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Surgical Treatment of Complex Axillary Scare Contractures- One Case Report

Kaoutar Johri , Rafik Amine, Boukind Elhassan

Alghassani hospital ,Fes city ,Morocco

Abstract: *Axillary scar contracture is frequently observed after severe burn insult and is usually accompanied by scarred adjacent area. These scars result in adduction deformity, which may be severe and diffuse. The lack of adequate treatment in the acute phase leads to complex scars that require different surgical techniques depending on the clinical examination of surgeon. Through a clinical case of a complex axillary scare contracture, we will expose the possible surgical techniques, their advantages and disadvantages in the case of burning of the entire axillary hollow. The surgical management of linear scare contractures will not be discussed in this article. Early surgical management of deep lesions within 21 days of the burn associated with prolonged rehabilitation as well as the wearing of compression garments and splints are essential elements in the prevention of these axillary contractures.*

Keywords :contracture,axillary, fasiocuteous flap

Introduction:

Burn sequelae are defined as any functional or aesthetic complication occurring after healing of a generally deep burn.

Their severity varies according to their location; The shoulder joint has the greatest amplitude of all the joints and remains a frequent seat of these sequelae, particularly for children.

The goal of the surgical correction of axillary scar contractures is to provide maximum release with minimum or no local anatomic distortion and the least incidence of recurrence.

There are many surgical techniques to treat complex axillary scar contracture. We illustrate them through this rare clinical case.

Clinical case:

This is a 12-year-old patient of low socioeconomic level who had an accidental thermal burn by scalding at the age of 5 years, poorly managed in the acute phase and having evolved into a significant limitation of shoulder movements.

the patient did not consult in a reconstructive surgery center and therefore did not benefit from preventive treatment of post-burn sequelae given the socioeconomic context.

The clinical examination on admission to the plastic surgery department at Alghassani hospital in Fes city (Morocco) objectified a scarring tissue with involvement of the entire left axillary hollow; the anterior and posterior pillars including the hair bearing area the abduction was limited to 30 degrees (fig 1) .The internal face of the arm and the supero and infero external quadrants of the left breast were scarred.

the surgical treatment consisted of a complete debridement with meticulous excision of the scar tissue leaving a loss of skin from the axillary hollow extending to the lateral part of the left breast and the internal face of the arm wich was covered by a laterothoracic IC fasciocutaneous flap in rotation which allowed coverage of the axillary hollow(fig 2) ; a semi-thick skin graft was performed after two weeks to cover the lateral region of the breast(fig3).

Evolution was marked by 100% retention of the flap and graft and recovery of abduction at 110°.The result was considered very satisfactory.

FIG1 :axillary bride contracture type III

FIG2:immédiate post operative appearance

FIG3: skin graft after release

Discussion:

Retractile bands scars are a form of major skin sequelae, appearing in the functional area. They create a virtual loss of skin , highlighted during surgical debridement. A classification of burn sequelae in the axillary region is useful for standardizing therapeutic proposals.

There are several classifications of axillary burn sequelae [1—2]. Achauer's classification [2], taken up by Mojallal et al. [3] is the most detailed.

- Type I: anterior or posterior axillary fold is involved.

  Slightly restricted shoulder mobility.

- Type II: Both the anterior and the posterior axillary folds are involved, leaving the normal skin in the hair-bearing area. A web is formed during abduction.
- Type III: The upper arm and the lateral aspect of the trunk are completely included in one mass of hypertrophic scar tissue
- Type IV: Extrinsic impairment,scars in surrounding areas causing reduced joint mobility.

Thus, Hudson and Renshaw recommend the use of autoplasties when the limitation of articular amplitude is less than 50% of the normal amplitude. Beyond that, they recommend complete debridement, paying attention to the noble axillary elements, followed by the use of total skin grafts, artificial dermis or flaps [4].

Thin skin grafts are not suitable for reconstructing burn sequelae because they cause recurrence of skin retraction. Total skin grafts provide the best cosmetic and functional result. The thickness of the total skin reduces the amount of retraction.

However, the taking of total skin grafts is more difficult to obtain, particularly at the level of the mobile zones, in particular articular. Postoperative immobilization of total skin grafts is therefore essential and complicates postoperative management. The surface area of total skin donor sites is limited. Prior cutaneous expansion of these sites makes it possible to obtain larger grafts and closure of the donor sites by direct suture. Semi-thick skin grafts are an alternative to full skin grafts. Their retraction is slightly greater and increases the scar ransom.

Artificial dermis are intended to reproduce the properties of the dermal extracellular matrix which is a skin structure responsible for the elasticity of normal skin.

In deep burns, this structure is damaged and replaced by granulation tissue, causing skin retraction and pathological scars. The major advantage of artificial dermis lies in the availability of the matrix itself, as well as the thin skin grafts necessary for its covering. This procedure showed 75% improvement in joint mobility without recurrence of the contracture 11 months after surgery [5].

The use of a flap makes it possible to provide thicker and more elastic tissue than a skin graft. Free flaps have been used, but are technically more difficult, require longer anesthesia time, and require a trained microvascular surgeon [6].

IC fasciocutaneous flaps derived from Z plastic is a reliable technique in the treatment of these sequelae of axillary, inguinal and popliteal burns.

However, there are limits. First, the absolute necessity that the flap be raised in healthy skin. It is necessary to study the adjacent scarred skin well. It is also necessary, in spite of their relative success, to be wary of giant flaps [7].

The feasibility of a particular procedure depends on a set of local anatomical conditions, as the shape or extent of the scar is not unique in all patients. The decision regarding which technique to use can only be made after careful consideration given to each individual case.

Conclusion

Treating burn scar contracture remains a challenging problem for reconstructive surgeons. At present, no consensus exists on when to use what kind of technique [8]. Surgical treatment cannot be efficient without rehabilitation and immobilization [9] . The ultimate goal of the treatment of burn sequelae is the socio-professional reintegration of the burnt victim.

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