Preventing Web Space Contractures in Hand Burns

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Introduction

Hand burns are a common injury – they are involved in 42-80% of all burn injuries, and can have a devastating impact on function and quality of life. A major contributor to this impact is web space scar contracture. It is the most frequent indication for reconstructive surgery after a hand burn. A number of techniques have been described in the literature for web space contracture release – this can be a complex procedure with variable success. The mainstays for preventing web space contracture are supervised passive motion protocols and compressive garments. We ask: can acute surgical management can be optimised to help prevent web space contracture?

We present our experience at Royal North Shore Hospital Severe Burns Unit through a retrospective review and case series of surgically grafted hand burns.

Technique

The protocol utilised was initially described by Dr Chandini Perera (Burns and Plastic Surgeon, Sri Lanka):

1. Debridement +/- escharotomy
2. Grafting of the dorsal hand and fingers avoiding the web spaces
3. Observation for a period of 21 days from injury to determine if palmar or web space grafting is required.

Methods/Patients

We conducted a retrospective review of hand burns presenting to RNSH over a 5 year period. Patients with burns involving the web space(s) who underwent hand grafts as per the aforementioned protocol were isolated for our case series.

Outcome measures:

- Presence of web space contracture
- Sollerman Test for hand function
- Modified Vancouver Scar Scale (MVSS) for cosmetic outcome

Results

612 hand burns were treated at RNSH during the period of review. The mean age of patients was 39 years, 75% were male. 396 (64.7%) required surgical grafting.

We present a case series of 5 patients who sustained hand burns involving the web space(s), managed with fenestrated, unmeshed split skin graft excluding the web space(s). No patients had web space contracture at follow up. Functional and cosmetic outcomes were favourable. See video for clinical photographs.

Patient	Injured Hand(s)	Sollerman Test (Hand Grip)		Modified Vancouver Scar Scale (MVSS)
		Right Hand	Left hand	
17yo R-handed male, 25% TBSA electrical flash burn	Left	76/80	76/80	3/12 at 2 months
20yo R-handed male, 6% TBSA hot oil burn	Right	74/80	76/80	4/12 at 3 months
49yo R-handed male, 2% TBSA hot oil burn	Right	77/80	75/80	0/12 at 3 months
35yo R-handed male, 10% TBSA flame burn	Right + left	76/80	73/80	3/12 at 6 months
55yo R-handed male, 45% TBSA flame burn	Right + left	74/80	75/80	4/12 at 12 months

Table: summary of results

Conclusion

Although this is a small study with no comparison group, it demonstrates that excluding web spaces when grafting hand burns may help prevent web space contracture. All cases had multidisciplinary input from physiotherapy and occupational therapy.

Acknowledgments

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Case 1

Figure 1: Day 1 post burn

Figure 2: Day 5 post split skin graft

Figure 3: Week 8 post split skin graft

Video: clinical photographs from a case series of grafted hand burns

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