Complex Soft Tissue Injuries

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Disclosures

- Consultant/Speaker DePuy Synthes
- Consultant/Speaker/Royalty Agreement Osteomed
Objectives

- To understand the principles in treating complex soft tissue injuries
- Properly evaluate and treat patients with traumatic foot and ankle soft tissue injuries
Complex Soft Tissue Injuries

- Unplanned wounds through the skin epidermis and dermis
- Multiple layers of tissue and structures
- Complex with jagged edges and crush component
- Degloving injuries
Complex Soft Tissue Injuries

- Mechanism of injury
- Contaminants / Know your injury environment
Complex Soft Tissue Injuries Protocol

- Think open fractures!!!
- Empiric antibiotics
- Urgent OR
- Stage procedures
- Wounds left untreated for greater than 8 hours may need to heal secondarily
Complex Soft Tissue Injuries Protocol

- Repair tendon injuries
- Repair neurovascular structures or consult those that do
  - Have teams readily available (plastics, vascular, neurosurgery, ID)
- Delayed wound closure
  - NPWT
  - Biologic dressings
  - Skin grafts
16 yo M kicked a glass door
Boy fell off slide
Tendon Repair

- Debride to viable ends?
- End to End repair
  - Kessler
  - Bunnell
  - Modified Krackow
- Non-absorbable Suture
- Repair tendon sheath when possible
Kicked Glass Door
3 Years Post-op
Complex Soft Tissue Injuries

Patient was a 29 year old male presenting to the ED with a left distal leg laceration that occurred 3 hours prior. Patient works for a garbage collection company. While at work at garbage dump a large metal object was projected through the posterior distal lower leg. NPO since 11am

- Allergies
  - PCN
- Meds - Denies
- PMH - Denies

- PSH - Denies
- FHx - Denies
- SocHx
  - Occasional smoking
  - Social EtOH
Initial trauma
First case (7:30am) the morning after

After general anesthesia achieved further evaluation of the injury was able to be performed and seemed to include the gastrocnemius aponeurosis with the Achilles tendon intact

The posterior tibial artery, veins, and tibial nerve were visualized, intact and protected

All debris removed and wound was debrided down to healthy appearing tissue

Achilles aponeurosis and deep muscle were reapproximated using 0 Vicryl.

Wound was then closed in layers
Possible discharge if no complications
Continue IV Clinda

POD #1
- Overnight
  - Fever, Tmax (103.1°F); Chills, Diaphoresis, Headache; 9/10 Pain
- In A.M.
  - No fever, pain down to 5/10, dressing C/D/I

Given improvement of fever, possibly secondary to reaction to general anesthesia. Concerning none-the-less
WBC = 20.5
Post-Op Hospital Course

POD #2

- Febrile overnight to 102.4 F - improved with Tylenol
- +Chills
- Pain which worsens at night
- The dressing was removed at bedside.
- Signs of acute infection noted. Sutures removed
- Wound copiously irrigated
- Wound cultured
- Plan for emergent I&D
- Continue with Clinda pending wound cultures
Multiple Debridements
POD #1 (From Sx #3)

- WBC 10.7 / Tmax 98.3 F
- Wound Cx
  - Bedside - Kelbsiella pneumonia, E. Coli, MRSA, Enterococcus Fecalis
  - Post-Lavage (I&D #1) - Few GNR
  - Post-Lavage (I&D #2) - No org
- Infectious Disease Consulted
  - Recc IV Vancomycin (MRSA & Enterococcus Fecalis coverage)
  - Recc IV Meropenem (E.Coli & Kleb pneumo coverage)
- Plastic Surgery Consult - plan for wound eval after infection removed
Debridement of the posterior leg wound
- No purulence noted
- No erythema
- Some necrotic tissue which was removed
- Irrigation w/ 9L NS w/ last 3L w/ polymyxin B and bacitracin

Gastrocnemius repair
- Significant aponeurosis and gastroc-soleus muscle complex missing
- Repaired w/ #3 Ethibond
- Sliding of muscle and tendon noted w/ ROM of ankle

Application of NPWT
Wound Cx- Post-Lavage (Sx #4) - Morganella Morganni
Infectious Disease
- Continue with IV Meropenem, IV Vancomycin
- Add IV Bactrim due to highly contaminated wound (all organisms sensitive to Bactrim)
Left peroneal artery perforator propeller flap 120cm² and placement of Biobrane
- Plan for STSG over flap site on POD #6
- Long rehab
Summary

- Have a plan
- Think open fracture protocols
- Consult other specialists when needed
Thank You