

Breast Reduction: Modified “Lejour Technique” in 500 Large Breasts

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Background: The “minimal scar technique” for breast reduction, developed by Marchac, Lassus, and Lejour, has become an increasingly practiced alternative to standard operative procedures.

Methods: The authors introduced the modified “Lejour technique” in nearly 500 breast reductions in 250 overweight patients (adipose breasts) with a resection weight of more than 700 g. Their technique is a step-wise modification of the following procedures, resulting from their experience with complications and outcomes. Planning of the nipple-areola complex is carried out for each patient, and the glandular body is undermined only centrally and atraumatically, without liposuction. The superior mastopexy suture is waived in favor of the submammary fold being fixed using three H points. The three H points serve as a pivot by which later sagging is avoided. The skin closure does not have a shaping function without tension. The vertical pleated suture is not forced but adjusted to the retraction ability of the patient’s skin. Use of the vertical pleated suture is limited; in cases of longer incisions, it is combined with a horizontal submammary transverse pleated suture.

Results: In 250 patients with an average follow-up of 4.2 years, the average resection weight was 985 g for the right breast and 923 g for the left. The operation lasted from 120 to 180 minutes. The results were evaluated as very good in 75 percent, good in 19 percent, satisfactory in 5 percent, and unsatisfactory in 1 percent. The complication rate was 14 percent.

Conclusions: The authors’ experience has shown that this technique can be applied as a standard technique. It is particularly suitable for larger breasts, because it reduces aesthetic deficiencies and simplifies the reduction technique. (*Plast. Reconstr. Surg.* 120: 1095, 2007.)

In the early 1990s, Marchac and de Olarte,¹ Lassus,² and Lejour³ introduced the “minimal scar technique” for breast reduction. This approach has become an increasingly practiced alternative to standard operative procedures.⁴⁻⁷ In the last few years, there has been a trend in plastic surgery toward reducing overall scar length by confining the scar to one vertical incision.⁸⁻¹¹ Results from patients with younger or more retractable skin, minimal breast hypertrophy, and a resection weight of less than 500 g have confirmed that a long transverse scar in the submammary fold can be avoided with no adverse effect on the aesthetic shape of the breast.^{12,13}

This is not the case for patients with voluminous breasts, older patients with less elastic skin, or pa-

tients with multiple striae. The scar minimalization technique frequently leads to problems with scar healing, due to excessive pleating and consequent compromised blood supply to the wound edges or to overlong vertical scars that protrude caudally below the submammary fold and are aesthetically unsatisfactory, as they cannot be hidden by a bra. Residual folds or ugly puckering at the caudal scar pole require secondary surgical correction.¹⁴ Many patients are unconvinced by the benefits of shorter scars when the advantages are in conflict with a better aesthetic appearance. In our experience, tension-free scars in the submammary fold, when they do not visibly extend beyond the breast base medially or laterally, nearly always produce unobtrusive, dash-like scarring and are preferable to an unattractive, forced, vertical scar.

One of the main benefits of the modified Lejour technique is that all phases of the operative planning (detailed down to the skin suture) can be adapted to the individual patient. As a standard procedure, therefore, it can be used on all breast types.¹⁵⁻¹⁸

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PATIENTS AND METHODS

Between 1996 and 2003, we performed 1968 mammary reductions in approximately 1000 patients in two centers, the Ulm Clinic Rosengasse and the Padova Plastic Surgery Institute. In small reductions (<500 g), we preferred the pure vertical technique. From our early experience with the vertical technique, we knew about the problems with the persistent vertical dog-ear deformity at the nadir of the incision and about the lateral axillary fullness in larger breasts. Therefore, we used our “modified

Lejour technique” in approximately 25 percent of the patients; these patients were overweight and had a breast resection weight of more than 700 g.

By using this technique in these 250 patients with 500 breast reductions, we avoided the aesthetic deficiencies and simplified the reduction technique for large breasts. We found no contraindications, even in cases of large resection weights of 1000 g or more.

All 250 patients with large breast reductions of more than 700 g who were operated on with the



Fig. 1. (Above) Individual planning of the displacement axis and the height of the new nipple. (Center) Planning of the lateral and medial resection margins. (Below) Marking of the caudal incision line and superior nipple definition.

modified technique were examined postoperatively, and their progress during this time was documented. The data gathered were used to determine whether this procedure is suitable for high resection weights in adiposity. Nearly all patients had a history of either futile attempts at dieting or weight loss of a maximum 20 kg.

Technique

The operative treatment begins with preoperative planning and site marking. The axis on which the nipple is going to be superiorly relocated is then chosen. This is ascertained by laying a measuring tape around the patient's neck and moving it from nipple to nipple. In contrast to using a fixed template, this method allows the optimum nipple relocation to be planned for the individual patient. The exact positioning of the nipple on the marked axis is felt by palpation of the tissue starting from the middle of the submammary fold. The bilateral vertical margins for the skin resection are

marked by laying the breast first laterally and then medially, drawing two connecting lines to the previously marked middle breast axis (Fig. 1, *above* and *center*).

The breast must be pushed up into a conical shape during marking. The two vertical lines are then joined together by an arched line running about two fingerwidths above the submammary fold. Another curved line is then drawn around the future position of the nipple, which vary in accordance with the plastic surgeon's preferred method (Fig. 1, *below*).

First, infiltrate up to tumescence subglandularly and epifascially with 250 ml of solution (500 ml of sodium chloride plus 1.5 mg of epinephrine). In this way, the prepared tissue is loosened and bleeding is simultaneously arrested. After a tourniquet is applied, the diameter of the nipple is determined using a template; it may vary between 4 and 5 cm, depending on the size of the breast.¹⁹ The de-epithelialization area is then marked, with a gap of at least two fingerwidths left

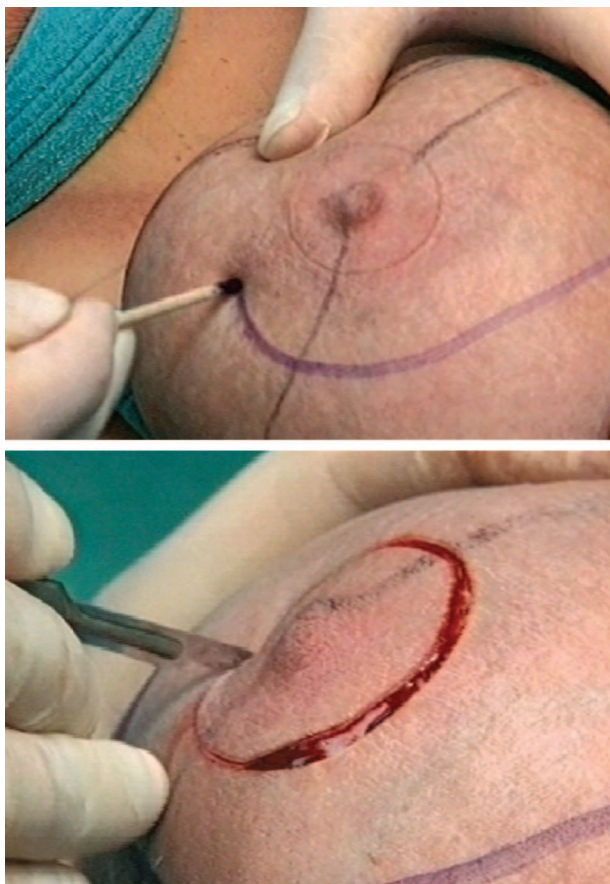


Fig. 2. (*Above*) The nipple-supporting flap is planned distally up to 2 fingerwidths from the nipple. (*Below*) The mamilla is cut around in the size planned, cutting through the epidermis only.

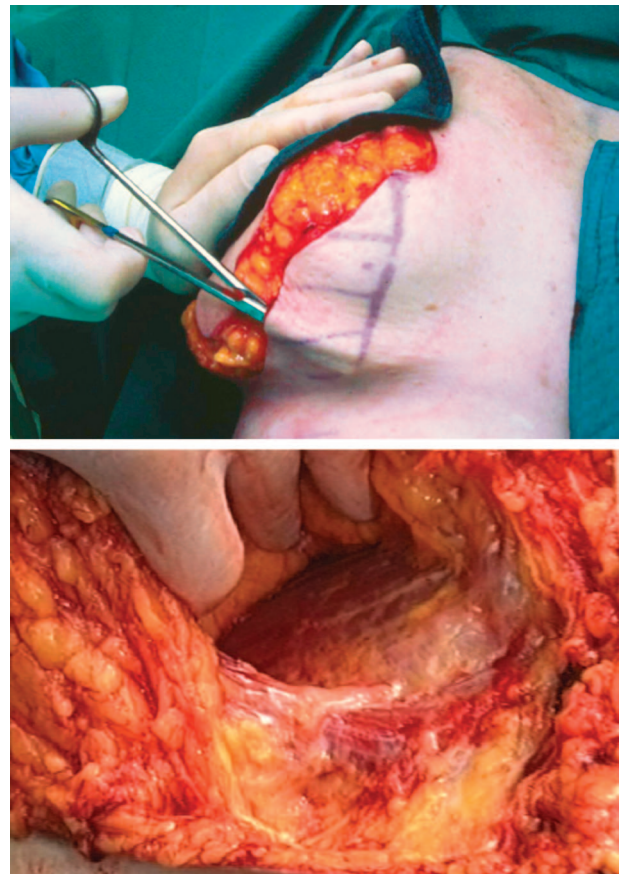


Fig. 3. (*Above*) Subcutaneous skin mobilization with scissors. (*Below*) Blunt undermining of the breast gland on the pectoralis fascia.

below the nipple so that blood flow is not compromised after flap preparation.

Next is the excision of the nipple and the marked flap, whereby the cutis is only superficially transected (Fig. 2).²⁰ The entire excised flap is de-epithelialized. The skin is completely cut through in the area of the preoperative markings using an electric cauterizer. The skin is laterally and medially undermined atraumatically (i.e., mobilized) using scissors. It is very important to find the correct tissue layer, which is recognizable by its minimal resistance. Thinning of the skin is required for optimal retraction (Fig. 3), but there must be no risk to the blood supply from overskeletonization of the skin. Next, the breast glandular tissue is mobilized; this has to be carried out strictly epifascially. Mobilization is begun sharply and caudally using scissors, but superior mobilization can be continued bluntly. In this way, damage to the pectoralis fascia can be largely excluded.

Mobilization continues to the upper margin of the gland at the height of about the third intercostal space, to create a vertical tunnel about 8 to 10 cm wide (Fig. 4, *above, left and center*).

The outcome of bilateral division of the breast gland is a medial and lateral mammary gland pillar. The surgeon then cuts around the de-epithelialized skin flap, and the actual resection of the tissue that is going to be reduced takes place. The tissue can be resected with scissors or a scalpel (Fig. 4, *above, right and center*). It is important that a nipple-supporting flap with a thickness of at least one to two fingerwidths remains.²¹ This is obligatory in the central or nipple-supporting area; the layer may taper at the edges. The flap is then tested for deformability.

The nipple is superiorly positioned and secured with sutures. Both side pillars of the mammary gland, which are connected to the pectoral

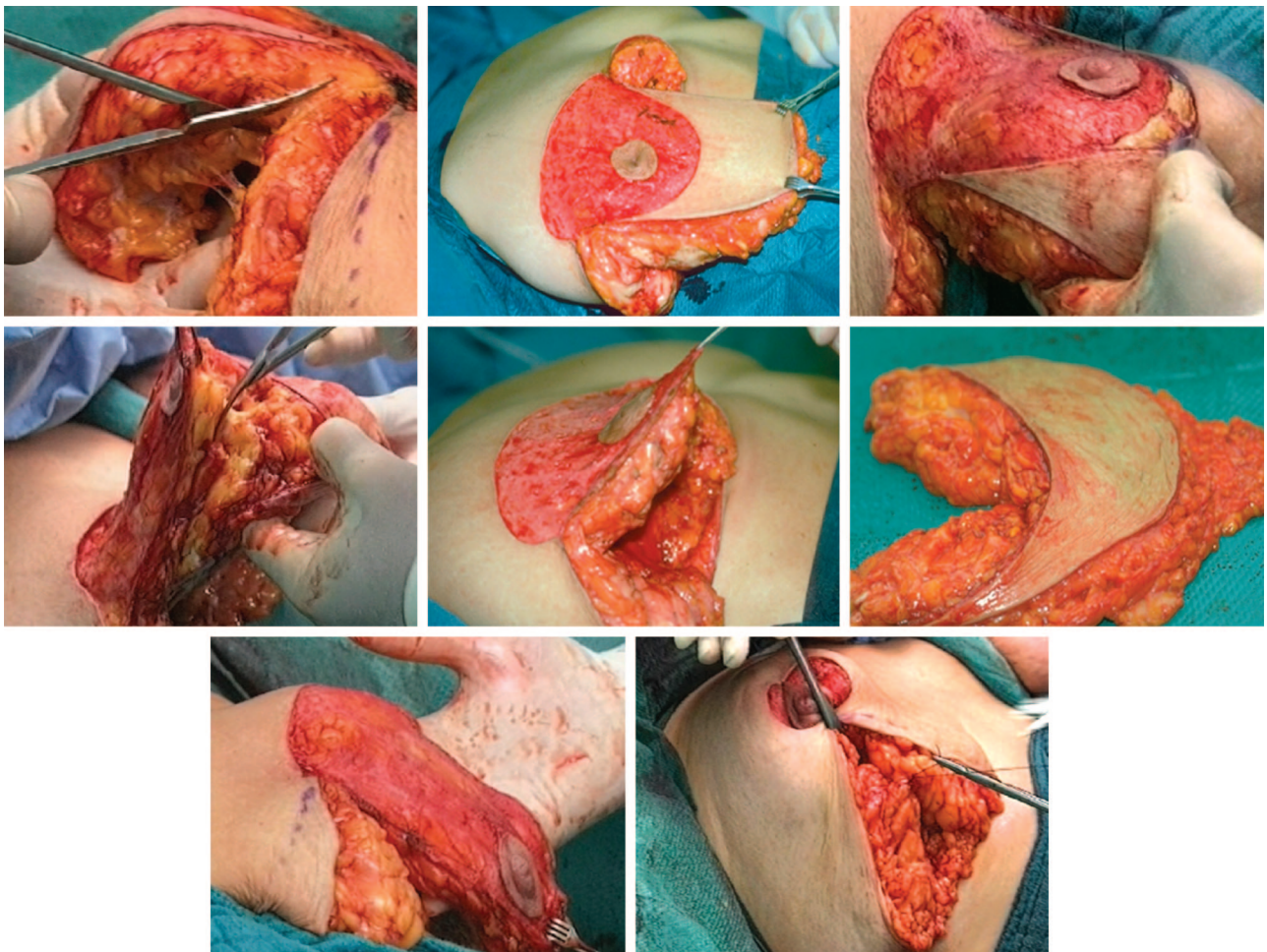


Fig. 4. (*Above, left and center*) Bilateral division of the mammary gland and cutting around the gland flap. (*Above, right, and center, left and center*) Gland resection creating a nipple-supporting superior pedicle flap. (*Center, right*) The resected tissue. (*Below*) The nipple-supporting superior pedicle flap and connection of the lateral and medial gland pillar by suture to form the new breast.

muscle, are joined caudally with three or four sutures beginning underneath the areola (Fig. 4, *below*). The sutures shape the breast and produce a conical appearance. The sutures also progressively decrease the breast base from top to bottom. The sutures must not catch the pectoralis fascia; otherwise, natural ptosis will not take place. The remaining caudal gland pillar is medially and laterally resected at the height of the planned submammary fold.

The three H points (i.e., the radical key sutures) are of vital importance because they form a permanent anchor for the submammary fold (Fig. 5, *above, left and center*). They stabilize the form and height of the fold and stop subsequent caudal sagging of the breast; that is, natural ptosis is guaranteed with a stable submammary fold. A superior mastopexy suture can be waived. If insufficient postoperative retraction for a large skin surplus is expected, direct skin resection can be beneficial in

avoiding wound-healing problems and their potential correction. A completely tension-free skin closure is crucial (Fig. 5, *above, right and center*).

The vertical and transverse pleating of the skin suture is conducive to final shaping and scar shortening. If the skin has good retraction ability, skin resection and the consequent additional submammary suture are waived. It is vital that the pleated suture does not compromise the blood supply to the wound margins, with the associated impairment to wound healing. The vertical suture should not be compulsory (Fig. 5, *below*).

RESULTS

All 250 patients were controlled during the investigation period (8 years), with an average follow-up of 4.2 years. Patient ages ranged from 19 to 72 years (average age, 39.2 years). Their average body mass index was 31 ± 4 ; their average weight and height were 83.6 ± 12.6 kg and 163.6 ± 6.6

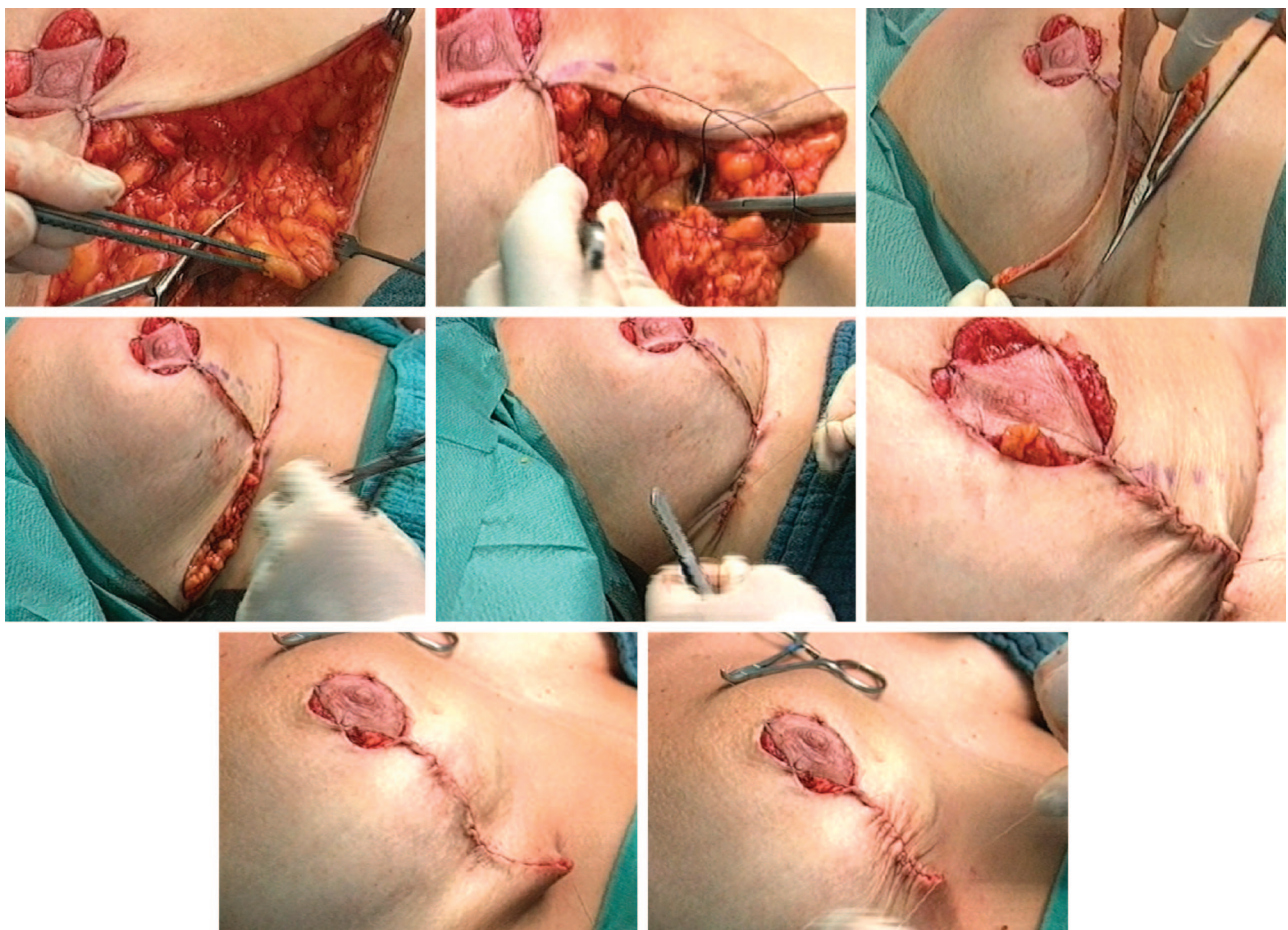


Fig. 5. (*Above, left and center*) Caudal glandular resection, with H point anchorage of the submammary fold with three radical sutures. (*Above, right and center, left*) Caudal skin resection for excessive surplus skin and double-layer wound closure. (*Center, center and right*) Pleating of the transverse and vertical skin sutures for scar shortening and ultimate breast shaping. (*Below*) Singular vertical scar with shortening from pleating with good tissue retraction.

cm, respectively. The resection weight ranged from 741 to 3249 g (average, 985 g) for the right breast and 719 to 3370 g (average, 923 g) for the left breast.

In one case, a free graft of the nipple was necessary. Decisions about the incision/scar line always depended on the skin and soft-tissue situation. The operative time ranged from 120 to 180 minutes, with a well-trained fellow performing simultaneous sutures.

Follow-up care included single drains for each breast until postoperative day 2, inpatient treatment for 3 to 5 days, and a special bra that patients wore for 12 weeks. We generally recommend to our patients the “triple rule”: 3 days in hospital, 3 weeks of no strenuous activity, and 3 months with a special bra and no sports.

The results of follow-up examinations of the 250 patients were as follows: very good, 75 percent; good, 19 percent; satisfactory, 5 percent; unsatisfactory, 1 percent (Figs. 6 through 8). The evaluation was performed using a special internal hospital score with criteria such as volume, shape,

scars, sensibility, and patient satisfaction. The follow-up was conducted by an independent person in training for plastic surgery.²²

Our complications rates are listed in Table 1.²³ Figure 9 shows necrosis complications in two patients.

In our experience, adiposity and gigantomasty are not in themselves contraindications to the modified Lejour mammary reduction technique. Despite large volume reductions, a very good breast shape can be achieved in most cases. The complication rate for overweight patients was significantly higher than that for our other clinical patients. It is striking that the majority of complications and, indeed, all serious complications occurred during the initial phases of the technique, which argues for a typical learning curve. After a lengthy treatment course, the patients who had complications also showed satisfactory aesthetic results.²⁴ As for nipple sensitivity, 220 patients achieved normal nipple sensitivity following a period of deteriorated sensation. Twenty-eight patients reported reduced sensitivity, and two patients reported loss of sensitivity.^{25,26}



Fig. 6. Preoperative and 3-month postoperative views of mammary reduction of 800 g on both sides. Note the auspicious development of a vertical scar.



Fig. 7. (Above) Preoperative and 6-month postoperative views of mammary reduction of 870 g on both sides. (Second row) Preoperative and 6-month postoperative views of mammary reduction of 1250 g for the right breast and 1070 g for the left breast. (Third row) Preoperative and 3-month postoperative views of mammary reduction of 950 g on both sides. (Below) Preoperative and 6-month postoperative views of mammary reduction of 1530 g on both sides.



Fig. 8. (Above and second row) Preoperative and 2-year postoperative views of mammary reduction of 1250 g on both sides. (Third row and below) Preoperative and 4-year postoperative views of mammary reduction of 1650 g on both sides.

Table 1. Complications after 500 Mammoplasties in 250 Adipose Patients (resection weight >700 g)

Complications	No.	%
Nonserious		
Seroma	15	3
Hematoma	10	2
Soft-tissue infection	12	2.4
Delayed healing of skin ²³	8	1.6
Surface skin necrosis (max 2 × 3 cm)	16	3.2
Serious		
Fatty tissue necrosis and wound dehiscence	9	1.8

With regard to breastfeeding, three patients became pregnant after the operation and breastfed their babies with no problems.

DISCUSSION

Our 500 breast reductions in 250 overweight patients with voluminous breasts exhibited the following benefits and characteristics compared with more established procedures:

1. The position of the nipple-areola complex was located individually for each patient on the breast-neck axis using the finger pressure resistance test.
2. Shaping of the breast gland was achieved in skin closure without a mastopexy suture by anchoring the breast fold using H points.
3. Entirely tension-free wound closure was achieved by shortening the scar with pleat-

ing, although this was controlled by the individual retraction ability of the skin and the blood flow to the wound margins.

When in doubt, primary resection of the caudal skin surplus was performed and the caudally transverse suture was made tension-free by shortening (i.e., pleating).²⁷ We have not experienced a single case of hypertrophy or aesthetically objectionable scarring after this alternative procedure, whereas forced vertical scars have often required secondary correction. Liposuction is not used because the breast gland can be better shaped when there is no denaturing of the original anatomy. If it is necessary, liposuction can be used in isolated cases to contour the lateral fat ridges along the sides of the thorax. Shaping the breast and positioning it using glandular and mastopexy sutures are an integral part of most established reduction techniques.²⁸ Earlier techniques attached great importance to exact preoperative planning using fixed templates and the specification of a skin incision pattern to achieve the desired shape.²⁹ Our experience has shown that only the reduction technique has a bearing on the subsequent breast shape. Shape is not significantly influenced by suture technique, gland tissue, or skin tension (or lack thereof) or by external fixation techniques, such as tape dressings or special bras. In fact, the reduction technique has to embrace the individual dynamics of the body tissues with regard

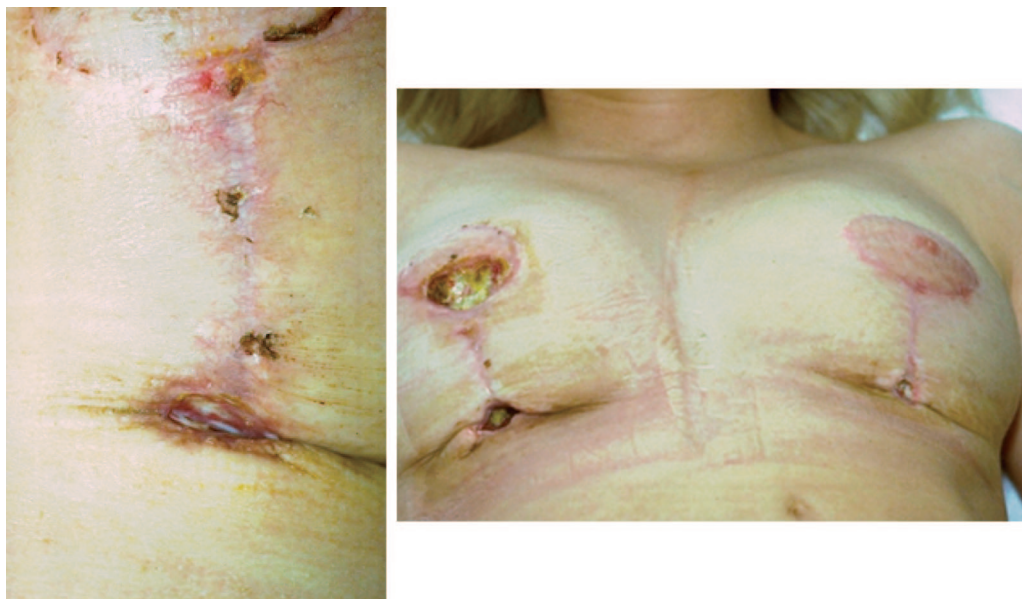


Fig. 9. (Left) Fat and tissue necrosis. (Right) The left breast shows delayed wound healing due to a small amount of skin necrosis; this was considered a minor complication. The right breast represents a serious complication, with wound dehiscence and “fatty tissue necrosis.”

to proportion, structure, volume, elasticity, and blood flow. Gland and skin sutures serve merely to loosely adapt the breast shape, which has been created by the reduction technique. Only the breast fold is of importance, and only the breast fold can be influenced. Anchoring over several points can avoid the familiar, undesirable sagging of the short-scar techniques and act as a fixed pivot point to induce a natural ptosis. From the beginning to the end of the operation, the modified reduction technique following Lejour's method gives the operating surgeon the freedom to vary the technique by adapting it to each patient following the axiom of minimum tissue trauma and maximum aesthetic benefit.

Having applied the described technique for more than 6 years, whereby all modifications have been based on long-term experience, we consider our procedure to be an excellent treatment option for breast reductions of all sizes, shapes, and tissue situations. It is especially suited to the reduction of very large breasts in overweight patients. The complication rate for our patients was comparable to that of other authors²⁴ and has become significantly lower with long-term experience.

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DISCLOSURE

None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this article.

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