Rehabilitation of patients with burns, flaps and grafts Clinical Guideline

Purpose

To provide AUSMAT rehabilitation professionals with guidance on the acute rehabilitation of patients with burns, grafts and flaps.

Key principles in the AUSMAT context

AUSMAT rehabilitation professionals must be capable of autonomously providing acute rehabilitation for patients with burns and / or who require grafts or flaps in both inpatient and outpatient settings. Rehabilitation in the emergency setting requires trans-disciplinary practice by rehabilitation professionals and due consideration of the challenges posed by austere environments.

Responsibilities

AUSMAT rehabilitation professionals are required to provide acute rehabilitation, including therapeutic intervention and discharge planning, for patients with burns, grafts or flaps in accordance with the surgical management plan developed by the AUSMAT surgeons.

AUSMAT surgeons are required to develop a surgical management plan.

AUSMAT nurses are required to be aware of the principles of acute rehabilitation of patients with burns, grafts and flaps support the efforts of the rehabilitation professionals.

Guidelines

Background.

Burn injuries in emergency contexts may occur both as a direct result of the disaster, or in the post-disaster phase when people may be residing in close quarter temporary shelters and / or using high-risk methods of cooking and heating such as fires and open flame stoves. Significant wound injuries are common across the spectrum of natural disasters, and frequently occur with concomitant trauma such as fractures, PNI and amputations. To achieve adequate skin and / or muscle coverage, burn and significant wound injuries may require the use of skin grafts or musculocutaneous flaps. Chronic wounds (i.e. diabetic ulcers, infected wounds pre-dating the emergency) may be managed in AUSMAT facilities due to disruption to usual local wound care services. There is a significant risk of infection in any emergency environment and amelioration of this risk is critical in the management of all burns, grafts and flaps (1-3).

Burn and wound injuries, including grafts and flaps, carry a high risk of significant complication including joint contractures, disfigurement and long-term disability. Rehabilitation must commence as soon as possible post injury in order to achieve the best possible functional and cosmetic outcome. Scar maturation and management can continue for up to two years, and longer in the case of paediatric injury, and is thus beyond the scope of an AUSMAT EMT2. It is therefore the role of the rehabilitation professional to effectively manage the very acute phases of recovery and ensure referral of all patients with a significant burn or other soft tissue injuries to a local provider of long-term scar management and rehabilitation (1-3).

Clinical Management.

1. Burn first aid (if burn sustained within three hours prior to presentation to AUSMAT facility)
    a. Stop the burning process
        i. Remove clothing (unless stuck to skin) and jewellery
        ii. Cool the burn wound with cool running water for twenty minutes
        iii. Wrap burn in cling wrap / non-adhesive film to allow for completion of other aspects of emergency care (3,4)
2. Burn / wound assessment
    a. Ascertain cause and history of burn / wound

i. Thermal / chemical / electrical burn
ii. Acute / chronic wound, laceration / penetrating / degloving
iii. When was burn / wound sustained?
iv. If burn first aid given and for what duration. Could further first aid be effective?

b. Suspicion / presence of inhalation injury, consider mechanism of injury
c. TBSA, burn depth and areas involved (i.e. extent of full thickness burn, presence of circumferential burn)
d. Suspicion / presence of other injuries (i.e. fractures / PNI / TBI), consider mechanism of injury
e. Pain / sensation
f. Oedema
g. ROM of affected joints (2,3)

3. Burn / wound management
    a. Liaise with AUSMAT surgeon regarding surgical plan, consider the following
        i. Is surgical scrub / debridement planned?
        ii. What dressing system is planned? Ensure minimal restriction to joint ROM
        iii. Is splinting in theatre required? Consider taking advantage of anaesthetic to achieve optimal positioning
        iv. What is the plan for skin / muscle coverage? Is grafting / a flap procedure anticipated?
        v. Is transfer to a facility with plastics capability required / underway? What is the time frame for transfer to this facility?
    b. Monitor pain and ensure pain management adequate
        i. Pre-dressing changes
        ii. Pre-mobilisation / exercises
    c. Assess and manage oedema
        i. Elevate affected limbs above heart level
        ii. Apply compression bandaging
        iii. Be mindful of risk of compromising perfusion of vulnerable grafts / flaps
    d. Splinting and positioning
        i. Immobilise necessary joints. Avoid prolonged immobilisation wherever possible
        ii. Support / splint affected joints in anti-deformity positions when at rest
        iii. Ensure all AUSMAT clinical staff are aware of importance of maintaining these positions (i.e. post-turns / toileting / dressing changes)
    e. Mobilisation and joint ROM
        i. Mobilise patients out of bed as soon as possible
        ii. Facilitate participation in functional tasks as able
        iii. Commence structured program of stretches / exercises as soon as movement permitted
    f. Optimise nutritional status as able
    g. Monitor psychological status (2,3,5)
4. Management of inhalation injury (primarily for physiotherapists only, principles appropriate for trans-disciplinary practice identified with *)
    a. Maximising lung volumes
        i. Positioning (i.e. upright / side-to-side) *
        ii. Positive Expiratory Pressure (PEP)

iii. Breathing techniques (deep/diaphragmatic breathing, sustained maximal inspiration, Active Cycle of Breathing)*

b. Secretion clearance techniques

i. Coughing* / huffing

ii. Vibrations / percussion

iii. Humidification / suction (equipment only available in HDU)

c. Early mobilisation / bed exercise program *

d. Pain management * (2,3)

5. Meet with patient and family, if present, to gain detailed history of:

a. Personal information including contact details

b. Medical history and pre-morbid function (i.e. pre-existing disability / chronic injury / illness that may influence rate of healing / outcome)

c. Pre-morbid occupations (i.e. vocation, leisure activities, family roles)

d. Hand dominance if relevant

e. Discharge destination and details regarding accessibility / supports available / proximity to health and disability services

f. Cultural sensitivities, particularly regarding injury and disability (2)

6. Early scar management, consider the following

a. Commence moisturiser / massage as soon as burn / wound sufficiently healed

b. Apply compression as able; consider use of compression bandaging / Tubigrip / firm clothing as available locally (i.e. thick stockings / tights / bike pants)

c. Continue structured program of stretches / exercises (2)

7. Accurate and setting-specific education of patient and family / carer, consider the following

a. Wound / scar healing and maturation phases and timelines

b. Scar management education

i. Itch

ii. Pain

iii. Massage / hydration of scars

iv. Sun protection

c. ROM restrictions / precautions

d. Splint wear regime, don / doff and care as required

e. Functional retraining

f. Potential complications (i.e. contracture / hypersensitivity / pain / long-term disability) and how these can be prevented through stretching / strengthening exercises, positioning, functional activity and engaging in rehabilitation

g. Importance of nutrition and smoking abstinence

h. Rehabilitation phases, roles of relevant rehabilitation professionals

i. Referral process, local sources for psychosocial support (2,3)

8. Discharge planning and referral pathways, consider the following

a. Planning for discharge and referral from the AUSMAT facility should commence as soon as possible following admission

b. Is referral to facility with plastics capability required / underway? What is the time frame for transfer to this facility?

c. What is the discharge destination? (i.e. inpatient / outpatient rehabilitation facility, home / other private dwelling, temporary shelter, EMT3 or other step-down facility)

d. Is the discharge destination safe / accessible / adequately supportive?

e. Is an assistive device / mobility aid required for safe discharge? Ensure any devices provided can be maintained / sourced locally

f. All patients with a significant burn or wound injury should be referred for long-term scar management, rehabilitation and psychosocial support

g. Where burn survivor or peer support networks exist, all patients with a significant burn injury should be referred to, or at a minimum, provided with information regarding these networks (1,2,5)

9. Documentation

    a. All therapeutic interventions to be documented in the relevant clinical file (format determined by setting i.e. inpatient / outpatient / mobile clinic)

    b. All referrals to external health care providers (i.e. an EMT3, NGO or local rehabilitation provider) should contain the following information:

        i. Clinical information (i.e. surgical management to date, wound considerations, pain issues, other injuries)

        ii. Splints / orthoses / other assistive devices provided

        iii. Functional status, including progression of ROM and relevant precautions

        iv. Follow up requirements (i.e. further surgery, cast / splint removal, surgical review or follow up x-ray)

    c. A copy of any referrals should be provided to the patient and retained by AUSMAT

    d. Numbers and contact details of patients with burn or wound injuries likely to require prolonged hospitalisation / scar management / rehabilitation, experience permanent disability, or require long-term specialist assistive devices should be recorded and this information provided to the host ministry of health / coordination cell (5)

References and Supporting documents

1. World Confederation for Physical Therapy. *WCPT report: The role of physical therapists in disaster management.* 2016, London, UK: WCPT. Available at: http://www.wcpt.org/sites/wcpt.org/files/files/resources/reports/WCPT_DisasterManagementReport_FINAL_March2016.pdf
2. Humanity and Inclusion. *Early rehabilitation in conflicts and disasters*. 2020. London: HI. Available at: https://www.hi.org/sn_uploads/document/36199-Humanity--Inclusion-Clinical-Handbook-web_1.pdf
3. Australian & New Zealand Burn Association. *Burn trauma rehabilitation: allied health practice guidelines*. 2014. Philadelphia, US: Wolters Kluwer.
4. Australian & New Zealand Burn Association. Emergency management of severe burns: Australian & New Zealand course manual. 2013. Albany Creek: ANZBA.
5. Mills, J-A., et al.. *Minimum Standards for Rehabilitation*. 2016. Geneva: WHO.

Supporting documents:

AUSMAT Clinical Guideline – Burns Management in Austere Environments

AUSMAT Clinical Guideline – Surgical Wound Management in Disasters

AUSMAT Clinical Guideline – Role of the Rehabilitation Professional

Abbreviations	
PNI	Peripheral Nerve Injury
TBI	Traumatic Brain Injury

Abbreviations	
ROM	Range of Movement
HDU	High Dependency Unit

Document History	
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