Asplund and Davis\(^1\) were the first to describe the medial pedicle vertical reduction and Hall-Findlay\(^2\)–\(^5\) further popularized the technique. Although nipple-areola complex (NAC) survival has been reported as very reliable with this technique,\(^2\)–\(^6\) necrosis may still occur even in experienced hands.\(^7\) Especially in larger breasts, the pedicle is proportionately larger and therefore flap vascularity may be compromised due to constriction by the pillar closure in the relatively narrow areolar space.

In an attempt to improve the safety and aesthetic outcome, we introduce a technical addition to the medial-pedicle vertical scar breast reduction, wherein a straight incision is made into the upper pole parenchyma at the level of the breast meridian, called “the median incision of the upper pole.” This incision allows the medial pedicle to be inset without any tension or constriction.

**METHODS**

A total of 94 patients underwent vertical scar reduction mammoplasty with medial pedicle in the author’s clinic over a two-year period. All of the cases were performed at the University of Massachusetts Memorial Medical Center by the same surgeon (MA). All of the patients underwent vertical breast reduction with a similar surgical approach with a medial pedicle, irrespective of the breast size, shape, or measurements. The median incision of the upper pole was performed in all of the cases. Patient characteristics are shown in Table 1.

**Operative Technique**

Each patient was marked in the upright position prior to surgery, as previously described.\(^3\) The vertical mammoplasty...
procedure involved the following sequential steps: liposuction in the inframammary fold and lateral chest wall; medial pedicle dissection; breast reduction superiorly, laterally, and inferiorly; median incision of the upper pole; pillar suturing; inframammary fold contouring by direct excision; the finger test; and finally, closure of incisions.

The medial pedicle was dissected as a full-thickness flap down to the chest wall with cautery. The breast was reduced by glandular excision superiorly, laterally, and inferiorly, all as full-thickness excisions at the level of the markings. Although it was beveled (especially laterally, in order to avoid lateral fullness), the excision was perpendicularly continued down to the chest wall superiorly at the areolar opening, with emphasis on preserving upper pole fullness.

A median incision was made into the glandular tissue of the upper pole at the point of breast meridian, splitting it into two halves. This incision was generally straight in orientation, but could also be beveled either medially or laterally, depending on the way the pedicle would rotate into the upper pole. The median incision of the upper pole provided additional space into which the pedicle could be inset without tension. Such an incision was preferred to the alternative (beveled excision of tissue with upper pole skin undermining, which would create loss of upper pole fullness).

The length of the incision was adjusted depending on the needs of the patient. It was continued incrementally until the pedicle fit into the keyhole smoothly without any compression, generally measuring about 3 to 4 cm in small- to medium-sized breasts and up to 6 to 7 cm in large breasts. It was important to leave at least 2.5 cm of fat beneath upper pole skin to avoid contour irregularity (Figure 1).

It is conceivable that the medial pedicle could be suture-fixed during the inset in an effort to increase upper pole projection, as well. In patients with large, fatty breasts, fat necrosis may also be possible with crowded suturing. Therefore, no attempt was made to suture the medial pedicle in the upper pole in any of the patients in this study.

Following the pillar adjustment and suturing, the inframammary fold was defatted and the vertical incision was closed in the usual manner over a suction drain.
RESULTS

The average age of the patients in this series was 39.7 years (range, 19-68 years), with an average body mass index (BMI) of 31.3 (range, 23.0-40.4). The average amount of breast tissue removed was 780 g per side (range, 350-2505 g; Table 1). A total of 34 cases (36.2%) required reductions of more than 750 g per side and the breast tissue removed per side ranged from 350 to 750 g in the remaining 60 cases (63.8%; Table 2).

Table 2. Amount of Breast Reduction per Side

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<tr>
<th>Number of Cases (%)</th>
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<tr>
<td>Less than 750 g</td>
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<tr>
<td>More than 750 g</td>
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<tr>
<td>Total</td>
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This series included patients with a diverse age, weight, breast size, and shape distribution, ranging from young healthy women with good skin elasticity, upper pole fullness.

Figure 2. (A, C) A 22-year-old patient with 36 DD breast size presented for mammaplasty. (B, D) One year after bilateral vertical breast reduction with the author’s technique. A total of 319 g was removed from the right side and 501 g from the left side.
and well-defined lateral breast contour, to older patients with large breasts with unfavorable features such as loss of skin elasticity, deficient upper pole fullness, and prominent side rolls. The majority of the cases (96%) were performed as day surgery. The patients were followed up from six months to two years (average, one year; Figures 2 and 3).

Vascularity problems in the NAC were not observed intraoperatively or postoperatively in any of the cases. This series showed that the medial pedicle is safe and very reliable when it is harvested as a full-thickness flap, as described earlier, and rotated into a defect created by the median incision, thus avoiding any constriction.

Complications included one breast with hematoma that did not require surgery, one breast with cellulitis that was treated with oral antibiotics, five patients with minor wounds in the inframammary fold region that healed without surgery, and four breasts with fat necrosis that did not require surgery.

Figure 3. (A, C) A 42-year-old patient with 38 G breast size presented for mammaplasty. (B, D) One year after bilateral vertical breast reduction with the author’s technique. A total of 878 g was removed from the right breast and 775 g from the left breast. The result is stable, with pleasing shape and symmetry.
DISCUSSION

Although the medial pedicle is supplied by consistent perforators from the internal mammary system,^6 pedicle thickness is an important factor to dictate safety of the flap.2-5 Therefore, a full-thickness medial pedicle is considered a safe flap to carry the NAC.2-5 However, vascular compromise of a properly dissected medial pedicle may still arise due to constriction by the pillar suturing, even in experienced hands.7 This situation is especially evident when there is a disparity between the pedicle size and the volume of the areolar space available to accommodate the pedicle. This is often noted in cases of large reductions, such as those over 750-g per side.

This technical challenge was recognized by Davidson et al.,^8 who reported that in cases of reductions over 1000 g, it was necessary to excise a wedge of tissue as an arch above the areola to provide space to rotate the pedicle. The median incision of the upper pole provides the same relief in the upper pole, but without the need to remove any tissue beyond the superior limit of the areolar opening, thereby avoiding any risk of upper pole fullness loss that could arise easily with undermining of the superior breast skin and tissue excision.

It is commonly accepted that one of the major advantages of the vertical scar approach over Wise pattern inferior pedicle reductions is that upper pole fullness is maintained.2-5 Hall-Findlay^4 recommended that the superior aspect of the breast be treated carefully during glandular resection to preserve as much upper pole fullness as possible. From this perspective, the median incision of the upper pole is preferred to simple debulking of the upper pole in providing enough space for the pedicle to inset.

Vertical scar breast reduction is based on the concepts of inferior wedge resection and subsequent suturing of the medial and lateral breast pillars, thus creating coning of the breast.1,5,10-15 This results in a projecting breast, which is often preferred by patients.9-11 Median incision of the upper pole allows the medial pedicle to be accommodated easily into the upper areolar defect, hence decreasing its volume inferiorly. This technical modification therefore may help to prevent the pseudoptosis that can be caused by lower pole bulkiness.

CONCLUSIONS

Median incision of the upper pole increases the safety of vertical scar breast reduction with a superomedial pedicle by allowing easy rotation of the pedicle into the areolar defect without constriction by the pillar closure. This technical modification simplifies the procedure, particularly in cases of large breast reductions. Considering the reluctance by many plastic surgeons to apply the vertical mammoplasty for large reductions, this technical step increases the safety of the procedure in such cases.

In the author’s experience, medial pedicle vertical mammoplasty is a reliable approach that can be employed for a variety of breast sizes with a low rate of complications, as noted in this series. The median incision of the upper pole was found to be so useful that it is now an integral part of the author’s regular operative procedure.

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