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RELOCATING THE NIPPLE AREOLA COMPLEX AS A COMPOSITE GRAFT
ABSTRACT

Achieving a good shape of the breast is not sufficient to complete a reconstruction. The presence and correct positioning of a nipple areola complex (NAC) is important for a good esthetic result. This is demonstrated by the unsatisfactory result in cases of NAC malposition. Two cases are presented in which revision was performed by transferring the NAC as a composite graft. This approach achieved improvement in the esthetic result and the patient satisfaction.
INTRODUCTION
The goal of breast reconstruction, for congenital or post oncological deformities, is to restore the volume and shape of the breast. The nipple areola complex (NAC) is an integral part of the breast; thus, correct placement of the nipple is essential for a successful reconstruction.

Cases in which the breast has been reconstructed but the NAC is malpositioned present a challenge; such cases also demonstrate how important the correct placement of the NAC is for a satisfactory reconstruction. Two cases are presented in which the malpositioned NAC was transferred as a composite graft for revision of breast reconstruction.

CASE REPORTS

Case 1
An 18-year-old patient with Poland syndrome presented for breast reconstruction. The right thorax was hypoplastic, a flail chest was present with paradoxical breathing movements due to missing ribs, and a NAC was present but was located at a high position on the chest wall. In order to achieve a stable base for implant reconstruction, the thoracic wall was first reconstructed using a Marlex mesh covered by a latissimus dorsi muscle flap. A half year later, after sufficient rigidity of the chest wall was achieved, a subglandular implant was placed (Allergan Style 410FM, 205 g) (Allergan, Irvine, CA). The size and the shape of the new breast were satisfactory, but the position of the NAC remained too high on the breast mound. Three years later, the NAC position was corrected by transferring it as a compound graft, and the donor site at the original location of the NAC was directly closed in a horizontal direction. At 13 months of follow-up, an improved symmetry was achieved; the patient was satisfied with the result (Figure 1).

Case 2
A 19-year-old patient presented for breast reconstruction. At the age of 4, she underwent resection of Ewing’s sarcoma involving the ribs of her left thorax wall, and the latissimus dorsi muscle was transected during this surgery; this was followed by radiotherapy. On examination, the chest wall was hypoplastic, the pectoralis major muscle was rudimentary, and the breast was underdeveloped with a high positioned NAC. There was a horizontal scar cranial to the NAC.

A subglandular breast augmentation was performed via the predicted location of the inframammary fold using an anatomic gel implant (Allergan Style 410MF, 225 g). After this procedure, there remained an asymmetry. Ten months later, a second procedure was performed. A right subglandular augmentation was performed using a round gel implant (Allergan style 110, 90 cc) (Allergan, Irvine, CA). On the left breast, the NAC was relocated as a composite graft. Due to the skin tightness at the
donor site, primary closure was not possible and the defect was closed with the skin from the receptor site which was used as a full-thickness skin graft. At 42 months of follow-up, an improved symmetry was achieved; the patient was satisfied with the result (Figure 2).

DISCUSSION

The position of the NAC is important for an esthetically pleasing and harmonious breast. In case of malposition, patients will be dissatisfied with the esthetic result even if the shape is correct. This issue is pertinent for esthetic procedures such as breast reduction and breast augmentation; numerous studies have addressed the issue of breast proportions as well as the location of the NAC [1-3]. Brown reported that observers can notice even small asymmetries in NAC form and position [4].
NAC reconstruction is an integral part of breast reconstruction; a breast without a NAC will seem incomplete. This procedure is often left as the last step in a reconstruction process. If the breast has been reconstructed and no NAC is present, the surgeon and the patient are faced with the decision regarding the correct placement of the NAC; the ideal position may often be different when clothed or undressed. In unilateral cases, one may use the contralateral breast as a template for the placement of the new NAC.

Malposition of the NAC can mar an otherwise satisfactory reconstruction. Such cases clearly demonstrate the importance of the correct placement of the NAC.

Millard offered solutions for the repositioning of the nipple in case of breast reduction using excisions at the inframammary fold and further transfer on the original pedicle [5]. Van Straalen described the use of subcutaneous pedicles to transfer the NAC in case of malposition caused by burn contractures [6]. Taneda, Frenkiel, and Mohmand transposed the NAC on a cutaneous pedicle [7-9]. Ali described transferring a reconstructed nipple as a composite graft [10]. Raffel and Colwell described the use of tissue expanders in the upper pole of the breast [11, 12].

Like in most medical conditions, prevention is more important than correction. Good planning, together with the patient, will reduce the incidence of misplacement of reconstructed NACs [13]; however, in the cases presented, it was not possible to reposition the NAC in the same procedure as the breast mound reconstruction. It was therefore elected to defer the revision of the NAC position.

The local situation in both cases did not amend itself to the use of pedicles to transpose the NACs or the use of tissue expanders to gain skin length cranially, due to the thin and tight coverage above the implants, which would have resulted in implant exposure.

In case the NAC is transferred as a composite graft, it is important to inform the patients about the lack of nipple sensation and the inability to breast feed. Faced with the preoperative situations, we found these drawbacks to be an acceptable trade-off. The harvest of the NAC is similar to that performed for a free nipple graft in breast reduction; it is removed as a full thickness skin graft and defatted in order to improve the take at the receptor location.

The management of the original NAC location also deserves attention. In each case, a different approach had to be used based on the local conditions. In the first case, it was possible to primarily close the donor site; in the second patient, the skin coverage of the implant was too tight and a full-thickness skin graft was used. The decision on the closure of the donor site has to be individualized to the local situation.

CONCLUSION
Achieving a good shape of the breast is not sufficient to complete a reconstruction. The presence of a NAC is important for a good visual harmony. Cases of malposition and their correction demonstrate the importance of the NAC for breast reconstruction.
REFERENCES