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Original Research Article

# Oncoplastic Breast-Conserving Surgery: Clinical Outcomes, Complications, and Patient-Reported Satisfaction — A Prospective Observational Study of 30 Patients

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**Abstract:**

**Background:** Breast cancer remains one of the most common malignancies affecting women worldwide. While mastectomy was historically the standard approach, the trend in recent decades has shifted toward breast-conserving surgery (BCS), particularly when combined with radiotherapy, which provides comparable survival outcomes to mastectomy. However, conventional BCS can lead to significant deformities and psychological distress, especially in women with small to medium breast volumes or those with tumors in cosmetically sensitive quadrants. To overcome these limitations, oncoplastic breast-conserving surgery (OBCS) has emerged as an approach that integrates oncological safety with reconstructive principles. Aimed to evaluate the oncological safety, complication profile, and cosmetic satisfaction of patients undergoing OBCS.

**Methods:** At one tertiary care facility, a prospective observational study was carried out between March 2023 to November 2024. OBCS was performed on thirty individuals with histologically proven breast cancer who satisfied the requirements for breast conservation. Surgical outcomes, including margin positivity, postoperative complications, and cosmetic results, were assessed. In order to assess metastasis and recurrence, patients were monitored for a median of 15 months.

**Results:** Of the 30 patients, margin positivity was reported in only one case (3.33%), while all others achieved tumor-free margins. Postoperative complications were minimal, with seroma occurring in 2 patients (6.66%), flap necrosis in 1 patient (3.33%), and surgical site infection in 1 patient (3.33%). Cosmetic satisfaction, assessed by patient feedback, was high, with nearly 90% of patients reporting good to excellent outcomes. During the median follow-up of 15 months, no cases of local recurrence or distant metastasis were documented.

**Conclusion:** OBCS demonstrated low complication rates, excellent cosmetic outcomes, and maintained oncological safety. The approach appears to be a promising alternative to mastectomy or conventional BCS. However, larger multicentric studies with longer follow-up durations are warranted to confirm these encouraging results.

**Keywords:** Breast Cancer, Oncoplastic Breast-Conserving Surgery, Cosmetic Outcomes, Surgical Complications, Oncological Safety.



## Introduction

Breast cancer remains the most common malignancy among women and continues to be a major cause of cancer-related death worldwide. Its incidence is rising steadily, particularly in LMIC's, creating significant challenges for healthcare systems. Earlier detection through ultrasound, mammography, and MRI has made breast-conserving approaches more feasible and widely practiced.

The typical surgical procedure for many years was a radical mastectomy. Evidence from large clinical trials, however, has shown that breast-conserving surgery (BCS) combined with radiotherapy achieves survival rates equivalent to mastectomy. This has led to a shift toward organ-preserving procedures, which offer the additional advantage of improving body image and overall quality of life without compromising oncological safety.

Conventional BCS, despite its proven effectiveness, can leave patients with unsatisfactory cosmetic results. Removal of a relatively large tumor volume compared with breast size may result in distortion, asymmetry, or contour irregularities. These aesthetic changes are more pronounced in women with smaller breasts and can have a negative impact on psychological health, self-esteem, and adherence to follow-up treatments.

Oncoplastic breast-conserving surgery (OBCS) was developed to overcome these limitations. By combining tumor excision with immediate breast reshaping techniques, OBCS seeks to maintain the breast's natural look while securing clear surgical margins. Methods include volume displacement, using remaining breast tissue for reconstruction, and volume replacement with regional flaps such as the latissimus dorsi. While these techniques are well established in many parts of the world, data from developing countries are still scarce. Differences in patient characteristics and healthcare delivery highlight the need for region-specific studies. This prospective study examines the outcomes of OBCS in an Indian tertiary care center, with emphasis on oncological safety, complications, and patient satisfaction.

## Materials and Methods

**Study Design:** Over the course of 20 months, from March 2023 to November 2024, a single tertiary care facility participated in this prospective observational study.

**Sample Size and Patient Selection:** Thirty female patients with a diagnosis of breast cancer were included. Patients were selected based on inclusion and exclusion criteria:

- **Inclusion Criteria:**
  - Histologically proven breast carcinoma suitable for breast conservation.
  - Patients with no contraindications to radiotherapy.
  - Willingness to give informed permission for oncoplastic procedures.
- **Exclusion Criteria:**
  - Locally advanced or inflammatory breast cancer requiring mastectomy.
  - Patients with multicentric tumors unsuitable for BCS.
  - Medically unfit patients contraindicated for surgery.

**Preoperative Work-Up:** All patients underwent detailed clinical examination, imaging (mammography and/or ultrasound), and biopsy confirmation. Tumor staging was done according to AJCC guidelines. Preoperative counseling was provided regarding surgical options, expected outcomes, and potential complications.

**Surgical Technique:** Wide local excision was performed to achieve oncological clearance. The defect was reconstructed using oncoplastic techniques tailored to tumor site and breast size. Commonly employed methods included:

- **Volume displacement:** mobilization of breast tissue flaps for reshaping.
- **Volume replacement:** use of local/regional flaps when displacement was insufficient.

Axillary management (sentinel lymph node biopsy or axillary clearance) was performed depending on nodal involvement.

**Postoperative Care and Adjuvant Therapy:** Standard postoperative care was provided. All patients were referred for adjuvant therapies including radiotherapy, chemotherapy, and hormone therapy as indicated by multidisciplinary team discussions.

### Data Collection Parameters

1. **Oncological safety:** margin status.
2. **Complications:** seroma, wound infection, flap necrosis.
3. **Cosmetic satisfaction:** assessed by patient-reported outcomes (subjective scoring).
4. **Follow-up:** recurrence and metastasis monitoring.

**Follow-Up:** Patients were followed at regular intervals: monthly for the first 3 months, then every 3–6 months. Median follow-up was 15 months. Clinical and imaging surveillance was undertaken to detect recurrence.

## Results

**Patient Demographics:** Thirty women were included in the study. The majority were in the middle-age group (details per thesis data). Most tumors were located in the upper outer quadrant, consistent with global trends. All patients had early-stage disease (Stage I or II) and were eligible for breast conservation.

**Oncological Outcomes:** Clear margins were achieved in 29 of 30 patients (96.66%). Only one patient (3.33%) required re-excision due to margin positivity. This demonstrates that OBCS enabled wide resections without compromising oncological safety.

**Table 1. Margin Status in Study Population**

| Margin status | Number of patients | Percentage |
|---|---|---|
| Clear margins | 29 | 96.66% |
| Positive margin | 1 | 3.33% |

**Postoperative Complications:** Overall complication rates were low. Seroma was the most

frequent issue, followed by minor flap necrosis and infection. No systemic or life-threatening complications were reported.

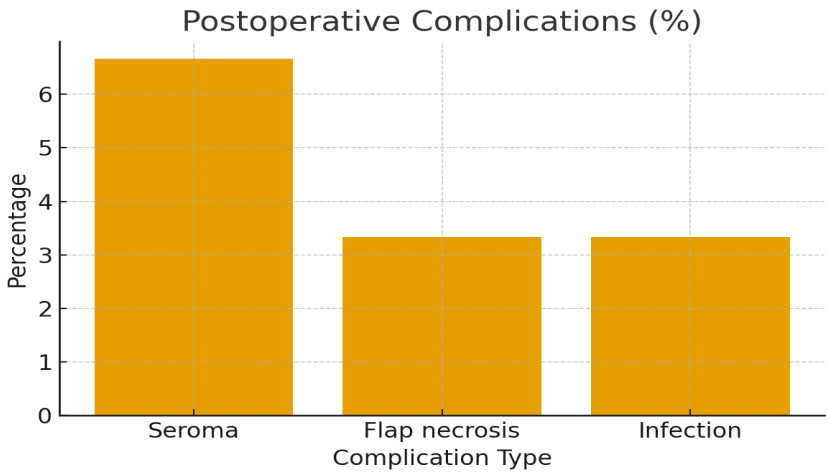


**Figure 1. Distribution of Postoperative Complications**

**Table 2. Postoperative Complications**

| Complication | Number of patients | Percentage |
|---|---|---|
| Seroma | 2 | 6.66% |
| Flap necrosis | 1 | 3.33% |
| Infection | 1 | 3.33% |
| None | 26 | 86.66% |

**Cosmetic Outcomes:** Patient-reported satisfaction was high. Twenty-seven patients (90%) rated cosmetic outcomes as good to excellent. Three patients (10%) reported moderate satisfaction, primarily due to minor asymmetry. No patients expressed dissatisfaction.

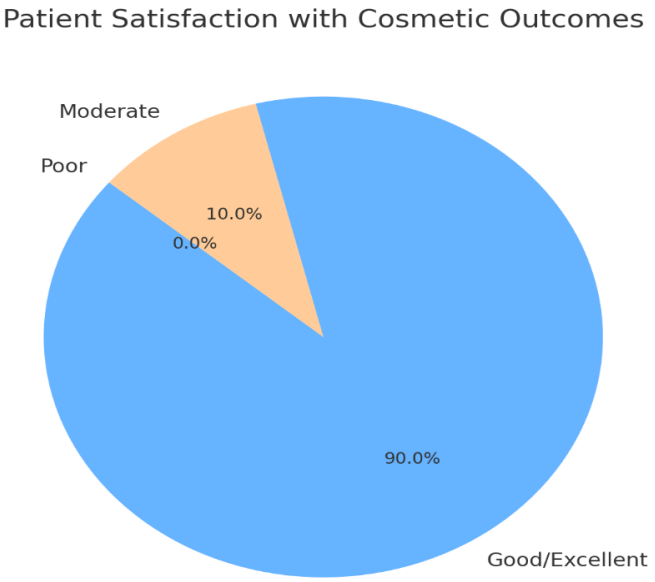


**Figure 2: Patient Satisfaction with Cosmetic Outcomes**

## Discussion

The present study demonstrates that oncoplastic breast-conserving surgery can achieve excellent oncological and aesthetic outcomes with low complication rates. Among the thirty patients included, margin positivity was observed in only one case, while the remainder achieved clear margins. This low rate is encouraging, given that positive

margins are one of the strongest predictors of local recurrence. Moreover, no local recurrence or distant metastasis was recorded during the median follow-up period of fifteen months. Although the observation time was limited, these findings reinforce the principle that oncoplastic techniques do not compromise oncological safety when carefully performed.

When compared with international literature, our results align closely. Studies from Europe, including those by Clough and colleagues, have reported margin positivity rates ranging from 4% to 10%, with local recurrence rates below 5% at five years. Similarly, American series have documented comparable outcomes with wide excisions facilitated by oncoplastic methods. The margin positivity rate of 3.3% in our cohort falls at the lower end of this spectrum, suggesting that with careful patient selection and surgical execution, outcomes in resource-constrained settings can mirror those achieved in high-income countries. Data from India, though limited, also support this trend. Prospective studies from major cancer centers in Mumbai and Delhi have demonstrated negative margin rates above 90% with minimal recurrence, consistent with the findings of our series.

In our investigation, the incidences of complications were minimal, with seroma formation in two patients, flap necrosis in one, and surgical site infection in another. These accounted for fewer than 15% of cases, and all were managed conservatively or with minor interventions. Importantly, no complication delayed adjuvant therapy. Internationally, complication rates for oncoplastic procedures typically range from 10% to 20%, depending on the technique and patient population. Our rates, at approximately 13%, compare favorably. For example, a French multicentric study reported seroma rates around 8% and flap necrosis near 5%, while an Italian series described overall complication rates of 12%. The similarity between these results and our own suggests that with adherence to surgical principles, complication rates remain manageable, even outside high-volume specialized centers.

Cosmetic outcomes were one of the most significant strengths of this study. Ninety percent of patients reported their results as good to excellent, and the remaining 10% considered them satisfactory. None expressed dissatisfaction. Such high satisfaction rates are critical, as body image strongly influences psychosocial recovery, self-esteem, and compliance with treatment. These findings are consistent with international reports, where 80–90% of patients undergoing oncoplastic procedures describe favorable cosmetic results. A German prospective cohort, for instance, documented "good to excellent" satisfaction in 87% of cases, while a British audit reported similar rates. In contrast, conventional breast-conserving surgery has been associated with dissatisfaction rates of up to 30% in women with small breasts or large resections. Our study, therefore, confirms that oncoplastic approaches offer substantial advantages in preserving aesthetics without sacrificing oncological control.

The clinical implications of these findings are important. By enabling larger resections with better cosmetic preservation, OBCS addresses two key limitations of conventional BCS: the risk of inadequate margins and the risk of deformity. This dual benefit not only reduces the likelihood of reoperation but also improves patient acceptance as an alternative to mastectomy: breast conservation. In many cultural contexts, including India, women often choose mastectomy due to fear of visible deformity after BCS. Demonstrating that OBCS can provide both oncological safety and aesthetic integrity may encourage greater uptake of breast-conserving strategies. Furthermore, favorable cosmetic outcomes may indirectly influence compliance with radiotherapy and systemic treatments, as women are less likely to experience treatment fatigue when they feel positive about their surgical results.

Nevertheless, limitations must be acknowledged. The study included only thirty patients, which restricts statistical robustness and generalizability. The single-center design may also reflect institutional practices and surgeon expertise that are not uniformly available elsewhere. The fifteen-month the follow-up period does not record long-term recurrence or survival statistics, even though it is adequate for evaluating complications and early results. Furthermore, cosmetic outcomes were measured using subjective patient reporting, which, while valuable, lacks the objectivity of standardized tools such as the Breast-Q questionnaire or photographic panel assessments. These limitations must be considered when interpreting the results, though they do not detract from the value of the findings as preliminary evidence.

Looking forward, future studies should address these gaps. Larger, multicentric prospective cohorts with extended follow-up will be required to establish long-term recurrence rates and survival outcomes. Incorporating validated cosmetic assessment tools and quality-of-life instruments would allow more objective evaluation and international comparability. Cost-effectiveness analyses may also provide insight into whether OBCS, though potentially more resource-intensive at the outset, reduces overall costs by lowering re-excision rates and enhancing adherence to therapy. Training and capacity building are equally important: surgeons must be equipped with both oncological and reconstructive skills to deliver consistent outcomes. Interdisciplinary collaboration between breast and plastic surgeons may also strengthen results,

particularly in complex cases requiring volume replacement.

In summary, this prospective experience demonstrates that oncoplastic breast-conserving surgery offers oncological safety, low complication rates, and excellent patient satisfaction in an Indian tertiary care setting. The results are comparable with international literature, highlighting that favorable outcomes can be achieved even in resource-limited environments when surgical principles are carefully applied. While limited by small sample size and short follow-up, the study contributes valuable region-specific data and underscores the promise of OBCS as a standard approach in breast cancer surgery. With further validation through larger and longer-term studies, oncoplastic methods have the potential to become integral to breast cancer management, balancing the dual goals of tumor eradication and quality of life.

## Conclusion

Oncoplastic breast-conserving surgery is a safe and effective approach that combines oncological clearance with favorable cosmetic outcomes. With low complication rates, minimal margin positivity, and high patient satisfaction, OBCS represents a valuable advancement in breast cancer surgery. However, ongoing research with longer follow-up and larger populations are necessary to establish its role as the standard of care.

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