of treatment, during therapy, and after completion of neoadjuvant therapy. This was correlated with an imaging study (MRI) and final surgical pathology. Out of the 23 patients, subtypes included 10 HR+/Her2- cases, 8 Her2+ cases, 2 triple negative cases, and 2 basal cases. Patients on average had 3 ctDNA time points during their treatment, and 4 time points after treatment. All 23 patients had 1 baseline ctDNA drawn before the start of treatment. All patients completed a baseline MRI at the start of neoadjuvant treatment and another follow up MRI near the completion of treatment to track imaging response.

Results: Of the 23 patients available for study, only 6 patients were negative at baseline prior to neoadjuvant treatment, while the other 17 started with positive ctDNA. Only one patient did not have their ctDNA normalize prior to breast surgery, and continued on to have metastatic disease. Of the patients who cleared their ctDNA after neoadjuvant treatment, 18 had a response on MRI, with 8 of those 18 cases showing a complete imaging response. 10 patients had pCR post-op while 13 did not.

Conclusions: ctDNA can be used to evaluate response to therapy. Non responders can be evaluated for change of treatment, somatic testing, or more extensive surgery. More mature data will be available at the time of meeting, as more of our patients continue to be tested during and after neoadjuvant treatment.

1972245 - Real World Outcomes of Diverse Mammaprint/Blueprint Utilization in a Comprehensive Community Breast Center.

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Background/Objective: We retrospectively examined key outcomes in breast cancer care obtained from incorporation of genomic analysis using the Mammaprint/Blueprint (MP/BP) assay in diverse clinical settings based on contemporary evidence. We believe our analysis will demonstrate how use of MP/BP has provided excellent outcomes in our real world patient population and contributed significantly to care.

Methods: We performed a retrospective analysis of prospective data collected in a dedicated breast disease database from a single breast surgeon's practice in a comprehensive community cancer center. Women with Stage I-III primary breast cancer treated between Dec 2011 and Dec. 2023 who had MP/BP performed were selected for analysis. People with less than 6 mos of follow-up were omitted. 1889 people were identified for analysis: 704 (37%) had MP analysis, 460 (24%) had MP and BP analysis. We primarily analyzed breast cancer deaths (BCSM), Systemic Recurrence (SR) and Local Regional Recurrence (LRR) in Stage I-II HR+Her2- patients managed with MP/BP analysis for adjuvant chemotherapy recommendations. For TN and Her2+ cases we examined pathologic complete response (pCR) rates. We analyzed the MP High2 and ER+B subsets of HR+ Her2 - disease to examine pCR.

Results: In HR+Her2- cases with a MP High Risk (HR) result, 73% received chemotherapy, 31% neoadjuvantly with pCR rate of 16%. For the MP Low Risk (LR) group, 94% of the patients did not receive chemotherapy. 79% of those who did receive chemotherapy were lymph node positive, and 47% were under 50 years of age. Surgical and hormonal therapies in HR vs. LR groups were similar. Outcomes in both risk groups were excellent at an average follow-up of 45.4 months. In the LR cohort, no BCSM and a SR rate of 1.5% was observed. LRR was 1.5% in this group. For the HR group, BCSM was 2%, SR 1.2%, and LRR 2.7%. We examined the MP High2 subset of HR+Her2- disease identifying two distinct molecular subtypes, ER+B (55%) and Luminal B (45%), with distinctly different pCR rates. ER+B compromised the entirety of the pCR results with a rate of 50%. For Triple Positive disease (81%), all were MP High but distinct by BP: Luminal B 50%, Her2 45% and Basal 5%. HR-Her2+ (19%) of Her2+ had a more uniform BP distribution: 90% Her2 and 10% Basal. 92% of the Her2+ group received chemotherapy + anti-Her2 treatment and 83% neoadjuvantly. pCR rates were distinctly different amongst the BP subtypes overall, Her2 65% vs Luminal B 14%.

Conclusions: Our analysis demonstrates that utilization of MP/BP for early-stage HR+Her2- breast cancer produces excellent outcomes. MP/BP informs care significantly in ER+ Her2- patients with MP High2 or ER+B. Recent evidence has demonstrated how this information provides for improved care and a basis for clinical trials. Also, we observed that MP/BP clarifies Her2+ disease informing pCR. Our study demonstrates how utilization of MP/BP results in excellent outcomes in HR+Her2- and provides evidence based expanded clinical utility in other histologies.

Table 1: Chemotherapy Treatment and Outcomes

Outcomes Stage I-II HR+ Her2-

	MP High			MP Low	
Death BrCA	5	2.0%		0	0.0%
Death Other	2	0.8%		5	1.5%
LRR	7	2.7%		4	1.2%
Systemic Rec	3	1.2%		5	1.5%
NED	239	93.4%		312	95.7%

Chemotherapy Stage I-II HR+ Her2-

Chemotherapy	**MP High**			**MP Low**	
Yes	188	73%		19	6%
No	68	27%		307	94%
Neoadjuvant					
Chemo	58	31%		2	13%
Hormone	10			11	

High Risk - Neoadjuvant Chemotherapy N=58

pCR	9	16%
ypStage I	27	47%
ypStage II	22	38%