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Comparison of Health-Related Quality of Life Outcomes in Breast Cancer Patients Undergoing Breast-Conserving Surgery, Medically Necessary, and Patient Preference Mastectomy: A Prospective Study

THE UNIVERSITY OF BRITISH COLUMBIA

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BACKGROUND

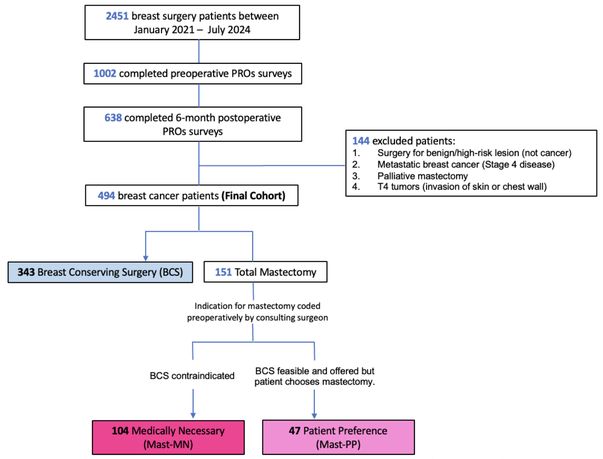
Guidelines support both breast-conserving surgery (BCS) with radiation and mastectomy for treatment of early breast cancer, but emerging evidence favoring BCS challenges the practice of universally offering both options equally to patients.

STUDY OBJECTIVE/ HYPOTHESIS

Objective: To compare the preoperative and 6-month postoperative change in patient-reported health-related quality of life (HRQoL) in aspects of breast satisfaction, mental, and physical health between **BCS**, medically necessary mastectomy (**Mast-MN**), and patient preference mastectomy (**Mast-PP**).

Hypothesis: BCS patients will have improved HRQoL outcomes compared to Mast-MN and Mast-PP.

METHODS



- Patients completed surveys preoperatively and 6-months postoperatively
- Patient-reported outcome measures (PROM) used: BREAST-Q, PHQ-9, GAD-7, PEG, EQ-5D-5L-VAS
- Primary outcome: postoperative breast satisfaction
- Statistical analysis:
  - Univariable Chi^2 and Kruskal-Wallis test.
  - Multivariable linear regression assessing relationship between surgical procedure and each patient-reported outcome (PRO).
  - Controlling for preop score, age, neoadjuvant therapy, adjuvant therapy, cancer stage, Charlson Comorbidity Index (CCI), Canadian Index of Multiple Deprivation (CIMD)

Table 1: Distribution of baseline covariates by breast cancer surgery modality

Patient Characteristic	Breast Conserving Surgery (BCS)	Total Mastectomy, N = 152 (30.5%) Medically Necessary (Mast-MN)	Patient Preference (Mast-PP)	*p*-value
	N = 343 (69.4%)	N = 104 (21.1%)	N = 47 (9.5%)	
Age, median (IQR)	62 (54 – 71)	55 (47 – 68)	57 (47 – 75)	**0.001**
Neoadjuvant therapy, N (%)	38 (11.1)	17 (15.4)	11 (23.4)	**0.048**
Adjuvant hormone therapy, N (%)	221 (64.4)	66 (63.5)	23 (48.9)	0.118
Adjuvant radiation, N (%)	297 (86.6)	35 (33.7)	10 (21.3)	**<0.0001**
Adjuvant chemotherapy, N (%)	80 (23.3)	33 (31.7)	14 (29.8)	0.182
Immediate breast reconstruction, N (%)	2 (0.58) *	62 (59.6)	24 (51.1)	**<0.0001**
Cancer stage				
Stage 0 (DCIS), N (%)	47 (13.7)	16 (15.4)	10 (21.3)	
Stage 1, N (%)	149 (43.6)	31 (29.8)	17 (36.2)	
Stage 2, N (%)	130 (38.0)	40 (38.5)	17 (36.2)	**0.002**
Stage 3, N (%)	16 (4.7)	17 (16.4)	3 (6.4)	
Charlson Comorbidity Index				
0, N (%)	45 (13.9)	15 (15.0)	8 (18.6)	
1-2 (Mild), N (%)	199 (61.4)	51 (51.0)	28 (65.1)	0.088
3-4 (Moderate), N (%)	10 (3.1)	1 (1.0)	2 (4.7)	
≥5 (Severe), N (%)	70 (21.6)	33 (33.0)	5 (11.6)	

Figure 2: Change in Preop- to 6-month Postop Core BREAST-Q Scores

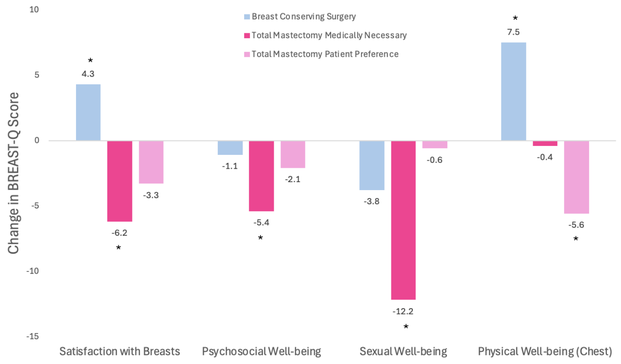
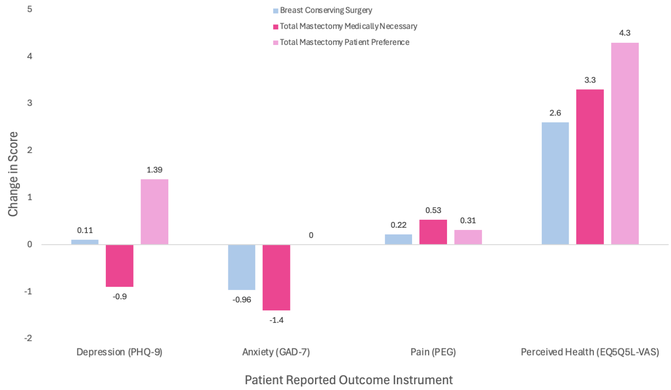


Figure 3: Change in Preop- to 6-month Postop Psychosocial Scores



RESULTS

- Clinically significant increase in breast satisfaction (+4.3) and chest physical well-being (+7.5) **after BCS**.
- Clinically significant decrease in breast satisfaction (-6.2), psychosocial well-being (-5.4), and sexual well-being (-12.2) **after Mast-MN**.
- Clinically significant decrease in chest physical well-being (-5.6) **after Mast-PP**.

Table 2: Linear regression model for 6-month postoperative BREAST-Q outcomes

	Satisfaction with Breasts		
Regression Effect	Coefficient (β)	Confidence Interval	p-value
Procedure			
BCS	Reference		
Mast-PP	-7.91	-15.2, -0.63	0.033
Mast-MN	-12.3	-17.4, -7.13	**<0.001**
Age	0.07	-0.11, 0.24	0.444
Neoadjuvant therapy	2.28	-4.80, 9.36	0.526
Adjuvant hormone therapy	-1.14	-5.86, 3.57	0.633
Adjuvant chemotherapy	-4.18	-9.52, 1.16	0.124
Cancer Stage			
0	0.73	-10.0, 12.46	0.903
1	Reference		
2	2.95	-2.29, 8.19	0.269
3	0.90	-9.01, 10.81	0.858
Charlson comorbidity			
0	Reference		
1-2	2.03	-9.56, 13.62	0.731
3-4	-11.5	-27.79, 4.77	0.165
≥5	-0.66	-13.61, 12.28	0.920
SES – Situational Vulnerability			
Q1	Reference		
Q2	3.43	-1.91, 8.78	0.207
Q3	2.51	-3.17, 8.18	0.386
Q4	0.30	-6.80, 7.40	0.934
Q5	-4.40	-15.97, 7.17	0.455
SES – Ethnocultural Composition			
Q1	Reference		
Q2	-6.91	-19.21, 5.39	0.270
Q3	-7.73	-18.46, 2.99	0.157
Q4	-5.74	-16.05, 4.57	0.274
Q5	-6.31	-16.87, 4.24	0.240
Preoperative score	0.42	0.33, 0.52	**<0.001**
Constant	42.2	21.46, 62.8	**<0.001**

DISCUSSION

- Patients may choose mastectomy to avoid adjuvant radiation that is necessitated with BCS, however this study demonstrated that despite most BCS patients receiving adjuvant radiation in this cohort (86.6%), they still reported higher breast satisfaction, and non-inferior psychosocial and physical outcomes compared to Mast-PP.

CONCLUSION

At 6 months postoperative, BCS was associated with higher breast satisfaction compared to both Mast-MN and Mast-PP. Overall, Mast-PP does not appear to offer HRQoL advantage over BCS in mental or physical health domains. When deciding surgical approach, patients should be counselled on these quality-of-life consider when BCS is feasible.

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