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Better Inset in Nipple Reconstruction by Modification in Skate Flap: A Case Study

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ABSTRACT

NAC reconstruction represents the final stage of breast reconstruction. This can be accomplished through non-surgical and surgical procedures, each with its own set of advantages and disadvantages. The majority of surgeons employ the Skate flap. The following is a demonstration of a modification to this flap.

A woman, 56 years of age, who had previously undergone breast reconstruction using a TRAM flap, was admitted for nipple reconstruction. During the design of the star flap, a modification was executed, which involved reciprocally changing the orientation of the lateral flaps. Both flaps were properly positioned in their prepared locations during the flap inset and skin closure. The final outcome was satisfactory and aesthetically pleasing.

The modification in the design of the Skate flap alters the orientation of the transferred flaps, making the final inset feasible with less disfigurement.

Introduction

Nipple reconstruction, as the final stage of breast reconstruction, significantly influences both patient and surgeon satisfaction. The cause of nipple areolar complex (NAC) loss is not of importance, whether it's developmental (as in athelia), following trauma or burn injury, upon cancer surgery, or even loss in complicated mammoplasty. NAC loss exclusively diminishes self-confidence and prompts the search for reconstructive operations.

The history of nipple reconstruction dates back to breast reconstruction surgeries since the 1960s, as presented by Adams. Various techniques of NAC reconstruction exist, which are chosen according to the condition and the surgeon's preference. These include contralateral nipple graft, skin grafts, local or

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regional flaps with or without augmentation [1].

Numerous techniques have been presented over several decades. Berson, for example, described three triangular flaps. This pathway was improved by Little in 1984, who enhanced the quality by introducing the skate flap and popularized this technique worldwide. However, most surgeons reported a loss of at least 50% of nipple projection in most techniques [2]. In burn scars, the skate flap has limited use, and some have suggested preserving sufficient subdermal plexus in a cheesecake style instead of an apple pie style, which in such threatening conditions may bring patient satisfaction [3].

Besides, in alloplastic breast reconstruction, the lack of tissue over the implant presents unique challenges during NAC reconstruction. Therefore, Pu et al. (2021) recommended preserving maximal dermal tissues from the skate flap to overcome this dilemma. However, the mastectomy scar itself has a direct impact on the location and outcome of NAC reconstruction [4].

A modification in the skate flap design is presented here, which may provide a better inset of flap limbs in a good position, leading to an acceptable outcome.

Case presentation

A single 52-year-old woman was admitted for the final stage of her breast reconstruction. She had undergone a TRAM flap operation for a right mastectomy six months prior and was then prepared for the operation. The skate flap is commonly used to create the nipple. Skate flap and its derivatives are frequently used in practice (Figure 1).

Tissue bulging and ultimate flap distortion were considered in some cases, and the problem was found to be in insetting. Therefore, minor changes were made in the flap design as follows: two lateral flaps were marked differently in their orientation as seen in Figure 2.

As illustrated in the picture, changing the orientation of the lateral flaps reciprocally provides a suitable opportunity for a relaxed inset without extra tension in the suture lines. This means that the lateral flaps are

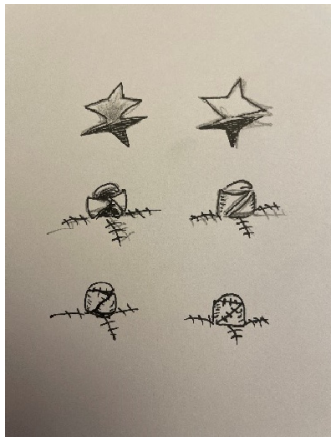

Fig. 1. Star flap (skate derivative) as traditional design and flap elevation.

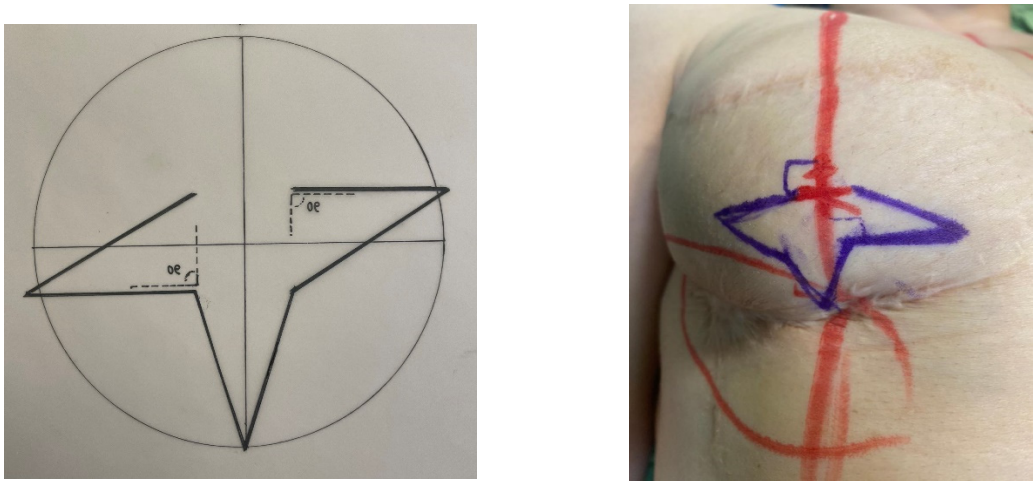

Fig. 2. modification in flap design of original design (right). Detailed changes in orientation of lateral flaps should be transported reciprocally (left).

Fig. 3. Immediate schematic picture at the end of flap inset.

designed at a perpendicular angle instead of the acute angles previously used, and these right angles are reciprocally in front of each other. This modification reduces flap ischemia and eventually partial necrosis. Finally, skin closure and lateral flap inset appeared easy without any distortion (Figure 3).

Discussion

The NAC complex and the nipple, as the central point of the breast, attract attention and play a significant role in breast reconstruction. Among a multitude of approaches and techniques, surgeons decide which one is most suitable for their practice. The basic structure of nipple reconstruction consists of contralateral nipple grafts, dermal fat flaps, and various local flaps. However, since Becker introduced the tattooing technique in 1986, this field has seen new extremes [5].

Yuksel et al. (2003) emphasized the advantages of the skate flap in providing a conical shape rather than a cylindrical one. Eventually, after several changes and modifications, the skate flap achieved an acceptable contour. This is due to the nature of the flap, and it is now generally accepted and available [6]. Some disfigurations were noticed, especially in thick flaps which encountered more tension following skin closure. It was observed that changing the flap orientation, even by less than 30 degrees, enhanced the contour.

Jalini et al. (2017) gathered the results and outcomes following nipple reconstructions and considered nipple retraction over time, particularly when there had been previous radiotherapy, infection, or poor flap design [7]. Some factors are beyond control, but careful attention should be paid to flap design, which has a significant effect on the final projection. It is announced with pride that this modification can achieve this goal.

Liodaki et al. (2013) presented another technique as a mushroom-shaped flap, which left a fully mobilized flap by a centrally wide dermal bridge and folded wings of the flaps around the body of the nipple and sutured [8]. However, maintaining a proper vascular pedicle in the selected area may be questionable.

Such minimal changes in flap design, as described above, and elevation, subsequently led to a better inset of the flap, which may maintain nipple projection. This can be considered a generally accepted procedure in nipple reconstruction.

Conclusion

The Skate flap and its derivatives are commonly used techniques in nipple reconstruction. Changing the orientation of lateral flaps in a reciprocal mode can make the final inset easier and more pliable, resulting in less disfigurement

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Footnotes

Contribution of the Authors: Each author has made significant contributions to the design, manuscript preparation, revision, surgery, and postoperative care, in accordance with their roles specified during submission.

Ethical Considerations

Ethical approval

This article approved by University ethical committee.

Informed consent

the patient signed the informed consent following consultation.

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Conflict of Interests

Authors confirmed they have no any kind of conflict of interest.

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