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Breast Conserving surgery is a suitable option for early breast carcinoma in a conservative society of middle income country - early experiences

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Abstract

Introduction: *Breast conserving surgery now a days are most common preferred surgery for breast cancer patients other then mastectomy . Oncoplastic Surgery can be a safer, more cost effective alternate to conventional BCS owing to its higher rate of negative surgical margins and better cosmetic results. In Asian countries, the rate of Breast conservation surgery is low and the cause are multifactorial such as availability and accessibility of investigation, infrastructure ,oncology and pathological support and surgeon's choice. Aim is to elucidate the surgeons' perspective while choosing between BCS and mastectomy, in women oncologicaly eligible for BCS.*

Methods: *A retrospective study in Z.H.Sikder Women's Medical College Hospital,a single Centre based study by reviewing patient's medical records from August 2021 to July 2023 was conducted. Percentage of patient agreed for breast conservation surgery along with mean tumor size, type of cancer and different surgical procedures with postoperative complication was assessed.*

Results: *A total of 199 patients were eligible for BCS but 75.87% patients showed unwillingness to go for BCS. 48 patients responses were included who underwent for BCS. The mean age of the participants was 43 years and of the 48 patients in the study, 46 had unilateral and 2 had bilateral BC. 74.37 % of patients tumor size was 1-2 cm . 5 patients received NACT; none achieved a complete clinical response. Majority of (73.9%) of tumor biology shows ER, PR positive and HER 2 negative. 36 patients diagnosed with IDC and second common cancer id ILC . Breast conservation surgery was the commonest surgery to remove the cancer and 27 patients had WLE and glandular repair. 21 patients required level II oncoplastic techniques. No major complications or local recurrences were observed.*

Conclusions: *Implementing breast-conserving surgery as the standard of care breast cancer patients where appropriate. Breast-conserving surgery is not only safe, but also highly beneficial in terms of aesthetics, body image, and quality of life. Adoption of these techniques into practice can increase indications of BCT and requires a team approach for best success.*

Introduction:

Breast cancer is the most common cancer in Asia and around the world among womens. More recently, breast conservative surgery (BCS) with radiotherapy has widespread acceptance in breast cancer surgery in the world. Modern surgical techniques , oncoplastic procedures ,radiotherapy and chemotherapy increase survival rates and have been found to be equivalent to mastectomy[1]. BCS is less mutilating and cosmetically more acceptable for womendue to unavailability and inaccessibility and lack of affordability),lack of training facilities training among surgeons, patient preference and fear about recurrence and additional radiation hazards contribute to patients choice for mastectomy over BCS.

Breast cancer still remains the most common cancer in the world, with a rising incidence in middle-income countries. Early detection through awareness and screening has led to a greater proportion of patients presenting with early-stage disease, amenable to breast-conserving strategies. However, in conservative societies, especially in middle-income countries, patient preferences, cultural considerations, and limited reconstructive expertise often lead to a high rate of mastectomy, even for operable small tumors[2].

Oncoplastic breast surgery (OBS), which combines oncological safety with plastic surgical techniques, offers a promising alternative that balances tumor resection with acceptable cosmetic outcomes. Multiple prospective randomized trials shows some data with a follow-up of 20 years, have established equivalent survival rates between mastectomy and breast conservation surgery (BCS) with negative margins3. It is particularly valuable for women reluctant to undergo mastectomy or visible breast deformity, which may carry significant psychosocial and marital implications in conservative cultures.

Oncoplastic surgery (OPS), first introduced by Werner Audretsch in 1980s, is an ingenious approach with initial emphasis on refinement of BCS procedure and incorporating plastic surgery techniques to maintain natural shape of breast . It is defined as breast-conservation surgery incorporating an oncologic partial mastectomy with ipsilateral defect repair using volume displacement or volume replacement techniques with contralateral symmetry surgery as appropriate .OPS allows the surgeon to remove substantial volume of breast tissue without compromising cosmetic outcome which is a limitation in conventional Breast conserving surgery and is of key importance in developing countries where a large number of patients present late with larger tumor size or locally advanced disease[4,5,6] . Many of these patients until recently were subjected to mastectomy in fear of inadequate tumor excision a common practice in many countries. Therefore, oncoplastic techniques makes it possible to resect larger tumors with adequate margins with lower rate of re-excisions and conversion mastectomies. The concept of oncoplastic breast surgery is still contemporary to developing countries. With the advent of neo-adjuvant therapy allowing more and more breast conserving procedures to be performed and declining mortality of

breast cancer patients due to advances in adjuvant treatments, more women will live with the surgical treatment decided for them. Although cosmetic and oncological safety of Oncoplastic has been reported in various studies, its usefulness as a cost effective procedure in developing countries has not been affirmed[5,7].

Materials and methods :

A retrospective study in a single Centre based by reviewing patient's medical records from Z.H.Sikder Women's Medical College Hospital, Dhaka, Bangladesh from August 2021 to July 2023. All patients who underwent oncoplastic or breast conserving surgery were recruited through consecutive sampling technique. Females above 18 years who were diagnosed with breast cancer on core biopsy. Oncoplastic procedure and decision regarding surgery based on each patient and some factors such as Tumour size ,Tumour: breast ratio ,site (quadrant) , Position of tumour in relation to nipple areolar complex and Degree of ptosis . The patient underwent one of the well-described oncoplastic procedures which could either be volume displacement or volume replacement technique. The aim of tumour excision was to excise at least 1 cm of healthy tissue far from the visible cancer. Depending upon breast to tumor size ratio, few patients also included with post neoadjuvant downgrading of tumor and wish and commitment to receive radiation after surgery. Oncoplastic procedures performed solely by breast surgeons. Consecutive patients of early breast cancer presenting to this centre during the study period and who were deemed candidates for breast conservation were enrolled in the study. The pathologic assessment of specimen obtained from BCS was carried out in the hospital laboratory.

Patient Selection:

Inclusion criteria:

Female patients aged 18–70 years

Diagnosed with early-stage breast cancer (Stage I–II)

Lesions suitable for breast-conserving surgery

Provided informed consent for oncoplastic procedures

Exclusion criteria:

Locally advanced or metastatic breast cancer

Multicentric disease not suitable for single-quadrant excision

Previous breast irradiation or surgery

Preoperative Assessment

All patients underwent:

Triple assessment (clinical exam, imaging, core biopsy)

Staging workup as per institutional protocol

Multidisciplinary team (MDT) discussion including surgical oncology, radiology, pathology, plastic surgery, and psycho-oncology.

Surgical Techniques:

Oncoplastic procedures were selected based on tumor location, volume-to-breast ratio, and patient preference. Techniques used included:

Level I techniques (glandular reshaping)

Level II techniques (reduction/mastopexy-based approaches) . Contralateral summarization was offered but not mandatory.

SLN or ALND was performed as per nodal staging.

Result:

Analyzation of data was performed using descriptive analysis; Among 199 patients , these 48 (24.12 %) patients underwent an oncoplastic procedure and 151 (75.87%) patients showed the unwill-

ingness to go for conventional breast conserving surgery. Mean age in years was 43 ± 13.21 SD, and Mean tumor size in OPS group was 1.76 cm ± 1.66 SD. Majority of patients(36 patients) had invasive ductal carcinoma followed by invasive lobular carcinoma 18.75 %, DCIS 4.1% .

Oncoplastic surgery	Number	Percentage
Reject offer for BCS	151	75.87
Proceed for BCS	48	24.12
Eligible for BCS	199	100

Table 1: Patients eligible for Breast conservative surgery

The majority (over 75%) patients declined BCS despite being eligible. This is significant, as BCS is often preferred due to cosmetic outcomes, equivalent survival to mastectomy, and shorter recovery times but there are Fear or misunderstanding about recurrence risk or survival. However ,48 patients proceed to BCS and got the treatment which not only preserve the breast but also maintain the self esteem.

Cultural or personal preferences favoring mastectomy for perceived completeness.

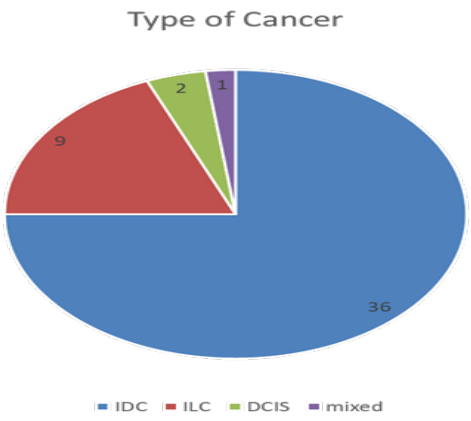


Figure 1: Pie chart showing Type of cancer

The majority of patients (75%) had Invasive Ductal Carcinoma (IDC), consistent with global epidemiological patterns. IDC is the most common form of breast cancer worldwide, and its predominance here confirms that oncoplastic techniques were primarily being applied to the most prevalent histological subtype. This supports the generalizability of oncoplastic surgery in routine practice and demonstrates its applicability to the bulk of early breast cancers encountered in clinical settings. ILC cases were more likely to undergo mastectomy. Including 18.75% ILC here underscores the expanded role of OBS even in challenging histologies. (4.16%) DCIS also dealt with Oncoplastic techniques particularly for larger lesion and cosmetically sensitive areas which reflects appropriate use of OBS in DCIS. There are mixed histology (2.08%) e.g., IDC with DCIS and metaplastic carcinoma with DCIS), where OBS allowed for both oncological clearance and aesthetic outcome.

Size of tumour	Number	Percentage
<1cm	15	7.53
1-2 cm	148	74.37
2-5 cm	30	15.07
Advance cancer	6	3.01
Total	199	100

Table 2: Size of tumour

Cancer of early-stage detection, often found through routine screenings like mammograms or ultrasounds. The relatively low percentage of early cancer due to Limited access to early detection tools, Patients presenting symptoms only when tumors are larger and Lack of awareness or screening programs. In this study tumors < 1 cm (7.53%) and tumors 1–2 cm (74.37%) nearly three-quarters of the cases. The high percentage is a positive indicator, showing that many tumors are being caught

before progressing to advanced stages. (15.07%) tumors are large size 2-5cm may indicate delayed diagnosis and higher risk of lymph node involvement or metastasis. Small percentage (only 6 cases) 3.01% was diagnosed as advanced cancer where the cancer was locally invaded and patients desired for volume replacement with autologous tissue[8].

Receptor status	Number	Percentage
ER +, PR +, HER2 -ve	34	73.9
ER +, PR +, HER2 +ve	3	6.52
ER -, PR -, HER 2 +ve	5	10.8
Triple Negative	4	8.69
Total	46	100

Table 3: Table shows the biomarkers of cancer

ER +, PR +, HER2 -ve (73.91%) is the most common hormone receptor-positive subtype and typically responds well to hormone (endocrine) therapy like tamoxifen or aromatase inhibitors. These tumors usually have a better prognosis and slower progression. ER +, PR +, HER2 +ve (6.52%) known as Luminal B HER2+ type and these patients may benefit from a combination of hormone therapy and anti-HER2 therapy (e.g., trastuzumab). Prognosis is generally good but slightly more aggressive than HER2-negative, hormone-positive tumors. ER -, PR -, HER2 +ve (10.87%) tends to be more aggressive, with a higher recurrence risk and no benefit from hormone therapy. 8.70% patients were triple negative which usually more aggressive, higher chance of early recurrence and mainly treated with chemotherapy. Triple negative cancer is more common in younger women and certain ethnic groups[9].

Procedure	No of Patient	Percentage
WLE and glandular reshape	27	56.25
Batwing technique	6	12.5
Tennis racket technique	2	4.16
Round block technique	4	8.33
Therapeutic Mammoplasty	7	14.58
Tram Flap	2	4.16
Total	48	100

Table 4: Different BCS and Oncoplastic procedures

The most commonly performed technique was Wide Local Excision (WLE) with glandular reshaping, accounting for 56.25% of cases. This reflects a preference for level I oncoplastic techniques, which are generally simpler, involve minimal tissue rearrangement, and are suitable for small tumors with favorable breast-to-tumor volume ratios. In conservative societies, this approach may also appeal to patients wary of extensive surgery or cosmetic alteration. The batwing and round block techniques (collectively 20.83%) were used for tumors near the nipple–areolar complex (NAC) which help preserve cosmetic integrity while maintaining oncologic safety. Batwing (12.5%) were preferably used for superior quadrant lesions and Round block (8.33%) suits periareolar tumors[10,11].Therapeutic mammoplasty (14.58%) was chosen in moderately large-breasted women, enabling larger resections while providing cosmetic benefit. The use of TRAM flap (4.16%) was limited and was only offered larger defects with locally invaded cancer where coverage of the defect and maintained breast volume was the goal. This reflects cautious use of volume replacement tech-

niques in a setting with limited reconstructive resources or patient acceptance.

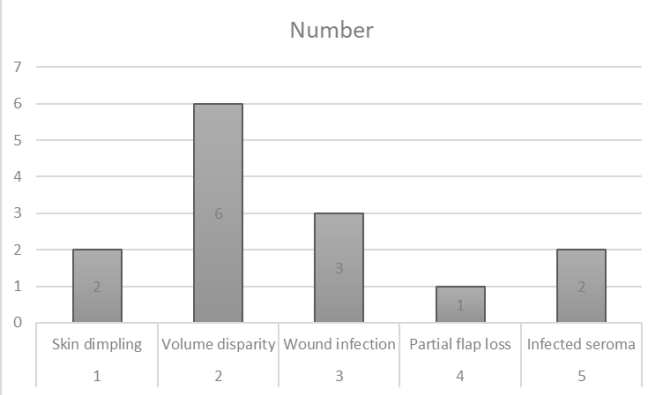


Figure 2: Histogram shows complications after surgery

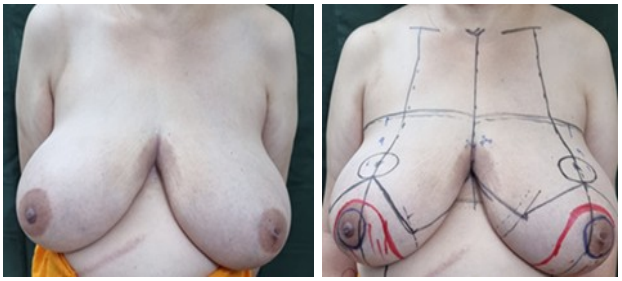
Most Common Complications are Volume disparity and reported 6 cases. This results from tissue shrinkage postoperatively and after radiotherapy. Wound infection occurred in 3 cases along with concern of delayed wound healing and affect overall outcomes. Skin dimpling and infected seroma were each seen in 2 patients. Skin dimpling may relate to tissue tethering or fibrosis. Infected seromas lead to abscesses managed with multiple aspirations and antibiotic treatment. Partial flap loss occurred in only 1 patient with TRAM flap which required subsequent Skin graft to cover the defect.

Case 1: 47 yrs Old lady with 1.5 cm hard mass in RUOQ , IDC with ER:7/8, PR :8/8, Her-2(-),No family history of breast carcinoma. MMG+USG (16mm hypoechoic lesion at upper outer quadrant of rt breast. Surgery: WLE and SLN

Case 2: 42 years old lady , 20mm ,IDC , G1,ER 8/ PR 8/HER2 – ve , Upper quadrant tumour in left breast, Mass is near to NAC , Surgery: Batwing procedure

Case 3: 51 years old lady with 2.6 cm cancer , IDC, ER 8/PR 5/HER2 -ve,in lower quadrant of left breast near NAC, Center of which is 2.1 cm away from nipple. Mammogram: 28x9 mm ,irregular shape lesion with speculated margin and absence of calcification at lower quadrant of left breast. Surgery: Roundblock technique

Case 4: Bilateral 2.3 and 1.8 cm, ILC, ER 8/PR 8/ HER2 Negative . Right breast shows multicentric outer quadrant cancer and left breast unifocal cancer at UIQ. Axilla- normal. Surgery: Bilateral Therapeutic Mammoplasty



Case 5: Right breast locally advanced cancer with neoadjuvent chemotherapy. Mastectomy by general surgeon and margin clearence referred for delayed autologus reconstruction as level 2 oncoplastic surgery. Surgery: TRAM flap

Discussion:

The conservative society of the world, where body image and femininity are very sensitive and culturally and under religional influence, the ability to offer BCS allows more women to retain their breast without compromising outcomes. Overt changes to body image such as mastectomy or visible asymmetry can cause psychological distress, social stigma or marital strain[8]. The high adoption of less invasive and reshaping-based oncoplastic techniques likely reflects both surgeon awareness and patient demand for breast preservation with minimal visual disruption. Complex reconstructive procedures (e.g.,TRAM, LD reconstruction, free flaps, DIEP) may not be routinely available in many middle-income countries due to cost, lack of microsurgical expertise, and limited operating room time[11,12]. The limited use of TRAM flap aligns with these systemic constraints. The choice of predominantly glandular reshaping and therapeutic mammoplasty indicates growing confidence among general breast surgeons in OBS. It also highlights the importance of OBS training integration in middle-income healthcare system. This early experience demonstrates that oncoplastic breast surgery is both feasible and culturally acceptable in a conservative, resource-constrained setting[13,14].

Despite the rate of BCS has been relatively low in Asian countries, While the United States of America reported 64.5% of women with early-stage breast cancer undergoing BCS, in India, 11.3% of the patients who were offered BCS and 31% of breast carcinoma patients in Singapore underwent BCS underwent the procedure. The low rates of Breast Conservation Surgery in low-and-middle-income countries (LMICs) are because the majority of breast carcinoma cases are being detected at advanced stages in comparison to high income countries .

Tumours of central quadrant and inferior quadrants result in poor cosmesis if addressed by conventional BCS . It can be seen from our study that tumours in all locations can be addressed by oncoplastic surgery. It can also be seen in our study that relatively more number cases at upper outer quadrant as well as lower quadrant tumours could undergo breast conservation by oncoplasty procedure than by conventional BCS technique . Superior pedicle

reduction mammaplasty, the inferior pedicle reduction mammaplasty, round block mastopexy, TRAM flap are some oncoplasty surgery options for these tumours[15]. Our comparative study showed the clear advantage of oncoplastic surgery compared to conventional BCS in terms of the volume of the resected breast specimen,

Patients who had undergone conventional BCS 24.12% is similar to middle income countries. Depending on the type of cancer most cancer are IDC and ILC. ILC constituted 18.75% of cases, a relatively higher proportion than commonly seen (typically around 10-15%). it may be difficult for DCIS is multifocal and need wide margin to ensure low rates of local recurrence. Conventional breast conservation surgery have bad cosmetic results seen after surgery in a central quadrant tumour, a upper inner quadrant tumour, lower inner quadrant tumour and lower outer quadrant tumour. Patients who underwent oncoplastic surgery 22.5 % had upper inner, 8.2 % lower inner cancer.75%had diagnosed with IDC and 18.75 % had lobular carcinoma. We had 3.2 % cases who had who progressed on Neo adjuvant chemotherapy but were able to conserve breast using volume replacement oncoplastic techniques[16,17]. Over 80% of cases are hormone receptor-positive (ER+/PR+), which is promising in terms of treatment responsiveness and survival. Targeted therapies are available for HER2+ cases, making them more manageable despite their aggressive behavior. The Triple Negative and HER2-enriched subtypes account for nearly 20% of the cohort. These subtypes are typically more aggressive, and have fewer treatment options. Receptor status must be integrated with tumor size, grade, and lymph node involvement for comprehensive clinical management. Regarding Only 7.53% of cancer are <1 cm, which ideally should be higher for optimal prognosis. Tumors ≥2 cm (including advanced cases) make up about 18%, indicating there is room for improvement in early detection and public health outreach[17].

Commonly performed technique was Wide Local Excision (WLE) with glandular reshaping, accounting for 56.25% of cases. The batwing and round block techniques (collectively 20.83%) were used for tumors near the nipple–areolar complex (NAC) The use of TRAM flap (4.16%) was limited .Therefore, as reported by Koppikar and associates in their paper 'Extreme oncoplastic surgery for multifocal/multi-centric and locally advanced breast cancer' demonstrate that OPS gives a clear advantage for the surgeon to resect larger volume of specimen in patients with DCIS and lobular carcinoma, multifocal and locally advanced disease that often lacks defined margins .The overall number of complications is relatively low, suggesting generally favorable surgical outcomes[18]. Volume Disparity (6 patients, 12.5%) was the most common complication, affecting 6 patients. Volume disparity should be a focus for quality improvement in reconstructive planning. Close postoperative monitoring and wound care protocols may further reduce infection-related issues. To prevent complication rates its important to understand patient expectations and proper counselling . It reflects asymmetry between breasts post-surgery, possibly due to inadequate reshaping, post-radiation volume shrinkage, or under-correctio. Wound Infection (3 patients, 6.25%) represents a common surgical complication and influenced by patient comorbidities (e.g., diabetes, smoking), surgical duration, or lack of sterile conditions in resource-limited setups. Managed conservatively in most cases, but significant in prolonging recovery and delaying adjuvant therapy. Infected Seroma (2

patients, 4.16%) needed better drain management or prolonged drainage in high-risk patients. That can be minimized by improved intraoperative hemostasis and post-op protocol. Skin Dimpling (1 patient, 2.08%) is usually cosmetic and due to excessive tissue removal or traction at suture sites19,20. Though it is minor but could impact patient-perceived outcomes, especially in oncoplastic cases where aesthetics is a key goal. Partial Flap Loss (1 patient, 2.08%) is Relatively rare and potentially serious and most likely occurred in volume replacement cases (e.g., TRAM flap, LD flap and DIEP flap).It is very importance of careful flap planning, vascular assessment, and patient selection.

In this study, the aim is not only to explore and present the benefits of BCS and OPBS in the treatment of breast cancer but also to highlight the importance of using these techniques in the Bangladesh context. In middle income countries like Bangladesh, there is a need for enhancing the quality of care for breast cancer among women. OPBS techniques can provide a considerable advancement in the quality care among womens, thereby enhancing both the health and the psychological wellbeing of breast cancer survivors[19,20].

The study has limitations of being a retrospective review from a single center. Technical expertise unique to individual surgeon's skill level was also a confounding factor. Data on oncoplastic surgery from developing world is sparse, its utility and challenges in low resource countries needs to be assessed through prospective trials[21,22].

Conclusion :

BCS can be a good option for middle income country and Oncoplastic techniques can bring favorable change in terms of cost effectiveness and decreased work load by reducing the numbers of reoperations in already overburdened healthcare system. This study presents early experiences from a tertiary center in a middle-income country, evaluating the outcomes, patients participation and acceptance of oncoplastic surgery in early breast carcinoma. Preservation of body image with oncological safety is the ultimate goal . Trained health professional, infrastructure, screening facilities, access to radiotherapy and multidisciplinary approach is mandatory to ensure adequate treatment. However larger prospective studies need to be conducted to prove its benefit in developing world.

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