Scar Management: Academic-Clinician Collaborations in Identifying and Mapping Evidence

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JBI Model of Evidence Informed Healthcare

Overarching principles
Culture - Capacity - Communication - Collaboration

Global Health
Evidence Based Healthcare Feasible Appropriate Meaningful Effective
Evidence Synthesis
Evidence Transfer
Evidence Implementation
Evidence Generation
Research
Expertise
Discussion
Dissemination
Guidelines
Systematic review
Evidence summary
Active dissemination
Systems integration
Evidence
Education
Facilitation of change
Evaluation of process & outcome
Sustainable impact
Engagement
Knowledge need
Research
Academic-Clinician collaboration

“the knowledge needs of expert clinicians need to be paired with the skills of experienced academics to synthesize and produce practical, relevant, usable evidence”

(Jordan 2018)
JBI Database of Evidence-Based Practice

> More than 3,300 Evidence Summaries, 900 Recommended Practice documents
> Transfer relevant, up to date evidence
The Joanna Briggs Institute Burns Node

- JBI Burns Node launched in 2009
- 13 Expert Reference Group members
- 190 online Evidence Summaries and 77 Recommended Practices, updated yearly
- 17 audit topics in JBI’s online auditing software
Axilla Burns: Post-Surgical Care

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Question
What is the best available evidence regarding management of axilla burns and contractures following surgery?

Clinical Bottom Line
Burns to the axilla present a challenge to healthcare professionals. More than one-third of patients sustaining burn injury >30% body surface area (BSA) have burns of the neck and chest. These burns often include the axilla and contractures can range in severity and can be difficult to treat due to both the concavity of the axilla and the wide range of flexion and abduction motion. There can be poor compliance with axilla splints, as they can be difficult to keep in place, and due to being uncomfortable.1-5 Contractures to the axilla region can cause restrictions in shoulder movement, result in an impact on daily functioning, and are unsightly.1,4,5 A variety of surgical and non-surgical methods are often used to address axilla contracture, including but not limited to skin grafting, Z-plasty, Y-V plasty, regional and free flaps, island flaps and perforator flaps, as well as different splinting methods.1,2,4,5 For axilla burns, treatment options depend on severity of contracture, health of the patient, safety of anesthesia, availability of resources/equipment, and possibility of follow-up care.5

- The modiolus axillary plasty helps the management of axillary contractures by providing crushescential pressure for scar management and prolonged stretch to contracted tissue. It increases the shoulder range by acting as a cam stool. It is comfortable and this enhances compliance.1, level 5
- A case study investigated the factors that influence functional improvement in severe axillary contractures. The authors reported that adequate surgical treatment in the early period, after occurrence of contracture, is desirable for burn scar contracture of the axilla.2, Level 4
- A clinical study reported on post burn axillary contractures treated with thoracodorsal perforator based cutaneous flaps. Satisfaction improvement in shoulder abduction was obtained and cosmetic results were satisfactory from the patient’s point of view. The authors recommend this approach as a treatment of choice.2, Level 4
- A study was conducted to present a new opposite running Y-V plasty design to overcome the cumbersome, unattractive, and distortion of the axillary hair that occurs with traditional flap surgical methods. The authors reported the opposite running Y-V plasty is a good alternative method when considering the reconstruction of axillary burn contracture.4, Level 4
- Splints and externally the air splints, offer some protection and immobilization, arm abduction, and protection to the surgical sile from shear forces. Filling for splints is best done whilst the patient is still under anesthesia, to prevent pain. Splints should be worn as much as possible with an hour rest every 3 to 4 hours for 2 weeks following surgery. The splint should then be worn all night for 6 months after this period. In addition to splinting, active range of motion and passive stretching exercises can begin usually 2 weeks following surgery.5, Level 5

- Splinting is essential in the prevention and treatment of axillary burn contractures, as patients have a tendency to lose positions of comfort that lead to contractures. Appliance splints have been used to prevent and treat axillary contractures. High density foam splints may have advantages compared to thermoplastic splints, which can increase compliance, comfort and ease of use for health professionals, and take shorter time to make.5 (Level 4)
- There is no consensus on when to splint or for how long splinting should continue. One article outlined a treatment algorithm for patients with axilla burns. Those classed as low risk patients with passive range of motion greater than 90 degrees were fitted with a shoulder abduction pillow. High risk patients with passive range of motion less than 90 degrees were fitted with a shoulder abduction brace. Both groups received physiotherapy treatment on a daily basis. At discharge and at twelve weeks follow up, there was good range of movement scores in both low and high risk groups. The authors concluded that a shoulder treatment flowchart with standardized splinting and exercise regimens can result in good outcomes.5 (Level 3)
- The salutary splint is one type of splint that has been used for treatment of burn contractures, where the patient's wrist is strapped to their head, in the tractionsal position.6, Level 4
- As splints that aim to keep the arm in an abducted position can be uncomfortable, can be difficult to make, and can result in compliance issues, a figure of 8 s technique which provided pressure on the skin graft has been used. The technique was well received by patients and provided good range of movement at 12 weeks post-operatively in adult axillary burns.10, Level 1
- There is evidence to suggest that there is no benefit between splinting and exercise and exercise alone on shoulder range of motion at 12 weeks post-operatively in adult axillary burns.6, Level 1

Characteristics of the Evidence
The evidence included in this summary is from a structured search of the literature and selected evidence-based health care databases. Evidence in this summary is from:

- A literature summary1
- A study that included 13 consecutive case of severe axillary burn scar contracture.2
- A clinical study that included 15 case reports.3
- A clinical study that included eight cases.4
- An opinion paper and literature summary.5
- A design modification study.6
- An observational study.7
- An opinion paper and design modification study.8
- A clinical study that included 40 case reports.9
- A prospective randomized study of 52 patients.10

Best Practice Recommendations
- Splinting and physiotherapy regimes may be required following correction of axilla contractures; however, the treatment delivered is dependent on the surgical method and the patient presentation. (Grade B)

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# JBI Burns Node – Scar Management

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## Evidence Overview – Compression Therapy

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<th>Level of evidence/study designs</th>
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| Burns Scar Management: Pressure Garment Effectiveness                     | Given the limited evidence for effectiveness, associated costs and morbidities, clinical judgment should be used to determine whether application of PGT is appropriate. (Grade B)  
Practitioner judgment should be used to determine appropriate levels of pressure required. (Grade B)  
PGT should not be used in isolation but as part of a multi-faceted scar prevention and management strategy. (Grade B)  
Custom made pressure garments are recommended over ready-made garments. (Grade B)  
Pressure garments are to be worn 24 hours daily and removed only for hygiene and washing purposes. (Grade B)  
Pressure garments should be regularly reassessed for adequate fit and pressure, with either adjustments made or new garment supplied as required. (Grade B) | Level 1 & 5 – systematic reviews, RCTs & expert opinion articles                                                                 |
| Clients Perspectives of Pressure Garments and Factors Determining Compliance | The use of alternative materials, additional support for patients with instructions, and continued education for patients on pressure therapy are a range of measures that may improve patient compliance with pressure garments. (Grade B) | Level 3 (quantitative) & Level 3 (qualitative) – Mixed methods SR & observational study |
| Facial Burns: Pressure Therapy Application                               | Transparent face masks appear to have a range of advantages over other types of pressure delivery methods, and should be considered. (Grade B)  
Healthcare professionals should be aware of the impact pressure therapy may have on developing craniofacial features. (Grade B) | Level 3 – Observational studies  
Level 5 – Expert opinion and literature review articles |
| Facial Burns: Adverse Effects of Pressure Therapy                        | Practitioners need to be aware of the potential for obstructive sleep apnea to occur in patients with pressure garments on the face, particularly if they have pre-existing risks for sleep apnea. (Grade B)  
Healthcare professionals should be aware of the impact pressure therapy may have on developing craniofacial features. (Grade B) | Level 3 – Observational studies  
Level 4 – Case reports |
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<td>Burn Scar Management: Moisturizers</td>
<td>Moisturisers for burn scar management should be non-irritant and non-deleterious to pressure garment effectiveness (i.e. aqueous rather than oil based) if applicable. In considering which moisturiser should be used, attention should be paid to patient dermatological history and preferences. (Grade B)</td>
<td>Level 1 – Systematic reviews</td>
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<td>Burns/Surgical Scars: Silicone Gel Sheeting</td>
<td>There is some evidence to support the use of silicone gel sheeting as a preventative or management treatment for hypertrophic and keloid scars. However, this should be just one component of a multiple method approach to scar prevention and management. (Grade B) Clinical judgment should be used to determine the most appropriate wearing regimen. (Grade B) Silicone gel sheeting should only be applied once the wound has healed (i.e. skin is intact) and in accordance with the manufacturer’s recommendations. (Grade B)</td>
<td>Level 1 &amp; 5 – RCTs &amp; clinical guidelines</td>
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<tr>
<td>Burns/Surgical Scars: Massage</td>
<td>There is some but not conclusive evidence supporting the benefits of massage in improving pigmentation, pliability, vascularity and height of scars. (Grade B) Massage can be recommended for its psychological benefits including reduction of depression and anxiety, developing patient-therapist rapport, and improving mood. (Grade B)</td>
<td>Level 1 &amp; 5 – RCTs &amp; expert opinion articles</td>
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<td>Burns Scars: Lasers</td>
<td>Fractional nonablative laser resurfacing appears to be an effective treatment for burns scars, and may be considered as part of a multicomponent strategy to reduce scarring. (Grade B)</td>
<td>Level 1 &amp; 3 – RCTs &amp; observational study</td>
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Rapid reviews and evidence mapping

- Assists clinicians with identifying evidence-based strategies for implementation
- Assists in identifying future research priorities
  - Primary and secondary research
Summary

> Interventions that included multi-components were found to be most effective

> Optimal management is dependent on the patient and scar characteristics

> Academic-Clinician collaboration is invaluable to facilitate implementation of evidence in practice and highlight research priorities
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