JPRAS Open 36 (2023) 89–93

Contents lists available at ScienceDirect

JPRAS Open

journal homepage: www.elsevier.com/locate/jpra

Short Communication

Betadine-soaked gauzes intraoperative sizing in breast augmentation surgery

Giuseppe Pezone[a,*], Annachiara Cavaliere[a], Gisella Nele[b], Francesco D'Andrea[a], Fabrizio Schonauer[a]

[a] Unit of Plastic Surgery, University "Federico II" , Via Sergio Pansini, 5, Napoli, Naples 80131, Italy
[b] Ruesch Private Hospital, , Viale Maria Cristina di Savoia, 39, Napoli, Naples 80122, Italy

ARTICLE INFO

Article history:
Received 21 November 2022
Accepted 26 March 2023
Available online 22 April 2023

Keywords:
Betadine
Gauzes
Breast sizing
Breast implant
Breast augmentation
Intraoperative breast sizing

ABSTRACT

In breast augmentation surgery, the correct evaluation of the implant size required is crucial to achieve satisfactory final result. Intraoperative volume decision is usually made by the use of silicone gel breast sizers. Intraoperative sizers have some disadvantages: the progressive loss of structural integrity, the increased risk of cross infection, the high costs. However, during breast augmentation surgery, it is mandatory to fill and expand the newly dissected pocket. In our practice we fill the dissected space with Betadine-soaked and then squeezed gauzes. The use of multiple soaked gauzes as sizers is advantageous for the following reasons: they fill and expand the pocket, they are useful to check the volume and to show the circumferential contour of the breast, to keep the pocket clean while dissecting the second one, to check final hemostasis and to compare the two breasts' size before definitive implant insertion. We simulated an "intra operative setting" where standardized volume Betadine-soaked gauzes were packed into a breast pocket. This easily reproducible and accurate technique is inexpensive and produces reliable and highly satisfactory results;

* Corresponding author at: Unit of Plastic Surgery, University "Federico II" , Via Sergio Pansini, 5, Napoli, Naples 80131, Italy.
E-mail address: giupezone92@gmail.com (G. Pezone).

https://doi.org/10.1016/j.jpra.2023.03.004

it can be incorporated into the practice of any surgeon performing breast augmentation.

Evidence Based Medicine (EBM) level: IV

Correct evaluation of implant size in breast augmentation surgery is crucial to achieving satisfactory final results. Intraoperative volume decisions are usually based on the use of silicone gel breast sizers which guide the surgeon in implant size selection.

According to Holmes et al.,[1] pre-operative external sizers are the most common approach used by UK consultant plastic surgeons in selecting implant size for primary breast augmentation. The technique is relatively easy to perform and allows the patient to preview the final breast size and participate in the sizing process.[2]

However, intraoperative sizers can have some disadvantages. Firstly, they are quite expensive and not always readily available. Secondly, while sizers can be for a single use or re-sterilizable, most sizers are not licensed for repeated intraoperative use due to a progressive loss of structural integrity. Furthermore, their re-use increases the risk of cross infection. Moreover, in some cases implant sizers do not accurately replicate the fundamental characteristics of chosen implants such as in projection, base diameter and cohesivity.[3]

Presently there is no existing consensus on the optimal method for selecting implant size for primary breast augmentation. The surgeon's "leave it to me, I know best" approach may be satisfactory for patients without specific expectations, but might ultimately lead to disappointing results for others.

Our group also uses non-sterile sizers to preoperatively decide, together with the patient, breast implant size and breast volume differences, if applicable,[4] and much deliberation is given to the decision-making process in choice of precise implant size before going to theater. The patient is asked to wear an elastic sports bra that is a larger cup size than her breasts. Various implant sizers are then inserted into the bra until an ideal breast volume is reached. This procedure allows for simulation of the final breast size that the patient desires, while responsibility for outcome is shared with the surgeon.[2]

However, when replicating the chosen breast size intraoperatively, we usually try to avoid the use of a breast sizer for required implant volume unless it is necessary in difficult breast asymmetry augmentation cases. As it is mandatory to fill and expand the newly dissected pocket during breast augmentation surgery, in 90% of our patients we use a dual plane technique. In most cases access to the breast is achieved by an inframammary fold incision no more than 5 - 5.5 cm in length, after which a partially submuscular pocket is made by a combination of sharp and blunt dissection (dual plane) followed by meticulous hemostasis. Once the pocket is created and after the positioning of a 10 French suction drain inferior-laterally for each breast, we then proceed to fill the dissected space with Betadine-soaked and wrung gauzes. The soaked gauzes are then molded inside the pocket to reproduce not only the implant volume, but also its shape.[5] The aim of this procedure is to obtain a temporary expansion of the cavity while checking that the new pocket volume matches with the preoperatively chosen implants. These inserted gauzes are molded to adjust the edges also serve to keep the dissected pocket packed while the surgeon is working on the second pocket. We also find the gauzes useful in monitoring for hemostasis as we can observe where the gauzes appear to be stained with blood. The gauzes also enable us to compare the volume of one breast to the other. At this stage, the gauzes are removed one at a time while hemostasis is checked for again. The safety gauzes count allows us to avoid the occurrence of any retained swabs.[6] The pockets are then washed with antibiotic solution and the definitive implants are inserted. Closure is achieved with 3–0 polyglactin

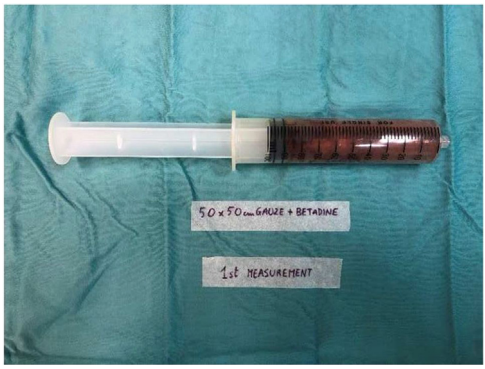

Fig 1. A 50 ml Betadine-soaked 50X50 cm gauze packed into a 100 ml plastic syringe.

Table 1
Details of experimental measurements of the volume of 50 × 50 cm saline-soaked gauzes packed into a 100 ml plastic syringe.

	50 × 50 cm Gauze + NaCl 0.9%
1st measurement	88 ml
2nd measurement	87 ml
3rd measurement	90 ml
4th measurement	89 ml
5th measurement	90 ml
Mean	88.8 ml

Table 2
Details of experimental measurements of the volume of 50 × 50 cm Betadine-soaked gauzes packed into a 100 ml plastic syringe.

	50 × 50 cm Gauze + Betadine
1st measurement	90 ml
2nd measurement	89 ml
3rd measurement	90 ml
4th measurement	92 ml
5th measurement	90 ml
Mean	90.2 ml

(Vicryl) and 3–0 and 4–0 poliglecaprone (Monocryl) sutures. Surgical dressings are then applied to the wounds and drain sites. The patient is asked to wear an elastic sports bra for at least four weeks.

This method has been described by Niranjan et al. who named it “Trial sizing”.[5] However, we feel that the calculation of swabs’ volume, in that paper, was partially inaccurate. We decided to standardize the way of experimentally measuring the swab volume. In order to calculate the volume of a standard laparotomy gauze sized 50 × 50 cm, we simulated an “intra operative setting” where Betadine-soaked and wrung gauzes were packed into a breast pocket. Our experiment was conducted by putting a dry, a 50 ml saline soaked and a 50 ml Betadine-soaked gauze into a 100 ml plastic syringe. We then applied a degree of pressure to the syringe plunger which simulated the “steady pressure” usually used to pack the gauzes into the breast pocket in vivo (Fig 1). The experiment was repeated 5 times for each setting: dry, saline soaked (Table 1) and betadine soaked (Table 2). The mean value for a 50 × 50 cm dry gauze was 95,4 ml, while when soaked in saline solution, was 88,9 ml, and when soaked in Betadine 90,2 ml.

As a clinical practice example, if we have preoperatively chosen a 360 ml implant and wish to simulate the intraoperative use of a 360 ml breast sizer, we would use 4 Betadine soaked 50 × 50 cm

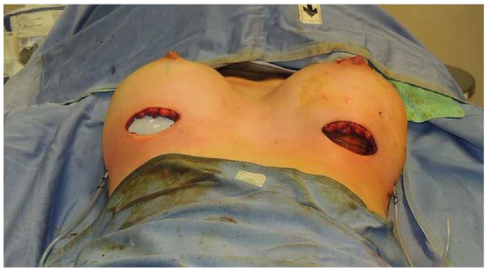

Fig 2. Intraoperative use of a 360 ml breast sizer on the right side, compared to the left side with 4 Betadine soaked 50x50 cm gauzes (4x90 ml=360 ml).

gauzes (4 × 90 ml=360 ml) (Fig 2). In the same way, if we wish to simulate a 450 ml breast sizer, we would use 5 Betadine soaked 50 × 50 cm gauzes (5 × 90 ml=450 ml).

Our results are concordant with the Caulfield and Niranjan paper regarding the gauze volume measurement executed with the small gauze in the syringe, while are in contrast with the volume values obtained from the aforementioned work regarding the larger swab measured in a different volume measurer with a different way of exerting pressure to the swab.

The application of a constant pressure to the syringe plunger, the use of the same type of gauze and the use of the same measuring tool led us to obtain the volume values indicated above. For this reason, we suggest anyone trying this technique should experiment first with the swabs available at their institution to confirm volumes, before using them intraoperatively.

The authors have successfully used this technique over the past 15 years in more than 900 breast augmentation procedures. Based upon our positive experience, we can report that the use of multiple soaked gauzes as sizers is opportune for the following reasons: they adequately fill and expand the pocket, they enable to surgeon to assess the volume and indicate the circumferential contour of the breast, they keep the pocket sterile while dissecting the second breast, they enable the monitoring of possible final hemostasis and, lastly, they allow for a more precise comparison of both breast sizes before definitive implant insertion.

This easily reproducible and accurate technique is inexpensive and produces reliable and highly satisfactory results which can be incorporated into the practice of any surgeon performing breast augmentation surgery.

This technique is not aimed to replace the use of a real sizer, which remains the gold standard method to choose the definitive implant. Indeed the density of a sizer is equal to the density of silicone (∼1.06 g/ml)[7] and is different from the density of a gauze. The idea of comparing volume of different items, on which our research focuses, has been already mentioned in literature.[8] We have found that intraoperative use of multiple Betadine-soaked gauzes as breast sizers can augment the plastic surgeon's approach to conventional breast implant procedure.

Ethical approval

For this study our institution Research Ethics Committee has confirmed that no ethical approval is required.

Informed consent statement

Written informed consent has been obtained from the patients to publish this paper.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Source

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Holmes WJ, Timmons MJ, Kauser S. Techniques used by United Kingdom consultant plastic surgeons to select implant size for primary breast augmentation. *J Plast Reconstr Aesthet Surg*. 2015;68(10):1364–1369.
2. Hidalgo DA, Spector JA. Preoperative sizing in breast augmentation. *Plast Reconstr Surg*. 2010;125(6):1781–1787.
3. Khoo LS, Radwanski HN, Senna-Fernandes V, Antônio NN, Fellet LL, Pitanguy I. Does the use of intraoperative breast sizers increase complication rates in primary breast augmentation? A retrospective analysis of 416 consecutive cases in a single institution. *Plast Surg Int*.. 2016;2016:6584810.
4. Schonauer F, Singh S, La Rusca I, Molea G. Preoperative sizing and breast asymmetry. *Plast Reconstr Surg*. 2011;127(2):1005–1006.
5. Caulfield RH, Niranjan NS. Innovative techniques: a novel technique for intraoperative estimation of breast implant size in aesthetic and reconstructive breast surgery. *Aesthetic Plast Surg*. 2008;32(1):126–129.
6. Hariharan D, Lobo DN. Retained surgical sponges, needles and instruments. *Ann R Coll Surg Engl*. 2013;95(2):87–92.
7. Hsieh F, Miroshnik M, Lam TC. Silicone breast implants are thicker than water. *Plast Reconstr Surg Glob Open*. 2013;1(6):e43.
8. Aslani A, Del Vecchio DA. Composite buttock augmentation: the next frontier in gluteal aesthetic surgery. *Plast Reconstr Surg*. 2019;144(6):1312–1321.