OPEN FRACTURE PROTOCOL

1. Initial management
   a. Per ATLS protocols, XRs of injury
   b. Open fracture identified clinically and radiographically
   c. Consult Orthopaedic Trauma (consult and initial management to be completed in ER)
      i. Reduction for purpose of vascular or skin compromise
      ii. Sterile dressing with normal saline soaked gauze (no Betadine)
      iii. Skeletal stabilization (splint or traction)
      iv. Post reduction/splint imaging (XR/CT)

2. Antibiotics
   a. Administer within 1 hour of presentation to ER
   b. IV Cefazolin (1gm <70kg, 2mg >70kg, q8hrs) for type I, II, and IIIA open fractures
   c. Penicillin allergic: IV Clindamycin 900mg, q8hrs
   d. Type IIIB & C open fractures: add IV Gentamycin 80mg, q8hrs
   e. Gross contamination: add IV Penicillin G 2 million units, q4hrs

3. Debridement
   a. Within 24 hours of presentation
   b. Access to operating room (ortho trauma on call OR) essential
   c. Urgency increases with severity of open fracture (ortho attending judgement)

Rationale:

Decreasing the risk of infection is most important in the treatment of open fractures. The risk of infection increases with the severity of the injury to the soft tissue. The Gustilo Anderson classification is most commonly used:

Type I  wound < 1 cm in length, clean with minimal soft tissue loss or injury

Type II  wound > 1 cm but without extensive soft tissue injury & tissue loss (need for muscle flap anticipated), or contamination

Type III  A: wound with heavy contamination
   B: soft tissue loss and/or heavy contamination with extensive soft tissue injury
   C: open fracture with arterial injury and ischemia

Infection rate increases significantly as the grade of the injury increases (0-2% for type I, to 25-50% for type IIIB & C). Other important predictors of infection in open fractures are: time to antibiotics, quality of debridement, trauma center care, and time to wound coverage.
References:

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