Research Article

Comparative Study Between Pedicled Latissimusdorsi Flap Reconstruction And Traditional Conservative Breast Surgery in Upper Outer Quadrant Breast Cancer

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How to cite this article: Ahmed AS, Mostafa HS, El Naggar ANMS, Ali AHMAHL, Ibrahim MF. Comparative Study Between Pedicled Latissimusdorsi Flap Reconstruction And Traditional Conservative Breast Surgery in Upper Outer Quadrant Breast Cancer.,International Journal of Contemporary Medicine, 2023;11(2):1-6.

Abstract

Background: Oncoplastic breast surgery (OPS)has developed as an extension of breast conserving surgery (BCS) in an effort to improve esthetic and functional outcome following surgery for breast cancer (BC). This study evaluatedthe benefits of reconstruction using the latissimusdorsi(LD) flap, as compared with local tissue displacement.

Methods: This was a comparative non-randomized control study on patients after excision of the malignant mass from the upper outer quadrant BC. The two groups were classified into Group A: reconstruction by local tissues displacement, and Group B: reconstruction by pedicledLD flap.The two techniques were compared regarding history, examination finding, intraoperative and post-operative complications.

Results:there was no significant difference between group A and B regarding their age, BMI, distance between tumor, NACandpostoperative complications. Tumor size was larger in group B,there was a significant longer operative time,increased blood loss and longer time to recoveryin group B than group A.

Conclusion: OPS with breast reconstruction using the pedicledLD flap accompanied with better intra and postoperative outcomes.

Keywords: Latissimus Dorsi Flap – Oncoplastic surgery – Tissue displacement – Breast cancer.

Introduction

Breast cancer (BC) is the most commonly diagnosed cancer worldwide; accounts for 1 in every 8 cancer diagnoses and 2.3 million new cases in both sexes combined and the most diagnosed cancer in women in 2020. Breast cancer is expected to kill 685,000 women in 2020, accounting for 16% of all cancer deaths in women [1].

Surgery remains the cornerstone of treatment for the vast majority of patients with early stage breast cancer. Long-term follow-up of landmark BCT trials has demonstrated the equality of results between mastectomy and breast BCT in terms of overall survival [2].

As compared to non-reconstructed mastectomy patients, those treated with BCT have better aesthetic results and quality of life. Nevertheless, BCS does not always provide positive results, with 25-30% of women enduring substantial deformity as a result of the procedure. The percentage breast volume excision is an important component in deciding aesthetic success following surgery and breast irradiation [3].

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Previously, there were two surgical choices for treating breast cancer: mastectomy and BCS. BCS removes only enough tissue to guarantee clean margins, preserving non-affected tissues. Despite this more cautious method, over 50% of patients still have breast abnormalities, with some flaws worse than those observed in complete mastectomies [4].

OPS techniques were created with the goal of; enhancing aesthetic outcomes as compared to traditional BCS, perhaps resulting in a higher quality of life and to minimise rates of positive margins with the necessity for re-excision or mastectomy. While being widely used across the world, the prospective benefits of OPS have not been proven [5].

The latissimusdorsi (LD) musculocutaneous flap has long been a popular alternative in volume replacement oncoplastic breast surgery. Regrettably, usage of the LD flap has been demonstrated to result in postoperative flap atrophy, morbidity, and poor functional results. Pedicled perforator flaps from the thoracodorsal or intercostal vessels have therefore become more prevalent [6].

The purpose of this study was to evaluate the postoperative complications of standard BCS vsoncoplastic breast surgery employing the pedicledLD Flap.

Patients and Methods

Study design and participants

The study comprised forty patients who were candidates for CBS in the form of removal of the malignant mass in the upper outer quad-rant breast cancer with a safety margin and ipsilateralLN dissection. Patients with invasive BC grade 1 or II in the upper outer quadrant of the breast and a monocentric peripheral le-sion were recommended for BCS.

Patients were divided into two groups based on the technique of reconstruction used:

- Group A: reconstruction by local tissue displacement in BCS, which will comprise 20 patients.
- Group B: will consist of 20 patients and will undergo pedicledLD flap repair.

Criteria of inclusion and exclusion

All patients must have BC in the upper outer quadrant with tissue biopsy and be classified as IDC grade I or II based on TNM grading. Sonomammography and MRI show monocentrictumors that are smaller than 5 cm in size. Age ranged from 20 to 60 years.

Our study excludes the following patients: the age of 20 or over the age of 60, Invasion of a tumour into the skin, BC in stages III, IV, and V a large tumour measuring more than 5 cm via sonomammography, Patients who refuse to consent, The tumor's multicentricity, contraindications to radiation, morbid obesity, and extremely big breast size.

History and Investigations

All patients were subjected though: history, detailed medical examination, sonomamography, MRI, metastatic work up and all routine labs.

Operative details

Preoperative preparation

- The tumorlocation in relation to the areolar edge
- Size of the breast,
- BMI

Operative preparations and details

The exact location and extent of the skin incision line, the location of the tumor, its closeness to the skin, and the distance between the tumor and the nipple-areola complex (NAC) were all marked using Curvilinear skin and flap marking.

In the instance of LD flaps, the procedure was performed supine, then lateral, and then supine again. To get access to the axillary area, the patient's arm on the surgery side was abducted. Antibiotics were given to patients one hour before surgery and maintained for two days afterward. Excision of the tumor with safety margins of at least 2mm by naked sight, and dissection of the ipsilateral axillary LNs. The procedure time and blood loss were both recorded.

Postoperative status

Postoperative status was evaluated by; Time of recovery to normal activity and post-operative complications

Ethical consideration

The ethical and scientific committee of Beni-Suef University's faculty of medicine accepted the study. The approach used for OPS in BCS is determined by how well we informed the patients about the operations.

Statistical analysis

Data analysis was carried out using SPSS v. 25. The mean and standard deviation were used to describe quantitative variables. Qualitative variables were described using numbers (No.) and percentages.The significance of the results was determined using P-values, which were classified as: o Non-significant when P-value > 0.05, Significant when P-value 0.05.

Results and Discussion

OPS, which combines tumor removal with a defined safety margin followed by breast reconstruction, has evolved. These methods comprise volume displacement or volume replacement approaches, with an emphasis on quick repair for a better psychological result. [7].

BCS has quickly acquired favour as a conventional therapy for early stage breast cancers [8].

LD muscle is a very adaptable and dependable flap that is commonly utilised in breast reconstruction and volume replacement following broad excision.[9]

At Beni-Suef University Hospital, researchers compared OPS using the pedicledLD flap to typical CBS in upper outer quadrant BC. Patients treated with local tissue displacement had a mean age of 41.50 ± 12.576 years and a mean BMI of 28.11 ± 3.011, whereas patients treated with LD flap had a mean age of 41.55 ± 11.199 years and an average BMI of 27.72± 3.021. There was no statistically significant difference in age or BMI between the two groups.

The study by Abidi et al.,[10] and Schaverien et al.,[11] were on similar population.

But Kosasih*et al.*,[12]reported higher age than our population.

As regards to the postoperative complications, there was no significant differences between both groups in early complications, however higher rates of postoperative lymphedema (15% Vs 5%), wound seroma (25% Vs 10%) and wound infection (30% Vs 5%) were observed in patients with local tissue displacement than those in LD flap group with no cases complained of wound hematoma in LD flap. In agreement with our study; Saini et al., [13] in their study using LD flap showed lower postoperative complications as no seromabut necrosis of flap margins occurred in one patient.

Carter et al., [14] found that the risk of seroma was 13.4%, delayed wound healing (1.4%) and wound infection (4.1%). Despite the slight increase in wound-related complications, the majority of such cases were mild with few requiring re-operative intervention or delay of adjuvant therapies.

Wattoo et al., [15] demonstrated that the most common complication was seroma (58%),then wound infections (13%)only (3.4%) respiratory tract infection.

Salibian et al., [16] mentioned that short-term complications in OPS are commonly due to delays in wound healing which have been reported in around 5%–15% of patients. Other common complications include fat necrosis (4%–11%)and infection (0%–5%). Seroma and major ischemic skin envelope complications are relatively rare. In volume replacement procedures, flap necrosis complications in pedicled techniques have been reported in 0%–10% of cases.

The mean tumor size was significantly larger among patients managed with LD flap (3.6 ± 0.52 cm) compared to those managed with local tissue displacement (2.4 ± 0.56 cm). The distance between the tumor and the NAC didn't differ significantly

between both groups. For patients in local tissue displacement group the distance was 4.45 ± 0.605 cm and in LD flap group the mean distance was 4.20 ± 0.696 cm.

Similar results were reported by Abidi*et al.*,[10] about OPS as an alternative to conventional BCS in low-Middle income countries. They revealed a significant larger tumor size in patients with OPS group. The Mean tumor size in OPS group was 2.26 cm ± SD 1.66 and in BCS group was 1.94 cm ± SD 1.28.

Afsharfard et al., [17] also agreed with our study and reported that in patients undergoing OPS, the dimensions of the smallest removed tumor were 1.2 × 1 × 1 cm, and the largest tumor was 10.5 × 6.5 × 3.5 cm. The average size of the removed tumors was 3.13 × 2.16 × 1.51 cm (±1.89 × 1.16 × 0.5).

Tokui et al., [18]reported that the patients in the BCS with LDMF group were significantly younger and had larger, more aggressive tumors than those in the BCS alone group.

The results of our study could be explained aslocal tissue displacement is effective in reconstruction of defects that result from removal of less than 20% of the native breast tissue in women with small to moderate breast size as volume displacement techniques make use of the remnant breast tissue after segmental resection to restore aesthetic breast forms **[19].**

The mean operative time was significantly longer among patients managed with LD flap (86.75 ± 13.206) min while in patients managed with local tissue displacement it was (50.75 ± 5.200) min. The operative blood loss was significantly increased in patients managed with LD flap compared to those managed with local tissue displacement (570.00 ± 136.594 Vs 276.25 ± 74.549) ml respectively. Postoperative hospital stay was significantly longer in patients with LD flap Vs local tissue displacement (4.50 ± 1.051 Vs 1.60 ± 1.353 days) respectively. After discharge patients in LD flap group returned to normal activity in average (14.85 ± 3.200) days while patients managed with local tissue displacement their mean recovery time was (11.45 ± 2.874) days. The average postoperative VAS score over 48 hours was significantly higher in patients with LD flap group 6.50 ± 1.606 compared to 4.55 ± 1.276 in patients with local tissue displacement group.

Similarly, Wattoo et al., [15] reported in their study about the long-term outcomes of LD flap that the length of stay in hospitals ranged from 1 to 26 days. Of these, 160 (77%) stayed 0–5 days and 44 (21%) stayed 6–10 days, (30 with no documented reason).

Afsharfard et al., [17] also reported in their study that the duration of hospitalization was 1 day in 96 patients and 2 days in 2 patients and 2 patients were hospitalized for 3 days.

The operative time was longer in patients with LD flap than local tissue displacement due to the time needed for harvesting the flap added to the time of the operation and this technique is also associated with more blood loss. Like the study of Feng et al., [20] who reported that the mean operative time was 96.5±25.3 min. longer duration was reported by the study of Ahmed et al., [21]about LD flap enhancement as an immediate breast reconstruction technique for skin-preserving mastectomy who revealed that the mean operative time was 201.32±29.99 min.

Abdelrahman et al., [7] revealed in their study about OPS comparing BCS to volume replacement surgery with LD flap that patients returned to normal activity following a postoperative hospital stay 7.0 ± 1.22 days and 6.71 ± 0.96 days for BCS.

Conclusion

OPS with breast reconstruction using the pedicled LD flap provides usually accompanied with less operative time, blood loss, return to normal activity time and post-operative complications.

Conflict of interest: None

Source of funding: Self

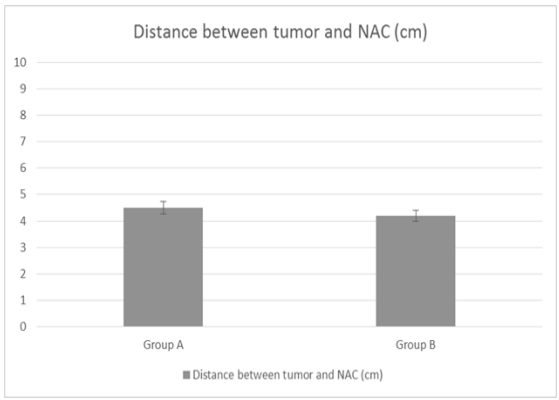

Figure (1):Comparison between both groups regarding the Distance between tumor and NAC (cm).

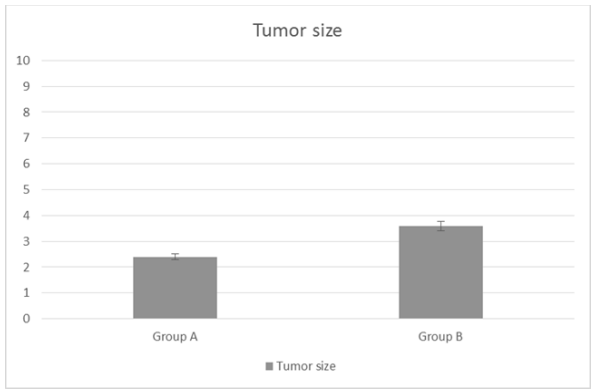

Figure (2): Comparison between both groups regarding the mean tumor size.C

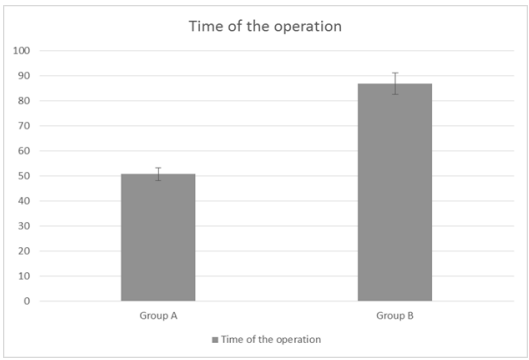

Figure (3): Comparison between both groups regarding their Time of operation.

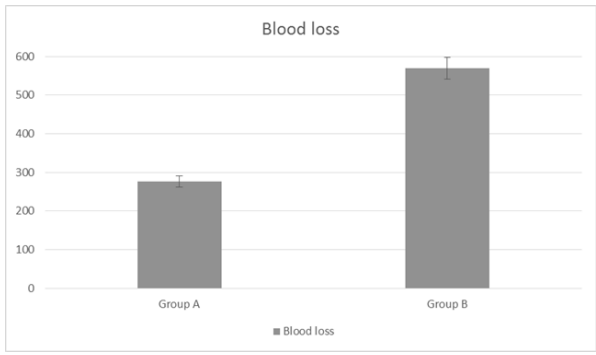

Figure (4):Comparison between both groups regarding blood loss

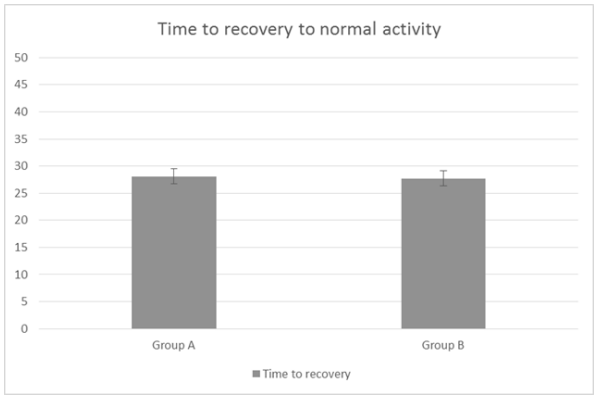

Figure (5): Comparison between both groups regarding their Time of recovery to normal activity.

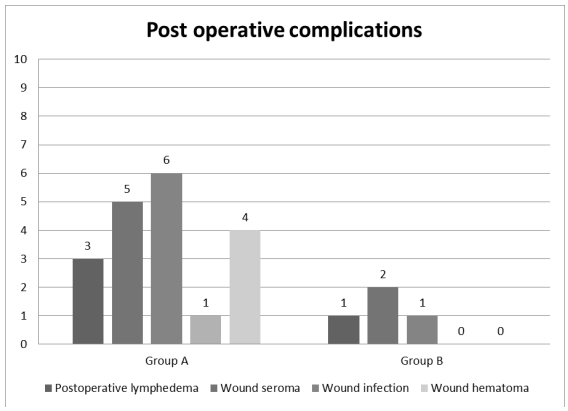

Figure (6): Comparison between both groups regarding their Post-operative complications.

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