Therapists Management of Grafts, Flaps, and Integra™

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Therapists Management of Grafts, Flaps and Integra™

- Objectives
- Collagen is Scar Tissue
- Pre Operative Management
- Daily Wound Observation
- Wound Management: TIME
  - Grafts
  - Integra™
  - Flaps
- Catalyst for Optimal Healing
- References
Objectives

• Therapist will:
  – recognize wound management techniques beneficial to the process of healing grafts and flaps
  – understand the benefit and management of Integra™
  – be able to apply the process of wound assessment to develop a plan for optimal wound repair
  – be able to respond to signs from the wound to create the right environment for healing
Collagen is Scar Tissue

Injury

Inflammatory Cells Secrete

(Enzymes/Growth Factors/Cytokins) Creates a Moist Environment

Affects Proliferation of Fibroblasts

Collagen Derived from Fibroblasts

Too Little
Eschar
Decreased Cell Activity

Just Right
Healing

Too Much
Maceration
Break Down Matrix

Affects Proliferation of Fibroblasts
Collagen is Scar Tissue

OUR GOAL: ALLOW THE BODY TO GROW COLLAGEN

• The right wound environment will:
  – lend a viable wound base
  – establish a functional extracellular matrix
  – allow cellular migration
  – form collagen from fibroblasts (2)

• Proper response to signs from the wound will guide the formation of the right environment = a viable wound base
Pre Operative Management

• Edema Management
  – Edema can create:
    • Tissue hypoxia through:
      – Hypovolemia
      – Third spacing
  – Management (REAP):
    • ROM
    • Elevation of the injured body part
    • ADL performance
    • Positioning (3)
Pre Operative Management

- Proper wound care may reduce wound size
  - Positioning + Splinting + Fluid Mobilization Techniques:
  - Improve tissue viability (3)
Daily Wound Observation

- Stasis=Questionable
- Coagulation=Dead
- Hyperemia=Survivable
Daily Wound Observation

- Key to proper management of grafts or flaps
  - Check for changes during every intervention
    - Look: Color/Edema/Drainage [purulent]
    - Feel: Warmth/Pain and Tenderness
    - Smell: Odor (2)
  - Increase in any of the above is a sign that optimal healing is at risk; must respond to the indicator
Wound Management

• **TIME**
  – **Tissue Debridement**
    • Remove necrotic, nonviable tissue; reach punctate bleeding
  – **Infection/Inflammation**
    • Achieve bacterial balance
  – **Moisture Balance**
    • Avoid maceration and eschar
  – **Edge Effect**
    • Wound contraction is a key indicator of a healing wound (2)
Wound Management: Grafts

• Skin Grafts (Auto graft):
  – Obtained from patients own body
  – Used on wounds that are well vascularized without injury to neurovascular or osseous structures.
  – Benefits:
    • Rapid coverage
    • Rapid take
    • Rapid rehabilitation
Wound Management: Grafts

Graft appears white (1-2 days)
Lives off serous fluid
Fibrin clot holds graft in place

Graft becomes pink (2-4 days)
Anastomosis has occurred

Graft ‘pinks-up’ (5-7 days)
Angiogenesis = ‘take’

* Images (7)
Wound Management: Grafts

• Graft held in place with suture or staples
• Dressings are placed
  – Prevent Shear
• Splints maintain position
  – Expand wound bed
  – Pull graft into position
• Negative pressure wound dressing
  – (vacuum assisted) used to hold grafts in place (3)
Wound Management: Grafts

• **Day 5** post grafting:
  – Protection changes to:
    – Antimicrobial emollient dressings
      • retains moisture to protect re-epithelialization
    – Light dressings are continued to:
      • allow ROM
  – Splints are used to position
    • Expands wound bed
  – **Goal**: achieve maximum ‘take’ (3)
Wound Management: Grafts

• **Day 7** post grafting:
  – Grafts can usually withstand gentle cleansing in a shower by now
  – Light dressings, splints and motion are continued to protect and enhance function
  – **Goals** transition toward increasing ROM, strength, endurance, & ADL performance

• **Graft Failure**
  – Primary cause is movement (shear)
  – Secondary cause is infection (3)
Wound Management: Grafts

• **Long Term Rehabilitation:**
  – Grafts remain fragile: If proper protection isn’t applied the graft is at risk for shear.
  – Epidermal layer becomes firmly attached to the dermal layer (several months) the risk decreases.
  – Moisturize; massage; stretch; ROM; splint; compression; occlusion; ADL’s
  – **Goals** now focus on reintegration, psychological adjustment, return to work and continued scar management. (3)
Wound Management: Integra™

- **Artificial Dermal Replacement (Integra™):**
  - Bovine collagen based dermal analogue and temporary epidermal substitute layer (silicone)
  - Bilayer Matrix Wound Dressing
    - Collagen functions as ‘scaffold’ for extracellular matrix
    - Silicone closes the wound = immediate wound coverage (1)
Wound Management: Integra™

- **Integra™:**
  - Collagen scaffold replaced by host cells
    - Migration of dermal cells creates biological coverage
    - Silicone removed (21 days)
  - Skin grafts are placed over the ‘neo-dermis’ of large wounds (3)
  - Used for partial thickness-deep partial thickness wounds (wound bed must be able to generate skin cells)
  - “not indicated for use in full thickness burns” (1)
Wound Management: Integra™

• Management: same as grafts
  – Dressing:
    • Maintains (graft) position & prevents shear
  – Splinting:
    • Maintains (hand) position to maximize expanse of the wound bed
  – Positioning:
    • terminal edema
  – Activity:
    • intravascular volume: third spacing
Wound Management: Flaps

• Procedure:
  – Tissue is lifted from a donor site and moved to a recipient site with an intact blood supply.
  – Purpose is to fill a defect:
    • A wound that’s remaining tissue is unable to support a graft
    • Rebuild more complex anatomic structures (6)

• Candidate:
  – Wounds with infection/dead space
  – Extensive soft tissue avulsion
  – Restoration of function
  – Reduce:
    • contraction (skin)
    • contracture (joint)
Wound Management: Flaps

- **Pedicle**
  - Rotation of healthy viable tissue
  - Blood supply uninterrupted
  - Covers damaged area with significant tissue loss (6)

- **Free**
  - Healthy viable tissue removed from one area
  - Blood supply interrupted
  - Placed in area of defect

Photo: (6)
Wound Management: Flaps

- **Flaps 0 - 21 days**
  - Sutures hold flap
    - Removed 10-14 days
  - Dressings protect wound:
    - Infection
    - Moisture balance
    - Edema
- **Fixation or splint position:**
  - Protect from shear
  - Remove tension
  - Protect from contusion
- **ADL’s**
- **Mobility**
- **ROM of adjacent joints**

- **Day 21 – Scar Maturation**
  - Assessed for anastomosis
    - Pedicle divided
    - Donor and recipient closed (4)
  - **Continue:**
    - ADL’s
    - Mobility
    - ROM of adjacent joints
  - **May require further reconstruction**
    - Case by case
    - Continue scar management
Catalyst For Optimal Healing

- **Educate the Patient and Family:**
- **Early and Often**
  - Rehabilitation process and expectations
    - ADL performance; each post operative status = decreased ADL function
      - Will return with effort
    - Extensive time involved with self ROM/ADL performance
    - 6 hours per day each day
  - Reduce Edema
    - ROM/Elevate/ADL/Positioning
  - Facilitate Wound Healing
    - Wound Assessment/ Wound Care/Exercise
  - Prevent skin/scar breakdown through scar management
  - Protect skin grafts and donor sites
  - Preserve ROM through maximized ADL performance (3)
References


   http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3495367/


