

Original Research Article

Outcome of Breast Conservation Therapy at a Tertiary Care Cancer Centre

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ABSTRACT

Background: Breast conservation therapy is a well established treatment modality for early breast cancer. But it is not widely practised in developing countries because of a lack of awareness and treatment facilities.

Aim: To review our experience on outcome of breast conservation therapy.

Methods: 82 patients who underwent breast conservation therapy for early breast carcinoma from January 2006 to December 2010 were evaluated. Data regarding the incidence, presentation, histopathology, stage and grade of tumor, management and outcome of patients were analysed. Margins were assessed by frozen section and histopathological slides.

Results: Only 2% of overall and 7% of early breast cancer patients underwent breast conservation therapy. The average age of patients was 44 years. The mean pathologic tumor size was 3.1 cms. In our study 39% of patients had nodal involvement. 73.15% were estrogen and progesterone receptor positive and 26.8% were triple receptor negative. Adjuvant radiotherapy was given in all patients. 75.6% received adjuvant chemotherapy while 73.1% received adjuvant hormonal treatment based on the histopathological findings. Late complications in the form of limb edema occurred in 2 patients. At a median follow up of 24 months, local recurrence developed in 2 (2.4%) patients and distant metastasis in 4 (4.8%) patients.

Conclusion: Breast conservation therapy is oncologically safe and cosmetically acceptable procedure for early breast cancer. A lack of awareness, lack of treatment facilities and advanced stage of presentation are the main reasons for the decreased utility of this treatment modality in Indian scenario.

Key words: Carcinoma breast, early breast cancer, Breast conservative therapy.

INTRODUCTION

Worldwide, breast cancer is the most common cancer among women and is emerging as a leading cancer among Indian women as well.^[1,2] Breast conservation therapy is now well established as oncologically safe treatment for early primary breast cancer. Its management requires a multidisciplinary approach and surgery plays an important role. The past

three decades have seen major changes in the surgical treatment of breast cancer with a shift towards organ preserving breast conservation therapy.^[3-8] Breast conservation entails wide local excision of the tumour combined with axillary lymph node dissection followed by radiotherapy to the whole breast with tumor bed boost.^[4,6] Many large randomized trials have proven the efficacy of breast conservation therapy

in the management of early breast cancer.^[3-8] However, most of the experience is from western centres where a larger proportion of patients present with early breast cancer. In contrast, Indian patients present with advanced disease and facilities for multidisciplinary care are limited. This has resulted in decreased usage of this treatment modality for early breast cancer in Indian patients.

MATERIALS AND METHODS

We retrospectively analysed our breast cancer database from January 2006 to December 2010. A total of 3855 patients of breast cancer were treated during this period. Of these, 1156 patients had early breast cancer and 82 (7%) of these received breast conservative therapy. Exclusion criteria included multicentric disease, diffuse microcalcification on mammogram, history of prior therapeutic chest irradiation, history of collagen vascular disease, inappropriate tumour breast ratio, patient not willing and tumour size >4 cms. Diagnosis was established by fine needle aspiration cytology (FNAC) in all cases. Work up included bilateral mammography, chest X-ray, USG abdomen and bone scan in all patients. All patients had a wide excision with a 1 cm three dimensional gross tumour free margin. Margins of the specimen were labeled as medial, lateral, superior, inferior and deep margin and sent for frozen section analysis. A complete axillary lymph node dissection (levels I-II) was then performed in all patients with a separate incision in the axilla. Re-excision of positive margins on frozen section was done till they were found to be negative. A single drain was placed to drain the axilla; no drains were placed in the primary tumour bed to avoid deformity. Adjuvant radiotherapy was given in the form of external beam radiotherapy (45-50 Gy) in 25 fractions over 4-5 weeks in all patients which was supplemented by radiotherapy boost to tumor bed (15-20 Gy). Adjuvant chemotherapy in the form of six cycles of epirubicin (100mg/m²) and

cyclophosphamide (600mg/m²) was given following radiotherapy in patients with premenopausal status, tumor size >1 cm, positive lymph nodes, estrogen and progesterone receptor (ER/PR) negative and high grade tumors with lymphovascular invasion. Hormonal therapy was given in the form of Tamoxifen 20mg/day for five years in all ER/PR positive patients. After completion of treatment, all patients were followed up in the breast cancer clinic every 3 months for the first 2 years, and every 6 months thereafter. At every follow up visit, a clinical examination, chest X-ray and liver function tests were done. Annual bilateral mammogram, USG abdomen and bone scan were performed in all patients to rule out local recurrence, development of contralateral breast cancer and distant metastasis.

RESULTS

At our institute, only 2% of overall and 7% of early breast cancer cases underwent breast conservation therapy. The mean age of these patients was 44 years (25-78 years). Clinical characteristics are summarized in Table 1.

Table 1: Clinical characteristics of patients

Characteristics	No. of cases	Percentage
A) Age (years)		
<35	08	9.70
35-50	49	59.75
>50	25	30.48
B) Menopausal status		
Premenopausal	57	69.51
Postmenopausal	25	30.48
C) Laterality		
Right	32	39.03
Left	50	60.97
D) Tumor location		
Upper outer	52	63.41
Upper inner	20	24.39
Lower outer	04	4.87
Lower inner	06	7.31
Central	00	00
E) Clinical stage		
Stage 1	26	31.71
Stage 2	56	68.20
Stage 3	00	00
Stage 4	00	00

Histopathological features are summarized in Table 2.

All patients with positive margins on histopathology were subjected to modified radical mastectomy later. The mean lymph

node yield was 11 per patient (7-25). 32 (39.02%) of the 82 patients had lymph nodal involvement, out of which 7 patients had extra nodal spread.

Adjuvant treatment is summarized in Table 3.

Late complications in the form of limb edema occurred in 2 patients who were treated with physiotherapy and compression stockings.

Median follow up period was 24 months (12-79 months). 2 patients developed local recurrence during the follow up period which were treated with modified radical mastectomy and 4 patients developed distant metastasis among which 2 were pulmonary, 2 were skeletal and one patient developed both. All these patients were treated with palliative chemotherapy, radiotherapy and hormonal therapy.

Occurrence of local recurrence and distant metastasis are summarized in Table 4.

Characteristics	No. of cases	Percentage
A) Histologic type		
Invasive duct carcinoma Ductal	72	87.80
carcinoma in situ	04	4.87
Poorly differentiated carcinoma	04	4.87
Medullary carcinoma	02	2.43
B) Pathologic size of tumor		
1.5-2 cms	26	31.71
2-4 cms	56	68.20
C) Pathologic stage		
Stage 1	12	14.63
Stage 2	50	60.97
Stage 3	20	24.39
Stage 4	00	00
D) Grade		
Grade 1	04	4.87
Grade 2	06	7.31
Grade 3	72	87.80
E) Surgical margin		
<i>Frozen section</i>		
Negative	79	96.34
Positive	03	3.60
<i>Histopathology</i>		
Negative	76	92.68
Positive	06	7.31
F) Lymph node status		
NIL	50	60.97
1-3	18	21.95
4-10	10	12.19
>10	04	4.87
G) Hormone receptor status		
ER/PR +, Her-2+	54	65.85
ER/PR +, Her-2 -	04	4.87
ER/PR -, Her-2+	02	2.43
Triple negative	22	26.82

Table 2: Histopathological features

Table 3: Adjuvant treatment

Treatment	Dose and delivery	No. of cases	Percentage
1) External beam radiotherapy to breast and axilla	45-50 Gy/25 fractions	82	100
2) Radiotherapy to tumor bed	15-20 Gy/4 fractions	82	100
3) Adjuvant Chemotherapy	Epirubicin -100mg/m ² Cyclophosphamide -600mg/m ² × 3 weeks × 4 cycles	62	75.60
4) Hormone therapy	Tamoxifen - 20 mg × 5years	60	73.17

Table 4: Occurrence of local recurrence and distant metastasis

Recurrence	No. of cases	Percentage
1) Local recurrence	02	2.43
2) Lung metastasis	02	2.43
3) Skeletal metastasis	02	2.43
4) Lung and skeletal metastasis	01	1.20

DISCUSSION

Breast conservation has become the standard of care in western countries for early breast cancer. Many prospective randomized trials have proven the efficacy of breast conservation therapy over mastectomy in early breast cancer. [3-8] The major advantage of breast conservation therapy over mastectomy is preservation of the breast and body image. However, even after many years of scientific scrutiny, breast conservation therapy is not widely

practiced in India in comparison to western countries where it accounts to 45-65% of early breast cancer. [3-8] Reasons for low breast conservation therapy rates in India include advanced stage at presentation, cost of treatment, lack of appropriate equipments and facilities, lack of physician and patient awareness. Only 7% of early breast cancers underwent breast conservation therapy in our study.

The mean age at diagnosis in our study was 44 years. This is almost a decade younger than western population. [9] However, we found a lower preference for breast conservation therapy by patients when compared to mastectomy in our study.

Most of the patients in our study had a relatively large primary (2-4 cms) in

comparison with western studies. [9] The extent of resection in breast conservation therapy has a direct bearing on local control and cosmesis. The recommended margins for resection vary from 0.5 to 2 cm.

Faverly et al have shown that a margin of 0.5 cm is associated with a higher local relapse rate in comparison with a 2 cm margin. [10] We aimed for a margin of 1 cm in all patients with frozen section analysis and this resulted in low rate of positive resection margins, excellent local control and a reasonably good cosmetic outcome. The local recurrence after breast conservation therapy can be classified as either true occurring within the vicinity of tumor bed or false which are actually new or second primaries. Most of the true recurrences occur within 2 years of completing the treatment. The factors known to increase the risk of local recurrence include young age, status of resection margin, presence of extensive intraductal component and the lymph node involvement. [11-14] The local recurrence rates reported in different studies vary from 2 to 13%. [11-14] But in the present study as the total number of events was small, we could not find any statistically significant association. The local recurrence rate in our study was 2.4%. In order to reduce the morbidity, performing sentinel node biopsy has been the current topic of debate. Sentinel node biopsy for clinically negative axilla is becoming the standard in most western centers. [15-17] However, owing to the lack of facilities, routine level 2 axillary dissection has been the most widely practiced procedure for axilla in Indian patients.

Radiotherapy is an integral component of breast conservation therapy and helps in controlling invisible microscopic disease around the tumour bed and other areas of the breast. The NSABP

B-06 trial had shown a significant reduction in local recurrence in patients undergoing breast conservation therapy with or without radiation therapy (14.3% v. 39.2%). [18] The timing and dosage of

radiation are also crucial. To achieve optimum results adjuvant radiation should be started within 4 weeks of surgery. [19] A boost to the tumour bed helps in improving local control rates. At present whole breast radiation is the standard of care. Various attempts at partial breast radiation are being considered in various trials. [20-22] The results of these trials can change approach in coming years. At our center, external beam radiation was used for whole breast (45-50 Gy/25 fractions) while brachytherapy was used for tumor bed boost (15-20 Gy/4 fractions) in all patients.

As far as systemic adjuvant therapy in breast conservation therapy patients is concerned, the same guidelines are followed as described for mastectomy. Systemic therapy in breast cancer, either in the form of chemotherapy or hormonal therapy helps in controlling systemic spread.

The sequencing of therapy and multimodality coordination is crucial for any successful breast conservation therapy programme. Generally, breast conservation therapy patients are given systemic therapy after completion of locoregional therapy (surgery and radiotherapy). All the landmark trials which established breast conservation therapy as an efficacious treatment option for early breast cancer used radiotherapy before adjuvant systemic therapy. [3-8] We have also followed the same sequence for treatment. Adjuvant chemotherapy and hormonal therapy was given in 75.60% and 73.17% of our patients respectively.

Acceptability of breast conservation therapy depends apart from the patient's educational and economic background, also on the treating surgeon's training. Several western studies suggest that most women prefer breast conservation therapy over mastectomy when given a choice. [3-8]

In contrast, most patients at our center prefer mastectomy over breast conservation therapy when given a choice. Education of the medical community as well as the patient population is essential to

improve the breast conservation therapy rates in India.

CONCLUSION

Breast conservation therapy is an established treatment modality for early breast cancer. Breast conservation therapy is oncologically safe and cosmetically acceptable procedure for early breast cancer. A lack of awareness, lack of treatment facilities and advanced stage of presentation are the main reasons for the decreased utility of this treatment modality in Indian scenario. With increased physician and patient awareness, better treatment facilities and early detection of breast cancer with screening methods, the role of breast conservation therapy in management of early breast cancer in Indian patients may increase in future.

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