

## Vertical Breast Reduction: Superomedial Pedicle

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### ABSTRACT

From May 2004 to March 2007, 34 consecutive patients with bilateral breast hypertrophy were operated in this study in Plastic and Reconstructive Surgical Department, Tanta University Hospital, using the superomedial pedicle technique. All cases requiring resection of 500gm or more of breast tissue reported relieve of clinical symptoms. The amount of breast reduction ranged between 280 and 1850gm per breast with average 700gm/breast. The extent of nipple transposition ranged between 12 and 23cm with average of 17cm. Nipple sensitivity to touch was preserved bilaterally in 28 patients and unilaterally in 6 patients which was temporary loss that were observed in the early postoperative period. Complete recovery of the nipple sensitivity occurred within 6 months postoperatively. No nipple necrosis was noted in this study. The superomedial pedicle technique has better preservation of the sensation to the NAC. We found that the superomedial pedicle technique is useful for all types of breast.

### INTRODUCTION

In 1957, Arie [1] first described the superior pedicle mammoplasty. This description was followed with refinements by Ivo Pitanguy [2]. Weiner [3] described the superiorly based dermal pedicle for reductions and mastopexy. Soon thereafter, Orlando and Guthrie [4] demonstrated the superomedial pedicle technique, which varied only in the more medial-directed superior pedicle. Seeking a safer pedicle to ensure nipple viability, Hugo and McClellan [5], as well as Hauben [6], later incorporated more parenchyma beneath the de-epithelized dermal pedicle. The use of the superior pedicle in the initial vertical techniques of Lassus [7,8,9] and Lejour [10-13] prevented wide acceptance of the vertical approach. The superior pedicle is difficult to inset; either the pedicle needs to be thinned to allow it to be folded into place or blood supply is at risk through kinking or compression. Thinning may allow better circulation by avoiding compression, but the ability to retain sensation or allow for breast feeding is reduced. The medial pedicle

vertical reduction mammoplasty is simple and reliable [14]. The procedure is fast and involves few adjustments. The pedicle is of full thickness and the skin is not undermined, but the resection is beveled. The desirable breast tissue superiorly is left in place, and the undesirable breast tissue inferiorly and laterally is removed. The durability of the breast shape appears to be due to the heavy inferior breast tissue and the lack of reliance on skin for shaping. Findlay [15], Schlenz et al. [16] and Van der Meulen [17] showed that the superomedial pedicle technique may better preserve sensation to the NAC than the superior pedicle technique.

### MATERIAL AND METHODS

34 consecutive patients with bilateral breast hypertrophy were included in this study. Preoperative physical examination should document the following: Shoulder bra strap grooving, breast intertrigo, previous breast surgery breast masses, current nipple sensation, sternal notch-to-nipple distance, nipple-to-IMF. Preoperative multiview photographs, complete blood picture and prothrombin time and activity are routinely used to establish preoperative adequacy of hematocrit and coagulation. Preoperative mammogram is mandatory for all patients, as well as duplex ultrasound to localized the perforators supplying the NAC. Submit all resected breast tissue for pathologic examination to exclude previously unrecognized breast cancer.

*Preoperative marking:* Make the preoperative markings on an erect patient as illustrated in Figs. (1,2,3). Marking the breast midline, draw the IMF and the vertical axis of the breast beneath the IMF. Displace the breast medially and laterally in relation to the vertical axis of the breast marked below the

IMF. This medial and lateral displacement determines the margins of skin resection. Special mention is made of a superior displacement while marking to provide a final conical breast shape. Connect the medial and lateral margins by a gently curving line 2-4cm above the IMF. Determine the new nipple location and make the curvilinear mosque dome periareolar marking 2cm above the future nipple location. The length of the dome shape periareolar marking varies depending on breast size but usually should not exceed 16cm. The upper border of the superomedial pedicle should obliquely divide the intended NAC inset position between its inferomedial one third and the superolateral two thirds. The lower border is an oblique line, drawn within the planned skin resection margins, that respects and reflects the oblique traverse of the parasternal perforators into the pedicle. The ideal width of the pedicle base measures 8-12cm according to the extent of reduction, half of the base lies in the NAC, and half lies in the medial vertical limb.

*Intraoperative details:* The superomedial pedicled mammoplasty begins by de-epithelization of the pedicle and circumscription of the NAC. The pedicle is developed by incision along markings straight down to but not through the loose areolar connective tissue plane directly above the superficial pectoralis major muscle fascia. The breast tissue to be excised is beveled outward, especially laterally and inferiorly. The flap is at least 1cm thick at the margins, and the beveling is performed as needed to resect the necessary breast tissue. Exposure of the pectoralis fascia is not necessary; retaining some of the tissue just superficial to the pectoralis may account for the retention of sensation with the medial pedicle (Figs. 4,5,6).

*Pedicle inseting:* After resection, the approximate 4-o'clock position of the NAC is affixed to the apex of the mosque-shaped keyhole inset site. A dermal back cut at the most inferior portion of the de-epithelialized pedicle may be required to achieve an adequate arc of rotation. This is particularly true in pedicles that are relatively short and wide. Fixation of the pedicle to the pectoral fascia by 2/0 vicryl sutures to give more projection of the breast tissue. The pedicle soft tissue bulk is transposed superomedially and secured in position by intra-parenchymal suturing to unify the medial and lateral pillars. The positional interrelation of the pillars can be manipulated by the surgeon to achieve the desired breast shape. The pillar positioning that is selected should reflect a tension-

free NAC inset the base of the areolar opening is closed with a 3-0 polydioxanone (PDS) suture. No undermining of the base of the pedicle is needed for this suture (Figs. 7,8,9).

*Shaping:* The medial and lateral pillars of breast tissue are then sutured together with 3-0 PDS. This shaping causes coning of the breast tissue, and more or less projection can be achieved as desired. If the pedicle is very large and/or long, as with a larger breast reduction (e.g., 1500g), suturing some of the pedicle to the chest wall may be indicated.

*Skin closure:* The skin is closed with interrupted deep dermal sutures with 3-0 PDS (Fig. 10). The skin is then closed with subcuticular 3-0 Monocryl, gathering the skin somewhat with closure. Minimal gathering is used superiorly, but some of the skin is gathered inferiorly. Although gathering the skin is believed to reduce the length of the vertical scar, this does not appear to make a significant difference, except at the lower end where the skin is quite redundant. Also, this skin is recognized to stretch with time because of the weight of the breast inferiorly (Fig. 11). Drains are left for 48h.

*Postoperative details:* A gauze bandage is lightly placed over the incisions and the skin is covered with elastoplast. A surgical brassiere is then used for comfort and to hold the breast in place. Patients are advised to use the surgical bra continuously for approximately 2 weeks and then to progress to a sports bra day and night for 2 months.

## RESULTS

34 patients, 68 breasts underwent bilateral vertical breast reduction using superomedial pedicle technique. The results were acceptable by the patients from both aesthetic and clinical points of view. All cases requiring resection of 500gm or more of breast tissue reported relieve of clinical symptoms. The amount of breast reduction ranged between 280 and 1850gm per breast with average 700gm/breast. The extent of nipple transposition ranged between 12 and 23cm with average of 17cm. Nipple sensitivity to touch was preserved bilaterally in 28 patients and unilaterally in 6 patients which was temporary loss that were observed in the early postoperative period. Complete recovery of the nipple sensitivity occurred within 6 months post operatively. No nipple necrosis was noted in this study.

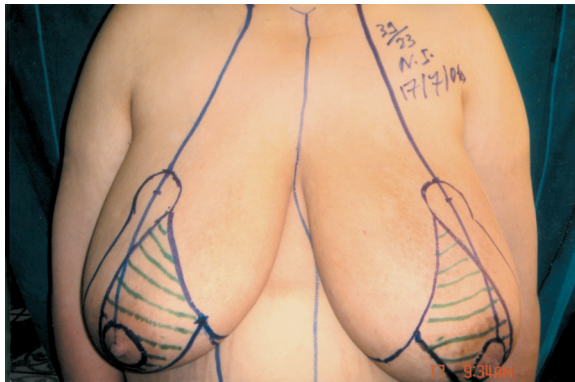


Fig. (1): Preoperative marking.



Fig. (2): Medial and lateral displacement of the breast to determine the extent of skin and glandular resection.



Fig. (3): Medial and lateral displacement of the breast to determine the extent of skin and glandular resection.



Fig. (4): De-epithelization of the pedicle and circumscription of the NAC.

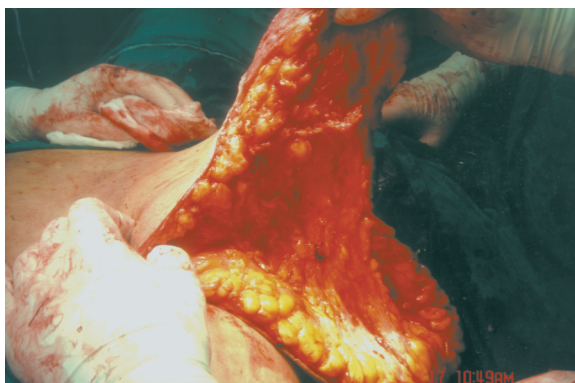


Fig. (5): The pedicle is developed by incision along markings straight down to but not through the loose areolar connective tissue plane directly above the superficial pectoralis major muscle fascia.



Fig. (6): The breast tissue to be excised is beveled outward, especially laterally and inferiorly. The flap is at least 1cm thick at the margins.

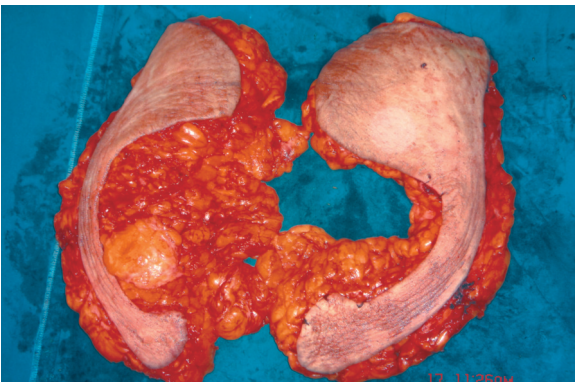


Fig. (7): C-shaped resected dermo-glandular part.

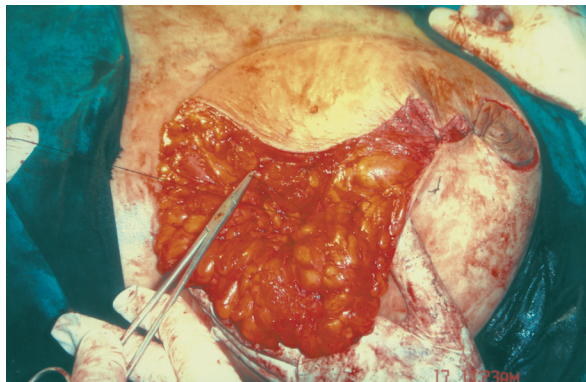


Fig. (8): Fixation of the pedicle to the pectoral fascia by 2/0 vicryl sutures to give more projection of the breast tissue.

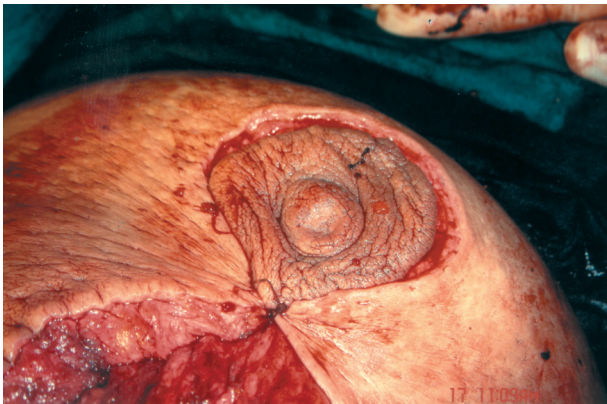


Fig. (9): After resection, the approximate 4-o'clock position of the NAC is affixed to the apex of the mosque-shaped keyhole inset site.



Fig. (10): Intraoperative appearance of the vertical limb.



Fig. (11): Two months post-operatively.



Fig. (12): Preoperative.



Fig. (13): Postoperative.



Fig. (14): Preoperative.



Fig. (15): Postoperative.

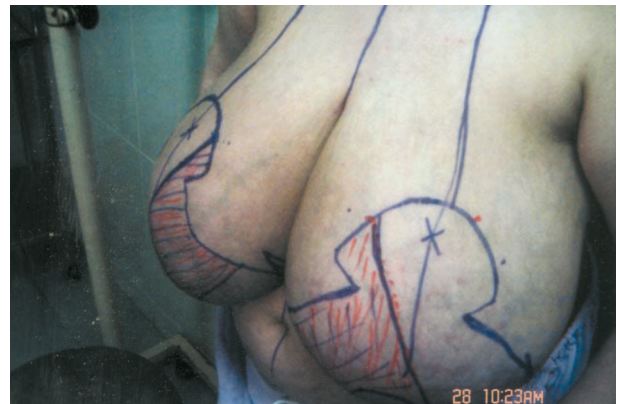


Fig. (16): Preoperative.



Fig. (17): Postoperative.



Fig. (18): Preoperative.



Fig. (19): Postoperative.



Fig. (20): Postoperative.

## DISCUSSION

Breast reduction has become well established with respect to safety and predictable aesthetic results. Recently limited scar techniques such as pure circumareolar scar method [21] and vertical scar mammoplasty [9,12] have become more popular. The major advantages of vertical mammoplasty are aesthetically acceptable breast shape and excellent contour projection [9,14]. As confirmed in our study it gives the breast a good seat upon the chest wall, scars are confined to the breast without inframammary involvement, as well as stability of breast shape depends on glandular suturing and not on skin tension. Van der Meulen [16] showed that the superomedial pedicle technique may better preserve sensation to the NAC than the superior pedicle technique. The author has found the superomedial pedicle technique useful for all breast types, not restricted to use on nonsmokers or patients with soft and mobile breasts. The superomedial pedicle technique can be safely used for resections of up to 2000g and cephalic NAC transpositions of 5-15cm with reliable preservation of viability and sensibility. Finger et al. [19] illustrated the safety of the superomedial pedicle tech-

nique in reduction of up to 4,100gm and with pedicle lengths of up to 30cm. No cases of nipple-areola necrosis were encountered in their series as the ratio between the width and length of the flap was respected in addition to careful monitoring of the thickness of the flap and degree of tension during closure. Ceydeli and Gamboa [25], believed that the dermafascial fixation suture a concept more than a technique. It incorporates the two strongest structures, the dermis and the fascia, to achieve more durable projection with short-scar vertical reduction mammoplasty. As regards nipple areola sensation, anatomical studies [22,23] have shown the fourth intercostals nerve as the main supply to the nipple-areola complex. The nerve pierces the serratus anterior muscle at the midaxillary line of the fourth intercostal space, then travels within the serratus fascia to the lateral border of the pectoralis muscle and then turns anteriorly at a right angle to enter the mammary gland. The nerve remains deep within the breast until halfway to the nipple-areola complex where it becomes superficial. However, Jaspars et al. [24] could not find this unusual course of the lateral cutaneous branches with S-shaped to the skin and areola. In addition they found a constant bilateral

innervation of the areola by the lateral and anterior branches of the sixth intercostals nerve, therefore, they favored a superomedial pedicle for reduction mammoplasty. Schlenz et al. [17] demonstrated that the lateral intercostal nerve runs across the breast just above the level of the pectoralis fascia until the mid portion of the breast, where it then runs superiorly toward the nipple. This assessment of anatomy explains why the medial pedicle technique maintains as good sensation as the lateral pedicle technique. Hauben [18] reported his experience and refinements with the supero-medial pedicle vertical breast reduction on 212 patients; in 1 patient total loss of the NAC occurred (the first time he used this technique, the pedicle length was 26cm, and the patient was a heavy smoker). In addition, he had another partial loss of the NAC. Decreased sensation of the NAC was present, but no incidence was quoted; nipple retraction was present in 2% of patients and hematoma in 2.26%. No transfusion was necessary. Finger et al. [19] reported only 2 partial losses of the NAC (<25%) and decreased sensation in 15% in 148 patients (291 breasts). Other complications were hypertrophic scars, nipple retraction, and dog-ears. Average blood loss was 200mL. Hugo and McClellan [20] reported on 34 patients (68 breasts) with an average of 760g resected and 12cm of nipple transposition. One patient (1.4%) had a partial loss of the NAC, and 2 (3%) had infections.

Lista and Ahmad [26] represented their experience in vertical scar reduction mammoplasty over 15-year including a review of 250 consecutive cases with transposition of the nipple-areola complex on a superior or medial dermoglandular pedicle. The average reduction per breast was 636g (range, 60 to 2020g). Complications were minimal (2.6%), with no nipples being lost, attesting to the safety of this technique. They concluded that vertical scar reduction mammoplasty can be applied to breast reductions of all sizes with good breast shape, shorter operation time and leaves less scarring and improved long-term projection than standard breast reductions. Kreithen et al. [27] supported the vertical reduction mammoplasty as the resultant breast shape and scar are superior to the Wise pattern breast reduction. As regard breast-feeding after vertical mammoplasty with superomedial pedicle, we found no significant difference between women who had vertical mammoplasty with superomedial pedicle and women who had no prior breast surgery, where as Cruz and Korchin [28] found no significant difference in the rate of breast-feeding success between women who had medial pedicle/vertical pattern reduction mammoplasty and women who had no prior breast surgery. Chen

et al. [29] used medial or a superomedial pedicle in 56 patients with no major complications were noted. The median follow-up period was 17 months. The average reduction was 554.5g per breast; however, the reduction was greater than 1000g per breast in eight patients. The authors found that: (1) Chest wall anchoring improves lateral contour and minimizes axillary fullness. (2) Aggressive debulking inferiorly avoids persistent inferior bulge. (3) Starting the subcuticular gathering suture 2cm below the nipple-areola complex followed by placement of a nipple-areola complex marker at the conclusion of the case prevents lateral deviation and corrects the nipple-areola complex teardrop deformity. Karp [30], used medial pedicle in vertical breast reduction in 120 cases. He first started performing the procedure only on smaller reductions (<600g each side) and now he performed the short scar reduction for most patients having <1000g removed from each side. He recommended the transition to short-scar breast reduction which is easy and reliable.

*Conclusion:* Superomedial pedicle technique has better preservation of the sensation to the NAC. We found that the superomedial pedicle technique is useful for all types of breast. It can be safely used for resections of up to 1850g and cephalic NAC transpositions of 12-23cm with reliable preservation of viability and sensibility.

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