Polydioxanone Monofilament Mesh: A Safety Net for Complex Breast Implant Revision Surgery

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Abstract

Background: Breast revision surgeries are complex cases requiring greater pocket control than primary surgeries. Intraoperative techniques to maximize pocket integrity are crucial to achieving an aesthetic result in revisions with implants.

Objectives: Uniform utilization of a polydioxanone (PDO) internal support matrix in a high volume of revision-augmentation cases has, to our knowledge, never before been described.

Methods: A high-volume (n = 104) single-surgeon experience followed patient outcomes in consecutive cases from September 2020 to March 2022. Included in this cohort were patients undergoing revision-augmentations with vertical or wise-pattern mastopexies (n = 74), revision-augmentation without mastopexies (n = 25), and revision without implant exchange (n = 5). Each case employed at least 1 sheet of PDO mesh, with a small set (n = 4) receiving 2 sheets. Patients were followed up (range, 3-19 months), with 3 months minimum follow-up to assess outcomes.

Results: The average length of follow-up was 8.8 months. Patients in this cohort had undergone an average of 1.6 prior breast surgeries (range, 1-7). A total 89.4% of patients received an increase in implant volume (average change, +165.2 Cc); 87.5% of patients had favourable aesthetic outcomes, and 12.5% of patients were reoperated on (including reoperations for complications and/or aesthetic reasons). There were 13 complications in the cohort, and no mesh-related complications.

Conclusions: PDO mesh is a safe and effective method of increasing pocket control in breast revision. Supplemental soft-tissue support allowed greater implant volumes to be employed, yielding high rates of patient satisfaction with breast shape, scarring, and long-term aesthetics.

Level of Evidence: 4

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Breast implant revision surgery is considered the ultimate challenge for aesthetic surgeons, requiring greater levels of pocket control than in primary breast augmentation cases to build a predictable surgical construct of high integrity.[1] Revision surgeries in patients who have had multiple prior breast revision surgeries are even more complex; these individuals may present with anatomical challenges posed

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by a lack of native tissue, restrictions due to scar tissue formed from prior surgery, and less reliable wound healing more dependent on random blood supply. Additionally, in our experience, 1 in 3 patients seeking breast revision surgery desire to receive larger implants, creating even more pressure that can lead to extrusion in already thinned out tissue, placing more pressure on already impaired blood supply to nipple-areola complexes from prior surgeries, and applying greater forces on the skin envelope and risking unfavorable scarring.[2]

Internal support matrices, hereinafter referred to as "mesh," have been employed in aesthetic revision cases to provide soft-tissue reinforcement and prevent complications such as implant malposition.[3] Durasorb (Surgical Innovation Associates, Inc. [SIA], Chicago, IL), a synthetic absorbable mesh composed of polydioxanone (PDO), was cleared by the FDA in 2018 for soft-tissue reinforcement and has been widely utilized at the senior author's practice since 2020 in a variety of over 400 aesthetic breast cases, including primary augmentations, mastopexy-augmentations, and breast revisions.[4] The authors have recently shown significant benefits in pocket control and a decrease in scar malposition rates with PDO mesh in primary breast augmentation cases as well as improved scar aesthetics with PDO mesh reinforcement in primary mastopexy-augmentations.[5,6] It is hypothesized that the benefits of PDO mesh reinforcement could be further applied to more challenging and complex aesthetic breast surgeries.

The authors have reviewed the outcomes of patients who received PDO mesh while undergoing breast revision surgery with or without mastopexy in over 100 patients. A series of this size analyzing so many different aspects of patient outcomes in the most challenging setting of implant-based surgery employing PDO mesh as an adjunct has, to our knowledge, never been described before.

METHODS

A retrospective cohort analysis was conducted utilizing data from 105 consecutive revision-augmentation surgeries performed between September 2020 and March 2022 with bilateral smooth silicone gel breast implants plus PDO internal support matrix. One patient was excluded due to mental health conditions preventing follow-up after surgery. Breast revision cases employing mesh (n = 104) included in this study were revision-augmentations with a wise-pattern or vertical mastopexy (n = 74), revision-augmentations without a mastopexy (n = 25), and breast revisions without implant exchange (n = 5) (Table 1). All patients were women ranging in age from 22 to 70 years, with an average age of 41 years. The majority of patients (n = 89) had no preexisting medical conditions, and 15 patients had non-acute medical conditions managed by medication (7 patients had hypothyroidism, 3 patients had hypertension, 2 patients had autoimmune diseases, 2 patients had a history of cancer, 1 patient had a congenital adrenal disorder); for the purposes of this study, all patients were considered similarly healthy, with patient BMIs ranging from 18.3 to 29.7 and an average patient BMI of 22.5. Patients receiving smooth, round silicone gel breast implants of all sizes were included in this study, ranging from 310 to 800 Cc. Written consent was provided at the preoperative appointment, by which the patients agreed to the retrospective and prospective review of their case data.

Table 1. Case Type Breakdown of the Breast Revision Surgeries Performed in This Study

Breast revision surgery types	Amount
Revision-augmentation with mastopexy (wise pattern or vertical) + PDO mesh	74
Revision-augmentation without mastopexy + PDO mesh	25
Pocket revision without implant exchange + PDO mesh	5
Total	104

PDO, polydioxanone.

The surgeries were performed by the senior author (S.S.K.) in Newport Beach, CA. All cases including a mastopexy employed a superior or superomedial dermal pedicle blood supply and with a wise-pattern or vertical mastopexy scar. Surgeries were performed in the dual plane unless patients had a preexisting subglandular capsule deemed healthy enough to reuse. A small subset of cases (n = 12) required pocket exchange from subglandular to dual plane. The implantation of the mesh was conducted as previously described by the authors; while preparing the breast pocket, the monofilament mesh was removed from its sterile packaging and soaked in a triple antibiotic irrigation solution consisting of 50,000 units of bacitracin, 1 g cefazolin, 80 mg gentamicin in 1 L of normal saline or a 50% povidone-iodine solution.[6] After dissection, the 10- × 25-cm mesh was routinely removed from the solution and cut in half. Each half was oriented such that the smooth surface would be facing toward the patient's breast implants and the rough surface toward the breast tissue. The mesh was then contoured to the confines of the breast implant pocket and inset to the periosteum of the rib and the Scarpa fascia employing 2-0 Vicryl (Ethicon; Raritan, NJ) sutures in an interrupted fashion along its inferior edge, moving from medial to lateral along the inframammary fold border. When a vertical mastopexy or no mastopexy was performed, the breast implants were inserted first employing an introduction sleeve, and then the mesh was inset as described above, with the smooth surface of the mesh placed against the breast implant and its rough surface toward the breast tissue

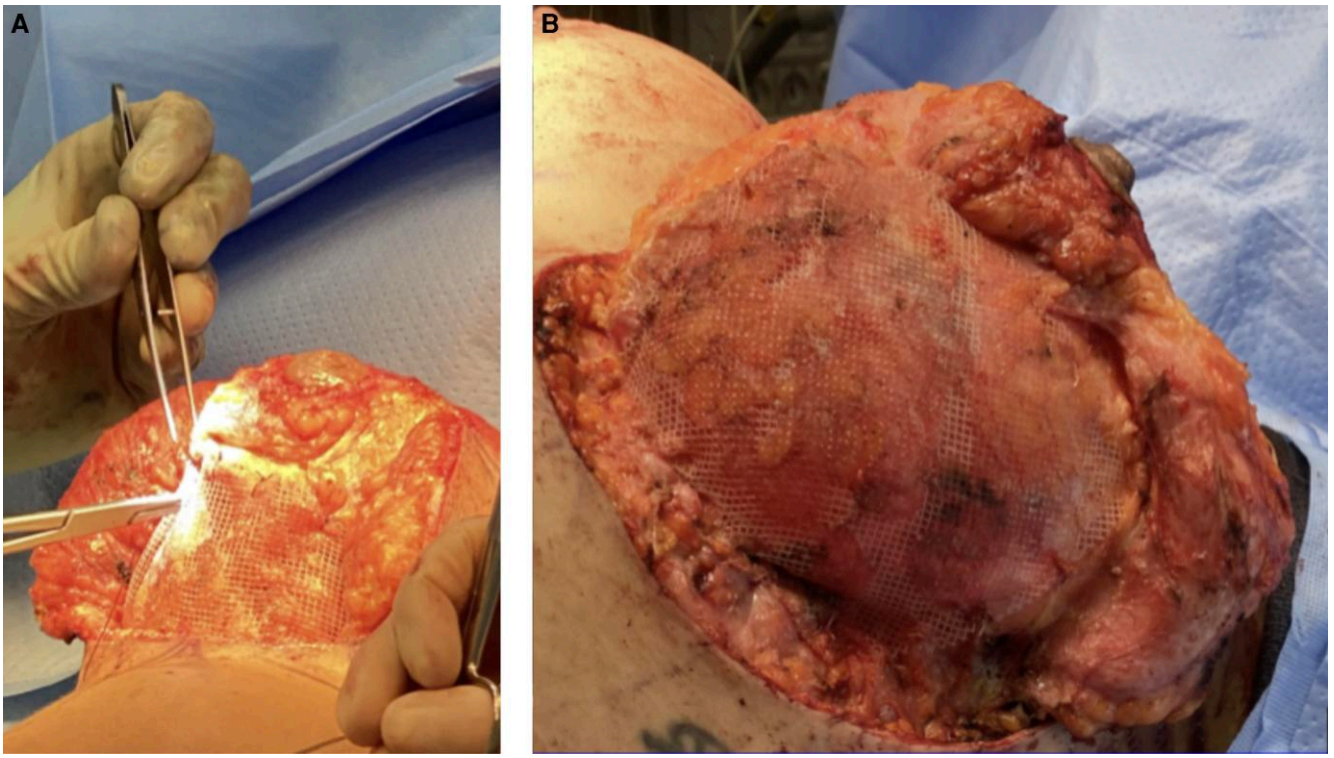

Figure 1. Mesh implantation technique outside of the pocket when a wise-pattern mastopexy is performed as a part of the breast revision. (A) implantation of mesh and (B) mesh implanted outside of the pocket.

and/or remaining capsule. The superior border of the mesh covered at least the lower half of the breast implant and did not need any sutures to suspend its superior border. 2-0 Vicryl sutures in running simple and locking fashion were employed to reapproximate the fascia of the breast gland over the implant and mesh.

In cases where a wise-pattern mastopexy-augmentation was performed, the implants were placed, and the breast fascia was then closed to have total implant coverage. The senior author would then perform a routine mastopexy with tailor-tacking, marking, release of staples, de-epithelialization of the intended blood supplying pedicle, excision of excess skin and subcutaneous fat, debulking of excess lower pole breast volume, and 3-layered suture closure. During the wise-pattern, once the flaps were elevated, the mesh was sewn outside the breast implant pocket but still with its most inferior border securing the inframammary fold border. While the mesh was still oriented with the smooth surface toward the breast implant (although outside the breast implant pocket) and its rough surface toward the mastopexy flaps, the main difference was that its superior border and any dead space were quilted with light 2-0 Vicryl interrupted sutures tacked down to the underlying soft tissue, being sure not to go too deep and inadvertently puncture the underlying implant (Figure 1). The mesh was pulled to the degree of tautness desired.

In more complex cases where increased lateral support was needed, the mesh was parachuted inside the breast implant pocket, and in a small subset of cases in this study (n = 4), 2 pieces of mesh were employed to construct a "fortress," with mesh inset inside and outside of the pocket. Otherwise, all cases used one 10- × 25-cm sheet of mesh, with one half placed in each breast. Three-layered suture closure was employed for all cases (fascial layer, deep dermis, and a subcuticular layer). Drains were utilized only in cases requiring a total capsulectomy due to ruptured silicone implants (n = 7).

A minimum of 3 months of postoperative evaluation to assess patient outcome was required for this study, with follow-up time ranging from 3 to 19 months. The authors measured preoperative factors, including the number of prior surgeries, prior implant material and sizes, receipt of a prior mastopexy (and if so, prior mastopexy's resulting scar quality), Fitzpatrick phototype, and presence of prior capsular contracture (Baker Grade III/IV). The outcome factors that the authors measured were the change in implant volume, scar quality in patients who received a mastopexy, postoperative complications including implant extrusion, wound dehiscence, tissue necrosis, seroma, hematoma, infection, capsular contracture, and implant malposition. Scar quality in patients who received a mastopexy was evaluated by photography and then scored by an independent

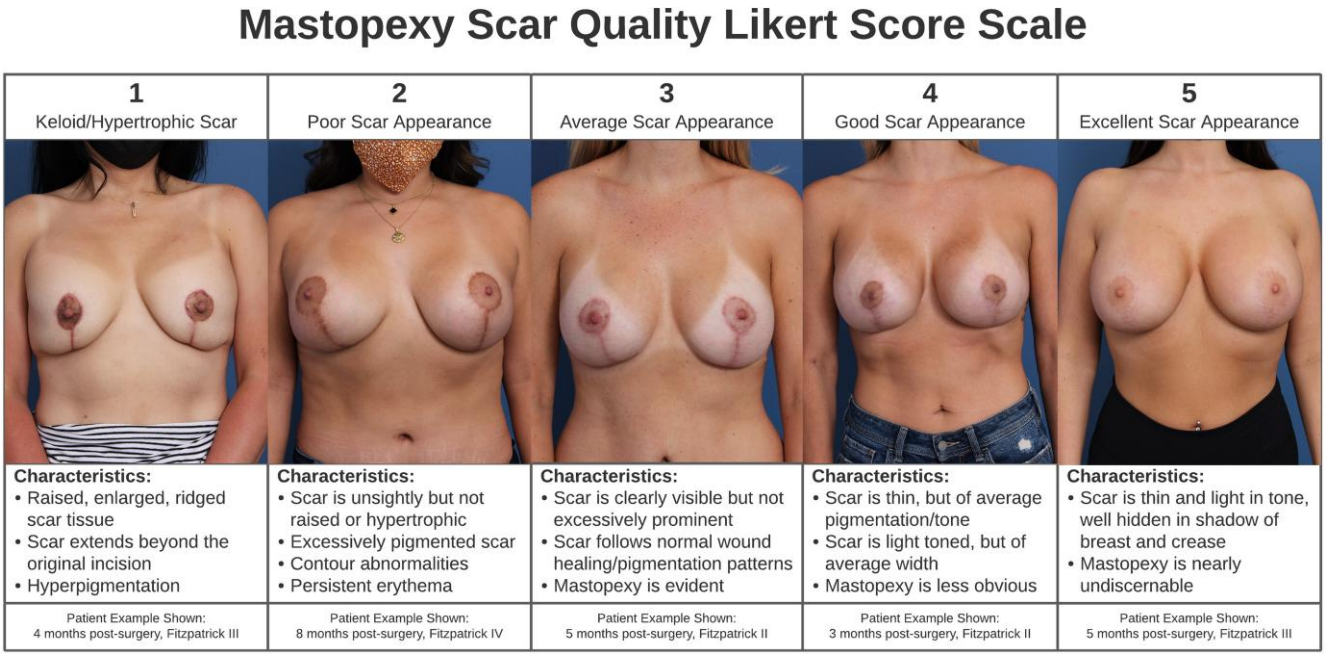

Figure 2. Mastopexy scar scale. Reproduced from Chiemi JA and Kelishadi SS[6] by permission of Oxford University Press on behalf of The Aesthetic Society.

observer according to a previously described 5-point scar scale, where 1 corresponds to a hypertrophic/keloid scar and 5 denotes a thin, well-toned scar that blends with the native breast tissue (Figure 2).[6]

RESULTS

Implant Size Changes

The average follow-up length was 8.8 months, ranging from 3 to 19 months. The average prior implant size was 424.5 Cc (range, 165-800 Cc), while the average new implant size was 589.7 Cc (range, 310-800 Cc). The average implant volume change was +165.2 Cc. Ninety-three patients (89.4%) desired to receive larger implants than their previous size with their revision surgery, and of these patients who sought a size increase, the average implant volume change was +191.2 Cc, with achieved size increases ranging from 10 to 510 Cc. Patients receiving a mastopexy had an average implant volume change of +172.6 Cc, and patients not receiving a mastopexy (excluding the 5 patients undergoing pocket revision without new implants) had an average implant volume change of +176.3 Cc (Table 2).

Prior Breast Surgeries

Patients in the cohort underwent an average of 1.6 prior breast surgeries, ranging from 1 to 7 prior surgeries. The majority of patients (n = 63, 60.6%) had 1 prior breast surgery, most others had undergone 2 to 3 prior surgeries (n = 36, 34.6%), and 5 patients (4.8%) had a surgical history of >3 breast surgeries. Twelve patients (11.5%) had undergone their most recent prior breast surgery at the S.S.K. practice before seeking revision from the senior surgeon during this study (Table 3).

Reoperation

Thirteen patients in the cohort underwent further surgery, yielding a 12.5% reoperation rate overall. Four patients out of the 104 sought revision for a size change (3.8%), and 9 patients out of 104 (8.7%) required reoperation due to a complication: 2 due to implant extrusion and infection, 5 due to implant malposition, 1 due to seroma, and 1 due to capsular contracture. Thus, of the reoperations in this cohort, 30.8% were due to cosmetic reasons and 69.2% were non-cosmetic reoperations. Of the 9 patients who were brought back to the operating room due to complications, the average number of prior breast surgeries was 2.0 (ranging from 1 to 6 surgeries). Eight (88.9%) had received a mastopexy, and 1 patient (11.1%) was from the non-mastopexy group (Table 4).

Complications

The authors recorded a total of 13 complications (12.5%), including 2 infections, 2 seromas, 2 partial nipple-areola complex necroses, 1 deep wound dehiscence, 2 implant

Table 2. Implant Size Change Data

Implant volume changes in revision-augmentation patients					
Overall (n = 104)		Patients desiring larger implants (n = 93)		Patients desiring smaller implants (n = 6)	
Average prior implant size, Cc	424.5	Average prior implant size (Cc)	404.9	Average prior implant size (Cc)	594.5
Average new implant size, Cc	589.7	Average new implant size (Cc)	596.1	Average new implant size (Cc)	526.6
Average implant size change, Cc	+165.2	Average implant size change (Cc)	+191.2	Average implant size change (Cc)	−67.8
Revision augmentations with mastopexy (n = 74)			Revision augmentations without mastopexy (n = 25)		
Average prior implant size, Cc		423.2	Average prior implant size, Cc		402.1
Average new implant size, Cc		595.8	Average new implant size, Cc		578.4
Average implant size change, Cc		+172.6	Average implant size change, Cc		+176.3

Table 3. Breast Surgical Histories of Patients in the Cohort

Prior breast surgeries in breast revision patients (n = 104)					
Hx of 1 prior surgery		Hx of 2 to 3 prior surgeries		Hx of >3 prior surgeries	
63	60.6%	36	34.6%	5	4.8%
Minimum no. of prior sx		Maximum no. of prior sx		Average no. of prior sx	
1		7		1.6	
Surgeon of patients' most recent breast surgery (last surgery received before the start of the study)					
Returning patients of study's senior surgeon				12	11.5%
New patients				92	88.5%

Hx, history; sx, surgery.

extrusions, 1 capsular contracture, and 1 non-fatal pulmonary embolism. There were no mesh-related complications. Four of the complications were resolved without reoperation; 1 infection was treated with oral antibiotics, the pulmonary embolism was treated in the ER with anticoagulants, and both nipple-areola complex partial necroses healed with re-epithelialization by secondary intention at 3 months postsurgery.

Table 4. Reoperation Data for Patients in the Cohort

Reoperation in breast revision patients (n = 104)		
Patients not requiring reoperation	91	87.5%
Patients requiring reoperation	13	12.5%

Reasons for reoperation (n = 13)		
Desired size change	4	30.8% of reoperations, 3.8% of cohort
Complication necessitating surgery	9	69.2% of reoperations, 8.7% of cohort

Characteristics of patients who had complications necessitating surgery (n = 9)		
Average prior breast surgeries, No.	2.0	
Received a mastopexy	8	88.9%
Did not receive a mastopexy	1	11.1%

Capsular Contracture

Nine patients in the cohort (8.7%) had a prior history of capsular contracture; all had prior smooth-shelled breast implants. The 1 patient who developed new capsular contracture had undergone 4 prior breast surgeries with 2 previous instances of capsular contracture; of note, in this particular patient, her mesh was placed outside of the breast implant pocket. In all of the revision patients not requiring mastopexy, the mesh was placed against the implant, and this was also the case in approximately one-third of the cases where a mastopexy was performed as well. Therefore, there were no cases of capsular contracture noted in this cohort of breast revision cases when the mesh was placed against the implant. Please note that unless a capsulectomy was performed at the time of breast revision (n = 7), most of the cases in this study had preservation of prior capsule that was repaired during the surgery.

Scar Quality in Mastopexy Patients

Thirty patients (28.8%) had undergone prior mastopexies, with an average scar quality score of 4.05 prior to revision surgery in this cohort. Seventy-four patients received a mastopexy as part of their breast revision surgery, and the average scar quality score was 4.67. The average Fitzpatrick phototype of the patients in the cohort was 3.0. There were no hypertrophic or keloid scars.

DISCUSSION

Breast revisions are the most complex cases we conduct in aesthetic breast surgery, and every patient undergoing

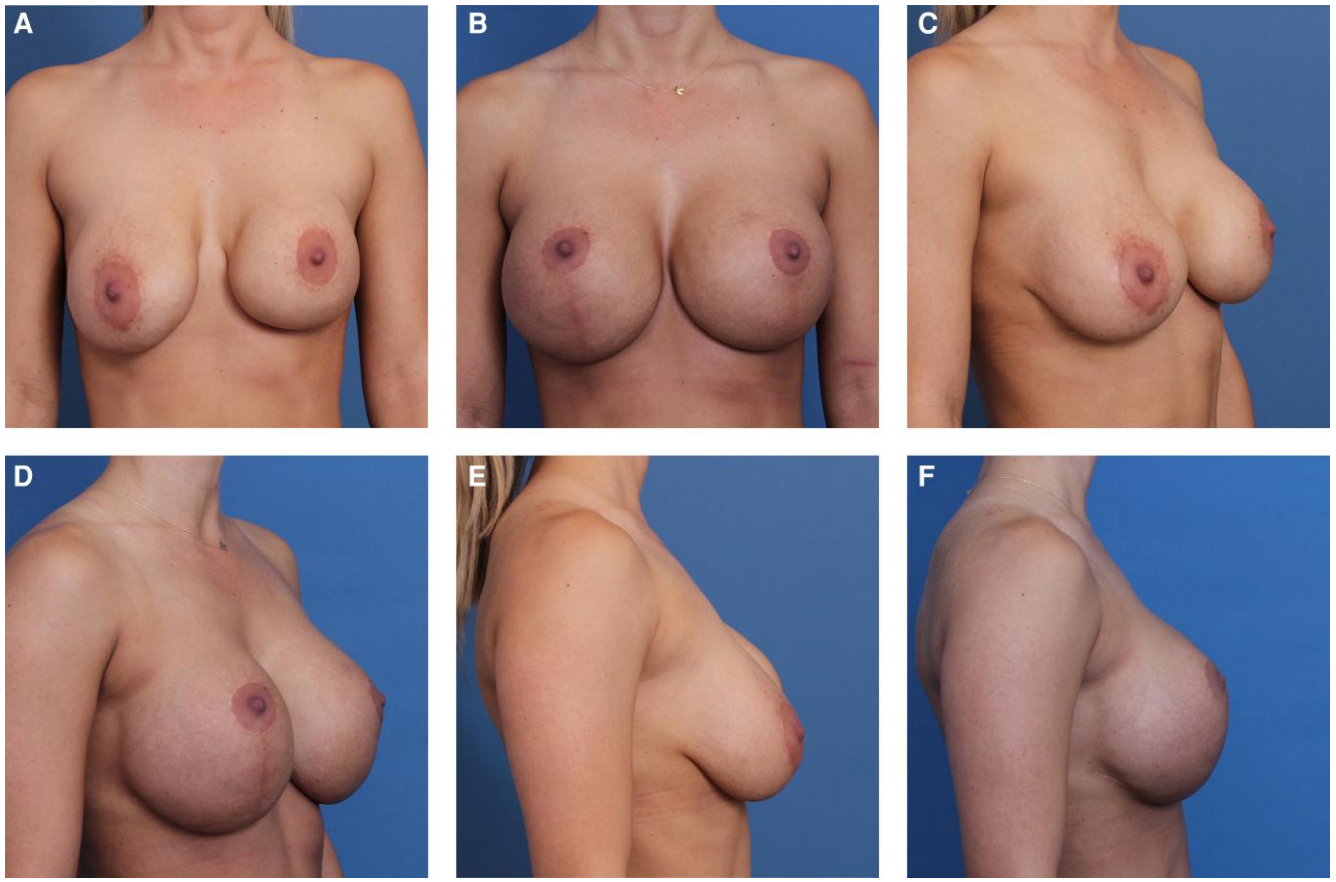

Figure 3. This 36-year-old female patient shown 14 months after revision mastopexy-augmentation. Mentor moderate plus profile smooth saline implants, 375 cc, were exchanged for Allergan Natrelle Inspira SoftTouch SSX Smooth Round Implants, 650 cc, plus DuraSorb mesh. A left capsular contracture (Baker Grade III) was corrected in surgery. Frontal, three-quarter, and lateral views shown (A, C, E) preoperatively and at (B, D, F) 14-month follow-up.

Table 5. Reoperation Rates Over 10 Years From Allergan, Sientra, and Mentor's Core Clinical Studies Compared With the Study's Reoperation Rate[7–9]

Reoperation rates in literature vs study reoperation rate			
Allergan	Sientra	Mentor	Breast revision with PDO mesh
32.4%	42.5%	50.7%	12.5%

Daya from 10-year core study, the above data shows the percentage of patients operated on within 10 years. It is projected that the study reoperation rate will increase as time passes. PDO, polydioxanone.

breast revision presents their plastic surgeon with a unique set of challenges to producing an aesthetic outcome. With consideration that the majority of patients in this study sought increases in implant size close to 200 Cc and also presented with a thin average body habitus, there is a significant amount of increased stress on the skin envelope and surgical construct that must be controlled to achieve a well-supported revision-augmentation.

Although an overall complication and reoperation rate of 0% would be desirable, considering the outcomes out of all the groups with all risk factors included, mesh appears to have offered more support and prevented higher complication rates if such support was not afforded. The 3 major breast implant manufacturers in the United States (Allergan [Irvine, CA], Sientra [Santa Barbara, CA], and Mentor [Irvine, CA]) report overall breast implant surgery revision/reoperation rates ranging from 30% to 50% in their core studies (Table 5).[7–9] Due to the length of follow-up, the authors clearly expect their reoperation rate of 12.5% to increase as time elapses but were pleased to observe

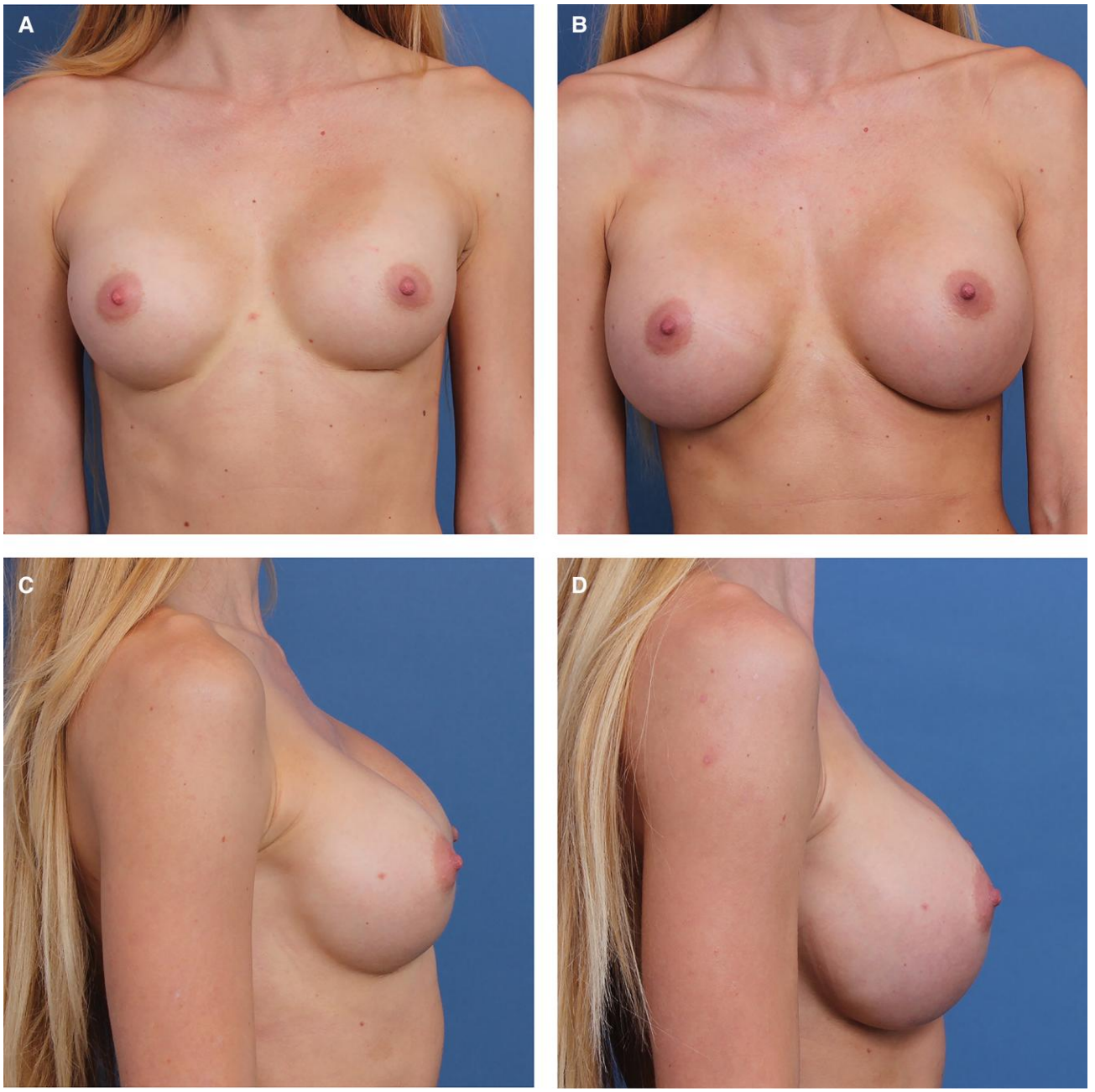

Figure 4. This 32-year-old female patient shown 12 months after revision augmentation. Allergan biocell TSF round implants, 265 cc, were exchanged for Allergan Natrelle Inspira SoftTouch SSF Smooth Round Implants, 450 cc, plus DuraSorb mesh. This patient had concerns about Biocell macrotextured implants and wished to exchange them for smooth implants while maintaining her implant position and shape over time. Mesh employed in conjunction with smooth implants provided the desired pocket control of a textured implant without the risks associated. Frontal and lateral views shown (A, C) preoperatively and at (B, D) 12-month follow-up.

aesthetic results and positive wound-healing outcomes in the vast majority of patients receiving PDO mesh in conjunction with their breast revision surgeries. This reoperation rate is low when considering that the cohort included multiply-operated-on breasts, slim patients with thinner tissue, an average breast implant volume of close to 600 Cc, and high-volume implant size increases (Figures 3-7).

To address the complications observed in this study, the authors wish to clarify additional details of these patients' cases leading them to believe that the PDO mesh did not

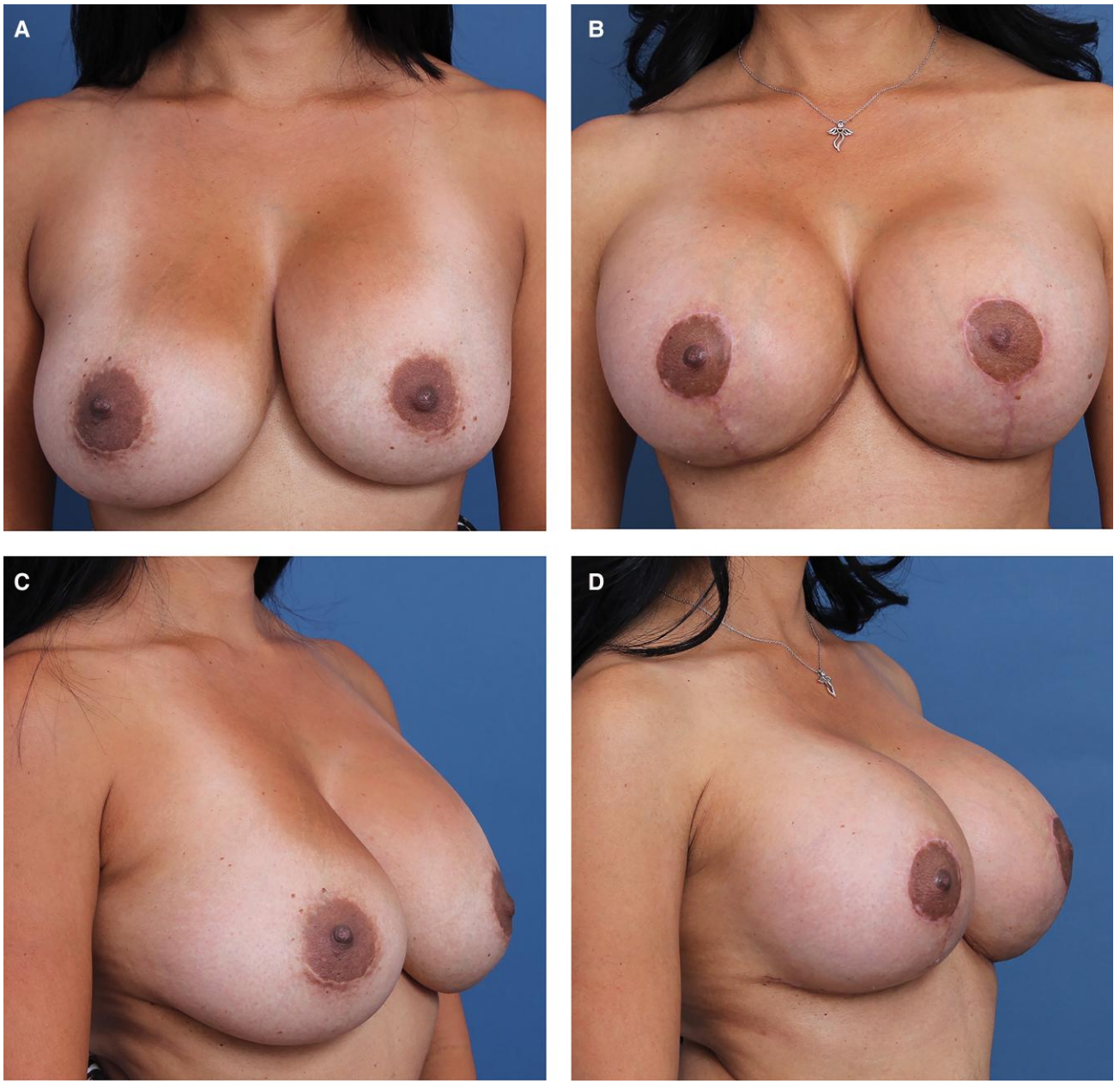

Figure 5. This 37-year-old female patient shown 12 months after revision mastopexy-augmentation. Mentor moderate plus profile smooth silicone implants, 500 cc were exchanged for Allergan Natrelle Inspira SoftTouch SSX Smooth Round Implants, 700 cc, plus DuraSorb mesh. Frontal and three-quarter views shown (A, C) preoperatively and at (B, D) 12-month follow-up.

contribute to these sequelae developing. The mesh did not play a role in either of the 2 partial nipple-areola complex necroses; we believe that the main reason was because these were complex revision surgeries with scarred and tethered nipple-areola complexes and unreliable blood supply. One of the 2 was preoperatively tethered due to scar tissue. Revision surgeries are more complex and are less predictable, and in fact, mesh may decrease tension forces that may impede blood supply. The other patient's blood pressure was very labile throughout surgery, from 180 systolic down to 84 systolic, and the authors believed this may have contributed to some problems with wound healing. With regards to the 2 cases of implant extrusion, neither implant extrusion was through the mesh. The first patient's BMI was >30, and patients with a higher BMI tend to have higher wound-healing complication rates. This was an out-of-town patient whose

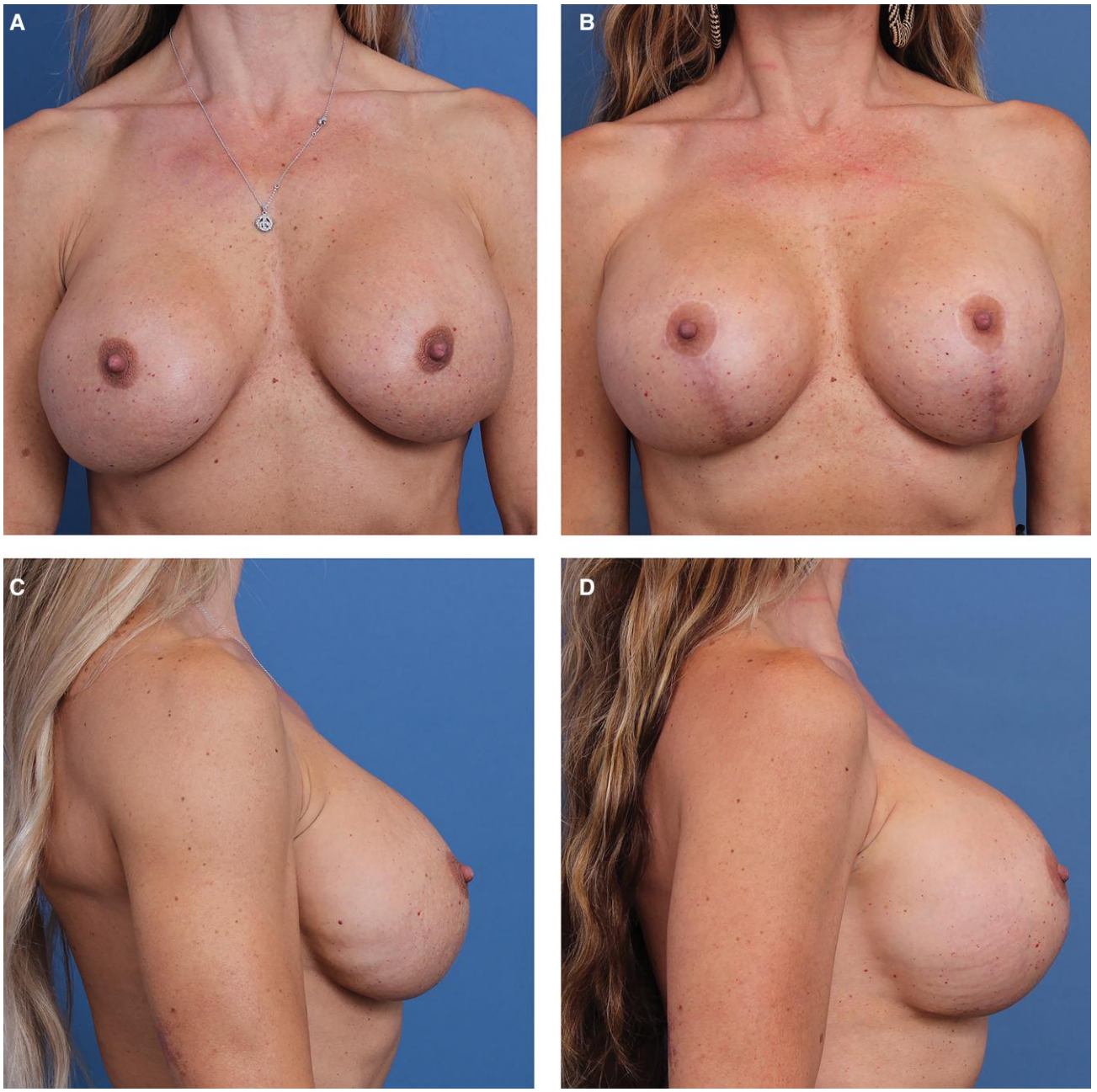

Figure 6. This 47-year-old female patient shown 18 months after revision mastopexy-augmentation. Allergan High Profile Smooth Saline Implants, 600 cc, were exchanged for Allergan Natrelle Inspira SoftTouch SSX Smooth Round Implants, 750 cc, plus DuraSorb mesh. Mesh was extended laterally to correct wrinkling in this lean patient. Frontal and lateral views shown (A, C) preoperatively and at (B, D) 18-month follow-up.

stated weight during virtual consultation was much lower than the actual weight measured when presenting for preop/surgery. She also works in health care and returned to rigorous physical activities at 1 week against doctor's orders (our normal protocol is 6-8 weeks). The second extrusion occurred in a patient who is a hairstylist and had scheduled a wedding party 1 week after surgery and consumed high levels of caffeine (>300 mg/d) to complete her work. Furthermore, it was noted that under her fingernails was filled with debris, and we believe that her extra activity, poor hygiene, and increased caffeine consumption all contributed to this complication and poor wound healing in a very complex breast revision setting. For both cases, the mesh did not appear to have any purulent rind or material around it. In fact, outside

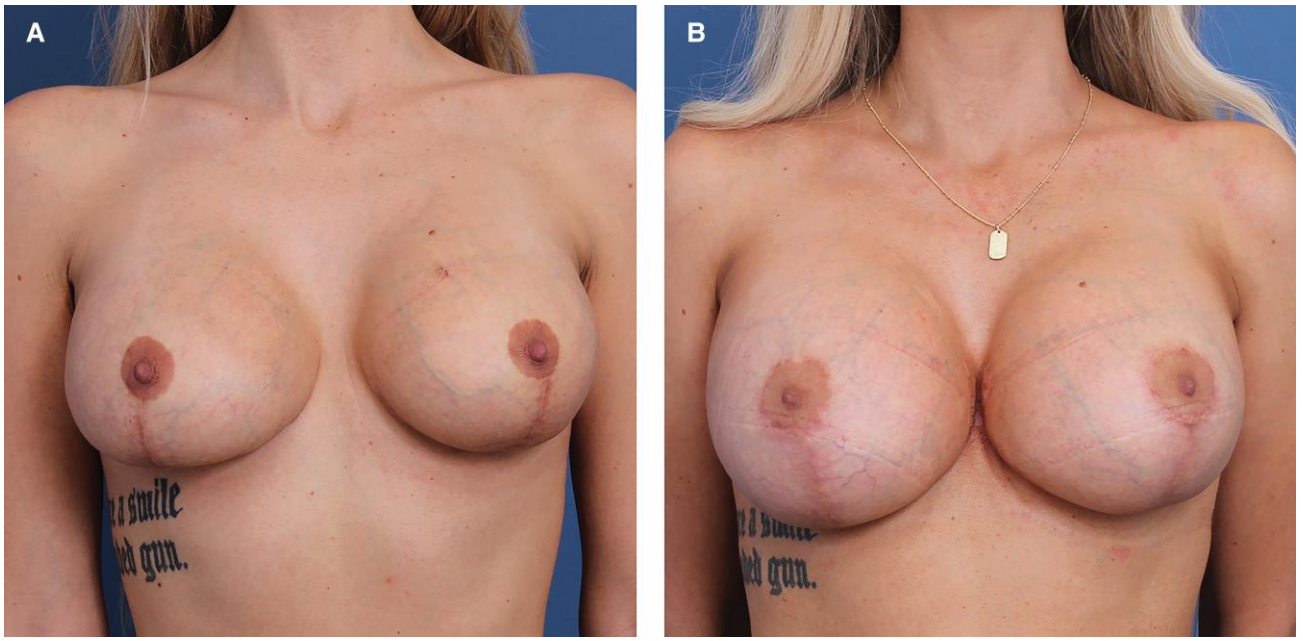

Figure 7. This 35-year-old female patient shown 12 months after revision mastopexy-augmentation. Bilateral ruptured Mentor High Profile Smooth Silicone Implants, 400 cc, were exchanged for Allergan Natrelle Inspira SoftTouch SSF Smooth Round Implants, 605 cc, plus DuraSorb mesh. Frontal view shown (A) preoperatively and at (B) 12-month follow-up.

of where the wound dehiscences were noted, the mesh appeared to be integrating into the native tissue and was not free floating.

Limitations of this study include the average length of follow-up, because a longer period of follow-up could have captured additional sequelae such as capsular contracture and recurrent ptosis that take longer to develop. If the patients had been followed up for a longer period of time, it would naturally be expected to observe even higher rates of complications and a need for reoperation. However, the reason why a shorter follow-up was chosen for this study was due to both author convenience, as cosmetic patients are notoriously difficult to maintain long-term follow-up with, and the nature of the complications we sought to capture with this study.[10] Immediate complications tend to be those based on surgical techniques and control, whereas longer-term complications are more related to unique biologic phenomena in each person; given the increased risks posed by placing much larger implants in thin, multiply-operated cosmetic breast patients with less reliable blood supply to their skin flaps and nipple-areola complexes, the low incidence of wound healing and other immediate surgical complications is noteworthy. The authors also acknowledge that diagnostic imaging such as MRI and ultrasound to capture complications such as implant rupture were not utilized, because this was not a parameter followed in our current study and such imaging would have been premature compared with current implant manufacturer and FDA guidelines for timelines to assess for silent ruptures. Although there is no formal control group to compare with in this study, our experience shows sustained and successful results with lower complication rates than what has been recorded in the literature and aesthetic results in complex revisional surgeries with larger implants than typically described.

Internal support matrices have been employed in aesthetic revision cases to provide soft-tissue reinforcement and prevent complications such as implant malposition. However, the high cost of meshes such as acellular dermal matrices have limited their feasibility for utilization in aesthetic cases beyond “bailout” revisions where soft-tissue adjuncts are deemed absolutely necessary.[11] With the increase of many synthetic mesh options of various compositions and absorption profiles entering the market, there are now more options than ever for plastic surgeons to provide additional reinforcement with meshes that are more cost-effective and inert than biologic products. Synthetic absorbable meshes in particular have garnered attention for utilization in aesthetic breast surgeries, because their absorption profile allows for the most support during the initial months of soft-tissue healing while being thin/non-palpable, non-permanent, and relatively economical.[6,11] Recent studies conducted with P4HB matrices in cosmetic breast revisions support the safety and aesthetic benefit of resorbable matrices in conjunction with implants yet call for further investigation.[12] DuraSorb PDO mesh was chosen for utilization in aesthetic revision bases due to its shorter absorption profile of 3 to 12 months combined with its unique

level of strength as a thin, non-palpable produce. The matrix is known to integrate into the tissue within 4 weeks of implantation and continue to absorb over the course of 1 year, leaving 1 to 2 mm of neo-collagenous vascular tissue in its place.[13] Many surgeons are less inclined to want to employ mesh support in the breast because of prior experiences with mesh infections employing other materials in breast reconstruction. However, in elective cosmetic cases, patients tend to be healthier and less likely to get infected. More importantly, anecdotally, we have never heard of anyone stating that they lost a breast implant due to an infection from a PDS suture (Ethicon). The polydioxanone mesh is made from the same material as PDS suture (also composed of polydioxanone), and we judge this material to be sufficiently inert to circumvent this risk. Infection would be very rare with this material, and its porosity and rapid integration make it a material that is very biologically compatible.

Employing mesh in revision-augmentations allowed us to feel much more comfortable utilizing larger implant volumes in patients regardless of their soft-tissue capacity and skin quality. The average implant employed in this cohort was 589.7 Cc, considered to be a high-volume augmentation. Achieving substantial increases of nearly 200 Cc for the average patient desiring larger implants would not have been feasible without mesh to provide a "safety net" for the repair. The authors believe that these results demonstrate that mesh is definitely protective in the short-term, and that in the long term, from the data shown with our 12+ month follow-ups, that the mesh remains protective. Additionally, we did not observe any recurrent glandular ptosis because the senior author, when performing a mastopexy, tends to aggressively debulk the lower pole and employ the implant to shape the breast. Furthermore, the rapid integration of the mesh with the tissue makes it interact as 1 interface between the tissue, the mesh, and the implant. However, it is noted that patients will still age and contend with the effects of gravity over time, and there is no technique that is bulletproof against normal aging and the test of time. We believe that mesh may have helped to limit the amount of wound-healing complications we observed in these complex, high-risk aesthetic breast surgeries, a provision that can certainly contribute to fewer unsatisfactory aesthetic outcomes later. Moreover, there was a learning curve to employing the mesh that the authors discovered during the study; the PDO mesh has preferential stretch, meaning that there is an orientation where the sheet of mesh is more pliable in one direction, and 90° to that orientation has less give. A pearl in employing this mesh that we have learned is that in patients desiring extra-large implants who are at risk for inferior malposition, we orient the mesh vertically in its least stretchy orientation to decrease inferior malposition.

Consistent with our previous findings[6] of improved mastopexy scar quality in primary mastopexy-augmentation patients, the scar quality of the revision-augmentation patients in this cohort who received a mastopexy with mesh was overall quite favorable. Though further research purely dedicated to assessing old vs new mastopexy scar quality with and without mesh would be required to better assess this relationship, we observed an improvement in scar quality with mesh compared with the average scar scores of patients who had received prior mastopexies without mesh. Anecdotally, multiple patients who had received prior mastopexies and then receiving a new mastopexy in their revision case remarked that their incisions and scars were much thinner sooner on in the healing process compared with their prior mastopexy experience. We believe that one of the many benefits of mesh in the wound-healing process is that it decreases tension forces from the implant and the mastopexy itself on the incisions, manifesting in better looking scars and fewer wound-healing complications.

CONCLUSIONS

The utilization of round, smooth silicone gel breast implants with the adjunct placement of PDO internal support matrix is a safe and effective method of increasing pocket control and improving outcomes in revision-augmentation surgeries. Patients seeking high-end elective plastic surgery from a board-certified plastic surgeon, especially those who have undergone many prior breast surgeries, demand greater levels of precision in their results and often desire to push the limits with greater implant volumes. The modern plastic surgeon has a variety of techniques at their disposal to maximize their control over the surgical construct, and today's matrices have evolved to be more durable, flexible, and cost-effective. Mesh is no longer a tool only to be employed in the most complex, "bailout" aesthetic surgery cases but should be considered as a useful addition to all revision surgeries to provide better wound healing, stability, and surgeon confidence. Our vast experience with prior published works alongside this study supports that PDO mesh in revision-augmentations allowed us to continue to better meet the aesthetic goals of our patients while prioritizing a strong, impeccably controlled repair.

Disclosures

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