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MCKISSOCK'S BREAST REDUCTION TECHNIQUE IN A PATIENT WITH BURN SEQUELAE: A CASE REPORT AND SURGICAL STRATEGY

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Summary

Background. Advances in burn treatment have improved survival rates, even in extensive cases. However, burn sequelae can lead to severe deformities, such as breast burns in women, resulting in loss of the nipple-areola complex (NAC), scar contractures, and tissue alterations. Women with chest burn sequelae may also develop mammary hyperplasia, requiring careful surgical management.

Methods. A 45-year-old woman with burns covering 25% of her total body surface area (TBSA) sought treatment for scar contractures and gigantomastia symptoms, including cervicalgia and lumbosacral pain. Preoperative examination showed severe tissue damage in the chest and neck, with adherent scars and reduced skin elasticity. A mammary deformity, including asymmetry and abnormal jugulo-nipple distance, complicated surgical planning.

Results. This case presents reduction mammaplasty in a patient with chest and neck burn sequelae, using McKissock's supero-inferior pedicle technique. The technique ensured secure vascularization and proper NAC repositioning, leading to improved outcomes.

Conclusions. Managing gigantomastia in patients with burn sequelae remains complex and requires individualized strategies. Further studies and clinical guidelines are needed to refine surgical decision-making in such cases.

Key words: burn sequelae, burn chest, burned breast, reduction mammaplasty, McKissock's technique, scar contracture

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INTRODUCTION

Over the years, thanks to significant advancements in burn treatment techniques, the survival rate of patients, even in cases of extensive injuries, has improved markedly [1]. However, the sequelae of burns can lead to severe and disabling deformities, accompanied by considerable psychological distress, as seen in cases of breast burns in young women. The most common issues include partial or total loss of the nipple-areola complex (NAC), post-burn scar contractures, and alterations in breast

tissue [1,2]. Women with chest burn sequelae may also develop mammary hyperplasia over time, presenting symptoms similar to those of patients without burns [1,2]. In such cases, the plastic surgeon faces the challenge of planning a reduction of mammaplasty to improve the patient's quality of life. In addition to the aesthetic damage that compromises the appearance of the breast and complicates surgical planning, these lesions can negatively impact vascularization, which is why many plastic surgeons are reluctant to operate on burned breasts [1-3]. The aim of the authors of this work is to present a case of reduction mammaplasty performed on a patient with sequelae of burns to the chest and neck, in order to stimulate discussion on the best surgical and medical management in similar cases. The procedure was carried out using McKissock's technique. In the case described, the technique proved to be safe and complication-free, with no hematomas, necrosis, or infections.

CASE

A 45-year-old woman, a habitual smoker (10 cigarettes per day), with a history of burns covering 25% of her total body surface area (TBSA), involving her face, neck, chest, and upper limbs, presented again to our plastic surgery unit for treatment of persistent scar contractures on her neck and management of symptoms related to gigantomastia, including cervicalgia and lumbosacral pain, which significantly affected her quality of life.

The patient had undergone acute burn management 4 years earlier, including tangential eschar excision and split-thickness skin grafting. Preoperative evaluation revealed a complex clinical scenario: the chest and neck regions previously affected by burns exhibited adherent, retracted scars with severe compromise of skin quality and underlying soft tissues. This condition was further complicated by a marked mammary deformity with significant asymmetry.

Preoperative anthropometric assessment demonstrated a sternal notch-to-nipple (SN-N) distance of 38 cm on the right side and 33 cm on the left, with a bilateral nipple-to-inframammary fold (N-IMF) distance of 14 cm. Preoperative breast volume was estimated using the Breast-V [4] application, revealing an approximate volume of 1450 mL for the right breast and 1320 mL for the left. The combination of severe post-burn tissue alterations and excessive breast volume significantly complicated preoperative planning for reduction mammaplasty (Fig. 1).

Despite these challenges, the patient was selected for simultaneous procedures: lipofilling of the neck, using fat harvested from the thighs, and reductive mastoplasty with a superior-inferior pedicle technique. The



Figure 1. Preoperative examination photographs of the patient. **A**) Left lateral view highlighting the retracted scars and altered breast contour; **B**) Frontal view showing breast asymmetry and jugulo-nipple distance discrepancy; **C**) Right lateral view illustrating tissue adhesion and deformity due to burn sequelae, emphasizing the surgical challenges in planning a reductive mastoplasty.

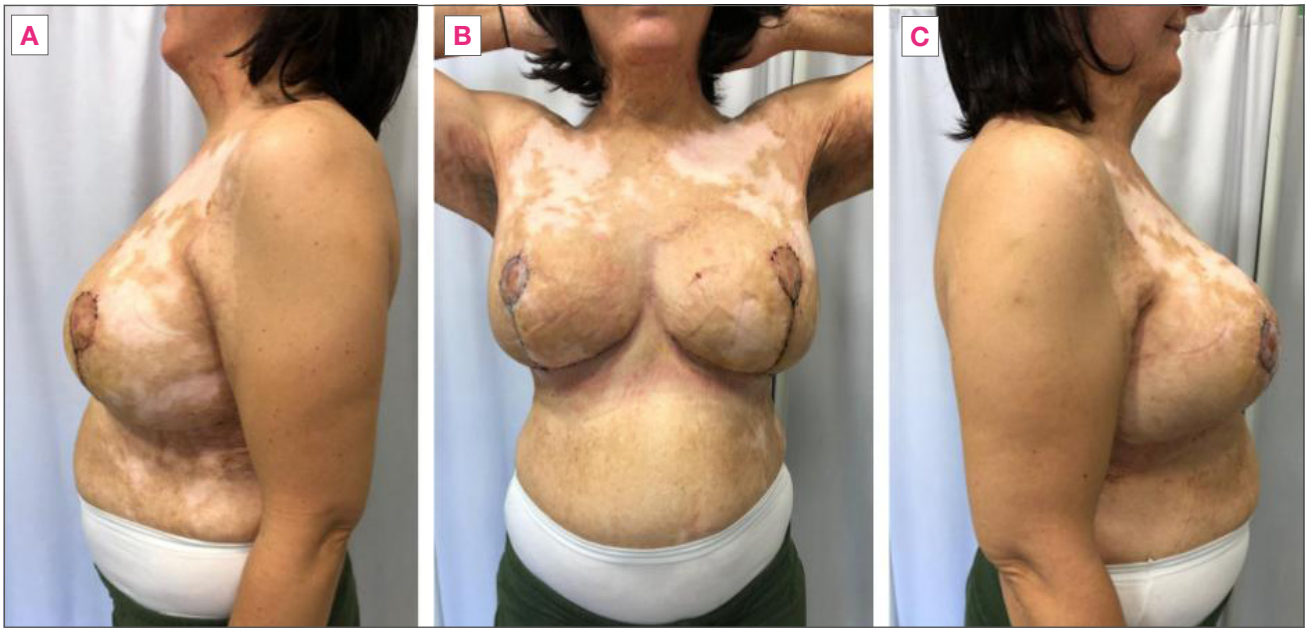


Figure 2. Photographs of the patient during the first postoperative follow-up visit. **A**) Left lateral view highlighting the restoration of the breast contour with a more natural and harmonious shape; **B**) Frontal view showing significant breast symmetry and correction of the jugulo-nipple distance; **C**) Right lateral view illustrating the improvement in breast projection and shape, with reduced scar adhesions and a more uniform appearance of the tissues.

McKissock technique for reductive mastoplasty was chosen for its multiple advantages in this case. It reduces the size of large breasts with significant jugulo-nipple distances, eliminates the scar tissue from the medial and lateral flaps, and repositions the nipple-areola complex (NAC) to a normal location, thus improving both aesthetics and functionality. The procedure was completed without complications. Immediate postoperative results showed breast symmetry, restored contour, and an improved jugulo-nipple distance Figure 2. The patient expressed high satisfaction with the functional and aesthetic results.

Preoperative planning

Preoperative markings were performed with the patient in the upright position. The new nipple-areola complex (NAC) position was planned along the breast meridian at the level of the projected inframammary fold, corresponding to approximately 21 cm from the sternal notch. According to the McKissock superior-inferior pedicle reduction mammaplasty technique [5], a supero-inferior pedicle approximately 8 cm in width was designed to ensure adequate vascularity in a surgical field compromised by post-burn scarring. Resection patterns were planned to preferentially excise the most inelastic and fibrotic tissues while preserving critical vascular territories. Particular attention was paid to scar-related tissue stiffness and altered skin elasticity, which significantly limited tissue mobilization compared with non-burned breasts.

Surgical technique

The patient was placed in a supine position under general anesthesia. Bilateral keyhole-shaped incisions were made following the preoperative markings. The nipple-areola complexes (NAC) were preserved on a superior-inferior pedicle, with deepithelialization of the pedicle and surrounding skin.

A total of 950 g of glandular and fibrotic tissue was removed from the right breast and 720 g from the left. The excision aimed to eliminate scarred and inelastic tissues, ensuring maximum removal of compromised tissue while preserving the vascular supply of the NAC. The medial and lateral breast flaps were mobilized and reshaped using parenchymal sutures to recreate a conical breast contour. The NACs were repositioned symmetrically and aesthetically through the movement of the areola-carrying flap, achieving a natural and harmonious result.

The new inframammary fold was recreated by suturing the lower edges of the medial and lateral flaps of each breast. Skin closure was performed with layered sutures, ensuring minimal tension and optimal scar placement for a functional and aesthetically pleasing outcome.

DISCUSSION

In patients with burn sequelae involving the chest wall, breast tissue may undergo profound structural alterations secondary to retractile scarring and loss of skin elasticity. The present report describes a rare case of gigantomastia in a patient with post-burn sequelae, a condition that poses significant surgical challenges due to burn-related deformities of the surrounding tissues, as well as substantial functional and psychological impairment resulting from the coexistence of both conditions. In such complex scenarios, meticulous surgical planning is mandatory to preserve tissue integrity, ensure reliable vascularization, and achieve appropriate positioning of the nipple–areola complex (NAC).

A review of the literature reveals several reconstructive strategies for managing breast deformities in patients with burn sequelae. El-Otiefy et al. [6] described the use of a superiorly, laterally, or medially based abdominal sliding skin flap transferred to the inframammary sulcus to restore breast contour. This technique allows elevation and reshaping of the breast mound while adapting to individual anatomical and functional requirements.

El-Khatib [7] advocated the use of an inferior pedicle technique for breast reduction in burned patients, as it permits excision of compromised medial and lateral tissues while enabling repositioning of the NAC to a more anatomical location. In the present case, however, McKissock's supero-inferior pedicle reduction mammaplasty was selected. In addition to offering the advantages described for inferior pedicle approaches, this technique provides a more reliable blood supply through a dual-pedicle design, which is particularly advantageous in tissues compromised by burn-related scarring.

Recent literature emphasizes the critical importance of pedicle reliability in surgically challenging vascular environments. Studies addressing reduction mammaplasty in compromised tissues highlight the benefits of robust pedicle design and careful planning of NAC transposition to reduce ischemic complications [8]. Similarly, reports on breast reconstruction in burn patients underscore the unpredictability of tissue perfusion and the need for reconstructive techniques that offer vascular redundancy [9]. Earlier experiences with reduction mammaplasty in structurally altered breasts further support the use of approaches that minimize ischemic risk while allowing substantial reshaping [10]. These considerations support our choice of McKissock's dual-pedicle technique, which offers enhanced vascular safety in a scarred operative field.

In agreement with Bayram et al. [11], we believe that no single standardized approach exists for the correction of post-burn breast deformities. Surgical reconstruction must be individualized, taking into account the specific characteristics of the deformity as well as the patient's functional and aesthetic goals.

Despite the use of advanced surgical techniques, the management of post-burn breast deformities remains challenging due to scar contractures, compromised skin quality, and altered tissue biomechanics. These cases require a multidisciplinary approach, experienced surgical expertise, and meticulous postoperative follow-up to optimize long-term outcomes. This case highlights the importance of personalized therapeutic strategies, as patients with burn sequelae and gigantomastia represent a unique and complex clinical population requiring tailored surgical solutions.

CONCLUSIONS

The management of gigantomastia in patients with burn sequelae represents a rare but highly complex reconstructive challenge. Tissue fibrosis, reduced elasticity, and unpredictable vascularity demand meticulous planning and techniques that maximize perfusion reliability. This case demonstrates that McKissock's supero-inferior pedicle reduction mammoplasty can provide a safe and effective option in severely scarred breasts, allowing substantial volume reduction, reliable NAC transposition, and restoration of breast contour. For plastic surgeons, this report reinforces the importance of individualized strategy selection and highlights the value of dual-pedicle techniques in surgically compromised vascular environments.

Conflict of interest statement

The authors declare no conflict of interest.

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Author contributions

The authors contributed equally to the work.

Ethical consideration

Not applicable.

References

1 Powers KL, Phillips LG. Breast reduction in the burned breast. Clin Plast Surg 2016;43:425-428. https://doi.org/10.1016/j.cps.2015.12.005.

2 Thai KN, Mertens D, Warden GD, et al. Reduction mammaplasty in postburn breasts. Plast Reconstr Surg 1999;103:1882-1886. https://doi.org/10.1097/00006534-199906000-00012

3 Hsiao YC, Yang JY, Chuang SS, et al. Are augmentation mammaplasty and reconstruction of the burned breast collateral lines? Experience in performing simultaneous reconstructive and aesthetic surgery. Burns 2009;35: 130-136. https://doi.org/10.1016/j.burns.2008.05.023

4 Longo B, Farcomeni A, Ferri G, et al. The BREAST-V: a unifying predictive formula for volume assessment in small, medium, and large breasts. Plast Reconstr Surg 2013;132:1e-7e. https://doi.org/10.1097/PRS.0b013e318290f6bd

5 McKissock PK Reduction mammaplasty with a vertical dermal flap. Plast Reconstr Surg 1972;49:245-252. https://doi.org/10.1097/00006534-197203000-00001

6 El-Otiefy MA, Darwish AM. Post-burn breast deformity: various corrective techniques. Ann Burns Fire Disast 2011;24:42-45.

7 El-Khatib HA. Reliability of inferior pedicle reduction mammaplasty in burned oversized breasts. Plast Reconstr Surg 1999;103:869-873. https://doi.org/10.1097/00006534-199903000-00014

8 Longo B, D'Orsi G, La Padula S, et al. Narrow inferior-central septum-based pedicle: a safe technique to improve aesthetic outcomes in breast reduction. J Plast Reconstr Aesthet Surg 2023;85:226-234. https://doi.org/10.1016/j.bjps.2023.07.016

9 Foley P, Jeeves A, Davey RB, et al. Breast burns are not benign: long-term outcomes of burns to the breast in pre-pubertal girls. Burns 2008;34:412-417. https://doi.org/10.1016/j.burns.2007.05.001

10 MacLennan SE, Wells MD, Neale HW. Reconstruction of the burned breast. Clin Plast Surg 2000;27:113-119.

11 Bayram Y, Sahin C, Sever C, et al. Custom-made approach to a patient with post-burn breast deformity. Ind J Plast Surg 2014;47:127-131. https://doi.org/10.4103/0970-0358.129646