Management of Skin Grafting & Donor Sites

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OBJECTIVE

Recognize appropriate care for postoperative donor sites and grafting.
I have no disclosures

- Skin grafting is not just for burn victims
- Many factors impact skin graft patients
- Graft and Donor sites require close management
- Education (Patient, family & Staff)
Why Skin Grafts?

- Burns
- Wounds (traumatic, chronic etc)
- Necrotizing Fascitis
- Spider Bite
- Steven Johnson Syndrome

What is a skin graft?

- Any type of temporary or permanent tissue or tissue substitute utilized to assist closure of defect
  
  **MANY TYPES**!

- **AUTOGRAFT**: The patient’s OWN skin taken from one place and put on another. The Autograft is the NEWLY transplanted skin. Typically done on a FULL THICKNESS defect (burn or wound)
  
  - The **DONOR SITE** is where this skin is taken FROM.
  - Full thickness burns, traumatic wounds, chronic wounds
What is a skin graft?

**INTEGRA:** Artificial dermal regeneration template. Bi-layered matrix that assist in growing a new dermis. Useful in large surface area burns where rapid excision and grafting is difficult to obtain adequate donor sites. Also assists in increased function, stretch, and cosmetic appearance of grafts.

- Requires 2 surgeries: 1st to remove eschar and place Integra, 2nd to place Autograft with Donor site
- Full thickness burns (large or small TBSA), traumatic/chronic wounds

Allograft

**ALLOGRAFT** (homograft): Cadaver skin – our surgeons use MOST often over chronic non-healing wound beds to test the readiness for an autograft.

- Ultimately the allograft is EXPECTED to reject but within the first week it should appear to stick meaning the wound bed is ready for an autograft.
Skin Grafting Types

- Split thickness skin graft (STSG) vs Full Thickness Skin Graft
- Thickness of donor depends on several factors
- Area donor site taken from may vary
- May need to use artificial skin product as a first step → donor site later

Zones of Injury

- Zone of Coagulation: Cell death, necrosis
- Zone of Stasis: Injured cells suffering from vascular damage
- Zone of Hyperemia: Minimally injured cells, will repair themselves
Assessment of Burn Depth

- **Superficial (1st Degree)**
  - Red, Tender, No Blistering or Weeping
  - Painful
  - Will heal on its own with minimal intervention
  - Tylenol, ibuprofen, cold showers, bacitracin
**Partial thickness (2\textsuperscript{nd} degree)**

- Blistering, tender
- Sloughing/peeling tissue noted
- Blanches when touched
- With BID dressings will heal in 14-21 days
- With intervention will heal in under 12
  - Xenograft – Pigskin - Porcine

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**Porcine for Partial Thickness Burns**

- Porcine\rightarrow a xenograft (graft from another species) is just PIG SKIN. Temporary. Only will work on PARTIAL THICKNESS BURN.
- Specially provided by approved vendors and currently sent Shelf Stable
- Intent is for it to STICK to the burn.
  - Glued down and immobilized for 24-48 hours
  - Then MUST be allowed to be open to air and dry.
  - Cover at night – might be always covered if small children – to keep from ripping off
Admission

Porcine care 1\textsuperscript{st} 24-48 hours

- Once applied it is wrapped generally with a silver dressing barrier and under light compression
- Must keep the graft from moving/shearing
  - ?Splints? Immobilization?
- After 24-48 hours we carefully unwrap it
Porcine Care after day 2

- Leave open to air as much as possible.
- It WILL get dry and crunchy. Let it.
- Keep CLEAN. Don’t put lotions or crème’s on.
- As the patient’s skin re-epithelializes the glue and porcine will lift and let go.
- Once the edges lift we trim even with the skin.
6 days after application-Outpatient visit

13 days after application
Treatments & Outcome

Routine placement of Porcine or other biological products prevents surgeries in some cases

Red flags:
- NOT stuck to wound bed after pressure dressing removed
- Purulent drainage – it can be normal for serous weeping
- Wound bed appears pale beneath
Full Thickness??

Full Thickness Burn

- 3rd Degree (full thickness)
  - Insensate (lacking sensation)
- Dry, Stiff, Leathery
  - Non-Blanching
  - White, Yellow,
    - Brown to Black, Charred

WILL generally require
AUTOGRAFT to repair
Grafting is for more than burns

- Traumatic wounds – once deeper reconstruction is done final closure may be achieved
- Vascular wounds – once the vascular issues are resolved
- Stevens Johnsons/TENS – most often porcine is utilized

Revascularization first!
Necrotizing Fasciitis

Stevens Johnsons (SJS)/Toxic Epidermal Necrolyzing Syndrome (TENS)
Care of Biologic Grafts

- Eric Jensen, RN spoke about these!
  - Examples: Oasis, BioVance, Apligraf etc.
  - Care rules:
    - Call about any suspected problems EARLY
    - DO NOT remove dressings if your instructions are not too
    - Monitor for s/s of infection, edema, bleeding

Allograft

- At times these types of wounds are serially Allografted.
- Allograft is donated cadaveric skin
- The wound bed is essentially tested for autograft readiness
- Patient’s generally brought back to the OR weekly
Allograft (cadaver skin → temporary covering)

Integra

First remember what Integra is?
- Placed under anesthesia in the Operating Room
- Immobilization
- Compression for first 7 days
- Surgical dressings intact first 7 days
  - Only removed if bleeding or s/s of infection (temperature, drainage on dressings, or odor)
Integra

A bilayer dermal regeneration template designed to “grow” a new dermis. Think of it as a scaffold for new cellular structure → Neodermis. Dermal regeneration layer – has a defined degradation rate and promotes cellular ingrowth. Top silicone layer for protection and moisture control.

++WILL require 2 surgeries
++Can utilize thinner donor site which means the donor heals faster
++Improved cosmetic and functional outcomes (better stretch & less scar)

Neodermis Maturation

Day 0  Day 7
Day 14  Day 21
Integra Care

- After first week surgical dressings are removed
- After that daily washing with CHG or antibacterial soap
  - Shower. NO bathtubs, pools, hot tubs, etc.
  - Avoid vigorous scrubbing but do wash – washcloths are ok
- Dressed with silver antimicrobial dressings, gauze/kerlix/ace wrap maintaining a light compression. In hospital daily is standard but outpatient or at home may be every other day dressings

STOP: purulence/probable infection
GO! Looks good
PAUSE: 1. Hematoma/bruise 2. Shear – is it just silicone layer? Is matrix intact?
Contact Provider – prepare to window and culture
Good or Bad Integra?

Questions: Does it blanche? Is it intact? Any shear? No pockets of purulence, odor, or drainage? No Hematomas?

Integra

- Remember
  - Integra ALWAYS requires 2 surgeries.
  - First is to place the Integra
    - Large surface area burns
    - Deep defects that need the dermal growth support
    - Areas of high flexibility – over major joints
    - Areas of cosmetic concern – faces
  - Autograft MUST be placed over the new neodermis
Maturing Integra

Autograft over Integra about Post op day 10

Autograft about 6 months later

Healing

- Rehabilitation
- Long term healing of skin
- Psychological issues surrounding the process
- Reconstruction
Autograft

- Epidermal tissue taken from one area of the patient and placed on another
  - Full thickness vs Split Thickness Skin Graft (STSG)
- The donor site is where the skin came from
- The only final solution to a full thickness burn we currently have
- Can be used on many other wound etiologies as discussed

Autograft Care – Post op

- Similar to Integra care.
- Surgical dressings intact 7-10 days
  - Only removed if s/s of infection or bleeding
- Compression
- Immobilization and splinting
- Surgical dressings taken down generally POD 7-10
Donor Site – treated like a partial thickness burn

Xeroform placed over donor site area that had previous dressing sheared off

Skin Graft

Autograft Complications

Hematomas – must be drained

Graft failure – open areas are not uncommon especially at the seams
Donor Sites

- Thigh
- Back
- Scalp
- Abdomen & others
- May vary depending on where available, skin type
**Donor Site Dressings**

- **Examples:**
  - Xeroform
  - TheraBond

- **NO matter WHAT** the dressing – the **INTENT** is for it to **STICK** and **DRY**.

- The donor site is essentially a partial thickness burn – the body heals itself under this dressing.
Donor sites Day 1 & 2

- After the site is taken in the OR they choose the dressing they want.
- It’s applied and generally stapled down
- A pressure dressing is then applied
- The pressure dressing is removed on post op day 1.
- This allows the air exposure the donor site dressing needs to heal.
Post-op Nursing Principles

- Pain
- Risk for Infection
- Interventions to assist with healing
- Co-morbidities
- Nutrition

Xeroform
Helping Healing

- Heat lamp
- Fan or blow dryer
- Sun
- Keep area open to air consistently
  - Only cover if going out
- May need to be creative with posterior surface donor sites

Pain

- Frequent assessment & appropriate medication treatment
- Educate your patient – the first several days are the worst – GENERALLY.
- Non-verbals
- Anxiety
- Reassure
Risk for infection is extremely high!!!

Allowing donor sites to be covered continually keeps them moist & warm = Bacterial growth!

What should you be teaching to help prevent this complication?

Activity

Patients with donor sites can walk, sit in the chair, and do physical therapy.

Donor sites are painful especially in the first several days. So how are you going to help encourage activity?

Keeping active keeps the skin & donor dressing from drying short and tight, drying short and tight can increase pain when they do finally get up.
Complications

- Slow and Non-healing
- Infections
- Shearing
- Adjacent to Autograft
- Many complications are due to poor nursing care!

Pseudomonas on Donor Site
Deep donor site that didn’t heal well & developed layer of eschar & infection
To be surgically debrided itself with potential autograft to heal the donor site.

With consistent debridement and care donor site is healing with skin buds present
Nearly healed with layer of yellow eschar still present at lower borders and needs moisturizer every where else.

Good or Bad?
What a healed autograft & donor site should look like!

GOOD!
Road to Recovery!

- Ongoing skin care
- Coloration of pigment
- Dryness
- Itching
- Scarring
Questions???

Ask an Education Council member, your preceptor or CNS