

# A Novel Short-Scar Breast Reduction Technique in Large Breasts

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## Abstract

**Background** Short-scar breast reduction techniques have become very popular in the last two decades. These techniques cannot be used very often in patients with exceptionally large breasts because of the excessive amounts of redundant skin. In this article we describe our new approach for dealing with the extra skin remaining in patients with very large breasts so that they may also benefit from the short-scar breast reduction procedure.

**Methods** In our technique the vertical suture line is divided into two separate suture lines. The first suture line follows the natural curve of the lower pole of the breast from the nipple to the chest wall. This line is elongated by elevating and anchoring the new inframammary fold higher on the chest wall with a suspensory suture and the skin is then closed in a straight line. The second suture line attaches the extra lower skin by closing the dermis to the chest wall and then closing the skin with a purse-string suture. This technique helps to deal with the extra skin resulting from the short-scar breast reduction technique.

**Results** The technique was used in ten patients with large breasts. Patient satisfaction was excellent and there was no increase in complications. The technique also helped to obliterate the dead space beneath the breast and reduced seroma formation.

**Conclusion** We found that this new technique can be used safely and effectively in selected patients with large breasts without any increase in complications.

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**Keywords** Breast · Mammoplasty · Cicatrix

## Introduction

Vertical reduction mammoplasty using a superomedial pedicle is a well-accepted technique that gives good results in mild to moderate breast hypertrophy [1]. Although good results have been described in breast reductions of up to 1,425 g, using this technique in patients with exceptionally large breasts is not without its major drawbacks. In these cases, long vertical scars extending below the inframammary crease, and excessive skin gathering and “dog-ears” due to excessive amounts of redundant skin are frequently encountered. These patients will usually require a procedure utilizing a modification of the Wise pattern inverted-T. In this article we describe our new approach for dealing with the extra skin remaining in these patients so that they may also benefit from the short-scar breast reduction procedure.

## Methods

Patients with very large breasts (over 750-g reduction) were carefully selected to undergo short-scar breast reduction using our new technique. Patients were required to have good skin elasticity with minimal stretch marks and an understanding of the surgical procedure and recovery process. The data we collected included epidemiological data, BMI, sternum-to-nipple distance, the amount of

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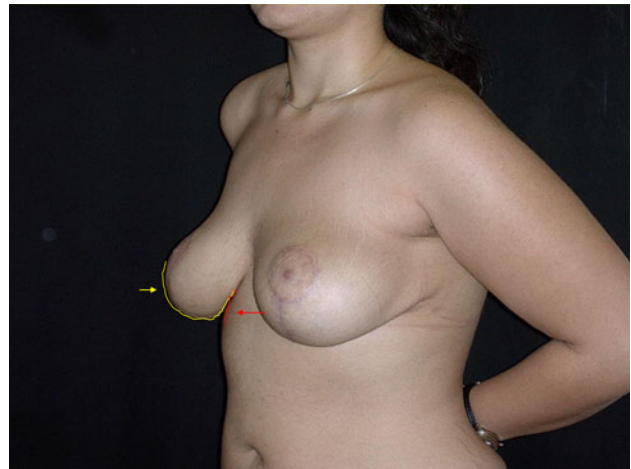
breast tissue removed, the type and rate of complications, and the type of revision procedure.

### The Technique

The patient is marked preoperatively in the standing position. The meridian of the breast is marked, and the proposed nipple location is determined slightly below the level of the existing inframammary fold. The areolar diameter is set to between 4 and 5 cm. Instead of extending the vertical limbs laterally and medially, according to the standard Wise pattern, once the vertical limb reaches about 6 cm, the vertical limbs are curved downward in a circular fashion to meet each other about 2–4 cm above the inframammary fold.

The dermoglandular superomedial pedicle base measures between 6 and 10 cm, with a larger base chosen for longer pedicles. A rim of dermis measuring approximately 1 cm is left around the areola for safety. The pedicle is deepithelialized under tension in the standard fashion. It is then incised vertically down toward the chest wall without undermining. The remaining skin and breast tissue is resected in one piece after the pedicle has been created. The lower end of the areolar skin opening is closed before rotating the pedicle. This is done with a single 3–0 vicryl suture. At this stage, one can assess breast size and resect additional tissue if needed. A 2–0 or 0 vicryl suture is used to bring the medial and lateral pillars together. At this point, to shape the breast and help define and stabilize the inframammary line, we use a single 2–0 vicryl suture passing through the inferior portion of the medial and lateral pillars and then tack it to the pectoralis major fascia at the level of the new inframammary fold.

During the reduction procedure, the skin of the lower pole should be thinned out meticulously to allow it to shrink and adapt to the new breast size and shape. The vertical suture line is then divided into two separate suture lines. The first follows the natural curve of the lower pole of the breast tissue from the nipple to the chest wall (Fig. 1). This line is elongated by elevating and anchoring it to the new inframammary fold on the chest wall with a suspensory suture from the dermis to the pectoralis major fascia and the skin is then closed in two layers (using 3–0 vicryl sutures for the dermis and 3–0 monocryl sutures for the skin) in a straight line. The second suture line deals with the remaining skin of the lower breast portion by suturing the deep dermis to the chest wall with interrupted, buried 3–0 vicryl sutures in an upward pull toward the new inframammary fold, and then closing the skin with a purse-string suture using subcuticular 3–0 monocryl (Fig. 2). The breast should be drained until drainage is less than 25 cc per day. The skin closure should be snug, but not too tight,



**Fig. 1** The vertical suture line is divided into two separate suture lines. The first follows the natural curve of the lower pole of the breast tissue, from the nipple to the chest wall (yellow line and arrow). The second line is on the chest wall (red line and arrow)



**Fig. 2** The second suture line attaches the remaining skin of the lower breast portion by suturing the dermis to the chest wall tightly and then closing the skin with a purse-string suture

to avoid ischemia, and a good support bra should be worn for 6 weeks.

### Results

We used this technique in ten patients with an average age of 41.5 years (range = 21–57), and an average BMI of 29 kg/m<sup>2</sup> (range = 24–34). The average sternum-to-nipple distance was 33 cm (range = 36–29) and the average amount of breast tissue removed was 1,000 g (range = 750–1,400 g). This technique allowed us to avoid a long inverted T scar and it helped to obliterate the dead space beneath the breast and seroma formation. This pattern of skin closure creates an additional short scar on the chest wall, but it is concealed

**Fig. 4** A 22-year-old patient (*left*) before a 1.4-kg breast reduction and (*right*) at 1-year follow-up



**Fig. 3** An 18-year-old patient (*left*) before a 1.2-kg breast reduction and (*right*) at 3-year follow-up



beneath the breast tissue. Patient satisfaction was evaluated by a telephone questionnaire. All the patients were very happy with the result, which they defined as being very good or excellent, and all said that they would recommend this procedure to others. When patients were asked about the scars, all but one were very happy, claiming that the scars did not limit them with bra-wearing. Mild scar hypertrophy had developed in one patient and was treated conservatively and successfully with silicon sheaths. Minor revision of the lower pole of the scar was performed in only one patient (this was the first case in which the procedure was performed). The rate of complications was comparable to that of smaller breast reductions carried out at our institution. We had one infection that was treated with intravenous antibiotics, one patient with a small seroma formation, and two patients with a suture line breakdown in the inferior (chest wall) suture line. Examples can be seen in the figures as follows: an 18-year-old patient with a 1,200-g breast reduction and a 3-year follow up (Fig. 3), a 22-year-old patient with a 1,400-g breast reduction and a 1-year follow up (Fig. 4), and a 34-year-old patient with a 750-g breast reduction and a 2-year follow-up shown wearing a bra (Fig. 5).

## Discussion

Reduction mammoplasty is one of the more frequent procedures done in plastic surgery [2, 3]. Patients with large breasts are usually motivated by psychosocial discomfort

[2–5] and the desire to get rid of the physical symptoms, including back and neck pain, shoulder grooving, intertrigo, and coracoid compression syndrome [4, 6, 7]. It is most important, therefore, to offer these patients a method of reduction mammoplasty that produces a well-shaped breast with appropriate contour and size combined with minimal visible scarring and as much physiologic function as possible [8]. Achieving these goals is a challenge for every plastic surgeon, as evidenced by the multitude of techniques and modifications that vary in terms of scar position and length, pedicle choice, and breast-forming methods [9].

Vertical scar mammoplasty was first described by Lötsch in 1923 [10] and Dartigues in 1925 [11] for mastopexy. It was otherwise lost to surgical history until Lassus [12] began experimenting with it in 1964 and was later refined and popularized by Lejour [4, 9, 12–16]. Despite initial skepticism, vertical reduction mammoplasty has become increasingly popular in recent years [2, 17] because it best incorporates the two concepts of minimal scarring and a satisfactory breast shape [18]. It is gradually becoming a more accepted alternative to traditional inverted-T scar methods [19]. The technique, however, is not without major drawbacks. These include long vertical scars extending below the inframammary crease and excessive skin gathering and “dog-ears” at the lower end of the scar that may require long periods for resolution, causing extreme distress to patients and surgeons alike [20]. This is especially true in patients with massive breast



**Fig. 5** A 37-year-old patient after a 0.75-kg breast reduction at a 2-year follow-up. On the *right* side, the patient is shown wearing a bra with her arms elevated and the chest wall scars are not visible. On the *left* side, the chest wall scars are not visible due to the ptosis of the breast tissue

hypertrophy treated by large reductions. Other problems are hypertrophic circumareolar scars and lower-pole deformities, including notching, boxy shape, infra-areolar depression, and flatness [21]. In an effort to simplify the technique and expand its applications, recent modifications to the basic vertical scar design have been introduced by Hall-Findlay [22], Hammond [23], and Spear and Howard [24], who have proposed alternative pedicles compatible with the vertical reduction patterns. The superomedial and inferior pedicle designs may be more versatile than the superior pedicles of Lejour and Lassus in terms of improved blood supply, innervation, and potential for postoperative lactation [24].

The biggest pitfall of the vertical scar technique is the appearance of the vertical scar, which very often appears too long, extending sometimes below the new higher submammary crease, and possibly becoming visible [25]. It is vexing to the surgeon and, more important, embarrassing to the women when wearing a small bra or bikini top [5, 8]. Moreover, the technique always produces marked puckering of the excess skin with persistent marked “dog-ears” that are evident at the inferior portion of the vertical scar

where skin is unsupported by breast tissue, particularly in large-volume reductions. The bulge results in a “double bubble” appearance, which may take a long time to resolve [24].

Although vertical scar reduction mammoplasty is slowly gaining in popularity, efforts are being made to make it more user-friendly by either modifying it or replacing it with an alternative that retains the same advantages yet is more predictable. One of these modifications is based on the awareness that although avoidance of a transverse scar is the goal of a vertical reduction pattern, a short, tidy transverse scar may be just as desirable as a purely vertical scar with irregularities [24]. To avoid the potential need for future revision, a short horizontal incision may be used to treat the “dog-ears” in the operating room. Alternatively, this “dog-ear” can be defatted and left to “settle” [24]. During the first 2 months of the postoperative period, the skin usually retracts and no resection may be required, as suggested by Marchac and de Olarte [26]. Another alternative is to convert the vertical scar into an L scar by rotating the excess skin laterally around the corpus of the gland and placing the lateral extension of the scar in the submammary crease [9].

Revision of the vertical scar or a secondary, horizontally oriented excision of excess “dog-ear” tissue may be necessary in 16–28 % of vertical scar breast reductions [9, 24, 27]. It has been suggested that a “dog-ear” at the end of the vertical scar may almost always be prevented by initial skin resection down to the submammary fold [8]. This, however, will undoubtedly extend the resulting scar caudally.

We have reevaluated the steps of the vertical reduction mammoplasty. In an attempt to eliminate the pitfall of long vertical scars and inferior “dog-ears” while avoiding a short transverse scar, we have developed our technique for vertical scar breast reduction. This technique is based on Pitanguy’s method of mastopexy and Marconi’s purse-string closure for superior pedicle breast reduction. Patients with larger breasts usually have a large body habitus and this dictates leaving fairly large amounts of breast tissue after breast reduction procedures to maintain proper proportions in the reconstructed breast. Thus, the gravitational pull on these larger reconstructed breasts will eventually lower the level of the newly created inframammary fold and the breast tissue will become somewhat ptotic. With our technique, we use these expected changes to help us deal with the extra skin of the short-scar technique. By anchoring both suture lines at the inframammary fold in a higher position, we artificially elongate the upper suture line on the breast tissue. When this line eventually moves down, the scar will shorten. The second lower scar that is left beneath the inframammary fold is hidden by the ptotic breast tissue.

## Conclusion

We found that this new technique can be used safely in selected patients with larger breasts undergoing short-scar breast reduction without any increase in complications. Given that the benefits of the vertical scar method are significantly greater than T-scar reductions, the technique described can encourage surgeons to use vertical scar reduction mammoplasty more frequently. Certainly, with growing experience, problems can be avoided by adhering to proper patient selection, using the correct concepts of skin design, and observing correct glandular resection and closure concepts [21]. The complication rates will diminish and results will become more predictable and consistent.

**Conflict of interest** The authors have no conflicts of interest to disclose.

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