Complex Pressure Injury Roundtable: Flap, NPWT, Graft, Culture, IV Antibiotics, All of the Above?
What Does Best Practice Look Like

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Treatment Algorithm

Stage-Based Management

Stage I/II (nonblanching erythema or ulcer into dermis)
- Conservative management (see Table): operative intervention rarely required

Stage III/IV (full thickness tissue loss +/- exposed bone, tendon or muscle)
- Operative candidate?
  - Nutritional optimization
    - Albumin >2.0 mg/dL
    - Protein intake 1.5-3.0 g/kg/d
    - Hgb A1C <6
  - Spasms controlled
  - Infection/osteomyelitis workup
  - Postoperative plan of care
- YES
  - Proceed to flap selection Algorithms based on defect location
- NO
  - Continue with conservative management
    - Reassess regularly until preoperative conditions met as above
Nutrition

• Establish a serum albumin goal of more than 3.0 g/dl for adequate healing
• Protein intake of 1.5 to 3.0 g/kg/dl (with oral or tube feed supplementation as needed)
• Vitamin C twice daily of 500 mg has shown to be effective
• A well balanced diet which include vitamins and minerals that promote wound healing
Pressure Relief

– Offloading of pressure points with turning protocols, every 2 to 4 hours on average
– Specialized mattresses/beds
– Adequate cushions for transportation
Medical Issues
Infection Management

• Sharp debridement as necessary
• Deep cultures (avoid culturing superficial or necrotic tissue)
  – Pre op bone biopsy not recommended
• Rule out osteomyelitis with imaging (CT or MRI)
• IV antibiotic treatment prior to surgical intervention (broad spectrum or tailored to culture results)
• Send intraop tissue/bone for culture/path
Stabilization Medical Issues

- Tight glucose control for diabetics
- Optimize renal function if possible
- Cardiovascular clearance
- Anticoagulation management
- Anemia
Social Issues

• Limit sitting
• Smoking cessation
• Alcohol and/or drug dependence
Some Contraindications to Surgery

- Cigarettes/nicotine
- Terminally or critically ill
- Sepsis
- Large bacterial load or β hemolytic strep
- Severely immunocompromised
  - Chemotherapy, corticosteroids may prevent wound healing
Other Issues

• Wound Bed Preparation
  o NPWT Devices
  o Shrink down wounds
  o Converts large surgeries to small surgeries

• Establish Physician Patient relationship
  o High rate of recurrence
  o Patient for life
  o They need to trust your team

• Establish a Strong Team
  o Patient
  o Family
  o Surgical Team
  o Wound Clinic
  o Outpatient Nurses
  o Rehab /SNF
Surgical Debridement and Flap Closure Decisions

• Flap selection
• Timing
• Type of anesthesia
• Pre and post op antibiotics
  – Infectious Disease consult as necessary
Flap Selection

- Skin graft
- Local tissue rearrangement
- Fasciocutaneous
- Musculocutaneous
- Free tissue transfer

- Ischial
  - Gluteus maximus
  - V-Y hamstring
  - Inferior gluteal thigh
- Sacral
  - V-Y gluteus maximus
- Trochanericy
  - Tensor fasciae lata
- Ankle/foot
  - Local Flaps
Timing

• Optimized co-morbidities, lifestyle issues
• Ulcer has decreased in size as much as possible
  – NPWT therapy
• Infection managed
Anesthesia

• Local
• Attended local
• General
  – Monitor BP closely
  – Hypertension, tachycardia common
• Autonomic Dysreflexia
Traditional bilateral V-Y advancement flap (above)

vs.

Bilateral V-Y modification of bipedicle perforator flap (below)
Unilateral V-Y modification of bipedicle perforator flap

Hartzell et al., PRS, 2009.
Post Operative Care

• 2-4 days in hospital
• 6-weeks of complete bed rest; NO SITTING
• Antibiotics
• Spasm control
• Discharge planning
  – Home vs. rehab
• Continue nutritional support
• Smoking cessation
• See them at 6 months
Complications and Recurrence

• Complications
  – Bleeding
  – Seroma
  – Infection
  – Wound dehiscence

• Recurrence
  – Rates as high as 90% have been reported
  – Age, mobility, malnutrition, smoking
Conclusion

• Pressure Injury Surgery is Difficult
• Preparation prior to surgery is critical
• Lifetime of pressure relief is necessary
• Try and convert a large surgery to a small one