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Original Article

Evaluation of surgical outcomes following oncoplastic breast surgery in early breast cancer and comparison with conventional breast conservation surgery

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ABSTRACT

Background: The aim of this study was to determine whether oncoplastic breast surgery (OBS) ensures better tumour resection than conventional breast conservation surgery (BCS). **Methods:** A prospective comparative study, conducted over a 3-year period, enrolled patients with early breast cancer who underwent OBS. The total volume of glandular resection, tumour volume resection and width of the margins obtained were noted. The incidence of complications, requirement of revision surgery and locoregional recurrence during follow-up period were also noted. The data were compared with matched controls who had undergone convention BCS in the past.

Results: Thirty-three patients underwent oncoplastic surgery and the data was compared with 46 patients of conventional breast conservation. The mean volume of specimen was higher in the oncoplastic group (173.5 cm³ vs 101.4 cm³, $p = 0.03$) though the tumour volume excised was similar (43.2 cm³ vs 36.4 cm³, $p = 0.14$). The mean margin widths were larger in the oncoplastic group (14 mm vs 6 mm, $p = 0.01$). There were more instances of close and positive margins seen in conventional BCS groups. The incidence of complication rate was similar. Median follow-up 18 months for oncoplasty group showed no cases of locoregional recurrence while in median follow-up of 38 months for conventional BCS group, six cases of locoregional relapse were noted.

Conclusions: Oncoplastic surgery results in excision of larger volume of breast tissue and correspondingly obtain wider surgical margins as compared to conventional BCS. Longer follow-up is required to determine if wider resection translates into better locoregional control.

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Introduction

Breast-conserving treatment (BCT) is the standard treatment in early-stage breast cancers.^{1,2} The primary goal of tumour excision using breast conservation surgery (BCS) is to achieve tumour-free resection margins; to provide a treatment as effective as mastectomy, with the added benefit of a preserved breast. However, despite the best surgical efforts, tumour involved surgical margins still occur in 12–40% of all tumours undergoing BCS.^{3,4} Conventional BCS entails removal of tumour volume with a clinically appreciated one cm gross margin along with axillary lymph node dissection. Many localised tumours can be successfully treated by the standard wide local excision just described, but some lesions are difficult to excise without the risk of cosmetic deformity and/or margin involvement. In some cases, cosmetically favourable results can be difficult to obtain as in large breast tumours in relation to breast size, ill-defined or poorly situated tumours.⁵ Oncoplastic breast surgery (OBS), which combines a plastic surgical procedure with BCS, is a new surgical approach that allows wide excisions and prevents breast deformities by immediate reconstruction of large resection defects. Status of surgical margins is one of the prime considerations in determining oncological safety in BCS. It is assessed as a marker for residual disease after primary surgery. It is known that pathologic margin status is one of the most important risk factors associated with ipsilateral breast tumour recurrences.⁶ Residual breast carcinoma at the resection margins may also be a source of systemic spread and, ultimately, disease-specific mortality.^{3,7} We performed a prospective study to analyse surgical margins obtained in the resected specimens obtained at the time of oncoplastic surgery. The parameters studied were volume of specimen resected, the mean of the margins obtained, the mean of closest margin and incidence of margin involvement. We compared these surgical outcomes of OBS with similar outcomes obtained from conventional BCS procedure done in historical controls.

Material & methods

This was a single centre prospective, observational study carried out over a three-year period (Jan 2012–Dec 2014) at a tertiary care, teaching hospital.

Consecutive patients of early breast cancer (T1/T2, N0/N1, AJCC TNM Classification 2010) presenting to this centre during the study period and who were deemed candidates for breast conservation were enrolled in the study. Following patients were excluded from this study:

- (i) Patients unwilling for BCS
- (ii) Patients of locally advanced breast cancers who had undergone neoadjuvant chemotherapy.
- (iii) Patients unwilling to follow-up at this centre
- (iv) Patients who had undergone conventional BCS previously at outside centre and whose medical records were incomplete.

Pre-operative work-up: All patients being considered for OBS underwent a trucut biopsy and digital mammography

accompanied with sonomammography. They underwent standard baseline hematologic and biochemistry work-up. The tumour site and planned skin flaps were marked with indelible ink on the patient breast evening prior to surgery. Decision to offer a particular oncoplastic procedure in each patient was done on individual basis and was based on the following factors:

- (i) Tumour site (quadrant) and size
- (ii) Tumour:breast ratio
- (iii) Position of tumour in relation to nipple areolar complex
- (iv) Degree of ptosis of ipsilateral breast as well as contralateral breast

The patient underwent one of the well-described oncoplastic procedures which could either be volume displacement or volume replacement technique⁵ (Figs. 1 and 2). Tumour excision was performed with the aim of including the tumour with at least 1 cm of healthy tissue far from the macroscopic margins. Patients were not offered symmetrisation surgery for contralateral breast at same sitting. The same was offered after completion of adjuvant therapy.

Pathologic analysis

The pathologic assessment of specimen obtained from BCS was carried out in the laboratory as per a standardised routine. All specimens were inked before cutting. The volume of specimen mass resected and the volume of the tumour mass within the same was measured in fresh specimens only. The volume of each tumour was calculated using the following formula: tumour volume = $(3.14/6) \times (\text{histological size})$ and the volume of each specimen was calculated by multiplying measurements of the length, width and height.⁸ Formalin-fixed and paraffin-embedded sections were stained with haematoxylin and eosin for routine examination. The margins were assessed by a standardised *radial (perpendicular) margin assessment* technique in which six margins were taken (superior, inferior, medial, lateral, posterior, anterior). Negative margin was defined as tumour >2 mm from cut edge. Close margin was deemed if tumour was <2 mm but not involving the cut edge and positive

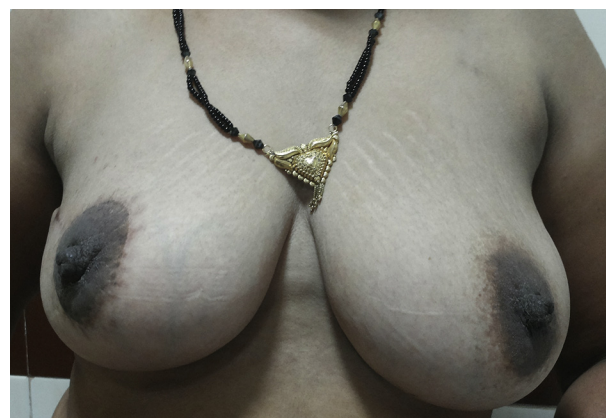


Fig. 1 – Oncoplasty volume displacement technique: A 3.5 cm upper outer quadrant tumour addressed by lateral mammoplasty incision.

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