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Breast

Therapeutic Mammoplasty in the Management of Cancers Involving Different Zones of the Breast

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INTRODUCTION

In patients with high tumor to breast volume ratio with anticipated volume of breast excision exceeding 20%, therapeutic mammoplasty (TM) provides an opportunity to preserve the natural breast shape.[1,2] Certain tumor sites, such as those below the nipple and those occupying the medial aspect of the breast, are particularly vulnerable to poor cosmetic outcomes with excision of over 10%–20% of the breast volume,[3] and TM may be particularly useful in these vulnerable areas. Previous studies have proposed TM to different zones of the breast using complex extended pedicles,[3] and incisions that do not conform to the classical breast reduction incisions especially for cancers outside the breast reduction site.[4] This study, with the help of video presentation, demonstrates different TM techniques (vertical and Wise pattern) using three different dermoglandular pedicles and their combinations in the management of breast cancers with high tumor to breast volume ratios in different areas of the breast.

METHODS

This article presents prospectively collected data of consecutive patients who underwent TMs performed by a single surgeon, from September 2016 to December 2023. Intraoperatively, the breast was divided into nine zones: three above the level of nipple–areola complex, three at the level, and three below to identify the predominant site of the tumor during surgery as shown in Video 1. [**See Video 1 (online),** which displays different zones of the breast and operative procedure for zones 1a and 1c.]

Vertical TM is usually the option in small-to medium-sized breasts and is also suitable for large breasts where the breast shape is relatively maintained. A Wise pattern is better suited when the shape of the breast needs to be altered with the use of a horizontal incision to help with aesthetics, especially in large breasts. Wise-pattern mammoplasty is also indicated when displacement of the dermoglandular pedicle is not sufficient to fill the dead space of the wide local excision cavity and may need additional tug, produced by pulling down the horizontal limb of the inverted T compressing the breast tissue around the wide local excision cavity. It is also the choice of incision in locally advanced tumors involving the normal breast reduction excision on either side of the inferior pedicle in Wise-pattern reduction, as shown in Video 2. [**See Video 2 (online),** which displays the operative procedure for zones 2a and 3c.] Regarding choice of pedicles, superomedial pedicle and lateral pedicles were used to carry the nipple, and inferior pedicle to fill the defect. Videos 1–4 show consecutive patients who had TM for cancers in different zones of the breast, rearranged for ease of presentation. [**See Video 3 (online)**, which displays the operative procedure for zones 1b and 3b.] [**See Video 4 (online)**, which displays the operative procedure for zone 2b.]

RESULTS

A total of 103 TMs were performed during the 7-year period (71 vertical and 32 Wise pattern). Median age was 52 years (36–86) and median MBI was 31 (20–68). There were 10 smokers. Bra cup size was D or less in 71 patients. Median size of the tumor was 30 mm (0–76) and median weight of the specimen was 109 g (18–840). Nine patients had ductal carcinoma in situ alone, 14 had triple negative disease, 11 had Her 2 +ve disease, and 24 received neoadjuvant chemotherapy.

Ten patients had margin reexcision (three mastectomies). Early complications included four wound infections and one T-junction delayed healing. Delayed complications included three patients with contour changes and one nipple deviation. After a median follow-up of 25 months (1–86), there were one local recurrence

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and six distant metastases. Breast cancer–specific survival was 96%.

DISCUSSION

In the article on TM, McCulley et al[5] described their experience with 50 patients, and divided the breast into nine different zones, based on the position of the tumor in relation to the preoperative marking at mammoplasty. Operative planning was based on the site of cancer in relation to preoperative marking, with scenario A being breast cancers that lie within the breast reduction site or scenario B being breast cancers that lie outside the breast reduction marking. They used seven different pedicles, including the modified extended pedicles. The present article also describes nine zones of the breast; however, they are not based on preoperative marking when upright. Rather, they are based on the intraoperative position of the cancer, which often alters when the patient is supine on table compared with being upright when marked. Rather than using extended pedicles which may have poor vascularity especially at their distal aspect, the present article shows the use of well-vascularized normal pedicles used in breast reduction (superomedial or lateral pedicle to move the nipple to a higher level and inferior pedicle to fill the defect following resection of cancer). The choice of procedure (Wise or vertical pattern) was dependent on two factors: aesthetically acceptable shape of the breast before surgery and anticipated volume of dead space after mobilization of the inferior pedicle. In certain cases, preoperative planning for both Wise and vertical patterns was performed, and the final decision to proceed with a particular pattern was made on table.

Clough et al also described quadrant-per-quadrant mammoplasty techniques based on an en bloc resection of the tumor and overlying skin in the management of breast cancers.[4] For tumors outside the breast reduction site, incisions that do not conform to classical breast reduction incisions were proposed to avoid extensive subcutaneous undermining.

In the present study, the use of vertical and Wise-pattern mammoplasty necessitates the knowledge and technical ability to perform extensive dissection in the subcutaneous plane and mobilization of vascularized dermoglandular pedicles. However, this allows the surgeon to perform TM with the classical incisions used in breast reduction and mastopexy techniques, which may have an aesthetic advantage. Symmetrization was offered at least 6 months after cancer surgery following completion of radiation treatment due to heavy cancer workload coupled with a lack of trained personnel in theater to offer bilateral surgery. Immediate symmetrization could avoid a second operation, and patient-reported outcome studies have noted strong patient satisfaction in this group.[6]

CONCLUSIONS

Through vertical and Wise-pattern incisions, which are the two most common incisions used in breast reduction and mastopexy techniques, and with the use of three common pedicles used in breast reduction techniques (inferior, superomedial, and lateral), this article provides a guide to safely perform TM in tumors involving different zones of the breast.

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