

The Periareolar Approach: All Seasons Technique for Multiple Breast Conditions

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Background: The periareolar approach was first introduced by Hollander in 1924 and, since then, numerous contributions have been reported by different authors. Despite all the strengths associated with this versatile technique, the periareolar approach still poses three main problems: large areolar diameter with poor quality scar, flattening of the breast cone, and poor stability of the results. The purpose of this article is to show how this surgical technique, with a good patient selection, can be applied to different situations and obtain excellent results.

Methods: We performed a retrospective study on 5028 consecutive procedures in 4198 female patients treated with a periareolar approach in two regional institutions between 2008 and 2018. We considered 853 pure mastopexies, 362 breast augmentations, 422 secondary breast augmentations, 402 corrections of stenotic breast, 2921 oncoplastic surgeries, and 68 breast reductions. Postoperative complication, as well as patient and surgeon satisfaction were assessed.

Result: Patient and surgeon satisfaction 1 year after the procedure was excellent, and the complication rate was low.

Conclusions: When the indication is set correctly, the periareolar approach can obtain excellent results. This versatile technique, initially introduced as a mastopexy technique, has expanded its applications and can now be used for multiple surgical situations. (*Plast Reconstr Surg Glob Open* 2021;9:e3693; doi: 10.1097/GOX.0000000000003693; Published online 20 July 2021.)

INTRODUCTION

The breast is one of the leading organs treated by plastic surgeons for many purposes, such as correction of malformations (breast asymmetries, stenotic and tuberous breasts, Poland syndrome, etc), postoncological reconstruction (breast reconstruction after mastectomy or lumpectomy) and aesthetic/degenerative corrections (hypotrophy, hypertrophy, age-related problems, and

postsurgical deformities). The surgical goals of these procedures are as follows:

- new pleasant breast cone;
- nipple–areola complex (NAC) survival and correct positioning at the centre of the breast cone;
- stable results throughout time;
- minimal scars.

The desire to correct the shape, ptosis, hypo/hypertrophy, and any type of breast malformation using periareolar approach is long-standing. Hollander¹ pioneered a technique to lift up the areola with skin excision in the supra-areolar area (“crescent technique”). However, it was Hinderer² who first described the “doughnut mastopexy” and periareolar dermopexy with retromammary mastopexy (only the periareolar epidermis was removed and not full-thickness skin).

These techniques were improved by Andrews³ for small volume breast reduction and Bartels⁴ for mastopexy in breast augmentation. Erol⁵ adopted a periareolar breast reshaping by leaving a central pedicle, undermining the superficial fascia, with no detachment of the gland from the muscle.

A significant improvement for the evolution of the periareolar technique was the introduction of the purse-string (or round-block suture) by Peled,⁶ even though Benelli^{7,8}

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introduced the modern concept of round-block suture for the correction of small to moderate ptosis, reduction of the areolar diameter, and closure of the two periareolar circles in a concentric fashion.

Peixoto,⁹ Felicio,¹⁰ Toledo,¹¹ Goes,¹² Spear,¹³ Ersek,¹⁴ Martins,¹⁵ and Hinderer¹⁶ added interesting contributions by using different breast remodeling and resection. Wilkinson¹⁷ proposed the “double Benelli stitch.” Robles¹⁸ introduced the concept of periareolar suture with a straight needle and an areolar sizer.

Bustos¹⁹ suggested the use of a silicone sheet around the gland, anchoring it to the anterior pectoralis muscle fascia for better stabilization, followed by Goes,²⁰ who performed a periareolar access with a polyglactine or mixed mesh as a support. Hammond^{21,22} described the interlocked suture with particular inferior pedicle.

Our group made a significant contribution in 2016, extending the periareolar approach to all breast resections in oncoplastic surgery,²³ and subsequently for the treatment of stenotic and tuberous breast.^{24,25}

Despite all the valuable contributions described above, the periareolar approach still presents three main problems:

- late widening of the areolar diameter due to suture tension and hypertrophic/wide scars;
- flattening of the breast cone;
- postoperative ptosis relapse.

Today these three issues have almost been solved.

The purpose of the present article is to show how the periareolar approach, with a good patient selection, can be applied to different situations, leading to excellent results. Exceptions of the described technique are severe hypertrophies/ptosis or inelastic skin, where a T-inverted or L-scar is preferred.

On the basis of previous works and the most recent developments, we think that the treatment of multiple mammary conditions with the periareolar approach can now be judged satisfying.

MATERIALS AND METHODS

We performed a retrospective study on 5028 consecutive procedures in 4502 female patients treated with a periareolar approach in two major regional hospitals (Humanitas Research Hospital – Rozzano and Ospedale San Giuseppe, Gruppo MultiMedica Holding S.p.A. – Milano) between 2008 and 2018. The number of surgical procedures is listed in [Table 1](#).

To evaluate patient and surgeon satisfaction about the aesthetic outcome, we randomly selected 1400 procedures out of a total of 5028. The patient satisfaction 1 year postoperatively was evaluated with a visual analog scale of 0–10.

Two independent experienced plastic surgeons (with a long-standing experience in breast surgery and not performing these procedures) developed a retrospective analysis on standard postoperative photographs of the same 1400 procedures in a blinded fashion to assess aesthetic outcome. Postoperative photographs were scored from 1 to 5 (1: very poor outcome, 2: poor outcome, 3: acceptable

Table 1. Number of Surgical Procedures Performed between 2008 and 2018

Surgical Procedure	No. Procedures
Mastopexy	42 bilateral 811 monolateral
Breast augmentation + mastopexy	362
Secondary breast augmentation + mastopexy	422
Stenotic breast correction	402
Oncoplastic breast conservative surgery	2921
Breast reduction	12 bilateral 56 monolateral

outcome, 4: good outcome, 5: optimal outcome) in terms of symmetry (volume, ptosis, NAC position), shape of the breast and scar quality.

Complication rate of the same 1400 procedures was assessed.

Surgical Technique

Before starting the procedure, preoperative standards anterior-posterior, oblique, and lateral pictures are collected for each patient.

Perioperative antibiotic prophylaxis administration is made with one shot of Cefazolin 2000mg e.v. to all patients (patients allergic to cephalosporins are administered Clindamycin 600mg e.v.). All surgical interventions are performed under general anesthesia.

As a general introduction, the main parameters to analyze are:

- position, dimensions, and shape of the two periareolar drawings (external one normally oval-shaped);
- position of the inframammary folds (IMFs) and the possible need to shift it on the basis of the patient's presentation (eg, stenotic breasts);
- relative position of the NAC compared with the IMF ([Fig. 1](#)).

The related maneuvers to consider are:

- glandular resection to achieve a natural breast reshaping (eg, postoncological resection, breast reduction);
- complete detaching of the gland from the pectoralis muscle fascia (eg, stenotic breast, secondary mammoplasty);
- glandular suspension or glandular mastopexy;
- deep glandular round-block suture to increase the projection;
- liposuction of the lateral breast quadrants to further remodel the lateral edges and reduce the density of the mammary tissue in case of a breast reduction;
- lipofilling to add volume in specific areas of the breast or smooth irregular edges (eg, primary and secondary surgery);
- percutaneous scar lysis by needles to treat the lower pole fibrotic areas (eg, stenotic/tuberous breast correction, secondary mammoplasty).

Preoperative Markings

The preoperative markings are made with the patient in the upright position, with arms on the sides. The suprasternal notch, the median sternal line, and the IMF are marked. The new ideal position of the nipple corresponds to the anterior projection of the inframammary

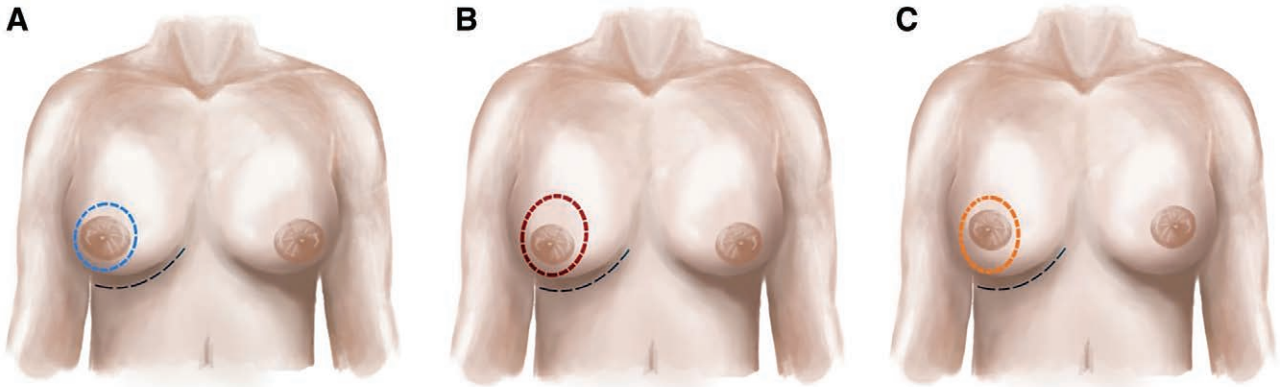


Fig. 1. A–C, Different shapes of the external circle, depending on the final position of the NAC, compared with the IMF.

fold in case of aesthetic breast reduction/mastopexy (corresponding to humerus midpoint and according to the patient’s anatomical proportions) and can be adapted to different situations (eg, stenotic breast, requiring a lower IMF). We draw the new IMF when a different position is planned, and the NAC is fixed in related point.

Surgical Procedure—Common Points

The patient is positioned on the operating table to accommodate both supine and sitting position.

Two circular skin markings are made. The inner circle is the areolar border, the external one is marked based on the new NAC point previously determined, the breast size, and degree of ptosis. External marking can be concentric or eccentric, normally oval. The diameter can be wide depending on anatomy and tissue quality presentation²³ and the areola can be moved in all directions (Fig. 2A). The pinching test allows us to visualize the new breast shape, checking the central position of the NAC.

Simulation with a temporary round-block suture (2-0 Polypropylene) is useful to previous checking to plan eventual further corrections.

The two circles are incised with cold blade and de-epithelialization of intervening skin is performed. The dermis is cut circumferentially (close to the external circle).

The gland needs to be mobilized from the superficial fascial layer, performing 1–2 cm of circumferential centrifugal undermining.

Two purse-strings are used (Polypropylene 2-0): the first one is placed deeper clockwise (residual dermis) to reduce the diameter of the outer circle and/or to evert out the central mound, whereas the second is more superficial and counterclockwise (close to the epidermis) (Fig. 2B).

The two skin edges are paired with a subcuticular suture (Polyglactin 3-0) placed in the 8 cardinal points (similarly to an interlocked suture, but with single stitches). Intra dermal suture is finally made.

Drains are always positioned except for mild ptosis and kept in place for 1–2 days.

An elastocompressive dressing is applied at the end of the procedure and kept for 3-4 days. Wound closure adhesive strips are maintained for 20 days and, for the same

period, the patient is required to wear a criss-cross-like bra 24 hours/day.

Surgical Procedure—Particular Points in Different Situations

We list below the different situations where the periareolar approach can be used.

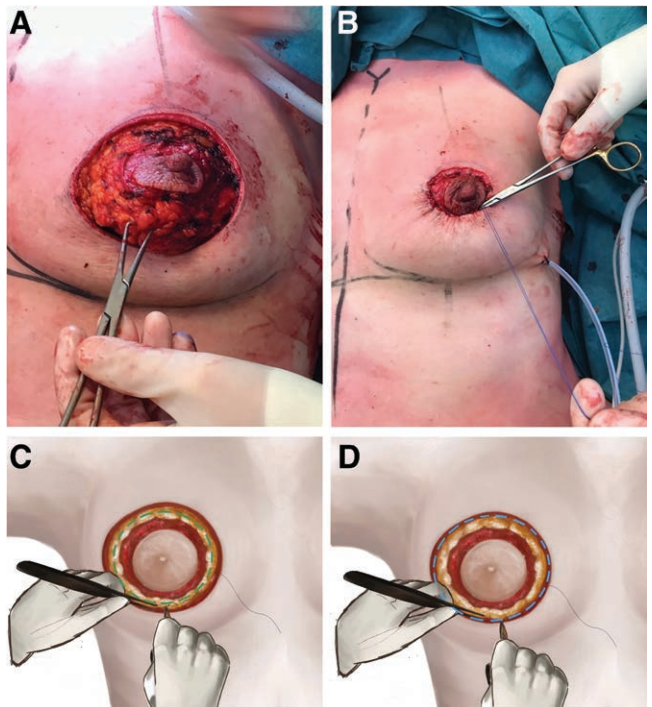


Fig. 2. A case of a 42-year-old woman undergoing a bilateral periareolar mastopexy. A, Intraoperative view. The external and internal circles are incised, de-epithelialization performed, dermis circumferentially interrupted, the gland detached from the skin of the lower pole and from the muscular fascia. At this point, it is possible to apply glandular stitches (B). C, D, Two illustrations. A double round-block suture in Polypropylene 2-0 has been applied. The first one (green-dotted line—deep) is made to reduce the diameter of the external circle, tighten the parenchyma and increase the areolar projection; the second one (blue-dotted line—superficial), is performed to obtain the final areolar diameter. The needle holder is used to temporarily fix the suture and verify the correct areolar diameter.

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Mastopexy

Originally, the periareolar approach was addressed to breast ptosis and the concept of periareolar mastopexy has been lent to reconstructive situations (oncoplastic surgery). The authors' technique considers three different degrees of ptosis:

- In mild ptosis, only a 360 degree glandular incision is made, 1–2 cm from the external circle without reaching the deep fascia, and a deep non resorbable suture in 2-0 Polypropylene to compact and project the gland is positioned.
- In moderate ptosis, the gland is detached from the superficial fascia from 4- to 8-o'clock at the lower pole, until the IMF is reached (or more if required). Remodeling the exposed pole is possible in different ways (glandular stitches, crossed-flaps) (Figs. 3, 4).
- In severe ptosis, the gland is detached from the pectoralis major fascia to suspend it at the higher point with not resorbable stitches, to obtain more fullness in the upper pole, caring the risk of over emptying the lower pole.

The double round-block suture is performed (see common points). The circles are incised both to shorten the inferior pole (NAC-IMF distance) and to move the areola upward, correcting the glandular ptosis. Lipofilling is utilized to gain volume and fullness, if necessary.

Breast Augmentation and Mastopexy

An inferior periareolar incision is made in normal width areola. Electrocautery dissection is performed through the breast parenchyma toward the pectoralis major muscle fascia.

It is possible to create either a subglandular or a sub-muscular pocket (dual-plane), depending on the patient's anatomy and/or volume desired.

The implant is positioned and covered by suturing the breast parenchyma with resorbable sutures.

Alternatively, the surgeon can work on the inferior pole of the gland with a different subcutaneous approach reinforcing it in different ways.

The inner periareolar circle is completed and to draw the outer circle the patient is positioned upright, checking the new placement of the areola with the picture in the upright position. If necessary, the final scar is simulated with a temporary external suture in 2-0 Polypropylene.

The periareolar mastopexy with double round-block suture is performed using the same steps described above (see common points) (Fig. 5).

Secondary Breast Augmentation and Mastopexy

Through an inferior hemi-periareolar approach, the gland is incised until the capsule is reached, and total capsulectomy or capsulotomy is performed to remove the former implant. The pocket is washed and cleansed with iodopovidone solution.

It is possible to modify the pocket depending on patients' clinical presentation. The correct position of the new implant is obtained by:

- enlarging and lowering the pocket with electrocautery (Fig. 6);
- fixing the IMF and lateral borders in a right position to correct a bottoming down or to reduce volume (capsulectomy with resorbable suture) (Fig. 7).

A new implant can be eventually placed in the same or different plane, depending on the local anatomy.

The gland is sutured with resorbable stitches, and the patient is positioned upright to draw the periareolar mastopexy (see common points).

Though the two breasts and the scars are generally asymmetrical at the presentation, the periareolar approach allows positioning the NAC on the centre in a symmetrical way, together with the described surgery inside the breast.

Periareolar is also useful in implant final removal, as it partially manages the skin excess with minimal scars.

Correction of Stenotic/Tuberous Breast

A reduction of the areola diameter is considered if necessary and the incision is made in the inferior border of the new planned areola, parenchyma is incised with electrocautery and pectoralis muscle fascia is

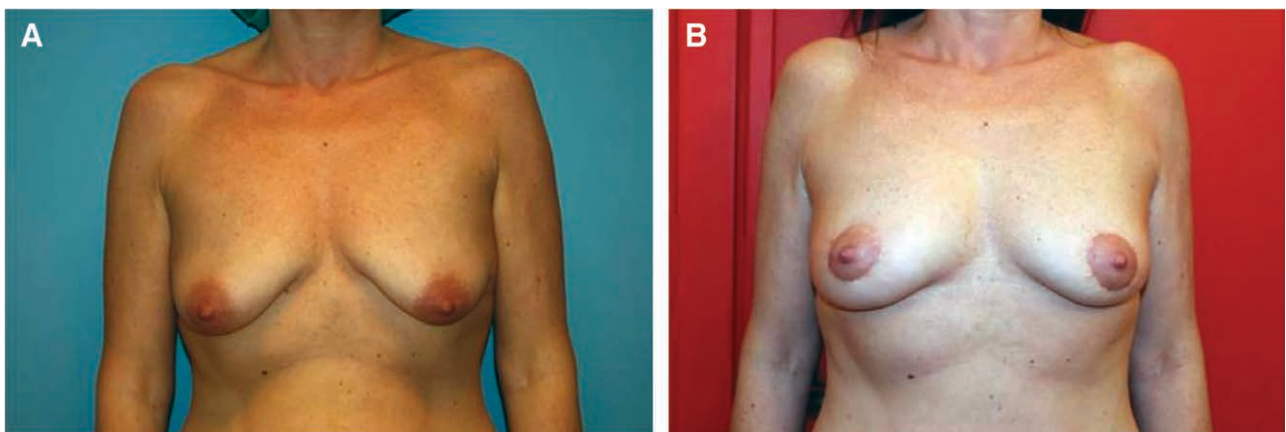


Fig. 3. A, Preoperative view of a 43-year-old patient presenting with bilateral moderate breast ptosis. B, Postoperative view 1 year after the periareolar correction, with glandular detaching and internal mastopexy.

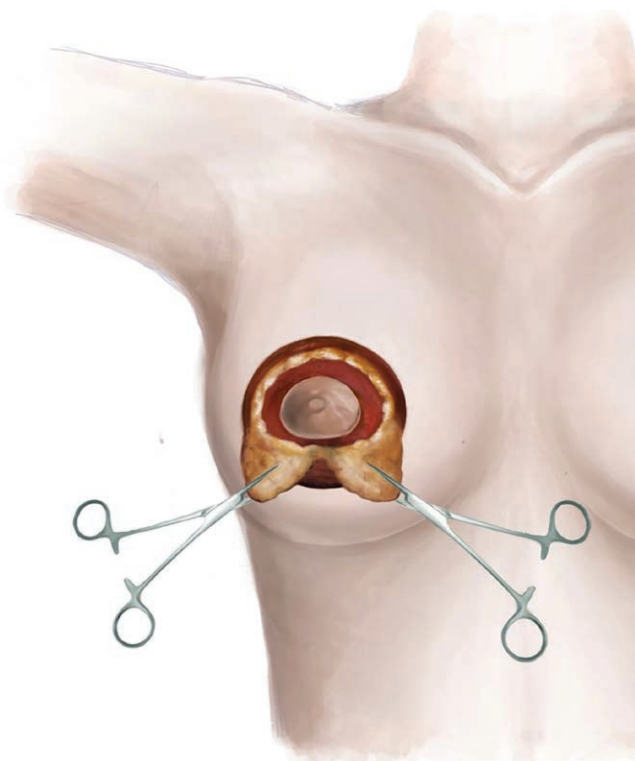


Fig. 4. After de-epithelialization and complete glandular detachment, two flaps in the lower pole can be used to reshape the breast cone (sutured together, flipped behind the NAC, moved medially or laterally to fill hypotrophic areas).

identified. A 360 degree glandular detachment is performed to interrupt all retractile fibres connecting glandular and muscular tissue.^{25,26} The high IMF is lowered (Fig. 8) as previously planned, obtaining a round and correct shape and volume redistribution on the four mammary poles.

The breast volume deficit as the frequent asymmetry can be corrected with (different) implants, mainly in subglandular position (due to the demonstrated shortness

and firmness of the pectoralis muscle) or with subfascial and intraglandular lipofilling.²⁶ To fill up the flat lower pole, glandular flaps are prepared on the basis of retroareolar pedicle and/or needles, and fat are employed to round up and fill the same pole, releasing fibrous retractile tissues and gaining volume²⁷ (Fig. 9).

The above-described double round-block suture (see common points) provides the centralization of the areola, shortening the created longer vertical distance (NAC-IMF).

Breast Reconstruction after Tumor Resection (Lumpectomy)

Author experience has already been published.²³ Numerous incision patterns and pedicled flaps have been proposed throughout the time, depending on the tumor size and location. Our group almost always uses the periareolar approach to combine the tumor removal with the reconstruction in a single scar.

The external circle/oval is marked based on tumor size/location, breast size and degree of ptosis; this circle is drawn in an eccentric position to place the areola at the centre of the new breast cone and avoid any distortion induced by the lumpectomy.

We do not undermine the NAC and do not incise the dermal layer in the opposite site of tumor location, to preserve NAC blood supply.

NAC repositioning is usually performed only with an eccentric periareolar incision. The key of the approach is the mobilization of three glandular flaps (sometimes two) from the musculofascial plane (medial, lateral, and inferior).

Skin undermining and glandular mobilization from the musculofascial plane are different depending on excised volume, tumor location, and breast size. The three glandular flaps are then sutured together with resorbable sutures to fill the volume gap and obtain a new breast cone.

A double round-block suture is performed before the subcuticular mattress suture placement.

This approach, as we have already demonstrated, is valid for any kind of tumor location.

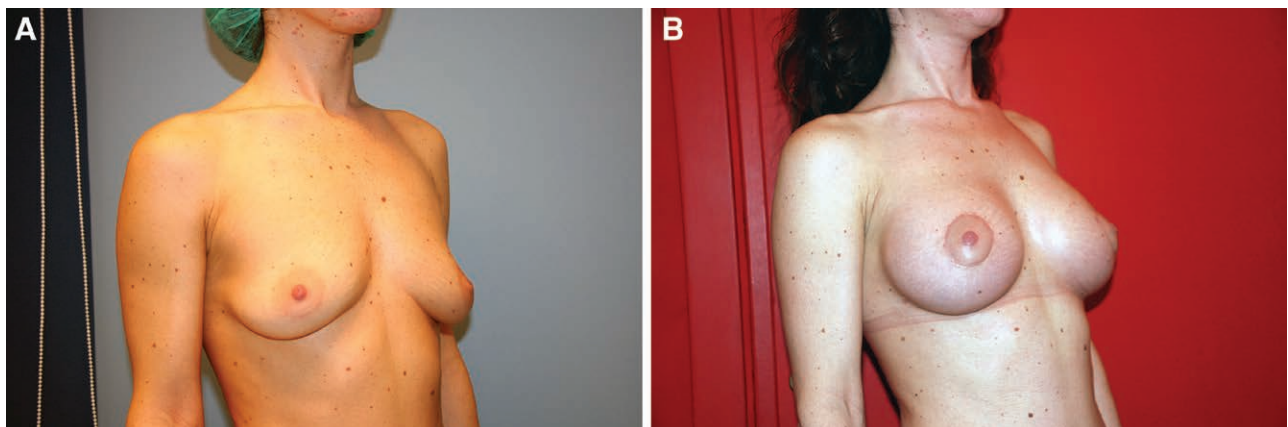


Fig. 5. A, Preoperative view of a 40-year-old patient presenting with bilateral breast hypotrophy and moderate ptosis. B, Postoperative view 6 months after bilateral breast augmentation (dual-plane technique) and periareolar mastopexy.

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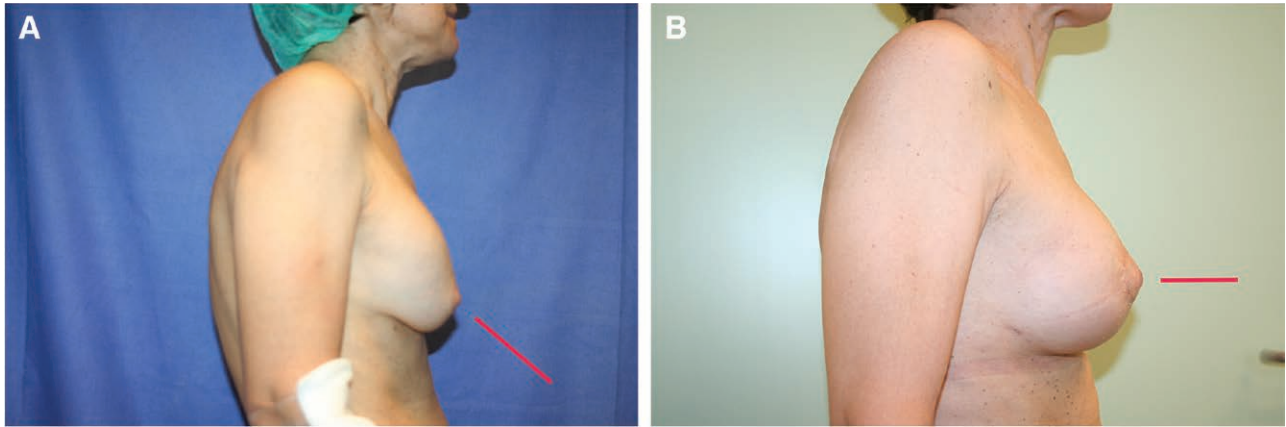


Fig. 6. A, Preoperative view of a 47-year-old patient presenting with a bilateral capsular contracture (Baker IV) 21 years after a bilateral retropectoral breast augmentation; the implant is dislocated upward and a “waterfall effect” of the gland and NAC is noticeable (arrow). B, Postoperative view 1 year after lateral and inferior capsulotomy, implants repositioning and periareolar mastopexy to obtain the correct position of the NAC (arrow).

Breast Reduction

Drawings are always performed in the upright position. Fixed points are:

- sternal notch;
- sulcus projection in middle breast line.

Two circular skin markings are drawn (see common points), the skin between them is de-epithelialized, and the dermis is cut circumferentially. The gland is detached from the subcutaneous tissue as much as needed to expose the parenchyma to resect. The glandular tissue is then excised (we prefer the supero-lateral quadrant to make the breast reshaping easier, but it can vary on the clinical presentation) and two dermoglandular flaps are sculptured, mobilized, and sutured together to obtain a natural round-shape (similarly to what is done in oncoplastic surgery); this is essential to recreate a natural breast cone and prevent any

skin retractions. Finally, a double round-block and subcuticular sutures are made (see common points) (Fig. 10).

In case of adipose breasts, a liposuction can be employed in a suprapectoral fascial plane (deep plane) to reduce the volume before the periareolar incision and avoid the glandular resection.

RESULTS

In the present study, we evaluated 5028 consecutive procedures in 4502 female patients treated with a periareolar approach (Table 1). The age of the patients ranged from 18 to 70 years. We examined 853 pure mastopexies (42 bilateral, 811 monolateral), 362 breast augmentations and periareolar mastopexy, 422 secondary breast augmentations, 402 stenotic and tuberous breasts, 2921 lumpectomies, 68 breast reductions (12 bilateral, 56 monolateral—with a mean resected volume between

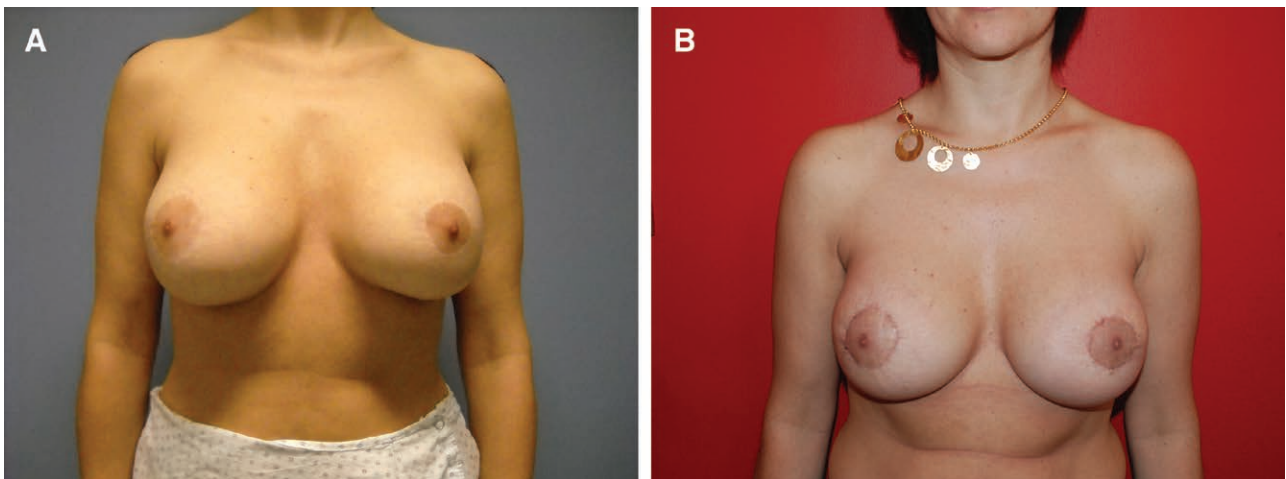


Fig. 7. A, Preoperative view of a 38-year-old patient requiring a reduction of the breast volume 4 years after a dual-plane breast augmentation; bilateral capsular contracture (Baker II) is evident. B, Postoperative view 6 months after pocket volume reduction using capsulorraphies (medial, lateral, and at IMF) with resorbable suture, smaller implants positioning. Periareolar mastopexy is useful to obtain NAC centralization and manage the skin excess after volume reduction.

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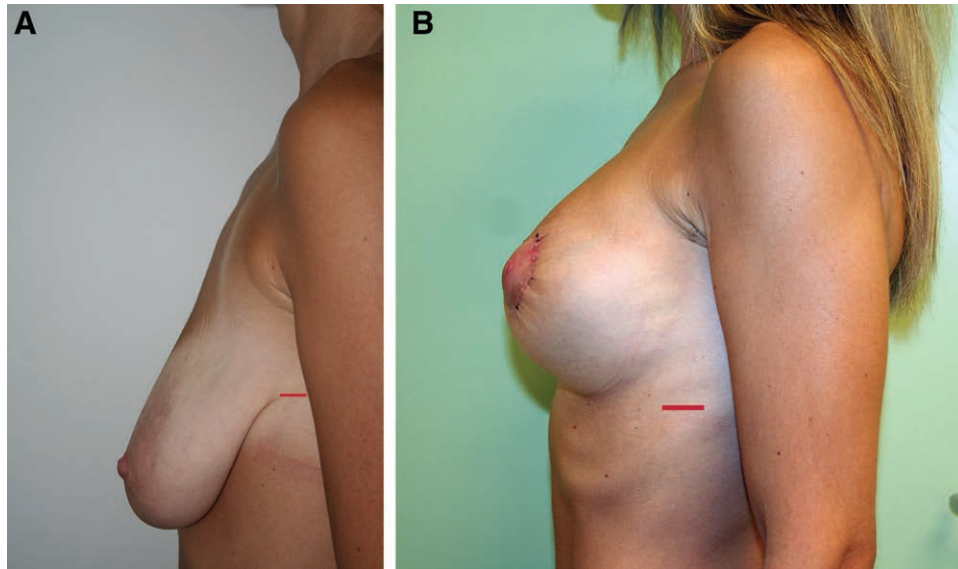


Fig. 8. A, Preoperative view of a 45-year-old patient presenting with a severe ptosis in a stenotic breast, requiring breast augmentation and mastopexy; the patient presents a high IMF (see red line), large areolas, complete ptosis of breast parenchyma, and tight breast base. B, Postoperative view 4 months after surgery; the IMF has been widely lowered (see red line), implants placed in a dual-plane pocket and periareolar mastopexy performed to obtain the correct position and diameter of the NAC.

150 and 400 g). All the 811 monolateral mastopexies were performed for contralateral breast symmetrization (507 after lumpectomy, 304 during second-stage breast reconstruction). The same is true for the 56 monolateral breast reductions (19 after lumpectomy, 37 during second-stage breast reconstruction).

Patient and surgeon mean aesthetic outcome scores are summarized in Table 2. Complication rate of the same 1400 procedures is summarized in Table 3.

DISCUSSION

Periareolar approach for treatment of different breast conditions is unquestionably complex, as proved by the

numerous authors who tried to find new solutions and by the criticism raised in the past and still today.

The starting point of the authors was favored by the important experience represented by the periareolar oncoplastic breast conservative surgery after lumpectomy, which allowed a daily reflection on its versatility and possible applications in different breast conditions. The key concept is to treat skin and gland as separate units, with the goal of achieving a natural breast cone with the NAC in the correct central position, frontally oriented. The repetition of these concepts on the contralateral breast allowed developing new solutions and led the authors to perform breast reduction and mastopexy with a single periareolar incision.

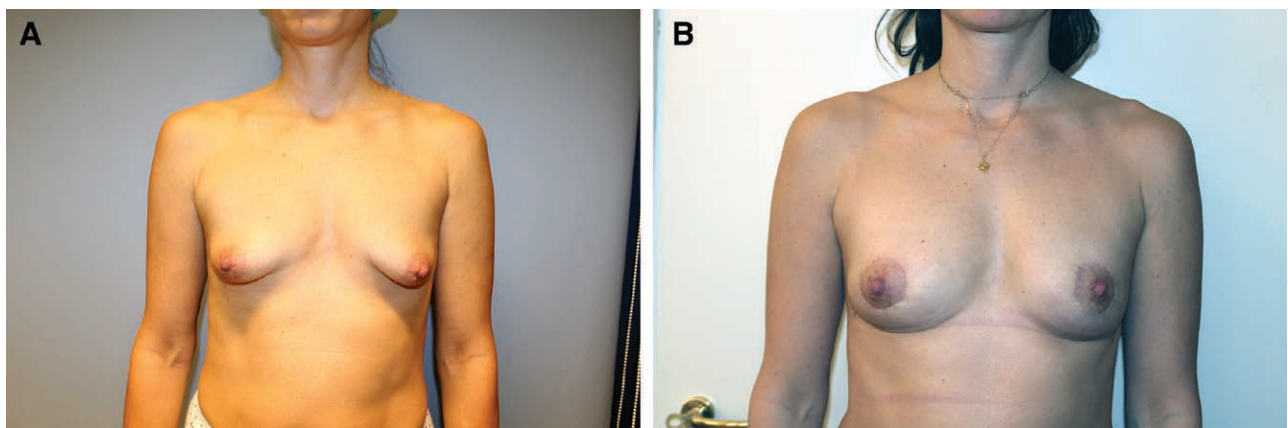


Fig. 9. A, Preoperative view of a 38-year-old patient presenting with a moderate ptosis in a stenotic breast, requiring a small volume increase without using implants. B, Postoperative view 6 months after surgical procedure. The gland was detached from the fascia, with complete lysis of adhesences in stenotic breast; 150 cm³ of autologous fat was injected for each breast. Periareolar approach allows NAC repositioning.

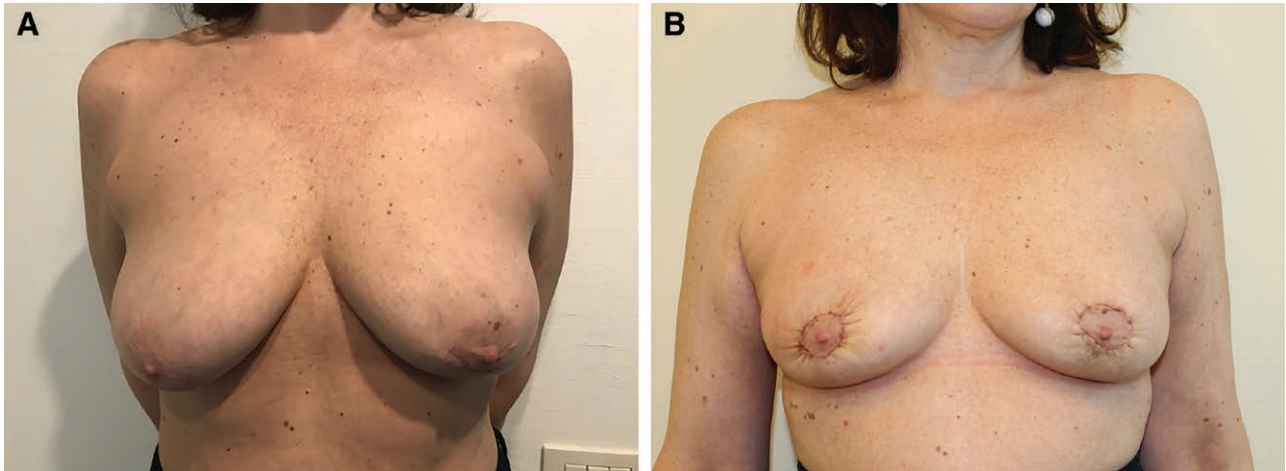


Fig. 10. A, A 59-year-old patient suffering from bilateral breast hypertrophy and severe ptosis. B, The same patient after a bilateral periareolar breast reduction. Periareolar approach can lead to good results, comparable with T-inverted reduction, but with less scars.

The analysis of stenotic breast provided a more accurate assessment of IMF position and its value in different conditions, imposing the concept of enlarging the stenotic cone. The roundness obtained almost always suggested the use of the periareolar approach for the new position of the NAC, as the condition, most of the time, consists of tight and insufficient skin in the lower pole.

The external circle can be very wide, as previously described.²³

From a vascular point of view, the study by Marcus,²⁸ Maliniac,²⁹ and van Deventer³⁰ described the vascular patterns of NAC, skin, and gland; Mu et al³¹ demonstrated the possibility to interrupt the dermis completely without compromising the NAC vitality.

Last but not least, skin elasticity with its variabilities permits adapting large external circles to the internal

ones, with the above-described maneuvers to match them in a satisfying way.

There are three main criticisms raised to this approach:

- A. Large areolar diameter with poor quality scar;
- B. Flattening of the breast cone;
- C. Poor stability of the results.

POINT A. As to the first point, the key elements to obtain a good result are the complete circumferential dermal incision (see above) in almost all situations, the deep incision and detachment of the gland from subcutaneous tissue (for 1–2 cm) and the use of two non-absorbable round-block sutures (the first deeper, the second more superficial) leading to margin ejection and reducing the tension forces on the edges. These sutures allow the match/adjustment of the outer circle within the inner

Table 2. Mean VAS Score and Surgeons' Score for Each Surgical Technique

Surgical Procedure	Mean Patients' Satisfaction (VAS Score)	Mean Surgeons' Score	No. Procedures Evaluated
Mastopexy	7.9 bilateral 8.5 monolateral	4.2 bilateral 4.1 monolateral	12 bilateral 153 monolateral
Breast augmentation + mastopexy	8.3	4.5	108
Secondary breast augmentation + mastopexy	8.1	4.4	127
Stenotic breast correction	8.4	4.6	120
Oncoplastic breast conservative surgery	8.4	4.5	859
Breast reduction	8.0 bilateral 8.2 monolateral	4.0 bilateral 4.1 monolateral	4 bilateral 17 monolateral

Table 3. Complication Rate for Each Surgical Procedure

	Mastopexy	Breast Augmentation + Mastopexy	Secondary Breast Augmentation + Mastopexy	Stenotic Breast Correction	Oncoplastic Breast Conservative Surgery	Breast Reduction
CAC necrosis	Partial 2 (1.21%) Complete 0	0	Partial 2 (1.57%) Complete 0	Partial 2 (1.67%) Complete 0	Partial 13 (1.51%) Complete 0	0
Areolar widening	4 (2.42%)	3 (2.78%)	0	6 (5%)	21 (2.44%)	1 (4.76%)
Poor scar quality (pinches and hypertrophic scars)	3 (1.82%)	0	1 (0.79%)	7 (5.83%)	22 (2.56%)	1 (4.76%)
Round-block suture exposure	0	0	0	4 (3.33%)	15 (1.75%)	0
Breast cone flattening	3 (1.82%)	3 (2.78%)	5 (3.94%)	7 (5.83%)	25 (2.91%)	0
Ptosis relapse	15 (9.09%)	1 (0.92%)	1 (0.79%)	2 (1.67%)	N/A	1 (4.76%)

circle. The determined skin pinches tend to reduce or disappear in the following 20 days with the employment of tapes for that period pressing the scars and reducing tensions.

POINT B. Flattening of the breast cone benefitted from the use of the deeper round-block suture, which tends to give projection to the central area (the normally flattened one). The oval marking of the outer circle means less skin removal either in lateral or in medial quadrants, as normally most of the excess is vertical. The eccentric draw permits moving up the areola and shortening the eventual too long NAC-IMF distance.

POINT C. The stability of the result is favored by the two not resorbable round-block sutures (deep and superficial) and by shortening NAC-IMF distance together with managing the gland with alternatively deep glandular sutures, crossing flaps in the lower pole or suspending the detached gland to the muscle fascia.

The authors believe that the most important and unique steps of their technique are the complete circumferential dermal incision, which mobilize the gland from the skin without any tension, and the two round-block sutures (the first deeper, the second more superficial), which reduce the diameter of the outer circle and/or evert out the central mound. The combination of these two simple steps can prevent most of the complications/weakness of the periareolar technique, such as the areolar flattening.

The versatility of these concepts can adapt either to increase the volume (implants or fat) or to selective reduction of breast parenchyma.

The periareolar approach is useful for different situations, most of the times combined with other surgical techniques.

Complications have had modest impact and have declined over time as the experience of the group has grown. The need for an outpatient-based secondary surgery (eg, surgical scar revision) among the 1400 patients considered has been low (9%).

More than a single surgical technique, it is a solution that allows us to find different possibilities for multiple breast conditions.

As mentioned above, the authors do not employ the examined approach in case of severe hypertrophies/ptosis with excessive/inelastic skin; for these situations longer scars (vertical, L or T) approach is preferred.

It is essential to discuss the approach with the patients during preoperative consultation and check whether the obtainable results correspond to their expectations and desires.

At the same time, their availability for eventual secondary scar revision (in most complex cases) is evaluated.

The main limitation of the study is the short follow-up period in the sub-group analyzed, since 1 year could not be enough to identify possible long-term complications, such as the capsular contracture for the breast augmentation (primary and secondary) group. Besides, another limitation is that this technique cannot be employed on the totality of the tuberous breast/breast ptosis/breast hypertrophy cases. Exceptions of the described technique

are severe hypertrophies/ptosis or inelastic skin, where a T-inverted or L-scar is preferred.

CONCLUSIONS

Plastic surgery breast procedures attempt to obtain a new natural breast cone, with the NAC at the centre of it (positioned according to specific proportionated ratios) and the minimal scarring. Interestingly, Lejours claims that “we surgeons tend to accept the scars that the patients do not.” It is an engaging concept, and every surgeon should keep in mind not only the mere surgical result but also consider the patient expectations. When the indication is set correctly, the periareolar approach can obtain excellent results. This versatile technique, initially introduced as a mastopexy technique, has expanded and can now be used for multiple surgical situations. The growth curve for young surgeons is complex but certainly satisfactory.

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The principles outlined in the Declaration of Helsinki have been followed in this study.

REFERENCES

- Holländer E. Die Operation der mammahypertrophie und der haenge brust. *Dtsch Med Wochenschr.* 1924;41:1400.
- Hinderer U. Primera Experiencia con una Nueva tecnica de Mastoplastia para Ptois Ligeres. Paper presented at: Sixth National Reunion of Spanish Society of Plastic and Reparative Surgery; October 29–31; Madrid; 1969.
- Andrews JM, Yshizuki MM, Martins DM, et al. An areolar approach to reduction mammoplasty. *Br J Plast Surg.* 1975;28:166–170.
- Bartels RJ, Strickland DM, Douglas WM. A new mastopexy operation for mild or moderate breast ptosis. *Plast Reconstr Surg.* 1976;57:687–691.
- Erol OO, Spira M. A mastopexy technique for mild to moderate ptosis. *Plast Reconstr Surg.* 1980;65:603–609.
- Peled IJ, Zagher U, Wexler MR. Purse-string suture for reduction and closure of skin defects. *Ann Plast Surg.* 1985;14:465–469.
- Benelli L. Technique de plastic mammaire “round block”. *Rev Chir Esth Langue Francaise.* 1988;13:7.
- Benelli L. A new periareolar mammoplasty: the “round block” technique. *Aesthetic Plast Surg.* 1990;14:93–100.
- Peixoto G. Reduction mammoplasty: a personal technique. *Plast Reconstr Surg.* 1980;65:217–226.
- Felício Y, Penaforte LR, Cruz VTF: Mamoplastia redutora com incisão periareolar. In: Março, ed. *Anais de la Jornada sul Bras de Cirurgia Plastica.* Forianópolis, Brazil: SBCP; 1984: 307–311.
- Toledo LS, Matsudo PK. Mammoplasty using liposuction and the periareolar incision. *Aesthetic Plast Surg.* 1989;13:9–13.
- Goes JCS. Periareolar mammoplasty, double skin technique. *Rev Bras Cir Plast.* 1989;4:55.

13. Spear SL, Kassan M, Little JW. Guidelines in concentric mastopexy. *Plast Reconstr Surg*. 1990;85:961–966.
14. Ersek RA, Ersek SL. Circular cinching stitch. *Plast Reconstr Surg*. 1991;88:350–352.
15. Martins PDE. Periareolar mammoplasty with flap transposition. *Rev Bras Cir Plast*. 1991;6:1.
16. Hinderer UT. Mammoplasty with periareolar scar: historical evolution and actual state. In: Hinderer UT, ed. *Plastic Surgery Vol 2. Amsterdam, the Netherlands: Elsevier Science Publishers; 1992:569–571*
17. Wilkinson TS. The double Benelli stitch. *Tech Forum*. 1991;15:2.
18. Robles J. “Round block” technique. Aportes tecnicos personales. *Rev Argent Cir Plast*. 1992;2:57–65.
19. Bustos RA. Periareolar mammoplasty with silicone supporting lamina. *Plast Reconstr Surg*. 1992;89:646–657; discussion 658.
20. Góes JC. Periareolar mammoplasty: double skin technique with application of polyglactine or mixed mesh. *Plast Reconstr Surg*. 1996;97:959–968.
21. Hammond DC. The periareolar approach to breast augmentation. *Clin Plast Surg*. 2009;36:45–8, vi.
22. Hammond DC, O’Connor EA, Knoll GM. The short-scar periareolar inferior pedicle reduction technique in severe mammary hypertrophy. *Plast Reconstr Surg*. 2015;135:34–40.
23. Klinger M, Giannasi S, Klinger F, et al. Periareolar approach in oncoplastic breast conservative surgery. *Breast J*. 2016;22:431–436.
24. Klinger M, Caviggioli F, Giannasi S, et al. The prevalence of tuberous/constricted breast deformity in population and in breast augmentation and reduction mammoplasty patients. *Aesthetic Plast Surg*. 2016;40:492–496.
25. Klinger M, Klinger F, Giannasi S, et al. Stenotic breast malformation and its reconstructive surgical correction: a new concept from minor deformity to tuberous breast. *Aesthetic Plast Surg*. 2017;41:1068–1077.
26. Klinger M, Caviggioli F, Klinger F, et al. Tuberous breast: morphological study and overview of a borderline entity. *Can J Plast Surg*. 2011;19:42–44.
27. Klinger M, Lisa A, Klinger F, et al. Regenerative approach to scars, ulcers and related problems with fat grafting. *Clin Plast Surg*. 2015;42:345–52, viii.
28. Marcus GH. Untersuchungen über die arterielle Blutversorgung der Mamilla. *Archiv für klinische Chirurgie* 1934;179:361.
29. Maliniac JW. Arterial blood supply of the breast: revised anatomic data relating to reconstructive surgery. *Arch Surg*. 1943;47:329.
30. van Deventer PV, Graewe FR. The blood supply of the breast revisited. *Plast Reconstr Surg*. 2016;137:1388–1397.
31. Mu D, Luan J, Xin M, et al. Full-thickness periareolar skin resection in mastopexy. *J Plast Reconstr Aesthet Surg*. 2016;69:725–727.