CASE SERIES

Oncoplastic volume displacement surgical techniques for early primary breast cancer: A case series

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Abstract

Oncoplastic breast surgery (OPS) is a new strategy for expanding breast-conserving surgical options, lowering mastectomies rates, and preventing deformities. OPS is based on the use of plastic surgical reconstruction after breast cancer removal. The study aims to assess volume displacement oncoplastic procedures for early primary breast cancer in terms of recurrence and cosmoses. A case series study was done on 20 patients with early breast cancer who underwent oncoplastic volume displacement techniques in the period from March 2019 to March 2021 in Kafrelsheikh University Hospital, Egypt. OPS techniques included were Racquet, Benelli, Batwing and Grisotti technique. The study concluded that OPS are oncologically safe (100%) with no recurrence and a better aesthetic outcome (90%).

Keywords: Mastectomy, Breast Cancer, Plastic, Oncoplastic.

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Introduction

Breast cancer is the most frequent type of malignancy in females around the world. In Egypt, it constitutes 38.8% of female cancers and represents about 19% of cancer deaths.[1] The quality-of-life following breast cancer treatment, including radiotherapy and chemotherapy, is seen as a critical problem.[2] The traditional breast-conserving surgeries (BCS) were considered the reasonable solution for small tumours. Incorporating oncoplastic techniques (OPS) can achieve better cosmoses than traditional BCS via breast reconstruction procedures or to integrate oncological and plastic bases.[3] The most recent goal of OPS is to remove the neoplasm locally while retaining the breast's aesthetic appearance with no statistically significant differences in patient survival between mastectomy and OPS.[4] OPS is based on the application of plastic surgery techniques for immediate reconstruction following the removal of breast cancer.[5]

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Oncoplastic surgical defects can be repaired by either volume replacement or volume displacement.[6] The method of OPS used is dictated by both the volume of the breast and the size of the surgical cavity for infilling.[7] The breast size-tumour size ratio determined the choice of volume displacement or volume replacement oncoplastic techniques.[8] The study's goal is to evaluate the efficacy of volume displacement oncoplastic surgery procedures for early-stage primary breast cancer in terms of oncological outcome (recurrence rate) and cosmetic outcome.

Case Series

A study was conducted between March 2019 and March 2021 on 20 female patients diagnosed with early breast cancer (Stage I, II) and with a small tumour-to-breast ratio who were recruited to the surgical oncology unit at Kafrelsheikh University Hospital (KSU). These patients were subjected to one of the oncoplastic volume displacement techniques (Racquet or Benelli or Grisotti or Batwing) in the period. Patients for whom excision with free safety margins was uncertain, or locally advanced breast cancer (stage III), metastatic patients, inflammatory breast cancer patients, multicentric lesions, or large tumour to breast volume ratio, recurrent lesion, or infiltrated safety margins after partial breast resection, or male patients with breast cancer, or patients refusing breast reconstruction were excluded from the research. All participants signed an informed consent after the objectives of the study had been explained. A detailed history was enquired and routine laboratory and radiographic investigations performed, Pathological confirmation and metastatic workup was done. Marking of the mass was executed before starting the neoadjuvant therapy. Metallic clips were applied if neoadjuvant therapy was indicated. All oncoplastic volume displacement techniques were performed by a single specialist breast team who had more than 5 years of experience in OPS. In all surgical techniques, the tumour site, tumour size, the total number of axillary lymph nodes removed, multiplicity if present, any intraoperative complication, and the site of the mass excised were accurately recorded.

Figure-1 shows a mammogram with a Left Lower outer quadrant mass marked preoperatively with metallic clips before ending the neoadjuvant chemotherapy.

Lateral (racquet) mammoplasty as described by Ho Yong Park in 2012,[9] is displayed in Fig 2, whereas Round block (Benelli) technique[10] as first described by Benelli in 1990 to confine the scar in the areola is seen in Fig 3.

Grisotti technique, developed by Grisotti in 1994[11] by using a dermoglandular rotational flap based in the lower part of the breast and utilizing it to fill the central defect by rotating it upward is shown in Fig 4.

Finally, the Batwing technique or Batwing mastopexy or mammoplasty technique was first used by Würinger in 1999[12] for breast reduction and elevation of ptotic breasts associated with gigantomastia can be seen in Fig 5.

Postoperative data were gathered, including the length of hospital stay, postoperative day of drain removal, postoperative histopathology and associated complications including wound infection, seroma formation, lymphoedema, and postoperative bleeding. Postoperative follow-up visits were once weekly at the outpatient clinic (OPC) for the first month following surgery and once monthly for 6 months and finally once annually. Patients were assessed esthetically during each clinical evaluation using the Breast Impact of Treatment Scale (BITS).[13] The total BITS score varies from 0 and 75. This score represents the severity of body image distress (BID): Mild (0-23), moderate (24-43), and severe (44+).

The study was carried out on 20 female patients between 31 to 70 years of age (mean age: 50.5±5.20 years) presenting with malignant mass size 1-5cm (mean: 3±1.2cm), 8 (40%) cases on the Right side and 12(60%) on the Left side, 12 (60%) cases in UOQ, 6 (30%) in LOQ, 1(5%) in LIQ and 1(5%) case was central (5%). Positive LN were found in 16 (80%) cases while Negative LN in 4 (20%) cases. Oncoplastic techniques used were, Lateral (Racquet) method in 8 (40%) cases, Round block (Benelli) technique 8 (40%) cases and Batwing technique and Grisotti technique in 2(10%) cases each. Postoperative pathology revealed infiltrating duct carcinoma in 17(85%) cases, invasive lobular carcinoma in 1(5%) and in-situ component was present in 2 (10%) cases. Estrogen receptors (ER) were positive in 18(90%), progesterone receptors (PR) positive in 16(80%) cases, while human epidermal receptor-2 (HER2) was positive in 12 (60%) cases. As regards staging of the tumour, 8 (40%) patients were stage I, while 12(60%) were stage II. No local recurrences were reported in the study patients within 2 years of median follow-up. This may be due to early staging of the tumour included in the study, removal of the tumour with negative safety margins, and

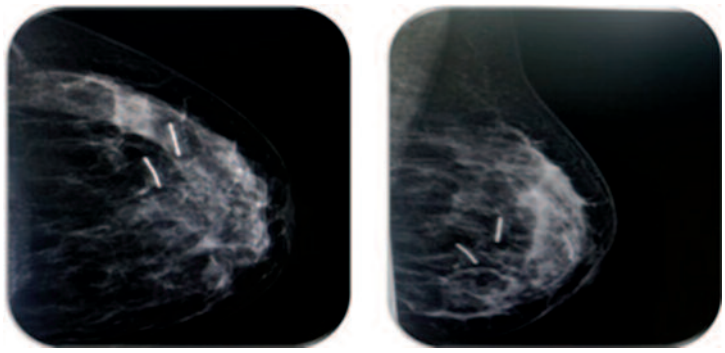

Figure 1: Mammography shows Lt Lower outer quadrant mass was marked preoperatively with metallic clips before ending the neoadjuvant chemotherapy

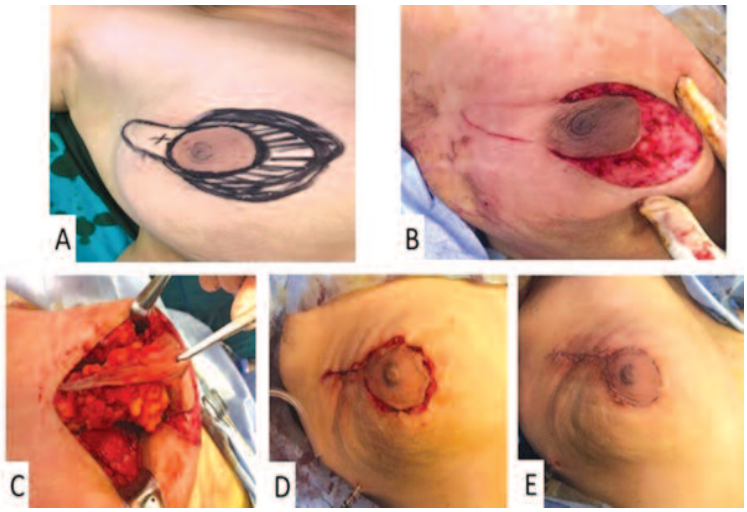

Figure 2: Lateral (racquet) mammoplasty; A: Outer Quadrant mass with marking to the incisions, B: De-epithelithelization of the inverting skin, C: Excision of the tumour with good safety margins, D: Closure of the defect, E: After 1 week.

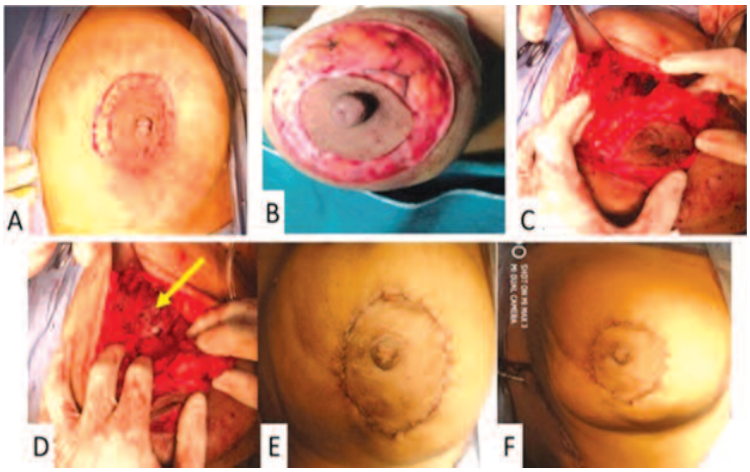

Figure 3: Round block (Benelli) technique; A: Central mass with marking to the incisions, B: De-epithelithelization of the inverting skin, C: Tumor excision with sufficient safety margins, D: Marking the bed of the tumour with metallic staples, E: Closure of the defect, F: Lateral Axillary incision was made for ALND.

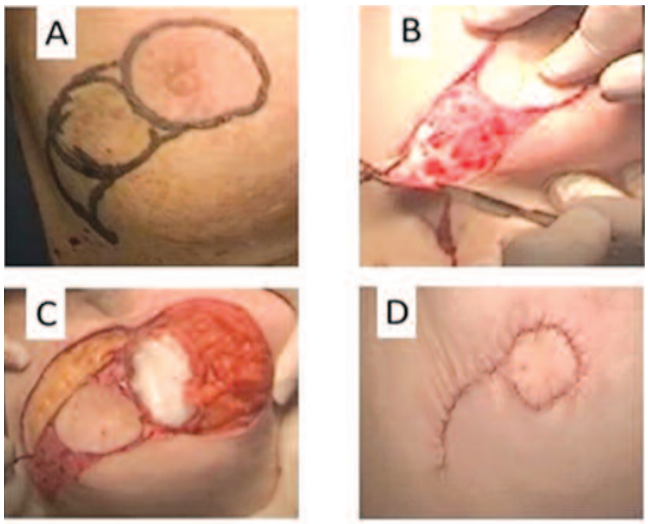

Figure 4: Grisotti technique; A: Rotational comma shaped dermoglandular flap done for central lesions with marking to the incisions, B: De-epithelithelization of the inverting skin, C: Excision of the tumour with safety margins, D: Closure of the defect with areola reconstruction by a new skin island.

the use of a frozen section in most cases. The study found no relationship between the type of oncoplastic approach used and local recurrence.

Discussion

Breast cancer is the leading malignancy in females. Early detection and prompt therapy is the key to a successful outcome. With advancements in surgery and oncology, The National Surgical Adjuvant Breast and Bowel Project (NSABP-protocol) reported a local recurrence rate of 14%, which do not include tumours greater than 4 cm in size.[14] The Milan I trial estimated the local recurrence rate to be 8.8% after a follow-up period of 20 years with exclusion of tumours larger than 2 cm, whereas the local recurrence rate was estimated at 9.4% after a five-year follow-up period according to the Curie Institute.[15] The local recurrence rate in breast-conserving surgery without breast reconstruction was 2%, according to Ueda et al.[16] In our study, majority of females,18 (90%), were satisfied with their surgical treatment and the cosmetic effect. Whereas, 2(10%) were dissatisfied due to the effect of radiotherapy, nipple insensitivity after surgery and body image difference postoperatively. These patients were more advanced in age than the others. Younger patients usually accommodate more to poor cosmetic outcomes than the older. For this reason, patients should receive preoperative counselling regarding the cosmetic differences between OPS and standard breast-conserving and mastectomy, and should also be made aware of how radiation may affect the aesthetic look of the breast following OPS. Meticulous preoperative marking, patient education, and engagement in site selection markedly improve the aesthetic outcome.[17]

Conclusion

Oncoplastic techniques for breast cancer are oncologically safe with no recurrence in the operated cases and provide a better aesthetic outcome.

Limitation: Because of the COVID-19 era and study costs, the study had a small sample size and relatively short follow-up period. However, a multicentre study would augment the power of the study.

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