

“Tear-Drop Augmentation Mastopexy”: A Technique to Augment Superior Pole Hollow

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Abstract. Breast ptosis classification systems focus on the inferior descent of the nipple, as well as the descent and distribution of the breast parenchyma below the inframammary fold. Common problems, such as development of a superior pole hollow and an excessive width of the superior pole, extending into the axilla, are not addressed. Few procedures specifically address these deficiencies, and even less information is available in terms of preventative maneuvers when augmentation is desired as an adjunct. Round implants worsen the problem by creating a superior pole shelf, and anatomic implants are unreliable alternatives. Here, we present a technique—“tear-drop” augmentation mastopexy—that addresses superior pole hollow, excess superior pole width, as well as breast ptosis and hypomastia. Patients with moderate to severe breast ptosis (Regnault’s classification), tubular breast deformity, and deformities secondary to previous breast surgery are included in the study. Skin is deepithelialized through a circumareolar incision, and a skin-fat flap is elevated completely encircling the breast. A 2-cm area of parenchyma is left attached to the skin in the lower half of the breast. Breast parenchyma in the superior half of the breast is then advanced and plicated in a superiomedial direction to move the nipple areolar complex to the desired new position. Care is taken to redefine the pectoralis major muscle at its axillary border. A 3-cm incision is then placed in the inferior part of the parenchyma at the 6 o’clock position to create a subpectoral pocket for placement of the implant. The tunnel is then closed to separate the implant pocket from the subcutaneous dissection. Residual dermal flap is used to define, and add durability to the parenchyma reshaping procedure. A 3-0 mersiline (Ethicon, Somerville, NJ) blocking suture is used for a uniform circumareolar

skin closure. Patients ($n:35$), ages 17–48, underwent “tear-drop” augmentation mastopexy between January 1999 and September 2002 for correction of the breast ptosis, tubular breast deformity, and deformities secondary to previous aesthetic breast surgery. The average follow-up was 2 years. All patients displayed type 1 or 2 (Baker classification) capsules. One subcutaneous hematoma and one subcutaneous seroma were seen, which were both treated by percutaneous aspiration. No submuscular hematomas, infections, skin or nipple losses, or hypertrophic scars were noted. Patient satisfaction was high. A more natural “tear-drop” breast shape was created with an improvement in the superior pole hollow and narrowing of the superior breast. The smallest breasts did not benefit from this technique for elimination of the superior pole shelf, as correction was proportional to the amount of breast tissue available for superior advancement. The “tear-drop” augmentation mastopexy is a novel technique for correction of the breast ptosis with augmentation, avoiding problematic development of superior pole hollow and excess superior width. This technique is also well applied to tubular breast deformity as well as to secondary breast procedures. Long-term follow-up demonstrates a safe and reproducible result with high patient satisfaction. This technique may solve several problems associated with breast ptosis surgery, which before were not specifically addressed, and the technique warrants further investigation.

Key words: Periareolar—Mastopexy—“Tear-drop” breast augmentation

1925 [2]; 3) Periareolar technique with the scar defined to the areola, which was described by Hinderer in 1969 [3]; 4) Breast augmentation mastopexy.

The inverted "T" attempts to correct the ptosis by reshaping the breast envelope. However the scarring is extensive, prone to hypertrophy, and the ptosis recurs early as a result of further stretching of the skin envelope. There are many different techniques that result in a vertical or periareolar scar in the attempt to correct breast ptosis, which focus on breast parenchyma reshaping and internal support. The mastopexy with vertical scar gives good results with a relatively smaller scar as compared to the inverted "T" approach. The periareolar approach for correction of ptosis obviously leaves the least amount of scar, but until recently, this approach has not been preferred because of puckering and widening of the periareolar scar, flattening of the nipple areolar complex (NAC), and for inability to correct the moderate to severe as well as globular ptosis. The complications and the inadequacies of the periareolar approach for correction of the breast ptosis were in the beginning due to relying solely on the skin without reshaping the breast mound itself. But the constant interest in reducing the scar to make it least visible helped to develop newer surgical techniques through the circumareolar incision to minimize the complications and to overcome the inadequacies. The final technique to correct breast ptosis, which is overused, is breast augmentation mastopexy. Many surgeons avoided mastopexy in the past because of relatively poor results, and they elected to increase the parenchymal volume in an effort to fill the breast envelope. However, the ptotic breast parenchyma with an added implant yield in most cases an unnatural looking breast with superior shelf and superior pole hollow, which often cause inferior rotation of the nipple and worsening of the ptosis—"Rock-in-a-sock deformity." Moreover, the augmentation alone to correct breast ptosis often requires an excessive volume increase that makes an already unhappy patient unhappier.

Herein we present a new surgical technique to correct breast ptosis and call it "tear-drop" augmentation mastopexy, which consists of reshaping the breast mound and supporting it with implant via periareolar incision to correct virtually any kind of ptosis with excellent aesthetic results and significantly decreased complications.

Materials and Methods

Study Group

A total of 35 female patients, aged between 17–48 years, who underwent surgery between January 1999 and September 2002 with indications of breast ptosis, tubular breast deformity, and deformities secondary

to previous aesthetic breast surgery, were included in the study. The average follow-up period was 2 years.

Marking the Patient

The most important part of this procedure, as with most plastic surgical procedures, is the marking of the patient. After determining if this technique is correct for the patient, the patient is placed in a sitting position, which uncrossed legs and with the hands on the hips. A midline mark is placed from the sternal notch to the umbilicus for evaluation of sternal or chest wall asymmetries that may not be obvious otherwise (Fig. 1). A transverse line is placed at the 4th intercostal space, the extent of pectoralis major muscle, which will be the superior limit of the subpectoral dissection for insertion of the implant. The inframammary folds and the superior borders of the ptotic breast parenchyma are traced. The breast median is formed by making a drop line from the lateral margin of the neck over the clavicle. The ideal nipple position (point A) is marked on the breast meridian (Fig. 1), which is determined by the patient's height, the location of the inframammary fold, and the current position of the nipple (Table 1). This position is typically medial to the current nipple location. The breast meridians should be equally lateral from the midline, and then the ideal nipple position is marked on the opposite breast. Point B defines the superior border of the limited skin excision, which is 2 cm above the ideal nipple position on the breast meridian, whereas point C is the inferior border, which is right below the current areolar complex on the breast meridian. A line parallel to the breast meridian is marked below the inframammary fold while the patient is still in the upright position (Fig. 1).

The patient is then placed in supine position. The breast meridian is connected to the parallel line crossing the inframammary fold. Point C is now defined as a point on the meridian below the new nipple areola complex, 5.5 cm above the inframammary fold. If the distance between point C and inframammary fold is less, the inframammary fold should be lowered to accommodate point C. An outer circle around the nipple areolar complex is created while the patient is still in supine position, based on the distance between points B and C (diameter of the circle), which will be the extent of the limited skin excision. Finally the axillary fat is identified and marked for liposuction.

Surgical Technique

The patient is placed in the supine position, with arms at the sides and with elbows resting away from the body. The nipple areola complex is encircled using a cookie cutter pattern and the tumescent injection is used (200–400 cc per breast) before the skin incision.

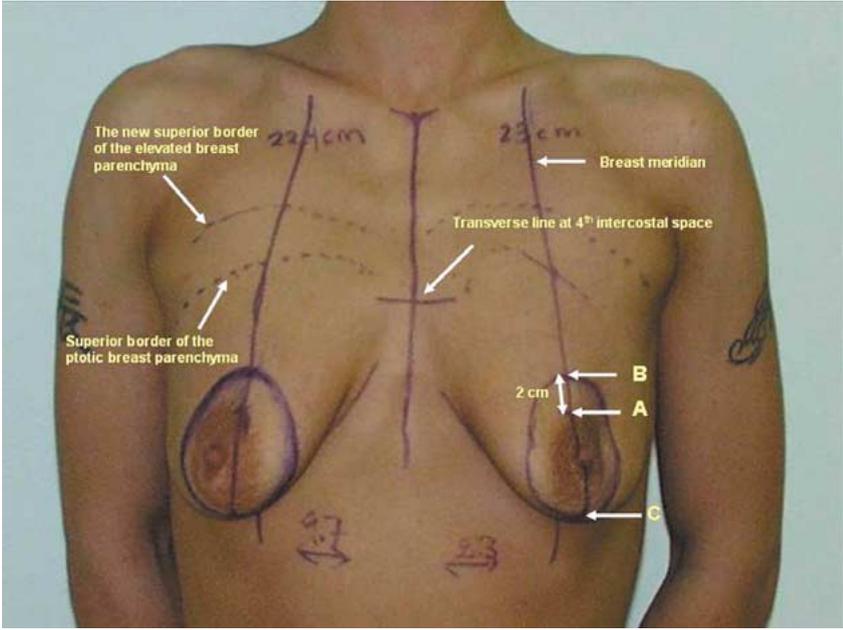


Fig. 1. Marking of the patient.

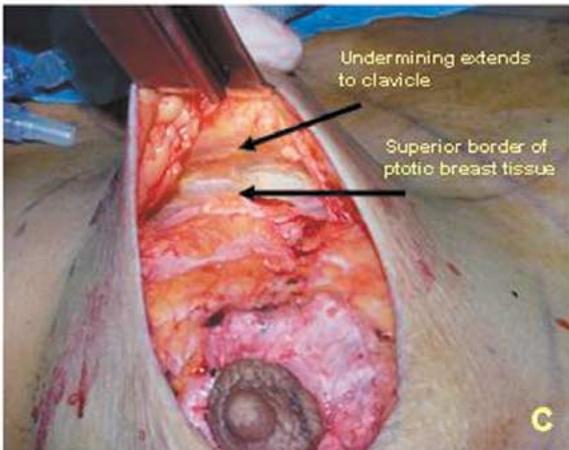
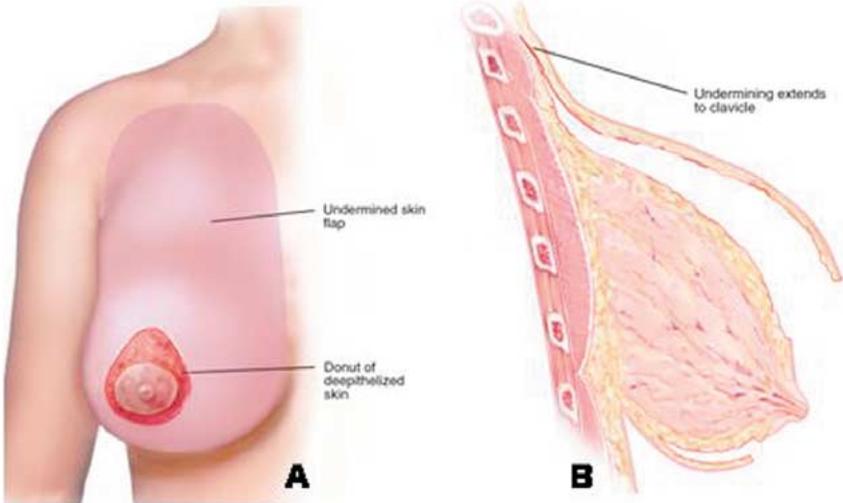


Fig. 2. Cross sectional (A), lateral (B), and intraoperative (C) pictures of the breast showing the area of undermining and deepithelialization.

Table 1. The distance between the sternal notch and the new nipple position according to height of the patient

Height (in.)	Sternal notch-new nipple distance (cm)
59–63	19–20
63–66	20–21
≥66	21–22

The skin is deepithelialized through a circumareolar incision, and a skin-fat flap is elevated completely encircling the breast (Fig. 2). The undermining of the skin extends up to the clavicle on the superior, whereas a 2-cm of breast parenchyma is left attached to the skin in the entire lower half of the breast (Fig. 2B).

The breast parenchyma in the superior half of the breast is then plicated in a superiomedial direction, and it is anchored to pectoralis fascia using nonabsorbable suture to move the nipple areolar complex to the desired new position (Fig. 3). The amount of the elevation of breast tissue may be adjusted according to the tightness of the knot and the place of the bite taken on the superior pole of the breast for the plication. Care is taken to redefine the pectoralis major muscle at its axillary border.

A 3-cm incision is then placed in the inferior part of the parenchyma at the 6 o'clock position to create a subpectoral pocket (Fig. 4A). The subpectoral dissection is performed bluntly up to transverse line at the 4th intercostal space and a soft, round implant was inserted (Fig. 4B). The tunnel is then closed to separate the implant pocket from the subcutaneous dissection. The residual dermal flap is used to define and add durability to the parenchyma reshaping procedure.

A 3-0 betadine bathed mersilene (Ethicon) blocking suture is placed around the skin using a 7-cm Keith needle to minimize the nipple areola widening. Monocryl sutures are used to close the remainder of the incision.

Results

A total of 35 patients, aged 17–48 years, underwent “tear-drop” augmentation mastopexy between January 1999 and September 2002 for correction of the breast ptosis, tubular breast deformity, and deformities secondary to previous aesthetic breast surgery. The average follow-up was 2 years.

A natural “tear-drop” breast shape with narrowed superior and widened inferior poles was created (Figs. 5–7). A more natural cleavage of the upper chest was formed and the superior pole hollow was decreased by softening the upper edge of any implant with this technique. Since the breast parenchyma was elevated, the required amount of skin removed was reduced, and the scarring was limited to a circle

around the areola. However, the correction of the superior shelf in a severely hypoplastic breast was limited because of the paucity of the superior pole breast tissue for superiomedial advancement (Fig. 8).

There were two complications, one subcutaneous hematoma, and one seroma, which were both treated by percutaneous aspiration. No infections, skin loss, or hardening of the breast implants were noted.

Discussion

Periareolar mammoplasty is not a technique but a surgical approach and has been used since 1969 by many plastic surgeons with various modifications and improvements. This approach was rarely used in the United States until 1990s because of poor outcomes. When the approach was first described, it solely relied on the breast skin and areola when correcting the breast ptosis, thus resulting in major adverse effects such as dilation and widening of the nipple areolar complex, flattening of the breast, and hypertrophic periareolar scars. It was difficult to control the nipple areolar height, since the nipple height was determined by skin markings and skin excision only. The limited patient selection was another drawback of this approach, since only the patients with minor degree of breast ptosis and pseudoptosis were suitable for periareolar mastopexy. The periareolar approach did not allow a great elevation of the areola (no more than 4–5 cm) and thus was not able to correct major ptosis. The previously mentioned drawbacks of skin-based periareolar mastopexy were accentuated when combined with augmentation. The implants were often too large, causing a superior shelf due to hollow upper pole, and the breast tissue was left below the transverse meridian of the implant, yielding “Rock-in-a-sock deformity.” Attempts to correct glandular ptosis using this approach resulted in a globular shape.

After the 1990s, modified techniques using the periareolar approach were described by various authors to overcome the poor results and to extend the patient selection criteria. Goes introduced the “periareolar mammoplasty: double skin technique” in 1989, [4] and Benelli described the “round block” technique in 1990 [5]; both authors changed the concept of the periareolar mammoplasty from relying on the breast skin and areola to reshaping of the breast with internal rearrangements of the gland and redraping of the undermined skin over the new breast architecture.

Herein we described “tear-drop” augmentation mastopexy, which is a combination of Goes-type mastopexy and subpectoral augmentation, based on a concept of breast reshaping using periareolar approach. This technique is suitable for patients with breast ptosis, who also have paucity of superior pole breast tissue, inverted breast shape, or hypoplastic breasts. With this technique, nipple position is de-

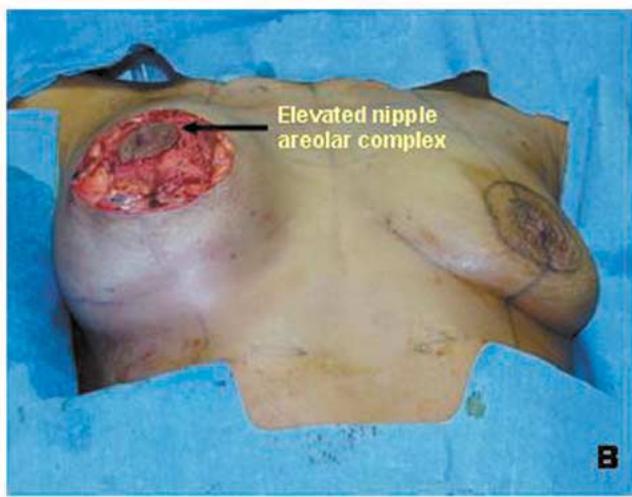
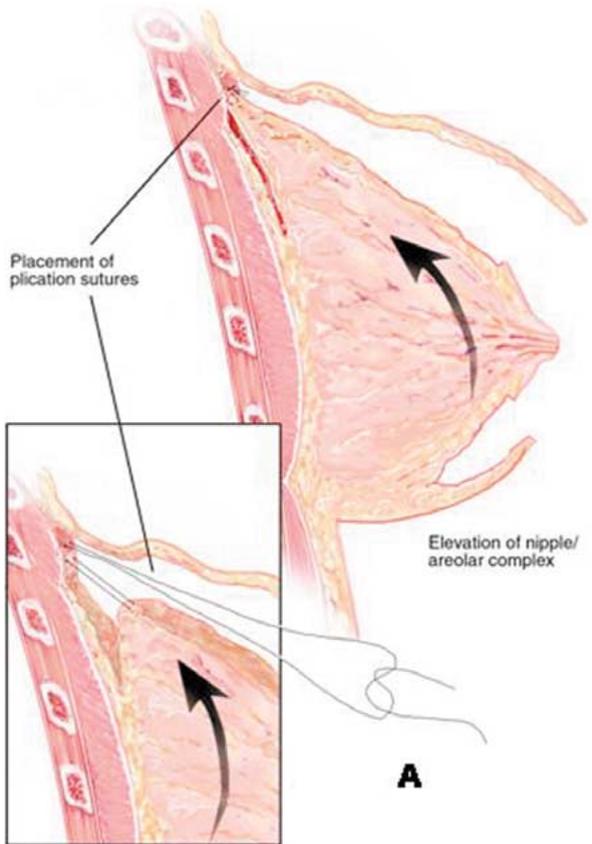


Fig. 3. Plication of the superior pole of the breast parenchyma to the pectoralis fascia in a superomedial direction (A) and intraoperative picture showing the elevation of nipple-areolar complex (B).

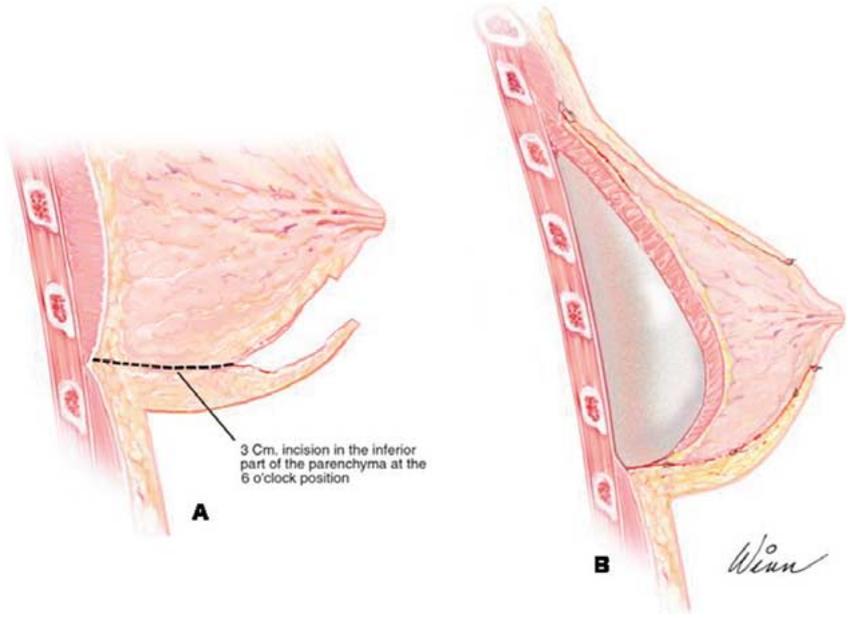


Fig. 4. Creation of the subpectoral tunnel (A) and the insertion of the implant (B).

terminated by the parenchymal movement, not by the skin marking. The upper pole width is narrowed, and the superior shelf is softened by redistributing the breast parenchyma above the transverse meridian of the implant. The correction of superior shelf is lim-

ited in severely hypoplastic breasts, since the amount of correction is related to the redistribution of breast parenchyma. The scarring is improved by limited skin excision and tension-free closure. This technique can be applied to correct moderate to severe breast ptosis

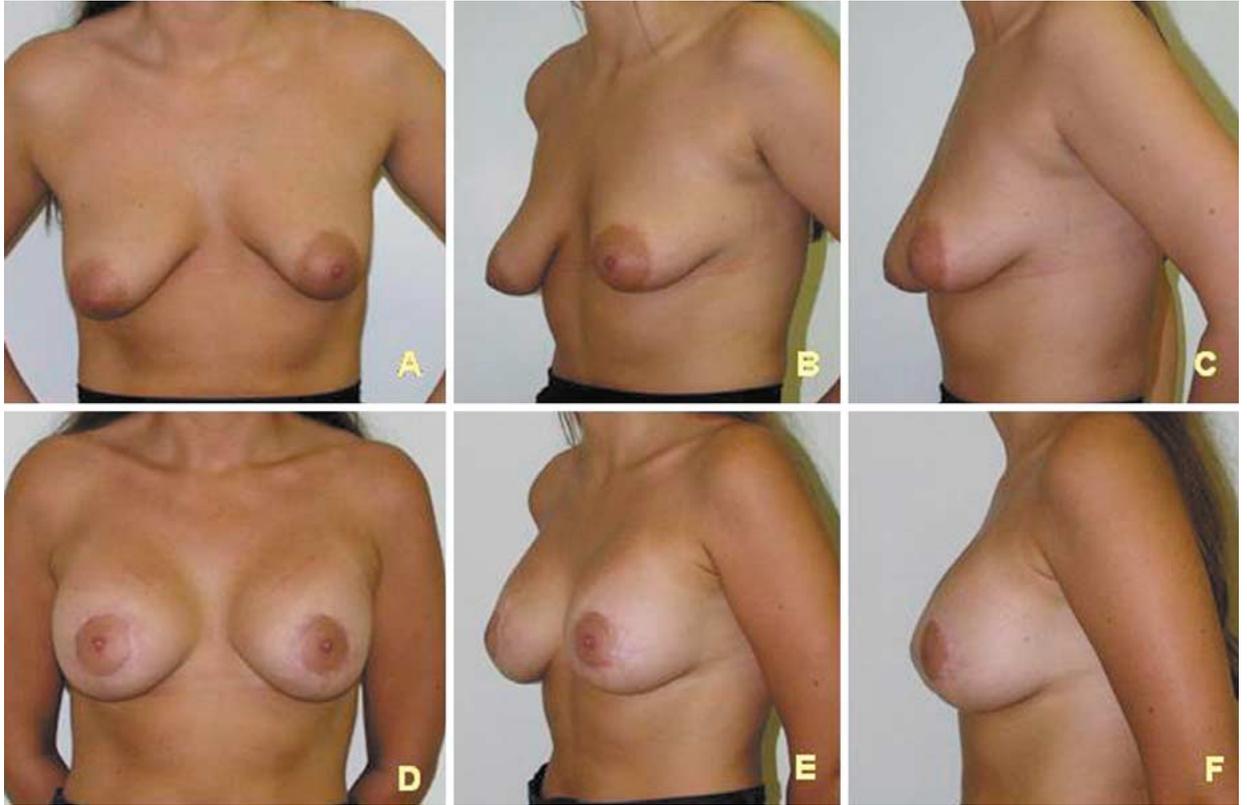


Fig. 5. Thirty-year-old patient with tubular breast deformity and ptotic breasts. Preoperative (A, B, C) and 1 year postoperative follow-up (D, E, F).

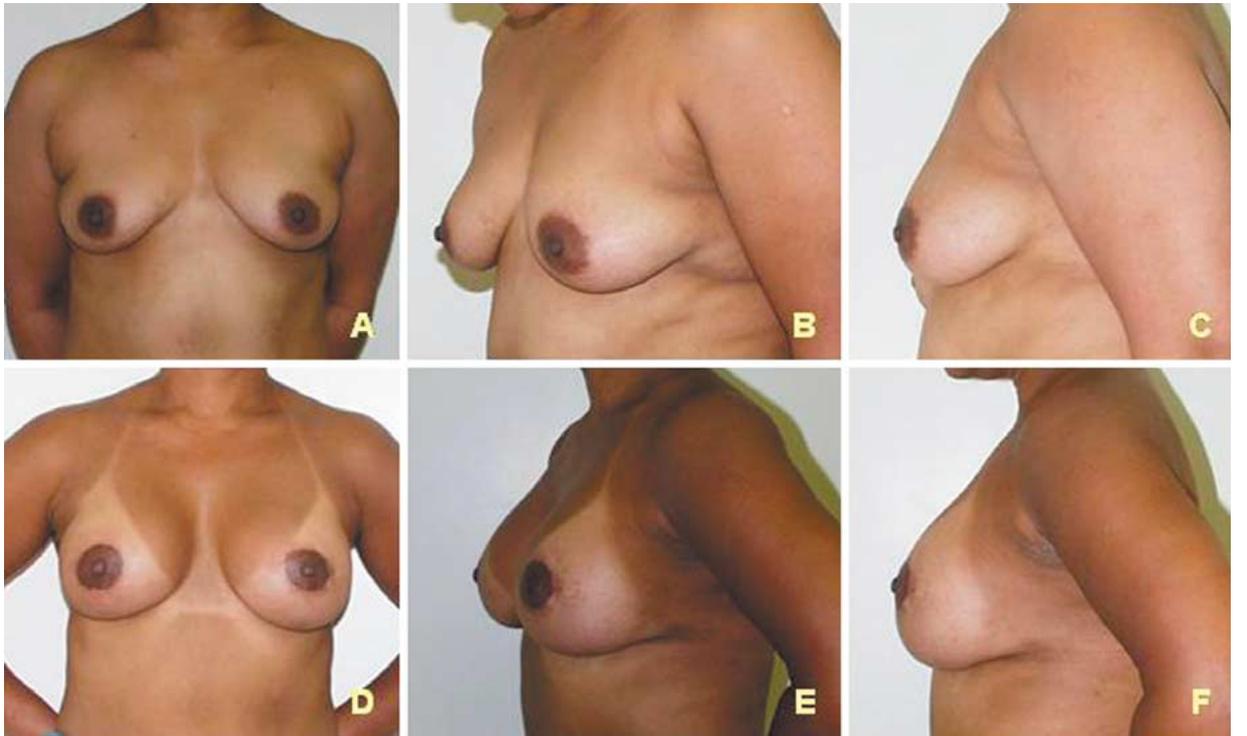


Fig. 6. Forty-year-old patient with excessive superior pole width and ptotic breasts. Preoperative (A, B, C) and 2-year postoperative follow-up (D, E, F).

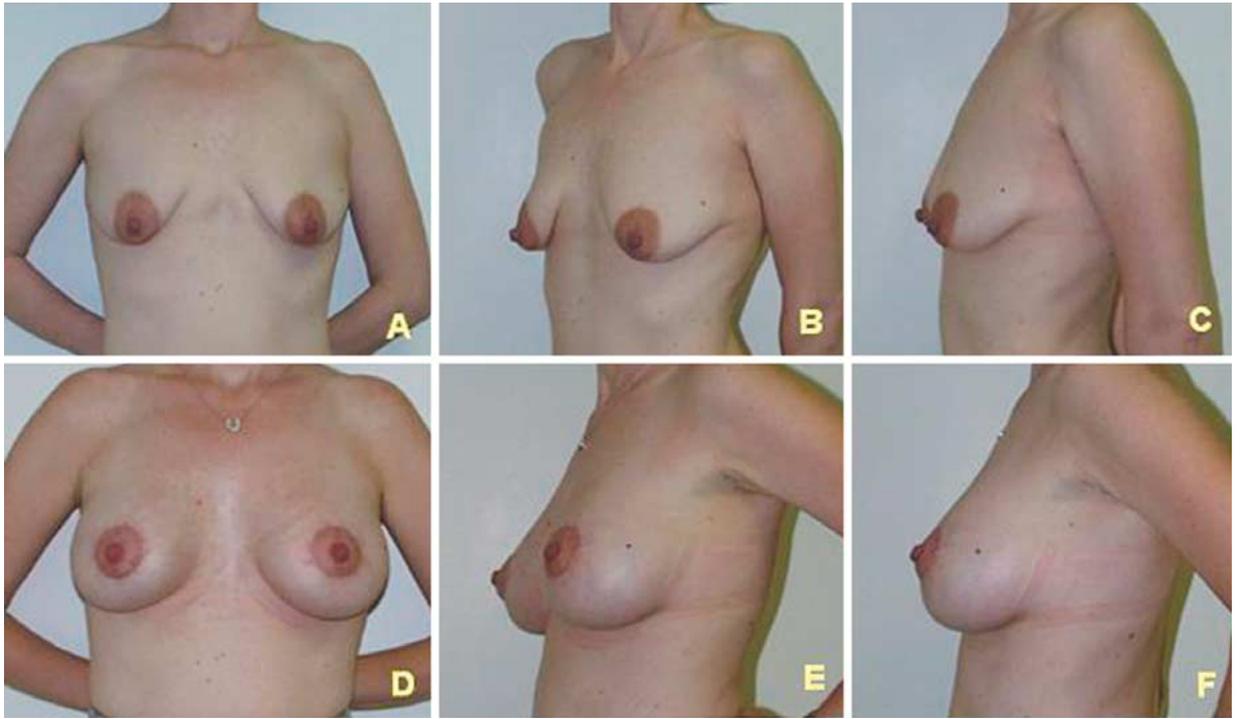


Fig. 7. Thirty-seven-year-old patient with hypoplastic and ptotic breasts. Preoperative (A, B, C) and 1.5-year postoperative follow-up (D, E, F).

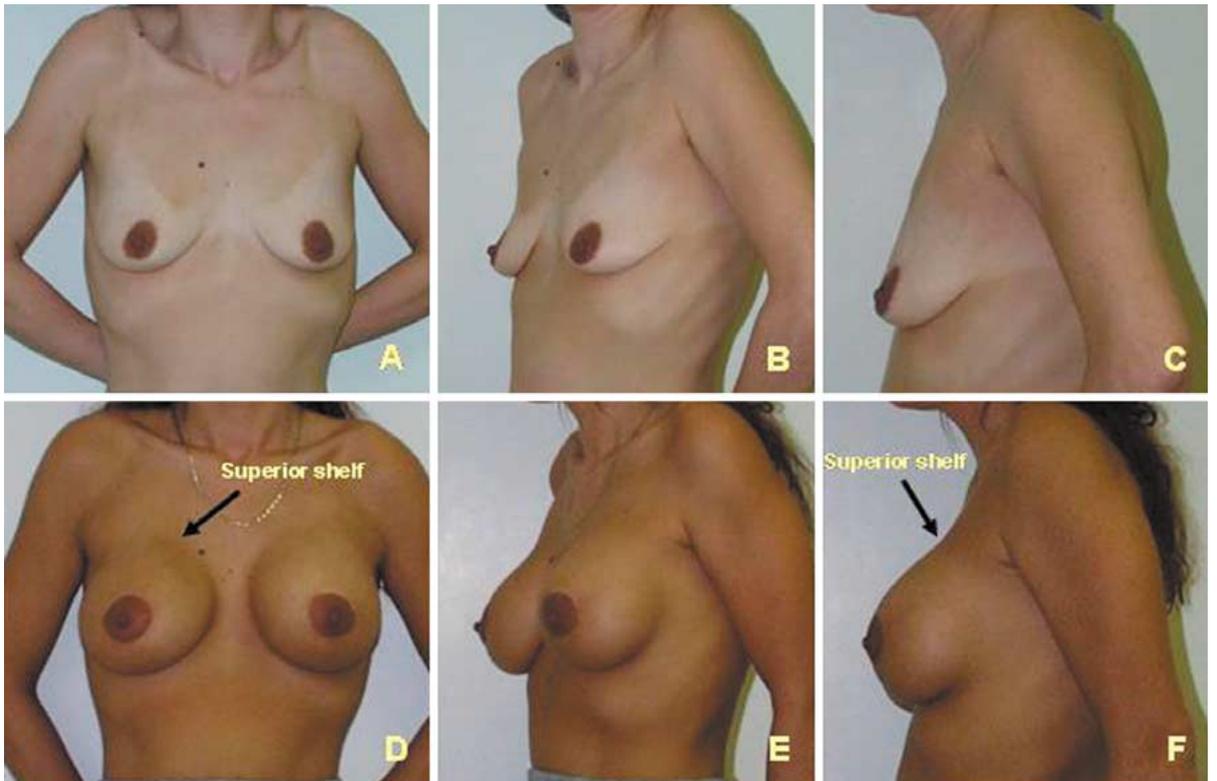


Fig. 8. Twenty-eight-year-old patient with severely hypoplastic and ptotic breasts. Preoperative (A, B, C) and 1 year postoperative follow-up (D, E, F). Superior shelf is shown.

(up to 26 cm of sternal notch-nipple distance), and tubular breast deformity, as well as to correct the deformities secondary to previous breast aesthetic surgeries, with excellent results and significantly reduced complication rate.

Conclusion

The “tear-drop” augmentation mastopexy is a combination of Goes-type periareolar mastopexy and subpectoral augmentation to correct breast ptosis with the concept of breast reshaping. It softens the superior pole hollow, narrows upper pole width, and defines lateral pectoral border. The scarring is minimal. Long-term follow-up demonstrates a safe and reproducible result with high patient satisfaction. This technique may be applied to a broader patient population and may solve several problems associated with

breast ptosis surgery, which before were not specifically addressed, and warrants further investigation.

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