

Clinical Outcome of Breast Conservation Surgery in Early Breast Cancer Patients: A Prospective Interventional Study

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ABSTRACT

Introduction: Breast conservation surgery (BCS) has gained acceptance among the surgeons for the management of young patients with early breast cancer.

Aim: To study the outcomes of breast conservation surgery in early breast cancer patients at a tertiary care centre in Marathwada region of Maharashtra, India.

Materials and Methods: This prospective interventional study included 40 patients in the age group of 20-65 years with stage I or stage II breast cancer was carried out in Government Medical College and Hospital, Aurangabad, India. Once staging work-up was done, all patients were evaluated for suitability of BCS. Surgical treatment consisted of wide local excision and axillary dissection with gross tumour surgical margin of 2 cm. Surgical morbidity like prolonged seroma formation, surgical site infection, haematoma, lymphoedema was assessed postoperatively. Pathological assessment included primary tumour size, histological type, margin status. Radiotherapy was

given to all patients. Chemotherapy was used where indicated with the appropriate regimen. All patients were followed-up at three months, six months and 12 months. Cosmetic outcome was assessed by Harris 4-point Likert Scale. Descriptive statistics was used and results were expressed in terms of frequency and percentages.

Results: In the present study, 28 (70%) patients had no postoperative wound complications. About 4 (10%) had surgical site infection, and 8 (20%) had prolonged seroma formation. Out of 40 patients, 37 (92.5%) patients postoperatively had all the margins free from the disease on histopathology, 2 (5%) had single margin positive which required revision surgery, and 1 (2.5%) had all the margins positive; hence Modified Radical Mastectomy (MRM) was performed. The cosmetic outcome was good to excellent in 34 (85%) cases.

Conclusion: The present study results concluded that breast conserving surgery had a good cosmetic outcome and most patients had disease free margins.

Keywords: Breast cosmesis, Carcinoma breast, Modified radical mastectomy

INTRODUCTION

Breast cancer incidence has been rising in India, and younger women are affected more in India than the developed countries [1-2]. The surgical treatment options have evolved. The MRM remains as the time tested surgical approach for many patients, however, with the advent of early diagnosis, BCS is a better and evidence based treatment option in early stages of breast cancer. Moreover, in cases of early breast cancer, breast conservation surgery with postoperative radiation therapy has been accepted as standard treatment [3-5]. Apart from the primary goal of achieving a cure, the other desirable outcomes after the treatment include improvement of survival, minimisation of recurrence risk, cosmesis and achieve the quality of life near to the life before the disease [6]. There is a need to assess and compare the outcomes of modified radical mastectomy and breast conservation surgery so as to contribute to the evidence based guidelines regarding the treatment options for breast cancer. The present study describes the outcome of breast conservation surgery in early breast cancer patients at a tertiary care centre in Marathwada region of Maharashtra, India.

MATERIALS AND METHODS

This prospective interventional study of breast conservation surgery was carried out in patients diagnosed with breast cancer admitted at the Government Medical College and Hospital, Aurangabad, Maharashtra, India, the period from June 2017 to November 2019. Institutional Ethics Committee approved the protocol of the study vide letter number Pharma/IEC-GMCA/473/2017 and informed consent was taken prior to enrollment in study.

Inclusion and Exclusion criteria: Forty patients in the age group of 20-65 years with stage I or stage II breast cancer as per American

Joint Committee on Cancer staging system (8th edition) were included in the study. Tumour size up to 2 cm is T1, >2 to 5 cm is T2 and >5 cm is T3 as per this classification. Similarly, histological grading was as per American Joint Committee on Cancer classification [7]. Pregnant women, patients with inflammatory breast carcinoma, patients in whom neoadjuvant treatment was planned or patients with contraindications to breast conserving surgery or radiotherapy were excluded [8].

Study Procedure

All patients diagnosed with breast cancer, were evaluated with bilateral breast mammogram, a chest x-ray, liver function tests, including alkaline phosphatase and complete blood counts. Once staging work-up was done, all patients were evaluated for suitability of BCS. Those with contraindications were excluded. Surgical treatment consisted of wide local excision and axillary dissection with gross tumour surgical margin of 2 cm.

Surgical morbidity like prolonged seroma formation, surgical site infection, haematoma, lymphoedema was assessed postoperatively. Radiotherapy was given to all patients. Chemotherapy was used where indicated, with the appropriate regimen.

All patients were followed-up at three months, six months and 12 months. In each visit, history, thorough clinical examination was made, at one year ultrasound liver, ipsilateral and contralateral mammogram; liver function tests were done. Symptoms oriented investigations were done, whenever indicated. Cosmetic outcome and Patient satisfaction was assessed by Harris 4-point Likert Scale [9] [Table/Fig-1]. Breast Imaging Reporting and Data System (BIRADS) criteria were used to describe the mammography findings in the subjects [10]. This scale is also called as Harvard scale.

Grading	Criteria
Excellent	Treated breast nearly identical to untreated breast
Good	Treated breast slightly different from untreated breast
Fair	Treated breast clearly different from untreated breast but not seriously distorted
Poor	Treated Breast seriously distorted.

[Table/Fig-1]: Harris 4-point Likert scale for breast cosmesis.

STATISTICAL ANALYSIS

Descriptive statistics were described in numbers and percentages using Microsoft Excel 2010.

RESULTS

Out of 481 carcinoma breast cases operated in the study period; in 40 patients breast conservation surgeries were performed which was followed by chemotherapy in 38 patients and radiotherapy in all 40 patients and 10 patients received hormonal therapy as well. The age distribution of patients is shown in [Table/Fig-2]. In the present study, mean age was 47.5 years, the youngest patient was 27 years old, while the oldest one was 64 years old. Majority of patients belonged to age group 41-50 years 17 (42.5%), followed by age group 51-60 years 12 (30%).

Age groups (years)	Number of patients (n)	Percentage (%)
20-30	02	5
31-40	06	15
41-50	17	42.5
51-60	12	30
61-70	03	7.5
Total	40	100

[Table/Fig-2]: Age distribution of study subjects.

Among the 40 patients studied, 22 (55%) were post menopause, and 18 (45%) were premenopausal women. The least age for the attainment of menarche was 12 years, and the maximum age was 16 years. Majority attained menarche before 13 years i.e. 25 (62.5%). In 2 (5%) patients, there was a family history of breast carcinoma. In all other 38 patients (95%) there was no family history of carcinoma breast. One patient's mother had a history of left breast cancer, and she underwent MRM in 2006 at Tata Hospital. The other patient's elder sister had a history of left breast cancer, and she got operated for MRM in 2012 in a private hospital.

The lump size distribution of the patients is shown in [Table/Fig-3]. The number of the left breast affected was found to be 24 (60%) as compared to 16 (40%) in the right breast. Out of four quadrants, the upper outer quadrant 24 (60%) in patients was affected the most followed by upper inner quadrant 8 (20%), lower outer quadrant 4 (10%), and lower inner one 4 (10%). No significant discharge was seen from the nipple in the majority of patients 34 (85%). Only 4 (10%) patients complained of watery discharge, and 2 (5%) patients had bloody discharge from the nipple. Skin involvement was not seen in most of the patients 37 (92.5%), whereas 3 (7.5%) showed skin involvement. On histopathology examination; 16 (40%) patients had grade II malignancy, whereas, 12 (30%) patients each had grade I and grade III malignancy.

The distribution of patients as per the BIRADS criteria is shown in [Table/Fig-4]. Since all patients had undergone BCS; radiotherapy was must in all patients. About 38 patients also received chemotherapy, and the remaining two patients did not receive chemotherapy as their tumour size was less than 1 cm. About 10 (25%) were ER/PR positive, and hence, they received hormonal therapy as well. In this study; 28 (70%) patients had no postoperative wound complications. About 4 (10%) patients had surgical site infection, and 8 (20%) patients had prolonged seroma formation.

The ultrasound abdomen and pelvis findings in the study subjects with 29 (72.5%) patients showing no abnormal findings on the

Ultrasonography (USG). The most common finding on USG abdomen and pelvis was fatty liver observed in 6 (15%) patients [Table/Fig-5].

Lump size	Number of patients (n)	Percentage (%)
Less than 1 cm (T1)	02	5
1.1-2 cm (T1)	04	10
2.1-5 cm (T2)	33	82.5
More than 5 cm (T3)	01	2.5
Total	40	100

[Table/Fig-3]: Distribution of patients according to lump size.

Mammogram	Number of patients (n)	Percentage (%)
Category IV A	05	12.5
Category IV B	02	5
Category IV C	13	32.5
Category V	10	25
Category VI	10	25
Total	40	100

[Table/Fig-4]: Distribution of patients according to mammogram BI-RADS.

Findings	Number of patients (n)	Percentage (%)
Borderline splenomegaly	1	2.5
Bulky uterus with fibroid	1	2.5
Fatty liver	6	15
Liver nodules	2	5
Renal cyst	1	2.5
Within normal limits	29	72.5
Total	40	100

[Table/Fig-5]: Distribution of patients according to findings on USG (Abdomen and Pelvis).

Follow-up of patients was done at three months, six months, and 12 months. Cosmesis was based on Harvard grade of Likert scale [9]. All 40 (100%) came for follow-up visit after three months, 27 (67.5%) turned up for follow-up at six months, and 17 (42.5%) came for follow-up at one year. The cosmesis outcome as per the Harvard Likert Scale at follow-up visits is shown in [Table/Fig-6]. The patient satisfaction with the cosmesis achieved at three months follow-up [Table/Fig-7]. Out of 40 patients, 37 (92.5%) postoperatively had all the margins free from the disease on histopathology, 2 (5%) had

Likert score	Number of patients (n)	Percentage (%)
At 3 months (n=40)		
Poor	0	0
Fair	6	15
Good	30	75
Excellent	4	10
Total	40	100
At 6 months (n=27)		
Poor	0	0
Fair	1	3.7
Good	21	77.78
Excellent	5	18.52
Total	27	100
At 12 months (n=17)		
Poor	0	0
Fair	0	0
Good	14	82.35
Excellent	3	17.65
Total	17	100

[Table/Fig-6]: Distribution of patients based on Harvard Likert scale for cosmesis.

single margin positive which required revision surgery, and 1 (2.5%) had all the margins positive; hence, MRM was performed.

Likert scale	No of patients (n)	Percentage (%)
Excellent	20	50%
Good	16	40%
Fair	04	10%
Poor	0	0%
Total	40	100%

[Table/Fig-7]: Distribution according to patient's satisfaction as per Harris scale regarding cosmetic outcome at three months follow-up.

DISCUSSION

In the present study group, there was an achievement of disease free margins in 92.5% patients. Revision surgery due to positive margins was required in 2 (5%) patients and MRM was required in 1 (2.5%) patient. There was a high degree of satisfaction with cosmesis achieved in most of the patients. Breast conserving surgery is an underutilized surgical treatment in India due to lack of patient awareness, patient preference, available health infrastructure [11]. Molenaar S et al., studied the effect of patient counselling and giving patient informed choice regarding the BCS and MRM in early breast cancer. It was reported that 63.3% of patients preferred BCS, 24.4% preferred mastectomy, and 12.2% were not sure about their preference. They concluded that there is a need for effective communication with the patient regarding the pros and cons of treatment options so that judicious and independent decision is taken [12]. Narendra H and Ray S study highlighted that cosmetic outcome and patient satisfaction mainly decides the success of BCS. They reported that patient satisfaction was good or excellent in more than 90% of patients. Also, they reported that with a median follow-up of 49 months; there was an equivalent outcome with BCS and mastectomy. They suggested that there was acceptability of BCS in Indian setting also. Every Indian woman with early breast cancer should be given an option for BCS, if there are no contraindications [13].

A recent study by Ali SH et al., has mentioned that the rate of BCS in India is rising as Indian surgeons are increasingly following evidence-based surgical options, and patient awareness and early diagnosis favours BCS [14]. Wang L et al., study in China has compared BCS with mastectomy in an eligible cohort of patients and found that BCS was equally effective regarding local tumour control, disease-free survival and distant 6-year disease-free survival. BCS was superior to MRM in many of the studied patients [15]. Bantema-Joppe EJ et al., study has reported 10-year outcome in a large and population based cohort and recommended BCS as an alternative to mastectomy in young early breast cancer patients [16]. The strength of the study is that, it adds to the limited literature available from India regarding the outcome and the satisfaction

regarding cosmesis among the patients managed by breast conservation surgery.

Limitation(s)

Descriptive study design with a sample not large enough and follow-up was short. More extensive studies with longer follow-up can give better insight regarding the long term outcomes with BCS like local recurrence and metastasis.

CONCLUSION(S)

Breast conserving surgery had a good cosmetic outcome and patient satisfaction. Most patients had disease free margins. There is a need for more hospital facilities with well-developed chemotherapy and radiotherapy department along with mammography for providing BCS as treatment option.

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