



# Breast conservation therapy versus mastectomy in the surgical management of invasive lobular carcinoma measuring 4cm or greater

University of California Case Brabham AB<sup>1</sup>, Ruby Guo AB<sup>1</sup>, Mary Kathryn Abel AB<sup>1,2</sup>, Kelly Fahrner-Scott BA<sup>1</sup>, Jasmine Wong MD<sup>1</sup>, Michael Alvarado MD<sup>1</sup>, Cheryl Ewing MD<sup>1</sup>, Laura Esserman MD MBA<sup>1</sup>, Rita Mukhtar MD<sup>1</sup>

<sup>1</sup>Department of Surgery, University of California, San Francisco, San Francisco, CA  
<sup>2</sup>University of California, San Francisco School of Medicine, San Francisco, CA

## Background

- ILC represents between 10-15% of breast cancers worldwide.
- Lacking E-cadherin, ILC grows in a diffuse pattern, presents at higher stages, and is more commonly treated with mastectomy.
- While breast conservation therapy (BCT) is safe in tumors <4 cm in size, it has not been studied in larger ILC tumors.
- **Therefore, we sought to investigate outcomes of patients with large ILC tumors treated with BCT instead of mastectomy.**

## Methods

- We conducted a retrospective analysis of 180 patients with ILC treated at UCSF between 1994 and 2019.
- BCT was defined as lumpectomy with or without local tissue rearrangement or oncoplastic reduction. All patients undergoing BCT had radiation therapy.
- **Primary Outcome:** 5 and 10 year recurrence free survival estimates, defined as absence of locoregional or distant recurrence at date of last follow-up.

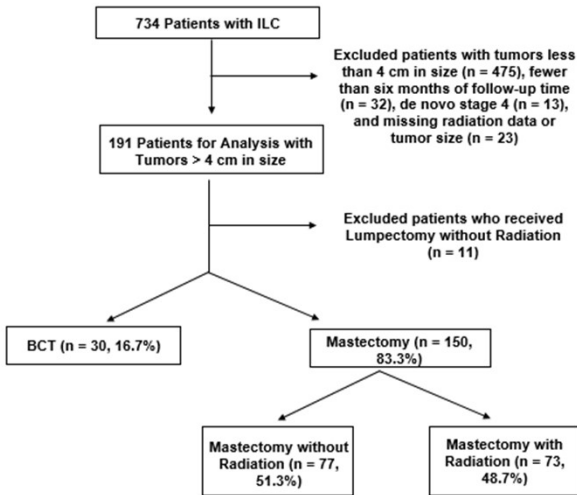


Figure 1: Flow chart depicting study design for analysis of ILC patients

## Cohort Characteristics

Characteristic	Overall Population (n = 180)	BCT (n = 30)	Mastectomy (n = 150)	P-Value
Age, years [mean (SD)]	57.9 (13.0)	64.3 (12.4)	56.6 (12.7)	0.003
Tumor Size [mean (range)]	6.9 cm (4-15.3)	5.4 cm (4-12)	7.2 cm (4-15.3)	< 0.001
Tumor Grade (n = 178)				0.980
1	43 (24.1)	7 (23.3)	36 (24.3)	
2	122 (68.5)	21 (70.0)	101 (68.2)	
3	13 (7.3)	2 (6.7)	11 (7.4)	
Receptor Subtype <sup>1</sup> (n = 167)				0.491
ER+/PR+/HER2-	120 (71.9)	19 (73.0)	101 (72.1)	
ER+/PR-/HER2-	38 (22.8)	8 (29.6)	30 (21.4)	
HER2+	4 (2.9)	0 (0)	4 (2.4)	
Triple negative	5 (3.6)	0 (0)	5 (3.0)	
N Stage				0.910
0	80 (45.2)	15 (50.0)	65 (43.3)	
1	57 (31.7)	9 (30.0)	48 (32.0)	
2	20 (11.1)	3 (10.0)	17 (11.3)	
3	23 (12.8)	3 (10.0)	20 (13.3)	
Neoadjuvant Therapy (n = 179)	79 (53.0)	9 (30.0)	70 (47.0)	0.087
Lymphovascular Invasion (n = 176)	23 (13.1)	6 (20.0)	17 (11.6)	0.339
Positive Margins	24 (13.3)	4 (13.3)	20 (13.3)	1.00

Table 1: Clinicopathologic characteristics of ILC patients with large tumors (≥4 cm) who received either BCT or mastectomy

- Of the 180 patients, 30 had BCT and 150 had mastectomy.
- Mean follow-up time was 5.3 years with a range of 0.53 – 21.8 years.
- Patients who had mastectomy were younger and had larger tumors.
- The two groups did not differ in: era of diagnosis, tumor grade, tumor receptor subtype, N-stage, receipt of neoadjuvant therapy, presence of lymphovascular invasion, or positive margin rate.
- There were no differences in seroma formation (4% vs. 8%, p = 0.51), infection (12% vs. 9%, p = 0.60), hematoma formation (0% vs. 2%, p = 0.51), or skin necrosis (0% vs. 4%, p = 0.29) between the BCT and mastectomy groups post operatively.

## Results

Patient Subgroup	RFS	Percent	95% CI
BCT (n = 30)	5 Year	80.6%	48.3-93.8%
	10 Year	80.6%	48.3-93.8%
Mastectomy (n = 77)	5 Year	86.2%	74.8-92.7%
	10 Year	71.8%	51.6-84.8%
Mastectomy and Radiation (n = 73)	5 Year	78.5%	64.9-87.4%
	10 Year	66.8%	50.4-78.8%

Table 2: Unadjusted recurrence-free survival (RFS) estimates in ILC patients with large tumors (≥ 4 cm) who received either BCT, mastectomy, or mastectomy and radiation therapy

## Results

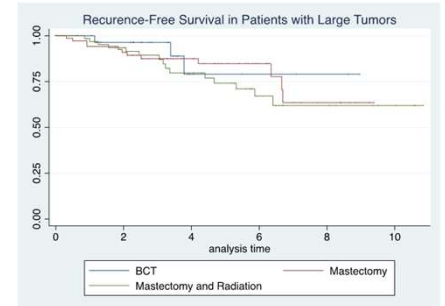


Figure 2: Kaplan Meier survival curve depicting recurrence-free survival in ILC patients with large tumors (≥ 4 cm) who received either BCT (blue), mastectomy (red), or mastectomy and radiation (green)

Treatment Type	Hazard Ratio	95% CI <sup>1</sup>	P-Value
BCT	Ref		
Mastectomy without Radiation	1.14	0.21-6.32	0.88
Mastectomy with Radiation	0.66	0.10-4.14	0.65
Positive Margins	4.16	1.38-12.58	0.012
Age at Diagnosis	1.02	0.97-1.07	0.44
Size of Tumor	1.29	1.10-1.51	0.002
N-Stage			
0	Ref		
1	5.50	1.18-25.80	0.030
2	6.12	1.11-33.79	0.038
3	17.95	3.25-99.10	0.001
Histological Subtype <sup>2</sup>			
ER+/PR+/HER2-	Ref		
ER+/PR-/HER2-	2.18	0.70-6.74	0.18
HER2+	41.96	6.37-276.40	< 0.001
Triple negative	43.87	6.62-290.92	< 0.001
Grade			
1	Ref		
2	0.63	0.23-1.68	0.35
3	1.18	0.19-7.38	0.86
Lymphovascular Invasion	1.32	0.45-3.84	0.61

Table 3: Results of multivariate logistic regression analysis that included a time-varying regression coefficient to account for nonproportional hazards

- Unadjusted analysis showed no significant difference in RFS at 5 and 10 years among the groups who underwent BCT, mastectomy alone, or mastectomy with radiation (Table 2 and Figure 2)
- On multivariate analysis, factors associated with reduced RFS were (Table 3) having positive margins, larger tumor size, and receptor subtype.

## Conclusions

- **The use of BCT rather than mastectomy in patients with ILC tumors that are ≥ 4 cm in size is safe provided that negative margins are obtained.**
- Please email [case.brabham@ucsf.edu](mailto:case.brabham@ucsf.edu) with questions