Periareolar Mastopexy: Double Skin Technique With Mesh Support

In the author’s view, the double-skin technique for reduction mammaplasty and mastopexy, incorporating mesh as support, results in improved anterior projection and reduces scars without increasing morbidity or interfering with mammography. Here, he describes his operative technique. (Aesthetic Surg J 2003;23:129-135.)

Increasing demand for reduced scars in breast surgery has led to numerous minimal incision procedures, such as periareolar techniques, which limit scars to the interface between the areola and the skin. However, results have not always been satisfactory. Inadequate projection and widened periareolar scars have been reported.¹⁻¹⁰

These observations led to a new technique based on (1) treating the glandular unit separately from the skin through the periareolar approach; (2) reshaping the new breast through glandular flap rotation and fixation to the anterior pectoral fascia; (3) incorporating mesh to achieve a more resistant support system; and (4) redraping the skin over the newly constructed architecture.¹⁸

This “double-skin” technique has been extensively refined over the last 13 years and is applicable to reduction mammaplasty and mastopexy.

In my practice, the primary indications for the double-skin technique are ptosis; moderate hypertrophy, up to 500 g, with or without ptosis; and aesthetic correction of the contralateral breast in reconstructive procedures.

Preoperative Markings

Marking is based on fixed points on the thorax, including the sternal notch, the midline, the inframammary fold (IMF), and the lateral breast border, not on anatomic breast structure or nipple-areola complex (NAC) position. First, define the 4 cardinal points, A to D, that will automatically bring the NAC to its new position (Figure 1). The most important resection area lies in the vertical plane along points A and B, because the ptotic breast projects itself vertically, not horizontally (points C and D).

Significant skin resections in the horizontal plane will lead to a flattened breast shape.

The final marking shape resembles a teardrop when the patient stands and a circle when the patient lies down. After marking, join the 4 points manually to predict the tension induced by skin resection. Remember that gland asymmetries will lead to asymmetric markings and that the resulting teardrop will be larger in larger breasts, reflecting increased tissue to be resected.

Finally, define the diameter of the future areola, which normally equals 5 cm and should be made 0.5 cm larger than the purse-string suture placed at the end of the operation. This produces a slightly projecting and convex areola in relation to the new breast. If these diameters are made equal, slight tension on the suture will occur during the early postoperative period, with a tendency to flatten the NAC.

Surgical Technique

First, deepithelialize the region between the areola and the teardrop markings. When dissecting the superior skin flap, bevel the scalpel so that the thickness of adipose tissue under the skin increases progressively. This maneuver will enhance upper-pole fullness because the thickened flap will overlap the newly assembled gland at the end of the operation. Dissect the first 4 to 5 cm, leaving a 0.5-cm layer of subcutaneous adipose tissue attached to the dermis, which preserves the subdermal vascular plexus responsible for flap viability. From this point on, flap thickness increases until the anterior pectoral fascia appears (Figure 2). Continue the dissection superiorly for about 4 cm or until the ideal position of the future superior breast pole is reached.

Keep the medial flap uniformly thin throughout its
elevation and interrupt its dissection 1.5 cm before reaching the muscle fascia to preserve the perforating vessels that supply the flap and the central gland. The inferior flap is also kept thin until dissection reaches the IMF, which should be preserved.

Dissect the lateral flap until the lateral border of the breast is reached. Dissect and disconnect the dermal flap from the gland, leaving some adipose tissue attached to the dermis. Interrupt the dissection 1 to 1.5 cm before the NAC borders to preserve its blood supply.

Figure 1. Mark 4 cardinal points to ensure that enough skin is available to cover the future breast and to define the flap to be used as the skin’s internal lining. Point A (superior cardinal point) defines the upper border of the future NAC and is located 2 cm above the IMF projection on the breast surface. Its precise location depends on individual thoracic shape and lies anywhere between 16 and 20 cm from the sternal notch. Point B, which corresponds to the inferior border of the future NAC, should be placed 7 cm from the IMF. In patients with less than 7 cm of skin available in the lower hemisphere, such as in tuberous breasts, more skin may be harvested by advancing the dissection inferiorly to the IMF. Point C represents the medial border of the future NAC and should be at least 9 cm from the midline to guarantee that the new NAC maintains its slightly lateralized normal position. This distance may reach 10.5 cm in patients with large breasts. Point D corresponds to the lateral border of the future NAC and should be placed at least 12 or 13 cm from the lateral breast border. The values for all points may be altered, if thoracic or breast asymmetries are present, to achieve bilateral symmetry.

Illustrations by William M. Winn, Atlanta, GA.

When necessary, perform reduction first in the upper pole by resecting a large U-shaped central tissue wedge, which shortens the upper hemisphere radius. The volume of resected tissue is larger in this hemisphere, which will result in a slightly triangular breast after reassembly. In this way, the lateral and medial sides will be slightly convex at the procedure’s end and the natural tissue accommodation in the postoperative period will increase this convexity only slightly, without inducing an excessively rounded breast shape, and maintain an elegant, projected shape. In the lower hemisphere, another central tissue wedge may be resected without detaching the base of the breast, where the perforating vessels are located (Figure 3). Assess the volume to be resected by manually tacking the excess tissue in to define precise mastopexy limits.

Assembly is carried out in both breast hemispheres. In the upper hemisphere, perform superior rotation by suturing the central extremities of the glandular flaps to the anterior pectoral fascia, suspending the breast at a higher position. In this way, the upper breast pole is filled and lifted to the initially marked future superior breast pole. If necessary, use complementary sutures to fix the rest of the superior pole to the thoracic wall.

In the lower hemisphere, resect or tuck the excess tissue under the NAC to enhance anterior projection. Perform mastopexy by suturing the resulting flaps to the anterior pectoral fascia; the flaps should be rotated slightly medially to decrease the breast-base diameter. The
Figure 3. A, B. Excision of glandular tissue is performed mainly in the upper hemisphere through a wide wedge excision that shortens its radius. In the lower hemisphere, it is possible to excise another tissue wedge in the central area.

Figure 4. A. Gland assembly is performed in both hemispheres by lifting the gland to a higher position on the thoracic wall, and mastopexy is performed to obtain anterior projection of the mammary cone. B. Ptosis is demonstrated by descent of the breast’s inferior pole (left). Traditional breast reduction and mastopexy techniques overcorrect the breast along a single vector and offer limited improvement of the breast’s upper pole (middle). In the technique presented here, breast shaping is performed along both the horizontal and vertical vectors, which ensures more satisfactory improvement of the breast’s upper pole (right).
constructed breast cone should have a height of 8 to 9 cm, which is slightly larger than the 7 cm of skin available to cover the inferior breast pole. This maneuver places slight pressure on the NAC and gives it a convex shape. Place complementary sutures to fix the inferior border of the gland to the IMF region. Final modeling of the breast can be performed by resecting the adipose tissue attached to the gland’s parenchyma and/or under the skin flaps (Figure 4).

Suture the circular dermal flap to the top of the breast cone and to the breast’s connective ligaments, which provide the internal cutaneous lining. Adequate projection of the NAC can be achieved by applying slight tension to these circumferential sutures.

Mesh Application

Apply the “mixed mesh” (40% polyester and 60% absorbable polyglactine) over the dermal flap as a brassiere and suture it to the anterior pectoral fascia.
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Operative Strategies

Figure 8. A, C, Preoperative views of a 19-year-old woman with moderate hypertrophy and considerable ptosis. B, D, Postoperative views 2 years after surgery employing the double skin technique with mixed-mesh application.

Figure 9. A, C, E, Preoperative views of a 25-year-old woman who is an ideal candidate for the double-skin technique. She has firm, dense breasts; moderate ptosis; and elastic skin. B, D, F, Postoperative views 4 years after 250-g reduction demonstrates good-quality scars.
using interrupted 4-0 nylon sutures or titanium clips. Begin suturing centrally at the IMF and ascend along both lateral and medial breast borders to provide an ideal conical breast shape and to induce slight breast elevation (Figure 5).

In the superior pole, leave a 3-cm excess of mesh over the muscle fascia so that fibrous tissue proliferates in this area, providing further support. Both extremities of the mesh will meet in the central part of the superior hemisphere; suture them together so that the breast is covered with mesh (Figures 6 and 7). Place suction drains through either the axilla or the lateral border of the IMF.

**Skin Closure**

Because the quality of the periareolar scar depends on tension, the external skin covering should be abundant to avoid areola-widening and breast-flattening with projection loss. There is a tendency for areolar flattening with time as a result of tissue accommodation and edema reduction. Therefore, slightly exaggerate projection during surgery to ensure that it will be adequate and natural.

Close the skin with 2 suture layers. Close the external cutaneous lining, which will determine the new areola diameter, using a 2-0 Mersilene (Ethicon Inc., Somerville, NJ) purse-string suture. Use a straight 7-cm needle to always keep the suture line in the intradermal position. Tie this suture around a 4.5-cm tube so that the resulting NAC shape (with a 5-cm diameter) is slightly convex. Finally, suture the areola to the external cutaneous lining using a noninterrupted 4-0 Monocryl (Ethicon Inc., Somerville, NJ) intradermal suture. This suture should be distributed at a ratio of 4 mm of external tissue to 1 mm of NAC dermis to minimize periareolar wrinkle formation.

At the end of the operation, construct a triangular supporting system with Tegaderm (3M Healthcare Ltd, St. Paul, MN) dressings over the entire breast and leave them in place for 15 to 20 days. Placing the triangle’s apex on the superior pole, which results in a horizontal projection of the mammary cone and areola can be seen in patients treated with mesh application (Figures 8 and 9). This technique provides improved resistance to early ptosis by inducing scarring between the 2 skin layers and therefore around the newly positioned glandular tissue, keeping the breast in place for at least 2 months. This support maintains the ideal intraoperative breast shape and permits a more predictable healing pattern by countering gravity.

In terms of the supporting system, using mixed mesh instead of purely absorbable mesh results in a less elastic envelope. Placing the mesh as a sandwich between the dermal flap and the skin avoids direct contact with the glandular tissue, minimizing the complication rate. In the future, development of a longer-lasting (≥1 year) absorbable mesh may significantly improve the results by inducing a more prolonged scarring reaction. In this way, the support would be maintained until the tissues are surrounded by mature, stable scar tissue.

Over the years, many colleagues have shown interest in applying my technique but are reluctant to insert non-absorbable materials into the breast, even though mixed mesh has produced good results in my hands, with few complications. Mixed mesh is not available or approved in the United States but alternatively Vicryl or Prolene with Vicryl mesh (Ethicon Inc., Somerville, NJ), both approved and available here, may be used. Although this technique’s unique principles and steep learning curve require persistent commitment, its results have shown that mesh, which is necessary in this procedure, does not interfere with clinical or mammographic surveillance for breast cancer. In fact, the mesh was not radiologically evident after 1 year, and histopathologic analysis demonstrated absorption of the polyglactine component and integration of the polyester between the 2 skin layers, with surrounding laminar fibrosis.

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**References**


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