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Breast Cancer

Quality of Life Post Breast Cancer Surgery: Comparison of Breast Conservation Surgery versus Modified Radical Mastectomy in a Developing Country

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Abstract

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Introduction Breast cancer survivors are the largest group of female cancer survivors. Oncologic breast surgery can have a profound impact on a woman's body image and sense of self that can significantly affect their quality of life (QOL). The paucity of data about the effect of type of surgery on QOL of Indian breast cancer survivors has led to this study.

Materials and Methods This prospective study included consecutive female early breast cancer patients who underwent primary surgery, that is, breast conservation surgery (BCS) or modified radical mastectomy (MRM) from January 1, 2015 to December 31, 2015. The primary objective was the comparison of QOL using European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) and EORTC QLQ-BR 23 between the two groups at 6 months and 1 year postsurgery with the baseline.

Results One hundred and thirty-eight patients were included of which 62 underwent BCS and 76 underwent MRM. BCS patients fared better with respect to physical functioning, dyspnea, fatigue, appetite loss, and body image at 6 months ($p < 0.05$) as compared with MRM. At 1 year postsurgery, BCS patients fared better with respect to physical functioning, role functioning, global health status, body image, sexual enjoyment, and dyspnea, while MRM patients fared better in emotional functioning and future prospectives ($p < 0.05$).

Conclusion Patients undergoing BCS have a better QOL with respect to various functional and symptom scales at 6 months and 1 year. However, patients undergoing MRM perform better in terms of future perspective and emotional functioning at 1 year.

Keywords

- breast cancer
- breast conservation surgery
- modified radical mastectomy
- quality of life

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Introduction

Breast conservation surgery (BCS) is now a well-established alternative to modified radical mastectomy (MRM).[1–3] Twenty-year follow-up of these patients has shown equivalent survival.[1–3] Multidisciplinary management has improved the overall survival of breast cancer patients in all stages. Women with a history of breast cancer are the largest group of female cancer survivors and account for ~41% of the total.[4] The earlier stage at diagnosis and the use of multimodality therapy have improved the likelihood of long-term disease-free survivorship.

Oncologic breast surgery can have a profound impact on a woman's body image and sense of self. To date, the relative impact of these various surgical therapies on patients' satisfaction and quality of life (QOL) remains unclear. Most studies have analyzed populations in the developed countries, which may differ substantially from those in less developed geographic regions. Indian women differ in ethnic, social, cultural as well as economical aspects as compared with Western women. There is little data available about treatment preferences among Indian women, whose wishes regarding cosmetic results or other factors may differ from those in the West. The data available are contradictory with some studies showing worse QOL in BCS patients in India.[5] A recent systematic review shows discordance in QOL with respect to the type of surgery in Asian patients.[6] The paucity of data regarding the QOL issues after breast cancer surgery in the Indian population in spite of the heavy disease burden has led to this study.

Materials and Methods

This is a prospective study performed in the Department of Surgical Services, Regional Cancer Center, Thiruvananthapuram, Kerala, India. This study was conducted after Institutional Review Board and Ethics Committee clearance. The duration of the study was from January 1, 2015, to December 31, 2015. Women with pathologically proven early breast carcinoma undergoing primary MRM or BCS were recruited for the study. Pregnant or lactating women and women with bilateral breast cancers were excluded from the study. The primary objective of the study was to compare the QOL between patients undergoing BCS and MRM at baseline, 6 months, and 1 year postsurgery period. For a power of 80%, an α error of 5%, and a β error of 20%, a sample size of 138 was calculated.

Written informed consent was obtained from all patients. The validated Malayalam version7 of the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) and the QLQ-BR23 was filled by all the participants, immediate presurgery, 6 months postsurgery, and 1 year postsurgery. Data was entered using SPSS software, Version SPSS 11.0.1, (LEAD Technologies, Inc., Charlotte, North Carolina, United States of America) and scored as per the scoring manual. Categorical variables were summarized using frequencies and its corresponding percentages. The continuous variables were expressed in terms of mean and standard deviation. The independent sample *t*-test was used to compare postsurgery 6 months and 1 year with baseline. p-Value < 0.05 was considered to be statistically significant.

Results

One hundred and thirty-eight patients were included in the study. Sixty-two patients underwent BCS and 76 patients MRM. None of the patients underwent any reconstructive procedure. The patient characteristics are summarized in ►Table 1. The median age of patients undergoing BCS was 43 years (range: 34–71 years), while that of patients undergoing MRM was 52 years (range: 33–69 years). All patients underwent level I, II, and III clearance. Most of the patients presented in stage II in both the arms. Stage II was also the most common pathological stage. Fifty-one (82%) patients in the BCS arm and 64 patients (84%) in the MRM arm received adjuvant chemotherapy. All patients who underwent BCS received adjuvant radiotherapy, whereas 50 patients (66%) who had undergone MRM receive radiotherapy. Endocrine therapy was received by 36 patients (58%) in the BCS arm and 42 patients

Table 1 Patient characteristics

	BCS	MRM
Age (y)		
31–40	9	4
41–50	30	22
51–60	19	42
61–70	4	8
cT stage		
T1	16	8
T2	46	66
T3	0	2
c N stage		
N0	37	30
N1	25	46
Final histopathology		
Stage I	12	4
Stage II	46	68
Stage III	4	4
Adjuvant chemotherapy		
Received	51	64
Not received	11	8
Adjuvant radiotherapy		
Received	62	50
Not received	0	26
Endocrine therapy		
Received	36	42
Not received	26	34

Abbreviations: BCS, breast conservation surgery; MRM, modified radical mastectomy.

(55%) in the MRM arm. Both the groups were comparable at baseline (immediate presurgery), at 6 months, and at 1 year, respectively, except for the median age that was a decade younger in the BCS group. ►Table 2 depicts the baseline QOL scores of both the groups. Both the groups were well matched at baseline with no significant differences. QOL scores at 6 months are depicted in ►Table 3. BCS patients fared significantly better with respect to functional scales of physical functioning and body image. They also fared better with respect to symptom scales of dyspnea, fatigue, and appetite loss at 6 months postsurgery ($p < 0.05$) (►Figs. 1–3). The QOL

Table 2 Comparison of QOL between BCS and MRM patients at baseline

Scale	Group	Mean	SD	*p*-Value
EORTC QLQ C30				
Functional scales				
Physical functioning	BCS	83.55	16.23	0.409
	MRM	81.14	17.60	
Role functioning	BCS	88.44	19.23	0.094
	MRM	82.46	21.92	
Emotional functioning	BCS	76.61	22.88	0.950
	MRM	76.86	23.59	
Cognitive functioning	BCS	86.56	21.94	0.720
	MRM	87.72	15.96	
Social functioning	BCS	84.14	25.33	0.497
	MRM	83.95	18.30	
Symptom scales				
Dyspnea	BCS	6.45	14.58	0.083
	MRM	11.84	21.57	
Pain	BCS	11.56	16.96	0.056
	MRM	18.42	23.50	
Fatigue	BCS	16.67	22.65	0.192
	MRM	21.64	21.77	
Sleep	BCS	18.28	29.37	0.407
	MRM	22.81	33.65	
Appetite loss	BCS	11.83	25.68	0.832
	MRM	10.96	22.04	
Nausea and vomiting	BCS	5.91	15.12	0.854
	MRM	6.36	13.32	
Constipation	BCS	11.29	23.33	0.935
	MRM	10.96	23.34	
Diarrhea	BCS	4.30	11.27	0.868
	MRM	3.95	13.30	
Financial difficulties	BCS	30.11	35.56	0.061
	MRM	45.18	45.77	
Global health status QOL	BCS	77.15	18.96	0.058
	MRM	69.63	17.78	

(*Continued*)

Table 2 (*Continued*)

Scale	Group	Mean	SD	*p*-Value
EORTC QLQ BR23				
Functional scales				
Body image	BCS	91.13	18.72	0.500
	MRM	89.14	15.75	
Sexual functioning	BCS	75.30	27.52	0.063
	MRM	86.03	19.66	
Sexual enjoyment	BCS	28.33	36.73	0.066
	MRM	17.11	33.77	
Future prospective	BCS	58.60	36.56	0.866
	MRM	59.65	35.83	
Symptoms scales				
Systematic therapy side effects	BCS	13.54	15.54	0.162
	MRM	17.17	14.67	
Arm symptoms	BCS	12.72	16.69	0.337
	MRM	15.57	17.73	
Breast symptoms	BCS	9.81	13.03	0.264
	MRM	12.61	15.72	
Hair loss	BCS	15.36	11.47	0.146
	MRM	23.77	13.34	

Abbreviations: BCS, breast conservation surgery; EORTC QLQ, European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire; MRM, modified radical mastectomy; QOL, quality of life; SD, standard deviation.

Table 3 Comparison of QOL between BCS and MRM patients at 6 months

Scale	Group	Mean	SD	*p*-Value
EORTC QLQ C30				
Functional scales				
Physical functioning	BCS	62.15	20.41	0.039
	MRM	54.56	22.04	
Role functioning	BCS	64.52	20.58	0.349
	MRM	61.18	20.80	
Emotional functioning	BCS	57.93	16.76	0.759
	MRM	58.92	20.23	
Cognitive functioning	BCS	80.11	18.81	0.351
	MRM	76.97	20.18	
Social functioning	BCS	41.67	20.85	0.788
	MRM	40.57	25.87	
Symptom scales				
Dyspnea	BCS	15.59	20.66	0.015
	MRM	25.88	28.07	
Pain	BCS	43.28	19.43	0.583
	MRM	45.18	20.69	

(*Continued*)

Table 3 (*Continued*)

Scale	Group	Mean	SD	*p*-Value
Fatigue	BCS	41.76	21.07	0.037
	MRM	49.34	21.02	
Sleep	BCS	34.95	22.12	0.050
	MRM	43.42	28.29	
Appetite loss	BCS	32.80	21.33	0.032
	MRM	41.23	24.26	
Nausea and vomiting	BCS	26.08	18.75	0.050
	MRM	33.33	23.41	
Constipation	BCS	10.75	18.87	0.155
	MRM	6.58	14.42	
Diarrhea	BCS	12.90	20.34	0.151
	MRM	17.98	20.69	
Financial difficulties	BCS	68.28	27.28	0.605
	MRM	70.61	25.51	
Global health status QOL	BCS	54.57	12.77	0.058
	MRM	49.78	16.04	
EORTC QLQ BR23				
Functional scales				
Body image	BCS	67.07	20.60	<0.001
	MRM	48.36	22.44	
Sexual functioning	BCS	95.63	12.13	0.442
	MRM	86.03	19.66	
Sexual enjoyment	BCS	8.06	26.09	0.666
	MRM	6.22	23.69	
Future prospective	BCS	37.63	27.98	0.630
	MRM	39.91	27.23	
Symptoms scales				
Systematic therapy side effects	BCS	42.63	12.60	0.315
	MRM	44.80	12.59	
Arm symptoms	BCS	66.31	20.12	0.429
	MRM	69.15	21.59	
Breast symptoms	BCS	54.84	19.99	0.558
	MRM	52.85	19.61	
Hair loss	BCS	65.36	11.47	0.146
	MRM	68.85	13.43	

Abbreviations: BCS, breast conservation surgery; EORTC QLQ, European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire; MRM, modified radical mastectomy; QOL, quality of life; SD, standard deviation.

scores at 1 year are depicted in ►Table 4. At 1 year postsurgery, BCS patients fared better with respect to physical functioning, role functioning, global health status, body image, sexual enjoyment, and dyspnea, while post-MRM patients fared better in emotional functioning and future prospectives ($p < 0.05$) (►Table 4).

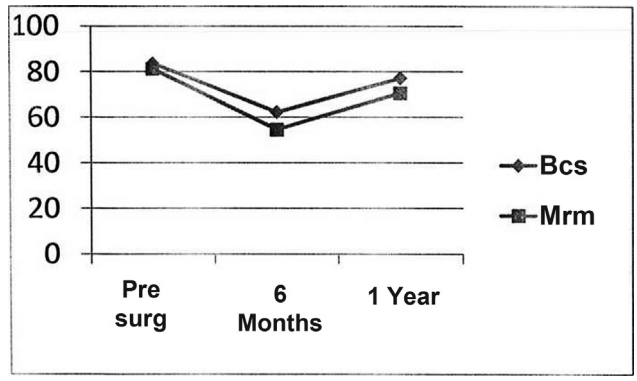

Fig. 1 Comparison of breast conservation surgery (BCS) and modified radical mastectomy (MRM) with respect to physical functioning.

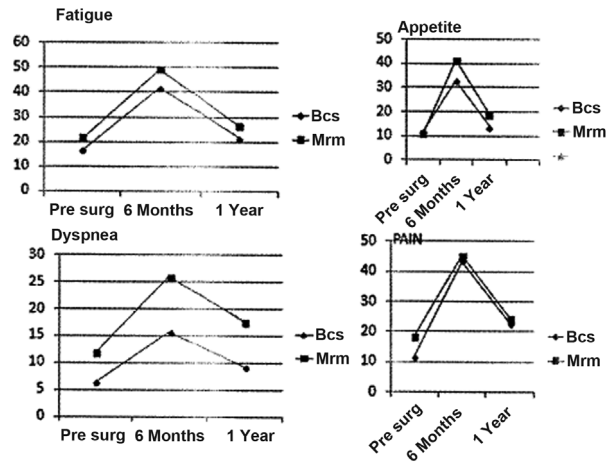

Fig. 2 Comparison of breast conservation surgery (BCS) or modified radical mastectomy (MRM) with respect to fatigue, appetite, dyspnea, and pain.

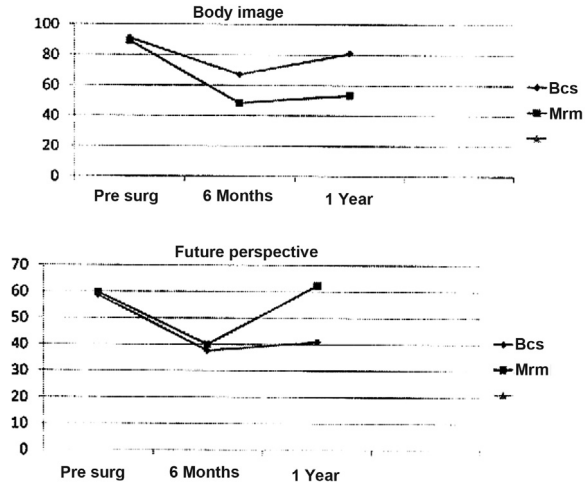

Fig. 3 Comparison of breast conservation surgery (BCS) and modified radical mastectomy (MRM) with respect to body image and future prospective.

Discussion

QOL studies are an integral part of the multidisciplinary management of cancer patients. They provide a measure of

Table 4 Comparison of QOL between BCS and MRM patients at 1 year

Scale	Group	Mean	SD	*p*-Value
EORTC QLQ C30				
Functional scales				
Physical functioning	BCS	76.99	15.91	0.037
	MRM	70.53	19.45	
Role functioning	BCS	83.06	18.23	0.026
	MRM	75.66	19.90	
Emotional functioning	BCS	70.43	14.13	0.029
	MRM	75.40	12.35	
Cognitive functioning	BCS	89.25	14.81	0.057
	MRM	83.99	16.87	
Social functioning	BCS	56.72	15.23	0.907
	MRM	57.02	14.47	
Symptom scales				
Dyspnea	BCS	3.76	10.64	0.449
	MRM	5.26	12.24	
Pain	BCS	22.58	16.00	0.537
	MRM	24.34	17.09	
Fatigue	BCS	21.68	18.04	0.126
	MRM	26.61	19.21	
Sleep	BCS	15.59	19.76	0.492
	MRM	26.61	19.21	
Appetite loss	BCS	13.98	19.60	0.151
	MRM	18.86	19.88	
Nausea and vomiting	BCS	9.14	13.39	0.13
	MRM	15.79	17.62	
Constipation	BCS	4.30	12.78	0.169
	MRM	1.75	7.49	
Diarrhea	BCS	3.76	10.64	0.449
	MRM	5.26	12.24	
Financial difficulties	BCS	54.30	24.32	0.502
	MRM	57.02	22.98	
Global health status QOL	BCS	73.66	9.92	0.033
	MRM	69.63	11.68	
EORTC QLQ BR23				
Functional scales				
Body image	BCS	80.78	21.26	<0.001
	MRM	53.51	19.54	
Sexual functioning	BCS	97.04	10.24	0.436
	MRM	98.41	9.33	
Sexual enjoyment	BCS	7.10	22.04	0.024
	MRM	69.63	11.68	
Future prospective	BCS	40.86	25.90	<0.001
	MRM	62.28	22.00	
Symptoms scales				
Systematic therapy side effects	BCS	28.80	12.97	0.514
	MRM	30.08	8.97	
Arm symptoms	BCS	65.23	16.89	0.348
	MRM	62.57	16.21	
Breast symptoms	BCS	41.80	13.28	0.287
	MRM	39.04	16.45	
Hair loss	BCS	47.85	39.40	0.906
	MRM	48.68	42.67	

Abbreviations: BCS, breast conservation surgery; EORTC QLQ, European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire; MRM, modified radical mastectomy; QOL, quality of life; SD, standard deviation.

the wholesome treatment that includes the social, psychological, and emotional aspects of the disease, apart from the physical aspect. QOL measures individual's or group's perceived physical and mental health over time.[7] With the advent of newer treatments, breast cancer patients have an improved overall survival. This raises questions about the QOL in these patients most of who receive multimodality treatment.

Breast surgery has a great impact on all aspects of a woman's life. There are multiple studies on the impact of breast surgery on the QOL in Western population.[8] The spectrum of breast cancer in India is different from that of the West. Patients are about one decade younger in developing countries like India than their counterparts in developed nations.[9] Thus, the QOL issues of Indian women may be different from that of Western women. There are a few studies of QOL in breast cancer patients from Asia with contradictory results. Edib et al observed that women who underwent BCS had better global health status than women who had mastectomy.[10] In contrast, Huang et al found that patients who had BCS had poorer global health status than those who had mastectomy.[11] Other studies comparing BCS and mastectomy did not find associations with global health status[12–15] or overall well-being.[16–19]

Our study compares the QOL post-BCS and MRM immediate presurgery, at 6 months after surgery, and at 1 year after surgery. The median age of women in the BCS group was a decade younger than that of the MRM group. Both groups were comparable at baseline. A single-time measure of QOL carries a lesser value as compared with multiple measures over a period of time. Multiple measures help to study the change over time and to effectively compare between treatments. In our study, we have measured the QOL at three different time periods with respect to the surgery of breast cancer using the Malayalam version (local language) of the questionnaires. The same questionnaires were used in a similar Indian study in young breast cancer patients by Dubashi et al.[5]

At 6 months postsurgery, BCS patients fared significantly better with respect to physical functioning, dyspnea, fatigue, appetite loss, and body image when compared with those undergoing MRM. At 1 year postsurgery, BCS patients fared better with respect to physical functioning, role functioning, dyspnea, global health, sexual enjoyment, and body image, while MRM patients fared better in emotional functioning and future prospectives.

The results as per the available literature are variable, with a few studies agreeing with our results, whereas others have pointed to the contrary. Dubashi et al found the QOL and sexual functioning to be marginally worse in the BCS group when compared with mastectomy group.[5] In the study by Pandey et al, women undergoing MRM were found to have significant deterioration in physical and functional well-being, breast-specific subscale, trial outcome index, and overall QOL as compared with BCS.[20] This study looked at a similar population and is in concordance with our study.

In breast cancer survivors, sometimes the only reminder of their malignancy is the mutilating scar on their chest. This logically leads to emotional distress and body image issues in all age groups. Patients undergoing BCS in our study tend to have a better body image of themselves as compared with patients undergoing MRM. An Egyptian study showed that women in MRM group had higher level of body image distress among cognitive, affective, and behavioral aspects.[21] This is in concordance with other literature that has reported better perception of body image in patients undergoing BCS.[22]

Interestingly, in our study, patients undergoing MRM have fared better than their BCS counterparts in terms of future perspective. Many studies have shown future perspective to be worse in MRM patients as compared with BCS patients.[5,23,24] Our study results are in contradiction to these studies. The fear of recurrence in the residual breast and the younger age of the BCS group may contribute to such a finding. Numerous trials have proved the oncological similarity between the two procedures.[1–3] Proper counseling goes a long way in allaying the fears of the patients undergoing breast conservation. Although we counsel our patients about the safety of BCS, probably better counseling is required.

Patients undergoing MRM have also fared better in terms of emotional functioning in our study. In contrast, Enien et al found that BCS patients fared better in emotional functioning compared with those undergoing MRM.[25] Again, the younger age of the BCS patients in our study could contribute to this finding.

There are many drawbacks of our study. No data on socio-demographics and psychosocial factors were available that can have a significant impact on the QOL. The BCS group was a decade younger than the MRM group. This age difference may have contributed to some of the difference in QOL between the two groups. There is no data about the comorbidities that significantly affect the QOL. None of our patients underwent reconstructive surgery. Reconstruction after MRM improves the body image as compared with mastectomy alone.[26] Details regarding ovarian ablation or suppression therapy, type of chemotherapy and impact of radiotherapy in QOL are not available.

Conclusions

Patients undergoing BCS fare better than patients undergoing MRM at 6 months and 1 year in terms of physical functioning, role functioning, and global health status. They tend to have a better perception of their body image and perform better in terms of various symptom scales. Patients undergoing MRM, in turn, tend to perform better in terms of future perspective and emotional functioning at 1 year. The choice of breast conservation should be offered to all patients if oncologically safe and cosmetically acceptable in early breast cancer even in developing countries.

Sources
Nil.

Note
Presented as a poster in the annual meeting of the Association of Radiation Oncologists of India in September 2017.

Conflict of Interest
None declared.

Acknowledgments
Nil.

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