

Fat Graft in Composite Breast Augmentation with Round Implants: A New Concept for Breast Reshaping

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Abstract

Background Breast augmentation surgery with implants is one of the most common aesthetic surgical procedures. Round and anatomical textured implants are employed very often, and fat grafting has proven to be a very useful complementary procedure in breast augmentation. Many authors report a more natural result with anatomical compared to round implants. Nevertheless, anatomical implants can be associated with complications such as implant rotation with subsequent shape distortion. In this article, we propose a combination of high-profile round implants and fat grafting to obtain a natural result analyzing its impact on the aesthetic outcome and patient satisfaction.

Methods In this study, we report our personal approach on 31 consecutive patients undergoing primary aesthetic breast augmentation with high-profile round implants and fat grafting. We describe our personal technique of breast augmentation via the periareolar approach and fat grafting. We evaluated short- and medium-term aesthetic outcomes and patient satisfaction using a 10-point VAS scale.

Results We achieved in all cases high patient satisfaction and good aesthetic outcomes with a “natural” breast shape and a “smoothened” upper pole with low complication rates. The technique is safe, simple, fast, and it leads to high levels of patient satisfaction.

Conclusions Our observations show that the combination of high-profile round implants and fat grafting in aesthetic breast augmentation can improve the aesthetic outcome and patient satisfaction as with anatomical implants eliminating the risk of implant rotation.

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Keywords Fat grafting · Breast augmentation · Round implants

Introduction

Breast augmentation surgery with implants is one of the most common aesthetic surgical procedures since the 1960s [1, 2]. Breast shapes and features may vary, and some conditions, such as asymmetric, tuberous or constricted breasts, are very common; thus, a combination of different procedures is often required to achieve satisfying results [3]. The safety of breast augmentation has been extensively reported in the literature [4–9], and no interference on oncological surveillance by physical examination and imaging has been described. Breast augmentation aims at providing greater volume to hypoplastic breasts and fuller contours in hypotrophic breasts, ensuring a “natural” shape and durability of the result over time. The use of fat

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grafting has been extensively reported in both cosmetic and reconstructive breast surgery, and it represents nowadays a fundamental, easy, fast and effective complementary procedure integrating the traditional surgical approach to breast augmentation [10]. Round textured implants are currently employed in breast augmentation. Even though round implants represent the best option in selected patients, they can lead to a less natural result with a convex appearance of the upper pole associated with implant palpability and/or visibility, especially in thin patients with severe glandular hypotrophy. Moreover, some authors reported more natural results with anatomical implants in this kind of patients [11–16]. On the other hand, anatomical implant malposition and rotation can cause shape distortion with an incidence ranging from 0.9 to 14 percent [17–25]. Fat grafting can help to overcome those issues leading to a better aesthetic outcome. Nevertheless, the combination of high-profile round implants and fat grafting and its impact on the aesthetic outcome and patient satisfaction have been poorly investigated. In this study, we report our experience with breast augmentation with high-profile round implants and fat grafting.

Materials and Methods

We prospectively considered 31 female patients who underwent primary aesthetic breast augmentation with round implants and fat grafting for hypomastia from January 2016 to June 2017. Breast reconstruction, secondary breast augmentation, severe constricted/tuberous breast deformity, Poland's syndrome and transgender patients were not included in this study. The follow-up, ranging from 3 to 12 months, consisted of monthly clinical examination. The preoperative workup included clinical history and physical examination, routine blood tests, EKG and cardiologist consultation (if over 55 years old), mammary ultrasound (US) imaging in all patients and mammography in patients over 40 years old. Preoperative standard photographs were taken (anterior/posterior view, lateral views and oblique views). The intervention was performed under general anesthesia. Preoperative antibiotic prophylaxis with cefazolin (2 g, i.v.) was administered 30 mins' before surgery, cefazolin (1 g every 12 h, i.v.) during hospitalization and cefixime (400 mg/24 h, oral) for 5 days after the patient was discharged.

Operative Technique and Perioperative Care

- Preoperative measurements: The desired “horizontal” width of the breast is planned; the surgeon considers the corresponding round implant and verifies whether its size matches the desired “vertical” height, planning the

lowering of the inframammary fold; on this basis and with regard to the overall thoracic size, the round implant with that diameter and the desired projection and volume is chosen during surgery

- Inferior periareolar incision (3–4 cm), trans-glandular electrocautery dissection, identification of the outer pectoral fascia and suprafascial glandular undermining. From the lateral pectoralis border separation creation of a wide subpectoral (partial submuscular) pocket by blunt finger dissection associated with a precise monopolar dissection. After accurate hemostasis, a 19 French lateral closed suction drain is positioned
- High-profile round textured implant placement and subsequent reconstruction of the glandular parenchyma followed by intradermal cutaneous reabsorbable suture
- The adipose tissue was harvested through liposuction from abdominal and hip subcutaneous fat. We used to infiltrate only physiologic solution with epinephrine without local anesthetic. We harvest the fat using blunt cannulas of 2 to 3 mm in diameter of variable length (between 15 and 23 cm). The cannula used for sampling is connected with a 10-ml Luer-lock syringe. The syringe plunger is pulled at the top and secured by hand. This creates inside the syringe a slight negative pressure, which allows the levy of adipose tissue while the cannula is advanced and retracted with radial movements inside the donor area and processed, according to Coleman's technique, by centrifugation at 3000 rpm for 5 min. The adipocyte cell fraction was purified in the ultracentrifuged adipose material by removing the pellet and the oil fraction. The fat graft was injected using an 18-gauge angiographic needle with a snap-on wing (Cordis, a Johnson & Johnson Company, N. V, Roden, the Netherlands) with a retrograde technique to avoid intravascular injection [26–28]. The mean amount of the injected adipose tissue was 134 cc. Fat was injected into the subcutaneous fat layer to obtain a breast augmentation as with an anatomical implant (Figs. 1, 2).

We evaluated patients at the 5th day post-op, weekly for the first month, every 15 days for the first 3 months and then monthly until the first year. The short- and mid-term aesthetic outcome was evaluated independently by five plastic surgeons with expertise in breast cosmetic surgery. We considered the following parameters: shape, symmetry (volume symmetry and NAC symmetry in terms of diameter and position), presence/absence of rippling, implant visibility and/or palpability, capsular contracture, upper pole contour (Table 1). Patient short-term and mid-term satisfaction was evaluated according to a 10-point VAS scale, and the questionnaire was administered to the

Fig. 1 Front view of fat grafting

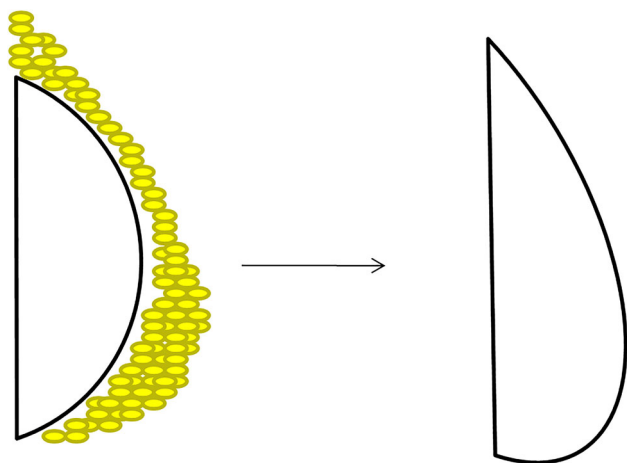
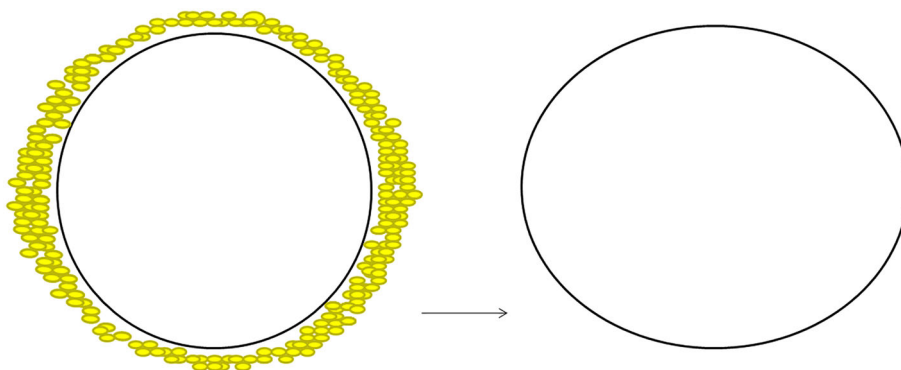


Fig. 2 Lateral view of fat grafting

patients every 4 months on the first year after surgery (Table 2).

Results

The average patient age was 34.3, ranging from 16.5 to 66.1. The average operative time was 67 min, ranging from 45 to 87 min. All patients were discharged on the first day after surgery, and drains were removed before discharge.

Transient areolar hypoesthesia was quite common, no permanent hypoesthesia at 1 year after surgery occurred. We did not experience any poor scarring needing revision surgery. We did not observe any capsular contracture and/or implant displacement. No double-bubble deformity was observed. We did not have any fat grafting-related

Table 1 Variables collected during the follow-up by plastic surgeons

PATIENT:	
OPERATIVE DAY:	
DATE:	
BREAST EVALUTATION:	
SHAPE	0 1 2 3 4 5 6 7 8 9 10
VOLUME SYMMETRY	0 1 2 3 4 5 6 7 8 9 10
NAC DIAMETER SYMMETRY	0 1 2 3 4 5 6 7 8 9 10
NAC POSITION SYMMETRY	0 1 2 3 4 5 6 7 8 9 10
RIPPLING	YES NOT
IMPLANT VISIBILIY\PALPABILITY	0 1 2 3 4 5 6 7 8 9 10
BREAST SOFTNESS (CAPSULAR CONTRACTURE)	0 1 2 3 4 5 6 7 8 9 10
UPPER POLE CONTOUR	0 1 2 3 4 5 6 7 8 9 10

Table 2 Patient assessment questionnaire

NAME:
OPERATION DAY:
DATE:
1) Score your satisfaction about your new breast shape 0 1 2 3 4 5 6 7 8 9 10
2) Score your satisfaction about your breast volume symmetry 0 1 2 3 4 5 6 7 8 9 10
3) Score your satisfaction about your NAC diameter symmetry 0 1 2 3 4 5 6 7 8 9 10
4) Score your satisfaction about your NAC position symmetry 0 1 2 3 4 5 6 7 8 9 10
5) Score how much do you fill and/or see your implant at autoexamination 0 1 2 3 4 5 6 7 8 9 10
6) Score how soft is your new breast at autoexamination 0 1 2 3 4 5 6 7 8 9 10
7) Score how smooth is your upper pole of new breast 0 1 2 3 4 5 6 7 8 9 10
8) Score your overall opinion about the aesthetic outcomes of new breast 0 1 2 3 4 5 6 7 8 9 10

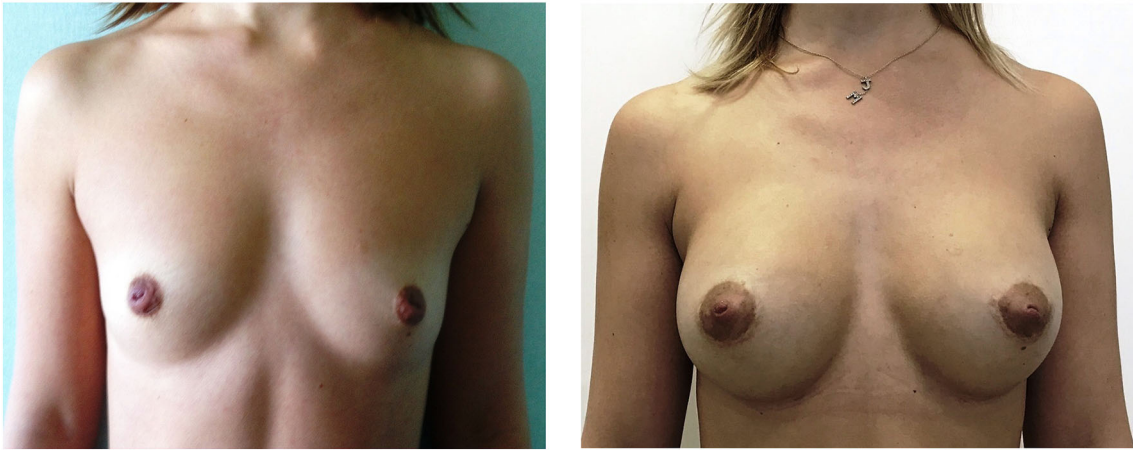


Fig. 3 Pre–post-operative frontal view (case 1)

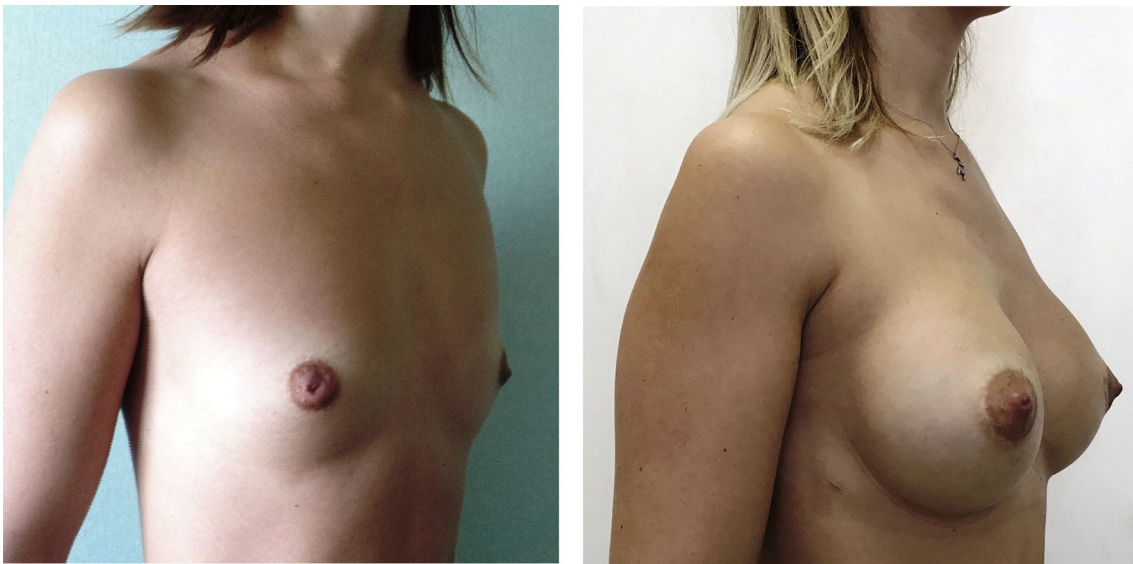


Fig. 4 Pre–post-operative oblique view (case 1)



Fig. 5 Pre–post-operative frontal view (case 2)



Fig. 6 Pre–post-operative oblique view (case 2)

Table 3 Surgeon evaluation results table at 1 year

Variable	Mean	SD
Shape	8.4	1.2
Volume symmetry	9.2	2.0
NAC diameter symmetry	7.6	3.3
NAC position symmetry	7.9	2.7
Rippling	None	
Implant visibility\palpability	9.4	0.2
Breast softness (capsular contracture)	9.2	0.3
Upper pole contour	9.8	0.1

Table 4 Patient satisfaction results table

Variable	Mean	SD
Shape	9.2	0.7
Volume symmetry	9.1	1.1
NAC diameter symmetry	8.6	1.6
NAC position symmetry	8.4	1.8
Implant visibility\palpability	9.4	1.1
Breast softness (capsular contracture)	9.2	0.6
Upper pole contour	9.8	0.3
Overall aesthetic outcome satisfaction	9.2	1.1

complications, and the percentage of fat take on the breast was satisfying and stable over time in all patients.

Aesthetic outcome in terms of shape and symmetry was satisfying and stable over time. We achieved a breast natural appearance without implant palpability in the infero-lateral pole and with a “smoothened” upper pole contour and a gentle takeoff from the chest preventing and

hiding the convex shape of the round implant (Figs. 3, 4, 5, 6; Table 3).

Most patients were satisfied with both breast size and symmetry. No secondary surgery to increase the volume was required with high patient satisfaction according to the 10-point VAS scale (mean patients aesthetic value of 9.2 SD 1.1) (Table 4.)

Discussion

Areolar, axillary, inframammary and umbilical approaches as well as subglandular, totally or partially submuscular, subfascial and dual-plane pockets have been described and thoroughly evaluated in the past years [29–36]. In our experience, the inferior periareolar incision provides adequate exposure and allows us controlled suprafascial undermining and separation of pectoralis major muscle fibers, whereas the resulting scar is in most cases favorable and well concealed. In addition, the inframammary fold can be lowered as requested after the implant placement and the formation of a new mound [36]. Indications include constricted basis/inferior pole, areolar pseudo-herniation of the parenchyma, but this approach is suitable in most cases, and it can be easily combined with periareolar mastopexy. However, if the areola is very small or its margins are indistinct [37], this access can be more difficult.

Glandular dissection by finger detachment is simple and safe; glandular function is provided by the upper pole, and the nipple-areola complex sensitivity is preserved in all cases. We create a subglandular pocket by electrocautery and blunt finger dissection in a suprafascial plane, whose extension is related to the result we want to achieve. This plane allows very “natural” repositioning of the glandular parenchyma over the submuscular implant and does not definitively compromise vascularity or innervation.

Submuscular implant positioning is particularly indicated if the glandular tissue is poorly developed at the superior pole, but it is suitable in most cases. Separation of the pectoralis major muscle fibers is performed over a rib, preventing chest wall injury and pneumothorax. In our opinion, if high-profile round implant placement has been planned, the submuscular pocket should be wide. Blunt finger dissection does not increase the risk of bleeding in the submuscular plane and allows to accurately control the extension of the undermining even though we always complete the pocket by monopolar electrocautery dissection, especially in the lower and medial quadrants. The pectoralis major muscle lower sternal and rib insertions are often divided [37]. This also allows an easy lowering of the inframammary crease, adapting the mound contour to the new volume.

Cohesive gel implants are slightly firmer than responsive gel, and the firmness of the implant can sometimes result in palpable edges [38]. In our experience, this may occur more often laterally and inferiorly, because at this level the partially submuscular placement does not ensure coverage.

With these technical refinements and choices, round textured implants are suitable in most cases and provide long-term favorable contours, particularly if we imagine that mild to severe ptosis may subsequently occur.

In our experience, mammary implants do not have an “expiration date” and each choice should be made considering long-term outcomes. Fat grafting was performed mostly in the upper and medial pole smoothing its contour, hiding the implant edges and preventing its visibility and palpability. The fat “camouflage” in the upper, lateral, medial, central and lower pole was stable over time leading to a more natural breast shape even in low-BMI patients with thin tissues and/or a severe hypotrophic gland. The use of needles for fat injection allows lower pole and inframammary fold release with a decreased risk of double-bubble deformity as we described in stenotic breast treatment in our previous article [39] similarly to Rigotti [40].

Finally, many authors reported rotation and malposition with shape distortion associated with anatomical implants with an incidence ranging from 0.9 to 14 percent. The combination of high-profile round implants with fat grafting, as investigated in this study, can provide natural results similarly to anatomical implants with no risk of implant rotation.

Conclusions

In this study, we resume our experience with breast augmentation combining high-profile round textured implants and fat grafting. We achieved in all cases high patient

satisfaction and favorable, “natural” results in primary aesthetic breast augmentation. The technique is safe, simple and fast, and we advocate the use of fat grafting every time there is an indication to place a round implant. Therefore, we firmly believe that in a modern approach to breast augmentation, fat grafting is becoming an essential procedure for breast reshaping when associated with round implants.

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