Management of Degloving Injuries

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Acute

Delayed
Defining the Injury

- Downward and transverse pressure
- It is a SHEAR injury
- Eponymous name: Morell-Lavalee injury
- Skin and fat disconnect from deeper tissues usually at the level of the muscle fascia.
- Bleeding is often minimal compared to the surface area of the injury
- Major traversing vessels have fascial septae protection

Eponymous label

- Morell-Lavallee lesion
- Orthopedic nomenclature
- Describes a closed degloving injury of the hip or thigh
- An unnecessary distinction from the general category of degloving injuries

Pathophysiology

- The more rigid the underlying muscle fascia, the higher the risk of degloving of that region with the same amount of force.
- Trochanter, lateral thigh over IT band, anterior iliac crest, knee
- Ulnar forearm
- Surgically, makes sense. These are areas where suprafascial dissection can be done bluntly with an index finger. (i.e., there are no septae)
Classic Location, skin loss

Pathophysiology

- The thicker the subcutaneous tissue (i.e., the fatter the patient) the higher the risk of degloving injury with the same amount of force.
- The skin and fat are one unit and are mobile. The muscle and fascia are fixed to the bone and immobile.
- Shear is transferred to the plane between mobile and immobile.
Obese female, knee

Common Mechanisms
- Abrupt pressure perpendicular to underlying muscle direction
- Seatbelt = lower abdomen and upper pelvis
- Car accident = thighs
- Motorcycle accident = thigh and lower leg
Common Mechanisms

- Rolling high pressure injury
- Also known as the “crush-degloving” injury
- Industrial rollers / factory machines
- Truck tire or car tire
- Related to friction of object (i.e. a tire) against the skin is stronger than the “friction” of the subcutaneous tissue to the fascia.

Degloving vs. Avulsion

- Distinction between degloving and avulsion is subjective but relevant:
- An avulsion is a large skin flap where the skin laceration is the same or nearly the same size as the total wound
- A degloving is a primarily tissue separation injury with either no skin laceration or a laceration that is significantly smaller than the underlying injury
- Degloving with significant soft tissue loss can be, clinically, very similar to a large avulsion and the distinction is not important

Avulsion Examples
Closed vs. Open Degloving

All degloving injuries have high fluid output from large injured surface area.
Initially bloody and may need surgical hemostasis.
After initial traumatic bleeding, usually largely serous but very high volume

Closed vs. Open Degloving

CLOSED
More difficult to evaluate extent of injury
More difficult to determine how much of the fluid is blood
Tense lesions may indicate underlying arterial bleed requiring exploration for hemostasis
Ballotable lesions more likely serous
Less likely to get infected than open
Closed Degloving Management

- Can be watched, serially tapped or opened and packed.
- Skin necrosis may occur due to extent of degloving (ie. it would have died anyway)
  - or -
- due to pressure if arterial bleed present

Delayed
Closed vs. Open Degloving

OPEN

• Extent of injury is obvious
• Level of initial bleeding can be addressed
• Amount of non-blood exudate is often underestimated
• "Open" skin-level injury is often much smaller than involved area

Open Degloving Management

• Temptation toward premature closure of skin must be avoided
• Initially pack with dry kerlix gauze
• Serial debridement of dead skin and/or fat
• Threatened skin should be allowed to declare
• May take 7-10 days
• VAC
• Time depends on size
• Then finally, delayed primary closure over drains

Seatbelt
Seatbelt

Motorcycle

- Open degloving
- Associated tibial fracture common
- Skin loss can result in exposed fracture or hardware
- Caution in suturing closed at the time of fixation

Bicycle handlebars
Degloving: Dead Skin con't

Obese female, knee
Summary

- Diagnose it
- Extensive bruising
- Abrasion/lacerations in classic areas
  - Thighs, pelvis, abdomen
- Early treatment plan
  - Debride dead tissue
  - Evaluate for bleeding
- Late treatment
  - Watch for infection
  - Pack, VAC
  - Close over drains.

Thank you