Is One-Stage Breast Augmentation With Mastopexy Safe and Effective? A Review of 186 Primary Cases

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Background: *Although some authors have reported that 1-stage breast augmentation with mastopexy does not increase the risks of surgery, recent literature has raised the question of whether better results might be achieved by staging the procedures.*
Objective: *The authors evaluated the safety and efficacy of 1-stage breast augmentation with mastopexy in their own patients by analyzing long-term complication and revision rates.*
Methods: *A retrospective chart review was performed of 186 consecutive patients who underwent primary 1-stage breast augmentation with mastopexy at a single outpatient facility. Patient data recorded included age, body mass index, smoking status, degree of breast ptosis, and any preoperative asymmetry. Operation-related data recorded included type of mastopexy performed, operating surgeon, length of surgery, American Society of Anesthesiologists level, and concomitant procedures. Data on implant type, volume, and position were also collected. Complication and revision rates were recorded and calculated.*
Results: *Ninety-six patients (44%) received saline implants; 104 (56%) received silicone implants. In most cases, textured implants were placed in submuscular pockets. The mean implant volume was 320 cc. Inverted T mastopexy was performed in 60% of cases, circumareolar in 24% of cases, and vertical or crescent accounted for most of the remainder. No severe complications occurred, although 1 patient developed a late infection that required removal of the breast implant. The most common complication was saline implant deflation (5.9%), although saline implants were used in less than half of cases. Thirty-one patients (16.7%) underwent some form of revision surgery within the average 42-month follow-up period.*
Conclusions: *Our review of 1-stage breast augmentation with mastopexy procedures revealed no severe complications. Although the overall revision rate of 16.7% is significant, it is comparable to rates for breast augmentation alone and is significantly lower than the 100% reoperation rate required for a staged procedure. In our experience, it is a safe and effective procedure, although one that is not easy to perform. Patients should be advised of the possibility that a second procedure may be necessary.* (Aesthetic Surg J 2006;26:674–681.)

One-stage breast augmentation with mastopexy is a challenging operation with numerous potential complications, which has led many plastic surgeons to heed the warning: "surgeon beware!"[1] However, the procedure is well described, with some authors reporting that "simultaneous timing of these operations does not add any additional risks."[2] Other studies have focused more on operative strategies, such as patient selection and surgical techniques, in order to achieve acceptable results.[3] Recent literature raises the question of whether better results might be obtained by staging the procedures.[4] Although it seems intuitive that a combined procedure would lead to less predictable results than a single procedure alone, in our experience most patients still prefer a 1-stage operation.

The largest reported series to date on the subject of combined mastopexy and augmentation included 34 primary and secondary breast surgery patients, with a complication rate of 8.8%, a revision rate of 14%, and 54% of patients desiring a revision procedure.[4] However, the primary emphasis of the aforementioned study was to perform a critical analysis of the aesthetic results and patient satisfaction.[4] The rate of complications and the reasons for revision procedures have not yet been documented for a large series of primary patients. The goal of this study was to review our own experience with 1-stage breast augmentation with mastopexy in only those

patients with no prior breast surgery. The safety and efficacy of the procedure in our series was studied by evaluating the long-term complication and revision rates.

Methods

A retrospective chart review was performed covering 186 consecutive patients who underwent primary 1-stage breast augmentation with mastopexy procedures performed at a single outpatient facility by 1 of 2 surgeons (WGS or DAS) over a 13-year period (1992-2005). Patient follow-up was an average of 42 months.

All patients included in this study were candidates for primary breast augmentation and mastopexy, as defined by the presence of breast ptosis and hypoplasia, and no previous history of breast surgery. The patient age, body-mass index (BMI), smoking status, and type of mastopexy (inverted T, vertical, donut or crescent) was recorded. Complication and revision rates were recorded and calculated retrospectively.

The degree of breast ptosis was recorded using the Regnault classification,[5] and any preoperative asymmetry was noted. Operation-related data such as operating surgeon, length of surgery, American Society of Anesthesiologists (ASA) level, and concomitant procedures were noted. Implant-related data such as type (saline versus silicone), volume, and position (submuscular versus subglandular) were collected. Postoperative data including complications, treatment of complications, revisions, reasons for revision, and patient and/or surgeon dissatisfaction were also noted.

Complications were categorized as tissue related versus implant related. Tissue-related complications included areolar asymmetry, pseudoptosis with "bottoming-out," breast asymmetry, recurrent ptosis, persistent ptosis, infections, hematoma, poor scarring, loss of nipple sensation, and superficial nipple-areolar epidermolysis. Implant-related complications included saline deflations, wrinkling, patients' desire for explantation, implant malposition, and capsular contracture.

Preoperative photographs were taken, and all patients were marked while standing. All received general anesthesia, lower extremity sequential compression devices (placed prior to induction), and perioperative antimicrobial coverage. Extensive undermining of mastopexy flaps was avoided when possible, and no drains were used. Postoperatively, patients were intermittently ambulated and maintained on oral pain medication.

When comparing complication and revision rates between procedures, statistical significance was determined with simple chi-square analysis.

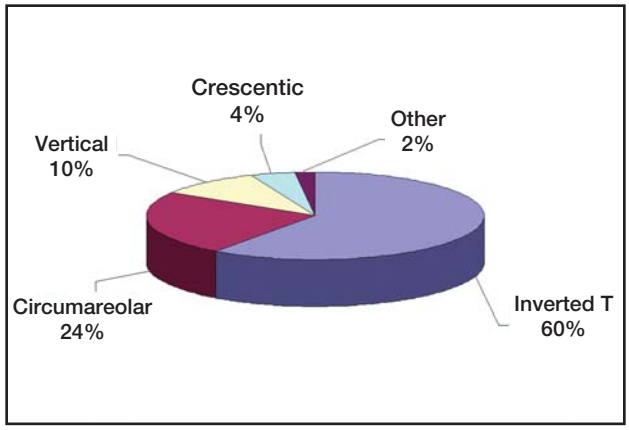

Figure 1. *Mastopexy type.*

Results

A total of 186 patients underwent primary 1-stage breast augmentation with mastopexy. The average age of women in our study was 37 years; the average BMI was 23 m/kg^2, and 18 patients smoked cigarettes (10%). Preoperative asymmetry was present in 58% of patients, and 8% had a tuberous breast deformity. Ninety-six patients (52%) had at least 1 other concurrent surgical procedure. Saline implants were placed in 82 patients (44%) and silicone implants in 104 patients (56%). The mean implant volume was 320 cc (range, 125-700 cc). Textured implants were used in most cases (82.5%). Submuscular pockets were used in 93% of patients, and subglandular were used for the remaining 7% of patients. The distribution of the techniques for mastopexy was as follows: inverted T, 60%; circumareolar, 24%; vertical, 10%; crescent, 4%; other, 2% (Figure 1). We have included some recent digital photos of our patients as representative samples of our surgical results (Figures 2 through 4). The degree of preoperative ptosis for each breast, according to the Regnault classification, is listed in Table 1.

No severe complications (defined as death, myocardial infarction, pulmonary embolus, deep vein thrombosis, major flap or nipple loss) occurred in any patients. However, 1 patient (0.5%) developed a late infection that required removal of the breast implant and subsequent reoperation. The most common complication was saline implant deflation (5.9%), even though saline implants were used in only 44% of patients. The distributions of tissue-related complications and implant-related complications are summarized in Tables 2 and 3, respectively.

"Recurrent ptosis" was defined as an acceptable initial result that later "bottomed out" over time, whereas "persistent ptosis" referred to ptosis encountered in

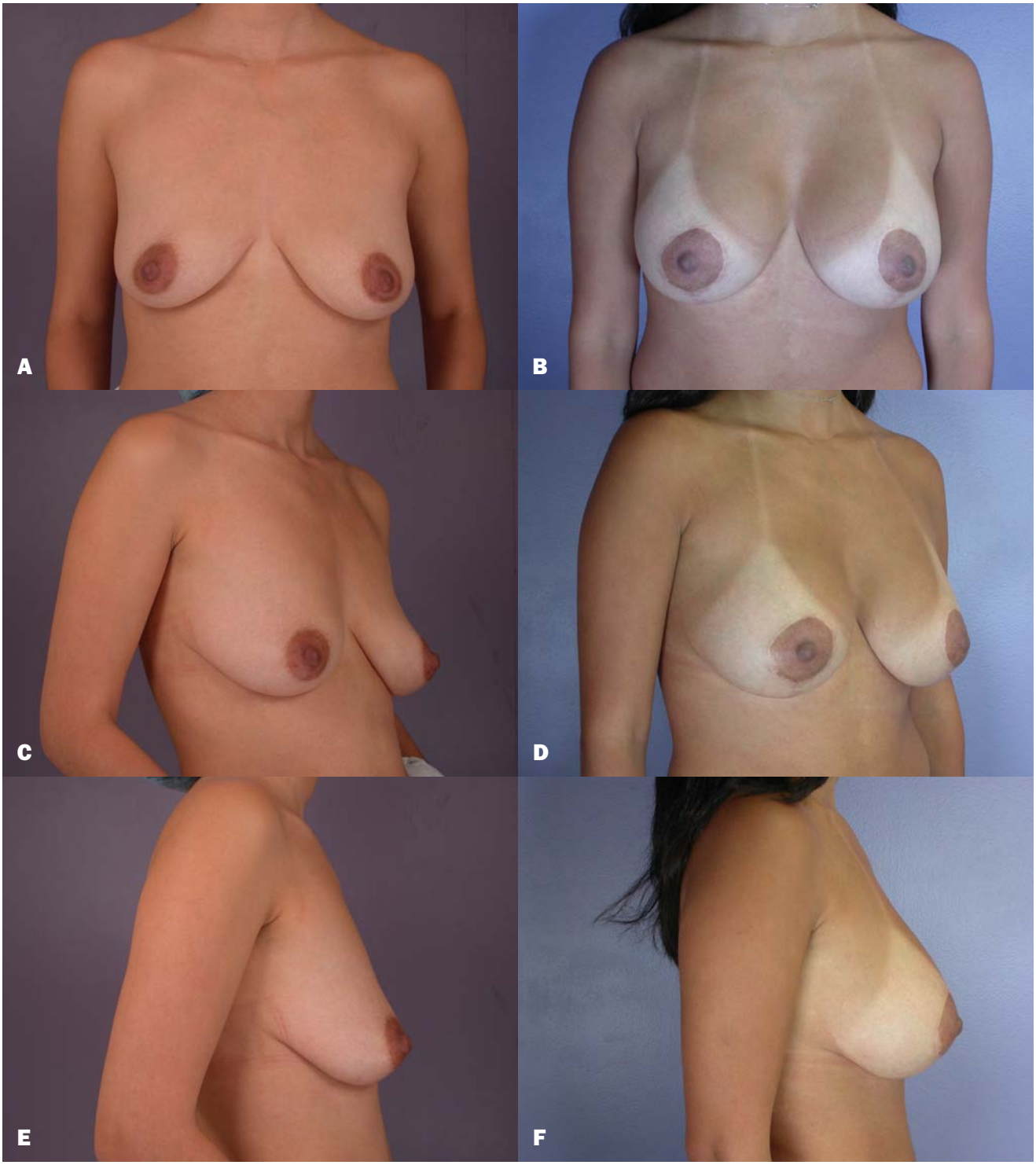

Figure 2. A, C, E, *Preoperative views of a 27-year-old woman.* **B, D, F,** *Postoperative views 17 months after primary augmentation with round textured silicone gel-filled implants (right breast, 225 cc, left breast, 200 cc) and bilateral inverted* T *mastopexy, performed as a single-stage procedure.*

patients on initial follow-up. Capsular contracture was defined as Baker grade II or higher.

Thirty-one patients (16.7%) required some form of revision surgery within the average 42-month follow-up period. Interestingly, most revision procedures (71%) were performed to correct implant-related issues, such as deflation, or due to the patients' desire to change the size of their implants. Twenty-two patients (11.8%)

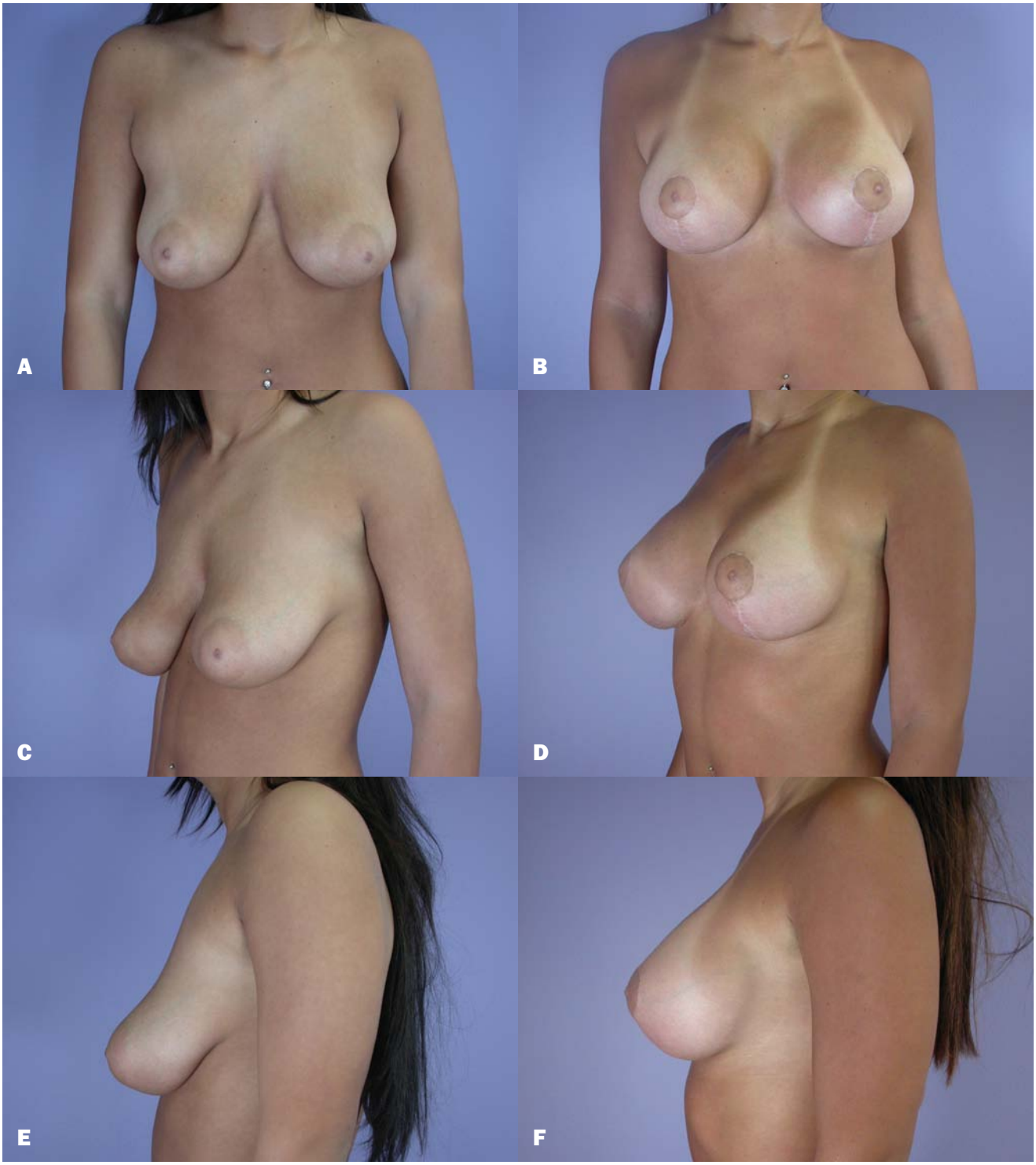

Figure 3. A, C, E, *Preoperative views of an 18-year-old woman.* **B, D, F,** *Postoperative views 2 months after primary augmentation with 225-cc round textured saline implants and vertical mastopexy, performed as a single-stage procedure.*

underwent a revision for an implant-related issue, whereas only 9 patients (4.8%) had a revision for tissue-related complications. The distribution of revisions can be seen in Table 4.

Our previous review of mastopexy patients without breast augmentation studied 150 mastopexy patients with an average 3-year follow-up.[6] The revision rate for mastopexy patients without augmentation was 8.6%.

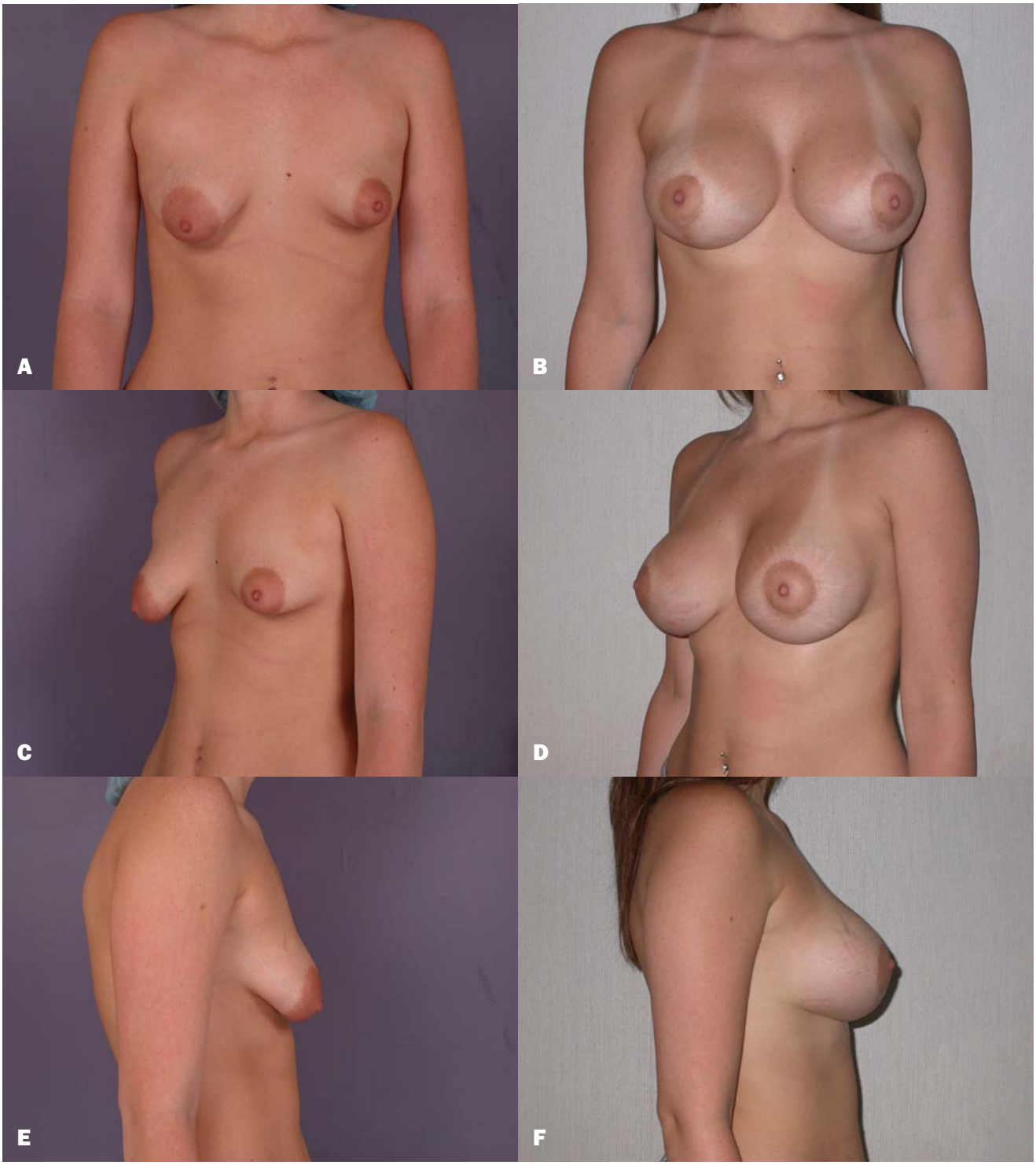

Figure 4. A, C, E, *Preoperative views of an 18-year-old woman.* **B, D, F,** *Postoperative views 17 months after primary augmentation with smooth round saline implants (right breast, 400 cc; left breast, 474 cc), short inverted T mastopexy on the right breast, and circumareolar mastopexy on the left breast, performed as a single-stage procedure.*

This compares to our current revision rate of 4.8% for non–implant-related complications in combined mastopexy/augmentation patients.

Similar to the study by Spear et al,[7] the most common indications for revision were implant related. Implant-related revision rates were 11.8%; however, the desire of

Table 1. Degree of ptosis

Degree of ptosis	Right breast	Left breast
Mild (Grade I)	25 (15%)	23 (13%)
Moderate (Grade II)	93 (54%)	92 (54%)
Severe (Grade III)	38 (22%)	35 (20%)
Pseudoptosis	9 (5%)	13 (8%)
No ptosis	5 (3%)	7 (4%)
Not recorded	2 (1%)	2 (1%)
Total no. breasts	186 (100%)	186 (100%)

Table 2. Tissue-related complication rates

Tissue-related complication	N (%)
Areolar asymmetry	5 (2.7%)
Poor scarring	4 (2.2%)
Recurrent ptosis	4 (2.2%)
Loss of nipple sensation	3 (1.6%)
Breast asymmetry	3 (1.6%)
Psuedoptosis	2 (1%)
Persistent ptosis	2 (1%)
Significant infection	1 (0.5%)
Hematoma	1 (0.5%)
Partial areolar depigmentation	1 (0.5%)

Table 3. Implant-related complication rates

Implant-related complications	N (%)
Deflations	11 (5.9%)
Capsular contracture	4 (2.2%)
Implant palpability	1 (0.5%)
Implant malposition	1 (0.5%)

Table 4. Indications for revision

Indications for revision	N (%)
Implant deflation	10 (5.4%)
Desire to change implant size	8 (4.3%)
Recurrent/persistent ptosis	4 (2.2%)
Poor scarring	4 (2.2%)
Areolar asymmetry	1 (1.6%)
Implant malposition	1 (0.5%)
Capsular contracture (Grade III)	1 (0.5%)
Implant infection	1 (0.5%)
Implant rippling	1 (0.5%)
Total	31 (16.7%)

Table 5. Comparison of revision rates

Procedure	Tissue-related revisions	Implant-related revisions
Combined mastopexy/augmentation	5.4%	11.3% at 3.5 y
Mastopexy alone	8.6%	
Augmentation alone (SPS)		13% at 3 y 20% at 5 y

9 patients to change the size of their implants increased this number markedly. Our implant-related revision rate of 11.8% at 3.5 years was slightly less than that documented by the Mentor[8] Saline Prospective Study (SPS) of 13.2% at 3-year follow-up for breast augmentation alone (Table 5).

When other factors were reviewed, one notable trend was that patients who underwent circumareolar mastopexy procedures were found to have a significant and disproportionately high number of revisions ($P < .05$). While circumareolar mastopexies accounted for only 24% of the procedures, they accounted for 39% of revisions.

Discussion

Combining mastopexy with breast augmentation is not a new procedure, although the safety and efficacy of the combined operation has not been established. It has been described and performed dating back to the publications of Gonzales-Ulloa[9] and Regnault[10] in the 1960s. Several recent studies advocate the judicious use of the combined procedure.[11-13] Other surgeons report that they commonly combine the procedures because they feel it is both safe and effective without adding additional risks.[2] Recently, the combined operation has received much attention because of published reports from Georgetown University[1,3,4,7] stating that the risk of the combined procedure may be greater than the risk of each procedure alone.[1] In their series of 34 primary and secondary patients, investigators reported 3 complications and a revision rate of 14%.[4] However, 54% of patients desired revisionary surgery when investigators polled their patients for satisfaction.

In our series, the 5 most common complications were deflation of a saline implant (5.9%), areola asymmetry (2.7%), recurrent ptosis (2.2%), capsular contracture (2.2%), and poor scarring (2.2%). One study

has suggested that "complications after augmentation and mastopexy combined are almost certainly more frequent and potentially disastrous."[1] This same study suggested that there is a higher rate of "major disasters" such as skin flap or nipple loss in combined procedures. Interestingly, none of these severe complications were encountered in our series. One patient did develop a late infection that later required implant removal. Another patient developed some superficial epidermolysis of the nipple-areola complex with resultant depigmentation. The wound healed spontaneously with local wound care, and the patient later underwent a revision for hypertrophic scarring. No "major disasters" were encountered.

Our saline implant deflation rate over an average of 42 months was 5.9% (11 of 186 patients), which contributed significantly to both the complication and revision rates (32.3% of revisions). This deflation rate is significantly higher than that reported previously by the same authors.[14,15] Complications from saline implants reported in the SPS study also revealed lower deflation rates of 1% at 1 year, 3% at 3 years, and 10% at 5 years.[8] Looking further, we discovered that a significantly higher number of deflations occurred in patients with poly implant prosthesis (PIP) implants, as has been documented previously.[14] Over 40% of the deflations occurred in PIP saline implants, which made up only 5.4% of the implants placed. If saline implant deflations were excluded, the total revision rate would be 11.3%. This finding seems to favor the use of silicone implants in these patients.

In the Mentor SPS study, the most common reason for reoperation was patient requests for a change in implant size or shape: 33% of patients made such a request at 3-year follow-up (N = 255) and 29% at 5 years (N = 343).[8] Our patients' rate of request for change of implant size was 4.8% (9 out of 186 patients) over 3.5 years and was far below the rate in the Mentor report.[8]

The efficacy of a surgical procedure addressing breast ptosis may be determined by objective analysis of the final results, patient satisfaction, and calculation of actual revision rates. We have included some recent digital photos of our patients as representative samples of our surgical results (Figures 2 through 4). Patient satisfaction questionnaires may represent an interesting next stage for future study of our own results. We elected to calculate revision rates to determine the efficacy of a combined procedure. Our overall revision rate of 16.7% at 3.5 years compares favorably to prospective studies of saline-filled breast implants, which reported reoperation rates of 13.2% at 3 years and 20% at 5 years for augmentation alone.[8] Thus, we conclude that combined breast augmentation and mastopexy may be at least as effective a procedure as augmentation alone.

There remains controversy with respect to the best approach to patients with breast ptosis who desire both breast augmentation and lifting. Some advocate staging the procedure by performing the mastopexy first, suggesting that patients may be so satisfied with the results of their breast lift that they may not go on to further breast augmentation.[16] Others advise performing the breast augmentation first, and once the final desired breast size is achieved, the mastopexy may be performed later. It is possible that some patients may be satisfied with the augmentation alone and not require a mastopexy. While staging the procedure is certainly an acceptable option, we believe that a combined procedure is equally as safe and effective. In our patient population, most patients have a strong preference for the 1-stage procedure with 1 trip to the operating room and 1 recovery period.

While this study shows that a 1-stage procedure may be performed with acceptable complication and revision rates, we are not implying that it is a simple procedure. On the contrary, this is one of the most challenging procedures that we perform. Not only is minimal undermining critical, but the unique nature of this surgery requires a delicate balance between the nipple-areola complex height and the breast volume and shape. Given a revision rate of 16.7%, it is important to stress to the preoperative patient that the need for a second procedure is quite possible. It is also interesting to note that the revision rate is reduced to 11.3% with the use of silicone implants.

Conclusion

This retrospective review of primary 1-stage breast augmentation with mastopexy demonstrated no severe complications or incidences of major flap or nipple loss. In our hands, 1-stage breast augmentation with mastopexy is a safe and effective procedure. Although the overall revision rate of 16.7% is significant, it is comparable to rates for breast augmentation alone and is significantly lower than the 100% reoperation rate required for a staged procedure. ■

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