



Comparison of early postoperative outcomes for breast conservative surgery and modified radical mastectomy in breast cancer in a tertiary hospital: A prospective observational study

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Abstract

Breast cancer is the most common malignant tumour in women in the world, with an incidence of 13.5% in India. For patients diagnosed with breast cancer, surgical options include breast conserving therapy (BCT) or modified radical mastectomy (MRM). This study aims to compare early post-operative complications in carcinoma breast patients undergoing MRM vs BCS at a tertiary care center in India. Patients undergoing BCS and MRM for carcinoma breast were prospectively studied over an 18-month period and postoperatively followed up for 3 months. Incidence of early post-operative complications such as seroma, flap necrosis, wound dehiscence and quality of life (QOL) were compared between the two groups. 106 patients were included in this study, of which 75 underwent MRM and 31 underwent BCS. There was no significant difference noted between these two groups with respect to the following; seroma formation (16.1% BCS vs. 13.3% MRM; p value =0.710), flap necrosis (3.2% vs. 2.7%; p value =0.87), wound dehiscence (3.2% vs. 5.3%; p value =0.63), wound infection (6.5% vs. 5.3% p value =0.823), average number of days of lymphorrhoea (15 ±9.76 vs. 15.7 ±7.49) and QOL post-surgery. Comparison of cost (> Rs.50,000) showed that expense of surgical treatment was significantly higher in MRM (24.0%) compared to BCS (9.7%). Early postoperative complications seen in BCS and MRM are comparable, with the most common early complication being seroma and lymphorrhoea. Patients should be educated regarding breast conservative surgery, its comparable results with MRM and social and physical impact irrespective of age and menstrual status.

Keywords: breast cancer; conservative surgery; modified radical mastectomy; local recurrence; patient satisfaction; quality of life

Introduction

Breast cancer (BC) is the most prevalent cancer worldwide. It has now surpassed lung cancer as the leading cause of global cancer incidence in 2020, with an estimated 2.3 million new cases, representing 11.7% of all cancer cases [1]. The estimated number of prevalent cases in India in 2016 was 526000 for breast cancer [2]. As per the Globocan data 2020, in India, BC accounted for 13.5% (178361) of all cancer cases and 10.6% (90408) of all deaths with a cumulative risk of 2.81.

Current trends point out that a higher proportion of the disease is occurring at a younger age in Indian women, as compared to the West [3]. Breast cancer remains the leading cause of death from malignant tumors in women in the world despite the effectiveness of initial

diagnostics and the improvement of pharmacotherapy in the recent past [4].

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In spite of tremendous advances, breast cancer has continued to remain an enigma. Surgery still has a central role to play in the management of breast cancer though there has been a gradual shift towards more conservative procedures and breast-conserving therapy (BCT) is becoming widely used [5]. In 1990, National Institutes of Health (NIH) released a consensus statement recommending the practice of breast conserving surgery (BCS) with adjuvant radiotherapy instead of mastectomy for the treatment of early-stage (stage I or II) breast cancer, whenever possible [6].

Breast conservation surgery (BCS) may be defined as combination of conservative surgery for resection of primary tumor with or without surgical staging of axilla, followed by radiotherapy, with or without adjuvant systemic therapy. Modified radical (Patey) mastectomy (MRM) the more commonly performed procedure, is indicated for large tumors (in relation to the size of the breast), central tumors beneath or involving the nipple, multifocal disease, local recurrence or patient preference. For women diagnosed with early-stage breast cancer, following the initial treatment, survival with breast conserving therapy (BCT) is comparable to that achieved with mastectomy with respect to disease-free survival, distant-disease-free survival, or overall survival [7]. Furthermore, a population-based cohort from the Danish Breast Cancer Cooperative Group (DBCG) concluded that patients assigned to BCS have a better survival than patients assigned to mastectomy [8].

There is a significantly better, social, emotional, and physical adjustment after BCS and in addition fewer surgical site complications with desirable cosmetic outcomes as compared to MRM [9, 10]. All these results influence the treatment decision while selecting a surgical procedure and the choice depends on a plethora of factors which includes, the stage at the time of presentation, the availability of resources and patient preference [11, 12].

Postoperative complications can demoralize patients and potentially delay adjuvant treatment, leading to adverse outcomes [12]. Due to a paucity of data in this regard from these parts of the country, there is a further need for research to explore this aspect. This study attempts to compare early postoperative morbidity, cost of surgical treatment and quality of life after surgery in patients undergoing breast conservation surgery (BCS), to that achieved with MRM in a tertiary care hospital in Thrissur, Kerala.

Materials and methodology

Patients with breast carcinoma admitted for surgical intervention in General Surgery and Onco-surgery

departments of Jubilee Mission Hospital from January 2021 to July 2022 were included in this prospective cohort observational study, after obtaining approval from Institution Ethics Committee (34/21/IEC/JMMC & RI).

All patients aged between 20 and 75 years, proven to have carcinoma breast by triple assessment and admitted for surgical intervention (BCS or MRM) during the study period were included in the study. Patients with metastatic or locally advanced breast cancer, previous chest wall irradiation, involvement of the breast skin, patient refusal, patients on anticoagulants and antiplatelet therapy, recurrent breast cancer and pregnant women were excluded. A total of 119 cases which included 2 male patients and 117 female patients, admitted during the study period were evaluated. 1 patient who was not willing for the study and 12 patients on anticoagulant or antiplatelet drugs (including both male patients) were excluded.

Patients selected for BCS had small tumour size, favourable breast-tumour ratio, unifocal tumour, with no contra-indication for radiation. Patients with small breast / large tumour, multifocal tumour, central tumour, having lymph node involvement only, poorly differentiated tumour and patient preference were selected for MRM.

Patients were diagnosed through triple assessment and after clinical evaluation, underwent diagnostic, staging and fitness investigations. The patients more than 35 years of age were imaged by mammogram. Patient whose mammogram or USG was found inconclusive, underwent fine needle aspiration cytology (FNAC)/ core needle biopsy to confirm the diagnosis. In cases of no palpable lump, USG guided or mammography guided biopsy was taken. Staging was done by USG (ultrasound) of abdomen and CT scan to exclude distant metastasis. The pre-operative base-line investigations (i.e., Complete blood count, random blood sugar, serum creatinine, blood grouping with Rh-typing, chest x-ray, and ECG) were done.

On the basis of the findings, disease was staged clinically, according to AJCC classification. High risk factors, patient's age, stage of disease, family history of breast malignancy in first or second degree relatives, surgeon's preference, fitness and consent for complete breast removal, and willingness for adjuvant radiotherapy were considered before planning surgical procedure. Histologic details considered in the further management of each patient included histologic type, grade, presence of lymph vascular emboli, pathologic stage, and ER/PR status.

Patients were given the choice of MRM and BCS based on their clinical presentation and investigation findings. They were counselled regarding the two procedures, treatment planned and were then assigned to one of the two groups i.e. those undergoing BCS and those undergoing MRM. After obtaining informed consent, patient's demographic details, relevant history, clinical examination findings, BIRADS score and cytology reports were recorded in a data collection form and entered in MS excel spreadsheet.

Negative pressure suction drain was placed in all patients at the conclusion of the procedure. All the patients were instructed regarding elastic compression bandage application, upper limb exercises, wound and drain care. Patients discharged with drain were instructed to record the drain output daily. Drain was removed in the outpatient department once the output reduced to less than 25 ml/ day. Total number of days to drain removal was recorded. The surgical team routinely monitored all patients after intervention. The follow-up scheme consisted of breast examination, clinical examination in OPD & ultrasonography if indicated. All patients were followed up at three points in the postoperative period i.e., post-operative day 4 (POD<4) or day of discharge taken as first point, post-operative day 10 (POD 10) or day of first review, as second point and 3 months review taken as third point for purposes of data collection. Post-operative complications like seroma, lymphorrhoea, flap necrosis, wound infection were recorded on the above mentioned days.

The patients were followed up for three months. During this period, they were assessed for any further complications, local recurrence, distant metastases and any emotional or physical disturbances. At the end of 3 months, all patients underwent assessment of their quality of life using SF12 survey (Annexure 1) and details of adjuvant therapy if any noted. SF12 survey utilises physical and mental components for QOL assessment. Each component has 4 domains, which were evaluated with a predetermined questionnaire. The physical component score was obtained from the 4 aspects i.e., bodily pain, physical role, general health and physical functioning. The mental component score was derived from the 4 aspects i.e., mental health, emotional role, vitality and social functioning. Assessment of the quality of life and assimilation of the scores into two components were done according to instructions in standard protocol of the SF 12 analysis.

Statistical methods

Study data was tabulated in the excel spreadsheet. Statistical Package for Social Sciences (IBM SPSS Statistics

for Windows, version 20.0; IBM Corp., Armonk, NY) was used for statistical analysis. Categorical variables were represented by frequency and percentage. Numerical variables were represented by mean and standard deviation. Pearson Chi square test and binary logistic regression were performed to compare categorical variables between BCS and MRM. Independent sample t- test was performed to compare numerical variables between BCS and MRM. Multinomial logistic regression was performed to find the relationship between variables. P values less than 0.05 were considered to be statistically significant.

Results

This prospective observational study was done amongst breast carcinoma patients admitted for surgical intervention in our center. The study spanned 18 months and data from all 106 participants were available for analysis.

Out of 106 patients in the study population, the proportion of patients who underwent MRM and BCS were 75/106 (70.75%) and 31/106 (29.25%) respectively. The age at presentation in BCS group varied from 32 to 73 years with a mean age of 47 ± 9.56 years and in MRM group from 23 to 72 years with a mean age of 55 ± 11.7 years (Table 1). We observed that, the highest number of cases were in the 5th and 6th decades in BCS and MRM groups respectively (p value 0.011) (Figure 1).

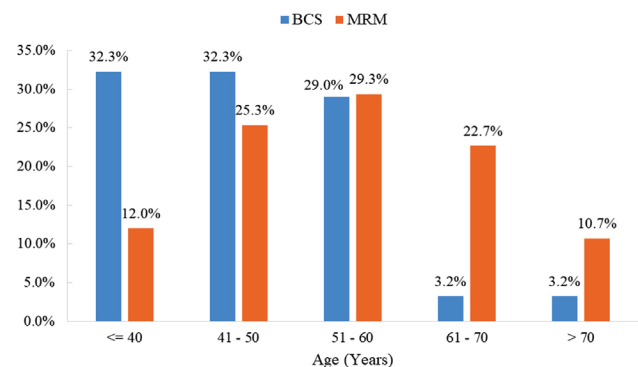


Figure 1: Distribution of patients according to age at presentation for BCS and MRM (n = 106, p value 0.011).

The study group comprised entirely of female patients (100%), as the two male patients with breast cancer during the study period were excluded due to their anticoagulant medication,

Comparison of menstrual status of patients showed, 45.2% in the reproductive age group for BCS and 62.7% of patients post-menopausal in MRM group (Figure 2). This difference was not statistically significant (p value 0.091).

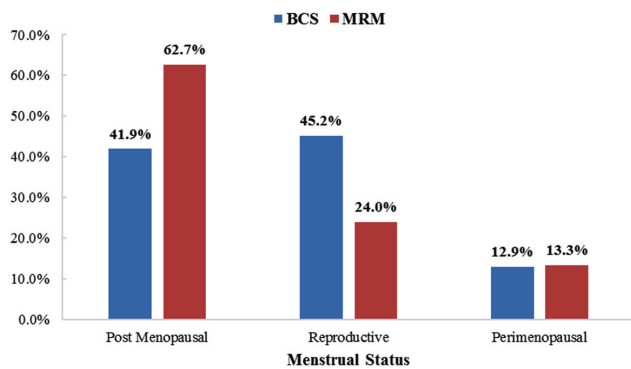


Figure 2: Comparison of menstrual status of patients at presentation for BCS and MRM (n = 106 p value 0.091).

Comparison of the BIRADS grade of radiological assessment between the two groups showed that, in the BCS group most (64.5%) patient's where BIRADS 4 grade, whereas in the MRM group they were in both BIRADS 4 (41.3%) & BIRADS 5 (42.7%) grades. This difference in BIRADS grades between the two groups was statistically significant (p value of 0.001). We also noted a significantly higher number (8 patients) of nulliparous women in MRM group (p value 0.016) in comparison (Table 1).

Table 1: Comparison of demographic profile, clinical evaluation and radiological assessment (BIRADS Grade) of patients.

Demographic profile and Clinical evaluation	BCS (N = 31)	MRM (N = 75)	p value
Age (mean± SD)	47.0± 9.56	55.0±11.7	0.016**
Post-menopausal	13 (41.9%)	47 (62.7%)	
Reproductive age	14 (45.2%)	18 (24.0%)	0.091
Peri menopausal	4 (12.9%)	10 (13.3%)	
Family history of carcinoma	4 (12.9%)	13 (17.3%)	0.565
Early menarche <13 yrs	5 (16.1%)	10 (13.3%)	0.665
Nulliparous	0 (0.0%)	8 (10.7%)	0.016**
First child birth (Years)			
< 25	26 (83.9%)	47 (62.7%)	
25 – 30	5 (16.1%)	19 (25.3%)	0.262
> 30	0 (0.0%)	1 (1.3%)	
Presenting complaints			
Lump	31 (100.0%)	72 (96.0%)	0.146
Nipple discharge	1 (3.2%)	5 (6.7%)	0.463
Pain	4 (12.9%)	5 (6.7%)	0.312
Axillary swelling	0 (0.0%)	3 (4.0%)	0.146
Ulcer	1 (3.2%)	5 (6.7%)	0.463
Nipple retraction	0 (0.0%)	2 (2.7%)	0.237
Mammography, BIRADS Grade			
2	3 (9.7%)	0 (0.0%)	
3	5 (16.1%)	4 (5.3%)	
4	20 (64.5%)	31 (41.3%)	0.000**
5	2 (6.5%)	32 (42.7%)	
6	1 (3.2%)	8 (10.7%)	

** p value < 0.05 is significant.

We also observed that the number of patients in clinical Stages 3A and Stage 3B disease are significantly higher in MRM as compared to BCS (13.7% and 12.3%) vs (0.0% and 3.3%) respectively. For the comparison of clinical

staging, binary logistic regression was performed and the difference in clinical staging between groups is of statistical significance (p value <0.05) (Table 2). The core biopsy HPE reports are given in Table 3.

Proportion of patients in our study with early post-operative complications, noted in BCS group was 9 out of 31 (26.66%) and 20 out of 75 (29%) for MRM and this incidence was comparable (p value 0.80). Incidence of individual complications in the two groups and the comparison were as follows: seroma (BCS, 16.1% vs MRM, 13.3% p value 0.710), flap necrosis (3.2% vs. 2.7% p value 0.87), wound dehiscence (3.2% vs. 5.3% p value 0.63) and infection (6.5% vs. 5.3% p value 0.823) and the average number of days of lymphorrhoea with time

to drain removal (15 ± 9.76 days in BCS vs. 15.7 ± 7.49 days for MRM p value 0.220). Comparison of the two groups showed no statistically significant difference for complications (Table 4). Furthermore, patients at the 3 months follow up showed no significant difference in the occurrence of complication between the two groups. We also noted that 10 patients in the MRM group and 2 in the BCS group had persistent lymphorrhoea. Figure 3 conveys the number of days after surgery for both lymphorrhoea and the drain removal.

Table 2: Clinical staging of breast cancer patients (*after excluding malignant phylloides).

<i>T stage</i>	<i>Group 1 BCS (n = 31)</i>	<i>Group 2 MRM (n = 75)</i>	<i>Total (n = 106)</i>	<i>p value</i>
T1	5 (16.1%)	9 (12%)	14 (13.2%)	0.439
T2	22 (71%)	47 (62.7%)	69 (65.1%)	
T3	2 (6.5%)	6 (8%)	8 (7.5%)	
T4	2 (6.5%)	13 (17.3%)	15 (14.2%)	
N-stage N0	18 (58.1%)	28 (37.3%)	46 (43.4%)	0.054
N1	13 (41.9%)	43 (57.3%)	56 (52.8%)	
N2	0 (0.0%)	4 (5.3%)	4 (3.8%)	
Staging*	Group 1 (n = 30)	Group 2 (n = 73)	Total (n = 103)	
Stage 1	0 (0.0%)	1 (1.4%)	1 (1.0%)	0.042**
Stage 1A	5 (16.7%)	5 (6.8%)	10 (9.7%)	
Stage 1B	0 (0.0%)	1 (1.4%)	1 (1.0%)	
Stage 2A	11 (36.7%)	21 (28.8%)	32 (31.1%)	
Stage 2B	13 (43.3%)	26 (35.6%)	39 (37.9%)	
Stage 3A	0 (0.0%)	10 (13.7%)	10 (9.7%)	
Stage 3B	1 (3.3%)	9 (12.3%)	10 (9.7%)	

** p value < 0.05 is significant

Table 3: Core biopsy HPE reports.

<i>Core biopsy HPE reports</i>	<i>BCS (n = 31)</i>	<i>MRM (n = 75)</i>
Bilateral lobular carcinoma	0 (0.0%)	1 (1.3%)
Epithelial hyperplasia with atypia	4 (12.8%)	1 (1.3%)
High grade DCIS	1 (3.2%)	0 (0.0%)
IDC	15 (48.3%)	50 (66.6%)
IDC mucinous type	0 (0.0%)	2 (2.6%)
IDC NOS	7 (22.5%)	15 (20.0%)
IDC NOS with ECIS	0 (0.0%)	1 (1.3%)
IDC with lobular carcinomachange	1 (3.2%)	0 (0.0%)
Invasive lobular carcinoma	0 (0.0%)	2 (2.6%)
Matrix producing carcinoma	0 (0.0%)	1 (1.3%)
Metastatic breast carcinoma or malignant phylloid	0 (0.0%)	1 (1.3%)
Mucinous carcinoma	0 (0.0%)	1 (1.3%)

Table 4: Early post-operative complications and complications at 3 months.

Early post-operative complications	BCS (n = 31)	MRM (n = 75)	p value
Seroma	5 (16.1%)	10 (13.3%)	0.710
Wound infection	2 (6.5%)	4 (5.3%)	0.823
Wound dehiscence	1 (3.2%)	4 (5.3%)	0.630
Flap necrosis	1 (3.2%)	2 (2.7%)	0.876
Number of days of lymphorrhoea/ time to drain removal Mean ± SD	15.0 ± 9.76	15.7 ± 7.49	0.220
Post-operative complications at 3month			
No complication	28 (90.3%)	59 (78.7%)	
New evidence of metastasis	0 (0.0%)	3 (4.0%)	0.322
Lymphorrhoea	2 (6.5%)	10 (13.3%)	
Wound infection	1 (3.2%)	3 (4.0%)	

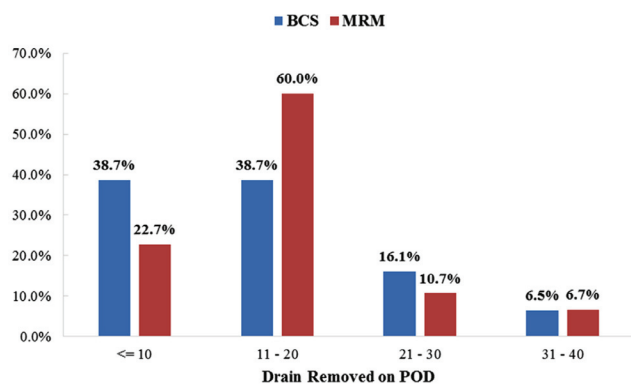


Figure 3: Lymphorrhoea and time to drain removal (in post-operative days).

The mean length of hospital stay was 3.17 ± 2.57 days for MRM and 2.48 ± 1.90 days for BCS and the difference in mean length of stay was not found to be statistically significant (p value 0.479) (Figure 4).

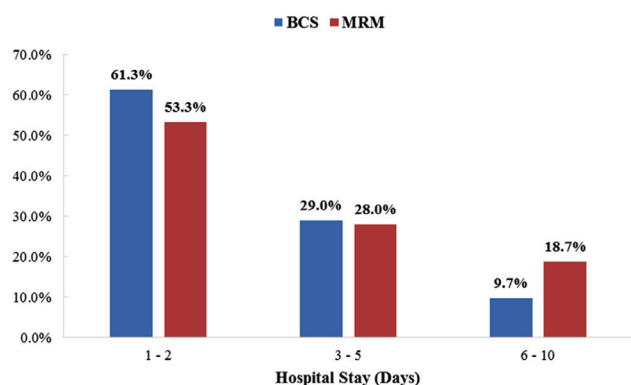


Figure 4: Duration of hospital stay (days).

Analysis of cost of treatment for MRM as compared to BCS using binary logistic regression showed statistically significant higher cost for MRM (p value 0.041) (Table 5).

Table 5: Cost of treatment.

Cost of treatment (Rs)	BCS (n = 31)	MRM (n = 75)	p value
< 25,000	5 (16.1%)	3 (4.0%)	
25,000 - 50,000	23 (74.2%)	54 (72.0%)	0.041**
50,000 - 1,00,000	3 (9.7%)	18 (24.0%)	

** p value < 0.05 is significant

Overall score for Q O L as assessed by SF 12, showed no significant difference between the groups. However, a comparatively poor mental health component score was observed in the

BCS group which was statistically significant (mean 8.9 ± 1.832 in BCS vs 8.12 ± 1.85 MRM p value 0.029) (Table 6).

Table 6: Assessment by SF12 QOL survey.

SF12 QOL survey/ group	Number of cases	Mean score	SD	p value
PCS				
BCS	31	4.968	±1.080	0.876
MRM	75	5.013	±1.466	
MCS				
BCS	31	8.903	±1.832	0.029**
MRM	75	8.120	±1.585	
SF12				
BCS	31	13.87	±2.306	0.148
MRM	75	13.13	±2.396	

** p value < 0.05 is significant

HPE pattern among the groups, showed the most common type was IDC NOS type (71% & 84% in BCS & MRM respectively). Other histological types of IDC noted include mucinous, papillary & tubular, 2 cases of ILC in BCS and 1 in MRM for a total of 3 cases. The lympho-vascular invasion was seen to be higher in MRM group (40%) when compared with BCS group (19.4%) and this difference was statistically significant p value 0.035 (Table 7).

Table 7: Histopathological examination findings.

Histopathological examination	BCS (N = 31)	MRM (N = 75)	p value
IDC mucinous	0 (0.0%)	2 (2.7%)	
IDC NOS	23 (74.2%)	63 (84.0%)	
IDC NOS+ Mucinous	0 (0.0%)	1 (1.3%)	
IDC NOS+ ILC NOS	0 (0.0%)	1 (1.3%)	
IDC NOS+ Malignant phylloid	2 (6.5%)	1 (1.3%)	
IDC NOS+ Papillary carcinoma	1 (3.2%)	1 (1.3%)	0.103
IDC Papillary carcinoma	1 (3.2%)	1 (1.3%)	
IDC Tubular	1 (3.2%)	0 (0.0%)	
ILC NOS	2 (6.5%)	5 (6.7%)	
Malignant phylloides	1 (3.2%)	0 (0.0%)	
Lymph node status			
All node negative	14 (45.2%)	35 (46.7%)	0.644
Grade			
1	6 (19.4%)	8 (10.7%)	
2	10 (32.3%)	29 (38.7%)	0.388
3	12 (38.7%)	38 (50.7%)	
DCIS	16 (51.6%)	33 (44.0%)	0.475
Paget's disease	0 (0.0%)	4 (5.3%)	0.097
Lympho-vascular invasion	6 (19.4%)	30 (40.0%)	0.035**
IHC			
ER	20 (64.5%)	44 (58.7%)	0.445
PR	18 (58.1%)	38 (50.7%)	0.385
HER2NEU	10 (32.3%)	28 (37.3%)	0.699
IHC type			
A	14 (45.2%)	27 (36.0%)	
B	6 (19.4%)	21 (28.0%)	0.598
Basal	6 (19.4%)	20 (26.7%)	
HER	4 (12.9%)	7 (9.3%)	

** p value < 0.05 is significant

Post operatively, 2 patients in BCS group diagnosed to have malignant phylloides tumour were advised follow up and the remaining advised adjuvant therapy as shown (Table 8).

Table 8: Adjuvant therapy.

Adjuvant therapy	BCS (N = 31)	MRM (N = 75)	p value
Adjuvant RT	20 (64.5%)	35 (46.7%)	0.107
Adjuvant CT	25 (80.6%)	66 (88.0%)	0.335
Adjuvant HT	17 (54.8%)	45 (60.0%)	0.624

Discussion

Recent advancements in breast cancer surgery have focused on three key areas: patient recovery, oncological safety and the best possible cosmetic result. Most patients undergoing breast conservation therapy need adhere to a therapeutic regimen that encompasses a combination of chemotherapy and radiotherapy. A stringent adherence to such regimens can portend favorable surgical outcomes. However, a delay in treatment due to any comorbidity and post-operative complication can have an adverse impact on the patients' overall survival [12]. The concept that lumpectomy and breast irradiation could adequately control local extent of the disease did not receive widespread acceptance until several decades later although breast conservation was proposed as far back as the 1930s. Seven prospectively randomized studies involving thousands of patients with follow-up periods of more than 2 decades have demonstrated that local tumor control and disease-free survival (DFS) in BCT are comparable to that with radical mastectomy. Hence, BCT is becoming a widely used therapy for breast cancer [7, 13].

The present study was done among patients with breast carcinoma admitted for surgical intervention and the purpose was to compare early postoperative outcomes of patients undergoing breast conservation surgery BCS to that achieved with MRM.

We observed that, a higher proportion (70.75%) of our study patients chose to undergo MRM rather than BCS. Our patients who preferred MRM, chose this option due to lack of radiotherapy in our centre and their perception of the slightly higher risk of disease recurrence. Our results were similar to the research findings of Kadam SS et al who showed that 79.1% females opted for MRM and 20.9% females opted for BCS [14]. Lower rates of BCT seen in developing countries has been attributed to a lack of awareness among patients, limited accessibility to adjuvant therapy, patient's preference to avoid multiple hospital visits, presentation at advanced stage

and fear of complication of radiotherapy and disease recurrence [15].

In our study, the mean age at presentation for BCS was 47 years and for MRM 55 years. We observed, in BCS group, a relatively younger population (20 out of 31 cases < 50 years) as compared to MRM group (58 out of 75 cases aged between 40 and 70 years). 45.2% of patients in the BCS group were of the reproductive age, while the highest number of patients were post-menopausal (62.7%) in MRM group. Our data compares well with the study by Teh et al who reported that, patients older than 60 years were significantly more likely to receive mastectomy rather than BCS as the initial treatment, as majority of patients were concerned about the oncological outcome, regardless of the type of surgery they underwent [16]. Our study population was comprised entirely of females, as the two male patients got excluded since they were on anti-coagulant / antiplatelet drugs. Overall global incidence of male breast cancer is 1%.

We observed that, a higher proportion of patients had T2 stage tumour in both BCS and MRM groups {22 (71%) & 47 (62.7%) respectively}. We also noted that, more patients with N0 stage {18(58.1%)} underwent BCS and while more patients with N1 stage {43(57.3%)} underwent MRM. In addition, we observed patients with a higher BIRADS score (5 & 6) underwent MRM rather than BCS. Patients with high risk factors like nulliparity, family history of carcinoma, hormone therapy were also seen in a higher proportion in the MRM group. This we attribute to the understanding that, while counseling on surgical options, the surgeon has to take into account the tumor characteristics (size, site, nodal status, systemic risk) and patient characteristics (breast volume). Joty et al concluded in their findings that BCS offers less trauma, infection and hospital stay; better aesthetic outcome and quality of life than MRM, making it more deserving of being promoted clinically in the treatment of early-stage breast cancer [17].

Among the early post-operative complication which were studied, the most common postoperative complication noted was that of seroma in 16.1% of cases for BCS and 13.3% in MRM followed by wound infection and dehiscence seen in 6.5% for BCS and 5.3% in MRM. We also noted that, lymphorrhoea persisted for 15.0 ± 9.76 and 15.7 ± 7.49 days in BCS and MRM groups respectively. Rizvi et al showed there was no significant difference in postoperative complication between MRM and BCS with regard to incidence of seroma, wound infection and dehiscence, flap necrosis and recurrence [12]. Al-Ghazal et al reported that BCS has the advantage of fewer surgical site complications with the addition

of desirable cosmetic outcomes as compared to MRM [10]. Liu and Luo in their research, observed an overall lower complication rate in BCS as compared to MRM with seroma / effusion being the most common among them [18]. The incidence of seroma in the present study is comparable with that reported by Sreelesh, Oommen A [19], and Kadam et al [14].

All patients were followed up for a 3 month period with regard to occurrence of complications. We noted that 2 cases in BCS and 10 cases in MRM groups had persistent seroma or lymphorrhoea requiring aspiration and drainage. We also observed the presence of wound infection in 1 case (3.2%) of BCS group and 3 cases (4.0%) in MRM group. In addition new evidence of metastasis was noted in 3 patient post MRM (4.0%) emphasizing the need for strict adherence to treatment protocol and follow up.

The policy of early discharge of our patients with drain *in situ* as followed in our institute, facilitated a reduction in the hospital stay to an average of 2.48 ± 1.90 days for BCS and 3.17 ± 2.57 days for MRM groups respectively. Drain tubes were removed during outpatient review visit with a mean period of 15.0 days for BCS and 15.7 days in MRM groups. Our findings may help patients and surgeons in our country decide whether BCT or MRM is the better option in a given case and advise eligible patients that BCS is an equivalent option for those who are willing.

The cost of treatment in this study was limited to the surgical treatment alone as radiotherapy was not available in our institution. According to our study the cost of surgical treatment was significantly higher in MRM group when compared to BCS (p value 0.041). This was due to the higher procedural charge for MRM and the higher category of hospital accommodation (room) chosen by many MRM patients. Furthermore, the entire BCS procedure was performed by the operating surgeon and did not involve a plastic surgical consultant for the reconstruction.

At 3 month follow up, a health survey questionnaire was completed and recorded. SF12 QoL analysis utilize 8 domains for assessment and the reports are comparable to SF36 QoL surveys. The two components include the physical component score (bodily pain, role -physical, general health and physical functioning) and mental component score (mental health, role-emotional, vitality and social functioning). We observed that, the aggregate score of physical and mental components according to SF12 questionnaire analysis for quality of life, showed no significant difference between the two groups with regard to the overall quality of life post MRM and BCS.

However, SF12 questionnaire analysis showed a higher mental component score for BCS, suggesting poorer mental health for BCS post operatively. Poorer mental health score among our patients was attributed to the uncertainty and restrictions in place during pandemic period, unavailability of radiation therapy in our center, the fear of radiation therapy complications and that of local recurrence and metastases.

Our findings were similar to that of Deepa K V et al who concluded in their study that quality of life in postoperative health analysis were similar for MRM and BCS groups [20]. Freita-Silva et al also reported that there were no differences between the two surgical techniques with respect to quality of life or satisfaction with surgery [21]. However, Elmas et al, and El-Maghawry et al., in their research, reported better quality of life after BCS [22, 23].

Limitations of the study: The small sample size owing to the SARS Cov 2 virus pandemic during the study period and higher number of patients on antiplatelet post SARS Cov2 infection highlighted the need for larger randomized trial, in the post COVID period. This was a single-center prospective study and the findings cannot be generalized as information was limited to that which was collected during hospital admissions for surgical treatment and the QoL was assessed based on a questionnaire survey after the surgery. The small sample size and short follow-up period in our study limits the comparison of BCT and MRM, and we hope that this might be addressed by our future studies.

Conclusion

Our data shows that a higher percentage of our patients underwent modified radical mastectomies. The study is significant from our perspective, as it reveals the fact that most of the patients in these parts, present slightly later in the disease and prefer modified radical mastectomy. In our center, overall early postoperative morbidity rates for both BCS and MRM are low and comparable. Seroma and lymphorrhoea were the most common early postoperative complications observed and this equally affected both groups of patients. Based on the results we obtained, overall QoL was seen to be equitably affected in BCS and MRM group of patients postoperatively. Eligible patients with breast cancer should be educated regarding breast conservative and oncological procedures and the same deserves to be promoted. The practice of early discharge and continued domiciliary patient care has positive influence on patient recovery and wellbeing. Further comprehensive studies and prospective matched trials are required to better assess and compare the impact of economic burden on this population.

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Conflicts of interest

Authors declare no conflicts of interest.

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Annexure 1: SF 12 QoL Survey

The following questions are about activities you might do during a typical day. Does *the post-operative complication (pain / seroma / infection) now limit you in these activities? If so, how much?*

- Post surgery, would you say your health is:(GH)
1 Excellent 2 Very good 3 Good 4 Fair 5 Poor
- Moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf
Limited a lot 3 Limited a little 2 Not limited at all 1
- Daily household work/ regular activities
Limited a lot 3 Limited a little 2 Not limited at all 1
Post-surgery, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?
- Accomplished less than you would like. 1 Yes 2 No
- Were limited in the kind of work or other activities. 1 Yes 2 No

Post-surgery, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

- Accomplished less than you would like. 1 Yes 2 No
- Did work or activities less carefully than usual. 1 Yes 2 No
- Post-surgery, how much did pain / seroma / other complication interfere with your normal work (including work outside the home and housework)?
1 Not at all 2 A little bit 3 Moderately 4 Quite a bit 5 Extremely

These questions are about how you have been feeling post-surgery. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time post-surgery...

- Have you felt calm & peaceful?
1 All the time 2 Most of the time
3 A good bit of the time
4 Some of the time 5 A little of the time 6 None of the time
- Did you have a lot of energy?
1 All the time 2 Most of the time 3 A good bit of the time
4 Some of the time 5 A little of the time 6 None of the time
- Have you felt down-hearted and blue?
1 All the time 2 Most of the time 3 A good bit of the time
4 Some of the time 5 A little of the time 6 None of the time
- Post-surgery, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?
1 All the time 2 Most of the time 3 A good bit of the time
4 Some of the time 5 A little of the time 6 None of the time.