Commonly Missed Uncommon Orthopedic Injuries in the ED

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• No Financial Disclosures
Objectives

• Review of:
  – Easily missed injuries: wrist/foot
  – Classic x-ray findings
  – Approaching to common radiographs
  – Targeted at an R3 CCFP-EM level
Perilunate injuries

• Spectrum of injury usually the result of a FOOSH
• Ranging in severity from S/L dissociation → Perilunate dislocation → Lunate dislocation
Scapholunate dissociation
- Gap due to torn S/L ligament
- May have minimal clinical findings
- “Terry Thomas” or “Letterman” sign
- >3mm is a ligamentous injury until proven otherwise
- If missed: leading cause of SLAC (scapholunate advanced collapse) of the wrist
- Tx: surgical repair
SLAC deformity
Associated Scaphoid # in 60%. CT often indicated to r/o if not seen.
Dx: “Empty cup”, Capitate not sitting in articular cup of lunate BUT lunate articulation with radius maintained.
Tx: Urgent reduction + ligament repair. Untreated: risk median nerve palsy, pressure necrosis, compartment syndrome.
• Reduction of perilunate dislocation:
  – Can be done in ED: elbow flexed to 90 deg
  – Fingers suspended in finger traps for 10 mins
  – Wrist extension with traction
  – Volar pressure on lunate while flexing the wrist
    • Palpable “clunk” may be appreciated
Lunate Dislocation

From injury to all perilunate ligaments; most significantly the dorsal radiolunate ligament.

Dx: Spilled Tea-Cup sign: Lunate displaced and rotated volarly. Not articulating with radius or capitate.

Another FOOSH
Wrist: Triquetral #

10% of Carpal Fractures

Mechanism: FOOSH
- Impingement by ulnar styloid or ligamentous avulsion.

Exam: Tender to ulnar aspect of dorsal wrist.

Xray: Triquetrium is most dorsal carpal bone on lateral film. Look for avulsion type irregularity or fracture through body.

Tx:
- Avulsion #: 3-6 wks immobilization
  - Volar spint w slight extension, in 3-4d once swelling subsides-> short arm cast.
  - Body of Triquetrum #: order CT as displacement >1mm warrants referral to hand surgeon. Otherwise tx as above.
Moving to the feet

- 24M jumps from 3\textsuperscript{rd} story window
  - Unable to wt bear, tender over R heel
Mech: Usually from large axial load.
XR: Bohler’s Angle < 20 deg = fracture
Assoc injuries: # implies large axial load → ? Vertebral #’s
Tx: Extra-articular: conservative, Intra-articular: ORIF → CT to assess
Case

- 22 F slipped and injured R foot
- Complains of severe pain in Right midfoot with difficulty ambulating
- Ottawa foot and ankle rules negative → xray of foot done:
Lisfranc Injury

• Spectrum: sprain to #/dislocation of tarso-metatarsal joints in the midfoot
  – Easy to miss, uncommon, subtle, can occur with low velocity

• Classical injury pattern: plantar flexion with external rotation

• O/E: difficulty weight bearing, ecchymosis over plantar aspect with ++ swelling
Foot: Lis-Franc Fracture Dislocation

- Lisfranc joint: encompasses all articulations between tarsal bones and metatarsals.

- Lisfranc ligament attaches Medial Cuneiform $\rightarrow$ 2$^{nd}$ Metatarsal base on the plantar aspect – Crucial to stability of Lisfranc joint (Tarsal-Metatarsal base articulation)
X-ray Findings

• Commonly normal!

• Misalignment:
  – AP: medial edge of base of 2nd MT and cuneiform should align
  – Oblique: medial edge of 3rd/4th MT align with medial edges of middle and lateral cuneiforms
• Widening: between 1\textsuperscript{st} and 2\textsuperscript{nd} or 2\textsuperscript{nd} and 3\textsuperscript{rd} metatarsal bases
  – >2mm is an indication for surgical intervention

• Fracture or Avulsion:
  – Pathognomonic “fleck sign”: small avulsion from 2\textsuperscript{nd} metatarsal base
What if the films are normal?

• Obtain 30deg oblique views
  – This eliminates overlap of metatarsals
• Consider weight bearing stress views
  – After ankle nerve block
• Consider CT if clinical suspicion high
Management

• Suspected: nonweight bearing with back slab and f/u with ortho

• If apparent # or joint widening (>2mm): ED consult for urgent surgical intervention.
  – Non-operative treatment if disrupted may lead to severe loss of function/pain
References

• Wheeless’ textbook of orthopedics
• Uptodate
• Radiopaedia.org