Management of burns: what you need to know

ACI Statewide Burn Injury Service
What we will discuss

- Conservative management of burn
- Pre-operative care
- Post-operative care
- Care of Biobrane
- Negative pressure therapy
- Surgical management of scars
Conservative management

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Conservative management of burns

- Management of patients who do not require operative management occurs every day throughout NSW, in liaison with Burn Units.

- Generally this includes management of burns which do NOT meet referral criteria or are expected to heal within 14 days.
4 yr old with scald burn
Dressing applied  Healed
Healed burns

Healed Day 10 post burn  Healed Day 11 post burn
Healed burn information

- Moisturise regularly
- No soap or bubble baths
- Sun protection (usually 12 months)
- Manage Itch (moisturising, meds)
- Return to normal activities
- Consider need for scar management if burn healed > 14 days.
Case study

- 3 year old boy
- Scald burn due to tipping foot into hot bath tub <1% TBSA
- Good first aid – 20 min cool running water
- Presented to Ambulatory Care service who contacted Burns Unit
- Superficial dermal – no concern re circulation
Case study - outcome

- Managed in conjunction with Burns Unit and digital photography service
- Healed in 12 days
- Unlikely to scar
Pre-operative Care
Also in liaison with Burns Units a grafting decision will be made.

Often patients will travel to Sydney the day of or day before their operation.

Therefore, pre-operative care is essential.
Pre-operative care

- The wound must be clean and not infected to receive a skin graft.
- Regular wound swabs are important and must guide the use of antibiotics.
- Antimicrobial dressings care is also essential pre-operatively.
Infection
Case study

- 12 year old boy
- Flame burn from sparkler 3/52 prior left knee <1%
  - TBSA not healed
- Presented late to GP
- GP referred to Burns Unit
Case study

- Decision made to bring child to Sydney for skin grafting same within 5 days
- GP swabbed and gave appropriate antibiotics according to swab result, and dressed in Acticoat to clear any colonisation.
Operative Case Study

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Case study

- 2 year old boy
- Scald burn to 4% TBSA chin/neck/anterior chest
- Good first aid – 20 min cool running water
- Assessed at day 12 post burn – mid-deep dermal burn requiring skin grafting
- Swabs – negative growth
- Suitable for skin grafting
Pre grafting

Photos courtesy of CHW
Debrided

Photos courtesy of CHW
Common sites for donor
Prepared donor site
Taking donor skin

Photos courtesy of CHW
Donor site

Photos courtesy of CHW
Donor skin ready to be grafted

Photos courtesy of CHW
Graft application

Photos courtesy of CHW
Post-graft in OT

Photos courtesy of CHW
Day 7 post-graft

Photos courtesy of CHW
Day 14 post-graft

Photos courtesy of CHW
Healed donor site day 14

Photos courtesy of CHW
Excision

- Tangential
- Versajet ®
- Fascial
Tangential excision

- Controlled depth
- Better aesthetic outcome
- Less functional loss
- Technically more difficult
- Higher blood loss
Versajet Action

Venturi Effect

Tissue Excision

Contaminant Removal

Diagram courtesy of Smith & Nephew

Prepared by: Dr Johnny Kwei
Fascial excision

- Depth anatomically determined
- Less blood loss
- Certainty in viable wound bed
- Takes longer
- More tissue taken
- Possible functional loss in sensitivity and distal drainage
Primary Excision & Closure
Skin grafting

- Split thickness
  - sheet graft
  - meshed graft
- Full thickness
Types of Graft

- Mesh

Graft taken from patient's healthy skin

Skin is meshed to cover a large wound
MESHING A SPLIT SKIN GRAFT

ratio 1:1 to 1:5

sterile osteotome or chisel

make cuts like this

skin grafting board

pull out the sheet of graft to increase its area
Meshed grafts
Sheet Skin Graft
Graft fixation

- Staples
- Sutures
- Cyano acrylate glue (Histacryl)
- Fibrin Glue (Artiss)
- Hypafix
Post-operative Care
Post-Operative Management

- With liaison with Burns Unit you may be required to look after the post-operative care of a skin graft.
Problems with grafts

- Blisters – should be incised and layed down
- Haematomas – should be expressed and pressure dressing applied
- Infections – swabs should be taken and antibiotics started appropriately
- Folliculitis/boils – again swabs should be taken and antibiotics started appropriately – may be a role for diprosone – MUST consult Burns Unit
Haematomas
Haematoma - resolved
Foliculitis
Problems with grafts

- Hypergranulation – diprosone/silver nitrate may be used but antibiotics must be considered
- Graft failure – may need to be regrafted
Hypergranulation
If you are having problems with grafts please contact your Burns Unit and send photos

– we are happy even to see healthy looking grafts.
Problems with donor sites

- Non-healing
- Infected
- Hypergranulated
- Again same principles for grafts
Donor Sites
Wound coverage: Biobrane

- Synthetic skin substitutes
  - Acellular, nylon matrix with porcine collagen
  - Covered by a silicone “epidermal” layer
  - Promotes ingrowth of host tissue
- Small pores to let fluid escape
- Separates as wound heals
- Dermal thickness injury but not requiring graft
- Full thickness that will need graft
Use of Biobrane

- In certain circumstances a patient will be required to have Biobrane applied 1-2 days after their burn injury.
- This particularly applies to facial burns but is used for other applications.
Biobrane

- As a burn epithelialises, adhered Biobrane will come away from the surface – this needs to be trimmed back.
- Infection underneath Biobrane can be bad – must consult Burns Unit asap.
- In paediatrics – Acticoat is often used over the top of Biobrane.
Biobrane

- Biobrane can be left in place for 2 weeks but should be monitored.
- Any Biobrane that remains after 2 weeks indicates that burn is deep and may need skin grafting – refer to Burns Unit.
- Biobrane that does not adhere in first instance also indicates that burn is deep – this should be reported back to the Burns Unit.
Scald burn hot tea day 0
Application of Biobrane
Covered with Acticoat
Review 7 days
Surgical Management of Scars
Hypertrophic Scarring
Releases

Release and grafting to contracture

Z-Plasty to neck to release contracture
Team Work

- Burn care requires the input of a multidisciplinary team.
- Good team work helps burns patients and their families/partners through a very difficult period in their lives.
- You are a vital part of this team!
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Negative Pressure Therapy

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Negative pressure dressings

- Prepare burn wounds (post-debridement) for skin grafting (often friction injuries or deep injuries with exposed tendon or bone)
- Post-skin grafting (prevent haematoma forming dressing to particular anatomical ankle)
Problems

- Alarming machine – e.g. leak, blockage
- Full canister
- Machine not working
- Frank blood filled canister (a small amount is normal)
Solutions - What you can do

- Check dressing, tubing, canister and machine
- If canister is full, change it
- If dressing is leaking, reinforce with plastic film (e.g. tegaderm/opsite)
- If machine isn’t working – plug into wall (battery may be dead)
- If there is frank blood/ongoing large blood loss – stop machine and contact Burn Unit urgently
- Please contact Burn Unit if concerned
Case study

- 12 year old boy
- Treadmill (friction) burn to right thumb (trying to pick up something underneath belt)
- Full thickness injury
- Debrided in theatre – indeterminate depth - ?down to tendon/nail bed - ?needed further debridement
- Negative pressure dressing applied for delayed skin grafting in 5 days
- Successful grafting onto healthy granulated wound
Case study

Day 1
Case study

Day 4
Post-debridement + VAC

Day 7
Post-skin grafting
**Integra**

- Bilaminar dermal replacement/template
  - silicone
    = temporary epidermal substitute
  - collagen & glycosaminoglycans
    = dermal replacement layer of porous matrix of fibres cross-linked to bovine collagen
- Infiltration of the dermal network by host fibroblasts & neovascularisation creates a ‘neodermis’
- Once this is formed (approx 3 weeks), a very thin autograft can be harvested and replace the silicone sheet
New horizon for scar therapy

- Laser therapy