

MAMMOPLASTY IN CORRECTING SCAR-INDUCED BREAST DEFORMITIES*

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SUMMARY. Post-burn or post-inflammatory scarring of the breast may have significant effects on the shape and volume of the breast as well as on the nipple-areola complex (NAC). Significant asymmetry of the breasts and distortion of the NAC may result, with marked consequent psychological and physiological sequelae for the patients. This report presents three cases of scar-induced breast deformities and the use of modified reduction mammoplasty for their management. The breast scarring was induced either by burn injuries or by chronic granulomatous mastitis. Reduction mammoplasty was used to reshape the deformed scarred breast and to balance the volume asymmetry between the scarred and the non-scarred breasts. The NAC was mobilized safely on a dermal-parenchymal pedicle in any direction regardless of the orientation of the pedicle. In conclusion, cosmetic surgery in the scarred breast was found to be a safe and rewarding procedure with good aesthetic results. However, it has to be carefully planned.

Introduction

Deep burns in female patients may have substantial sequelae on the breast. When the breast is burned after completing its development, the post-burn scarring may cause distortion of the contour of the breast, alteration of the breast parenchymal distribution, and/or nipple-areola displacement resulting in significant asymmetry relative to the contralateral unburned breast. However, if the burn occurs before puberty, the scarring of the skin will partially or totally obscure the developing breast, resulting in a “hidden breast” (*Fig. 1*). When this tight overlying envelope of scarred skin is released, the hidden breast emerges with a volume surprisingly matching that of the other unburned breast. Deep prepubertal burn may also destroy the nipple/areola complex (NAC). The breast bud lies in a relatively deep plane and is often protected from injury, even with significant prepubertal burns involving the NAC with subsequent breast development in adolescence.¹ Chronic inflammatory processes and post-inflammatory scarring of breast may also result in significant deformity of the breast as well as distortion of the NAC.

A variety of reconstructive procedures are frequently required to correct these post-scarring breast deformities and asymmetry and to improve breast appearance. The procedures include contracture release and relocation of the NAC to a more natural position - sometimes con-



Fig. 1 - Varieties of burned breast scars: hidden breast deformity when burn occurs before puberty (above) and contracture and hypertrophic scars when burn occurs after full development of breast (below).

tralateral breast reduction may also be required to symmetrize breast size. The aim of reconstructive surgery is the aesthetic re-contouring of the distorted breast and the restoration of as much symmetry as possible between the two breasts. This gives the patient a better appearance, with enhanced self-esteem. The design and execution of

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the surgery should be individually tailored for each patient, addressing her specific problem of skin contracture, nipple dystopia, and/or volume asymmetry. Conventional treatment for breast contour deformities has entailed release of the contractures by incision or excision of the restricting scar, followed by a thick split-thickness skin graft.^{1,2} Other approaches for reconstruction of post-burn breast deformities have included cutaneous flaps and Z-plasty, fasciocutaneous flaps, and musculocutaneous flaps with or without the use of skin expansion.³⁻⁵

This report presents three cases of scar-induced breast deformities in which the release of the contracting scar, relocation of the nipple-areola, and the elimination of bilateral asymmetry were successfully achieved using a minimal LeJour scar or an inverted-T procedure, tailored according to the concomitant surrounding post-burn scar. When the breast scarring was induced by tuberculosis, medical control of the disease and consideration of the residual scar are mandatory prior to any reconstructive procedure.

Case reports

Case 1. A 20-yr-old patient presented with a post-burn scar in the inferolateral surface of her right breast. She had suffered a deep flame burn when she was seven years old. The scar was hypertrophic and dark-coloured, disfiguring and obscuring the areola. The nipple was tethered to the abdominal wall, facing inferolaterally. The left breast presented grade III ptosis with a very wide areola (12 cm di-



Fig. 2 - Case 1 (above): hypertrophic pigmented scar of right breast with third-degree ptosis and very wide areola of left breast (left) and oblique close-up view of scar (right); (below): pre-operative marking (left) and early post-operative result (right).

ameter). The size difference between the breasts was very evident and noticeable, causing the patient great psychological suffering (*Fig. 2*). Revision of the post-burn scar in the right breast was performed with partial excision, and simple closure and superomedial mobilization of the NAC, together with reduction mammoplasty of the left ptotic breast were also performed.

Case 2. A 21-yr-old patient presented with a post-burn scar in the abdomen extending up to the inferolateral surface of her right breast. The hypertrophic scar was pulling the nipple downwards, tethering it to the abdomen with a deformed and displaced NAC (*Fig. 3*). The NAC was released from the contracting scar and mobilized on a superomedial dermal pedicle. Partial excision and simple closure were performed for the residual inferolateral breast scar. Nothing was done for the normal breast.

Case 3. A 24-yr-old single female presented with a chronic left breast ulcer. She had had two previous attempts for excision and closure, with recurrence of the ulcer within two weeks each time. A biopsy was taken from the edge of the ulcer, and the pathological examination revealed chronic tuberculous granulomatous inflammation. The patient received antituberculous therapy with marked



Fig. 3 - Case 2 (above): burn scar of abdomen and right breast (left) and pre-operative design to relocate nipple/areola complex (right); (below): early result after release of contracted scar and translocation of NAC - nothing was done to the normal breast.



Fig. 4 - Case 3 (above): tuberculous ulcer with scars of previous attempts at closure (left) and breast after conservative local wound dressing under antituberculous treatment for three months (right) - note deformity in nipple/areola complex of marked asymmetry in volume of the breasts; (below): operative design for both breasts (left) and early post-operative result (right).

improvement of the ulcer, which healed successfully within three weeks of starting treatment, leaving the breast with an ugly disfiguring scar excavating the mound of the breast and distorting the NAC (*Fig. 4*). After completing six months of antituberculous therapy, the patient was operated upon to reconstruct the deformed breast. The scar was excised and the NAC was mobilized on an inferior dermal pedicle to replace the depressed central breast scar. As the right breast was disproportionately voluminous, with grade 3 ptosis, reduction mammoplasty was planned together with scar revision of the left breast.

Discussion and conclusion

As a part of the chest wall, breast wounds tend to develop hypertrophic scars, especially in young patients.⁶ Additionally, all treatment of the anterior chest can result in

hypertrophy, often making restoration of normal appearance difficult.⁷ Scarring and distortion of the breasts following burns can be a significant psychological burden to adolescent girls and young women,⁸ and the same applies to scarring resulting from chronic inflammatory processes like tuberculous mastitis. When the prepubertal burn destroys the developing breast bud, breast development will be reduced or may not take place at all³ - in these cases the missing breast has to be constructed using skin expansion and a breast implant.

It is essential in the management of the initial burn injuries in young girls not to underestimate the extent of breast tissue and to preserve as much of it as possible. Anatomically, the base of the premature breast is the same as that of an adult: from the second to the sixth rib and approximately 2 cm from the sternal edge to the anterior axillary line.¹ The superior parenchymal pedicle allows reliable transposition of the NAC and ensures that the approximated lateral flaps are maximally vascularized from the intercostal, internal mammary, and thoracoacromial artery perforators. Minimal undermining of the skin and breast tissue and lateral dissection guaranteed this supply and gave an excellent cosmetic result.² A reduction mammoplasty was performed in the contralateral hypertrophic breast to restore bilateral symmetry of the breasts in terms of size and shape. Combining a superior pedicle with a modified LeJour skin resection pattern permitted the simultaneous safe upward transposition of the inferiorly tethered NAC, resection of the burn scar contracture, and recreation of the inframammary fold.

Tuberculosis of the breast is an extremely rare pathological problem which partly because of this rarity is also difficult to diagnose.^{9,10} Tuberculosis induces marked fibrosis and subsequent distortion and deformity. The lesion tends to persist and therefore, to ensure good healing, wide surgical excision of such tuberculous lesions should be performed only under cover of antituberculous treatment. To reconstruct a post-tuberculosis deformed breast, the design and execution of any reconstructive mammoplasty has to take the existing scar into consideration and the patient has to be on antituberculous treatment. Keeping these points in mind, post-tuberculosis deformity can be successfully corrected.

RÉSUMÉ. Les cicatrices post-brûlure ou post-inflammation du sein peuvent avoir des effets significatifs sur la forme et le volume du sein comme aussi sur le complexe aréole/mamelon (CAN). Cette condition peut provoquer une asymétrie manifeste des seins et la distorsion du CAN, avec de graves séquelles psychologiques et physiologiques pour la patiente. L'Auteur présente trois cas de malformations du sein provoquées par les cicatrices traitées avec la mammoplastie de réduction modifiée. Les cicatrices au sein ont été causées par des brûlures ou par la mastite granulomateuse chronique. La mammoplastie de réduction a été utilisée pour remodeler le sein cicatrisé et déformé et pour équilibrer l'asymétrie volumétrique entre le sein cicatrisé et le sein sans cicatrices. Le CAN a été mobilisé en manière sûre sur un pédicule dermique-parenchymateux dans n'importe quelle direction, quelle que soit l'orientation du pédicule. En conclusion, la chirurgie esthétique pour traiter les cicatrices au sein s'est démontrée une procédure sûre et avantageuse qui permettait de bons résultats esthétiques. Toutefois, l'intervention doit être planifiée avec grande attention.

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