

A NEW STRATEGY TO DEFINE THE INFRAMAMMARY FOLD IN REVISION BREAST SURGERY: THE HYDRANGEA TECHNIQUE

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Summary

Introduction. The inframammary fold (IMF) is considered an anatomical landmark of remarkable importance. It is essential to preserve its features for ensuring an optimal aesthetic result on procedures with either cosmetic or reconstructive purposes. Interventions such as mastectomies, breast augmentation or mastopexy can alter the IMF resulting in an unsatisfactory aesthetic result. Various techniques have been developed to address IMF malposition. This manuscript illustrates a new surgical procedure that we named "Hydrangea Technique".

Methods. A 45 y.o. patient with a history of previous breast surgery, resulting in an altered IMF associated with asymmetry, was evaluated. We therefore applied our proposed technique that consists of the use of transcutaneous sutures combined with polyurethane foam in order to restore the IMF and achieve an optimal aesthetic result. A follow-up was conducted 10 months postoperatively to evaluate the aesthetic outcomes.

Results. The procedure led to a well-shaped IMF and a satisfactory breast symmetry. We did not observe any complications, such as pressure injuries, skin maceration or infections. At the 10-months follow-up, we noticed a stable and appreciable aesthetic outcome, with good IMF definition and optimal symmetry.

Conclusions. This case report shows that the Hydrangea Technique is an easy and effective method to recreate the IMF after previous breast surgeries, ensuring stable results. However we reported only a single case, resulting in important limitations. Further studies with extended follow-up are needed to validate this technique for larger clinical application.

Key words: breast revision, breast fold, polyurethane foam, transcutaneous suture

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INTRODUCTION

The inframammary fold represents a crucial anatomical landmark in breast surgery, whether reconstructive or aesthetic, so its restoration can be extremely challenging.

Several techniques aimed at restoring and obtaining an aesthetically appreciable inframammary fold have been described in the literature ¹.

We report a new strategy based on the use of transcutaneous suture combined to the use of polyurethane foam.

CASE PRESENTATION

A 45-year-old patient came to our attention after undergoing multiple surgeries including bilateral breast augmentation, subsequently a prosthetic replacement associated with bilateral periareolar mastopexy using the “Round Block” technique, along with several breast lipofillings. The patient experienced some post-surgical complications; in particular, the poor definition of the right inframammary fold (especially in the medial region) led to an increased degree of breast asymmetry (Fig. 1). Importantly, similar implants were used in the current procedure to ensure consistency in comparison (500 ml textured round cohesive silicone implants were replaced with 500 ml nano-textured ergonomic cohesive silicone implants).

To recreate an adequate inframammary fold that would restore breast symmetry and achieve an optimal aesthetic result, we adopted a new surgical strategy based on the use of transcutaneous sutures combined with polyurethane foam plates.

Due to periprosthetic capsular contracture, selective capsulectomies were performed bilaterally. It was

necessary to redefine the inframammary folds, particularly to restore adequate symmetry considering the impairment caused by previous surgeries (Fig. 2).

Our suggested innovative technique consists of 3 steps. The first is to arrange a transcutaneous monofilament non-absorbable suture (Ethilon® 3-0, Ethicon®) with anchorage to the costal periosteum. The sutures are distributed inferiorly to the fold to be recreated, without binding, and maintained in temporary fixation with Mosquito-clamps (Fig. 3).

The second step is the linear definition of the lower part of the breast pocket and thus the inframammary fold: the periprosthetic capsule at the lower pole was therefore fixed, without preparing flaps, to the costal periosteum with polyfilament resorbable sutures (Optime® 3-0, Peters Surgical). We point out that in the previous surgery only this step was performed with a failure of the fold recreation.

The third and final step was to bind the transcutaneous sutures arranged in the first step: 2 overlapped polyurethane foam plates (Allevyn Classic Non Adhesive, Smith&Nephew®) were placed between the knots and the skin (Fig. 4)

Due to its strong visual resemblance to a flower, we have named the described technique “Hydrangea”.

The transcutaneous sutures were maintained for 14 days after surgery. Upon removal, optimal definition of the inframammary fold was observed with a satisfactory degree of symmetry achieved.



Figure 1. Preoperative cosmetic evaluation highlighting significant breast asymmetry, particularly of the medial portion of the right inframammary fold.

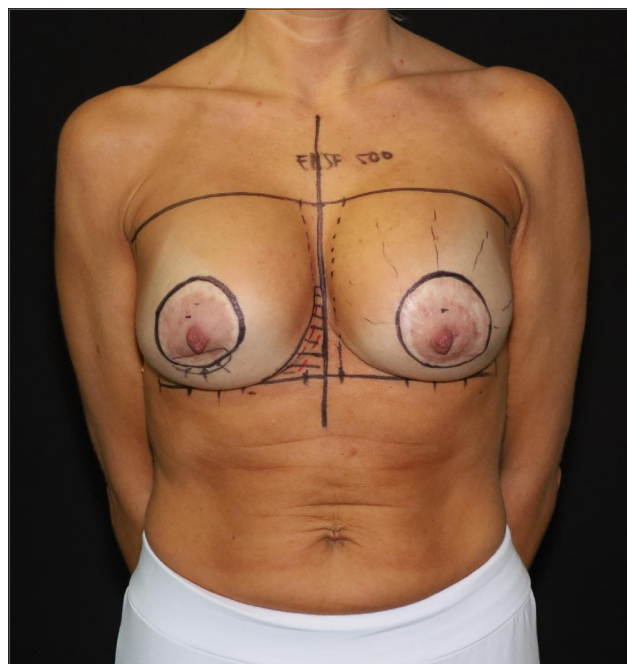


Figure 2. Pre-operative drawing detail.

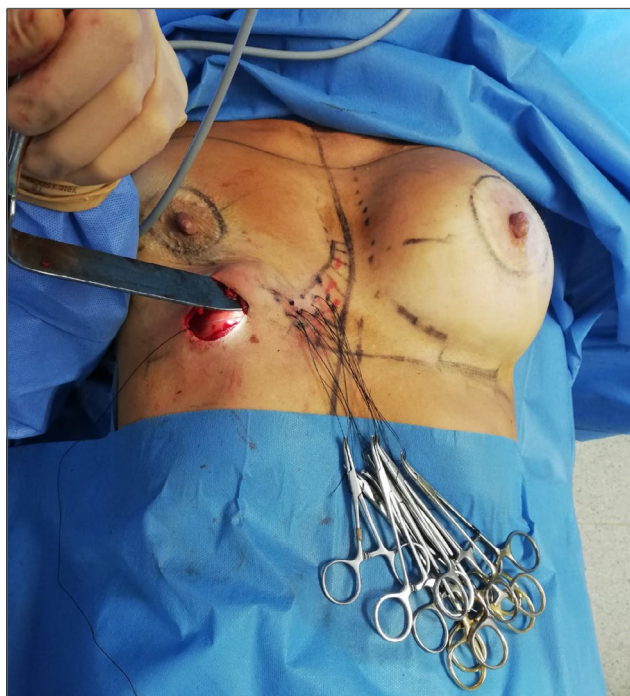


Figure 3. Stage 1 of Hydrangea technique: preparation of transcutaneous sutures inferior to the inframammary fold.



Figure 4. Stage 3 of Hydrangea technique: transcutaneous sutures ligation over polyurethane foam plates.

No complications such as pressure or ischemic injury, skin maceration or infection were noted. At the 10-month postoperative follow-up, stability of cosmetic outcome was observed (Fig. 5).

DISCUSSION

Recreating the inframammary fold is a crucial aspect of reconstructive and cosmetic surgery.

Mobilization of local flaps certainly represent a viable surgical strategy ^{2,3}.

However, these techniques may have disadvantages such as surgical variability related to the operator and his experience with the procedure, stability of the reconstructive result, and possible healing complications.

More recently, a research group has described the use of acellular dermal matrices due to recreate the inframammary fold and provide inferior support ⁴.

The use of external devices can also facilitate the recreation of this anatomical landmark ⁵.

Several techniques have also been described involving the use of suspensory sutures ^{6,7}.

These techniques are considerably variable but generally involve anchoring the dermis at the desired level of the neo-inframammary fold to rib periosteum. These methods, however, may have their own drawbacks,



Figure 5. Post-operative follow-up (10 months): appreciable aesthetic outcome with the achievement of optimal symmetry.

such as high costs and potential complications like seroma, infection, and reconstructive failure.

In our specific case, breast fold reconstruction using resorbable anchor sutures between dermis and costal periosteum had been attempted unsuccessfully.

The patient also presented some post-surgical complications, including moderate breast asymmetry with bilateral stage III periprosthetic capsular contracture according to the Baker classification, scar diastasis (particularly in the periareolar regions), severe alteration of breast profiles with poor cosmetic outcomes, and, ultimately, poor definition of the right inframammary fold (particularly in the medial portion), resulting in an accentuated degree of breast asymmetry.

The surgical planning included the removal of the previously implanted breast prosthesis, the execution of linear capsulectomies, redefinition of the lower portions of the breast pockets, redefinition of the inframammary folds, and revision of the atrophic scars through the execution of a round block mastopexy.

The most challenging aspect of the intervention was redefining the inframammary folds bilaterally while also restoring their symmetry and ensuring stability of the outcome. The function of the transcutaneous sutures was, therefore, to decrease the pressure exerted by the prosthesis on the new inframammary fold through improved tissue compliance and homogeneous distribution of forces. An additional goal was to minimize the tendency for a scalloped appearance, typically caused by dermal anchoring sutures.

The prolonged presence of the sutures has been a key element in the process of tissue healing and IMF stabilization. The role of the advanced absorbent dressing in polyurethane foam has proven to be fundamental in the prevention of any decubitus on the skin caused by stitches, as it distributes loads evenly over the cutaneous surface. Furthermore, the absorbent characteristics of the foam help keep wounds dry, preventing the negative effects of secretion⁸.

CONCLUSIONS

We describe a new, simple, and effective method which allows to recreate the inframammary fold secondary to previous aesthetic and reconstructive breast procedures. This technique has proven reliable due to the achieved stability of this anatomical landmark, which is very difficult to restore and represent a valid alternative to conventional methods. However, we refer to a single clinical case with no standardized outcome measures.

Well-designed studies with extended follow-up and certainly a larger population are needed. In future research we will plan to evaluate objectively the aesthetic outcomes using 3D scans and to also obtain a subjective

assessment reported by patients regarding outcomes through specific questionnaires.

Conflict of interest statement

Smith&Nephew® supported the conference participation costs for Prof. Giovanni Di Benedetto and Dr. Alberto Pau.

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Author contributions

AP: A, D, S, W

MA: A, D, S, W, O (surgical procedure)

GDB: A, D, S, W

Abbreviations

A: conceived and designed the analysis

D: collected the data

S: performed the analysis

W: wrote the paper

O: other contribution (specify contribution in more detail)

Ethical consideration

The study and the surgical procedures were conducted according to Good Clinical Practice requirements and the 1975 Declaration of Helsinki principles.

Informed consent

The patient provided written informed consent for surgery and use of pictures for academic and study purpose.

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