Burns Open xxx (2018) xxx–xxx

Contents lists available at ScienceDirect

Burns Open

journal homepage: www.burnsopen.com

Management of axillary burn contracture: About of 67 cases

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ARTICLE INFO

Article history:
Received 13 March 2018
Received in revised form 17 June 2018
Accepted 18 June 2018
Available online xxxx

Keywords:
Burn
Contracture
Axillary
Surgery
Physiotherapy

ABSTRACT

The scapulo-humeral joint has the greatest range of motion of all joints. Axillary contractures, mostly sequela of trunk burn, are sometimes cause of important hindrances in daily activities. Once installed, their treatment are essentially surgical. The purpose of this study was to describe epidemiologic and clinical profile and to evaluate the therapeutic results. We carried out a review from January 2001 to December 2016. Sixty-seven patients with all post-burn axillary sequelae were included. The Kurtzman-Stern's classification was used to describe the type of contracture. Surgical procedure consisted of releasing scar and covering the loss of substance by local plasty, skin grafting or loco-regional flap. The average age was 21 years [2–76 years] with a sex ratio (M/F) = 0.5. Post-burn contracture was following burn flame in 43 cases (64%) and hot fluid in 18 cases (27%). The mean duration of contracture was 3.3 years [1 month–20 years]. Type 1 and 2 were noted in 22 cases (33%), type 3 in 45 cases (67%). The deficit of abduction varied between 30° and 110°. Thirty-eight patients have been operated. Twenty-six patients underwent local plasty, 11 patients was treated by skin graft and one patient was treated by para-scapular flap. The complications were dominated by minor flap necrosis and skin graft loss in 9 cases (24%). After an average follow-up of 4 years, functional results were considered as satisfactory in more than 80% of cases.

Management of post-burn axillary contracture flap and skin graft gives good results despite the minor complications related to peri axillary scar and difficulties of post operative immobilization of the shoulder. Early surgery and physiotherapy are important to achieve better results by avoiding ligament and capsular retractions.

1. Introduction

Burn contractures are a real problem in developing countries. Their incidence are mainly related to lack or unsuitable care because they almost did not see a specialist medical doctor to evaluate the need of skin grafting of acute burn and physiotherapy after healing. Several procedures have been described to correct axillary contractures including skin grafting, local flaps, Random plasty, flaps islands, free flaps and tissue expansion [1]. Fasciocutaneous flaps and local plasty depend widely on the type of contracture and on the availability healthy skin neighboring the axillar [2]. However surgery only is not sufficient, it must be followed by physiotherapy to achieve better functional results. The purpose of this review was to define the epidemiological, clinical profile of patients and to evaluate therapeutics results.

2. Patients and method

We carried out a retrospective study from January 2001 to December 2016. We used the Kurtzman and Stern's classification (Table 1) to define contracture type. Surgical procedures were always performed by releasing scar contracture and covering the wound by local flaps, skin graft or fascio-cutaneous flap. A thoraco-brachial plaster splint was put at the end of the procedure and physiotherapy was started as soon as the cicatrisation obtained.

Parameters of satisfaction was the range motion of abduction: results was assessed as very good if the range of motion was between 150° and 180°, good between 100° and 140° and passable if it was under 90° and bad if there is recurrence.

3. Results

There was 22 males and 45 females (sex ratio = 0.5) with a mean age of 21 years [2–76 yrs]. Children was 31 among population. It was 16 girls (16/45) and 15 boys (15/22). Duration of

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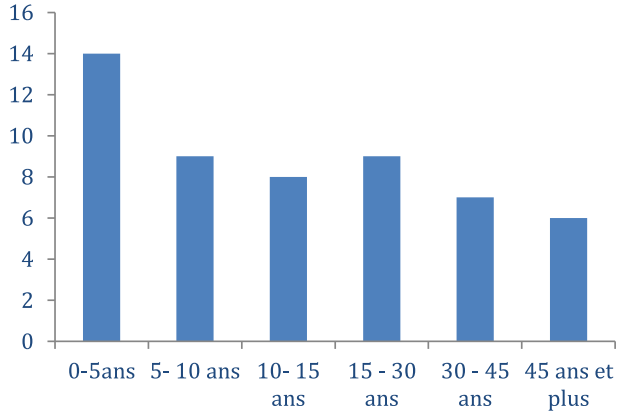
https://doi.org/10.1016/j.burnso.2018.06.003
2468-9122/

Table 1
Kurtzman and Stern's classification.

Type 1A	Injuries involving anterior axillary fold
Type 1B	Injuries involving posterior axillary fold
Type 2	Injuries involving both anterior and posterior axillary folds (sparing axillary dome)
Type 3	Injuries type 2 plus axillary dome

lesions was 3.3 years [1 month–20 years]. Etiologies of acute burn were due to flames in 43 cases (64%), hot fluids in 18 cases (27%), by chemical fluids in 3 cases (4.5%). In 3 other cases, patient couldn't precise the etiology because the didn't remember. We noted 15 cases (23%) of type 1 contracture, 7 cases (10%) of type 2 and 45 cases (67%) of type 3. The deficit of abduction varied between 30° and 110°. Associated lesions were dominated by hypertrophic trunk scars in 30 cases (45%); and scar contractures of elbow, neck and breast in 7 (10.4%), in 8(12%) in 2 cases (3%), respectively. Thirty-eight patients have been operated. There was 14 procedures in type 1, 4 in type 2, 19 in type 3. Twenty-six patients (68.4%) underwent local reconstruction with Z plasty, trident (five Z) plasty (Figs. 1 and 2) or V-Y plasty or combined local plasties (Fig. 3). Eleven patients (29%) were treated by skin grafting and one patient (2.6%) by para-scapular flap (Fig. 4). Complications were dominated by skin graft loss and partial local flap necrosis in 9 cases (24%). Five patients had undergone secondary procedures by skin grafting to cover wounds left by graft or flap necrosis. Physiotherapy was prescribed for all patients over a period of two months by professionnal. In immediate post operative care, all patients had splinting for 2 or 3 weeks. One third of patients didn't have physiotherapy but home massage by there relatives. In all cases, we suggested massage for a period of six month after surgery. After an average follow-up of 4 years, results were assessed as satisfactory with a recovery of shoulder function in more than 80%. No recurrence have been noted.



Distribution according to age

4. Discussion

In adapted treatment and lack of prevention protocol are the leading cause of burn scar contractures and its consequences. We found in our study and in Karki's study [3] that no patient had benefited prevention of scar contracture during acute phase management or after healing. Shoulder scar contracture often let limitation of range of motion and therefore induce major disabilities in daily life. However, despite lesions's severities and difficulties associated with it's treatment, we successfully had 80% recovery of a normal function with a range of motion between

Fig. 1A. Type 1 (posterior axillary contracture) in a 6 years old girl.

Fig. 1B. Result after realising contracture by Trident plasty.

Fig. 2A. Type 3 axillary contracture. After realising by Trident plasty.

Please cite this article in press as: Ndiaye L et al. Management of axillary burn contracture: About of 67 cases. Burns Open (2018), https://doi.org/10.1016/j.burnso.2018.06.003