LEVINE CANCER INSTITUTE

Atrium Health

Effect of Oncoplastic Reduction Mammoplasty on Timing of Radiation Therapy in Women Undergoing Breast Conserving Surgery for Breast Cancer

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INTRODUCTION

- Radiation therapy (RT) after breast conserving surgery (BCS) for Breast Cancer (BC) reduces local regional recurrence (LRR) and improves breast cancer specific survival (BCSS)
- Delay in initiating radiation has been associated with inferior LRR and BCSS in patients undergoing BCS
- Oncoplastic reduction mammoplasty (ORM) has expanded the utilization of BCS for patients with macromastia, ptosis, or anatomically challenging tumors
- ORM is often performed after oncologic surgery, prior to RT, with goal of avoiding wound healing delays following RT
- There is limited evidence on the impact of interval ORM after BCS on RT delay

OBJECTIVE

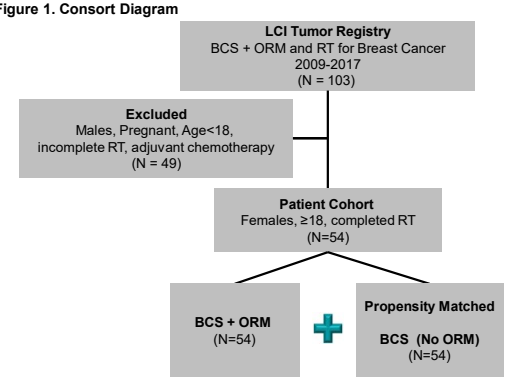
Our aim was to determine whether ORM performed after BCS lead to delay in RT, and what factors contributed to this delay.

METHODS

- The Levine Cancer Institute (LCI) Tumor Registry was queried for patients with primary breast cancer who underwent BCS + ORM followed by RT from 2009-2017 **(Figure 1)**
- Inclusion Criteria: Female, aged ≥ 18, with known stage and margin status, who completed RT
- Exclusion Criteria: Males, pregnancy, incomplete RT, adjuvant chemotherapy
- Delay from BCS to ORM was defined as >14 days, and delay from BCS to RT as >56 days
- A control cohort was obtained with propensity matching for age, BMI, and year of surgery (YOS)
- Univariable logistic regression models were used to estimate association of RT with age, BMI, tobacco use, diabetes, year of surgery, and insurance status (**Table 1**)
- Multivariable models controlling for the same variables, was then used to estimate association of time interval between BCS to ORM and BCS to RT **(Figure 2)**
- Multivariable analysis controlling for RT delay were used to determine what factors were associated with RT delay (**Figure 3**)

RESULTS

Figure 1. Consort Diagram



- **Delay to Radiation (Figure 2)**
  - BCS (No ORM)
    - The median time interval between BCS and RT was **44 days** (IQR 36 - 68)
    - 35% of patients that underwent BCS were delayed to RT
  - BCS + ORM
    - The median time interval between BCS and RT was **72 days** (IQR 54-97)
    - The median interval between ORM and RT was 52 days (IQR 40-72)
    - 68% of patients that underwent BCS +ORM were delayed to RT
- **Delay to ORM**
  - The median Interval between BCS and ORM was 14 days (IQR 12-20)
  - 44% of patients who underwent ORM were delayed from BCS to ORM
  - Delay to ORM did not predict delay to RT (*P*=0.394)

Figure 2. Frequency of Delay to Radiation Therapy

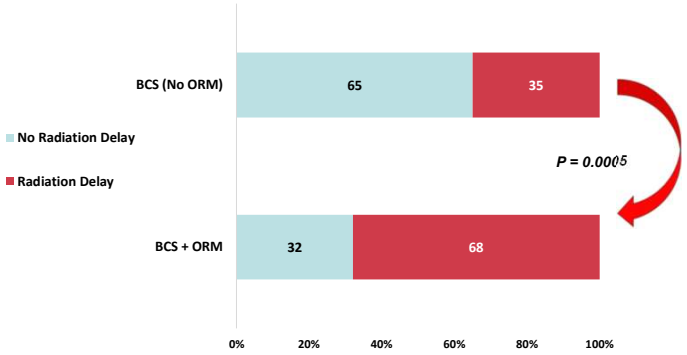
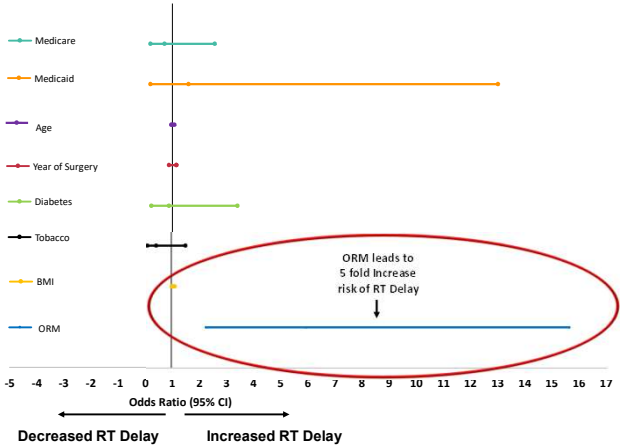


Table 1. Patient Characteristics

Factors	Radiation Delay: No		*P-Value*	Radiation Delay: Yes		*P-Value*
	BCS N=35 (65%)	BCS + ORM N=17 (32%)		BCS N=19 (35%)	BCS + ORM N=37 (68%)	<0.0005
Patient Age						
Mean	52.6 +/- 7.9	52.0 +/- 6.8	0.799	54.0 +/- 9.3	53.7 +/- 8.9	0.902
Body Mass Index						
Mean	36.5 +/- 9.4	34.3 +/- 9.5	0.426	39.6 +/- 8.1	38.0 +/- 6.1	0.430
Diabetes						
Yes	5 (15%)	1 (6%)	0.650	2 (11%)	5 (14%)	1.00
No	29 (85%)	16 (94%)		17 (89%)	31 (86%)	
Insurance						
Medicaid	2(6%)	0 (0%)	0.166	0 (0%)	3 (8%)	0.299
Medicare	8 (22%)	1 (6%)		2 (10%)	7 (19%)	
Private	23 (66%)	16 (94%)		14 (74%)	25 (68%)	
Uninsured	2 (6%)	0(0%)		3 (16%)	2 (5%)	
Year of Surgery						
Median (IQR)	2015 (2013-2016)	2016 (2015-2016)	0.563	2015 (2014-2016)	2015 (2014-2016)	0.958

Figure 3. Predictors of Radiation Delay



CONCLUSIONS

- Two thirds of those who had ORM experienced delay in initiating radiation treatment
- Undergoing ORM lead to 5 fold increase in delay to initiating RT, compared to BMI matched non-ORM cohort
- Delay to starting RT was not associated with delayed interval from BCS to ORM, Age, tobacco use, diabetes or insurance status
- More analysis is warranted to predict whom will experience delays in oncologic care following breast reduction, time to initiating RT in high BMI patients and to create usable algorithms for surgical decision making

RESOURCES

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