32 Breast Reduction with L Scar After 30 Years: Indications and Limitations

Antonio Roberto Bozola

32.1 Introduction

In this chapter, the author describes the limitations of and indications for the L mammoplasty technique after his 30-year experience of performing it. In 1990 (Bozola 1990a), he described the L mammoplasty technique, which leaves out the medial segment of the horizontal scar, and classified mammary hypertrophy in accordance with shape and volume. He proposed a new anatomical analysis of the breast based on three breast projections (Bozola 1990b; Bozola et al. 2011), He determined the resection marks of the excess skin according to the size of the ptosis and related how to provide a beautiful breast with suitable shape and volume in each case.

32.1.1 Anatomy of the Beautiful Shaped Breast and Classifications of Mammary Hypertrophy

If we consider the shape of the breast as being similar to an irregular cone that can be observed from three-dimensional points of view (frontal, lateral, and vertical), it is possible to determine:

(a) Frontal view – based on the breast implantation on the normal thorax comprising two horizontal lines: the lowest horizontal breast line (LHBL) that connects the inframammary sulcus where they meet the breast meridian line (point I), and the highest horizontal breast line (HHBL), which connects the highest point of the two anterior axillary folds. This results in an oval geometric figure that presents a smaller horizontal diameter than the vertical diameter in a ratio of 1:1.3 (Fig. 32.1). Figure 32.1 also shows its vertical axis ABCD (breast meridian) containing the golden ratio (Bozola et al. 2011), which means that the AD segment is to BD as the BD segment is to CD. If the ratio of the breast axis is 1:1.5 or it approximates 1:1.618, the result is a beautiful breast.

(b) Lateral view – inclining a golden triangle (which contains the phi ratio) over 18° (angle of Louis) in relation to the vertical axis of the body, this will also result in a beautiful breast (Fig. 32.2). From the profile, a normal and beautiful breast, with no ptosis, is located above the horizontal plane A (LHBL), which passes the inframammary sulcus and coincides with point I (the intersection of the breast meridian line with the inframammary sulcus). Another horizontal plane, M, crosses the apex of the mammary cone and divides the breast into two segments: superior and inferior. Where plane M crosses the breast meridian, point M is determined. In general, the nipple is found there (sometimes the nipple–areola complex (NAC) may be ectopic – outside of the apex of the cone). The ideal

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measurement of the breast from the apex of the cone to point I (LHBL) is between 7 and 12 cm. The section of the breast above the apex of the cone to the HHBL measures 1.618 times the size of the inferior section.

(c) Vertical view – From the vertical point of view of the individual (when the patient looks at her breasts). A normal and beautiful/attractive breast is located between two vertical lines: the vertical lateral breast line (VLBL) and the

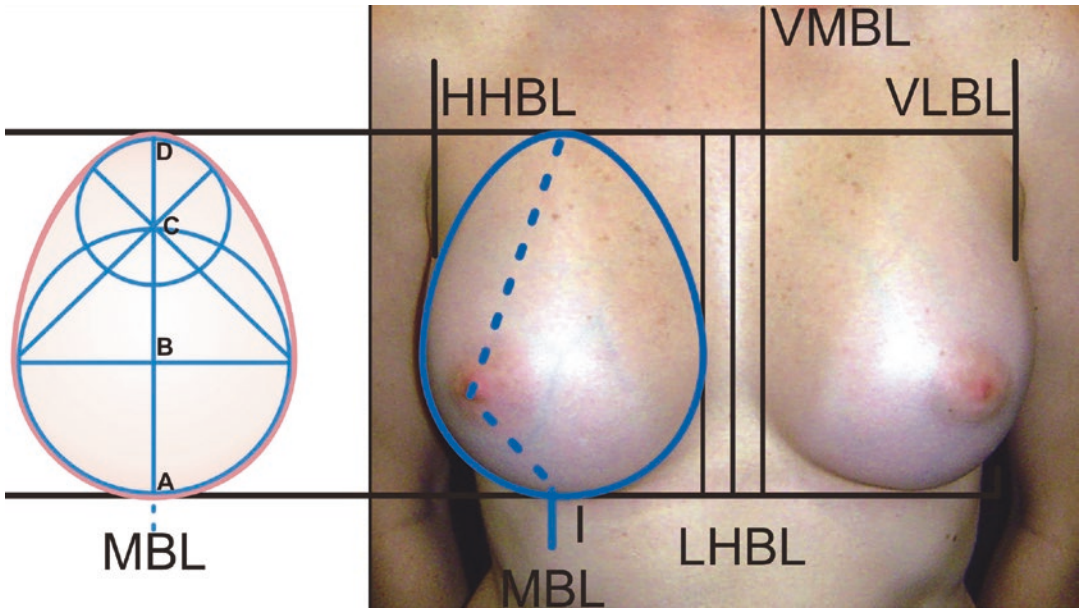

Fig. 32.1 In a frontal view: a perfect breast shape comprising the lowest horizontal breast line (LHBL) and highest horizontal breast line (HHBL) and the mammary meridian

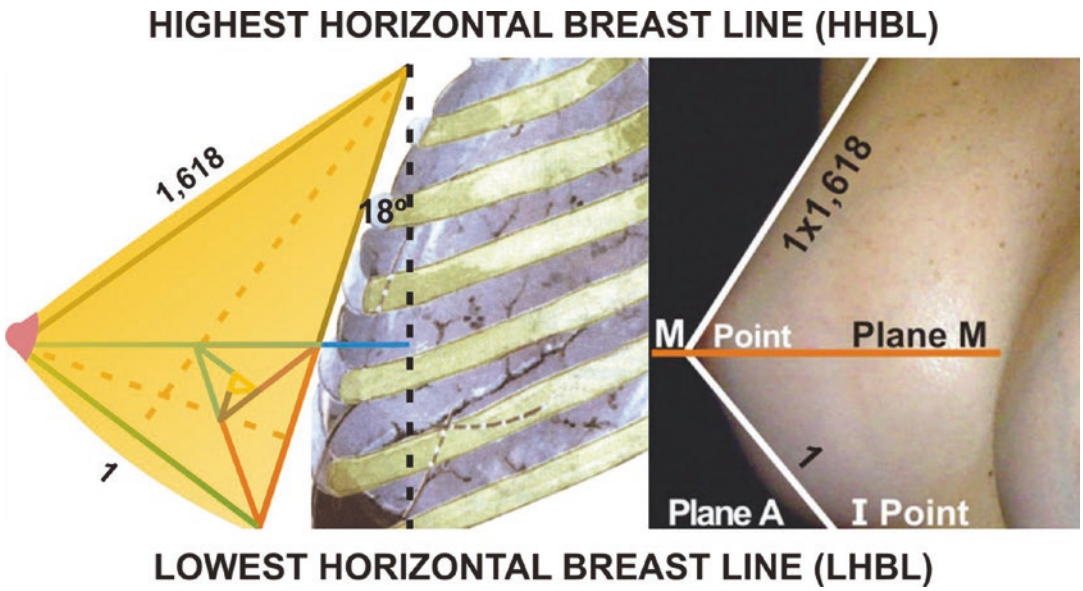

Fig. 32.2 In a lateral view: a perfect breast shape that is located above the LHBL line and that is similar to a golden triangle presenting an inclination of 18°

vertical medial breast line (VMBL) (Fig. 32.3). The former coincides with the anterior axillary line and the latter is situated 1–2 cm lateral to the middle line of the sternum bone. Applying a geometric analysis of the breast, it is possible to join the five golden triangles by their closest sides and by their apexes, forming a golden pentagon. If this pyramid pentagon is turned on its vertical axis, a golden cone is obtained. This presents a ratio of 1:1.618 between its height and base. If we curve its lines from the base and the apex, we obtain a figure that resembles a beautiful breast. The NAC must be on the apex of the cone.

In the author's opinion, the phi proportion can help plastic surgeons to provide beautiful breast shapes for their patients. The shape of the breast contains and molds its volume. Volume can be

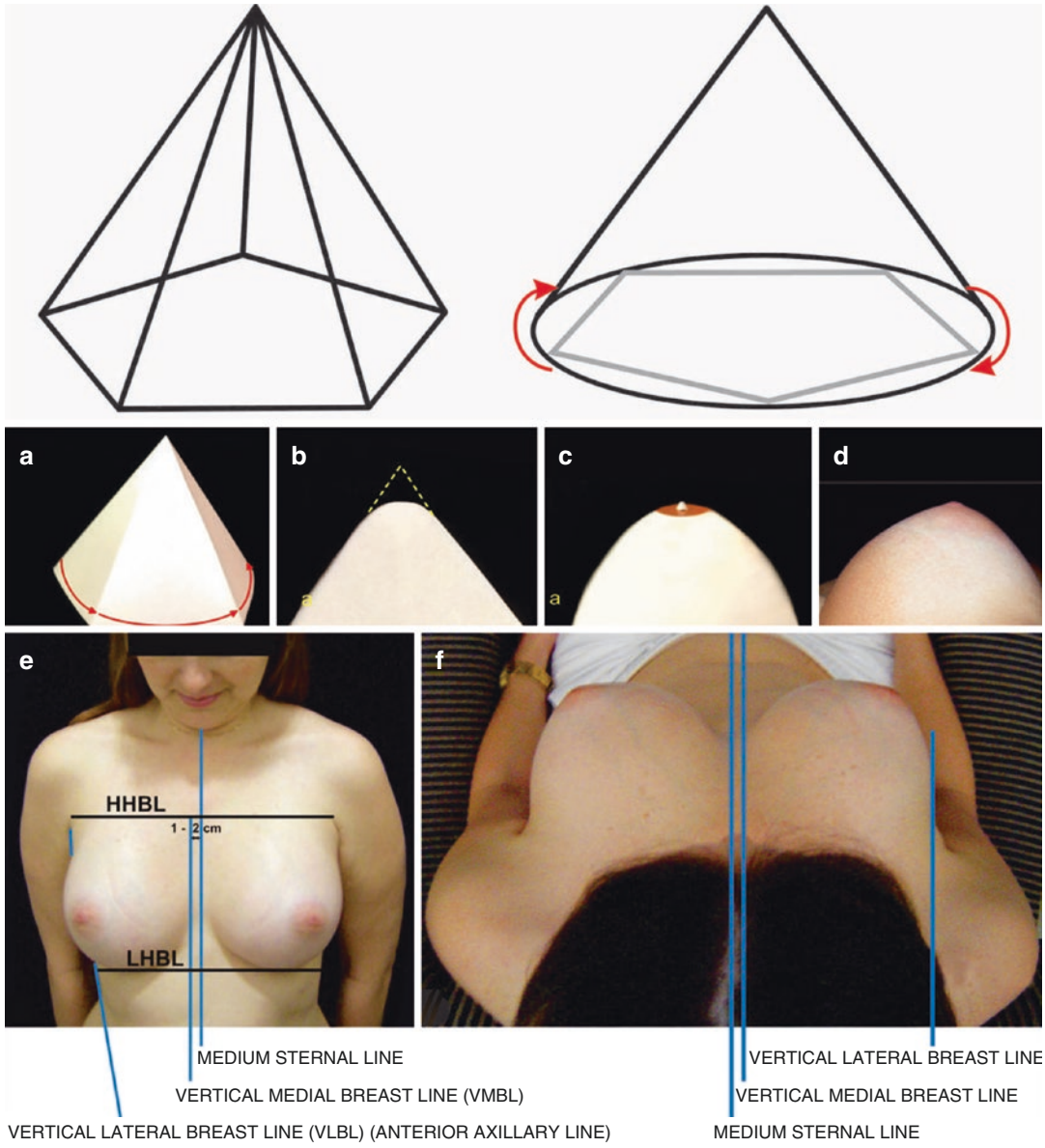

Fig. 32.3 (**a**–**d**) In a vertical view: a perfect breast shape constructed by joining the five golden triangles by their closest sides and by their apexes, forming a golden pentagon

changed over time because of different cultures, individual wishes, and fads. But a beautiful breast shape does not change. He also claims that phi must not be fixed as an exact measure, but rather be an indisputable reference.

32.1.2 Diagnosis of Breast Shapes and Volume Alterations

The diagnosis of the breast shapes and volume alterations can be determined in accordance with the metric changes of breast implantation on the thorax and their relationship with breast projection. It is possible to divide mammary hypertrophy into four groups (Fig. 32.4).

Group I (*GI*): the breast presents a normal base and projection. Its volume is adequate, but the shape is modified owing to ptosis. From the frontal view we can observe a reverse of the vertical and horizontal diameters. The superior section of the breast becomes empty and, from the lateral view, plane M can be observed below plane A.

Group II (*GII*): the breast presents a small projection and its base of implantation is wide. If it is beyond the VLBL and MVBL lines, symmastia and/or lateral axillary extension are caused.

Group III (*GIII*): the breast presents a large projection, but its base is minor/small and does not reach the VLBL and MVBL lines.

Group IV (GIV): the breast presents a large base and projection. We can combine GII and GIV, but those proportions can be found in GII, GIII, and GIV.

Ptosis: the breast presents a large volume and the elastic resistance of the skin is poor. In a frontal view, the point and plane M can be observed descending from plane A and point I into/toward the inframammary sulcus. These movements always take place gradually and over time (Fig. 32.5). The vertical diameter is reduced, and the horizontal diameter is widened. The upper pole of the breast becomes empty. The positions of points I are unalterable over time and they become points A when they are projected onto their breast meridians. It is the measurement between points A and M that indicates the skin surplus and how to execute the incisions and their skin extensions. Thus, the scars depend on the ptosis. If we have to

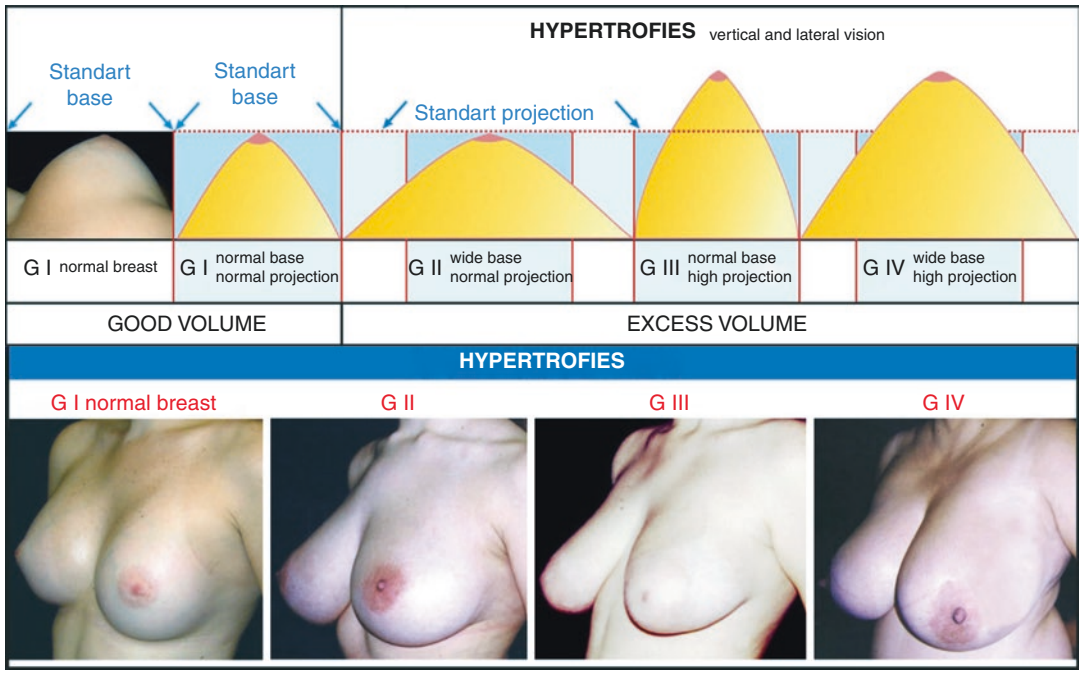

Fig. 32.4 Classifications of mammary hypertrophy according to the extent of the breast implantation on the normal thorax and their projections

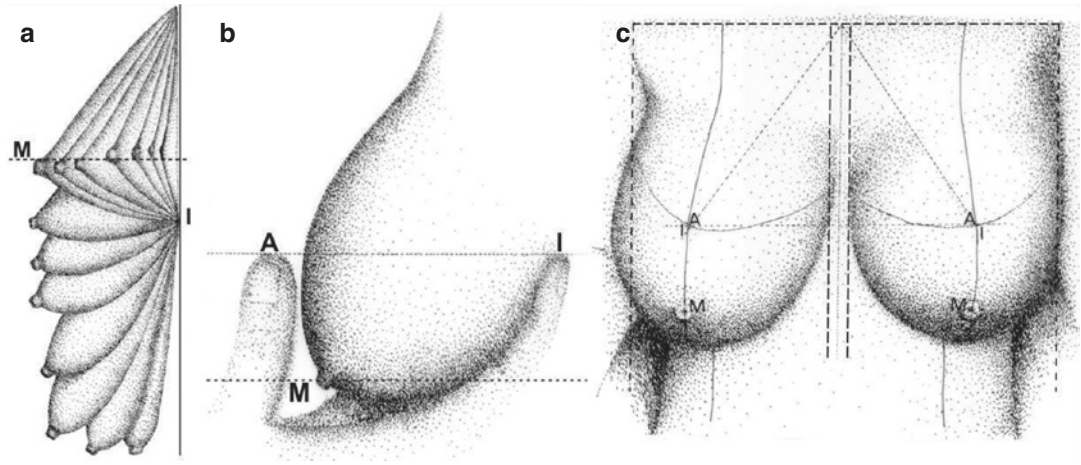

Fig. 32.5 (**a**) Schema of anteroposterior breast growth and its projections into the space that subjects it to gravitational forces, making it sag over time. (**b**) Point I when it is projected onto the breast determining point M. (**c**) A frontal view of the breast points already described

remove a small/minor volume, this means that we will obtain a small/minor scar. Points I and their corresponding points A (Pitanguy 1963) should be equidistant from the medial breast and external line. Points M are sometimes located in an ectopic position in ptosis cases.

There is a direct relationship between the A–M measurement and the final scar. With AM: 0–2 cm the alterations are in shape, volume, and NAC position, no ptosis, and it is possible to perform surgery resulting in a periareolar scar (Aboudib and Castro 1998; Andrews et al. 1975; Baran et al. 2001; Benelli 1990; Bozola 2009; Bustos 1992; Fayman et al. 2003; Goes 1996; Martins 1986; Ribeiro et al. 1998). With 3 cm, I had a final vertical scar (Ariê 1957; Bozola 1984; Ribeiro 1990) in those with an A–M measurement of 4–7 cm, an L scar (Bozola 1990a, b, 2011; Bozola 1984; Chiari 1992; Elbaz and Verheerke 1972; Horibe et al. 1956; Meyer and Kessehing 1975; Regnault 1974; Sepulveda 1981); and in those with A–M distances an inverted T scar (Lima 1979; Mckissock 1976; Peixoto 1980; Pitanguy 1963; Pontes 1973; Strombeck 1960). The T technique allows an extension of A–M value plus 2 cm, which reduces the horizontal scar by half, because of the skin compensations that are described later. The T technique provides an extension of only two times the A–M value plus 2 cm.

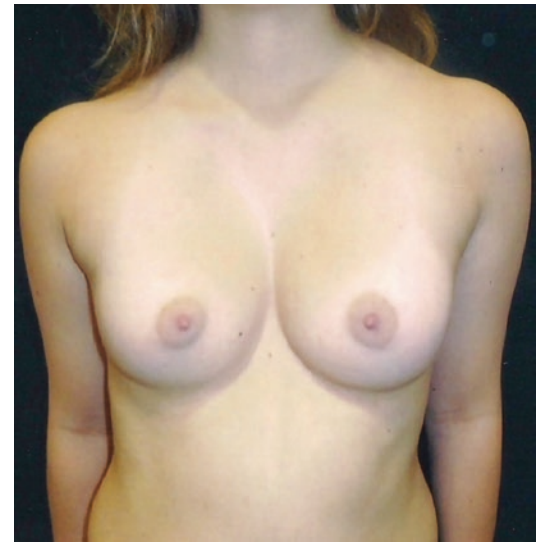

Fig. 32.6 Alteration of the thorax shape (pectus excavatum), which changes the breast bases of implantation and their projections

NAC: ectopic positions on the vertical and horizontal axes, diameter, shape, projection, and color must be individually analyzed.

Breast symmetry: diagnosing aesthetic diseases of the breast depends on their shape, volume, ptosis, NAC positions, axillary extension, pectoral pillars, anatomical thorax alterations, curvatures of the ribs, projection of the external bone (Fig. 32.6), musculature, and spinal pathological conditions.

32.2 Method

Skin markings: with the patient standing up to obtain the HHBL, LHBL, VMBL, VLBL, the mammary meridian, points I, A, and M, and the A–M measurement (Fig. 32.7). The, with the patient in a supine position, with arms at 90° relative to the thorax, the marks are made according to the A–M measurement. Place your flattened hand on the lateral breast side and push it until you can correct the breast meridian (Fig. 32.8a).

A superior semicircle with a radius A–M based on the pivot point M is drawn (Fig. 32.8a). From point I on the meridian of the breast, mark the A–M measurement upward. Based on the pivot point at its superior extremity, mark a quarter of the circle in the lower medial quadrant, also with the radius A–M, and join it to the medial end of the superior semicircle (Fig. 32.8b). From point I, the A–M measurement is transferred laterally on the submammary fold and the horizontal A–M is marked, elevating its extremity in the same proportion as the intended reduction in the diameter of the base of the breast (1–2 cm) (Fig. 32.8c). From the lateral extremity of this marking, up to point A, with a little upward traction of the skin, a line is marked where the curved oblique A–M is drawn. The oblique A–M is curved approximately 2 cm too (Fig. 32.9a).

The lateral superior semicircle is then joined to the inferior marking.

On the latero-superior quadrant, I draw a skin prevent triangle based on two equal arches that join each other at the bisector of the angle of the meridian and a horizontal line passing to M, height 1–2 cm, and give the surgeon a small amount of excess skin to aid in closure and to prevent tightness below the areola (Fig 32.9b).

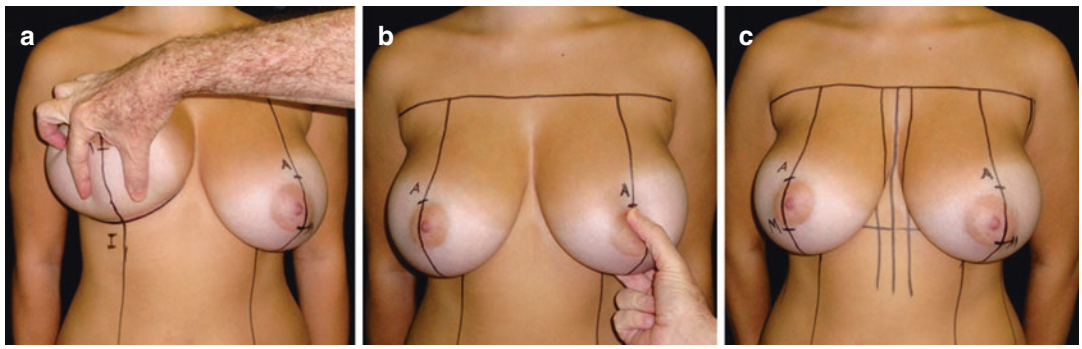

Fig. 32.7 (**a**) Point I. (**b**) Obtaining point A through a point I projection on the breast. (**c**) With the patient standing and presenting the large projection of point M on the breast ectopic cone comparing with the NAC and the mammary lines and points

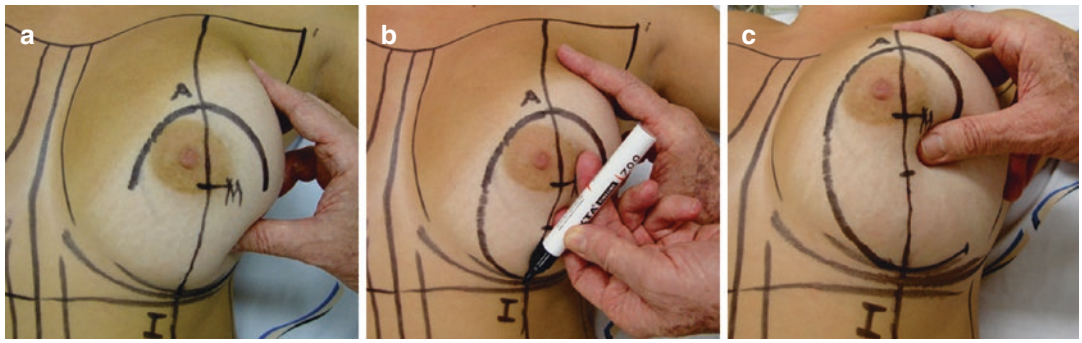

Fig. 32.8 (**a–c**) Marking out the skin resections based on the measurement of A–M. Please see the text

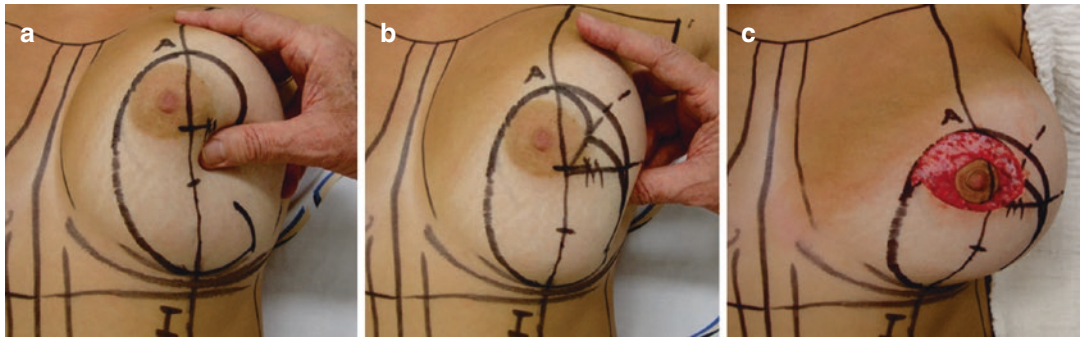

Fig. 32.9 (**a–c**) Skin resections already marked and superior de-epidermization

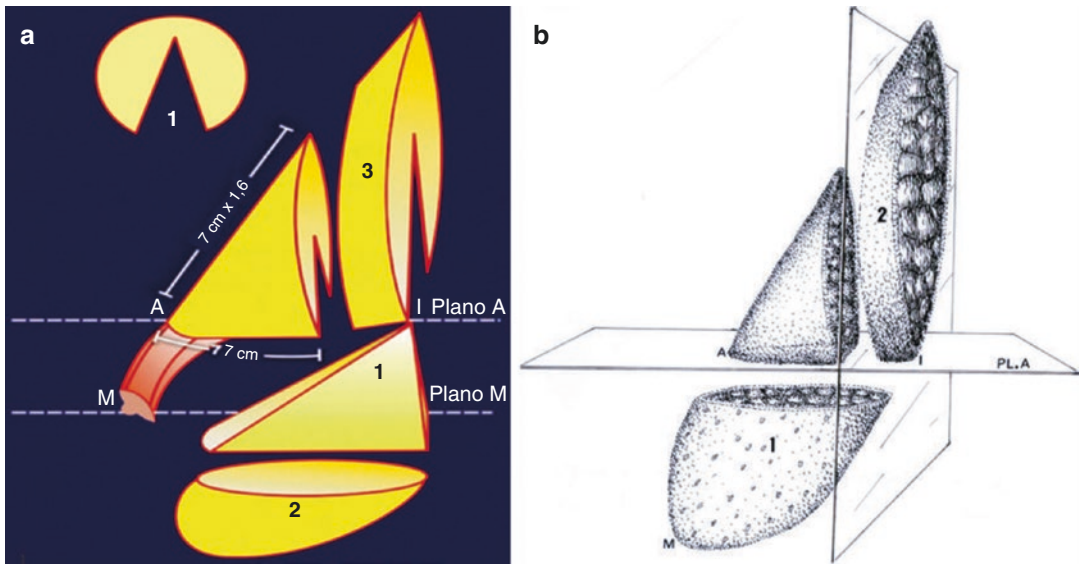

Fig. 32.10 (**a**, **b**) Schema of the breast tissue removal in group IV. *1* A breast reduction wedge in its latero-lateral diameter. *2* Ptosis of the breast volume. *3* A resection of the breast base to aim to reduce its projection, providing the remaining breast tissue with a suitable shape and a volume inside the mammary lines. The areolar pedicle is de-epidermized

32.2.1 Mammary Glandular Resection

The mammary gland resection and assembly is variable according to each group.

Group IV: to correct this type of breast, it is necessary to carry out a resection of the ptotic excess under plane A, and a resection of the vertical wedge to reduce the base (Figs. 32.10a and 32.11a), in addition to a resection of the base, in two parts, medial and lateral, reducing the height (Fig. 32.10). It is possible to reduce the projection with a resection and an inverted wedge under the NAC, easily elevating it. The lateral and medial parts are sutured to each other, except under the areola when the A–M measurement is much longer. The first and superior stitch the same as in GII.

All the time, think about the possibility of obtaining the shape, proportion, and volume described in Fig. 32.10.

It is important for the subcutaneous tissue in the whole the wound to be maintained at the same thickness as the subcutaneous tissue in the thorax.

During the resection of the breast tissue, this thickness must be left to avoid damage to the neurovascular supply to the skin and gland because this is embryologically ectodermic. The resection of the base of the mammary cone should follow the thoracic curvature so that the gland can be removed up to the axillary region. Resections of excess gland under plane A should accompany the skin mark parallel to point I. If this is done perpendicular to the thorax, it cuts the normal future cone, flattening its inferior pole. In all cases, it is important to leave a small flap of subcutaneous fat with an inferior pedicle and fixed naturally on the thorax, at point I, to avoid an empty appearance when the patient raises her arms (Fig. 32.11d) This is to rebuild the inferior aspect of the cone. When the patient has the upper pole emptied, a long and narrow flap is necessary to fill the breast, and increase the vertical diameter. The medial and lateral columns of the breast tissue must be sutured together to avoid dead spaces, except in the subareolar area, when the A–M measurement is longer.

Group III: The resection is performed in the base to reduce the height of the mammary cone with "amputation of the base" (Fig. 32.11b–c). It is possible to reduce a small excess of projection with an inverted wedge. In this case, it is not a good idea to suture the lateral and medial columns to reduce the projection.

Group II: After resection of the ptotic mammary gland under plane A, to correct the ptosis,

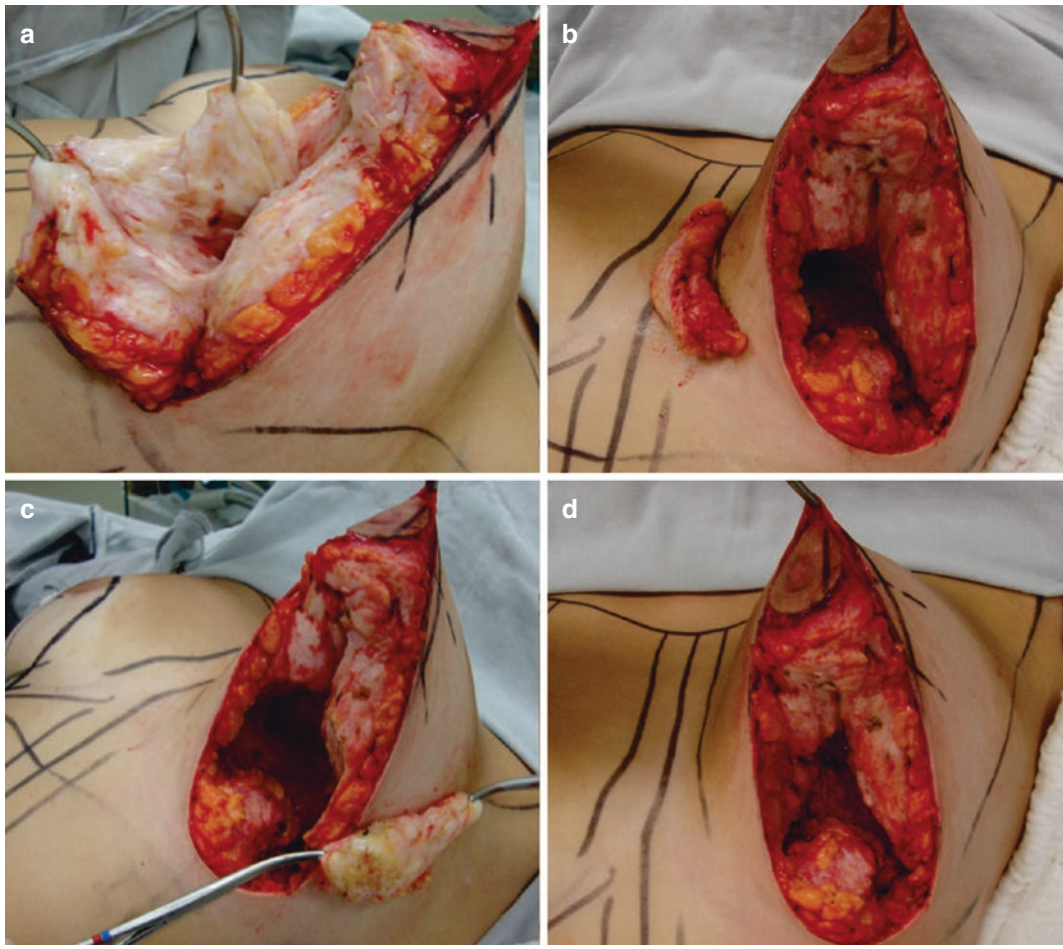

Fig. 32.11 (**a**) Ptosis and wedge resection as a whole (group IV), or leaving it entire or as part of it as an inferior pedicle (flap; group I). (**b**) Resection of the medial base (groups III and IV). (**c**) An inferior minor flap that is always left in groups II, III, and IV. (**d**) Resection of the lateral base (groups III and IV)

except for the NAC and its pedicle, a wedge is resected from near the apex to the base of the mammary gland to reduce its horizontal diameter and the lateral and medial glands are sutured to each other. The superior and first stitch fixes the aponeurosis of the pectoralis major muscle. The diameters are inverted. (Fig. 32.11a).

Group I: as there is no excess of mammary tissue, an axial flap is made of the mammary gland that is under plane A, except the NAC and its pedicle (Figs. 32.10a and 32.11a). The axial flap can be de-epithelialized or the skin can be completely removed. The remaining breast is freed from its insertion into the pectoralis major muscle, enough to slide the flap under the mammary gland and suture it vertically on the aponeurosis of the pectoralis major muscle (Ribeiro et al. 2002). Afterward, the lateral and medial glands are sutured together, or not, if the projection of the breast is to be reduced. In cases where there is an excess of axillary extension, part of the lateral flap is resected. With all these maneuvers, the inferior pole of the breast is emptied, the postero-anterior direction is increased, and the breast is filled. Again, the vertical diameter is longer than the horizontal diameter.

Suturing of the skin: pulling point A in a vertical and medial direction, the skin compensation is made to the lateral up to point I or 1 cm more medial than this with oblique A–M and horizontal A–M (Fig. 32.12a). Now, to adjust the difference between the great medial and the

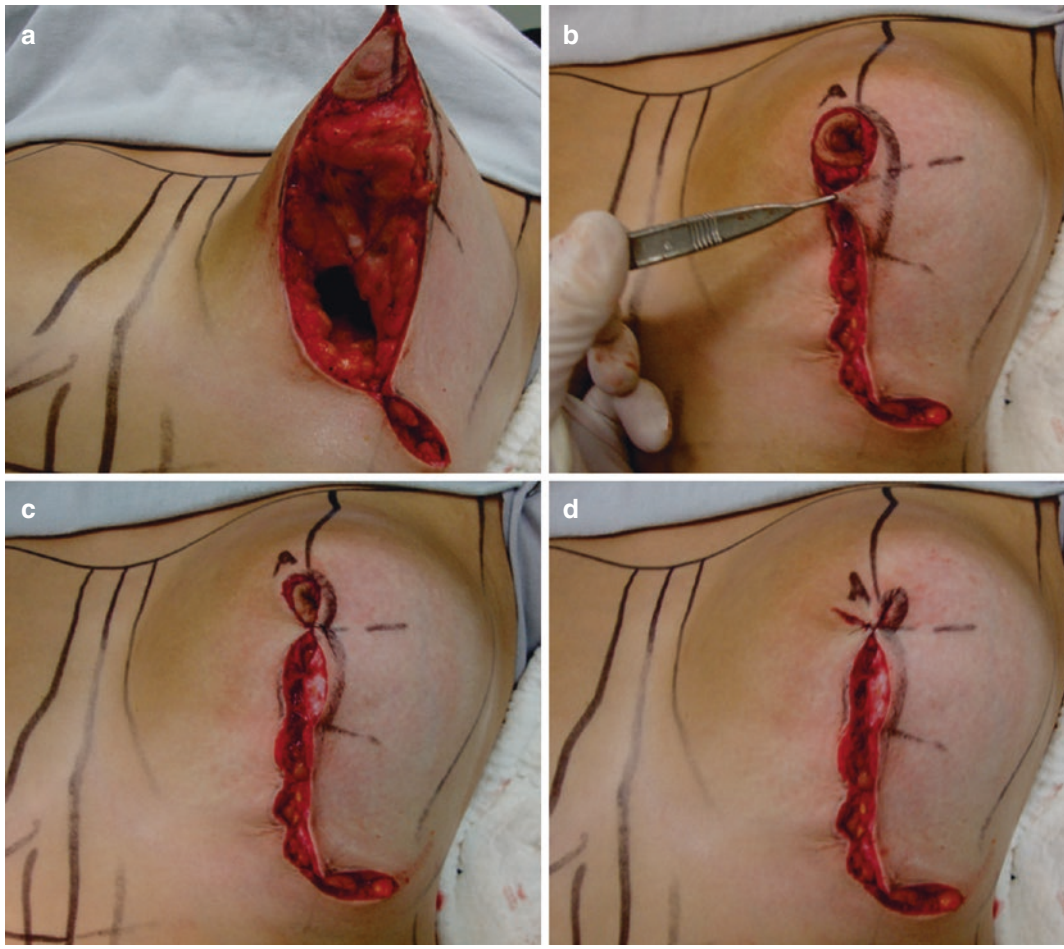

Fig. 32.12 (**a**) At the beginning of the suture from the lateral to the medial side. (**b**) The suturing of point I toward the areolar region with a semi-colon shape and a possibility of using or not using the skin security triangle. (**c**) The end of the vertical suture. (**d**) The end of the V–Y suture

short lateral surgical margins. At the beginning, it is necessary to execute the subcutaneous suture and then the skin suture. On the medial side, the needle should be inserted in a parallel incision line and, from the side, the needle should be inserted in a perpendicular direction. This suture is called a "semi-colon shap". What adjusts the slope naturally (Fig. 32.12b). To remove the tension to elevate the areola, an incision is made in the dermis in the lateral part of the areola. The tension on point A is released, and the lateral and medial sides are equally distributed and sutured to each other from the sulcus to the top, where a purse-string suture is inserted. The skin triangle in the supero-lateral quadrant is resected partial or totally or sutured under the areola to adjust the vertical suture (Fig. 32.12b), if the ptosis is small. If the ptosis is medium, it is not necessary to insert the purse-string suture as well; thus, I insert three stitches (v–y) around the skin excess at the extremity of the cone, or end in a vertical suture (Fig. 32.12c). After both, if the breast has considerable ptosis, the skin excess will exist mainly on the medial side; because of this, a purse-string suture is inserted (Fig. 32.13a). After both breasts are sutured, the new position of the NAC is marked in such a way that its superior margin is situated at the apex of the mammary gland (Fig. 32.13b). The purse-string suture is removed, or the three stitches, and the left and right sides of the circles are compared. The excess skin is removed, and the areola is sutured into the new position. If the diameter of the de-epithelialized area around the areola is more than twice its size, this is not good. Its suitable size measures one and a half times of the size of the areola.

During the suturing of the areola (Fig. 32.13c), there must be similar tension at the cardinal points, and there will be wrinkling of the skin, mainly on the medial side, when the A–M measurement is approximately 7 cm, which will disappear over a period of 60 days. When large wrinkles occur in patients with very elastic skin or an A–M measurement of more than 7 cm, the results are not good, and this is the only limiting factor in maintaining the final L scar. If this occurs, the skin excess is rotated downward to the medial submammary fold, where a resection is carried out with a final short inverted T scar, twice the size of an L scar.

Also, the limiting factor in obtaining a final L scar is not the volume, but the degree of ptosis, which is related to skin elasticity. For example, depending on the A–M measure, it is easier to obtain a final L scar in resections of 600 g than in

Fig. 32.13 (**a**) The end of the areolar bag to aim the circular compensation, based on the measurements of the excess skin. (**b**) Marking the location of the nipple–areola complex and correcting the position of the horizontal and lateral suture upward to the glandular edge, pushing the breast with the hand upwards. (**c**) The concluded sutures resulting in a horizontal scar that measures at most A–M +2 cm, and the vertical scar measures the same height of the new breast cone

those of 200 g. The excess skin that is removed by the purse-string suture corresponds to the skin resected in the medial part of the mammary fold in the inverted T technique.

Sometimes it is necessary to correct the horizontal scar, to put it up on the inferior glandular border, to compress the breast toward the upwards and remove a lateral skin triangle to compensate and increase it to 2 cm.

The suturing of the wound must begin from the sulcus and go up to the apex, and the breast tissue must have a rotation from lateral to medial, ending with a purse-string suture at the level of the areola, which allows more skin to be resected, resulting in a small scar.

Another important factor in the standardization of results is to leave the same size and volume of breast tissue columns in all patients, and the inferior pedicle flap if necessary, with the lateral one a little longer than the medial one, to follow the curvature of the thorax. Also, the standardization of volume that remains will give final symmetry, even in preoperatively asymmetrical breasts. Perfect unitary build-up of resections of the skin, an envelope suture with minimal tension, and a good areola position will provide good long-term results.

32.3 Results: Discussion and Conclusions

In the L technique, good and bad final results are proven only about 6 months after the surgery. They can be in relation to ptosis (Figs. 32.14 and 32.15), shape and final volume, breast asymmetries, and nipple diameter. If the technical maneuvers have not been correctly executed, the consequences will be apparent. When the sutures of the mammary cone are built from its upper mammary pole toward point I (in the superiormost position with the aponeurosis of the pectoralis muscle) the final shape results are good and durable. The irregularities of the confluence of the vertical and horizontal scars are reduced if A–M has a maximum value of 7 cm. The skin resection that leaves the ratio of content to container prevents residual ptosis and bad final scars. The NAC diameter can increase if skin tension exists around. The larger the volume removed, the greater the scarring. So, a minimum percentage of breast asymmetry should be permitted (Fig. 32.16).

The NAC sensibility presents in a normal state when the mammary gland detachments are reduced because it preserves the peripheral breast tissue of the thorax.

If it was possible to lift the NAC without tension, traction, or twisting, there was no necrosis of the NAC in this series of patients. Most of my patients were very happy with the final result in the immediate and late postoperative periods.

After undermining the resected glandular tissue slightly, the lymphedema is small too, and in the late follow-up period its regression reduces the volume by about 10–15%.

The L scar technique is executed through/with/for skin compensations as the breast apex towards its base, from the medial breast side to the lateral side, on the inframammary sulcus. It is indicated for any size of ptosis, but in cases of severe ptosis, it will extend beyond the VLBL and the scars will offer bad final results over time because of the movements of the patient's arms.

Throughout man's evolution, the limbic brain systems have been marked out with attractive features of what is visually beautiful. One mathematical proportion has been repeatedly referred to be contained in beautiful general forms up to the present day. Beautiful is an adjective that determines what the human vision can capture from shapes, volumes, proportions, outlines, lights, glows, shadows, colors, movements, and postures. Plastic surgeons must recognize why a breast is beautiful and how to correct their aesthetic changes (Atalay 2004; Bashour 2006; Eco 2004; Etcoff 1994, 1999; Gil and Médici Filho 2002; Langlois et al. 1987; Livio 2005; Marquardt 2010; Ono et al. 2007; Preston 1993; Ricketts 1982).

Fig. 32.14 (**a–f**) Pre- and postoperative pictures in a frontal, oblique and lateral view of a group IV mammoplasty presenting an L scar

Fig. 32.15 (**a–h**) *Right* and *left* breast sides observed from a frontal, oblique, and lateral view, applying the concepts of the L scar technique just on the left breast, patterning form and volume of the right breast

Fig. 32.15 (continued)

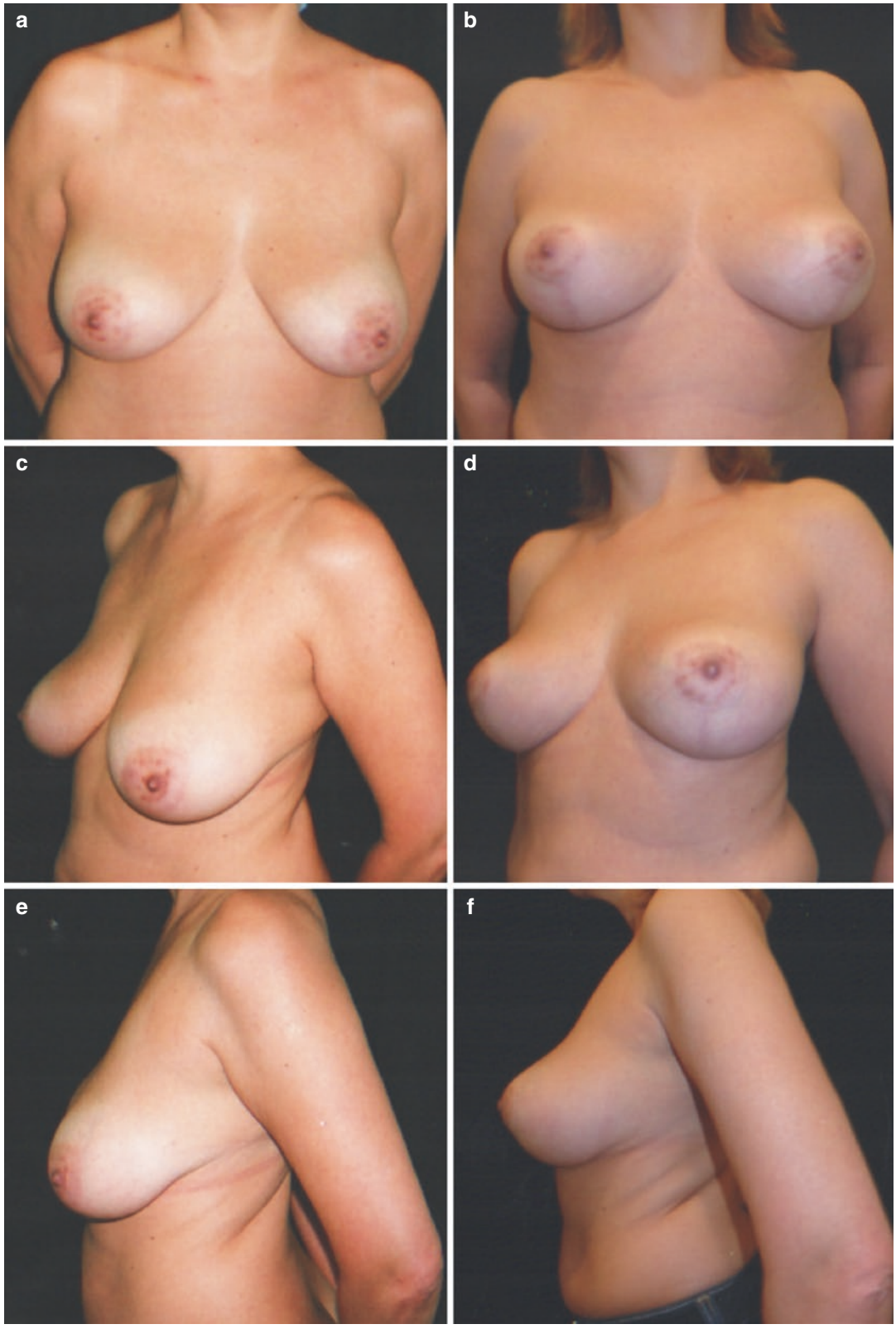

Fig. 32.16 a Pre and pos op of breast reduction Ppying the L scar technique.

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