A Review of 100 Consecutive Secondary Augmentation/Mastopexies

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Background: *Simultaneous breast augmentation and mastopexy has historically been a controversial topic, and it has been considered by some to be a difficult and unpredictable procedure. Secondary breast augmentation and mastopexy after previous breast surgery is rarely discussed in the literature, and little is known about the outcomes of these secondary procedures.*

Objective: *The authors present the indications, surgical techniques, and outcomes in a series of 100 consecutive secondary simultaneous breast augmentation and mastopexy cases.*

Methods: *One hundred consecutive patients who underwent secondary combined augmentation mammaplasty and mastopexy from 1992 to 2005 were retrospectively reviewed. The complications and revision rates in this group of patients were analyzed and compared with primary mastopexy alone, as well as with primary combined augmentation and mastopexy. Independent variables such as patient age, history of smoking, body mass index, type and size of implant, and type of mastopexy incision were analyzed for correlation with complication and revision rates.*

Results: *No major complications were noted in an average of 3.5 years follow-up (range 13 months to 13 years). Minor complications occurred in 13 patients, of whom 8 required revision surgery. The most common tissue-related complications were poor scarring (3%) and recurrent ptosis (3%). The most common implant-related complications were infection (3%) and capsular contracture (2%). In addition, 6 patients underwent reoperation for implant size exchange, and 1 patient underwent revision surgery to receive silicone implants. Patient age, history of smoking, body mass index, type and size of implant, type of mastopexy incision, type and number of previous breast surgeries, surgical time, concurrent non-breast operations, and preoperative ptosis grade were not statistically significant risks when correlated to the complication and revision rate.*

Conclusions: *Simultaneous breast augmentation and mastopexy after previous breast surgery is a commonly performed procedure that is not adequately reported in the literature. Our study indicates that the procedure is safe and has complication and revision rates comparable to primary augmentation/mastopexy.* (Aesthetic Surg J 2007;27;485–492)

Simultaneous breast augmentation and mastopexy is a challenging procedure that involves skin envelope reduction, as well as breast volume expansion. Many different augmentation/mastopexy procedures have been described in the literature.[1-13] Women often present to the surgeon's office requesting this procedure after already having undergone prior breast surgery. This presents the unique situation of secondary augmentation/mastopexy. Spear et al[14] reported on 20 patients who underwent revision of previously performed augmentation/mastopexy. The authors concluded that this is a common procedure, and it is most often performed for capsular contracture and recurrent ptosis. We present the indications, surgical technique, and outcomes of 100 consecutive secondary simultaneous breast augmentation and mastopexy cases. To arrive at clinically useful conclusions, we have compared these results with those of primary mastopexy alone,[15] primary augmentation alone,[16] and primary augmentation/mastopexy outcomes[17,18] previously reported.

Methods

We reviewed the medical records of 100 consecutive patients who underwent secondary augmentation/mastopexy within a 13-year period (1992–2005) by one of two surgeons (WGS and DAS). Information recorded included patients' age, body mass index (BMI), history of smoking, prior breast surgery, ptosis grade on the basis of the Regnault classification,[19] type and location of implant placed, type of mastopexy incision, operative time, concurrent non-breast operations performed at the time of secondary augmentation/mastopexy, complications, and revisions. All patients had preoperative and postoperative photographs taken, received general anes-

thetic, had lower extremity sequential compression devices placed before induction, and received preoperative antimicrobial therapy and 3 to 5 days of postoperative oral antibiotics. The implants and pockets were rinsed in Betadine solution. Statistical analyses were performed with the Student *t* test.

Patient data

The average age of the patients was 42 years, and the average time from initial breast surgery to simultaneous secondary breast augmentation and mastopexy was 12 years. Eight unilateral and 92 bilateral procedures were performed on 100 consecutive patients. The average BMI was 22.4. Eight patients had a history of smoking, defined as a smoking history up until 2 weeks before surgery. Two patients had tuberous breasts.

Previous breast surgery

Seventy patients (70%) had a previous breast augmentation, 15 (15%) had a lumpectomy or a breast mass biopsy, 13 (13%) had a previous augmentation/mastopexy, 5 (5%) had a previous breast reduction, 3 (3%) had a previous mastopexy, 2 (2%) had a previous mastectomy with implant reconstruction, and 36 patients (36%) had 2 or more breast procedures performed before the secondary augmentation/mastopexy. Of the patients with prior implants, 41 (59%) were saline and 32 (39%) were silicone. The remaining previous implants were double lumen, polyurethane, or unknown. Of the attainable data (50 out of 83 patients), only 2 patients had implants that were 500 cc or larger.

Surgical indications

Preoperative diagnoses are listed in Table 1. Sixty-three percent of patients had grade II ptosis, with the Regnault classification.[19] Fourteen percent had grade IV, or pseudoptosis, 13% had grade III ptosis, and 10% had grade I ptosis. Thirty-three percent of patients had evidence of capsular contracture, 22% complained of breast asymmetry, 11% had a ruptured implant (6 silicone, 3 saline, 2 double lumen), 6% of patients desired a different implant size, 3% complained of saline implant rippling, 3% complained of poor scarring, 2% complained of breast pain, and 1% had an unsatisfactory implant location.

Surgical technique

The type of implant, placement and type of mastopexy incision was recorded for each patient (Tables 2 and 3). Conservative undermining was always performed when possible. The previous breast pocket was used in most cases for the secondary augmentation/mastopexy. If there was no previous breast pocket, a submuscular plane was used to minimize disruption of pectoralis musculocutaneous perforators and to decrease capsular contracture risks. Textured silicone implants were placed in 79 (79%) patients: 60 (60%) Mentor silicone gel-filled implants (Mentor Corp., Santa Barbara, CA) and 19 (19%) Silimed silicone gel-filled implants (Sientiua, Inc., Santa Barbara, CA). Seven (7%) smooth saline and 12 (12%) textured saline implants were placed. Three (3%) Poly Implant Prosthesis saline-filled implants (PIP USA, Inc., Miami, FL; no longer available) were placed. Two implants (2%) were anatomic in shape, and the rest were round. Most implants placed were 400 cc or less (54% were less than 300 cc and 28% were 301 to 400 cc). The average size of implant placed was 305 cc. Eleven implants (11%) were in the range of 400 to 500 cc, and 7 (7%) were greater than 500 cc.

Wise pattern incisions were made for the mastopexy in 72 (72%) patients. Eighteen (18%) had a circumareolar incision, 8 (8%) had circumareolar and vertical incisions, and 2 (2%) had a crescent incision. Thirty-three (33%) patients had 1 or more concurrent non-breast surgeries at the time of secondary augmentation/mastopexy. The most common concurrent surgeries were lipoplasty (25%), abdominoplasty (13%), blepharoplasty (4%), and face lift (2%). The incisions were taped for 3 weeks, followed by scar massage and silicone sheeting.

Results

The average surgical time was 123 minutes (range 30-285 minutes), and 33 patients had concurrent non-breast cosmetic surgery at the time of the secondary augmentation/mastopexy. Follow-up ranged from 13 months to 13 years, with an average of 3.5 years. Typical results are shown in Figures 1 to 3.

One or more complications occurred in 13 patients. Complications were divided into tissue-related and implant-related categories. The most common tissue-related complications were poor scarring (3%) and recurrent ptosis (3%). The most common implant-related complications were infection (3%) and capsular contracture (2%). Three patients had more than 1 complication. Fifteen patients (15%) required revision surgery; 8 patients with complications in addition to 6 patients that desired a change in implant size and one patient that requested to exchange from saline to silicone gel-filled implants. Three patients (3%) had tissue-related complications requiring revision, and 5% had implant-related complications requiring revision. Seven patients (7%)

Table 1. Surgical indications for secondary augmentation/mastopexy

Diagnosis	Percent of patients
Ptosis	100%
Grade I	10%
Grade II	63%
Grade III	13%
Grade IV	14%
Capsular contracture	33%
Asymmetry	22%
Implant deflation or rupture	11%
Silicone	6%
Saline	3%
Double lumen	2%
Unsatisfactory implant size	6%
Implant wrinkling	3%
Poor scarring	3%
Breast pain	2%
Unsatisfactory implant location	1%

Table 2. Type of implants placed in secondary augmentation/mastopexy

Type of implant	Percent of patients
Mentor Textured Gel	
< 300 cc	33%
301-400 cc	20%
401-500 cc	3%
>500 cc	4%
Silimed Textured Gel	
<300 cc	7%
301-400 cc	5%
401-500 cc	5%
>500 cc	2%
Mentor Saline Textured	
<300 cc	10%
301-400 cc	1%
401-500 cc	1%
>500 cc	0%
Mentor Saline Smooth	
<300 cc	3%
301-400 cc	2%
401-500 cc	1%
>500 cc	0%
Poly Implant Prosthesis Saline Textured	
<300 cc	1%
301-400 cc	0%
401-500 cc	1%
>500 cc	1%

Table 3. Type of mastopexy incisions in secondary augmentation/mastopexy

Type of mastopexy incision	Percent of patients
Wise	72%
Circumareolar	18%
Circumareolar + vertical	8%
Crescent	2%

requested a revision to change the size or type of implant (Tables 4 and 5). This compares favorably to revision rates in published series of primary 1-stage mastopexy and breast augmentation cases (16.7% and 14% in published data, respectively).[17,18] A review of 150 consecutive primary mastopexies revealed a revision rate of 8.6% over 3 years, which may generally be compared with the tissue-related revision rate noted in this patient population (3%).[15] In a retrospective study of 3495 implants, the authors reported a reoperation rate of 15.5% for primary breast augmentation and 21.9% for revision augmentation, defined as any secondary breast augmentation surgery.[16] For another reference point, a 1997 study of 749 women with breast implants alone revealed a 6.5% complication rate for women with cosmetic breast implants at 1 year and 12% at 5 years.[20] When isolating the implant-related complication rate in our series, we found 6 complications (6%) at 3.5 years, which is significantly less than the studies mentioned. These comparisons are not highly accurate because the study designs and patient demographics have not been controlled, but they provide an approximation of complication and revision rates for comparison.

Discussion

Secondary simultaneous breast augmentation and mastopexy is a topic that has not been discussed extensively in the literature. It is a procedure that many women desire after previous breast surgery. This may occur as a result of the natural aging process, tissue changes after pregnancy, weight fluctuations, and changing societal standards of beauty.

This retrospective study reports on 100 women who had previous breast surgery and subsequent ptosis months to years later. Many of these women had previous breast augmentation or augmentation/mastopexy. This differs from a typical "staged" augmentation and mastopexy procedure, because the implant was often exchanged for a different size at the time of the sec-

Table 4. Complication rates in secondary augmentation/mastopexy

	Percent of patients
Tissue-related complications	
Poor scarring	3%
Recurrent ptosis	3%
Breast asymmetry	2%
Areolar asymmetry	2%
Loss of nipple sensation	1%
Hematoma	1%
Partial areolar depigmentation	1%
Total	13%*
Implant-related complications	
Infection	3%
Capsular contracture	2%
Deflation	1%
Total	6%*

*Three patients experienced more than 1 complication.

Table 5. Revision rates in secondary augmentation/mastopexy

Indications for revision	Percent of patients
Tissue-related	
Recurrent ptosis	2%
Unilateral reduction for asymmetry	1%
Implant-related	
Desire to change implant size	6%
Capsular contracture (Grade III)	2%
Infection requiring explant	2%
Implant deflation	1%
Exchange for silicone implant	1%
Total	15%

ondary procedure. In addition, in the months to years of time elapsed since the primary breast surgery, the patient's skin and soft tissue quality may have dramatically changed, and ptosis may have worsened.

Previously documented common indications for revision of primary augmentation/mastopexy include recurrent ptosis and capsular contracture.[14] We found that a desire to change implant size was the most common reason for a revision of the secondary procedure, with recurrent ptosis and capsular contracture occurring less frequently. Interestingly, a common cause for revisions after primary mastopexy is for poor scarring. We found that only 3% of patients demonstrated unsatisfactory scarring, and in none of these cases was scarring the primary reason for revision. One patient had partial-thickness skin slough over a portion of the areola after surgery. It healed uneventfully with local wound care and did not require additional surgery. Three patients had an infection after the secondary augmentation/mastopexy. Two of these infections required implant removal with later replacement, and 1 superficial infection was treated with antibiotics alone. This infection rate is admittedly higher than previously documented.[17,19] Handel et al[17] reported an infection rate of 1.2% for primary breast augmentation and 2.1% for secondary augmentation. The same preoperative, operative, and postoperative antibiotic regimen and Betadine irrigation was used for all patients in this series. Two of the 3 patients with postoperative infections had a BMI greater than 30, and 1 had a history of previous breast infection after capsulotomy. All 3 had Wise pattern mastopexy incisions. The infection rate may be due to something inherent in secondary procedures such as more tissue trauma, manipulation, and devascularization, or possibly sampling error because of the limited number of cases in our study.

It is interesting to note that none of the independent variables was statistically significant when correlated to complication and revision rates. This finding is in contrast to a review of 1-stage mastopexy and breast augmentation, in which a significant increase in the probability of revision was found to be related to a history of smoking, the use of a saline implant and a circumareolar mastopexy incision.[19] This may be a result of the small sample size in addition to many confounding variables present in each patient. It is important to consider the fact that an anchor mastopexy incision was used in 72% of patients. This allows for better control of breast shape and volume, but it may increase the risk of tissue ischemia because of undermining. The senior surgeons emphasize that they attempt to minimize tissue undermining where possible. A circumareolar incision was used only where the nipple height needed to be elevated less than 2 cm, thus reducing the risk of areolar spreading, flattening, and distortion from tension.

The incidence of complications and revision rate in these patients closely correlates with those previously published for primary combined procedures. As other studies have shown, we confirm that the most common reason for revision surgery is implant related.[17,18] In this patient population, the most common indication for revision surgery was the desire for a different implant size. The preferred use of silicone gel-filled implants over saline likely resulted in fewer deflations and therefore dramatically reduced that specific complication.

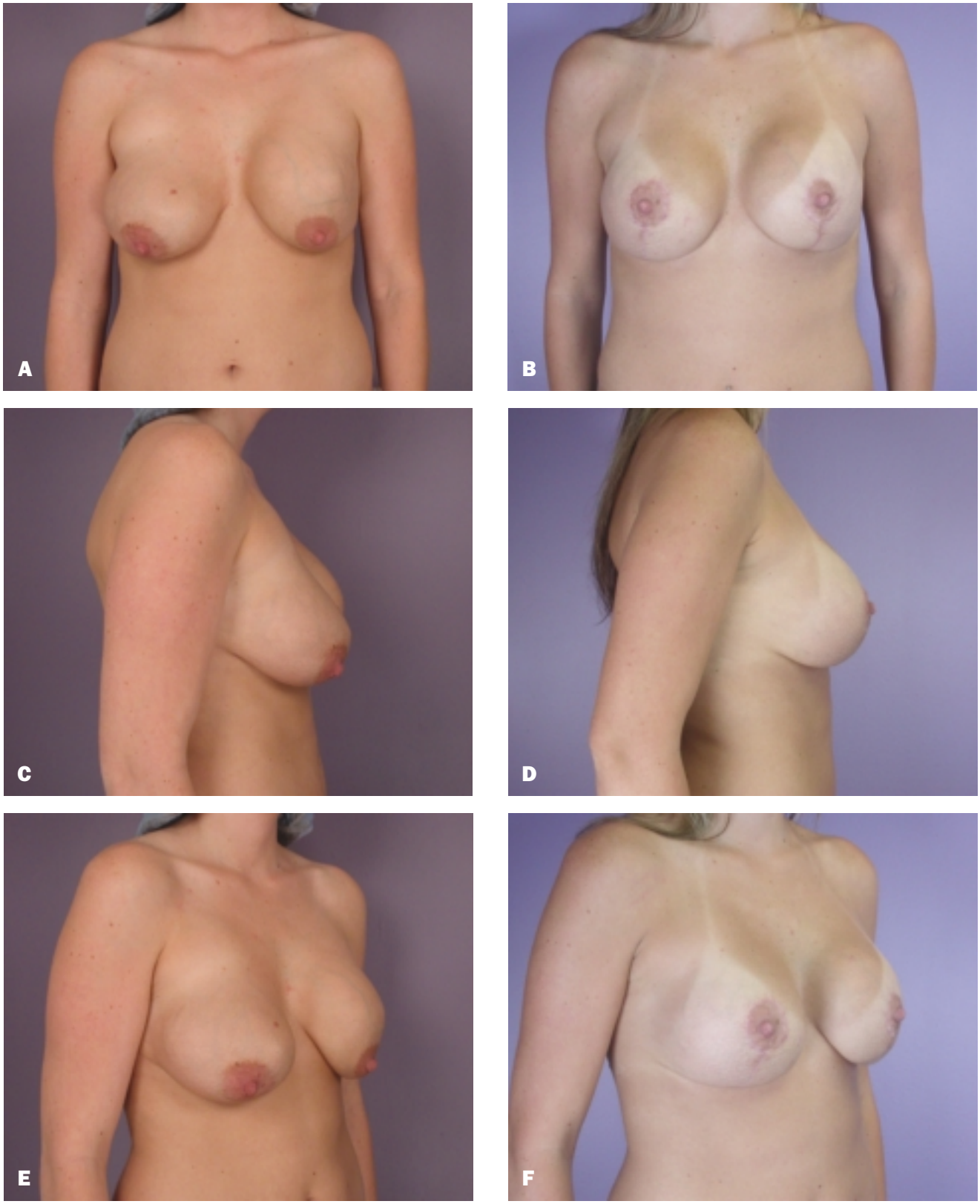

Figure 1. A, C, E, *Preoperative views of a 23-year-old mother who complained of breast ptosis, asymmetry, and capsular contracture 6 years following her primary breast augmentation.* **B, D, F,** *Postoperative views 2 months after bilateral capsulotomy, replacement of implants with 300-cc Moderate Plus Profile Mentor silicone gel-filled implants, and bilateral mastopexy with inverted-*T *incisions.*

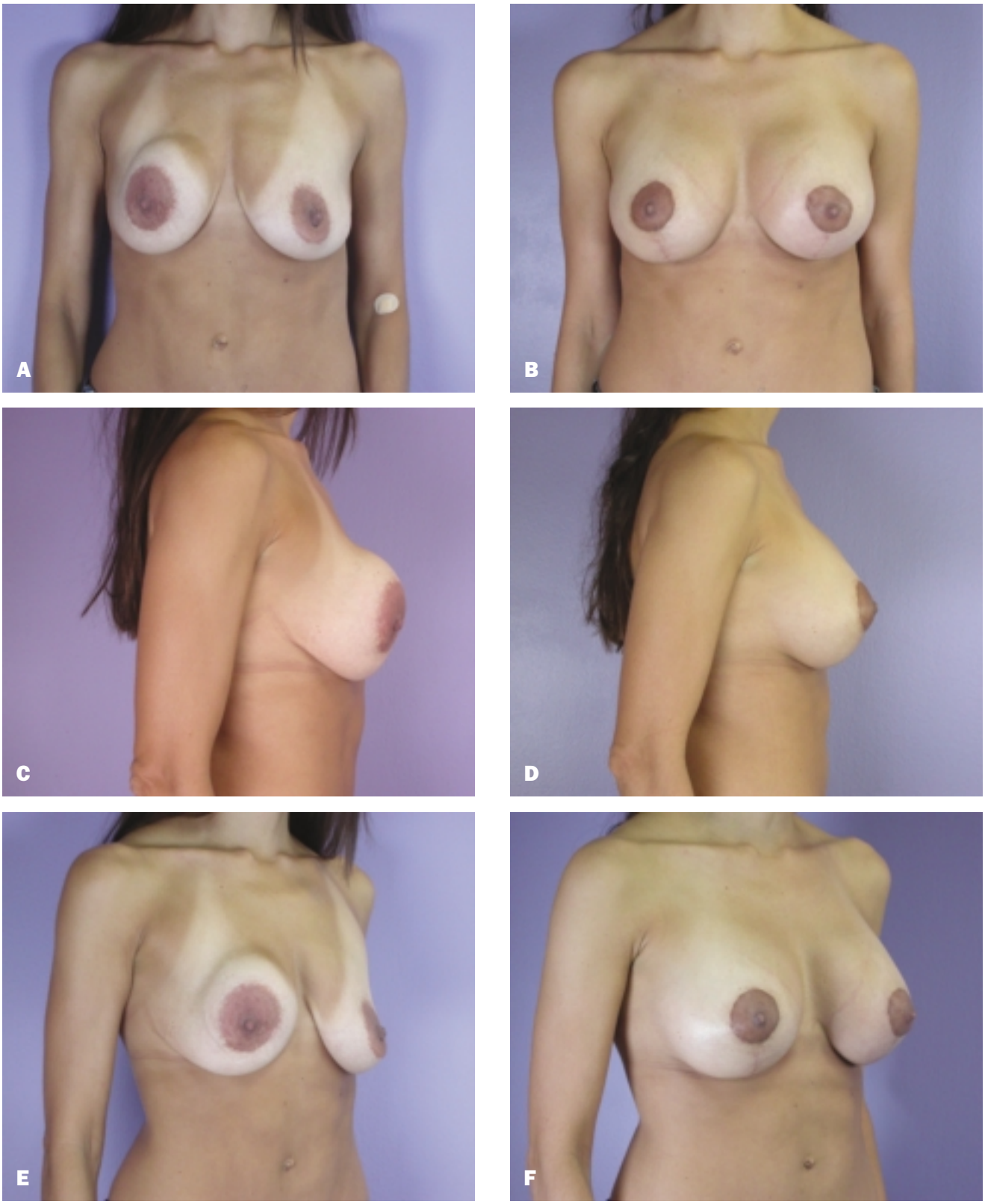

Figure 2. A, C, E, *Preoperative views of a 43-year-old mother who complained of breast asymmetry and right breast capsular contracture 25 years after undergoing right breast subglandular augmentation for breast asymmetry and was treated by right capsulectomy and explantation of a ruptured gel implant.* **B, D, F,** *Postoperative views 6 weeks after 1-stage bilateral breast augmentation with 275-cc Moderate Plus Profile Mentor silicone gel-filled implants in a submuscular pocket and bilateral mastopexy with inverted-*T *incisions, performed 2 months after the capsulectomy and explantation.*

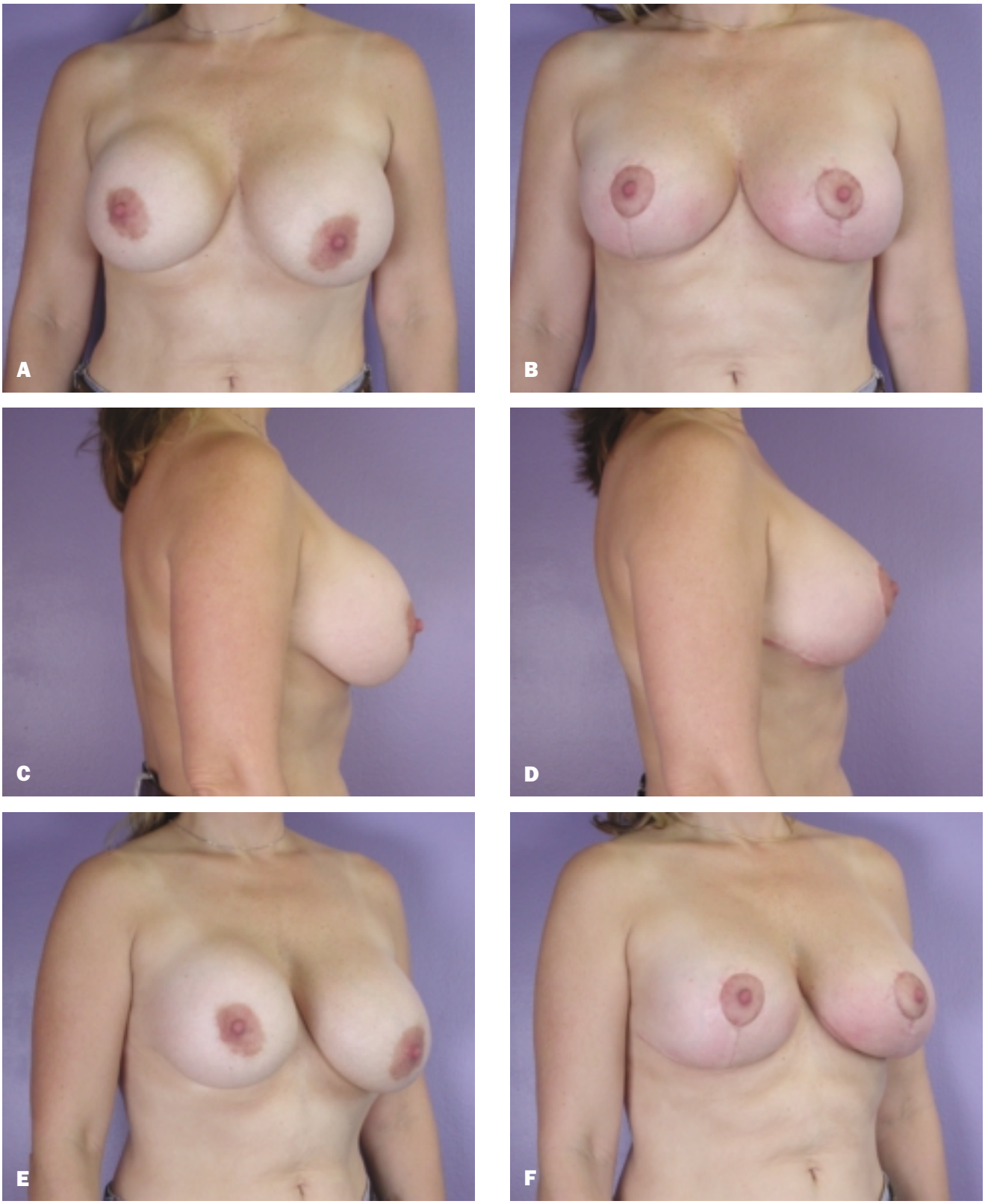

Figure 3. A, C, E, *Preoperative views of a 41-year-old woman who complained of right breast capsular contracture, excessive breast enlargement, areolar asymmetry, implant ripples, and breast ptosis following breast augmentation in a subglandular pocket 15 years earlier.* **B, D, F,** *Postoperative views 2 months after right capsulectomy, replacement of implants with smaller 275-cc Moderate Plus Profile Mentor silicone gel-filled implants in a submuscular pocket, and bilateral mastopexy with inverted-*T *incisions.*

The relatively low complication and revision rates in secondary augmentation/mastopexies support the belief that prior breast surgery does not necessarily predispose patients to a higher complication rate after a combined augmentation/mastopexy. There were no incidences of complete nipple or skin necrosis, wound dehiscence, or implant exposure. It is necessary to emphasize that care must be taken to closely evaluate the preoperative history and prior surgical technique when planning the secondary operation to optimize tissue healing and successful outcomes. A revision rate of 15% after secondary augmentation/mastopexy is a topic that deserves to be discussed with each patient carefully. The surgeon and patient must have very clear communication regarding implant size and surgical expectations to optimize patient satisfaction and limit the need for revision surgery. When compared with the option of a staged breast augmentation and mastopexy that necessitates a second procedure in every case, many patients and surgeons will continue to desire a 1-stage procedure that may result in less time, cost, and recovery for the patient.

Conclusions

This retrospective review of 100 consecutive patients supports the safety and efficacy of secondary combined breast augmentation and mastopexy after previous breast surgery. The revision rate is comparable to primary 1-stage breast augmentation and mastopexy. The most common reason for revision was the patient's desire to change the implant size. ■

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