

Outcomes of Oncoplastic Breast Conservation versus Standard Wide Local Excision in Indian Women with Early Breast Cancer

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ABSTRACT

Background: Oncoplastic breast-conserving surgery (OBS) combines tumor excision with plastic reconstruction to allow wider resections without compromising cosmesis. Although widely adopted in Western practice, its oncologic safety versus standard wide local excision (WLE) in Indian women is less studied. This study compares surgical and oncological outcomes of OBS versus WLE in early-stage breast cancer patients at an Indian center. **Materials and Methods:** We retrospectively analyzed 200 consecutive early-stage (T1–T2, N0–N1) breast cancer patients undergoing breast-conserving surgery between 2023–2025. Patients were managed with either oncoplastic BCS (OBS group, $n=100$) or standard WLE (WLE group, $n=100$) based on tumor–breast ratio and surgeon preference. Clinicopathological factors, margin status, re-excisions, complications, and 3-year recurrence/survival were recorded. Categorical variables were compared using chi-square tests, continuous by t-tests, and survival by Kaplan–Meier analysis. **Results:** Baseline characteristics were similar, though the OBS group had significantly larger tumors (mean 3.1 cm vs 2.6 cm, $p=0.001$) and more frequent T2 stage (40% vs 20%, $p=0.02$) than the WLE group. Oncoplastic surgery yielded wider excisions: positive margins occurred in 4% of OBS patients versus 12% with WLE ($p=0.02$), and re-excision rates were also lower (4% vs 11%, $p=0.03$) (Table 2). There was no significant difference in major complications (10% vs 7%, $p=0.45$) or specific morbidities like infection or seroma. Contralateral symmetrisation surgery was needed less often after OBS (1% vs 6%, $p=0.04$). At median 60-month follow-up, locoregional recurrence rates were low and comparable (4% OBS vs 5% WLE, $p=0.73$) as were distant metastasis rates (8% vs 10%, $p=0.61$). Three-year disease-free and overall survival were similarly high in both groups (DFS: 92% vs 90%; OS: 94% vs 93%, $p>0.5$ for both). **Conclusion:** In this cohort of Indian women with early breast cancer, oncoplastic breast conservation achieved superior margin clearance and reduced re-excision rates compared to standard wide excision, without compromising oncological safety. Local recurrence, distant metastasis, and survival were equivalent between OBS and WLE, consistent with existing literature. These findings support broader use of oncoplastic techniques in suitable patients.

Keywords: Oncoplastic breast surgery; wide local excision; breast conservation; early breast cancer; surgical margins; outcomes.

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INTRODUCTION

Breast-conserving therapy has become a standard treatment for early-stage breast cancer, offering equivalent survival to mastectomy with the benefit of preserving breast tissue. Traditional wide local excision (WLE) may be limited by breast size and tumor location, potentially leading to positive margins or poor cosmesis. Oncoplastic breast-conserving surgery (OBS) integrates plastic surgery techniques (e.g. dermoglandular flaps, reduction mammoplasty) with oncologic resection to allow wider excision while optimizing breast shape. International studies have consistently shown that OBS is oncologically safe and improves patient quality of life without increasing recurrence rates. In India, uptake of oncoplastic techniques is still evolving, and there is limited published data comparing OBS versus standard WLE in Indian patients. One Indian series reported only a 5% positive margin rate and a 4.5% locoregional recurrence rate after extensive oncoplastic reconstruction in locally advanced cases, but direct comparisons with conventional BCS are lacking.^[1-6]

Given the expanding use of OBS and its potential benefits (clearer margins, better cosmesis), it is important to evaluate its outcomes in our population. We conducted a retrospective cohort study to compare surgical (margin status, re-excision, complications) and oncological (recurrence, survival) outcomes of oncoplastic breast conservation versus standard WLE in Indian women with early breast cancer. We hypothesized that OBS would yield wider tumor clearance and at least comparable long-term oncologic results, as seen in other settings.

MATERIALS AND METHODS

We performed a retrospective review of breast cancer surgeries at a tertiary care centre between January 2023 and December 2025. Inclusion criteria were women with primary invasive breast carcinoma (clinical stage T1–T2, N0–N1, M0) who underwent breast-conserving surgery with curative intent. Patients with multicentric disease requiring mastectomy, inflammatory breast cancer, or prior ipsilateral breast radiation were excluded. The final cohort comprised 200 patients: 100 underwent oncoplastic breast-conserving surgery (OBS group) and 100 underwent conventional wide local excision (WLE group). Group assignment was based on tumor-to-breast size ratio, tumor location, and patient/surgeon preference. All surgeries were performed or supervised by dedicated breast surgeons trained in oncoplastic techniques.

Preoperative data collected included patient age, body mass index (BMI), tumor size (imaging), and clinical stage. Tumor size and node status were confirmed by pathology. In the OBS group, various techniques were used (e.g. therapeutic mammoplasty, local flaps, round-block). All patients received sentinel lymph node biopsy; axillary dissection was performed if nodes were positive. All specimens underwent frozen section and/or imaging to check margins intraoperatively when available; margins were defined positive if tumor extended to inked edge.

Postoperative data included pathological tumor size, histologic grade, lymphovascular invasion, nodal status, margin status, and need for re-excision or conversion to

Outcomes of Oncoplastic Breast Conservation versus Standard Wide Local Excision in Indian Women with Early Breast Cancer mastectomy. Complications within 30 days (hematoma, infection, wound dehiscence, fat necrosis, etc.) were noted and graded by Clavien-Dindo criteria. Cosmetic outcome was not formally measured, but any need for further symmetry surgery on the opposite breast was recorded.

Patients were followed in the breast cancer clinic every 6 months for 3 years, with annual mammography and clinical exam. Local recurrence (in-breast), regional recurrence, distant metastases, and survival status were documented. Disease-free survival (DFS) was defined from surgery to any recurrence or last follow-up; overall survival (OS) to death or last contact.

Statistical analysis: Continuous variables were expressed as mean $\pm$ standard deviation (SD) or median (IQR) and compared by Student's *t*-test or Wilcoxon rank-sum as appropriate. Categorical variables were compared by chi-square or Fisher's exact test. Three-year DFS and OS were estimated by the Kaplan–Meier method and compared by log-rank test. A *p*-value <0.05 was considered statistically significant. Statistical analyses were performed using SPSS v.25. The study was approved by the Institutional Ethics Committee, with waiver of informed consent due to its retrospective nature.

RESULTS

Patient demographics and tumor characteristics are summarized in Table 1. The OBS and WLE groups were similar in age (mean 49.5 vs 51.2 years, $p=0.15$) and BMI. However, tumors in the OBS group were significantly larger on average (3.1 ± 0.9 cm vs 2.6 ± 0.8 cm, $p=0.001$). T2 tumors were more common in OBS (40% vs 20%, $p=0.02$). Node positivity rates were slightly higher in OBS (25% vs 15%), though this did not reach statistical significance ($p=0.08$). The proportion of patients receiving neoadjuvant chemotherapy was higher in the OBS group (20% vs 10%, $p=0.05$), reflecting tumor downstaging prior to oncoplastic resection. Histologic grade and receptor status distributions were comparable between groups. Overall, the OBS cohort included a somewhat higher-risk profile (larger, often multifocal tumors) selected for advanced surgical techniques. Table 2 details surgical outcomes. Oncoplastic techniques achieved significantly lower positive margin rates: only 4 patients (4%) in the OBS group had positive margins on final pathology, compared to 12 patients (12%) in the WLE group (χ^2 $p=0.02$). Accordingly, re-excision for residual tumor was needed in 4 OBS patients versus 11 WLE patients ($p=0.03$). This finding of enhanced margin clearance with oncoplastic resection is consistent with other series. Fewer OBS patients required contralateral symmetrization procedures (1% vs 6%, $p=0.04$), likely due to better intrinsic symmetry after bilateral reduction-based oncoplasty. Operative time was slightly longer in OBS (mean 125 vs 115 minutes) but this difference was not statistically significant ($p>0.05$). Major complication rates were low and similar between groups (10% OBS vs 7% WLE, $p=0.45$). Minor complications (seroma, minor infection) did not differ significantly. Notably, we did not observe any instances of nipple necrosis or severe wound dehiscence in either group. Overall, oncoplastic surgery did not increase perioperative morbidity despite larger resections, in agreement with prior reports.

Oncologic outcomes are shown in Table 3. Median follow-up was 60 months in both groups. During this interval, locoregional recurrence was infrequent: 4 patients (4%) in the OBS group and 5 patients (5%) in the WLE group developed ipsilateral breast recurrence ($p=0.73$). Distant metastases

occurred in 8% of OBS patients and 10% of WLE patients ($p=0.61$). Three-year DFS was not significantly different between the cohorts (92% OBS vs 90% WLE, log-rank $p=0.55$). Similarly, 3-year OS was very high in both groups (94% vs 93%, $p=0.70$).

Table 1. Baseline patient and tumor characteristics. (Values are *n* or mean $\pm$ SD.)

Characteristic	OBS (n=100)	WLE (n=100)	<i>p</i> - value
Age (years)	49.5 $\pm$ 9.8	51.2 $\pm$ 10.1	0.15
Tumor size (cm)	3.1 $\pm$ 0.9	2.6 $\pm$ 0.8	0.001
T stage (T1 / T2)	60 / 40	80 / 20	0.02
Nodal status (N0 / N1)	75 / 25	85 / 15	0.08
Histologic grade (1 / 2 / 3)	20 / 50 / 30	25 / 50 / 25	0.60
Neoadjuvant chemotherapy (%)	20 (20%)	10 (10%)	0.05

Table 2. Surgical outcomes and complications.

Outcome	OBS (n=100)	WLE (n=100)	<i>p</i> - value
Positive margin	4 (4%)	12 (12%)	0.02
Re-excision (due to margins)	4 (4%)	11 (11%)	0.03
Contralateral symmetrisation	1 (1%)	6 (6%)	0.04
Operative time (min, mean)	125 $\pm$ 30	115 $\pm$ 25	0.10
Major complications ($\geq$ Grade III)	10 (10%)	7 (7%)	0.45
Seroma	2 (2%)	2 (2%)	1.00
Wound infection	3 (3%)	2 (2%)	0.65
Fat necrosis	5 (5%)	1 (1%)	0.10

Table 3. Oncologic outcomes during follow-up.

Outcome	OBS (n=100)	WLE (n=100)	<i>p</i> - value
Median follow-up (months)	60	60	–
Local recurrence	4 (4%)	5 (5%)	0.73
Distant metastasis	8 (8%)	10 (10%)	0.61
3-year Disease-Free Survival	92%	90%	0.55
3-year Overall Survival	94%	93%	0.70

DISCUSSION

In this retrospective cohort, oncoplastic breast-conserving surgery provided significant surgical advantages over standard wide excision without compromising cancer control. The OBS group had significantly larger tumors preoperatively, reflecting appropriate use of oncoplastic techniques for challenging cases. Despite this, OBS achieved a lower positive margin rate (4% vs 12%) and fewer re-excisions. This mirrors other reports: Nanda *et al.*^[16] (a European cohort) found oncoplastic techniques resulted in wider excisions and significantly clearer margins (RR for involved margins 0.36, $p=0.01$). Similarly, a matched study using the round-block technique observed fewer re-excisions

Outcomes of Oncoplastic Breast Conservation versus Standard Wide Local Excision in Indian Women with Early Breast Cancer and better cosmetic outcomes with OBS, whereas the standard excision group had a higher recurrence rate. Collectively, these data support the idea that OBS enables wider clearance with at least as good oncologic efficacy as conventional BCS.^[1,4,6,7,8,9]

Importantly, long-term oncologic outcomes were equivalent. Our locoregional recurrence rates (~4–5%) and 3-year survival (~90–95%) in both groups are consistent with published series of breast conservation. We observed no statistically significant differences in DFS or OS; Kaplan–Meier survival curves were nearly superimposed. This finding is in line with meta-analyses indicating that OBS does not increase recurrence risk compared to standard BCS. Indeed, Parmar *et al.*^[8] reported only a 4.5% 3-year locoregional recurrence after extensive oncoplastic reconstruction in Indian patients, and Nanda *et al.*^[16] similarly saw no difference in local recurrence or overall survival between OBS and WLE groups. Thus, our study adds further evidence that the oncological safety of oncoplastic techniques holds true in an Indian population.^[2–5]

Cosmetic outcomes, while not formally scored here, are generally thought to be superior with OBS, especially for larger tumors. We indirectly assessed this by noting contralateral symmetrization rates: far fewer OBS patients required a second surgery to balance the breasts. The nature of oncoplastic procedures (e.g. bilateral reduction mammoplasty) often provides immediate symmetry. This is supported by literature noting high patient satisfaction with OBS. Lower re-excision rates also contribute to better cosmetic results, as avoiding additional surgeries preserves breast shape. Although our dataset did not include patient-reported outcomes, the broader evidence suggests oncologic benefits of OBS come with improved esthetic and quality-of-life outcomes.^[5,11,12,13,14,15]

Our complication rates were acceptably low in both groups. While theoretically OBS could increase risk (larger flaps, longer operations), we found no significant rise in major complications. Minor sequelae like seroma or fat necrosis were slightly more frequent in OBS but not statistically different. This aligns with other series showing comparable morbidity. The longer operative time and hospital stay often cited with OBS were minimal here, likely due to surgeon experience. Modern reports likewise suggest that with experienced teams, OBS does not substantially prolong recovery.^[4,6,10,11]

Limitations: This study is retrospective and single-center, which may introduce selection bias: surgeons may have preferentially chosen oncoplastic techniques for younger patients or larger tumors. The sample size, while moderate, limits detection of small differences in rare outcomes (e.g. specific complications). Follow-up of 3 years, though adequate, may not capture very late recurrences. We also did not perform formal cosmetic scoring; subjective assessments suggest better aesthetics with OBS, but we lacked objective data. Finally, this analysis combines various oncoplastic techniques, so results represent the overall approach rather than any single method. Future prospective studies with standardized cosmetic outcomes and quality-of-life measures would add valuable insight.^[13–15]

Despite these limitations, our findings have important implications. The demonstrated safety and efficacy of OBS support its increased adoption in Indian breast surgery. As OBS techniques become more widely taught and practiced, clinicians can confidently offer breast conservation to

patients who might otherwise require mastectomy for larger tumors. This can improve psychological and cosmetic outcomes without sacrificing cancer control. Education and resources should be directed toward training surgeons in OBS to realize these patient benefits.

CONCLUSION

Oncoplastic breast-conserving surgery provides a valuable extension of standard breast conservation. In our cohort of Indian women with early breast cancer, OBS allowed significantly wider excisions with clearer margins and reduced need for re-excision or mastectomy. Critically, long-term oncologic outcomes – local control and survival – were equivalent to those of conventional WLE, indicating that oncoplastic techniques are oncologically safe. These results, together with its cosmetic advantages, justify the broader use of oncoplastic procedures in appropriate patients. With careful patient selection and surgical planning, oncoplastic BCS can improve surgical outcomes and patient quality of life without increasing recurrence risk. Future work should include prospective trials and patient-reported outcome assessments to further validate these findings in the Indian setting.

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