



Breast Reduction: 33 Years Using a Single Central Block

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Abstract

Background Since 1985, the author has been using the single central block technique for breast reduction and mastopexy, prioritizing the good relation between the final breast shape and the length of the scars, different from other authors who emphasize only the shape of the breast (Peixoto in *Plast Reconstr Surg* 65(2):217–225, 1980; *Aesthet Plast Surg* 8:231–236, 1984) and others who have drawn attention to the length of the scars (Arié in *Rev Latinoam Cir Plast* 3:23–31, 1957; Bozola in *Plast Reconstr Surg* 85:728–738, 1990; Sepúlveda in *Rev Bras Cir* 71(1):11–18, 1981). In this study, the author describes the use of a single central block of the mammary tissue and the nipple–areolar complex (NAC), dissected from the skin flaps and based on the superior vascular pedicle for reduction mammoplasty and mastopexy (Erfon et al. in *Annals of the international symposium recent advances in plastic surgery*, São Paulo, 1989; Hinderer (ed) *Plastic surgery*, Elsevier, Madrid, 1992; *Proceedings of the 65th annual scientific meeting of the American society of plastic and reconstructive surgeons*, Dallas, 1996).

Methods A retrospective study was performed, evaluating patients who underwent breast reduction and mastopexy using the single central block technique from July 1985 to December 2018 by a senior author.

Results A total of 2097 procedures were performed using this technique, 1556 being reduction mammoplasties and 541 mastopexies. The mean patient age was 44, and the mean weight of tissue resected was 455 g. Fat necrosis on the distal area of the flap was observed in 47 cases (2.24%).

Hematoma was observed in 6 patients (0.28%). Surgical revisions were undertaken in 75 patients (3.57%). Hypertrophic scars occurred in 12 of the cases (0.57%). Dehiscence in the inverted “T” scars occurred in 78 of the surgeries (3.71%).

Conclusions This technique allows the surgeon to easily form a good cone shape of the breast, repositioning the NAC and preserving its vascularization and sensation without tension on the skin flaps sutures, resulting in smaller and better scars.

Level of Evidence IV This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Breast reduction · Mammoplasty · Mastopexy · Single central block · Nipple–areolar complex (NAC) · Superior vascular pedicle

Introduction

Since 1985, the author has been using the single central block technique for breast reduction and mastopexy, prioritizing the good relation between the final breast shape and the length of the scars, different from other authors who emphasize only the shape of the breast [1, 2] and others who have drawn attention to the length of the scars [3–5].

The senior author introduced a new idea producing a good breast shape in association with reduced scarring and less tension in the sutures, by appropriate adjustment of the new breast mound with the skin that surrounds it with a superior vascular pedicle and nipple–areolar complex

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(NAC) on its top [6–8]. The reduction in the size of the scar is respected with this technique, though within the natural limits of possible skin contraction. That varies from one patient to another according to the skin's elasticity.

The scars can end up in an inverted “T shape” or in “peri-areolar and vertical incisions”, according to the amount of skin and lipo-glandular tissue to be resected in each case, using the principles of the single central block with the NAC on its top and superior vascular pedicle. The skin flaps are sutured over the single central block without tension favoring the final breast mound and good scars.

Materials and Methods

A retrospective study was performed in 2097 female patients, undergoing breast reduction and mastopexy, operated on by the senior author with a single central block technique (a superior vascular flap), from July 1985 to December 2018.

Patients were separated into two groups: 1556 patients were submitted to breast reduction (G 1), and 541 had mastopexy performed (G 2). In the G 1 category, the mean weight of tissue resection was 613.19 g, and in the G 2 there was no lipo-glandular tissue resection. Basic principles were observed: (1) the lipo-glandular tissue modeled in a single central block, with the NAC on its top and dissected from the medial and lateral skin flaps; (2) a superior vascular pedicle published by Weiner [9], modified by the senior author [6, 7]; (3) marking with small incisions, based on the skin's contraction, which cover the breast mound without tension over the skin's sutures [7, 8].

Inclusion criteria were women from 17 to 75 years of age, BMI less than 30, with breast ptosis, with small to large breast hypertrophy, without medical problems which would preclude the surgery. Smokers were advised to stop for at least 1 week prior and 1 week postoperatively. All patients underwent preoperative exams.

This study was performed in accordance with the 1964 Helsinki Declaration for research in human subjects and subsequent amendments. All patients provided written informed consent for surgery and use of photographs.

The exclusion criterion was patients who submitted to mastopexy with silicone implants.

Technique

With the patient standing up, a dotted line is drawn from the furcula to the xiphoid. It serves to check for symmetry between the breasts. At the same time, the sub-mammary sulcus is also defined (Fig. 1a). The uppermost point of the new NAC (Point “A”) is marked, 2 cm above the anterior projection of the infra-mammary sulcus (Fig. 1a, b). With

the patient under sedation and local anesthesia or under general anesthesia on the operating table, the demarcation continues: The table is set to 45 degrees. From point “A”, two lines are drawn ranging from 5 to 9 cm in length toward each side of the NAC, defining points “B” and “C” forming a triangle (Fig. 1b). This triangle becomes the superior vascular pedicle flap. The width of the vascular pedicle can be enlarged by using a semicircular line outside the “triangle”, uniting points “A”, “B” and “C” (Fig. 1b). In rare cases, when the NAC is very lateralized, its medial rotation can be improved, lengthening the distance between “A” and “C” relative to the distance “A” to “B” (Fig. 1c). From points “B” and “C”, two straight lines each 5 cm in length are marked downward with the inclination between them depending on the amount of skin to be resected (Fig. 1c). Marking is concluded uniting the distal end of these two segments of lines with the sub-mammary fold (Fig. 1c). The marking is repeated on the contralateral breast, and symmetry is checked using the anterior midline of the body, keeping an equal distance between it and medial incision of the drawing in each breast. Marking can be concluded in an inverted “T”—(Fig. 1c, d) or in “V” shape (Fig. 1d) when the distal ends of two straight segments 5 cm long are very close to each other and to the sub-mammary sulcus.

The retromammary space is infiltrated with a saline solution (adrenaline saline 1:500 ml) when general anesthesia is used. For patients under sedation and local anesthesia, a solution used is one ampoule (1 ml) adrenalin (1:1000) in 160 ml saline in addition to 40 ml of 2% xylocaine, injected in the subcutaneous tissue around the base of the breast and into the retromammary space (80–90 ml each side).

The surgery starts with a circular areolar incision and de-epithelialization of the superior vascular pedicle around the NAC, extending up to 2 cm below it. A total skin resection is performed in the previously marked area in the lower pole of the breast. The medial and lateral skin flaps of only 2 cm thick are dissected. The dissection extends to 1 or 2 cm above points “B” and “C,” going to the muscle fascia (Fig. 2c, d). The lipo-glandular tissue is completely dissected from the chest wall, resulting in a single central block, comprising the breast parenchyma and the NAC, maintained by the superior vascular pedicle (Fig. 2c). The central block is reduced and modeled by resection of the breast mass in the lateral and medial quadrants (in a minor amount) by keeping the entire distal and posterior thickness of the single central block (Fig. 2c, d). Enough tissue is needed to accomplish the new breast mound (Fig. 2a, b, e–h). The single central block is sutured to the chest wall in the new planned position using two stitches with 3 × 0 colorless mono-nylon: one at the distal end of the flap fixing it to the center of the sub-mammary sulcus (SMS);

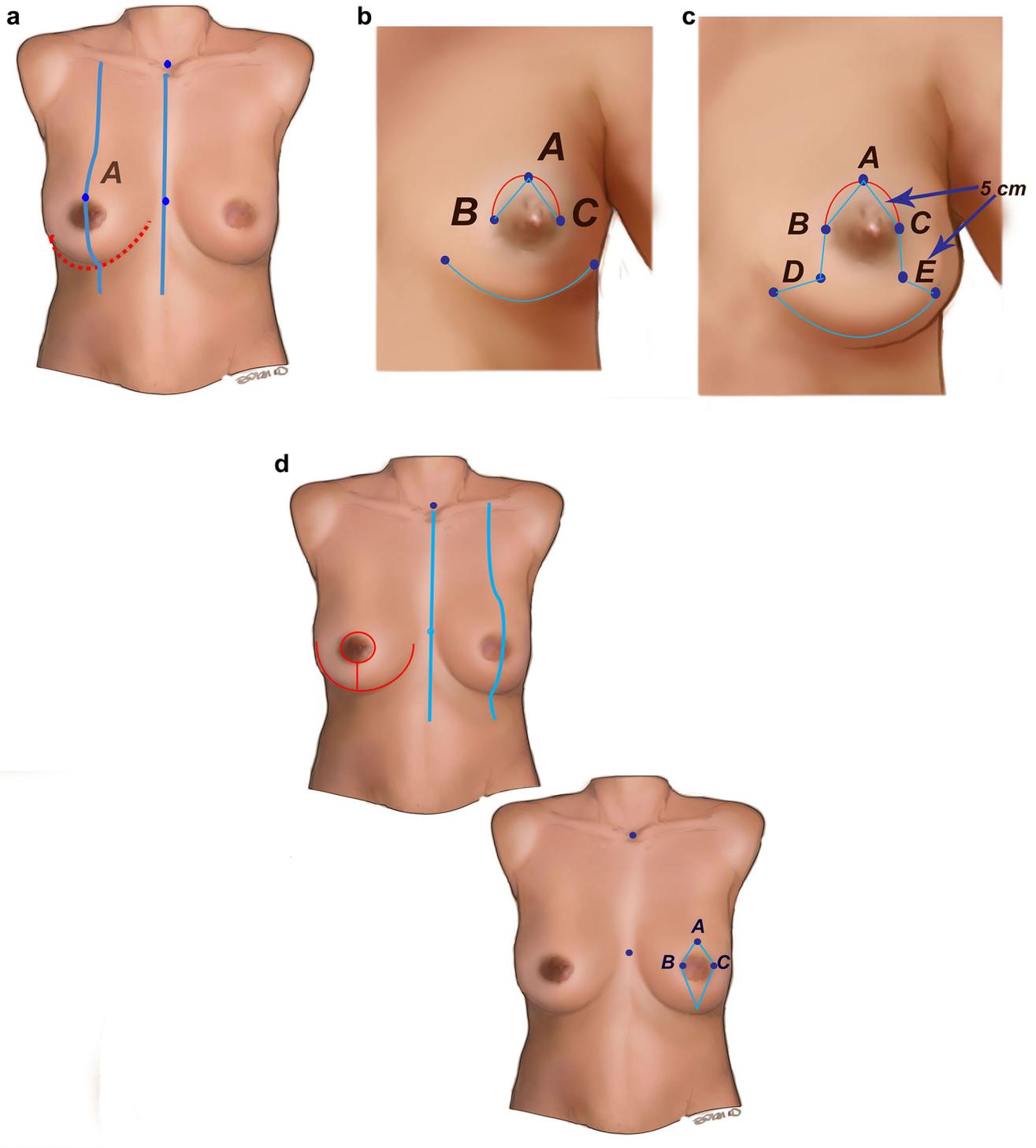


Fig. 1 Incision marking. **a** Marking starts with the patient standing up: point “A” and midline of the body and sub-mammary sulcus are drawn. The point “A”, which is the uppermost point of the NAC on its new position, is marked, 2 cm above the anterior projection of the

the other on the posterior part of the central block, suturing it to the muscle fascia, at the posterior projection of the NAC in its new position. Skin suture is started with 3

infra-mammary sulcus. **b** With the patient on the operating table, points “B” and “C” are marked around the NAC. **c** Marking is concluded in inverted “T” incisions (see text). **d** Marking is concluded in inverted “T” or “peri-areolar and vertical incision”

stitches using 3×0 colorless mono-nylon, uniting the medial and lateral skin flaps, by straight lines of 5 cm, which form the vertical scar. The first stitch joins the distal

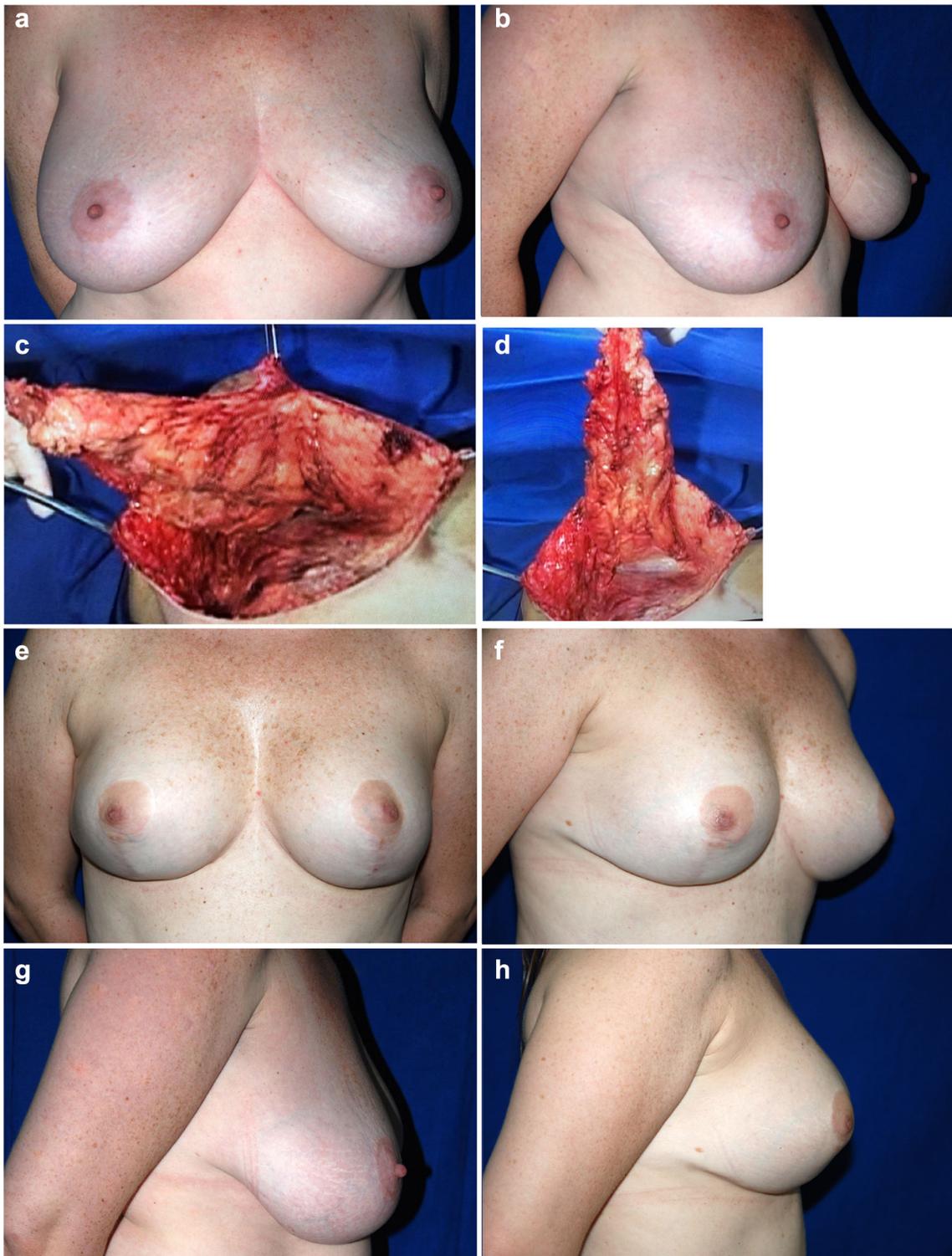


Fig. 2 a, b Pre-op breast hypertrophy; c, d trans-op showing a single central block with the NAC on its top; e, f 6 months post-op; g, h pre-op and post-op 6 months later—lateral view

ends of these two segments to the sub-mammary sulcus; the second joining points “B” and “C” to the lower board of the NAC; and the third one to the middle part. Now is

time to check for symmetry as far as the new breast volume and if the NACs are already in position (Fig. 3).

Skin flaps are sutured using subdermal stitches with 3×0 and 4×0 colorless mono-nylon and 4×0 or 5×0

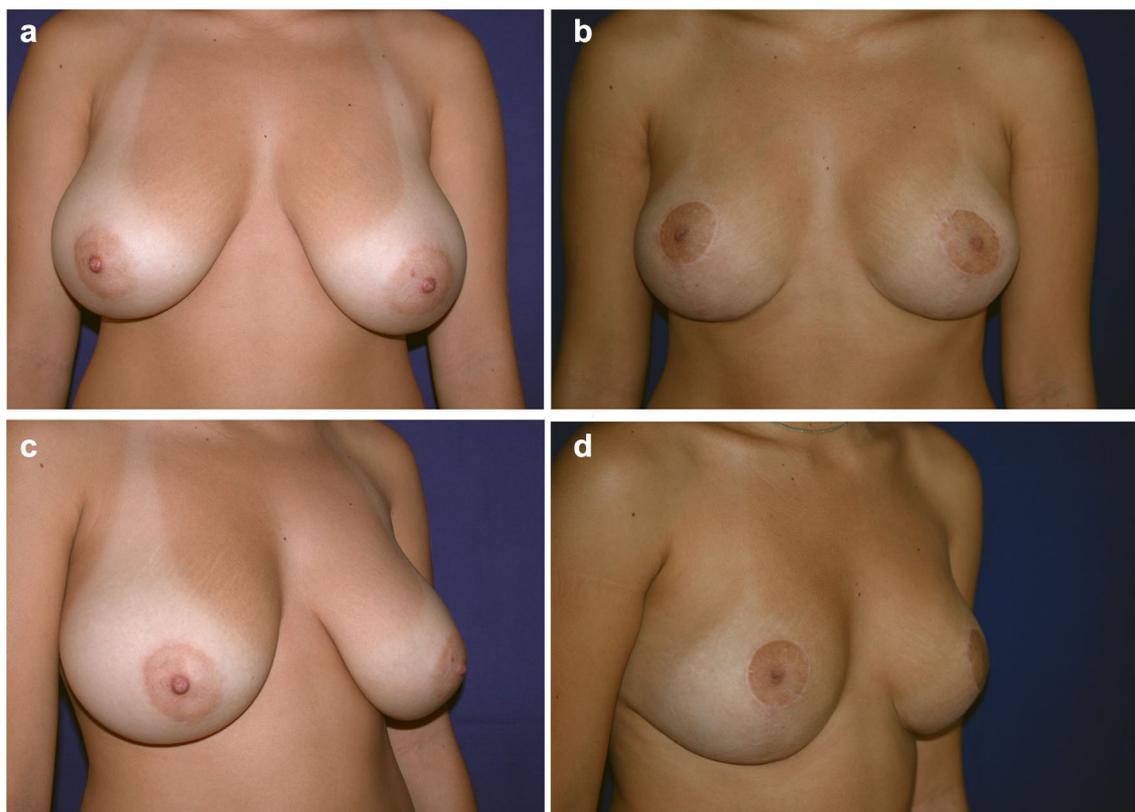


Fig. 3 Pre- and late postoperative of hypertrophy and mammary ptosis: **a** pre-op of hypertrophy and mammary ptosis; **b** post-op reduction mammoplasty, 8 months later; **c** pre-op oblique view; **d** post-op oblique view 8 months later

colorless mono-nylon in the NAC. Stitches can also be performed using Monocryl and the few external sutures with mono-nylon 5 × 0 (Fig. 4d).

Special brassiere is used for bandage with dry gauze for 2 months.

The same technique can be used in cases of mastopexy, removing only the skin, keeping all lipo-glandular tissue, suturing the lateral to the medial quadrants, improving the thickness of the central block, and forming an appropriate new breast mound (Fig. 4a–d).

Results

From July 1985 to December 2018, a retrospective study was performed. A total of 2097 breast reductions were carried out by the senior author using a single central block technique, in which 1556 cases were of reduction mammoplasties and 541 mastopexies. Patient ages ranged from 17 to 75 years. (The average age was 44 years.) The medium of lipo-glandular tissue resected ranged from 0 g (zero grams) in cases of mastopexies to 1950 g in the patients of reduction mammoplasties, with the average of 455 g per side. The duration of these surgeries varied from

1:30 h to 2:30 h (mean of 2:00 h). Drains are used for one day (Fig. 4d). The time for follow-up was 6 months or more when post-op photography was carried out (Fig. 3).

Since he has developed this technique, the senior author has observed better results than other techniques that he used before [10–12]. The possibility to perform resection in the upper lateral quadrant is an additional advantage, permitting better shape of the breast cone (Fig. 2c, d).

Complications

Steatonecrosis occurred at the most distal end of the flap in 47 patients (2.24%). Localized hematomas occurred in 6 patients (0.28%) all of which were treated with aspiration only. Dehiscence in the inverted “T” occurred in 78 cases (3.71%), since there is no tension over the skin flaps as is usual in other techniques. One case of infection that needed hospital admission was treated with intravenous antibiotics and local care which led to a 2-cm necrosis of the skin on the edges of the vertical scar, which required re-operation for wound closure and adjustment according to the contralateral breast. The senior author describes 4 cases (0.19%) of partial necrosis of the NAC in minimum extent, healed by secondary intention, but there was no case of

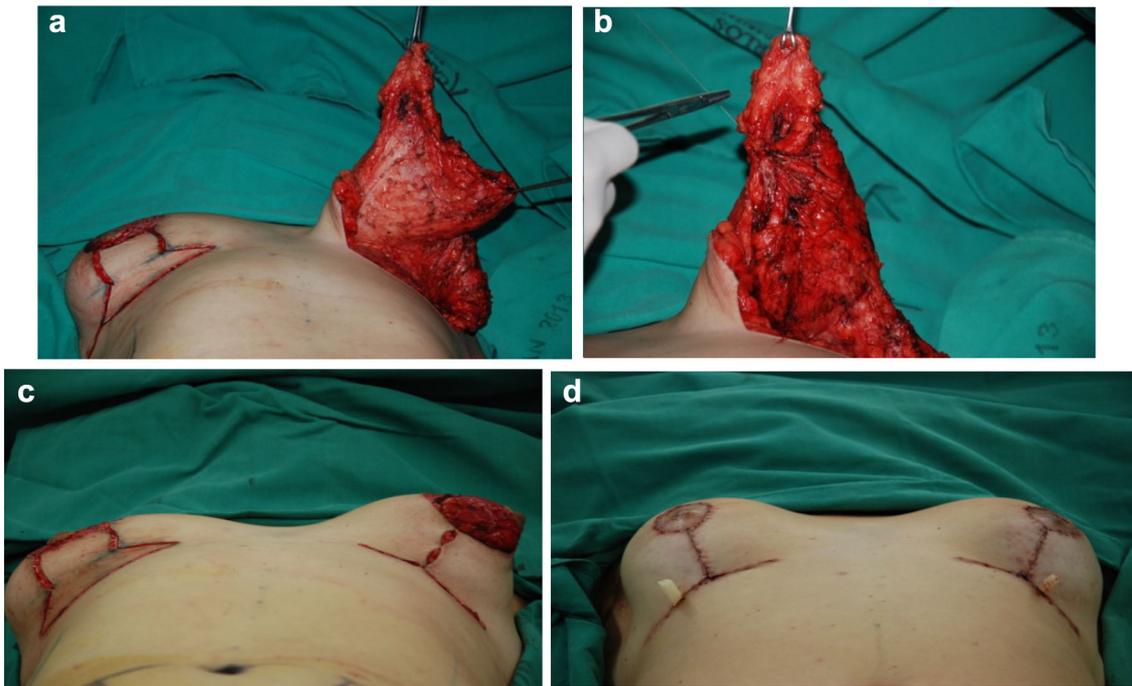


Fig. 4 a, b Trans-op of mastopexy suturing the lateral to the medial quadrants forming a single central block. c, d Trans-op of mastopexy suturing the skin flaps and final result

total necrosis. Hypertrophic scars occurred in 12 of the cases (0.57%) treated with triamcinolone injections, and 5 patients (0.24%) needed surgical revision and beta therapy (radiation therapy) and trans-operative application of intrascar triamcinolone. Nipple sensitivity reduction was related in 20 of the cases (0.95%) and breast-feeding just in 4 (0.19%). Secondary approaches were carried out on 97 patients (4.62%) for further reduction or skin adjustment.

Discussion

The aesthetic, psychological and physical common complaints like back pain, bra print on the shoulders and dermatitis in the sub-mammary folds must be considered in the breast reduction procedure improving the quality of life of the patients [13–15].

There are different techniques to perform breast reduction, showing the difficulty of this kind of surgery. Some authors use the vascularization of the pedicle to classify their techniques [7–9]. Another group of authors emphasizes the form and shaping of the breast parenchyma [10, 12, 16–18], whereas others are concerned about the extent of the scars [1–3, 5], while the last group values mostly the planning and marking of the skin [19–22].

The Lexer's technique (1912) described the partial resection of the inferior pole implementing the NAC position and the final scar in an inverted "T" shape [23].

Schwarzman (1930) published the importance of preservation of the dermis to the vascularization of the NAC, de-epithelializing the vascular flap around the areola, concepts still used today [24].

Thorek (1942) recommended amputation of the lower pole of the breast and grafting of the NAC in very large breasts, where the lift of the NAC to its new final position was considered unlikely [25].

Arié (1957) published a new technique with the superior pedicle and peri-areolar de-epithelialization, NAC lifting implementation and closing in an inverted "T" shape [3].

Pitanguy (1967, 1976) modified this technique that became better known by his publications, drawing attention to predetermined lines during marking, breast construction and positioning of the NAC [11, 16].

Weiner (1973) published his technique with a superior single dermal pedicle to easily lift the NAC in cases of breast reduction, breast lift and subcutaneous mastectomy [9].

Strombeck (1960) brings the concept of a bi-pediculate flap in its horizontal form to breast reduction [10].

McKissock (1972) re-enforced this idea with the bi-pediculate flap in its vertical form [12].

Skoog (1963) published the superior-lateral flap to the NAC [26].

Silveira-Neto (1976) published the superior-medial flap to the NAC [27].

Orlando (1975) and Davison (2007) described the versatility of the superomedial pedicle [28, 29].

Jurado (1979) was the first to publish the inferior vascular pedicle [30].

Robbins (1977) re-enforced the inferior pedicle idea, gaining popularity because of its versatility and reliability [31].

For Abramo (2012) the superior dermal pedicle is primordial for good vascularization and the sensitivity of the NAC [32].

Agbenorku (2012) concluded that operating reduction mammoplasty on a group of patients with gigantomastia in Ghana resulted in the decrease in physical and psychological symptoms [33].

Chiummariello (2008) found the possibility of breast-feeding in most cases by comparing four different pedicles, for breast reduction, and the superior pedicle was favored more for postsurgical breast-feeding. His study showed satisfactory results: 60.7% with the superior pedicle, 55.1% with the lateral pedicle, 48% with the medial pedicle and 43.5% with the inferior pedicle [34].

Van Deventer (2008) reported the necrosis of NAC as a terrible complication that can occur in the hands of experienced surgeons [35].

Karsidag (2011) suggested a dermo-glandular superior pedicle and freeing graft of the NAC, in order to have better breast shape results and reduce necrosis of the NAC, in cases of gigantomastia and severe ptosis [36].

Foustanos (2011) published in cases of gigantomastia and dense breast parenchyma a change in the upper pedicle of the Pitanguy technique to facilitate the uplifting of the NAC, making two flaps that overlap, nourished by internal intercostal vessels and the other side, vascularized by the lateral thoracic vessels [37].

Fischer (2014) divided the complications in breast reduction into early and late as well as larger or smaller, with rates ranging in the literature from 5 to 30%, according to the secondary procedure. The early complications are: bruising, partial necrosis of NAC, skin or fat and wound dehiscence and infection. The late ones are: secondary ptosis, the hypertrophic scars, asymmetry, reduced sensitivity of the NAC and breast-feeding failure. Also associated clinical factors such as age, obesity, diabetes, hypertension, smoking and surgical factors such as resected breast volume and duration of surgery with higher rates of complications [38].

Uebel (2019) concludes that the superior-lateral NAC pedicle breast reduction is a good technique to preserve the ability to breast-feed and nipple sensation. He reports 2% of decreased nipple sensitivity, and 0.75% of the patients were unable to breast-feed following surgery [39].

Moufareege (2019) in his study describes the patients who considered that the erogenous sensation in their nipples was fully or almost fully preserved are 70.4% [40].

The discussion shows that there are many techniques, each one described with their advantages and disadvantages.

The single central block technique is easy to plan and perform.

Keeping the single central block of lipo-glandular tissue and the nipple–areolar complex (NAC) on its top, thick enough to accomplish a new breast mound, completely freed from the chest wall and from the skin medial and lateral flaps permitting the lift of the NAC easily to its new position and creating a good shape of the new breast mound is our goal. It can be easily performed by new surgeons, and there is the possibility of changing the initial marking during the procedure when necessary (Fig. 2g, h).

The symmetry between the breasts is very easy to identify using a single central block technique. When a higher rise is necessary for the NAC, the single central block should be longer, narrower and thicker (Fig. 5).

Giving patients an appropriate physical and psychological change that can help a seamless integration between body and mind has been a constant concern of the senior author.

Conclusion

Breast reduction is one of the most difficult surgeries in body contouring. The purpose is to create a new breast with a beautiful breast cone, adequate in volume and shape, with a well-positioned NAC and its vascularization and sensitivity maintained (Fig. 3).

The advantages observed were: easier to model the breast in a cone shape; easy lift of the NAC; good preservation of vascularization of the NAC and the skin flaps; preserving the sensitivity, easily identified by simple tests of tactile sensitivity and breast-feeding function; smaller and good scars, less tension in the skin flaps; easy rise of the NAC, which is kept in its new position, by the single central block of lipo-glandular tissue that is left inferiorly and posteriorly in it (NAC).

We conclude that this technique with a single central block with superior vascular pedicle, incorporating the breast parenchyma with the NAC on its top, is easy to plan and perform, with very satisfactory aesthetic results that can be an interesting surgical option in cases of breast reduction and mastopexy.

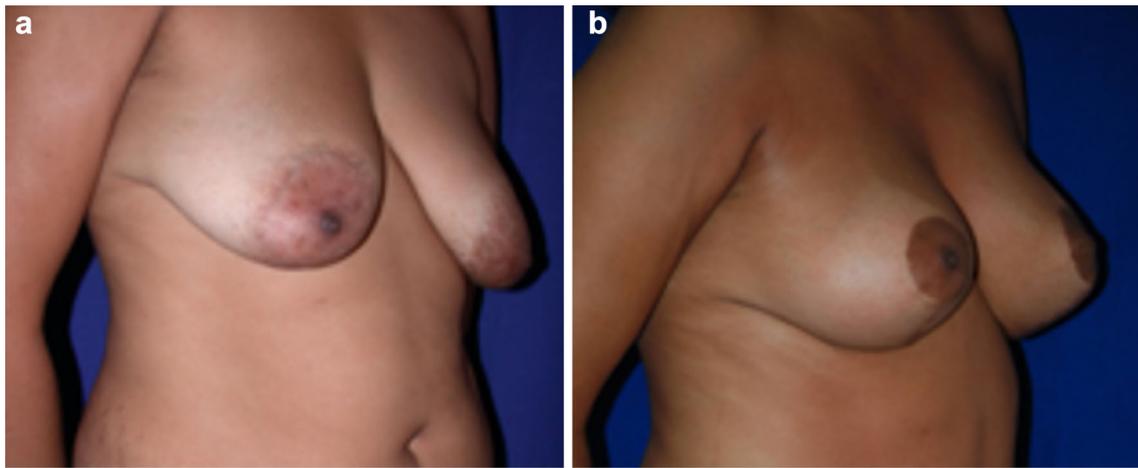


Fig. 5 a, b Pre-op and 6 months post-op of mastopexy without silicone implants

Compliance with Ethical Standards

Conflict of interest The authors have no conflict of interest, commercial associations or financial interests to disclose.

Ethics Statement This study was performed in accordance with the 1964 Helsinki Declaration for research in human subjects and its later amendments or comparable ethical standards. All procedures performed in studies involving human participants were in accordance with ethical standards of the institutional research committee.

Informed Consent All patients provided written informed consent for surgery and use of photographs.

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