

Subfascial Primary Breast Augmentation with Fat Grafting: A Review of 156 Cases

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Background: Composite breast augmentation with fat grafting and an implant has become very popular in the past 5 years. This achieves the core volume projection of an implant complemented by the natural appearance and feel of fat. However, no study has looked at the complications and reoperation rates of this technique.

Methods: A retrospective chart review examined all patients who underwent the combined use of an implant and fat grafting for primary breast augmentation.

Results: The study identified 156 patients between 2007 and 2013. The mean patient age was 31.7 years and the average body mass index was 18.85 kg/m². The average implant size was 252 cc. Patients received a mean of 126 cc of fat (range, 30 to 250 cc) in subcutaneous soft tissue. Follow-up averaged 22.25 months (range, 1 to 86 months). The total complication rate was 7.7 percent and the reoperation rate was 9.94 percent. Baker grade II/III contracture was the most common complication [Baker grade II, $n = 4$ (2.56 percent); Baker grade III, $n = 2$ (2 percent)], followed by infections [$n = 2$ (1.28 percent)], hematoma [$n = 2$ (1.28 percent)], and malrotation [$n = 1$ (0.64 percent)]. Delayed reoperation was performed in nine patients (9.94 percent) after a mean interval of 31.7 months. Two patients who developed Baker grade III contractures needed surgery to correct the problem. Three cases (1.92 percent) required additional fat grafting for insufficient soft-tissue coverage. The mean volume of fat reinjection was 170 cc.

Conclusions: Composite breast augmentation is a valuable, stable, reliable technique in breast aesthetic surgery with good, natural-appearing results. It provides long-term aesthetic benefits and avoids the submuscular plane. (*Plast. Reconstr. Surg.* 139: 1080e, 2017.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

Fat grafting in breast augmentation has gained popularity with the demonstration of its safety and efficacy.¹ However, primary breast augmentation with fat is limited in patients desiring a modest increase in volume. There is also a natural limitation to the projection achieved with fat alone, because of its soft nature.

Composite breast augmentation achieves core volume projection, with natural fat enhancing the cleavage and camouflaging the implant edges.^{2,3} By avoiding the submuscular plane, the source of pain and animation with activity, this technique treats breast asymmetry and chest malformation efficiently, and improves the

unnatural-appearing cleavage in women with breast implants. However, the major critique of this technique is the lack of a long-term review of the fat stability and aesthetic results. Therefore, we evaluated patient satisfaction with composite breast augmentation and the long-term aesthetic benefits of this technique.

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PATIENTS AND METHODS

Study Methods

The senior author (E.A.) has maintained a composite breast augmentation database since December of 2006. The patient inclusion criterion was retrofascial primary breast augmentation with the combined use of fat and an implant. All patients had bilateral breast augmentation.

Patients were excluded if they had breast ptosis, retroglanular composite augmentation, breast augmentation revision using this technique, or prior breast surgery. Patients were evaluated preoperatively and postoperatively with a combination of clinical evaluation, photographs, and mammography. The data evaluated included patient age, body mass index, pocket selection, implant type and size, volume of lipoaspiration, volume and location of fat reinjection, length of follow-up, early and late complications, additional fat grafting, and the incidence of and reason for reoperation.

Surgical Technique

All of the procedures were performed by the same surgeon (E.A.). (See **Video, Supplemental Digital Content 1**, which demonstrates primary composite breast augmentation with round textured gel implants and fat overlay, available in the “Related Videos” section of the full-text article on PRSJournals.com or, for Ovid users, at <http://links.lww.com/PRS/C122>.) Depending on the harvest site, the patient is first placed in the ventral position if fat is to be harvested from the buttocks or posterior thighs. If sufficient fat can be harvested from

the abdomen and anteromedial thighs, the operation can all be performed in the supine position. The patient is positioned with the arms abducted at 45 degrees and elbow flexed at 90 degrees. This position allows efficient access to the axillary region, while not distorting the breast position.

Infiltration

The lipoaspiration sites are infiltrated using 400 ml of normal saline, analgesics (40 ml of lidocaine with 1% adrenaline and 7.5 mg of ropivacaine), and 0.4 mg of adrenaline.

Fat Harvesting

Harvesting is performed using a 3-mm liposuction cannula. The fat is harvested under low pressure and the material collected with a sterile suction-assisted device. Then, the harvested material is loaded into 10-ml syringes, which are subsequently centrifuged for 1 minute at 3000 rpm.

Device Implantation

Textured gel implants are placed in a retrofascial position through a 4-cm-long stairstep axillary incision or a periareolar incision. An illuminated retractor is used to form an adjusted implant pocket and to ensure optimal hemostasis. The wound is closed in layers immediately after implant placement.

Fat Overlay

Fat grafting is performed with a 16- or 18-gauge, 15-cm-long cannula using two incisions: one medial to the inframammary fold and one superomedial to the areola (Fig. 1). Fat is placed subcutaneously at the medial edge of the implant, in the cleavage and submammary areas (Fig. 2).

RESULTS

The study enrolled 156 consecutive women with a mean age of 31.7 years (range, 19 to 51 years) between December of 2006 and December of 2013 with an average follow-up of 22.25 months (range, 1 to 86 months). The average body mass index was 18.85 kg/m² (range, 15.7 to 24.7 kg/m²). Breast hypoplasia was the most common preoperative diagnosis, followed by breast asymmetry (Fig. 3). Preoperative mammograms were classified as American College of Radiology 1 or 2 in all patients.

Devices and Techniques

All patients received textured gel implants: 70.52 percent ($n = 220$) were textured, shaped



 Video Available Online

Video. Supplemental Digital Content 1, which demonstrates primary composite breast augmentation with round textured gel implants and fat overlay, is available in the “Related Videos” section of the full-text article on PRSJournals.com or, for Ovid users, at <http://links.lww.com/PRS/C122>.



Fig. 1. (Above) Fat grafting incision medial to the inframammary fold. (Below) Fat grafting incision superomedial to the areola.

implants; and 29.48 percent ($n = 92$) were textured, round gel implants. Twelve patients (7.7 percent) had asymmetric augmentation.

The average implant size was 252 cc (range, 150 to 475 cc) (Table 1). The average implant sizes for shaped and round implants were 257 and 238 cc, respectively. Implant placement was performed using a transaxillary approach in most cases [$n = 144$ (92.3 percent)], with periareolar

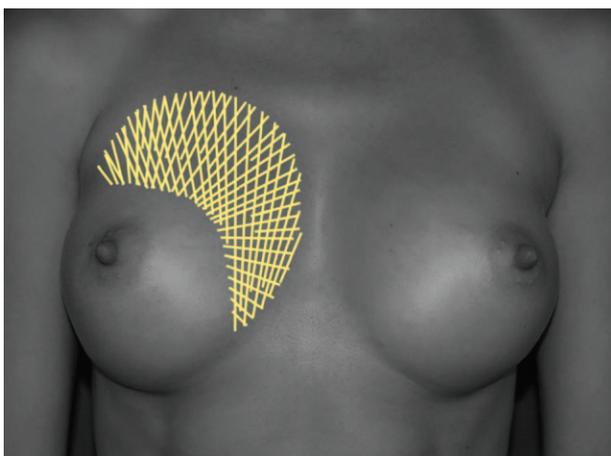


Fig. 2. Fat placement.

incisions [$n = 12$ (7.69 percent)] for the remainder. A subfascial pocket was used in all cases.

An average of 457 cc (range, 60 to 2500 cc) of fat was removed and the patients received a mean of 126 cc (range, 30 to 250 cc) of fat in subcutaneous soft tissue. Donor sites were the thighs in most cases, followed by the abdomen, hip, and knee. The volume of fat reinjection was asymmetric in 17 cases (9.9 percent). Fat reinjection was performed only in the cleavage area in 140 cases (89.7 percent), in the cleavage area and a pectus excavatum thorax deformity in eight cases (5.12 percent), and in the anterior breast in eight cases (5.12 percent). The mean operating time was 90 minutes (range, 70 to 180 minutes).

Complications and Reoperations

Twelve patients had one complication each (Table 2). Baker grade II/III contractures were the most common complications [Baker grade II, $n = 4$ (2.56 percent); Baker grade III, $n = 2$ (2 percent)], followed by infections [$n = 2$ (1.28 percent)], hematoma [$n = 2$ (1.28 percent)], and malrotation [$n = 1$ (0.64 percent)]. No fat necrosis or cyst was observed. There were no donor-site complications.

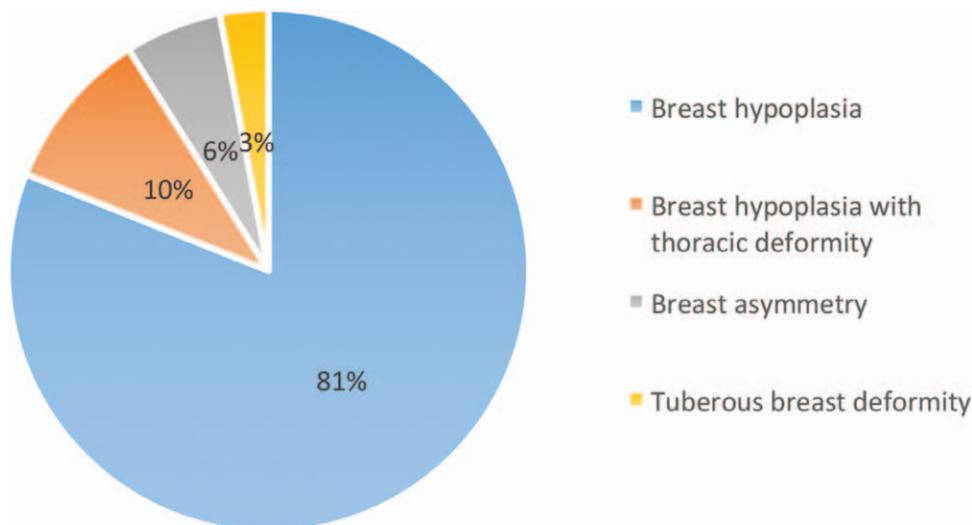


Fig. 3. Preoperative diagnoses.

Table 1. Implants Characteristics

| Implant Volume (cc) | No. of Patients (%) |
|---------------------|---------------------|
| <200 | 13 (4.8) |
| 200–250 | 70 (44.8) |
| 251–300 | 63 (40.4) |
| 301–350 | 8 (5.12) |
| >350 | 2 (1.28) |

Table 2. Complications and Reasons for Reoperation (n = 156)

| Variable | No. of Patients (%) |
|---------------------------------------|---------------------|
| Types of complications | |
| Capsular contracture, Baker grade | |
| II | 4 (2.56) |
| III | 2 (2)* |
| Hematoma | 2 (1.28) |
| Infection | 2 (1.28) |
| Rotation | 1 (0.64) |
| Reason for reoperation | |
| Palpable/visible implant edge | 3 (1.92) |
| Volume augmentation | 3 (1.92) |
| Capsular contracture, Baker grade III | 2 (1.28) |
| Asymmetry | 1 (0.64) |

*2% of patients with follow-up >12 mo.

The infection required surgery in two cases. Early management enabled pocket washing and immediate implant replacement in both cases. No hematoma or malrotation needed reoperation. Delayed reoperation was performed in nine patients (9.94 percent) after a mean of 31.7 months (range, 3 to 72 months).

Two patients who developed Baker grade III contractures needed surgery to correct the problem. Three cases (1.92 percent) required additional fat grafting for insufficient soft-tissue coverage. The

mean volume of fat reinjection was 170 cc (range, 110 to 280 cc). Three patients required volume augmentation, with prostheses alone in two cases and a prosthesis and fat in one case.

DISCUSSION

Breast augmentation is among the most popular procedures in aesthetic surgery. Increasingly, however, patients are seeking a natural-appearing result, afraid of an “operated-on” appearance. As one solution for obtaining natural-appearing results, fat injection in breast augmentation has become extremely popular. However, as this alone does not provide sufficient volume, fat grafting is performed simultaneously with an implant to obtain the desired breast size increase with natural-appearing results, particularly in the cleavage and presternal areas and in thin patients.^{4,5} Fat is injected not to increase the breast size, but to enhance the breast contour and cleavage, particularly in very thin patients⁴ (Fig. 4).

Because little is known about the ultimate outcomes following composite breast augmentation, this study analyzed the effects of lipofilling in primary composite breast augmentation in terms of complications, reoperations, and the cosmetic result. Most of the problems in breast augmentation are related to soft tissues and implant coverage.³ Many parameters determine the optimal coverage of the implant, such as the type of pocket, pocket dissection, soft-tissue coverage, and the skin.⁶ Many articles have reported the advantages of the subfascial plane, which avoids a submuscular position and provides adequate support.^{7–10} Tijerina et al.¹¹ demonstrated that the

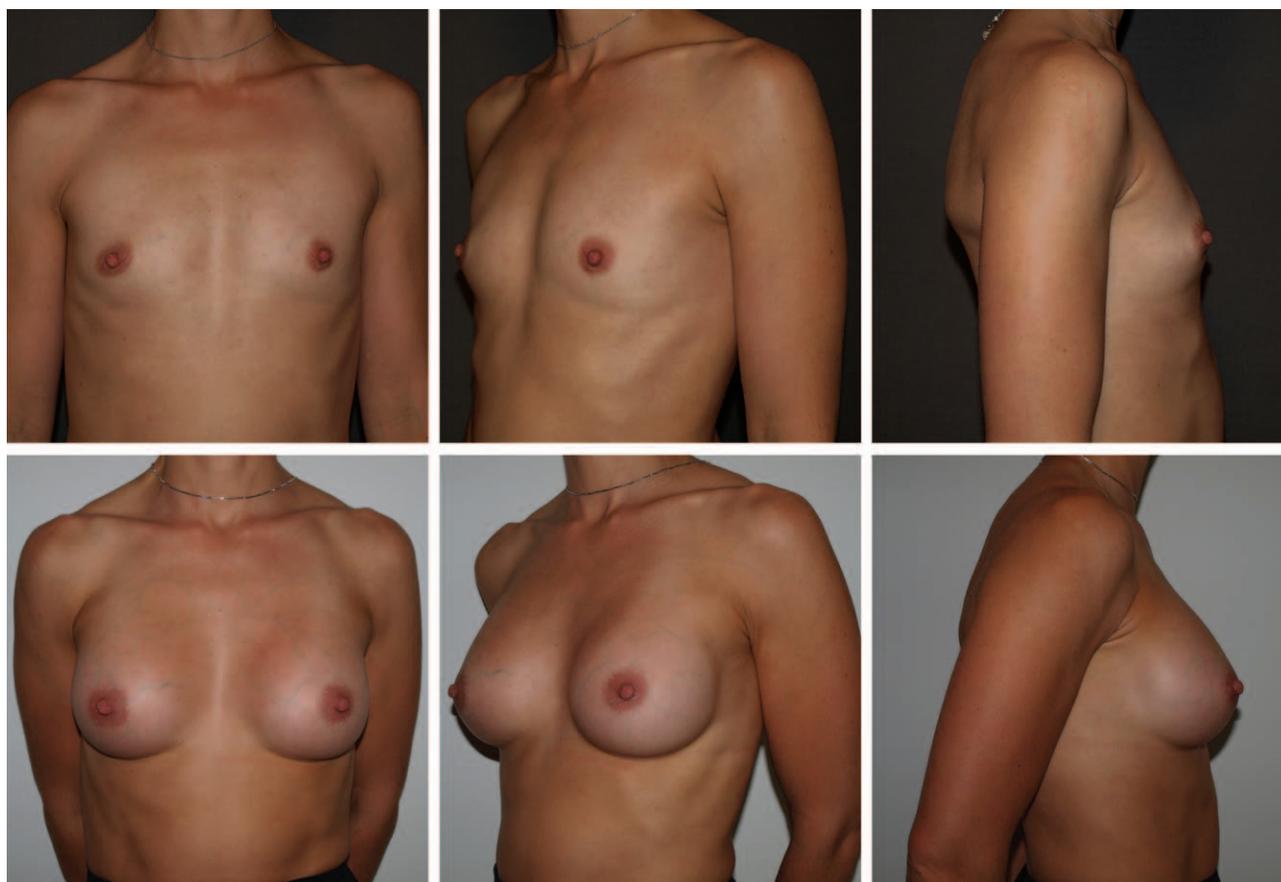


Fig. 4. (Above) Preoperative views of a 37-year-old patient. (Below) Two-year postoperative views with a retrofascial 240-cc shaped implant, placed by means of an axillary approach. The procedure was completed with a fat overlay of 120 cc (60 cc on each side) in the cleavage area.

pectoral fascia, which is thicker in the upper part of the breast,¹² limited superior displacement by forcing the implant downward.

Regarding the implant profile, shaped implants have gained popularity with the increasing demand for a natural-appearing cleavage. Even in experienced hands, however, there is a risk of malrotation.¹³ To avoid this, fat grafting with shaping of the implant allows us to use more round implants in a retroglandular position. In our center, in 2014, the use of shaped implants declined to 9 percent versus 91 percent for round implants. The remaining 10 percent of patients who still benefited from anatomical implants were those with a nipple-to-inframammary-fold distance of less than 3 to 4 cm, because it has been demonstrated that anatomical implants allow increasing the nipple-to-inframammary-fold distance more than round implants.¹⁴ Composite breast augmentation also allows us to shape a round implant and resolve the problem of malrotation (Fig. 5).

However, implant volume is significantly correlated with the risk of complications.^{12,15} We

believe that fat grafting with implants permits the placement of a smaller implant, which reduces complications. This may explain the low rate of complications in our series, in which the mean volume was 252 cc. Another point to consider is the possibility of asymmetry caused by unequal fat resorption over time. In a previous study, we used three-dimensional imaging to study fat resorption. In primary composite augmentation, patients demonstrated 53 percent volume maintenance.³ Volume maintenance was higher in secondary cases, primarily because of preexpansion of the tissue. However, we observed no breast asymmetry during follow-up in this study. One of the criticisms of this technique is the longer operating time, although the mean operating time was 90 minutes, which still seems reasonable, considering the aesthetic benefits of liposuction.

CONCLUSIONS

This series of primary composite breast augmentation demonstrated that fat grafting and

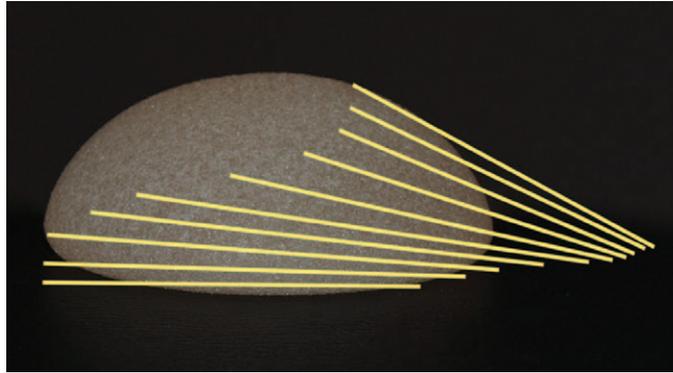


Fig. 5. Composite breast augmentation allows us to shape a round implant.

implanting is a simple and reliable breast augmentation technique. By avoiding a submuscular pocket, one avoids the problems of pain, implant animation, and bottoming-out. This technique enhances the cleavage and avoids “separated breasts,” particularly in thin patients with inadequate soft-tissue coverage. Rates of immediate and delayed complications were not higher using this approach. Once a surgeon has completed the learning curve, this technique provides excellent outcomes with low complication and reoperation rates, and the operating time remains reasonable.

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