

Simultaneous Augmentation and Periareolar Mastopexy: Selecting the Correct Implant

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Abstract

Background Periareolar mastopexy is a well-described technique for cosmetic improvement of breasts classified as Regnault ptosis grades 1 and 2. However, this technique is used less frequently for cases of grade 3 ptosis.

Methods Grades 2 and 3 ptosis were corrected for selected patients using a combination of augmentation with Style 410 shaped, form-stable, highly cohesive, silicone gel implants and periareolar mastopexy.

Results In this study, 17 patients were treated. The Style 410 implants used included four different devices: FX (full height, extra-full projection, $n = 4$), MX (medium height, extra-full projection, $n = 1$), MF (medium height, full projection, $n = 8$), and FF (full height, full projection, $n = 4$). No complications occurred immediately after surgery, and only two cases of capsular contracture Baker grade 2 cases with implant palpability occurred during a mean follow-up period of 18 months. All 17 women were very satisfied with

the improvement in their clothed appearance, and 16 were very satisfied overall with their surgery and body image improvements.

Conclusions With proper selection of patients and Style 410 breast implants, cases of grade 3 breast ptosis can be managed successfully by the periareolar approach, thus extending the range of cases suitable for this technique. The different shapes of the Style 410 form-stable, silicone gel implants help to recreate the desired natural-looking breast, achieving stable results with minimal complications.

Keywords Augmentation · Breast · Implant · Mastopexy · Periareolar · Shaped

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Hypoplasia and ptosis of the mammary glands in a single patient are frequent occurrences, especially after multiple pregnancies, breastfeeding, or significant weight loss. Inadequate breast volume may induce a negative body image and low self-esteem, affecting a patient's quality of life.

A mastopexy survey of 487 members belonging to the American Society for Aesthetic Plastic Surgery published in 2006 concluded that the inverted T is the most popular mastopexy approach (46%) despite the varying nature of mammary ptosis and its treatment. Short-scar mastopexy techniques were used by 18% of respondents, and the periareolar approach was used in 6.2% of the surgeries performed by respondents using only a single technique of mastopexy [1].

Over the years, breast augmentation with periareolar mastopexy has remained a challenging and controversial procedure [2–5]. The aesthetic results of combining breast augmentation and mastopexy are less predictable than those associated with augmentation mammoplasty or mastopexy alone [3]. According to Rohrich et al. [1], the periareolar approach was the preferred breast mastopexy technique for

as many as 40% of the most experienced surgeons who perform more than 26 mastopexies each year (mastopexy alone). Selection of this procedure by the most experienced surgeons implies the experience of a learning curve to achieve acceptable aesthetic results with this procedure.

Of all the aesthetic surgery liability claims in 2004, breast surgery represented more than 40% and mastopexy 6%. Periareolar mastopexy comprised 63% of all mastopexy liability claims [1].

Planning simultaneous augmentation and periareolar mastopexy with shaped implants helps to achieve the desired results, avoids unnecessary scars, and minimizes the frequent complications associated with this technique. In this report, we present our experience combining breast augmentation and periareolar mastopexy with Style 410 implants (Allergan, Inc., Santa Barbara, CA, USA) for patients presenting with mild to moderate/severe ptotic breasts.

Breast Ptosis

The Regnault classification is commonly used to assess breast ptosis (Table 1) [6]. The rating of ptosis depends on the position of the nipple in relation to the inframammary fold (IMF). Ptosis severity increases as the nipple position approaches and then drops below the IMF. However, two essential aspects are not evaluated by this classification: the breast skin area and the breast volume. These parameters must be considered in the selection of an implant appropriate for the procedure. Other relevant parameters include skin quality (e.g., elasticity, striae, fluting), quality of breast tissue support (which is difficult to quantify), previous scars, age, and patients' expectations. As a general guideline, a periareolar mastopexy may be appropriate for patients whose areola has a lower edge near or slightly below the IMF.

Style 410 Implants

Improvements in implant technology have led to the evolution of the shaped, fixed-volume implant. Cohesive-

gel implants have the potential to provide a natural breast shape and cleavage and to minimize the risk of postoperative rippling while also offering a greater degree of safety in terms of implant integrity. The Style 410 shaped, form-stable, highly cohesive, silicone gel implants represent this newest class of breast implants. An advantage of the Style 410 implant is its wide variety of available heights, widths, and projections.

Currently, the Style 410 implants offer 118 options and the Style 410 Soft Touch implants offer 79 options in a matrix of 12 cells [7]. The large number of options provides a significant advantage in the attempt to correct different grades of breast ptosis. After accurate breast measurements of width, height, and projection have been taken, selection of a specific implant can be individualized for each case to recreate the desired breast and achieve stable results with minimal complications. In our practice, 4 of 12 available shapes are commonly used.

Methods

Patient Selection

Eight patients with grade 3 and nine patients with grade 2 breast ptosis were eligible for this procedure. The average age of the patients was 44 years (range, 38–52 years). Nine of these patients had received previous implants and required revisional surgery. The patients were graded based on the aforementioned criteria, and the strategies used are described in the following discussion.

In grade 1 ptosis, the increased projection in the lower pole due to the teardrop shape of the form-stable implant shifts the inferior breast tissue superiorly without unnaturally increasing the fullness of the upper breast pole. This positions the nipple–areola complex (NAC) into a more appropriate, higher position. In grade 2 ptosis, a minimum periareolar mastopexy raises the NAC by 2 to 4 cm, achieving a satisfactory overall outcome and high levels of patient satisfaction. In grade 3, ptosis, which traditionally requires a circumvertical or inverted-T approach to correct the descended breast, use of the Style 410 implant allows the use of periareolar mastopexy.

Patients with grade 3 ptosis were selected for simultaneous breast augmentation and the periareolar approach if they had a lower areolar edge/IMF distance less than 8 cm, no need for ascending the new superior areolar edge more than 6 cm, and the minimum possible lateral (medial and axillary areolar) skin resection (ideally less than 1 cm per side).

Patients with large areolas and elastic breast skin are ideal for this technique because all the resected areolar skin

Table 1 Grades of ptosis according to the Regnault classification [6]

Grade 1: Minor ptosis	Nipple at the level of the inframammary fold, above the lower contour of the gland
Grade 2: Moderate ptosis	Nipple below the level of the inframammary fold, above the lower contour of the gland
Grade 3: Severe ptosis	Nipple below the level of the inframammary fold, at the lower contour of the gland

will not flatten the breast. By selecting patients with the aforementioned characteristics, we can avoid the classic flat breast appearance while keeping the periareolar scar at an acceptable size.

Breast Measurements

Standard markings were made on the breasts, which included defining the meridian of the breast across the IMF and the nipple and marking the midline, the height, and the width of the breast. All the markings were made while the patient was in the upright position. One of the most important issues was to define the appropriate nipple height. The nipple–sternal notch distance was measured, and the upper areolar edge was marked at 18 to 20 cm. This helped to determine the implant height. With less sternal–areolar distance, a shorter-height implant was selected.

The upper edge of the areola was pinched, and that skin was lifted up for observation of the proposed final position. The NAC was not elevated more than 6 cm, making areolar size important. Final areolar size was marked at 4.5 to 5 cm. Skin resections inside the original areola were highly acceptable in conserving breast projection. Finally, the intermammary distance was marked.

Implant Selection and Surgical Planning

Implants were chosen on the basis of mammary width and height measurements. The chosen devices were 1 cm shorter than the mammary measurements in each of these dimensions. Implant projection was selected according to skin stretch and patient desire, varying only between full (F) and extra-full (X) projections.

The inferior pole's position depended on final breast volume, skin quantity and quality, and implant size. After this mark was defined, an oval was drawn around the existing areola. The three principles of concentric mastopexy described by Spear et al. [8] were helpful for planning the surgery. As a rule, medial and lateral skin markings and resections were minimal and around the new 4.5- to 5-cm-diameter areolar borders. Minimal excess skin was removed in an attempt to resect primitive areolar skin only laterally. Inferiorly, as much infra-areolar skin as needed was left for breast shape. The lower edge of the areola was located 5 to 7 cm from the IMF but never more than 8 cm. In cases with greater ptosis, a circumvertical or inverted-T resection procedure was used instead.

A double projection with an unnatural appearance in the upper pole may develop when form-stable implants are used with larger breasts due to the tendency of these breasts

to become ptotic with time, whereas subpectoral implants stay in their initial position. To avoid such an unnatural appearance, a subglandular subpectoral position for the implant was preferred unless the pinch test was less than 2 cm. In that case, a subpectoral dual-plane implantation, similar to the technique described by Tebbetts [9], was performed.

Operative Technique

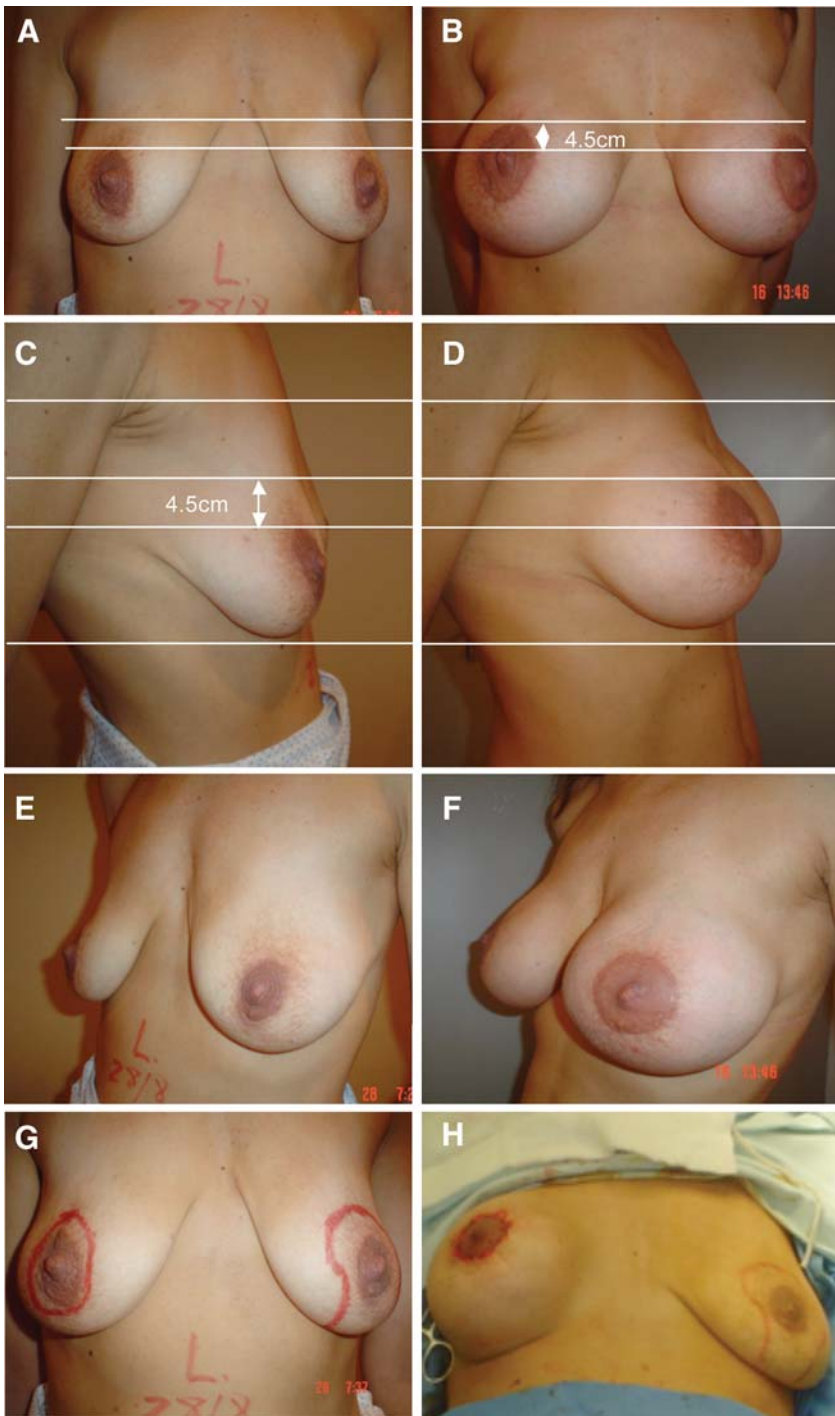
With the patient under general anesthesia and in a semi-seated position with the arms close to the body, a new areola 4.5 to 5.0 cm in diameter was marked using an areolotome. A precise incision around the new periareolar edge was performed, and the gland was dissected with an incision from the 3 to the 9 o'clock position reaching the pectoralis fascia. Retroglandular pocket dissection was performed under direct vision using an electrocautery unit. Precise pocket dissection was necessary to minimize postoperative implant rotation. The dissection did not extend more than 1 cm beyond the medial, lateral, and superior margins of the planned implant measurements. Inferiorly, the dissection was performed to reach the planned IMF exactly.

Intraoperative sizers have not been routinely used during the aforementioned procedures. The authors prefer to dissect a narrower pocket and complete it with the implant placed. The same procedure was performed on the contralateral breast, and parenchymal closure was made with a 3-0 polydioxanone suture. Transient purse-string closing sutures or staples were placed over the preoperative periareolar marks before the deepithelization of this area to assess the result and determine any additional adjustments. An upright seated position for the patient is strongly advocated for this intraoperative evaluation of breast shape [10].

With arms close to the body and with the implants in place, the patient was assessed to determine whether the surgical outcomes were satisfactory. Immediately after this assessment, the deepithelization was performed. The breast skin around the new areolar position was minimally undermined, and a round-block suture was performed with a purse-string closure 5 mm inside the dermal edge using 3-0 nylon with a straight needle. The suture was cinched down around a 35-mm cookie cutter. A new periareolar design 4.5 to 5 cm in diameter then was made with the areolotome. Minimal deepithelization was performed to resect periareolar wrinkles, and this tissue was placed under the areola.

Next, measurements were taken to ensure an equidistant position with the contralateral NAC relevant to the midline mark and suprasternal notch. Finally, areolar skin closure was performed with cardinal blocker 4-0 nylon stitches and

Fig. 1 Frontal (a, b), lateral (c, d), and oblique (e, f) pre- and 5-month postoperative views of grade 3 breast ptosis on a 34-year-old woman after three pregnancies, breastfeeding, and weight loss subsequent to periareolar simultaneous augmentation mastopexy with Style 410 FX 360-ml implants placed in the prepectoral plane. Note the elevation of the nipple–areola complex (NAC) above the inframammary fold (IMF) with a 4.5-cm lift. **g** Preoperative marking on the right breast for a periareolar mastopexy and on the left breast for a circumvertical mastopexy (not performed). **h** Intraoperative result with the patient in the seated upright position



intradermic nylon 3-0 sutures. We do not routinely use drainage in our practice, and thus did not use drainage in this study.

Follow-Up Evaluation

The study enrolled 17 patients between January 2005 and July 2008. The patient follow-up period ranged from 6 to 42 months (average, 18 months). All the patients were

scheduled for a postoperative follow-up visit every 6 months. The following questionnaire was sent by email 6 months after surgery.

Breast Mastopexy Satisfaction Questionnaire					
Improvement in unclothed appearance	1	2	3	4	5
Improvement in clothed appearance	1	2	3	4	5

continued

Body image improvements	1	2	3	4	5
Overall surgery satisfaction	1	2	3	4	5

1 = not at all satisfied, 5 = very satisfied

The patients were asked to rate their responses to the four questions regarding their surgery and satisfaction with their appearance on a scale of 1 (not at all satisfied) to 5 (very satisfied).

Results

Of the 17 patients, 12 received implants in the retroglanular position and 5 received implants in the retropectoral dual-plane position. The implants ranged from 220 to 375 g in size, with an average volume of 281.25 g. Four different Style 410 implants were used in this study: FX (full height, extra-full projection, $n = 4$), MX (medium height, extra-full projection, $n = 1$), MF (medium height, full projection, $n = 8$), and FF (full height, full projection, $n = 4$).

There were no complications immediately after surgery and only two cases of capsular contracture Baker grade 2 with implant palpability at the time of the follow-up survey. The follow-up survey showed that all the women were

very satisfied with the improvement in their clothed appearance, and 16 were very satisfied overall with their surgery and body image improvements. Only one patient rated her overall surgery experience and body image improvements as average. One patient rated her improvement in unclothed appearance as a 2 (mildly dissatisfied), whereas most (16 of the 17 patients) were either satisfied or very satisfied with their unclothed appearance. Sample results are shown in Figs. 1, 2, 3, 4 and 5.

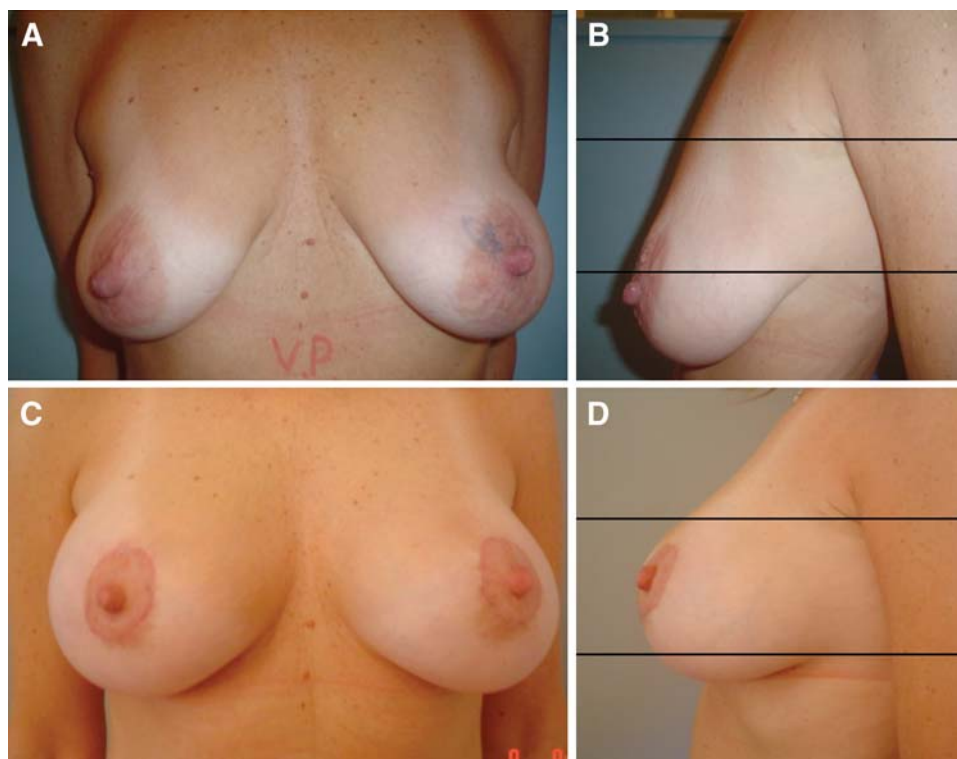
Discussion

The reported average incidence of complications associated with periareolar techniques is about 40% [8, 11–19]. Reported complications include wide scars around the areola, hypertrophic scars, the need for scar revision, areolar widening and distortion, breast and areolar flattening, and suture complications [16–21].

Accurate patient selection and matching of individual patients with the proper Style 410 implant are critical for achieving reproducible results with minimal complications. With technical refinement, minimal and acceptable scarring and very low complication rates can be obtained.

Using the described methods, we report no significant complications during an average follow-up period of 18 months, suggesting an improvement in the outcome of periareolar mastopexy. All the patients were satisfied with

Fig. 2 **a, b** Frontal and lateral preoperative views of grades 2 to 3 breast ptosis on a 51-year-old woman after multiple pregnancies, breastfeeding, and weight loss. Note that more than two-thirds of the gland and the nipple–areola complex (NAC) are below the inframammary fold (IMF) before surgery. **c, d** Frontal and lateral views 3 months after periareolar mastopexy with Style 410 MX 255-ml implants placed in the prepectoral plane. The nevi were marked for objective assessment of the NAC's elevation and the lower shape of the gland



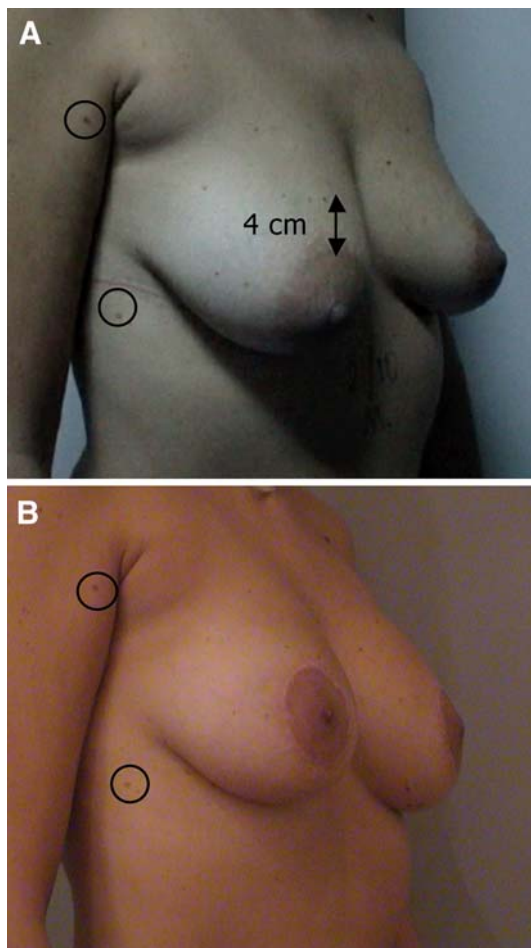


Fig. 3 **a** Oblique preoperative view of grades 2 to 3 breast ptosis on a 39-year-old woman after 3 pregnancies and breastfeeding. Note that more than two-thirds of the gland and the nipple–areola complex (NAC) are below the inframammary fold (IMF) before surgery. **b** Oblique view 6 months after periareolar mastopexy with Style 410 FF 255-ml implants placed in the dual plane. The nevi were marked for objective assessment of the NAC's elevation and the lower shape of the gland

the improvement in their clothed appearance. Almost all the patients were satisfied with their improved unclothed appearance, overall surgical experience, and body image.

We used the described technique, criteria selection, and implant type to correct some cases of grade 3 ptosis using the periareolar approach, extending the range of cases usually selected for this technique. This approach has been used in our practice to correct mild ptosis, mild mammary asymmetries (areolas or IMF), tuberous breasts or other areolar abnormalities, and some revision surgeries. However, this technique is not recommended for cases of severe ptosis in patients with more than an 8-cm distance between the inferior areolar border and the IMF or for patients with a significant amount of concern about loss of nipple sensitivity.

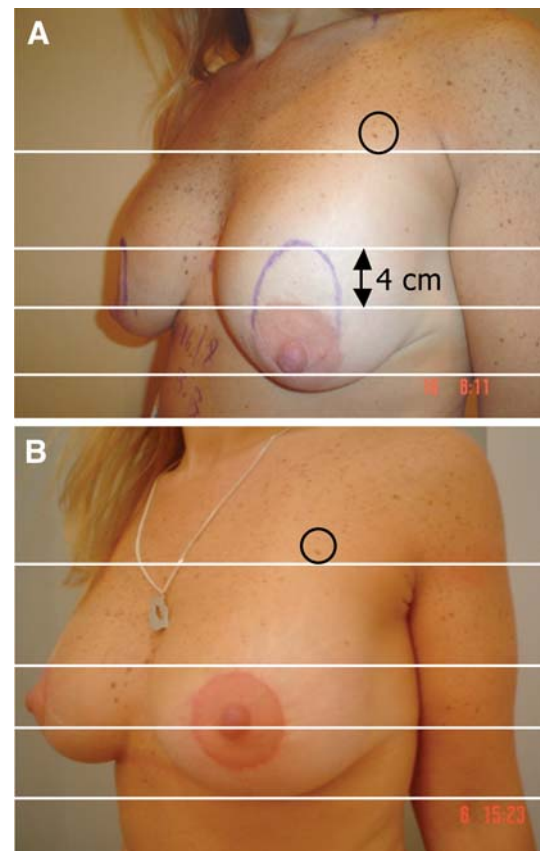


Fig. 4 **a** Oblique preoperative view of grades 2 to 3 breast ptosis on a 42-year-old woman after 3 pregnancies, breastfeeding, and weight loss. Note that the nipple–areola complex (NAC) is below the inframammary fold (IMF) before surgery. **b** Oblique view 6 months after periareolar mastopexy with Style 410 MF 375-ml implants placed in the dual plane. This was a revision surgery for previous retropectoral round 240-ml implants. The nevi were marked for objective assessment of the NAC's elevation and the lower shape of the gland

Evaluation of more patients and longer follow-up periods after the described surgery will determine whether this technique using Style 410 shaped, form-stable, highly cohesive, silicone gel implants will become a more popular method for performing breast augmentation with periareolar mastopexy.

Conclusions

With careful patient selection, appropriate use of Style 410 shaped, form-stable gel implants and careful intraoperative management, correction of ptosis grades 1, 2, and 3 with the periareolar approach has its place among the various mastopexy techniques and provides consistent results.

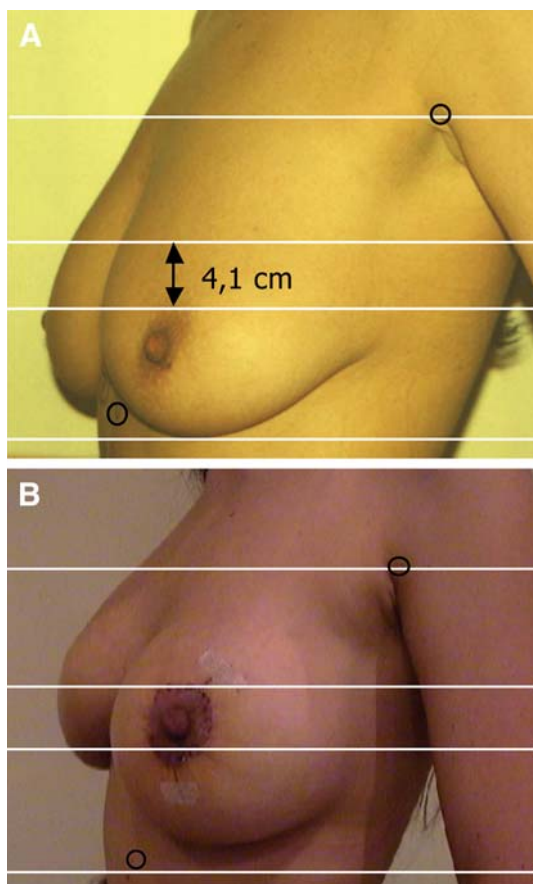


Fig. 5 **a** Lateral preoperative view of grades 2 to 3 breast ptosis on a 38-year-old woman after weight loss. Note that more than two-thirds of the gland and the nipple–areola complex (NAC) are below the inframammary fold (IMF) before surgery. **b** Lateral view immediately after periareolar mastopexy with Style 410 MF 255-ml implants placed in the prepectoral plane. The nevi were marked for objective assessment of the NAC's elevation and the lower shape of the gland

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