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Post Burn Contracture of the Axilla Reconstructed with a Pedicled Parascapular Flap

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ABSTRACT

Post burn scar contracture of the axilla is a common problem following thermal burns of the trunk and upper limb. Inadequate treatment and rehabilitation of shoulder abduction during the acute period is a major cause of this problem. It remains a challenging problem to the reconstructive surgeon to achieve good quality skin cover following contracture release. In this paper, we have presented a case of post burn contracture of the axilla, released and resurfaced the raw area with a pedicled parascapular flap with good functional and aesthetic results.

Key Words: Axilla, Contracture, Post-burn, Parascapular, Reconstruction

I. INTRODUCTION

Axillary contractures are difficult to treat due to the joint stiffness, difficulty in splinting, and the high recurrence rate with inappropriate care. Axillary contractures are classified as type 1 which are those limited to the anterior or posterior axillary fold, type 2 are those involving both the axillary folds but sparing the dome and type 3 are those with involvement of the dome and obliteration of the axilla.[1-3] Fasciocutaneous flaps should be considered as the first choice resulting in a better cosmesis. Parascapular flaps are simple to perform with a high survival rate and have good functional results.[4-6]

II. CASE REPORT

55 year old male presented with post burn raw area left arm, chest wall and trunk with difficulty in extending his arms and shoulders. There was an alleged history of flame burns by accidental domestic reason 2 months ago. He was treated elsewhere conservatively and now came with the above mentioned complaints. There is no history of any co-morbid illnesses. On examination, a large raw area involving the left arm, anterior chest wall and trunk with grade 1 contracture left axilla. **(Fig. 1)** We planned for contracture release, pedicled parascapular flap for axillary resurfacing and split skin grafting (SSG) the residual raw areas. Under general anaesthesia and tumescent infiltration, the contracture release was done and covered with a pedicled vertical parascapular flap. **(Fig. 2,3)** Rest of the raw areas and the secondary raw area were covered with SSG. Compression dressings and aeroplane splint was applied. Post-operative was uneventful with the flap and SSG well settled with improvement in shoulder abduction. **(Fig. 4)**

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Fig. 1 – Clinical photograph showing raw areas and axillary contracture

Fig. 2 – Marking of parascapular flap

Fig. 3 – Flap elevated

Fig. 4 – Late post-op picture with well settled flap & SSG

III. DISCUSSION

The axilla is one of the most frequently affected areas of postburn contractures, with associated cosmetic and functional problems. Burn around the axillary region frequently leads to axillary scar contracture which is one of the most difficult complications to prevent in burn patients.[7] It is also a problem for the surgeon as there is paucity of local tissues to be used for reconstruction.[8] A multitude of options are available but recurrence is common if improper flap is chosen or postoperative rehabilitation is not properly adhered to.[9] The hair-bearing part of the axilla, the dome or the cupola, is usually spared from the thermal injury because of the unexposed and hidden axillary skin of the arm pit, and in most cases the upper extremities are maintained in adduction, protecting the axillary hair-bearing area. The common pattern of scar formation in this region is contracture of the anterior, posterior, or both axillary folds, with a normal axillary dome. Anterior axillary skin fold contracture is the most common deformity occurring at the shoulder.[9] The aim of surgery is to provide maximum correction with minimal or no local anatomic distortion thereby aesthetic as well as maintain functionality.[10] The primary issue with axillary contractures is the inelasticity of either or both of the axillary folds, which prevents the full extension and/or abduction of the shoulder joint.[9] The two local anatomic conditions that must be taken into consideration when surgical correction is contemplated are the amount of scarring of the adjacent skin and the involvement of the hair-bearing area of the axilla.[10] Axillary contractures were classified by Kurtzaman and Stern on an anatomical basis as Type 1A - injuries involving the anterior axillary fold, Type 1B - injuries

involving the posterior axillary fold, Type 2n - injuries involving the anterior and posterior axillary folds and Type 3 - injuries of type 2 involving also the axillary dome.[11] The ideal treatment of axillary contractures can be planned on the basis of this classification with different options available including skin grafting, use of local flaps like Z-plasty or square flap and regional flaps like parascapular flap, scapular flap and thoracodorsal perforator artery flap.[6] The posterolateral fasciocutaneous flap described by Tollturst and Haeseker is actually the pedicled variety of parascapular flap.[12] It is the same territory of the descending branch.of the circumflex scapular artery. Its pedicle is however left wide, and the dog-ear is therefore more manifest. In 1982, Nassif et al.11 described the parascapular flap and used it as a free flap.[13] Fasciocutaneous flaps harvested from the back such as scapular and parascapular flaps have been used for treatment of obliterated axilla in post burn contracture. They have proved to be excellent for resurfacing large defects involving the axilla and their donor area of upto 10cm can be closed primarily.[14] When a vascularised flap is used for axillary reconstruction, the risk of contracture or recurrence follow skin grafting are minimal and postoperative splinting is unnecessary, early shoulder mobilisation is unimpeded and the period essential for rehabilitation is diminished. Parascapular flap as single stage alternative is excellent for resurfacing large defects involving the anterior or posterior axillary web.[15,16] With the introduction of fasciocutaneous flaps by Ponten there are now a number of larger flaps available around the axilla which allows closure of total axillary defects.[17] Fasciocutanous flaps are usually considered for type 3 axilla contracture of which parascapular flaps are most commonly used.[2,18] Mofikoya BO and Oyeneyin JO in 2007 did a study in which all wounds were healed without complications and they achieved a range of motion from 90 degrees after 4weeks to 120 degrees after 12 weeks.[19] But, in a study done by Shalaby H.A in 1995, 12 patients with grade 4 post burn axillary contracture were reconstructed by parascapular flaps and he achieved total flap survival with good functional result but all his donor sites could not be closed primarily as 3 of them needed split skin grafting.[20]

IV. CONCLUSION

Reconstruction of axillary contractures is a difficult one but the parascapular flap is the best option with its reliable blood supply, large coverage area, and low donor-site morbidity to provide the desirable functional and aesthetic outcome.

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