“Diamond” mammoplasty as a part of conservative management of breast cancer: Description of a new technique

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ABSTRACT

INTRODUCTION: Oncoplastic surgery is an integral part of current surgical treatment of breast cancer. Superior breast quadrant is a forgiving tumor location that often allows the conservation of the breast with simple mammoplasty manoeuvres. In this report, we describe a novel modification of the classic level I mammoplasty.

PRESENTATION OF CASE: A 49 years patient had an ill-defined carcinoma at the 12 o’clock position that necessitated a generous tumorectomy. A diamond shaped incision was done over the tumor area and the nipple-areola complex. Periareolar skin was de-epithelialized and the tumorectomy was completed down to the pectoral plane. The incision was closed in a star-like shape around the areola leading to natural appearance of the breast and a limited visible suture line.

DISCUSSION: We suggest that the described technique offered an advantage over the classic omega mastopexy or the round-block technique and provided a versatile technique for oncoplastic management and mastopexy.

CONCLUSION: The presented technique may be considered when performing level I mammoplasty.

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1. Introduction

Oncoplastic surgery (OPS) has become an established method for oncologically safe treatment of early invasive carcinoma of the breast.1,2 Level I OPS are direct extension of simple lumpectomy and are suitable for reconstruction of modest breast defects.3 On the other hand, level II OPS utilizes standard reduction mammoplasty techniques to reconstruct larger defects.3 Here we present an innovative modification of level I techniques.

2. Presentation of case

A 49 years old lady presented to the Mansoura University Cancer Center complaining of a painless lump in her right breast. Interrogation and general body examination were otherwise unremarkable. Examination of her right breast revealed an ill-defined mass of around 3.5 cm in greatest dimension occupying the 12 o’clock position midway between the areola and the upper margin of the protuberant breast. The mass was tethered to the overlying skin. Axillary lymph nodes were not palpable. The other breast showed no identifiable abnormalities. Both sides were ptosed and lax in texture. Her mammography showed an extensive area of B3 density but no discrete masses or calcifications. Ultrasonography revealed a single, ill-defined hypoechoic mass of 27 mm at the site of clinically palpable abnormality and showing posterior shadowing. Few ipsilateral axillary nodes showed mild enlargement with preserved shape and hila. Needle biopsy from the breast mass was diagnosed as lobular carcinoma. Chemistry lab results were within normal values. The patient was counselled regarding the available therapeutic options and she decided to have BCT without contralateral symmetrising procedures.

The patient was operated under general inhalational anaesthesia with endotracheal intubation. A parallelogram-like marking was drawn over the central breast to encompass the nipple-areola complex (NAC) and the skin overlying the tumor (Figs. 1a and 2a, b). The upper two limbs of the skin marking were around twice the length of the inferior limbs. The peri-areolar skin was de-epithelialized circumferentially. A triangular skin incision was then done to include the rest of the parallelogram-like skin marking (Fig. 1c). This triangular incision was extended into a definitive tumorectomy down to the pectoral plane (Figs. 1d and 2c). Intraoperative frozen section examination confirmed adequacy of the resection safety margin. The upper outer glandulo-cutaneous flap was elevated to have access to the axilla and sampling was done. Suction drain was inserted in the axilla. The superior angle of the skin incision was approximated to the areola at its uppermost edge with subdermal suture of 000 polyglaclin (Fig. 1e). This upper pole suture converted the triangular skin defect superior to the NAC into a transverse slit. The inferior two limbs of the original parallelogram incision were sutured to the areolar edge and to each other in the middle and to the corresponding

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The presented case had a superiorly located tumor (a). Skin marking were done in the form of a parallelogram including the skin overlying the tumor and the areola (b). Peri-areolar skin was de-epithelialized (c). Triangular lumpectomy resection down to the pectoral plane was done (d). The superior angle of the triangle was approximated to the areolar edge (e). Final closure (f).

Photograph of the presented case. Pre-operative view (a), operative planning (b), operative view (c) and immediate postoperative result (d).
superior limbs of the parallelogram on both sides (Fig. 1f). Skin closure was finalized with intradermal 0000 polyglactin sutures (Fig. 2d). The patient had a smooth postoperative course and the suction drain was removed on the fifth postoperative day. Microscopic examination of the Paraffin sections from the pathology specimen revealed grade II invasive ductal carcinoma with all-around free safety margins and reactive hyperplasia of all dissected axillary lymph nodes. Hormone receptors were positive and Her2/Neu negative. The patient had a 74% ejection fraction by echocardiographic examination and she was scheduled for four AC cycles (85 mg adriamycin and 850 mg cyclophosphamide) followed by postoperative radiotherapy to the breast. The patient was subjectively satisfied with the cosmetic results (Fig. 2d).

3. Discussion

Treatment of operable breast carcinoma is a multidisciplinary task that includes loco-regional control of the tumor and adjuvant systemic hormonal and/or cytotoxic therapy. Breast conservation therapy (BCT) yields comparable survival results with mastectomy for early breast cancer. Postoperative irradiation (PORT) of the conserved breast is an integral part of BCT to decrease the chance of breast recurrence. Correction of breast ptosis (mastopexy) maximizes the efficacy of PORT by preventing inhomogeneous dose delivery. Although mastectomy and breast reconstruction using autologous tissue or prosthetic material is a viable option, several strategies are utilized to allow conservation of breasts harbouring large sized tumors. One option is down-sizing the lesion with preoperative chemotherapy. Alternatively, the defect of an extensive tumorectomy can be filled with a latissimus dorsi “miniflap”. Oncoplastic techniques however are gaining more popularity and entail redistribution of the remaining breast tissue and are often accompanied with a contra-lateral symmetrization procedure. Superiorly located breast cancer has a favourable anatomy. Many of the tumors located in this position are amenable to level I OPS. Several level I OPS techniques have been described to manage tumorectomy defects in the superior location. Round-block technique was adapted from the original Benelli mastopexy. It starts with two concentric peri-areolar incisions. The inner incision encircles the NAC and outer one encircles the peri-areolar skin to be de-epithelialized. Skin flaps are elevated outer to this incision leaving the NAC supported on a posteriorly based pedicle. After resection of the tumor, the breast disc is mobilized to close the cavity. The skin edges are plicated leaving a scar limited to the areolar edge (Fig. 3a). Omega mastopexy involves resection of an ellipsoid of the breast including the tumor leading to good correction of the breast ptosis (Fig. 3b). A considerable batwing scar is often left behind. Omega operation is not ideal with lesions far from the NAC. Parallelogram mastopexy is a direct extension of simple lumpectomy (Fig. 3c). McMahon and colleagues described the Mercedes incision for the superiorly located tumors. It consists of a triangular skin resection with its base on the areolar margin and its apex pointing upwards towards the tumor orientation. The skin is closed by folding the two diagonal limbs of the triangle to the transverse base converting the triangle into a star-shaped slit. In the present case we combined several principles from the above-mentioned techniques to perform a generous lumpectomy and a sufficient mastopexy. We believed that inclusion of the NAC centralization prevented excessive displacement of the nipple and maintained a natural round contour of the inferior quadrant. We also speculate that scars limited to the immediate vicinity of the NAC may offer subjective advantage over a transverse scar spanning the breast diameter as in the classic omega technique. The technique is versatile and allows wide variation of the extent and orientation of the incisions.

4. Conclusion

Diamond mammoplasty is one option that may be considered when treating superiorly located tumors.
Conflict of interest
None.

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Ethical approval
The patient gave consent for publication. No personal data are disclosed.

Authors’ contributions
O. Hussein designed the operation, performed surgery, reviewed the literature and wrote the manuscript. T. El-Khodary planned the oncological management.

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