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The 3-Flap Technique: A Modification of Autoaugmentation Mastopexy in a Single-Surgeon Case Series

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Abstract

Background: Implant-free mastopexy remains challenging in patients seeking breast reshaping without implants. Autoaugmentation techniques using autologous parenchymal flaps may improve breast projection and upper-pole contour.

Objectives: The aim of this study was to describe the 3-flap technique as a modification of implant-free, caudally based parenchymal autoaugmentation mastopexy and to report clinical, anthropometric, and patient-reported outcomes in a selected single-surgeon case series.

Methods: This retrospective, single-center, single-surgeon consecutive case series included women with glandular, Grade I, or selected mild-to-moderate Grade II ptosis who underwent the 3-flap technique between January 2019 and December 2024. Outcomes included standardized photographic assessment, suprasternal notch-to-nipple and nipple-to-inframammary fold distances, complications, and BREAST-Q scores.

Results: In-person follow-up was available for 284 patients (97.0%) at 3 months, 235 (80.2%) at 6 months, 188 (64.1%) at 12 months, and 100 (34.1%) at 24 months. Breast contour instability, defined clinically as loss of upper-pole contour with lower-pole descent, was observed in 9 patients (3.1%). Delayed T-junction wound healing occurred in 31 patients (10.6%). No total nipple–areola complex necrosis occurred. In the paired BREAST-Q cohort ($n = 109$), satisfaction with breasts increased from 41.2 ± 12.5 to 86.7 ± 9.3, and psychosocial well-being increased from 54.5 ± 11.7 to 89.4 ± 7.8.

Conclusions: The 3-flap technique may represent an additional implant-free autoaugmentation mastopexy option for selected patients. Further comparative studies are required.

Level of Evidence: 4 (Therapeutic)

Mastopexy remains a commonly performed aesthetic breast procedure. According to the 2024 report of the International Society of Aesthetic Plastic Surgery, more than 770,000 mastopexy procedures were performed worldwide, highlighting the global demand for breast shape correction.[1] In patients seeking breast reshaping without implants, the surgical challenge is to achieve an aesthetically favorable breast contour while preserving the vascular safety of the nipple–areola complex (NAC), minimizing postoperative scarring, and maintaining the potential for future lactation when clinically relevant.[2]

The evolution of implant-free mastopexy has included multiple approaches designed to improve breast projection and upper-pole contour using autologous tissue. A major conceptual milestone was the inferior dermoglandular flap technique introduced by Ribeiro in 1975.[3] Ribeiro described the use of lower-pole breast tissue as a "glandular endoprosthesis," in which autologous tissue could be transposed cranially to improve breast projection and conicity.

Subsequent modifications of autoaugmentation mastopexy have focused on variations in flap design, pedicle configuration, fixation point, and direction of tissue transposition. Some authors have emphasized superior fixation of the inferior flap to the pectoral fascia, whereas others have modified the width, length, or orientation of the dermoglandular flap to influence breast projection and upper-pole contour.[4] Crossed dermoglandular flap techniques, including

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the method described by Caldeira et al, have also been used to improve breast conicity and lower-pole support.[5]

Additional strategies have incorporated fascial or muscular support. Techniques described by Daniel and Graf et al have used the pectoralis major muscle or fascia as a supportive sling for the inferior flap, aiming to provide additional structural reinforcement to the reshaped breast mound.[6-9]

Together, these techniques demonstrate the central role of well-vascularized autologous tissue in implant-free breast reshaping. Nevertheless, optimal methods of flap configuration, fixation, and parenchymal redistribution continue to evolve. In particular, maintaining breast contour over time remains an important challenge in mastopexy, especially in patients with glandular ptosis or mild-to-moderate ptosis who desire reshaping without implants.

The 3-flap technique is presented in this study as a technical modification within the established field of implant-free autoaugmentation mastopexy. The technique combines cranial transposition and fixation of a central inferior dermoglandular autoaugmentation flap with mobilization and reciprocal stabilization of the medial and lateral parenchymal pillars. This configuration is intended to create an internal autologous support construct and improve control of the breast mound, lower pole, and upper-pole contour.

The present study describes the surgical concept of the 3-flap technique and reports clinical, anthropometric, standardized photographic, and patient-reported outcomes in a consecutive single-surgeon case series of selected patients undergoing implant-free mastopexy.

METHODS

Study Design

This was a retrospective, single-center, single-surgeon consecutive case series based on prospectively maintained clinical records and standardized photographic documentation. Consecutive patients who underwent mastopexy, with or without a reduction component, using the 3-flap technique between January 2019 and December 2024 were reviewed.

All procedures were performed by the same surgeon at a specialized plastic surgery center according to a standardized operative protocol. The analysis included all eligible consecutive patients who met the predefined clinical selection criteria during the study period. No control group was included.

Analyses were based on patients with available data for each specific outcome. Postoperative clinical and anthropometric outcomes were analyzed using the number of patients who attended in-person follow-up visits at each time point.

The study was not prospectively registered and did not have a prospectively dated study protocol, formal sample size calculation, or prespecified statistical analysis plan. The sample size was determined by the number of eligible consecutive patients treated during the study period.

Patient Selection Criteria

The 3-flap technique was applied according to the author's preoperative surgical selection criteria. The technique was considered for women seeking implant-free mastopexy, with or without a reduction component, who had no previous history of breast surgery, had completed pregnancy and lactation at least 12 months before surgery, and had maintained stable body weight for at least 6 months before the procedure. All patients provided written informed consent for surgery, standardized photographic documentation, and the use of anonymized clinical data and images for scientific purposes.

The technique was used in selected patients with glandular ptosis, Grade I ptosis, or normotrophic to hypertrophic Grade II ptosis according to the Regnault classification. In patients with Grade II ptosis, the planned NAC elevation was required not to exceed 7 cm. This threshold was used as part of the author's selection criteria for this specific technical modification.

Although patients with more advanced ptosis may have sufficient lower-pole parenchymal tissue for autoaugmentation, they often require greater NAC elevation and may present with increased tissue laxity and reduced upper-pole volume. Therefore, patients with Grade II ptosis requiring NAC elevation >7 cm and patients with Grade III ptosis were not considered ideal candidates for this technique. This reflected the author's selection criteria for the 3-flap technique rather than a general contraindication to autoaugmentation mastopexy in patients with more advanced ptosis.

Patients were not considered candidates for the 3-flap technique if they had marked breast hypoplasia requiring implant augmentation, a history of breast implant surgery, severe chest-wall scarring that could compromise flap mobilization or vascularity, Grade II ptosis requiring NAC elevation >7 cm, or Grade III ptosis. Additional factors precluding use of this technique included systemic conditions that could impair wound healing, such as uncontrolled diabetes mellitus, systemic connective tissue disease, or vasculitis. Patients were also not considered candidates if preoperative consultation suggested unrealistic aesthetic expectations or inability to comply with the planned follow-up schedule.

For the retrospective analysis, all consecutive patients who underwent the 3-flap technique during the study period and met these clinical selection criteria were included.

Photographic and Clinical Outcomes

Standardized digital photographs were obtained preoperatively and at 3, 6, 12, and 24 months postoperatively during in-person follow-up visits. Frontal, lateral, and oblique views were obtained using a standardized photographic protocol, with consistent patient positioning, lighting conditions, and camera distance.

Upper-pole contour, lower-pole shape, and overall breast contour were assessed clinically and descriptively by the operating surgeon during routine in-person follow-up, with reference to standardized photographic documentation. These assessments were not treated as validated volumetric or photometric endpoints, and no independent blinded photographic assessment was performed.

Remote photographs submitted by patients unable to attend in-person follow-up were reviewed only for clinical communication and were not included in the clinical photographic or anthropometric analysis.

Anthropometric Measurements

The following anthropometric measurements were recorded: suprasternal notch-to-nipple distance (SN–N), defined as the distance from the suprasternal notch to the nipple and used to describe the vertical position of the NAC; and nipple-to-inframammary fold distance (N–

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IMF), defined as the distance from the nipple to the inframammary fold and used to describe lower-pole length.

Measurements were obtained bilaterally before surgery and during in-person postoperative follow-up. For analysis, preoperative measurements and 6-, 12-, and 24-month postoperative measurements were included. For each patient, the mean value of the right and left breast measurements was calculated before analysis to avoid treating 2 breasts from the same patient as independent observations.

Quality-of-Life and Patient Satisfaction Assessment

Patient-reported outcomes were assessed using the BREAST-Q Mastopexy Module. Two domains were selected for analysis: satisfaction with breasts and psychosocial well-being.

The questionnaire was completed preoperatively and at 12 months postoperatively. Paired analysis included only patients who completed both the preoperative and 12-month postoperative questionnaires. Patients with only one completed questionnaire were excluded from the paired statistical comparison.

Responses were linked using de-identified study codes to allow paired analysis while preserving patient confidentiality. Scores were converted to a 0 to 100 scale according to the BREAST-Q Scoring Manual.[10]

Statistical Analysis

No formal sample size calculation or a priori power analysis was performed. The sample size was determined by the number of consecutive eligible patients treated during the study period.

Data are presented as mean ± standard deviation or as number and percentage. Because this was a retrospective, noncomparative case series, the analysis was primarily descriptive. BREAST-Q scores were analyzed only in patients with paired preoperative and 12-month postoperative questionnaires. For the BREAST-Q paired cohort, preoperative and 12-month postoperative scores were compared using paired *t* tests.

For bilateral anthropometric measurements, the mean value of the right and left breasts was calculated for each patient before analysis to avoid treating 2 breasts from the same patient as independent observations. For anthropometric measurements, preoperative and postoperative SN–N and N–IMF distances were compared using paired *t* tests among patients with available paired measurements at each postoperative time point.

Missing data were handled by complete-case analysis and were not imputed. All statistical tests were 2-sided, and a *P*-value of <.05 was considered statistically significant.

Complications

Postoperative complications were recorded throughout the follow-up period. These included delayed wound healing at the T-junction, partial or total necrosis of the NAC, permanent NAC sensory loss, unsatisfactory scars, autoaugmentation flap–related complications, breast contour instability, and revision procedures when performed.

Complications were reported using patient- and breast-based denominators where applicable. Patient-based counts represented the number of individual patients affected by each event, whereas breast-based counts represented the number of affected breasts.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki (2013 revision). Approval was obtained from the local institutional ethics committee (Protocol No. 1, Multidisciplinary Medical Center, January 8, 2019). All patients provided written informed consent for treatment and for the use of anonymized clinical data and images for scientific purposes.

Surgical Technique

Preoperative marking was performed with the patient in the standing position. The breast footprint, planned NAC position, periareolar de-epithelialization zone, and vertical and horizontal components of the inverted-T pattern were marked. The planned position of the superior border of the new NAC was determined by measuring 6 cm vertically upward from the intersection between the midline and the projected inframammary fold level. This point was then transferred horizontally to the breast meridian to define the planned new NAC position. The planned NAC elevation distance was measured from the superior border of the existing areola to the planned new position (Figure 1A). The marking sequence and key operative steps are demonstrated in Video.

The vertical limb typically measured 6 to 7 cm, depending on tissue elasticity. The distance between the vertical pillars was determined using a pinch test to estimate the amount of skin to be resected (Figure 1B, C). Nipple–areola complex transposition was planned on a superior or superomedial pedicle according to breast anatomy and the required degree of elevation.

After skin incision and de-epithelialization of the marked area (Figure 2A), the 3 autologous parenchymal components forming the basis of the technique were created. The central component was an inferior dermoglandular autoaugmentation flap designed within the inverted-T pattern. This flap was created with preservation of the inferior septal region and sufficient dermoglandular thickness to allow cranial transposition and fixation. The medial and lateral components corresponded to mobilized parenchymal pillars from the lower-pole regions on either side of the central flap, rather than independent vascular pedicled flaps (Figure 2B).

Suprafascial dissection was performed in the retromammary plane, extending superiorly and medially to the planned superior border of the new breast mound. This created a pocket sufficient for cranial transposition and fixation of the central inferior dermoglandular flap.

The superior edge of the central flap was modified by creating a longitudinal split of ~2 to 3 cm, producing a bifurcated configuration (Figure 2C). This modification was intended to increase the surface area available for fixation and allow broader distribution of fixation tension. The flap was then transposed cranially and slightly medially and secured to the pectoralis major fascia using interrupted absorbable sutures, such as polydioxanone or polyglactin sutures (Figure 2D, E).

When a reduction component or correction of breast asymmetry was required, selected portions of glandular tissue were excised.

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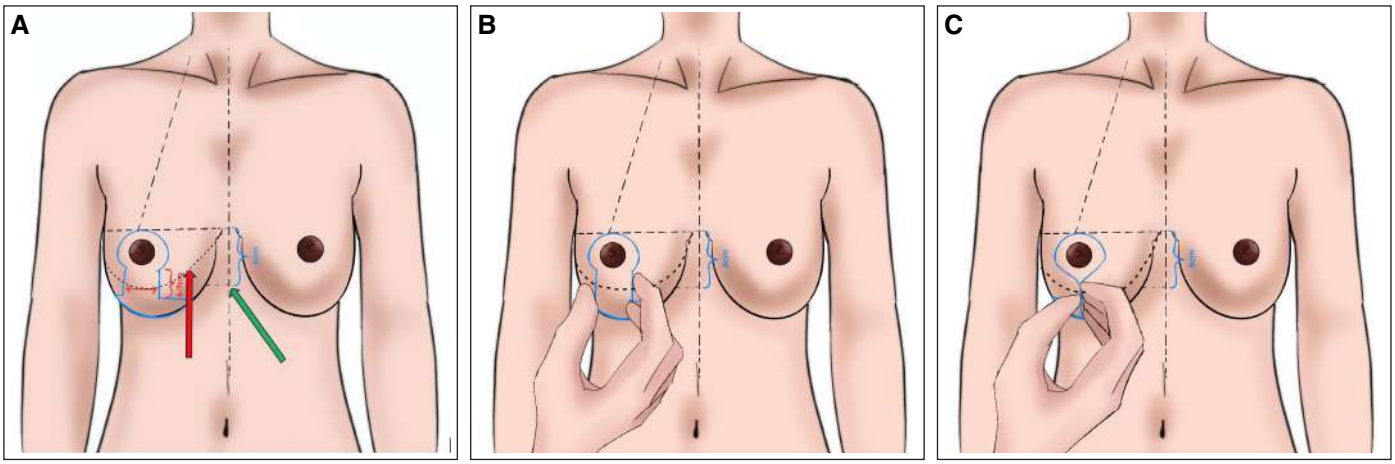
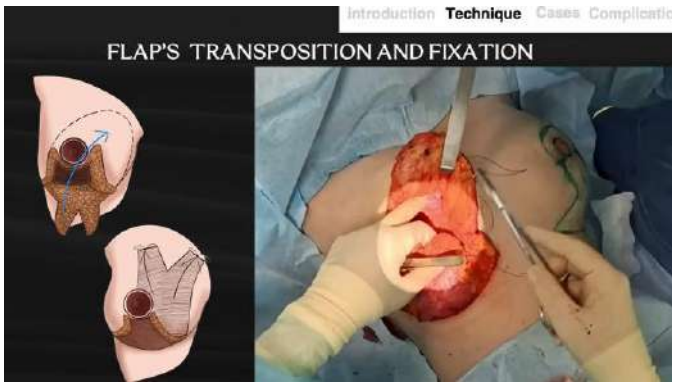


Figure 1. Preoperative marking. (A) The red arrow indicates the projected level of the native inframammary fold, which may be obscured by the lower pole in the standing position. The green arrow indicates the reference point formed by the intersection between the projected inframammary fold level and the midline. The upper border of the planned new nipple–areola complex is marked ~6 cm superior to this midline reference level and then transferred to the breast meridian. The planned vertical pillar length is typically 6 to 7 cm, depending on skin elasticity and breast tissue density. (B, C) The width of the vertical skin excision is determined intraoperatively using a pinch test to estimate skin redundancy and avoid excessive tension during closure.



Video. Watch now at http://academic.oup.com/asjopenforum/article-lookup/doi/10.1093/asjof/ojag204

Resection was typically performed from the lateral regions of the breast base or from the posterior surface of the central flap, while preserving the dermal component and the glandular tissue at the flap base.

The next step involved lateral-to-medial stabilization of the lower-pole parenchyma. The lateral parenchymal pillar was mobilized and advanced medially, where it was fixed to the dermal surface of the central flap using interrupted absorbable sutures (Figure 3A-D). This maneuver was intended to provide additional lower-pole support and improve control of lateral parenchymal displacement.

The medial and lateral parenchymal pillars were then sutured to each other, creating a closed internal autologous support construct (Figure 3E, F). This configuration was designed to integrate the central, medial, and lateral parenchymal components into a single internal support structure. When indicated, a closed suction drain was placed for 12 to 24 hours.

After formation of the internal support construct, final closure was performed, resulting in an inverted-T scar pattern. Nipple–areola complex closure was performed using a round-block suture to distribute periareolar tension and maintain the planned NAC position (Figure 3G, H).

Postoperatively, patients were instructed to wear a supportive compression garment for 4 to 6 weeks. Routine follow-up examinations were performed according to the study schedule.

RESULTS

Study Cohort and Follow-up

The study included 293 women with glandular, Grade I, or selected Grade II breast ptosis according to the Regnault classification who underwent mastopexy using the 3-flap technique between January 2019 and December 2024. Age ranged from 18 to 53 years, with a mean of 35.5 years. Mastopexy was performed without a reduction component in 212 patients (72.4%) and with a reduction component in 81 patients (27.6%). Among patients who underwent mastopexy with a reduction component, the mean resection weight was 350 g per breast, with a range of 100 to 600 g per breast. Nipple–areola complex transposition was performed using a superior pedicle in 62 patients (21.2%) and a superomedial pedicle in 231 patients (78.8%).

Scheduled follow-up visits were performed at 3, 6, 12, and 24 months postoperatively. In-person follow-up was available for 284 patients (97.0%) at 3 months, 235 (80.2%) at 6 months, 188 (64.1%) at 12 months, and 100 (34.1%) at 24 months. Outcomes at each postoperative time point were analyzed using the number of patients available for in-person evaluation at that visit. Therefore, the 24-month findings should be interpreted as findings from the available follow-up population rather than the entire initial cohort.

The most common reasons for missed follow-up visits were geographic distance, residence in other regions or countries, pregnancy or childbirth, and postponed appointments without subsequent attendance.

Baseline patient and operative characteristics are summarized in Table 1.

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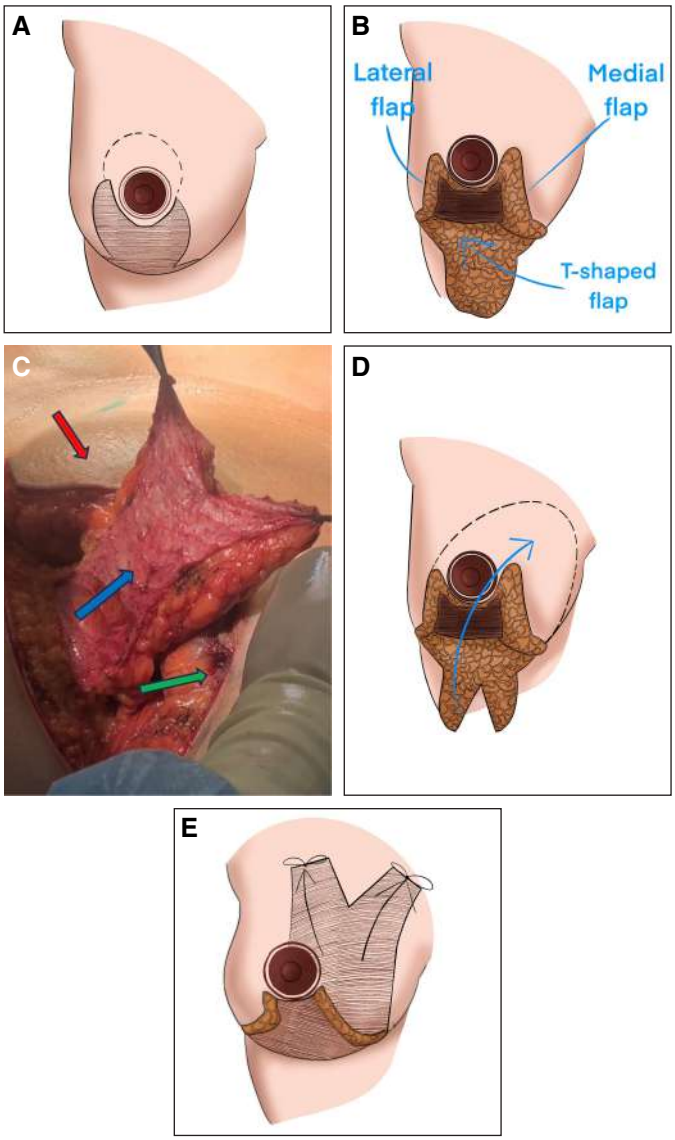


Figure 2. Formation of breast tissue flaps. (A) The lower-pole tissue is de-epithelialized according to the preoperative marking. (B) Creation of the central inferior dermoglandular autoaugmentation flap. The medial and lateral parenchymal pillars are mobilized from the lower-pole regions on either side of the central flap. (C) Intraoperative view of the 3-flap configuration. The superior portion of the autoflap is divided to create a bifurcated fixation segment, increasing the contact area for high fixation to the pectoralis major fascia and improving force distribution. The blue arrow indicates the central T-shaped autologous flap; the red arrow indicates the medial parenchymal pillar; and the green arrow indicates the lateral parenchymal pillar. (D) Schematic illustration showing the extent of suprafascial dissection in the upper-pole region and the direction of cranial advancement of the T-shaped autologous flap, indicated by the blue arrow. (E) The split superior edge of the transposed T-shaped autologous flap is fixed within the created superior retromammary pocket to increase the fixation surface area and improve flap stability.

Photographic and Clinical Outcomes

Standardized photographic documentation was obtained during in-person follow-up visits at 3, 6, 12, and 24 months postoperatively in frontal, oblique, and lateral views. The photographs were used for descriptive clinical assessment during routine follow-up and were not treated as validated volumetric or photometric outcome measures. Representative results are shown in Figures 4-6.

Because the upper-pole contour was assessed clinically by the operating surgeon, without independent blinded evaluation or validated volumetric analysis, maintenance of the upper-pole contour was not analyzed as a separate objective endpoint. Instead, loss of upper-pole contour with lower-pole descent was recorded as breast contour instability and reported as an aesthetic finding in the complications section.

Anthropometric Outcomes

Preoperative anthropometric measurements were available for all 293 patients. Postoperative measurements were analyzed in patients who attended in-person follow-up visits: 235 patients at 6 months, 188 at 12 months, and 100 at 24 months. The mean SN–N distance decreased from 25.4 ± 0.8 cm preoperatively to 20.1 ± 0.6 cm at 6 months and remained 20.1 ± 0.6 cm at 12 months. Among patients available at 24 months, the mean SN–N distance was 21.3 ± 0.4 cm. The mean N–IMF distance decreased from 10.9 ± 1.4 cm preoperatively to 7.1 ± 0.5 cm at 6 months and remained 7.1 ± 0.5 cm at 12 months. Among patients available at 24 months, the mean N–IMF distance was 7.5 ± 0.3 cm.

Compared with preoperative values, SN–N and N–IMF distances were significantly reduced at all postoperative time points among patients with available paired measurements. The corresponding *P*-values are presented in Table 2.

Patient-Reported Outcomes

Patient-reported outcomes were assessed using the BREAST-Q questionnaire. Preoperative questionnaires were completed by 194 patients. Of these, 109 patients also completed the 12-month postoperative questionnaire and were included in the paired BREAST-Q analysis. Patients without paired preoperative and postoperative data were excluded from the paired comparison.

In this paired cohort, the satisfaction with breasts score increased from 41.2 ± 12.5 preoperatively to 86.7 ± 9.3 at 12 months postoperatively ($P < .001$). The psychosocial well-being score increased from 54.5 ± 11.7 to 89.4 ± 7.8 over the same period ($P < .001$).

Complications

The types and frequency of postoperative complications and aesthetic findings are presented in Table 3. Complications were reported using both patient- and breast-based denominators where applicable. Patient-based counts represent the number of affected patients, whereas breast-based counts represent the number of affected breasts.

The most common complication was delayed T-junction wound healing, which occurred in 31 patients (10.6%) and involved 39 breasts (6.7%). Among these cases, 23 patients had unilateral involvement and 8 had bilateral involvement. All cases were managed conservatively with local wound care and topical antibacterial treatment. Complete epithelialization was achieved within 7 to 14 days, and no revision surgery was required.

No total NAC necrosis or permanent NAC sensory loss occurred. Partial marginal areolar necrosis occurred in 3 patients (1.0%),

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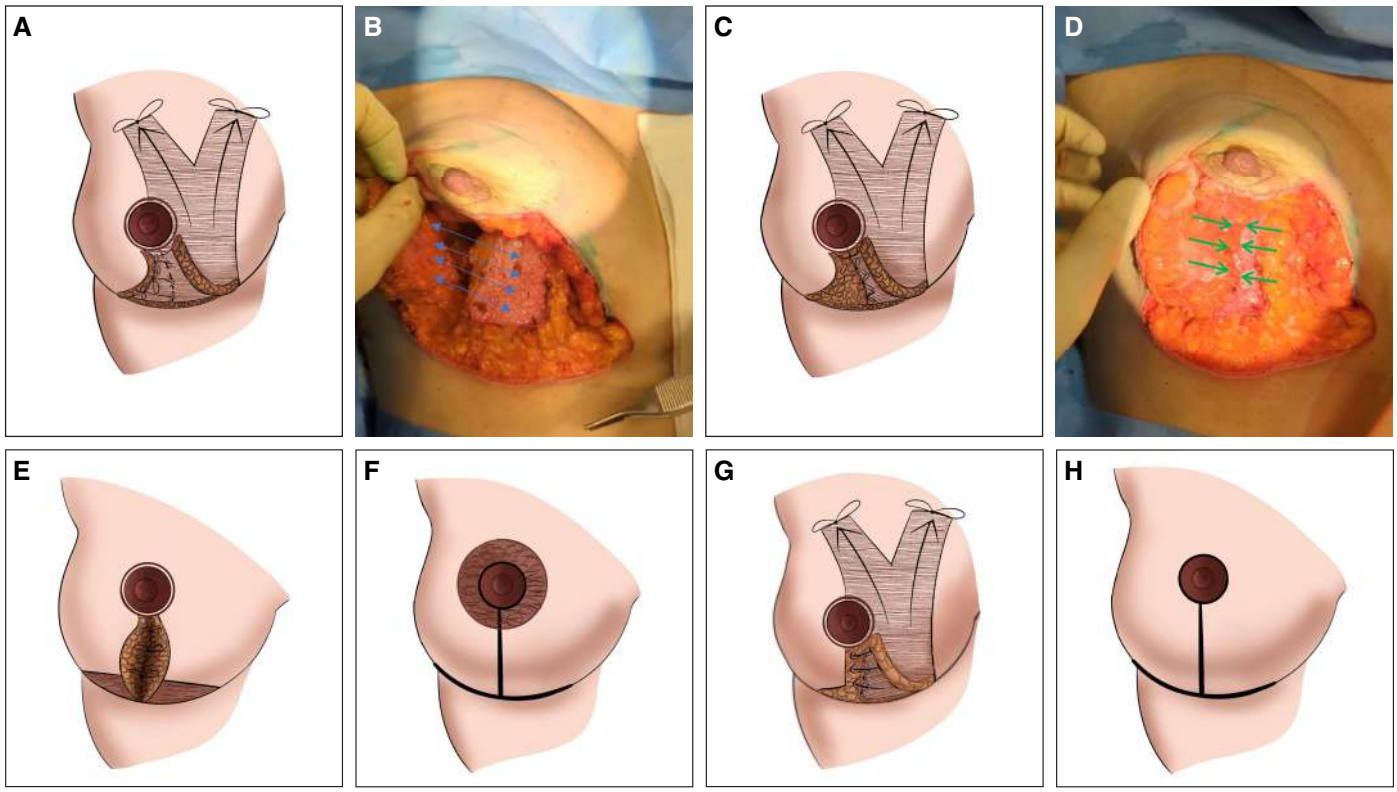


Figure 3. Formation of the 3-dimensional 3-flap internal support framework and final breast shaping. (A) After cranial transposition and high fixation of the T-shaped autologous flap, the lateral parenchymal pillar is advanced medially and fixed to the dermal surface of the central autoflap. (B) Intraoperative view demonstrating medial advancement of the lateral parenchymal pillar. The arrows indicate the direction of displacement of the lateral pillar toward the T-shaped autologous flap before sequential subsequent fixation. (C) The lateral parenchymal pillar is advanced medially and sutured to the T-shaped autoflap, completing the closed internal support structure. (D) Intraoperative view demonstrating fixation of the lateral pillar to the dermal surface of the central T-shaped autologous flap. The green arrows indicate the fixation zone, where the flap is secured with absorbable sutures along the entire vertical line of the autologous flap. This maneuver creates a stronger 3-dimensional internal framework and, when necessary, allows narrowing of the breast base. (E) Suturing of the medial and lateral parenchymal pillars to complete the internal autologous support construct. (F) Final closure of the vertical and horizontal components of the inverted-T incision. (G) Periareolar de-epithelialization followed by placement of a circumareolar round-block suture to stabilize the nipple–areola complex. (H) Final intraoperative appearance after completion of skin closure.

involving 3 breasts (0.5%). All cases healed with conservative treatment within 7 to 18 days without revision surgery.

Unsatisfactory or hypertrophic postoperative scarring was observed in 6 patients (2.0%), involving 12 breasts (2.0%). The most common location was the horizontal component of the incision. Scar revision was offered but declined by the patients.

Localized partial fat necrosis in the region of the autoaugmentation flap occurred in 2 patients (0.7%), involving 2 breasts (0.3%). Clinically, this presented with moderate pain, breast edema, and a palpable infiltrate in the medial portion of the horizontal scar. The diagnosis was supported by ultrasound examination. This complication was recorded categorically and was not measured volumetrically. Limited surgical revision and drainage were performed through the horizontal incision under intravenous sedation. Complete wound healing was achieved within 3 to 4 weeks. In these cases, the affected breast demonstrated reduced upper-pole contour after treatment. Corrective surgery was offered but declined.

Breast contour instability, defined clinically as loss of upper-pole contour with lower-pole descent, was observed in 9 patients (3.1%), involving 16 breasts (2.7%). In 7 patients, contour instability was bilateral and was associated with postoperative body weight loss exceeding 12 kg during the first postoperative year. In 2 patients, unilateral contour change occurred in the breast with localized partial fat necrosis involving the autoaugmentation flap.

DISCUSSION

The evolution of implant-free mastopexy reflects the continuing effort of plastic surgeons to improve breast shape, projection, and contour using autologous tissue. In this context, preservation of upper-pole contour and maintenance of the breast mound over time remain important surgical challenges. The findings of the present retrospective single-surgeon case series suggest that the 3-flap technique may represent an additional approach for selected patients seeking implant-free mastopexy, while acknowledging the limitations of a noncomparative study design.

The concept of increasing breast cone projection by transferring lower-pole parenchymal tissue to the central or upper portion of the breast was introduced by Ribeiro and Backer.[3,11] Ribeiro et al described the use of an inferior dermoglandular flap based near the inframammary fold, which could be transposed cranially and used as a form of “glandular endoprosthesis.” This concept was further developed in his later experience and contributed substantially to the

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Table 1. Patient and Operative Characteristics and Follow-up Availability

Patient and operative characteristics	Findings
No. of patients	293
No. of breasts	586
Age, years	
Mean	35.5
Range	18-53
Type of ptosis, *n* (%)	
First degree	12 (4)
Second degree	237 (81)
Glandular ptosis	44 (15)
Type of surgery, *n* (%)	
Mastopexy	212 (72.4)
Mastopexy + reduction	81 (27.6)
Weight of gland resected per breast, g	
Mean	350
Range	100-600
NAC pedicle type, *n* (%)	
Superior pedicle	62 (21.2)
Superomedial pedicle	231 (78.8)
Follow-up availability	
Scheduled follow-up visits, months	3, 6, 12, and 24
In-person follow-up at 3 months, *n* (%)	284 (97.0)
In-person follow-up at 6 months, *n* (%)	235 (80.2)
In-person follow-up at 12 months, *n* (%)	188 (64.1)
In-person follow-up at 24 months, *n* (%)	100 (34.1)

Data are presented for 293 patients and 586 operated breasts. Values are presented as mean, range, or *n* (%), as appropriate. Percentages were calculated using the total number of patients as the denominator unless otherwise specified. Follow-up cohort sizes represent patients available for in-person assessment at each postoperative time point. NAC, nipple–areola complex.

foundation of autologous breast reshaping.[12] Bozola later emphasized cranial transposition of the inferior flap and described variations in flap fixation to influence breast projection and upper-pole contour.[4]

Several subsequent techniques expanded the concept of autoaugmentation through different patterns of flap design and tissue redistribution. Caldeira et al described a triple-flap interposition technique, demonstrating that redistribution of parenchymal tissue could improve breast projection and conicity without implants.[5] This approach highlighted the potential value of using multiple parenchymal segments to reshape the breast mound.

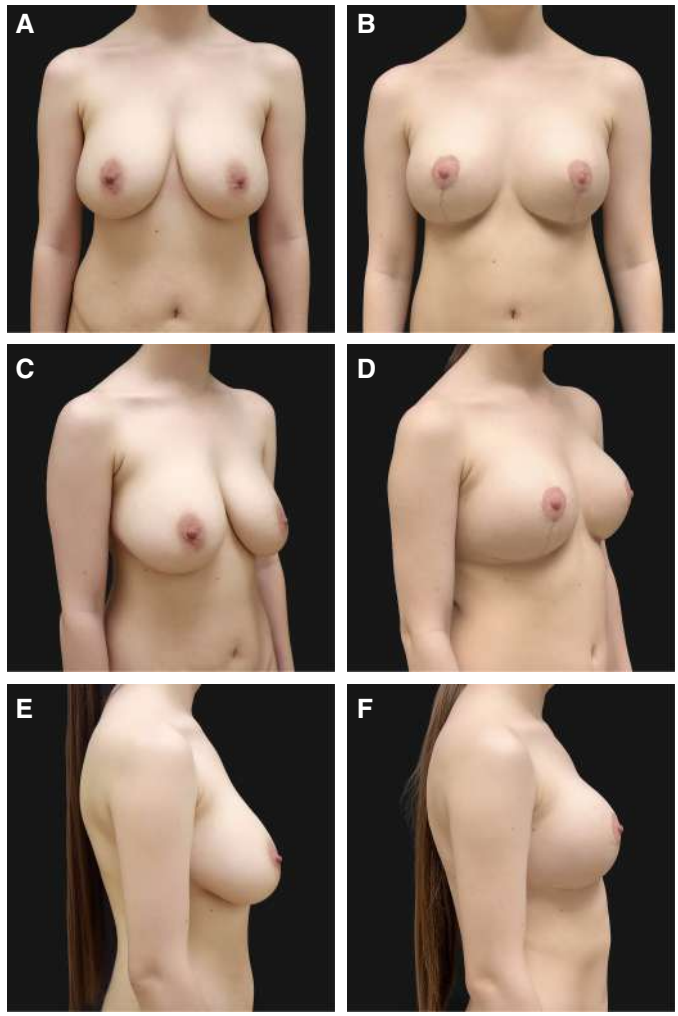


Figure 4. A 36-year-old female patient, 2 previous deliveries. Mastopexy using the described technique combined with parenchymal reduction (260 g on the right, 220 g on the left). (A, C, E) Preoperative views. (B, D, F) 24-month result.

Other authors attempted to reinforce transposed tissue using fascial or muscular support. Daniel and, later, Graf et al described techniques incorporating the pectoralis major muscle or fascia as a supportive structure for the inferior dermoglandular flap.[6-9] These methods contributed to the concept that flap fixation and structural support are important components of implant-free breast reshaping. However, techniques involving the pectoralis major muscle may require additional dissection and may not be necessary in all patients.

De Araujo Cerqueira also described the use of a pectoralis major muscle flap to support the reconstructed breast and improve positioning of the NAC and upper pole.[13] These approaches demonstrate that stable breast reshaping depends not only on skin-envelope reduction but also on internal redistribution and fixation of glandular tissue.

Botti further advanced the concept of autoaugmentation by emphasizing stable padding of the superior pole through rotation and fixation of a viable glandular-adipose flap to the pectoral fascia.[14] De la Plaza et al described a dermoglandular hammock flap designed to provide additional support to the breast mound and lower pole.[15]

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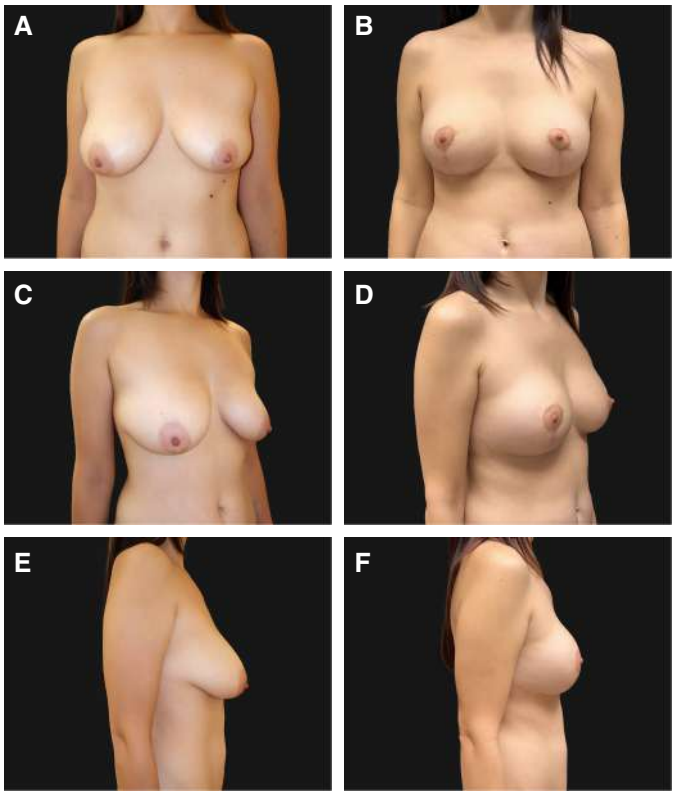


Figure 5. A 38-year-old female patient, 1 previous delivery. Mastopexy using the described technique without reduction. (A, C, E) Preoperative views. (B, D, F) 12-month result.

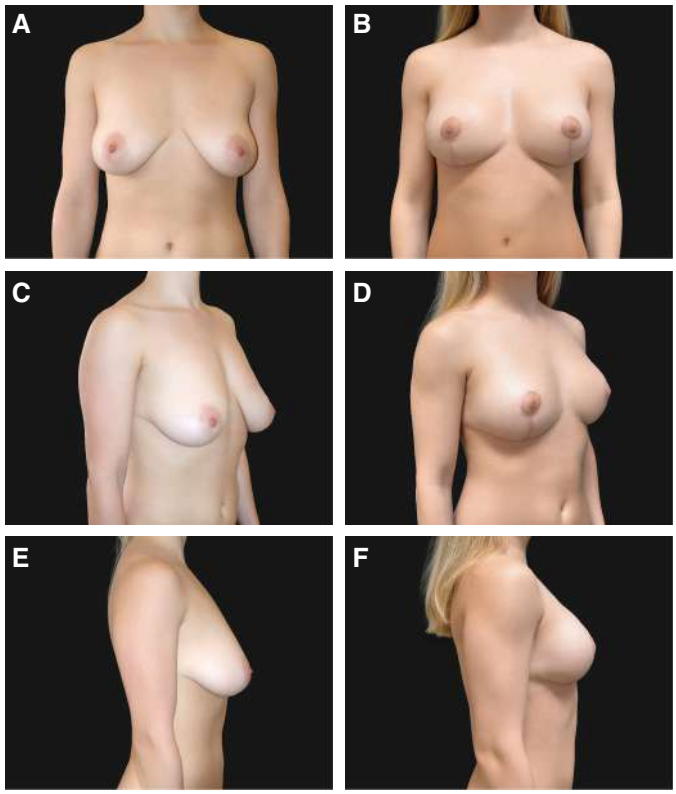


Figure 6. A 24-year-old nulliparous female patient. Mastopexy using the described technique without reduction. (A, C, E) Preoperative views. (B, D, F) 24-month result.

Foustanos and Zavrides introduced a double-flap technique, reflecting increasing interest in segmental parenchymal rearrangement and multipoint fixation.[16] Hönig et al later systematized the principles of autoaugmentation mastopexy and described the concept of an "internal autologous implant" based on a viable inferior dermoglandular flap transposed cranially and fixed to the fascia.[17,18] More recently, Nava et al further developed this concept by combining high fixation of the inferior dermoglandular flap with additional fixation of the split superior pedicle.[19]

Taken together, these techniques demonstrate a gradual transition from simple parenchymal transposition toward more structured internal reshaping of the breast. Within this historical context, the 3-flap technique is presented as a modification of Ribeiro's caudally based parenchymal autoaugmentation concept rather than as an entirely novel category of mastopexy. The modifications include a bifid cranial configuration of the central inferior dermoglandular autoaugmentation flap and fixation of the lateral parenchymal pillar to the de-epithelialized dermal surface of the central flap. These steps are intended to create a more integrated internal support construct.

In the present technique, the superior or superomedial pedicle is used primarily for safe transposition and vascular reliability of the NAC. The intended structural support is provided by the autoaugmentation component itself, including cranial fixation of the modified inferior flap, medial advancement of the lateral parenchymal pillar, and reciprocal stabilization of the medial and lateral parenchymal pillars. This configuration is intended to create an internal autologous support construct and improve control of breast contour in selected patients.

The present findings should be interpreted in the context of appropriate patient selection. In this series, the technique was used in patients with glandular ptosis, Grade I ptosis, and selected Grade II ptosis with a NAC elevation distance not exceeding 7 cm. The technique was not used as the preferred option for Grade III ptosis or for patients requiring greater NAC transposition. Therefore, the reported outcomes should be interpreted within the selected patient population included in this study and should not be assumed to apply to patients with more severe breast ptosis.

Localized partial fat necrosis involving a portion of the autoaugmentation flap occurred in 2 patients. In 1 patient, the complication occurred in the setting of a preexisting asymmetric sternotomy scar, which may have contributed to altered local tissue compliance or scar-related vascular conditions. In the second patient, partial fat necrosis occurred in association with postoperative hyperprolactinemia, galactorrhea, progressive breast engorgement, and increasing edema. The patient did not report these symptoms at an early stage, which delayed medical evaluation and endocrine stabilization.

Based on these observations, prevention of partial fat necrosis may include careful preoperative assessment of anterior chest-wall scars and tissue quality, preservation of a broad vascular base, avoidance of excessive flap thinning or tension, meticulous flap handling, early ultrasound assessment when persistent edema or pain occurs, and clear postoperative instructions for patients to report progressive swelling, pain, galactorrhea, or nipple discharge promptly.

The clinical, anthropometric, standardized photographic, and patient-reported outcomes observed in this cohort suggest that the technique may be useful as an implant-free option in selected

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Table 2. Anthropometric Measurements During Follow-up

Measurement	Preoperative ($n = 293$)	6 months ($n = 235$)	*P*-value	12 months ($n = 188$)	*P*-value	24 months ($n = 100$)	*P*-value
SN–N, cm	25.4 ± 0.8	20.1 ± 0.6	<.001	20.1 ± 0.6	<.001	21.3 ± 0.4	<.001
N–IMF, cm	10.9 ± 1.4	7.1 ± 0.5	<.001	7.1 ± 0.5	<.001	7.5 ± 0.3	<.001

Values are presented as mean ± standard deviation. *P*-values represent paired comparisons with preoperative measurements among patients with available paired data at each postoperative time point. Paired *t* tests were used.SN–N, suprasternal notch-to-nipple distance; N–IMF, nipple-to-inframammary fold distance.

Table 3. Postoperative Complications and Aesthetic Findings

Postoperative complications	No. of patients, $n = 293$ (%)	No. of breasts, $n = 586$ (%)
Delayed wound healing at		
T-junction	31 (10.6)	39 (6.7)
Unilateral	23 (7.8)	23 (4.0)
Bilateral	8 (2.8)	16 (2.7)
Breast shape instability/recurrent ptosis requiring revision	9 (3.1)	16 (2.7)
Unsatisfactory scars	6 (2.0)	12 (2.0)
Unilateral marginal areola necrosis	3 (1)	3 (0.5)
Partial fat necrosis of the autoaugmentation flap	2 (0.7)	2 (0.3)
Unilateral total areola necrosis	0 (0)	0 (0)
Permanent nipple–areola complex sensory loss	0 (0)	0 (0)

Complications are reported using both patient- and breast-based denominators. Patient-based counts indicate the number of individual patients affected by each event, whereas breast-based counts indicate the number of affected breasts. Percentages were calculated using 293 patients or 586 breasts as the denominator, as indicated. For delayed wound healing at the T-junction, unilateral, and bilateral cases are shown separately. Some patients may have experienced more than 1 postoperative finding.

patients. However, because this was a retrospective, noncomparative, single-surgeon case series, the study does not establish superiority over other mastopexy or autoaugmentation techniques. Further comparative studies with independent assessment, objective volumetric analysis, longer follow-up, and evaluation by other surgeons are required to define the reproducibility and relative role of this technique.

Study Limitations

This study has several limitations. First, it was a retrospective, single-center, single-surgeon case series. Although this allowed a high degree of technical standardization, this design may limit the generalizability of the findings and their reproducibility by other surgeons.

Second, the study did not include a control group. Therefore, direct comparison with standard mastopexy or other autoaugmentation techniques was not possible. The present study was not designed to establish comparative superiority but rather to describe the 3-flap technique as an additional surgical option for selected patients seeking implant-free mastopexy.

Third, patient selection may have influenced the observed outcomes. The study population was limited to patients with glandular ptosis, Grade I ptosis, and selected Grade II ptosis with a NAC elevation distance not exceeding 7 cm. Patients with Grade III ptosis or greater NAC transposition requirements were not considered ideal candidates for this technique in the author's practice. The 3-flap technique was considered most suitable for patients who did not require extensive vertical transposition of the NAC and who had sufficient lower-pole parenchymal volume to create a central inferior dermoglandular autoaugmentation flap that could be advanced cranially. Patients with Grade III ptosis usually require greater NAC elevation, more extensive skin-envelope reduction, and broader parenchymal rearrangement. In the author's practice, these patients are generally managed with alternative inferior septum-based pedicle techniques, which allow the glandular tissue and NAC to be elevated as a unified vascularized unit. This strategy is used to support breast reshaping and upper-pole volume redistribution while preserving a broad vascularized tissue base for the NAC, which may help reduce ischemic risk in cases requiring greater transposition.

Patients with previous breast implant surgery were also not included. Therefore, the findings should be interpreted within this selected patient population and should not be extrapolated to patients with severe ptosis or to secondary mastopexy after implant removal.

Fourth, the study was not prospectively registered and did not include a prospectively dated protocol, formal sample size calculation, or prespecified statistical analysis plan. Because this was a retrospective case series, the analysis was primarily descriptive, and these factors should be considered when interpreting the findings.

Fifth, follow-up data were limited by attrition over time, particularly at 24 months, when 100 of 293 patients were available for in-person evaluation. Patients with missing data for a specific outcome or follow-up time point were excluded from the corresponding analysis, and missing values were not imputed. Some patients maintained remote contact and submitted photographic updates; however, these images were not included in the primary analysis because they were not obtained under standardized photographic conditions. Therefore, the 24-month findings should be interpreted as available-case follow-up data rather than complete-cohort outcomes.

Finally, upper-pole contour and overall breast contour were assessed clinically by the operating surgeon with reference to standardized photographic documentation. No independent blinded photographic assessment, 3-dimensional volumetric analysis, or validated photometric upper-pole index was used. This limits the objectivity of conclusions regarding upper-pole contour, breast volume distribution, and contour changes over time.[20]

Further comparative studies with longer follow-up, independent assessment, objective volumetric analysis, and evaluation by other surgeons are needed to define the reproducibility, limitations, and relative role of this technique in implant-free mastopexy.

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CONCLUSIONS

The 3-flap technique may be considered an additional implant-free autoaugmentation mastopexy option for selected patients with glandular, Grade I, or selected Grade II ptosis. By combining cranial fixation of a central inferior autoaugmentation flap with reciprocal stabilization of the medial and lateral parenchymal pillars, the technique is intended to support breast reshaping and contour control using autologous tissue.

In this retrospective single-surgeon case series, the technique was associated with favorable clinical, anthropometric, standardized photographic, and patient-reported findings in the available follow-up population. Further comparative studies with independent assessment, objective volumetric analysis, longer follow-up, and evaluation by other surgeons are required to determine reproducibility and define the role within implant-free autoaugmentation mastopexy.

Supplemental Material

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Disclosures

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REFERENCES

1. International Society of Aesthetic Plastic Surgery. ISAPS international survey on aesthetic/cosmetic procedures performed in 2024. Accessed July 21, 2025. https://www.isaps.org/media/oogpzodr/isaps-global-survey_2024.pdf
2. Hamdi M, Hall-Findlay EJ. Pedicle choices in breast reduction. In: Hamdi M, Hammond DC, Nahai F, eds. *Vertical Scar Mammaplasty*, 1st ed. Springer; 2005:11-17.
3. Ribeiro L. A new technique for reduction mammaplasty. *Plast Reconstr Surg*. 1975;55:330-334. doi: 10.1097/00006534-197503000-00010
4. Bozola AR. Breast reduction with short L scar. *Plast Reconstr Surg*. 1990;85:728-738. doi: 10.1097/00006534-199005000-00013
5. Caldeira A, Lucas A, Grigalek G. Mastoplasty: the triple-flap interposition technique. *Aesthetic Plast Surg*. 1999;23:51-60. doi: 10.1007/s002669900243
6. Daniel MJ. Mamoplastia com retalho de músculo peitoral. *Arch Catarin Med*. 1994;23:119.
7. Daniel M. Mammaplasty with pectoral muscle flap. Presented at the 64th Annual Scientific Meeting of the American Society of Plastic and Reconstructive Surgeons, 1995, Montreal, Canada.
8. Graf R, Auersvald A, Bernardes A, Biggs TM. Reduction mammaplasty and mastopexy with shorter scar and better shape. *Aesthet Surg J*. 2000;20:99-106. doi: 10.1067/maj.2000.106471
9. Graf R, de Araujo LR, Rippel R, Neto LG, Pace DT, Biggs T. Reduction mammaplasty and mastopexy using the vertical scar and thoracic wall flap technique. *Aesthetic Plast Surg*. 2003;27:6-12. doi: 10.1007/s00266-002-0111-5
10. Pusic AL, Klassen AF, Scott AM, Klok JA, Cordeiro PG, Cano SJ. Development of a new patient-reported outcome measure for breast surgery: the BREAST-Q. *Plast Reconstr Surg*. 2009;124:345-353. doi: 10.1097/PRS.0b013e3181aee807
11. Ribeiro L, Backer E. Mastoplastia com pedículo de seguridad. *Rev Esp Cir Plast*. 1973;16:223-234. doi: 10.64869/EVAK6875
12. Ribeiro L, Accorsi A Jr, Buss A, Marcal-Pessoa M. Creation and evolution of 30 years of the inferior pedicle in reduction mammaplasties. *Plast Reconstr Surg*. 2002;110:960-970. doi: 10.1097/00006534-200209010-00038
13. de Araujo Cerqueira A. Mammoplasty: breast fixation with dermoglandular mono upper pedicle flap under the pectoralis muscle. *Aesthetic Plast Surg*. 1998;22:276-283. doi: 10.1007/s002669900203
14. Botti G. Vertical scar mammaplasty: stable padding of the superior pole by means of a posteriorly based pedicle autoprosthesis. *Aesthet Surg J*. 1999;19:116-123. doi: 10.1053/aq.1999.v19.97039
15. de la Plaza R, de la Cruz L, Moreno C. Mastopexy utilizing a dermoglandular hammock flap. *Aesthet Surg J*. 2005;25:31-36. doi: 10.1016/j.asj.2004.12.002
16. Foustanos A, Zavrides H. A double-flap technique: an alternative mastopexy approach. *Plast Reconstr Surg*. 2007;120:55-60. doi: 10.1097/01.prs.0000263320.57385.a2
17. Hönig JF, Frey HP, Hasse FM, Hasselberg J. Autoaugmentation mastopexy with an inferior-based pedicle. *Aesthetic Plast Surg*. 2009;33:302-307. doi: 10.1007/s00266-009-9310-7
18. Hönig JF, Frey HP, Hasse FM, Hasselberg J. Inferior pedicle autoaugmentation mastopexy after breast implant removal. *Aesthetic Plast Surg*. 2010;34:447-454. doi: 10.1007/s00266-010-9471-4
19. Nava MB, Rancati A, Rocco N, Catanuto G, Irigo M. Improving aesthetic outcomes in mastopexy with the "autoprosthesis" technique. *Gland Surg*. 2017;6:141-147. doi: 10.21037/gs.2017.03.05
20. Swanson E. A retrospective photometric study of 82 published reports of mastopexy and breast reduction. *Plast Reconstr Surg*. 2011;128:1282-1301. doi: 10.1097/PRS.0b013e318230c884

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