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The New Method of Pocket Forming for Breast Implant Placement in Augmentation Mammaplasty: Dual Plane Subfascial

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ABSTRACT

Introduction: Breast augmentation is one of the most frequently performed aesthetic surgical procedures in the world. The most important preoperative decisions which influence the final appearance of the augmented breast are the breast implant pocket choice and selection of the most appropriate implant. Described pocket locations are subglandular, subfascial, partially retropectoral, totally submuscular and dual plane. **Aim:** We have introduced a new method of pocket forming for implant placement, which is combination of Tebbett's dual-plane 2 or 3 and Graf's subfascial. We named it as dual plane subfascial. **Methods:** Between January 2016 and April 2018, total of 27 patients were operated using dual plane subfascial breast augmentation. The pinch test in the medial pole less than 2,0 cm and in upper pole less than 2,5 cm are indications for this technique. In our modification, in primary cases a dissected flap in front of muscle is fasciocutaneous (not cutaneous as in Tebbett's technique). It will be finally located caudally of pectoral muscle and in front of the lower pole of implant. Fasciocutaneous flap in primary cases and two independent levels of soft tissue coverage (fascial and cutaneous) in secondary cases (subglandular to dual plane subfascial conversion) in front of the lower pole of implants provide better coverage than cutaneous flap alone. **Results:** Hematoma and infection did not occur in any patient in our study. A capsular contracture grade I/II without the need for reoperation occurred in two patients. In one patient with secondary augmentation minimal bottoming out was noticed (before reoperation patient had significant bottoming out deformity). Minimal palpability of implants is recorded in three patients. **Conclusion:** Dual plane subfascial is a good option in primary breast augmentation with a well set indication especially in the breasts with the upper pinch test less than 25 mm and medial pinch test less than 20 mm. The idea can be followed even in secondary breast augmentation (subglandular to dual plane subfascial conversion). There is additional soft tissue in front of the implant which led to a less implant palpability, especially in thin patient with smaller amount of subcutaneous fat .

Keywords: dual plane subfascial, implant placement, pocket forming, new method.

1. INTRODUCTION

Breast augmentation is one of the most frequently performed aesthetic surgical procedures in the world (1). There are dilemmas and options on the part of surgeons about incisions, implant selection and pocket selection. In the past few years we have had new techniques and technologies using autologous fat, dermal matrices and other (2-4). The most important preoperative decisions which influence the final augmented breast appearance are the breast implant pocket choice and selection of the most appropriate implant. Described pocket locations are: subglandular (beneath the gland, in front of the pectoral fascia (Cronin and Gerow, 1962), subfascial (between the pectoral muscle fascia and the pectoral muscle (Graf, 1998); partial retropectoral (behind the pectoralis with its origins from the ribs left intact (Regnault, 1977); total submuscular beneath the serratus and pectoral muscle (Dempsey and Latham, 1968) and dual plane (Tebbets, 2001) (5-9) Every implant pocket location has specific indications but also a unique set of compromise. The dual plane was first published by John Tebbetts in 2001 (9). It is the ideal compromise as it allows the implant to be simultaneously retropectoral (where the device most needs coverage) and retromammary, where it needs to be in direct apposition to

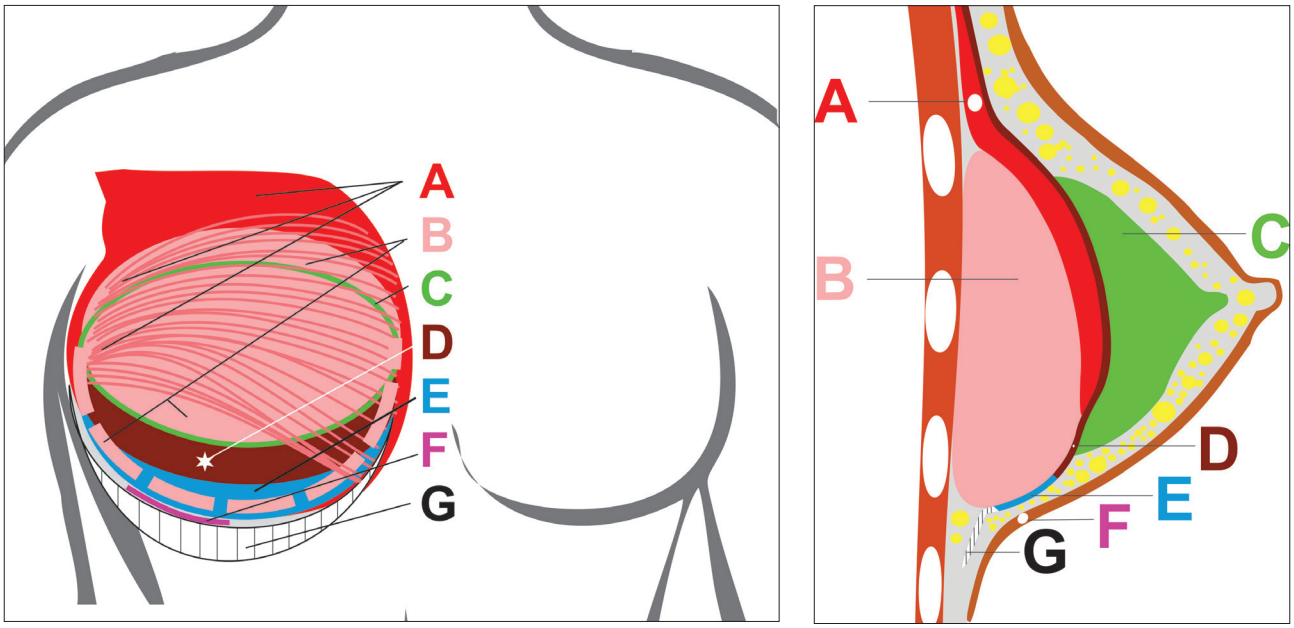

Figure 1 and 2. Dissection planes. The aim of procedure is to lengthen fascial coverage of implant.
A) m. pectoralis maior. B) implant placed under the muscle and subfascially. C) glandular tissue. D) pectoral fascia, elevated. E) fascia m. recti abdominis, m. serrati and m. obliqui externi, elevated and advanced. F) incision. G) area where fascia m. recti abdominis, m. serrati and m. obliqui externi is elevated and advanced from

the breast most. Subfascial method was invented in 1998 by Ruth Graf (6, 9).

2. AIM

Our aim is to introduce a new method of pocket forming for implant placement in order to get better coverage and less palpability of the implant. The method is a combination of Tebbett's dual-plane 2 or 3 and Graf's subfascial methods. It is named as Dual Plane Subfascial.

3. METHODS

From January 2016 to April 2018 twenty seven patients were operated using a specific technique (we named it as dual plane subfascial breast augmentation). We introduced a new method of pocket location for implant placement, which is a combination of Tebbett's Dual-plane 2 or 3 and Graf's subfascial methods. In the Tebbett's method, pectoral fascia stays attached to the muscle (a dissected flap is cutaneous). In our modification, a dissected flap in front of the muscle is fasciocutaneous and it provides better coverage especially in thin patients with smaller amount of subcutaneous fat. Textured round implants were used bilaterally in all cases. The pinch test in the medial pole less than 2 cm and less than 2,5 cm in upper pole are indication for this technique (requiring an extra padding in lower lateral pole)

Operative method (Technique)

The muscle and fascia of thoracic wall were approached by an inframammary skin incision in all cases. We undermine skin about 1,5-2 cm (depending on the clinical evaluation) below incision - planned inframammary crease and raise in semicircular manner fascia m. obliqui abdominis externus, fascia m. serratus, m. recti abdominis and pectoral fascia, which are included in flap. By dividing part of fascia from m. obliqui abdominis externus, m. serratus et rectus abdominis starting from the determined point (depends how much we need to lower inframammary crease and quality of skin) and attachments of overlying pectoralis fascia from the pectoralis muscle up to areola mammae the muscle can be raised, thereby reducing the proportion of subpectoral pocket and increasing the proportion of subfascial pocket (Figures 1 and 2). A dissected flap in front of the muscle is fasciocutaneous (not cutaneous as in Tebbett's technique) and it is finally located caudally of pectoral muscle and in front of the lower pole of implant. In secondary cases (subglandular to dual plane subfascial conversion) there are two independent levels of soft tissue coverage in front of lower pole of implants: fascial and cutaneous. Dissection of a fasciocutaneous flap in front of the muscle is just to the bottom of the areola (dual plane subfascial 2) or above the top of areola (dual plane subfascial 3). Dissection in the lateral plane (submuscullary and subfascially) is done no further than anterior axillary line to avoid lateralisation of the implant and injury of intercostal nerves. The medial subfascial and submuscular dissection is done to the lateral border of sternum. We suture skin below inframammary incision to the muscle beneath (the former place of advanced fascia m. obliqui abdominis externus, m. serratus et rectus abdominis) with V-lock 2-0 Vicryl and obliterate in proper fashion area we raised fascia below planned inframammary crease from. In that way, inframammary crease is formed and secured. After putting implants beneath the pectoral muscle and fasciocutaneous flap, we suture caudal end of a dissected fascia with subcutaneous tissue and remaining muscle fibers in level of new inframammary crease with V-lock 2-0 Vicryl. A suture line is about 9 cm long in a semicircular manner in region of incision line and approximately 1,5-2 cm on each side of incision.

In few cases involving big implants (more than 350 cc) and extremely tight and thin-skinned patients we decid-

Figure 3. Result after dual plane - subfascial augmentation. Preoperative view (Above). Postoperative view at 13 months follow-up (Below). Round type implants were implanted (300 cc bilaterally)

ed to extend semicircular incision in lateral and medial side of elevated fascia for 1-1,5 cm to obtain more comfortable implantation. Skin is sutured in layers with Vicryl 3-0 V-lock. Textured round implants were used bilaterally in all cases. Postoperatively we strongly suggest to the patients to wear designed brava for subpectoral implant placement for 6 weeks.

4. RESULTS

A total of 27 patients (54 breasts) had dual plane subfascial augmentation between January 2016 to April of 2018. In twenty five patients we performed dual plane subfascial augmentation 2 and in two patients dual plane subfascial augmentation 3. All patients were treated under general anesthesia.

The primary augmentation was performed in 25 patients and secondary augmentation was performed in two patients. All patients in this research were females ranging from 22 to 44 years of age (average, 33,5 years). The inframammary approach was used in all patients. Round, textured silicone gel implants in size range from 225 to 400 cc (mean 300 cc) were used in all patients. Results are good (Figures 3 and 4). Mentor textured implants were used in all patients and all of them were operated by the same surgical team (senior surgeon was the first author of this paper). We did not put drain in primary augmentations. We put it in secondary cases. The average duration of primary augmentation was 77 minutes (from 68 to 90 min).

The average duration of secondary augmentation was 149 minutes (from 140 to 158 min). The follow-up ranged from 8 to 33 months. The patients were scheduled for follow-up within 3 days, 2 weeks, 3 months, 6 months and than 1 year intervals thereafter. The pinch test in upper pole ranged from 17 to 24 mm, mean 22 mm), in medial pole ranged from 13-19 mm (mean 17 mm).

Hematoma and infection did not occur in any patient in our study. A capsular contracture gradus I/II occurred in two patients without any need for reoperation. In one patient with secondary augmentation minimal bottoming out was noticed (before reoperation patient had significant bottoming out deformity). Minimal palpability of implants was recorded in three patients.

5. DISCUSSION

The breast augmentation is one of the most common aesthetic operation in the world. There is some international discordance regarding some aspects of the operation technique which may be due to variety of reasons such as surgeons preference based on their experience and training, cost and lack of knowledge. Even trends in some regions in the world can influence surgeons to use a particular operative technique. The most trends and techniques usually originate from USA and then spread worldwide.

Anatomical and round prosthesis can be used successfully (10). In this research anatomically shaped implants were not used. Hedén et al discussed some misconceptions regarding anatomical implants and stated that they should primarily be used in cases of poor soft tissue coverage, tuberous breasts, or a short lower pole. Anatomic implants creates a more natural look, but are associated with the possibility of malrotation (estimated risk between 5.2% and 14%) (10, 11). With appropriate surgical planning and techniques, these risks can be minimized (11-14). In Europe, Asia, and Oceania, 22% to 46% of surgeons use anatomically shaped implants, whereas 90% of surgeons in the United States and Latin America never do so (15). In our research the mean implant size was 300 cc and range was from 225 to 400 cc. In the United

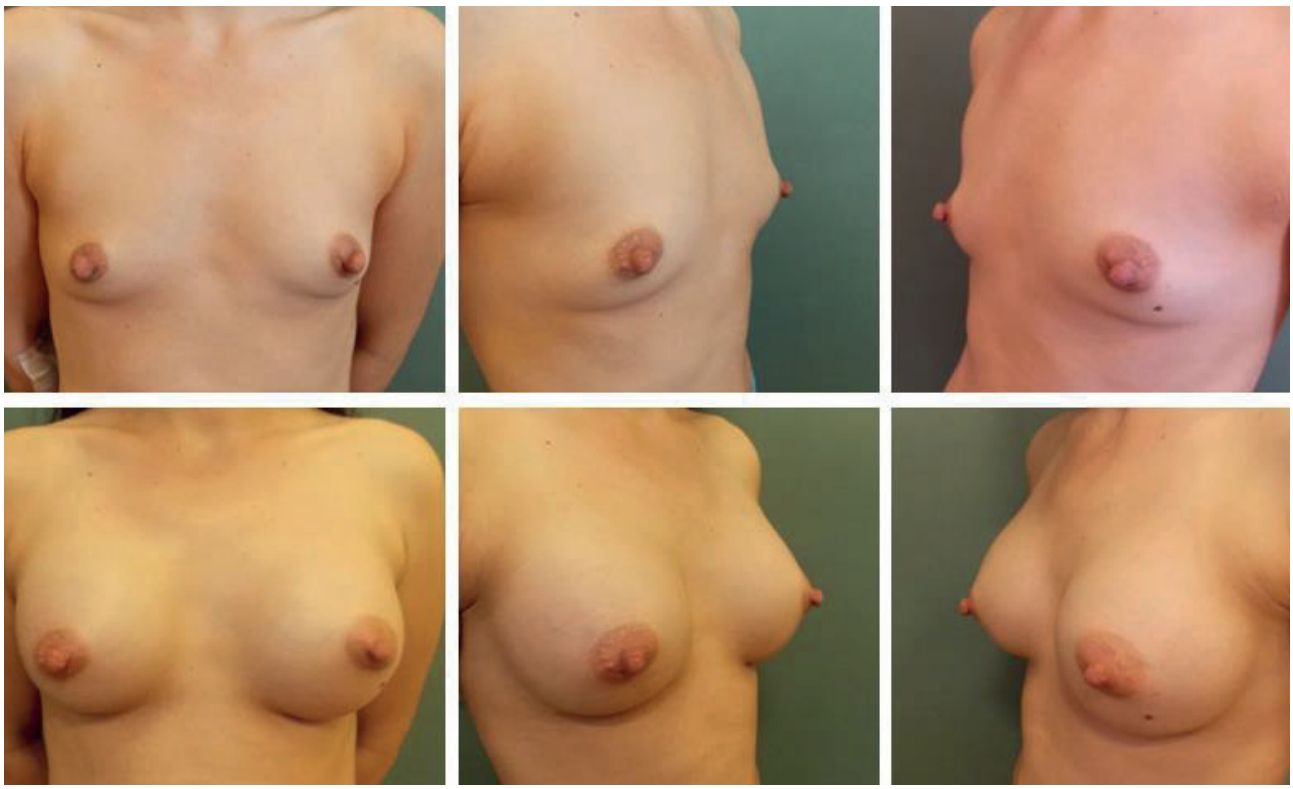

Figure 4. Clinical result after dual plane subfascial augmentation of a 28 -year-old female patient. Preoperative view (Above). Postoperative view at 1-year follow-up (Below). Round type implants were inserted (275 cc bilaterally)

States, over two thirds of surgeons usually use implant sizes greater than 300 cc, whereas in Europe and Asia surgeons mostly use volumes smaller than 300 cc (16). It has shown that silicone implants appear to be safer with a high degree of patient satisfaction (17). Breast proportion, volume and shape play major roles in achieving an aesthetically pleasing outcome. The inframammary approach is the most common approach to create an implant pocket. The subfascial pocket plane is rarely used, except in Latin America and in some regions in Asia. The subfascial implant placement was described and popularized by Graf et al (6). Several Latin American studies have commented on the advantages of subfascial implant placement, which explains why it is more popular in those countries (18, 19). In Europe subglandular and partial submuscular placement are the most popular ones. Despite not specifically commenting on subfascial placement, a recent meta-analysis performed by Egeberg et al evaluating the outcomes of 17.520 breast augmentations, showed that a subglandular implant placement increases the chances of developing a capsular contracture 2-fold compared to submuscular placement (20, 21).

Until now there has been a certain amount of information about the value of subfascial implant placement. This technique has several benefits. Some of them are: less capsular contracture (than in subglandular placement of implant), more natural shape, elimination of the implant animation (associated with submuscular placement of implant), decrease of implant visibility and palpability (compared with subglandular placement) (17-19). The average duration of operation in primary augmentation was 77 minutes. So, the average duration of the operation is little bit longer than in the Tebbets dual plane 2 or 3 (with a cutaneous flap in front of muscle), and the same time as subfascial implantation. There were two patients with secondary augmentations, with subtotal capsulectomy. The average duration was 149 minutes, which is good time for such operations.

The implant palpability was found in three patients. Considering that the patients were with a average pinch test 22 mm in upper pole and 17 mm in medial pole, this low palpability (3 out of 27) proves that the method is reliable and applicable to these patients. In one patient with secondary procedures there was a preoperative palpability in the area of the entire breast. After the subfascial dual plane 2 implant placement in former case we found minor palpability just in the ultimate lower lateral quadrant of the breast and minor bottoming out deformity (before reoperation patient had significant bottoming out deformity). The second patient with palpability of the implant was patient with the tuberous breast. The third patient was with the pinch test in the upper pole less than 20 mm and with the pinch test in the medial pole 14 mm. Fasciocutaneous flap in front of lower pole of implants provides better coverage than cutaneous flap, especially in thin patient with small amount of subcutaneous fat. There is additional soft tissue in front of the implant which led to a less implant palpability.

6. CONCLUSION

Knowledge of pocket plane options are essential to achieve optimal implant positioning. A dual plane subfascial is a good option in primary cases with a well set indication especially in the breasts with the upper pinch test less than 25 mm and medial pinch test less than 20 mm. Smaller implants are mostly inserted which is a good

indication for this procedure. The idea can be used even in secondary breast augmentation (subglandular to dual plane subfascial conversion) with two independent levels of soft tissue coverage (fascial and cutaneous). A dual subfascial plane augmentation mammaplasty reduces breast implant palpability taking into consideration that is indicated in thin-skinned patients with small amount of the subcutaneous fat. It provides better soft-tissue coverage of the lower lateral pole of breast with less incidence of palpability and a more stable inframammary fold.

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