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Simultaneous Augmentation Mastopexy: An Innovative Anatomical Approach—The Fascioglandular Flap for Improved Lower Pole Support

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Abstract Simultaneous breast augmentation and mastopexy is very challenging often considered to be one of the most difficult cosmetic breast surgeries. Although a patient is sometimes better served with 2 separately staged procedures, the demand for single-stage combined augmentation mastopexy is increasing associated with increasing demands for larger implants. Combining these 2 operations presents special problems because of the interplay of opposing forces. To avoid bottoming out, wound dehiscence, and ultimately implant extrusion, it is essential to provide proper coverage and support of the inferior breast pole. The goal of this report is to illustrate the benefit of an inferiorly based fascioglandular flap in providing adequate breast lower pole support in simultaneous breast augmentation mastopexy.

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Keywords Augmentation mastopexy · Mastopexy · Breast surgery

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Introduction

Mastopexy and mastopexy augmentation are procedures aimed at producing youthful appearing breasts with optimal projection and contour [1]. The goals of augmentation with simultaneous mastopexy as well described by Persoff [2] and stressed by Davison and Spear [3] include: (1) elevation of the mound; (2) elevation of the nipple-areolar complex; (3) conversion from a ptotic breast to a conical breast; (4) enlargement of volume; and (5) improved breast symmetry.

Neither mastopexy nor breast augmentation is a particularly difficult procedure by itself. However, simultaneous breast augmentation and mastopexy is very challenging often considered to be one of the most difficult cosmetic breast surgeries [4]. Combining these 2 operations presents special difficulties because of the interplay of opposing forces. Augmentation involves increasing breast volume and stretching the skin envelope, while mastopexy is designed to enhance breast shape by reducing that same skin envelope [3–6]. A key challenge is to remove enough skin to create an appropriately tight brassiere, yet leave enough laxity to accommodate the increased volume of the implant [3]. An important fact to be considered as well is that factors leading to the original need for an augmentation mastopexy, including aging changes, breast ptosis, and skin laxity, are progressive [3].

Performance of the simultaneous procedure entails all the individual risks of breast augmentation and mastopexy; in fact, it may magnify them [3]. These include increased risk of implant infection with either exposure or malposition, increased risk of nipple or flap necrosis, uncertainty about nipple-to-breast and implant relationships with potentially worse scars and decreased nipple sensation, and relapse of the associated ptosis [3]. Glandular pseudoptosis with upward migration of the nipple areola complex occurs following mastopexy, while following breast augmentation bottoming out may occur secondary to poor lower pole support and inframammary fold fixation [5].

A review by Spear and associates [7] indicated that 50% of his augmentation/mastopexy practice was revision of previous operations; the majority were revisions of recurrent or under-corrected ptosis [3]. To avoid bottoming out, wound dehiscence, and ultimately implant extrusion, there is increasingly more demand in providing proper coverage and support of the inferior breast pole [8, 9]. We present a modification of the balcony technique with a fascioglandular flap to improve lower pole support for a predictable and stable outcome of simultaneous augmentation mastopexy. We have been using a similar flap whenever breast implants were needed in upper body lift of patients presenting with massive weight loss [10].

Material and Methods

This is a retrospective study evaluating the outcome of 76 patients who underwent simultaneous augmentation mastopexy by a single surgeon between February 2011 and May 2019 with inverted "T" incisions and a fascioglandular flap fashioned in the inferior third of the pocket for protecting and supporting the implant. The data were collected from the medical records that included as well preoperative and postoperative photos. Since all patients were operated in several none academic private hospitals, No IRB approval was necessary for this study.

Ages of the patients ranged from 22 to 61 years (average age = 37.1 years). Nine patients had massive weight loss, 7 following gastric bypass, and 2 following diet. The patients' BMI ranged from 20.10 to 31.16 kg/m^2 (average of 24.93 kg/m^2). Among the 61 patients, only 4 were smokers. Three patients had hypertension, one patient had bronchial asthma, one patient had hypothyroidism, another suffered from nervous dermatitis, and 1 patient had breast fibrocystic disease.

The implants used were round silicone gel-filled implants, from various manufacturers (Eurosilicone, Mentor, Allergan, Silimed). Sixty-seven patients had implants with high profile, while only 2 patients received a moderate profile implant, and the remaining 7 patients had implants with an ultra-high profile. The volume of the implants varied from 200 to 380 cc. Four patients received polyurethane implants, and the remaining 72 had textured implants. The patients were followed for a mean of 46 months (range: 1–6.5 years).

Surgical Technique (Fig. 1)

The patient is marked for mastopexy using a modified Wise and Peixoto pattern [11, 12], with pre-marking of the areola. The vertical lateral and medial pillars 5 cm in height are drawn with the Lejour maneuver. Saline solution and adrenaline 1:500.000 is infiltrated subcutaneously, and then, the periareolar incisions and de-epithelialization are performed. The horizontal and vertical incisions are subsequently made, and the lower pole of the breast is resected (Fig. 1a) leaving a 1 cm thickness of breast tissue over the underlying deep fascia.

Attention is then shifted to creation of the implant pocket. To reach the subglandular plane, breast tissue is incised at the limit of the lower pole glandular resection, which usually corresponds to the areola lower border. Cephalic dissection and undermining is then performed superiorly as usual in a subglandular plane. Inferiorly, a fascioglandular flap is elevated from the previously preserved tissues by subfascial undermining till the level of the inframammary crease including the triangular fascial condensation, a component of the fascial ring around the breast foot print described by Matousek et al. [13] and the strong structure of connective tissue at the level of the inframammary fold described by Jinde et al. [14]. The length of this flap corresponds to the distance between the projected areola lower border over the chest wall and the level of the inframammary crease. The formed pocket thus is subglandular superiorly and subfascial inferiorly (Fig. 1b). The implant is then positioned into the pocket (Fig. 1c). Medial and lateral pillars are subsequently elevated, and the fascioglandular flap is sutured onto the glandular tissue below the areola firmly supporting the implant (Fig. 1d, e) and shifting tension internally. This maneuver minimizes skin tension at the "T" junction. Finally, medial and lateral pillars are approximated over the fascioglandular flap and sutured with nylon 2–0 in order to reconstitute the breast cone (Fig. 1f). The areola is closed using the round block suture described by Benelli [15] for added security to prevent late areola widening.

Results

All patients were followed for a minimum period of 1 year. Aesthetic outcome was noted to be satisfactory in all patients with no recurrent ptosis (Figs. 2, 3, 4). A more detailed analysis of outcome will be the subject of a

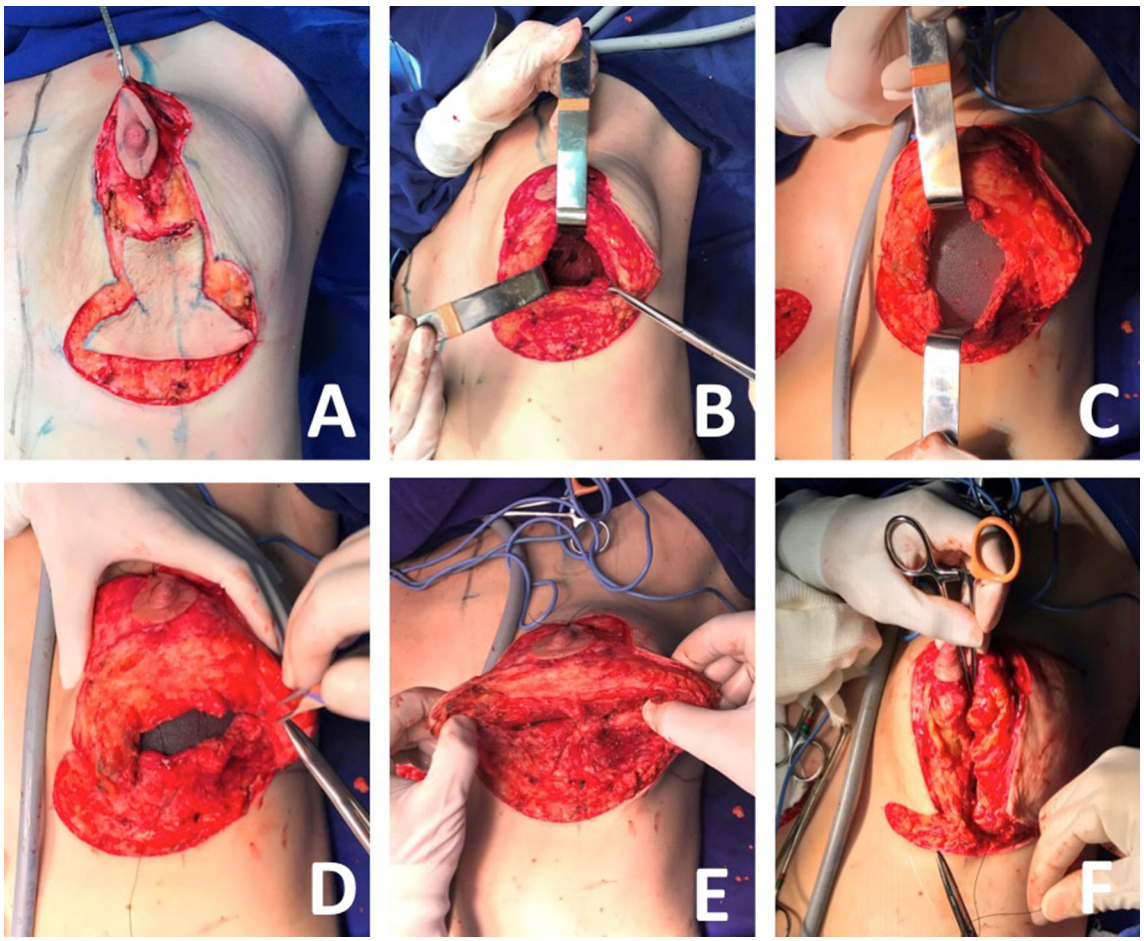

Fig. 1 **a** Modified Wise pattern and Peixoto, with pre-marking of the areola. **b** Implant pocket dissection. Cephalic dissection and undermining in the subglandular plane. Inferiorly, the fascioglandular flap is elevated by subfascial undermining. **c** Implant inserted in the dissected pocket. **d** and **e** Fascioglandular flap sutured to the glandular tissue below the areola completely covering and protecting the implant. **f** Suturing of medial and lateral pillars

subsequent report to evaluate long-term lower pole support of this flap. Three patients (2.87%) developed wound dehiscence of the vertical incision line without exposure of the implant and were managed by secondary closure; 1 patient had partial nipple areola complex necrosis; there were 2 cases of breast size asymmetries requiring surgical revision; 1 patient developed capsular contracture Baker grade II treated with Montelukast Sodium (Sandoz Inc.) 10 mg/day orally for 4 months; 1 patient had a dog-ear that was secondarily corrected surgically; and one patient developed a keloid scar that was successfully treated through superficial radiotherapy and intralesional resection.

Discussion

As reported in most current studies, tissue-related complications with risk of recurrent ptosis following single-stage augmentation mastopexy predominate over implant-related complications. This is probably related to the choice of incision, implant placement pocket, and implant size and weight [16]. It is worth noting that breast structural anatomy and morphology are affected by skin quality and elasticity and extent of breast adipose tissue [13]. Alterations in breast shape and volume occur due to aging, hormonal changes, or weight loss. Corrective surgical options may entail simple augmentation mammaplasty; however, in more advanced cases of ptosis, addressing both the skin envelope and breast parenchymal volume is required. In such cases, mastopexy and augmentation are required [17]. Knowledge of the structural anatomy and fascial attachments of breast tissue, particularly of the lower pole, is of paramount importance to understanding the aesthetic ramifications of breast aesthetic surgery [13].

Although patients are sometimes better served with 2 separate staged procedures whenever mastopexy and augmentation are required [5], the demand for single-stage combined augmentation mastopexy is increasing.

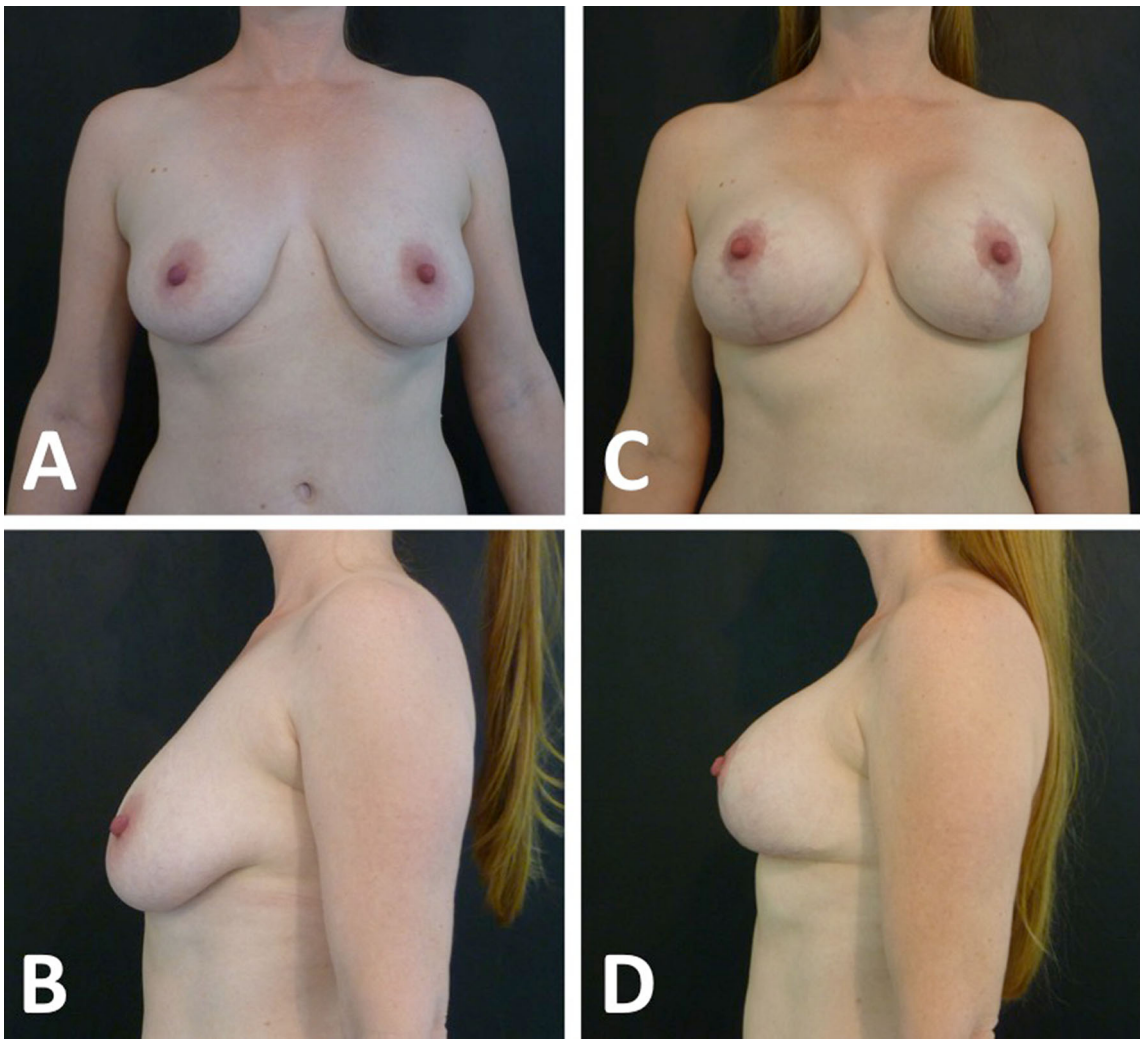

Fig. 2 **a** and **b** Patient with ptosis. **c** and **d** Result of augmentation mastopexy 1 year post-op

Moreover, it is increasingly associated with demands for larger implants to improve projection and upper pole fullness. However since the original publication of Spear [18] in 2003, the safety of this single-stage procedure has remained controversial [16]; in fact, it was considered to be the most controversial breast aesthetic surgery [17, 17] due in part to its higher complication profile than the combined complications of separate augmentation and mastopexy [19]. Many still insist that this approach holds higher risks and worse results with an exponential increase of reoperation rate [8]. In contrast, some retrospective studies have defended the efficiency and safety of the one stage approach [20–25]. Several recent studies have claimed acceptable complication and reoperation rates with the advantages of a single-stage operation, lower costs, and possibly greater patient satisfaction [16].

The first simultaneous augmentation mastopexy description through an Aufricht incision pattern was made as early as 1960 by Gonzalez-Ulloa [19]. He described important principals that must be respected: the implant must be placed in a non-aggressive manner and the pocket must be large enough to comfortably fit the implant, and provide closure with no tension. A few years later, Regnault [17] described a modification of the technique by retaining the dermis for better support [9]. The importance of lower pole support to improve overall breast profile has been well illustrated by Graf in her technique of autoaugmentation mastopexy with inferiorly based dermoglandular flap and a pectoralis major muscle loop [26]. Several modifications of the simultaneous augmentation mastopexy have emerged using a variety of different pedicles and flaps to protect and support the inferior aspect of the implant and decrease complications [9, 27]. An inferiorly based de-epithelialized dermal flap for autologous reinforcement of the inferior pole has been described to increase safety and reliability in one stage mastopexy augmentation [6]. Use of dermal grafts as well as non-autologous tissues has also been proposed [8, 9].

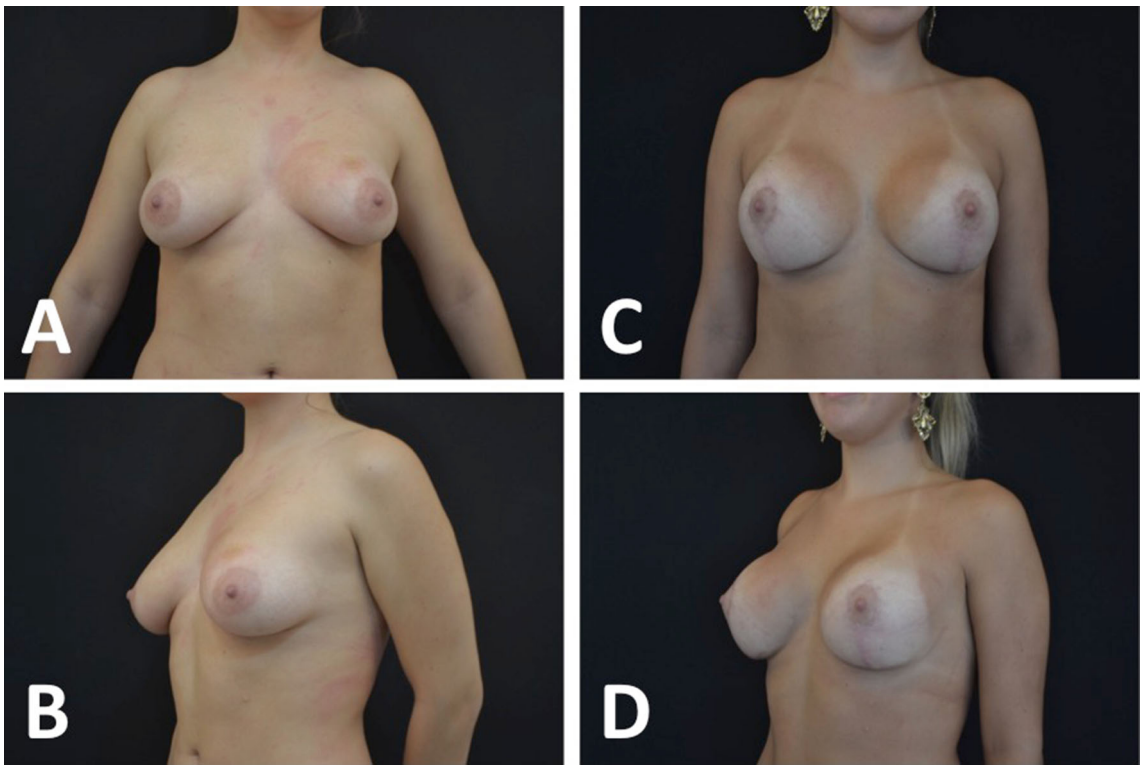

Fig. 3 **a** and **b** Patient with ptosis. **c** and **d** Result of augmentation mastopexy 3 years post-op

One of the main concerns to plastic surgeons is wound dehiscence, in particular at the junction of the vertical and horizontal incisions in a Wise inverted T pattern mammaplasty. This is attributed to the greatest tension observed at the T-junction susceptible to ischemia. Wound healing becomes a main concern with the inverted-T mastopexy whenever augmentation with an implant is added [1]. Such complication may subject the patient to a prolonged course of wound care that may progress to implant exposure requiring implant removal thus increasing treatment cost and elevating patient's stress and anxiety.

There is an increasing focus on providing better lower pole support and implant coverage in augmentation mammaplasty to prevent bottoming out and implant exposure [9]. Recently, De Vita et al. described "the balcony technique of breast augmentation and inverted-T mastopexy with an inferior dermoglandular flap" [6]. The adipofascial flap has been described to avoid implant exposure in alloplastic breast reconstruction [16, 28]. When applied to augmentation mastopexy, we believe this flap increases lower-pole stability, and improves implant support and coverage. Similar to the dermoglandular flap, it provides as well protection at the weakest point of the incision should dehiscence at the inverted-T junction occur. Although conceptually similar to the fascioglandular flap we are describing, the balcony technique of De Vita differs in execution. It relies on dermis to provide support not on the more rigid fascial structures. Preservation of the triangular fascial condensation and of the horizontal supporting ligaments as we are describing provides better breast lower pole support and avoids secondary ptosis of breast implants. Whenever lowering of the IMF is required, reconstituting the fold by anchoring the released triangular fascial condensation will more accurately maintain fold position and provide more predictable implant support [28].

Conclusion

Whenever augmentation and mammaplasty are indicated, a one-stage procedure is definitely a preferred approach certainly by most patients if not also by most surgeons. Though our study is not comparative and while the technique we are proposing does not eliminate the risk of wound dehiscence inherent to the Wise pattern inverted T approach, the fascioglandular flap seems to effectively prevent implant exposure in case of wound breakdown. Long-term follow-up has also demonstrated stable lower pole support and adequate implant positioning regardless of patients' age, breast tissue and cutaneous dermis quality, and implant type.

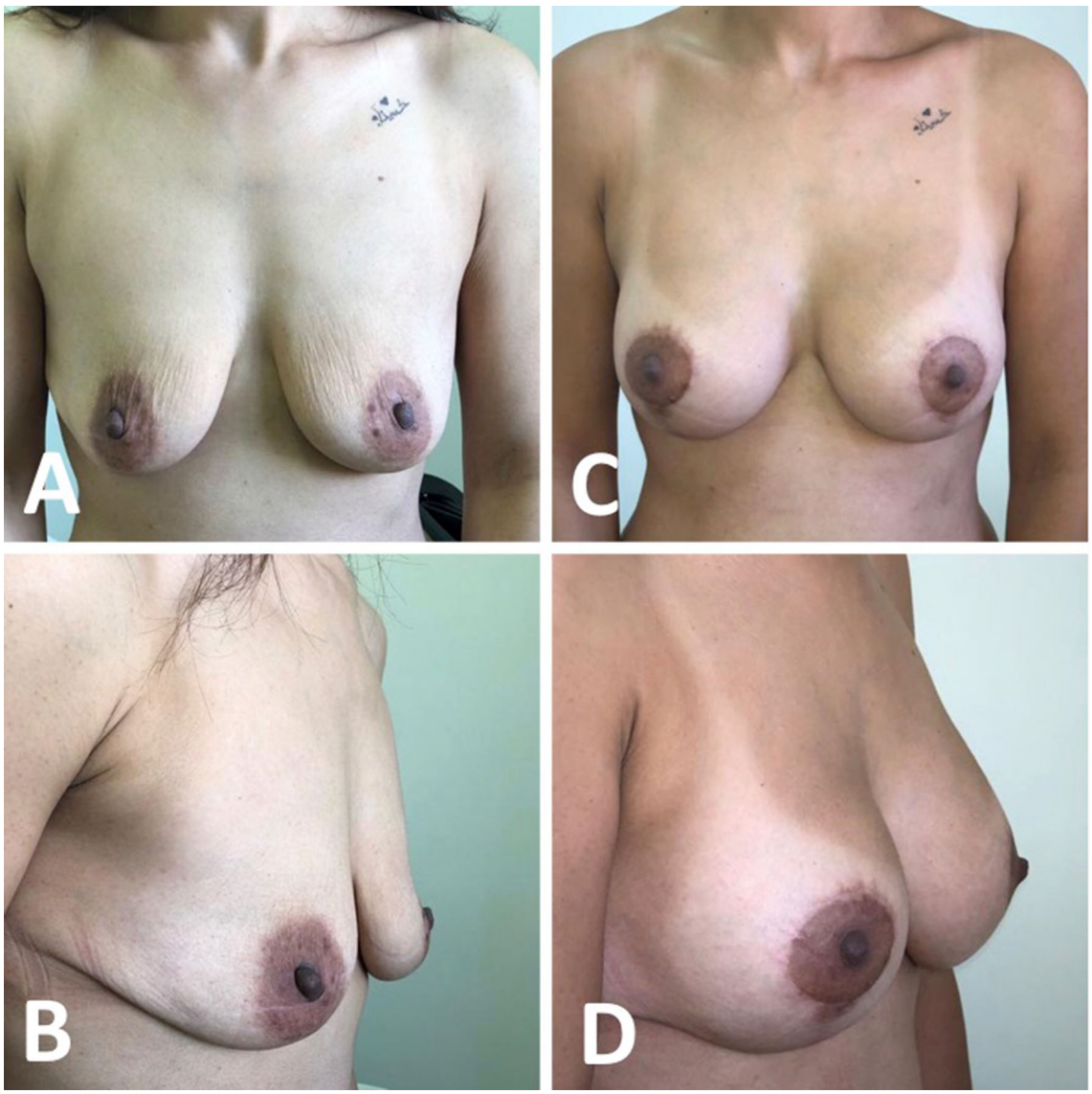

Fig. 4 **a** and **b** Patient with massive weight loss and breast ptosis operated through a different skin incision design (circumvertical) but with similar lower pole fascioglandular flap support. **c** and **d** 5 months postoperative result

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest to disclose.

Human and Animals Right This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent For this type of study, informed consent is not required.

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