ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/medsci.2018-61338

Tips and Tricks in Breast Augmentation and Mastopexy-Augmentation

Meme Büyütme ve Mastopeksi-Büyütmede İpuçları

Alper GEYİK[a],
Cenk DEMİRDÖVER[a],
Fatih Alp ÖZTÜRK[a],
Selin GÜLER[a],
Hüseyin Emre ULUKAYA[a],
Adnan MENDERES[a]

[a]Department of Plastic, Reconstructive and Aesthetic Surgery, Dokuz Eylül University Faculty of Medicine, İzmir, TURKEY

Received: 03.05.2018
Received in revised form: 03.03.2019
Accepted: 05.03.2019
Available online: 08.03.2019

Correspondence:
Alper GEYİK
Dokuz Eylül University Faculty of Medicine, Department of Plastic, Reconstructive and Aesthetic Surgery, İzmir, TURKEY/TÜRKİYE
alp_er027@hotmail.com

ABSTRACT Objective: Breast augmentation operations are becoming increasingly popular in Turkey just like they are all over the world. The aim of this study is to determine the precautions to be taken in order to decrease the complication rate in breast augmentation and compare the results obtained in our clinic with relative data from the literature. **Material and Methods:** We analyzed three hundred and thirty patients who had undergone for breast augmentation or mastopexy-augmentation procedures between 2003 and 2017. Demographic data of the patients, all the parameters related to implants and surgical techniques as well as complications were evaluated. **Results:** Of the 330 patients, 258 (78.1%) had breast augmentation and 72 (21.9%) had mastopexy and augmentation. Eight patients (2.4%) had secondary breast augmentation. Due to complications such as capsular contracture, rupture, malposition, recurrence of the breast ptosis, patient dissatisfaction, 15 patients (4.5%) underwent revisional surgery. **Conclusion:** There are many factors affecting the outcome in breast augmentation. A detailed evaluation of the patients preoperatively, determining the applicability of the wishes and expectations of the patients and planning the operation are the most important factors affecting the outcome.

Keywords: Breast; implants; silicone; mastopexy

ÖZET Amaç: Meme büyütme operasyonu, tüm dünyada olduğu gibi Türkiye'de de giderek popüler hale gelmektedir. Bu çalışmanın amacı, meme büyütme operasyonlarında komplikasyon oranının azaltılması için alınması gereken önlemleri ortaya koymak ve kliniğimizde elde ettiğimiz sonuçları literatür verileri ile karşılaştırmaktır. **Gereç ve Yöntemler:** 2003-2017 yılları arasında kliniğimizde opere edilen 330 izole meme büyütme ve mastopeksi-meme büyütme hastalar geriye dönük olarak gözden geçirildi. Hastaların demografik özellikleri, implant ve uygulanan cerrahi tekniğe ait değişkenler ve komplikasyonlar incelendi. **Bulgular:** Toplam 330 hastanın, 258'ine (%78,1) sadece büyütme; geriye kalan 72 (%21,9) hastaya ise mastopeksi ve büyütme operasyonu yapıldı. Sekiz hasta (%2,4) sekonder büyütme olgusu idi. Kapsül kontraktürü, rüptür, malpozisyon, pitoz rekürrensi, hasta memnuniyetsizliği gibi komplikasyonlar nedeniyle toplam 15 (%4,5) hasta yeniden opere edildi. **Sonuç:** Estetik meme cerrahisi operasyonlarında sonucu etkileyen pek çok faktör vardır. Operasyon öncesinde hastaların ayrıntılı bir şekilde değerlendirilmesi, hastaların istek ve beklentilerinin uygulanabilirliğinin saptanması ve buna göre operasyonun planlanması başarıyı etkileyen en önemli faktörlerdendir.

Anahtar Kelimeler: Meme; implant; silikon; mastopeksi

Surgical cosmetic procedures are becoming popular around the world because of the emerging importance of self-image. Aesthetic breast operations also constitute a remarkable amount of these procedures and increase annually. According to statistics of ISAPS (International Society of Aesthetic Plastic Surgery) in 2016, Turkey is at ninth place with 2.8% of all aesthetic breast operations.[1] Patients admit to clinics mostly complaining about either developmental or involutional glandular hypoplasia of the breast. Most of the time, they have very high expectations

which cannot be achieved by surgery. There are many parameters, such as breast size, shape, nipple areola position, chest wall deformity, soft tissue coverage, implant type, pocket plan, and incision, which may affect the outcome.

When we review history, during the 1950s and 1960s, solid alloplastic materials were used such as polyurethane, polytetrafluoroethylene or Ivalon sponge. In addition to these, there were injection materials including epoxy resin, paraffin, petroleum jelly, and liquid silicone.[2] Modern breast augmentation era began with silicone implants. After the manufacture of first- generation implants in 1962 by Cronin and Gerow, the implant industry grew and developed rapidly.[3] Today there are anatomic and round shapes, smooth and textured surfaces, saline and different cohesive gel fillings with numerous projection, height and width options. Additionally, pocket plane (subglandular, subfascial, submuscular or dual plane), incision type (inframammary, periareolar, transaxillary and transumbilical), preoperatively usage of three-dimensional imaging, insertion funnels, autologous fat grafting, acellular dermal matrix and finally combined procedures like augmentation with mastopexy are options that the surgeon has to consider meticulously.[4,5]

Since many factors may affect the surgical outcome of the breast augmentation operation, the aim of this study is to determine the necessary precautions to reduce the complication rate in breast augmentation and compare our results with related literature.

MATERIAL AND METHODS

Breast augmentation and mastopexy-augmentation patients who admitted to our clinic and operated between January 2003 and January 2017 were included in this study. All patients accepted and signed the informed consent form. This study was conducted according to Helsinki Declaration Criteria. The retrospective scan was done from our own clinical database. We analyzed age, prosthesis type, implant pocket, incision type, history of breast operation, pregnancy, breastfeeding, and major complications corrected by surgical revision. Additionally, the ptosis level before surgery was evaluated based on the Regnault classification for each patient.[6]

For each patient, physical examination, including breast measurement and imaging modalities were performed if necessary. Comorbidities, current medication, and smoking were noted. Depending on the patients' desire and surgeons' evaluation surgical approach was decided. Suprasternal notch, midclavicular line, inframammary fold, breast width, and height were marked in standing position preoperatively. Nipple position was estimated by Hall-Findlay technique.[7] Especially for vertical scar and inverted T scar mastopexy techniques, wise pattern or breast meridians were both used for marking the limbs of the pillars. In inverted T scar mastopexy, limb length was decided according to the breast shape. Cephazolin, and in case of penicillin allergy, Ciprofloxacin was administered as prophylactic antibiotics. All operations were performed under general anesthesia. Prior to making an incision, nipple-areola complex (NAC) was draped and covered to reduce bacterial contamination and each breast was injected with a solution of lidocaine with epinephrine (20 mg/ml lidocaine and 0.0125 mg/ml epinephrine). Either inframammary sulcus or periareolar incisions were used for augmentation. Circumareolar, vertical or short T scar incisions were used for the combined procedure. Subglandular, subfascial, or dual plane pocket options were determined and used according to each patient's needs and anatomical situation. Silicone sizers and temporary sutures were used to determine the size of the permanent silicone implants. Subsequently, patients were moved to a 90-degree seating position to evaluate implant position, NAC position, and symmetry of the breast. Gentamicin solution was applied to the implant prior to insertion. The incisions were closed with either absorbable or non-absorbable sutures and standard breast dressing was applied for each patient. Suitable supportive surgical bras were used to hold the implant in position in the postoperative period. Hospitalization was usually kept at one day and follow-up schedule was arranged with the patient before discharge. Each patient was evaluated for complications during the follow-up period.

RESULTS

The data of the 330 female patients who underwent aesthetic breast augmentation procedures between January 2003 and January 2017 were thoroughly analyzed. Of the 330 patients, 258 (78.1%) had breast augmentation (BA) and 72 (21.9%) had mastopexy and augmentation (MA). Eight patients (2.4%) had secondary breast augmentation. The mean age was 33.06±8.05, ranging from 18 to 57. For the BA and MA groups, the mean age was 31.34±7.39 and 36.64±8.37, respectively. Of the 330 patients, two (0.6%) of the patients had Turner Syndrome; one (0.3%) patient had Poland Syndrome and one (0.3%) patient had MTHFR homozygote gene mutation, other patients had no major medical problems.

Inframammarian fold (IMF) and periareolar incisions were used in 201 (77.9%) and 57 (22.1%) patients, respectively. Transaxillary and transumbilical incision options were not considered because no inflatable saline implants were used.

Six different prosthesis brands were used within 14 years. The distribution of silicone implants' brand names has been shown in (Table 1).

In BA group implant size was 296.33±44.29 (ranging from 225 to 440 cc); 141 (54.6%) anatomical and 117 (45.4%) round silicone implants were used. Preferred implant pocket was dual plane (162 patients, 62.8%) in most of the patients. This was followed by subglandular and subfascial pockets. The distribution of the implant pockets in BA group is demonstrated in (Table 2). One hundred and fourteen (44.1%) patients had at least one history of pregnancy. One hundred and sixty-three (48.6%) patients had no ptosis of the gland preoperatively. Classification of the patient population for the level of breast ptosis prior to the operation is shown in (Table 3). In BA group, eight patients (3.1%) had a history of breast augmentation and we reoperated because of capsular contracture, asymmetry, and implant malposition. In ten (3.87%) patients, major complications requiring reoperation were seen. A list of complications is shown in Table 4 and Table 5.

In MA group, median implant size was 273.59±58.76 cc (ranging from 180 to 400 cc). In MA group, 46 (63.8%) anatomical and 26 (36.2%) round silicone implants were used. The most preferred implant pocket was subglandular plane (42 patients,

TABLE 1: The distribution of the silicone implants' brand names.

Brand Name	Number and Percentage
Natrelle	153 (46.4%)
Mentor	91 (27.6%)
Perthese	47 (14.2%)
CUI	26 (7.9%)
Eurosilicone	8 (2.4%)
Nagor	5 (1.5%)

TABLE 2: The distribution of the implant pocket in breast augmentation and mastopexy augmentation patients.

Implant pocket	Breast augmentation (%)	Mastopexy-augmentation (%)
Dual plane	162 (62.8%)	15 (20.8%)
Subglandular	65 (25.2%)	42 (58.4%)
Subfascial	31 (12.0%)	15 (20.8%)

TABLE 3: The level of breast ptoses.

Breast ptosis level	Breast augmentation (%)	Mastopexy-augmentation (%)
No ptosis	163 (63.2%)	-
Level I	58 (22.5%)	11 (15.3%)
Level II	16 (6.2%)	35 (48.6%)
Level III	4 (1.5%)	22 (30.6%)
Pseudoptosis	17 (6.6%)	4 (5.5%)

TABLE 4: Complication rates in breast augmentation and mastopexy-augmentation patients.

Complications	Breast augmentation	Mastopexy -augmentation
Capsule contracture	3 (1.14%)	1 (1.38%)
Implant rupture	2 (0.76%)	-
Implant malposition	2 (0.76%)	1 (1.38%)
Small breast size and shape	2 (0.76%)	-
Nipple-areola necrosis	-	1 (1.38%)
Ptosis recurrence	1 (0.38%)	1 (1.38%)
Total (percentage)	10/258 (3.87%)	4/72 (5.55%)

TABLE 5: The distribution of the complications in terms of the implant pocket.

Complications	Dual plane	Subglandular	Subfascial	Total (percentage)
Capsule contracture	-	2 (0.6%)	2 (0.6%)	4 (1.2%)
Implant rupture	-	2 (0.6%)	-	2 (0.6%)
Implant malposition	1 (0.3%)	1 (0.3%)	1 (0.3%)	3 (0.9%)
Small breast size and shape	2 (0.6%)	-	-	2 (0.6%)
Nipple-areola necrosis	-	1 (0.3%)	-	1 (0.3%)
Ptosis recurrence	1 (0.3%)	1 (0.3%)	-	2 (0.6%)
Total (percentage)	4 (1.2%)	6 (1.8%)	3 (0.9%)	13 (3.9%)

58.4%); other options were dual and subglandular pocket planes. The distribution of the implant pockets in MA group was shown in Table 2. Patients showed up with different levels of ptosis according to Regnault's in the MA group, which is shown in Table 3. In this group, five patients (6.9%) had a history of breast augmentation and three patients (4.1%) had a history of breast reduction surgery. A list of complications such as capsular contracture, implant rupture, ptosis recurrence, implant malposition, and nipple areola necrosis is shown in Table 4 and Table 5. Pre and postoperative comparative patient photographs can be seen in Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6.

The average follow-up period was 33.5 months, ranging from 2 months to 6 years. Minor complications such as wound dehiscence and excessive scarring were managed by secondary intention or local procedures during follow-up time. These complications didn't affect the final aesthetic outcomes.

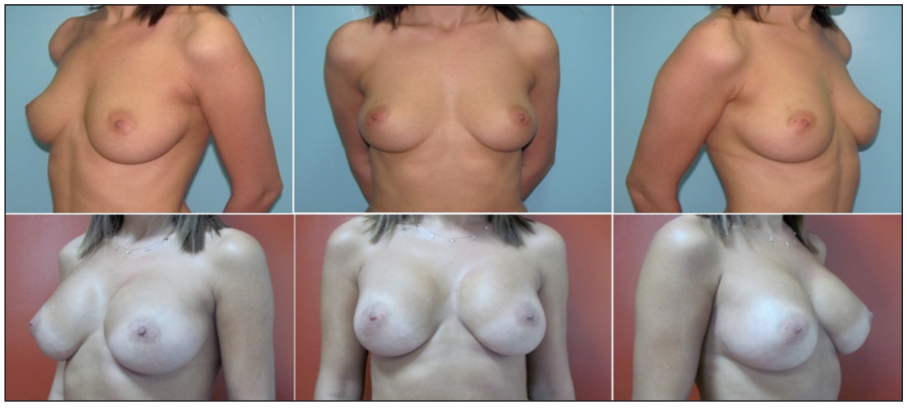

FIGURE 1: 29-years-old, inframammarian incision, subfascial pocket, 325 cc round, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row).

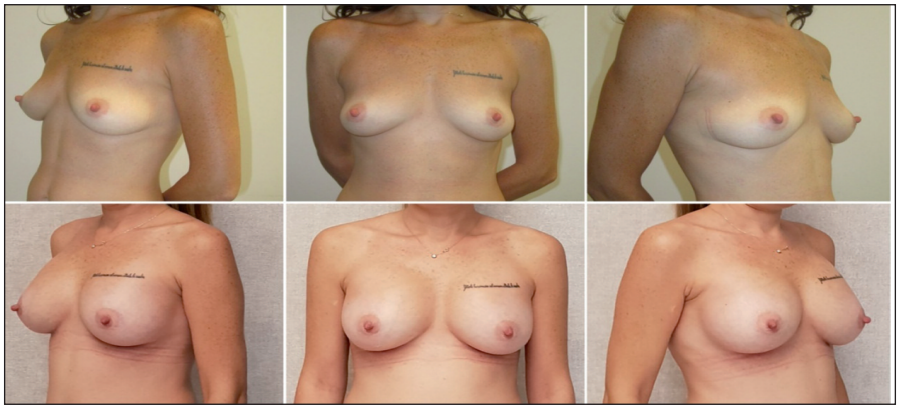

FIGURE 2: 32-years-old, inframammarian incision, subglandular pocket, 335 cc anatomic, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row).

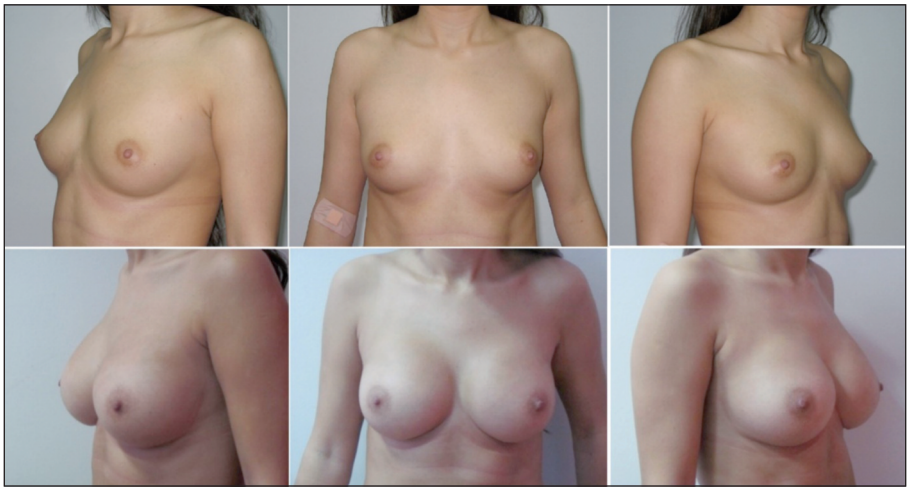

FIGURE 3: 27-years-old, inframammarian incision, dual plane pocket, 295 cc anatomic, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row).

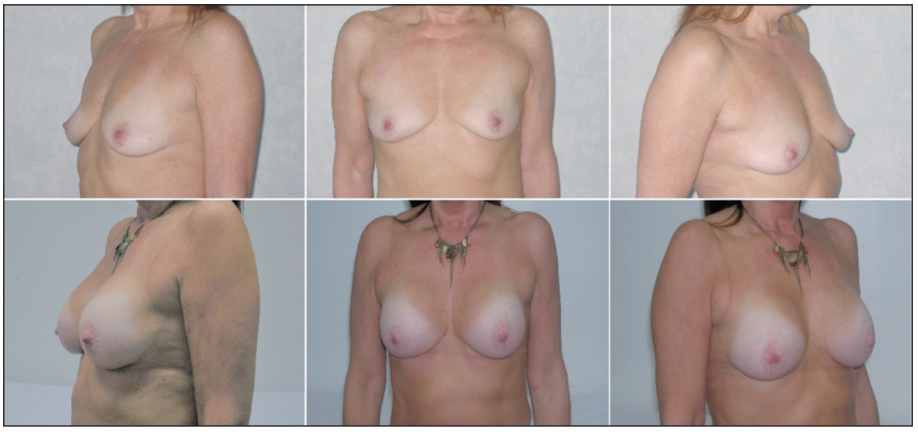

FIGURE 4: 52-years-old, periareolar incision, mastopexy-augmentation, subglandular pocket, 300 cc round, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row) preoperative and postoperative six months' view.

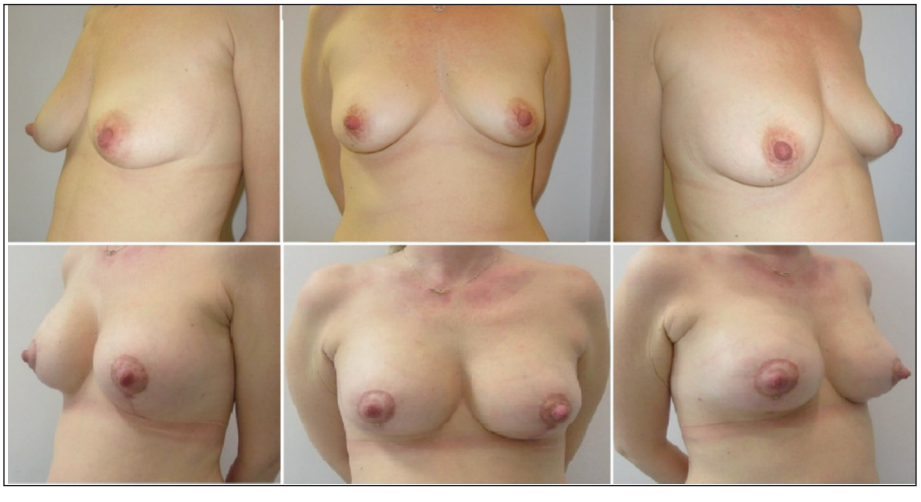

FIGURE 5: 39-years-old, circumvertical mastopexy-augmentation, subglandular pocket, 295 cc anatomic, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row).

FIGURE 6: 39-years-old, circumareolar mastopexy-augmentation, dual plane pocket, 295 cc anatomic, textured silicone implant; preoperative (upper row) and one-year postoperative view (lower row).

DISCUSSION

Aesthetic breast surgery operations are one of the most popular procedures all around the world. It is estimated that 10-11 million women worldwide have breast implants.[8] Therefore, a plastic surgeon must be aware of recent technical and technological improvements to fulfill patients' desires and obtain the best surgical results. Breast augmentation is a complex procedure with multiple variables. The surgeon should choose the correct combination, considering all varieties including incision types, pocket planes, implant sizes, shapes, surfaces, and contents. Also, patients must be informed about the ongoing process in detail.

The first thing to consider in breast augmentation is the incision choice. Inframammary sulcus, periareolar, transaxillary or transumbilical incisions are described as four main approaches. They all have pros and cons that play a role in the preoperative decision making and the postoperative result. Therefore, the surgeon's and the patient's mutual preferences are important. Inframammary incision is made in the fold. This area contains fascial attachments similar to adherence points at other parts of the body. Surgical control over the operation field is apparently easier and all implant types; especially highly cohesive larger ones could be inserted above or below the muscle when the IMF incision is chosen. It is also useful for constricted breast deformity correction. On the other hand, visible scar on breast tissue and surgical management of nipple to fold distance are important cons for this incision type. In our practice, we mostly prefer inframammary sulcus incision similar to the literature.[9] Preoperative measurement of the nipple to fold distance (normal 5-7 cm), and anticipating the difference after the operation is crucial. If there is an asymmetry between the levels of both folds, the incision should be made in accordance with these measurements done preoperatively. We make the incisions 0.5-1 cm over the fold, unlike the literature.[10] This is because we believe that it makes it easier to conceal the scar while the patient is wearing a bra or a bikini. Additionally, after the implant settles in the pocket completely, lower breast region is enough to mask the scar line. Placement of incision is determined according to breast meridian, and the length is determined according to the implant type. Generally, 5 cm incision, 2 cm laterally and 3 cm medially from breast meridian, is preferred. None of the patients who were included in our study reported dissatisfaction about their scar in the long term. We did not encounter any excessive scarring; probably due to effective usage of anti-scar treatment until the wound healing process mostly subsides one year postoperatively. We preferred to use silicone based topical ointment for at least three months after the operation.

The periareolar incision could also be used to insert the implant. The incision is placed from the 3 o'clock to the 9 o'clock position. Areola diameter should be over 4 cm for comfortable insertion. If areola diameter is lower than 4 cm, the surgeon could do the incision like a running w incision so the line will be elongated and distortion will be less. For obtaining a better scar, the incision should be at the juncture of areola and breast skin. Dissection can be done through breast parenchyma directly or over the parenchyma to the fold. But due to the risk of contamination with normal flora bacteria from the ducts; infection and capsular contracture risks are reported to be higher in the literature regarding this incision type.[11] Although this incision is used for 57 patients, we encountered one infection-related complication. This could be due to our combination of prophylactic antibiotics, no touch technique, rubbing the skin with betadine, and using gentamicin solution. However, even when all precautions are addressed, there may still be infection related complications and severe capsule contracture. On another note sometimes depending on patient-based factors, the final periareolar scar could be more visible than the inframammary incision scar. Distortion around the areola seems to be another drawback of this approach.

Transaxillary and transumbilical incisions are other alternative options. For both incisions, scar location is far from the breast region. Requirements for endoscopic devices and due to lack of surgical experience we do not perform breast augmentation operation with these incisions.

Next step is pocket selection after the incision. Implants are inserted to subglandular, subfascial or dual plane pockets. There is not an optimal breast pocket choice that could be performed to all patients, therefore as long as the surgeon follows the basic principles, pocket dissection would be decided according to patient and surgeon preference.

The subglandular pocket is theoretically the most natural approach compared to the others. With the IMF incision, controlling the surgical field and dissection will be relatively easy. Postoperative deformities consistent with submuscular dissection will be avoided with this approach. Different implant types could be inserted, but for smooth and anatomic implants precise pocket dissection is crucial because of the risk of implant malposition. In addition, the subglandular pocket should be selected when the pinch thickness of upper breast parenchyma is more than 2 cm to camouflage the implant border after surgery. That is important for rippling and unnatural feeling of the implant. Despite achieving a more natural appearance with this pocket plane, there seems to be an increased risk of infection and capsule contracture as reported in the literature.[12,13] According to our study results, the subglandular pocket is the second most performed method after the dual plane pocket. In breast augmentation group which we used subglandular pocket plane, we encountered three (1.14%) capsular contractures and two (0.76%) implant ruptures complications (Table 4).

The dual plane pocket is the most used method in our study. Especially in patients who had less than 2 cm of pinch thickness at the superior pole of the breast, dual plane pocket was preferred. Additional tissue coverage is beneficial for avoiding the unnatural visibility of the silicone implant, decreasing the risk of infection; implant exposition and preventing capsule contracture.[9-13] Postoperative assessments for breast cancer are easier in this technique. On the other hand, dissection of pectoralis major can be more painful postoperatively than the other methods. Therefore, postoperative analgesia and pain management becomes more important. The patients should be aware of the restriction of arm and shoulder movements before the operation. Animation, window shade or double bubble deformities are the complications that we encounter postoperatively because of implant distortion or malposition by pectoralis contraction. Although we prefer this method generally, we didn't encounter such complications in our study group. We suggest that proper evaluation of breast tissue and dissection of pectoralis fibers are important to avoid these complications.

The subfascial pocket is an alternative method that diminishes some of the abovementioned disadvantages of the dual plane pocket. Even if it is a thin

layer, it is beneficial in preventing complications which are related to either implant or muscle. On the other hand, dissection is surgically demanding and generally, more bloody because of perforator vessels between muscle and fascia. It could be an option if patients both do sports such as bodybuilding, fitness and have hypoplastic parenchyma.

Proper implant selection regarding both shape and size is also as important as surgical technique preference. Several variabilities that we must consider such as anatomy of the breast, surgeon experience, tissue pocket, and financial issues. In literature specific indications for anatomically shaped devices, include limited soft-tissue coverage, desire for a full but natural result, breast and chest wall asymmetry, constricted breast type, and short nipple-to–inframammary fold distance.[14,15] We predominantly preferred anatomical implants especially for patients who have tuberous breast deformity and we also suggest that if the pocket is dissected to the exact diameter of the implant, the malposition risk could be minimal. Despite the studies that stated anatomical implant malposition is more frequent at subglandular pocket, data suggesting the contrary is also present.[16] Vascular compromise and wound healing problems can occur because of bigger implant size but contrary to data from the literature we used 350 cc and bigger implants in 7 patients who underwent the combined procedure and no complications were encountered.[15] Additionally, the aforementioned implant sizes in the combined group are less than the breast augmentation group in our study. After fifth generation silicone, implants were introduced; we began to use both 410 implants from Allergan and CPG implants from Mentor.[17] Both of these implant series consists of textured silicone shells but different pore sizes. It is known that pore size is critical to allow for tissue adherence leading to the adhesive effect and implant stabilization.[18] Form stable high cohesive breast implants either round or anatomical have the same shape in vivo but one of our surgeons use mostly anatomical implants because of natural appearance, contrary to another surgeon who generally prefers round implants to have a fuller upper pole and to avoid implant malposition. The most frequently used silicone implant types were moderate, high profile and full or extra projections. The Mentor core study on silicone breast implants in 2007 involved 551 patients undergoing primary augmentation. The reoperation rate was 15.4% and the most common reason for revision was capsular contracture (8.1%).[17] The Allergan style 410-implant core study revealed a reoperation rate of 12.5%, most common reasons for reoperation were, change in implant size and implant malposition.[19,20]

Gonzalez-Ulloa and Regnault described the combined procedures in the 1960s.[21,22] Ptosis and hypoplasia of breast tissue are two main reasons prompting the surgeon to perform this procedure simultaneously. Ptosis could be defined as the relationship between the nipple and inframammary fold, however; several other factors should also be taken into consideration before surgery. Although mastopexy and augmentation procedures seem to contradict each other and several studies are present which warn about complications, in some cases it is inevitable to use them both.[10,11] For instance, patients who desire to have aesthetic breast size and shape who have had multiple pregnancies and weight gain or loss history. Likewise, in our study, 114 (44.1%) patients had at least one history of pregnancy. In these circumstances; despite the fact that surgeons' preference is using the combined procedure, some of the patients don't prefer silicone prosthesis. Therefore, before deciding to perform isolated mastopexy procedure, we recommend informing the patient about the results in detail.

During the time of this study, we performed 72 mastopexy-augmentation procedures. The authors who report good results with augmentation and mastopexy state that one of the most important points is proper selection of the surgical technique.[23] We decided on the surgical technique according to the patients' desire and surgeons' preference. We preferred mostly vertical and circumareolar scar techniques similar to literature; the trend has been toward short scar mastopexy. Ptosis level, tissue distribution and deficiency, NAC location related to the breast tissue, nipple position, and nipple-inframammary sulcus distance are consid-

ered as important parameters for the decision. If there is no ptosis or mild ptosis (Regnault type I), we preferred isolated augmentation; while on the other hand, we are prone to choose combined procedure for Regnault type II and III ptosis if the patient accepts the scars. Sometimes patients do not want long vertical or horizontal visible scars on their breast so we explain to the patient that the augmentation alone would not correct the ptosis and additional deformities may occur after the operation. In our study group; the major complication rate in the mastopexy-augmentation group was 5.55%. According to the literature, there were relatively higher revision rates because of major complications.[24] The complication rate in massive weight loss patients is higher than the other patients. This could be related to the loss of skin elasticity and quality, malnutrition; obesity stretched soft tissue and vascular structures that cause vascular compromise. To avoid such complications, precise pocket dissection, appropriate implant, and surgical technique selection, no touch technique, irrigation with antibiotic solutions (gentamicin) are important recommendations. Inverted T technique and vertical scar technique generally involve junction areas at either the periareolar or the inframammary level. In these areas, there could be more wound healing problems. Sensory changes, numbness, breast pain, swelling and bruising are examples of minor complications. Though all of them recover during the early follow-up period, these minor complications seldom change the final surgical result and patient satisfaction. The sterile strip usage, effective anti-scar treatment, patient selection, and meticulous surgery are the keys to prevent the excessive scar and wound dehiscence. Especially for implant malpositioning and ptosis recurrence, there are promising studies to overcome these complications.[25-27]

In our study, breast augmentation patient major complication rate was 3.9% which is similar to literature.[27] First of all, implant pocket and incision type choices are associated with reduced capsular contracture.[28] Secondly, outcomes with form-stable implants are superior to those with implants with low-cohesive filling, in terms of low rates of capsular contracture, rupture, rippling, and high rates of patient satisfaction.[29-33] Finally, communication with patients is essential for ensuring best results.

Anaplastic large cell lymphoma (ALCL) should be considered in all cases presenting with late seroma formation. Further cytological and histopathological tests are required in these patients. Fortunately, we haven't confronted any breast implant-associated ALCL in our study group.

CONCLUSION

As a conclusion, we believe that before performing aesthetic breast surgery, the surgeon should understand patients' complaints and expectations effectively and choose the best options through multiple variabilities to reach excellence. Combined mastopexy-augmentation surgery is as safe and effective as primary augmentation breast surgery when it is a well-planned.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Cenk Demir Döver, Adnan Menderes;* ***Design:*** *Cenk Demir Döver, Adnan Menderes; Alper Geyik;* ***Control/Supervision:*** *Cenk Demir Döver, Adnan Menderes, Alper Geyik, Fatih Alp Öztürk;* ***Data Collection and/or Processing:*** *Alper Geyik, Fatih Alp Öztürk, Selin Güler, Hüseyin Emre Ulukaya;* ***Analysis and/or Interpretation:*** *Cenk Demir Döver, Adnan Menderes, Alper Geyik, Fatih Alp Öztürk;* ***Literature Review:*** *Alper Geyik, Fatih Alp Öztürk, Selin Güler, Hüseyin Emre Ulukaya;* ***Writing the Article:*** *Cenk Demir Döver, Alper Geyik, Fatih Alp Öztürk, Selin Güler;* ***Critical Review:*** *Cenk Demir Döver, Adnan Menderes, Fatih Alp Öztürk,* ***References and Fundings:*** *Cenk Demir Döver, Fatih Alp Öztürk, Selin Güler, Hüseyin Emre Ulukaya;* ***Materials:*** *Selin Güler, Hüseyin Emre Ulukaya.*

REFERENCES

1. ISAPS International Study on Aesthetic/Cosmetic procedures performed in 2016. p.2. [Link]
2. Maxwell GP, Gabriel A. The evolution of breast implants. Clin Plast Surg. 2009;36(1):1-13. [Crossref] [PubMed]
3. Cronin TD, Brauer RO. Augmentation mammaplasty. Surg Clin North Am. 1971; 51(2):441-52. [Crossref]
4. Adams WP Jr. The process of breast augmentation: four steps for optimizing outcomes for patients. Plast Reconstr Surg. 2008; 122(6):1892-900. [Crossref] [PubMed]
5. Hidalgo DA, Sinno S. Current trends and controversies in breast augmentation. Plast Reconstr Surg. 2016;137(4):1142-50. [Crossref] [PubMed]
6. Doshier LJ, Eagan SL, Shock LA, Henry SL, Colbert SH, Puckett CL. The subtleties of success in simultaneous augmentation-mastopexy. Plast Reconstr Surg. 2016;138(3): 585-92. [Crossref] [PubMed]
7. Hall-Findlay EJ. A simplified vertical reduction mammaplasty: shortening the learning curve. Plast Reconstr Surg. 1999;104(3):748-59. [Crossref] [PubMed]
8. Lipworth L, Tarone RE, McLaughlin JK. Breast implants and lymphoma risk: a review of the epidemiologic evidence through 2008. Plast Reconstr Surg. 2009;123(3):790-3. [Crossref] [PubMed]
9. Adams WP Jr, Small KH. The process of breast augmentation with special focus on patient education, patient selection and implant selection. Clin Plast Surg. 2015;42(4):413-26. [Crossref] [PubMed]
10. Hidalgo DA, Spector JA. Breast augmentation. Plast Reconstr Surg. 2014;133(4):567e-83e. [Crossref] [PubMed]
11. Jacobson JM, Gatti ME, Schaffner AD, Hill LM, Spear SL. Effect of incision choice on outcomes in primary breast augmentation. Aesthet Surg J. 2012;32(4):456-62. [Crossref] [PubMed]
12. Chong SJ, Deva AK. Understanding the etiology and prevention of capsular contracture: translating science into practice. Clin Plast Surg. 2015;42(4):427-36. [Crossref] [PubMed]
13. Tebbetts JB. Dual plane breast augmentation: optimizing implant-soft tissue relationships in a wide range of breast types. Plast Reconstr Surg. 2001;107(5):1255-72. [Crossref] [PubMed]
14. Friedman T, Davidovitch N, Scheflan M. Comparative double blind clinical study on round versus shaped cohesive gel implants. Aesthet Surg J. 2006;26(5):530-6. [Crossref] [PubMed]
15. Hedén P, Montemurro P, Adams WP Jr, Germann G, Scheflan M, Maxwell GP. Anatomical and round breast implants: how to select and indications for use. Plast Reconstr Surg. 2015;136(2):263-72. [Crossref] [PubMed]
16. Steinbacher DM, Singh N, Katz R, Khalifeh M. Augmentation-mastopexy using an autologous parenchymal sling. Aesthetic Plast Surg. 2010;34(5):664-71. [Crossref] [PubMed]
17. Maxwell GP, Gabriel A. The evolution of breast implants. Plast Reconstr Surg. 2014;134(1 Suppl):12S-7S. [Crossref] [PubMed]
18. Danino AM, Basmacioglu P, Saito S, Rocher F, Blanchet-Bardon C, Revol M, et al. Comparison of the capsular response to the Biocell RTV and Mentor 1600 Siltex breast implant surface texturing: a scanning electron microscope study. Plast Reconstr Surg. 2001;108(7):2047-52. [Crossref] [PubMed]
19. Cunningham B. The mentor core study on silicone MemoryGel breast implants. Plast Reconstr Surg. 2007;120(7 Suppl 1):19S-29S. [Crossref] [PubMed]
20. Bengtson BP, Van Natta BW, Murphy DK, Slicton A, Maxwell GP; Style 410 U.S. Core Clinical Study Group. Style 410 highly cohesive silicone breast implant core study results at 3 years. Plast Reconstr Surg. 2007;120(7 Suppl 1):40S-8S. [Crossref] [PubMed]
21. Gonzales-Ulloa M. Correction of hypotrophy of the breast by exogenous material. Plast Reconstr Surg Transplant Bull. 1960;25(1):15-26. [Crossref]
22. Regnault P. The hypoplastic and ptotic breast: a combined operation with prosthetic augmentation. Plast Reconstr Surg. 1966;37(1): 31-7. [Crossref] [PubMed]
23. Corduff N, Taylor GI. Rotation mastopexy: an anatomical approach. Aesthetic Plast Surg. 2009;33(3):377-85. [Crossref] [PubMed]
24. Spear SL, Boehmler JH 4th, Clemens MW. Augmentation/mastopexy: a 3-year review of a single surgeon's practice. Plast Reconstr Surg. 2006;118(7 Suppl):136S-47S. [Crossref] [PubMed]
25. Auersvald A, Auersvald LA. Breast augmentation and mastopexy using a pectoral muscle loop. Aesthetic Plast Surg. 2011;35(3):333-40. [Crossref] [PubMed]
26. Tebbetts JB, Adams WP. Five critical decisions in breast augmentation using five measurements in 5 minutes: the high five decision support process. Plast Reconstr Surg. 2005;116(7):2005-16. [Crossref] [PubMed]
27. Migliori F. "Upside-down" augmentation mastopexy. Aesthetic Plast Surg. 2011;35(4): 593-600. [Crossref] [PubMed]
28. Calobrace MB. Teaching breast augmentation: a focus on critical intraoperative techniques and decision making to maximize results and minimize revisions. Clin Plast Surg. 2015;42(4):493-504. [Crossref] [PubMed]
29. Rohrich RJ, Gosman AA, Brown SA, Reisch J. Mastopexy preferences: a survey of board-certified plastic surgeons. Plast Reconstr Surg. 2006;118(7):1631-8. [Crossref] [PubMed]
30. Brown MH, Shenker R, Silver SA. Cohesive silicone gel breast implants in aesthetic and reconstructive breast surgery. Plast Reconstr Surg. 2005;116(3):768-79. [Crossref] [PubMed]
31. Hedén P, Bronz G, Elberg JJ, Deraemaecker R, Murphy DK, Slicton A, et al. Long-term safety and effectiveness of style 410 highly cohesive silicone breast implants. Aesthetic Plast Surg. 2009;33(3):430-6. [Crossref] [PubMed] [PMC]
32. Maxwell GP, Van Natta BW, Murphy DK, Slicton A, Bengtson BP. Natrelle style 410 form-stable silicone breast implants: core study results at 6 years. Aesthet Surg J. 2012;32(6):709-17. [Crossref] [PubMed]
33. Hedén P, Boné B, Murphy DK, Slicton A, Walker PS. Style 410 cohesive silicone breast implants: safety and effectiveness at 5 to 9 years after implantation. Plast Reconstr Surg. 2006;118(6):1281-7. [Crossref] [PubMed]