Joint Reduction – Pearls and Pitfalls

Christopher B. Colwell, MD

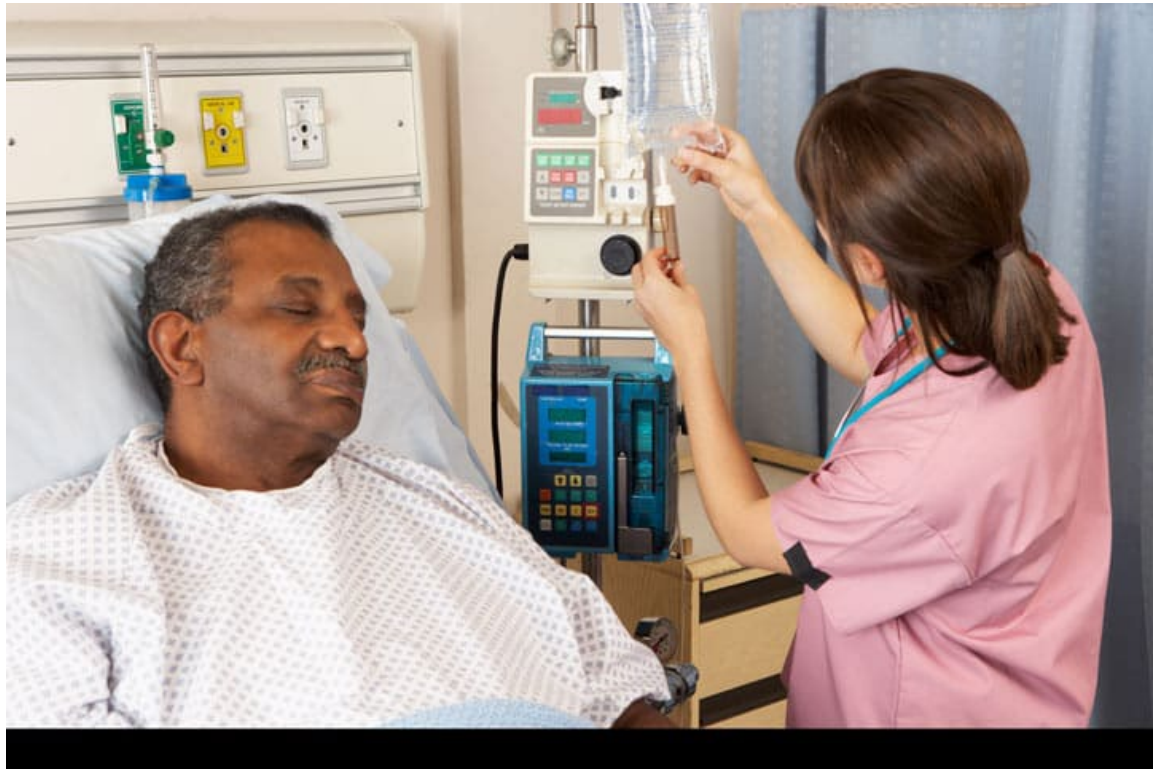
Zuckerberg San Francisco General Hospital and Trauma Center

Disclosures

None

Primary Pitfall - Inadequate Analgesia and/or Sedation

- Appropriate analgesia/sedation is key to safe, effective, and humane joint reduction
- What medication to use?
  - Fentanyl
  - Versed
  - Propofol
  - Ketamine



Sedation

- Randomized, double-blinded, clinical trial of propofol, 1:1 propofol/ketamine, and 4:1 propofol/ketamine for deep procedural sedation in the emergency department
  - Miner et al
    - Ann Emerg Med, 2015

Intra-articular Injections

- Intra-articular lidocaine vs. IV sedation for closed reduction of anterior shoulder dislocation in the ED: A systematic review and meta-analysis
  - Sithamparapillai et al
    - CJEM, 2022
    - No difference in reduction success
    - Fewer adverse events
    - Shorter ED stay
    - No difference in pain score
    - Longer procedural time it IAL
    - Lower patient satisfaction with IAL

Hip Dislocation Pitfalls

- Time from injury
  - > 3.5 hours resulted in significantly reduced success rates
    - Lai et al
      - J Ortho Traumatology, 2022
  - Avascular necrosis
- Missing other injuries
  - Hip dislocation requires significant force
- Sciatic nerve injury
  - Common peroneal branch

Hip Reduction

Hip Reduction

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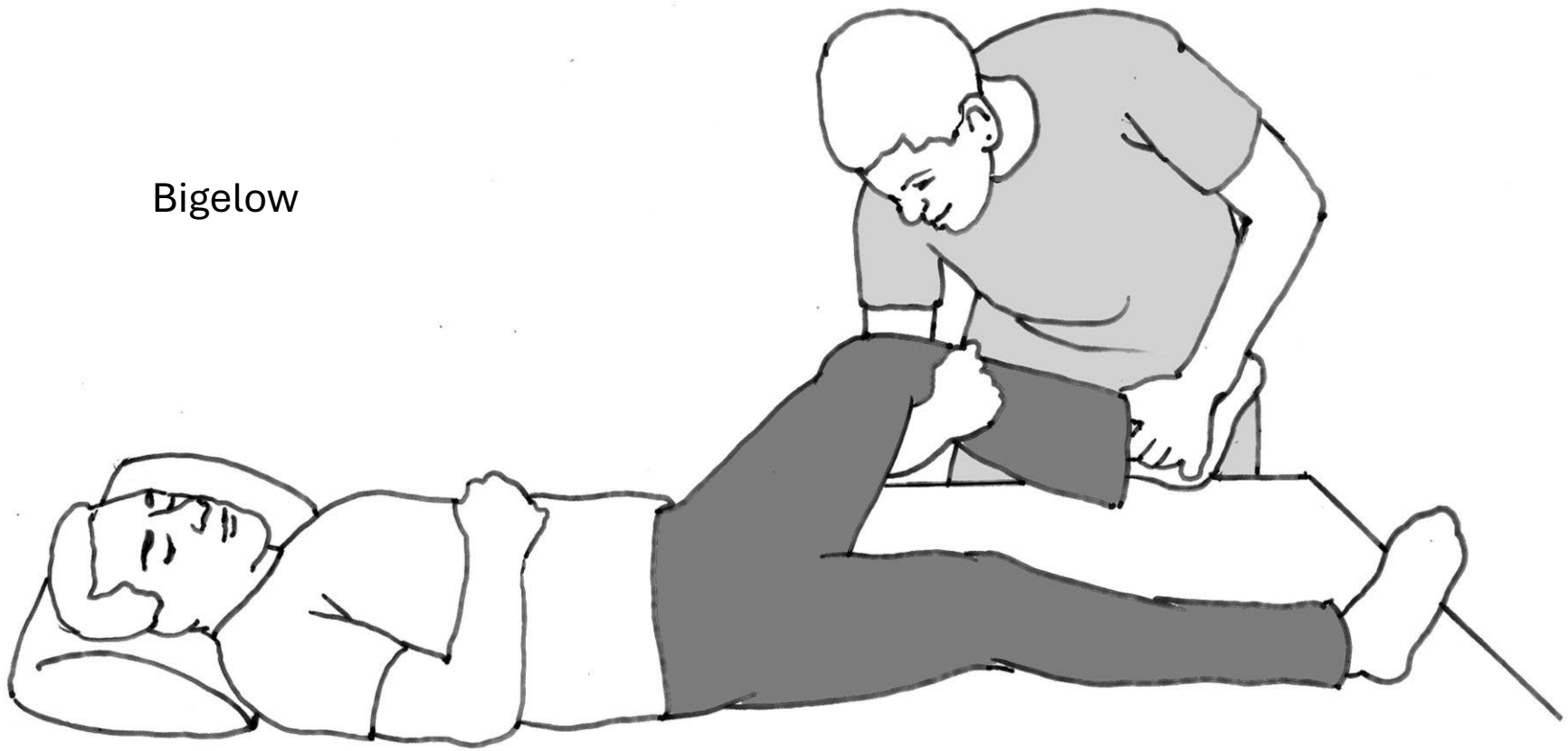
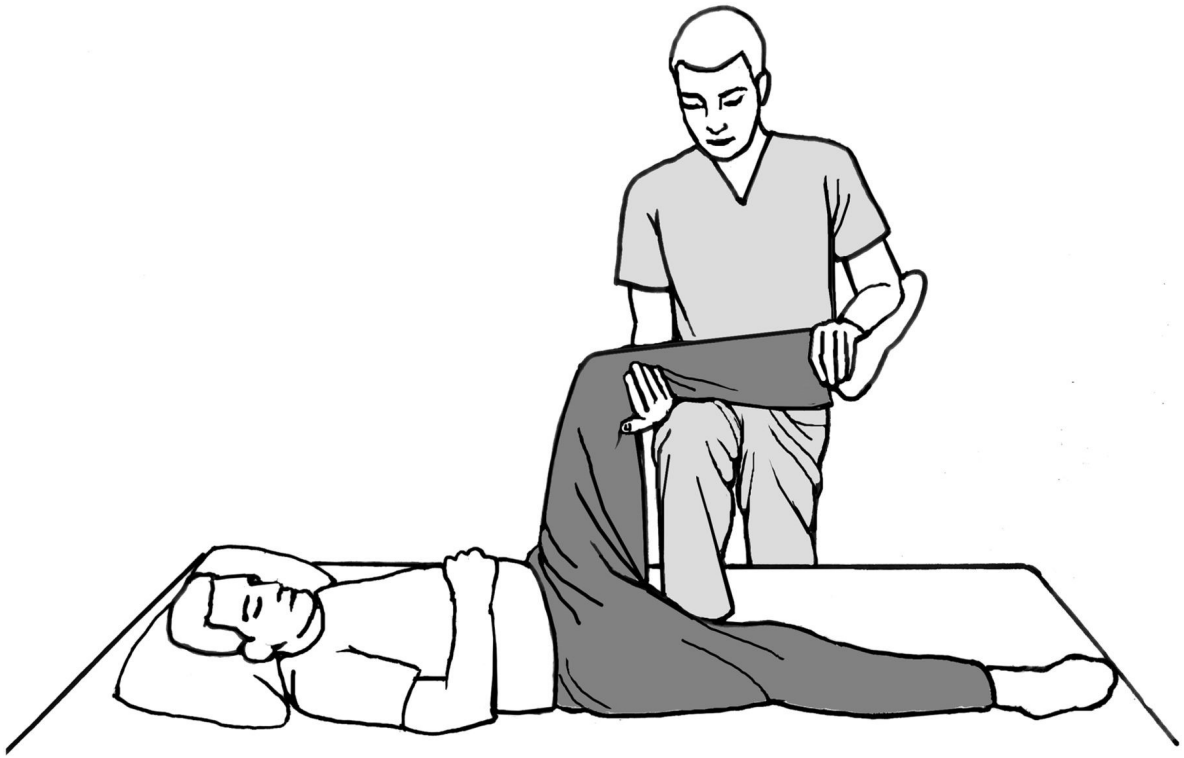
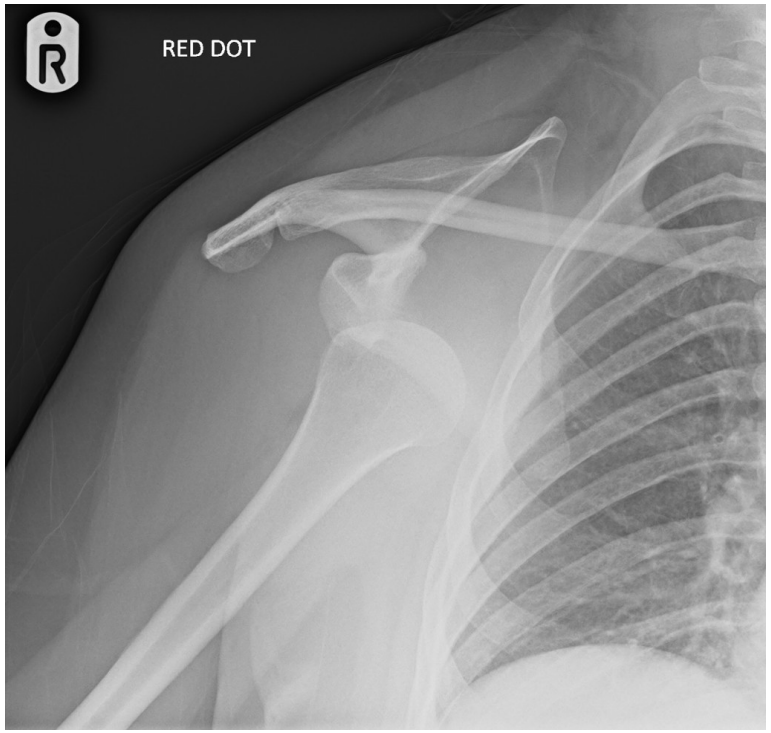


Hip Reduction



Shoulder Dislocation

- Back up techniques
  - Have 2
    - Traction – countertraction
    - Scapular manipulation
    - Stimson technique
    - External rotation
    - FARES method
      - Gottlieb M.
        - J Emerg Med, 2020



Traction – Countertraction

Scapular Manipulation

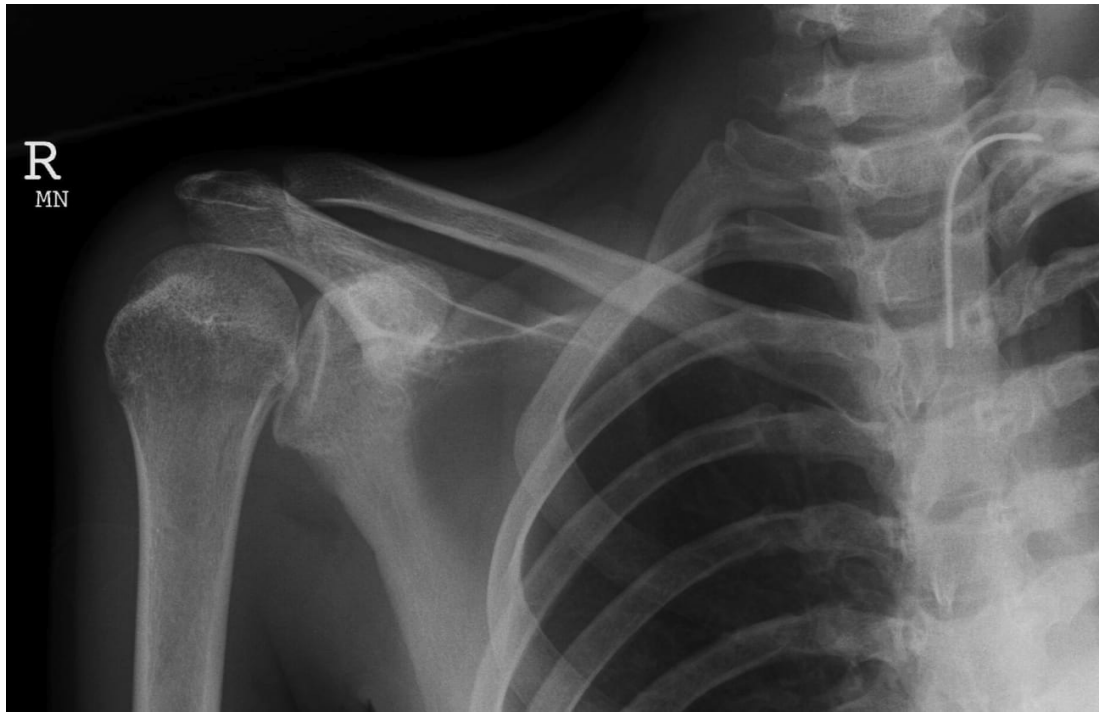
Stimson Technique

External Rotation

FARES Method

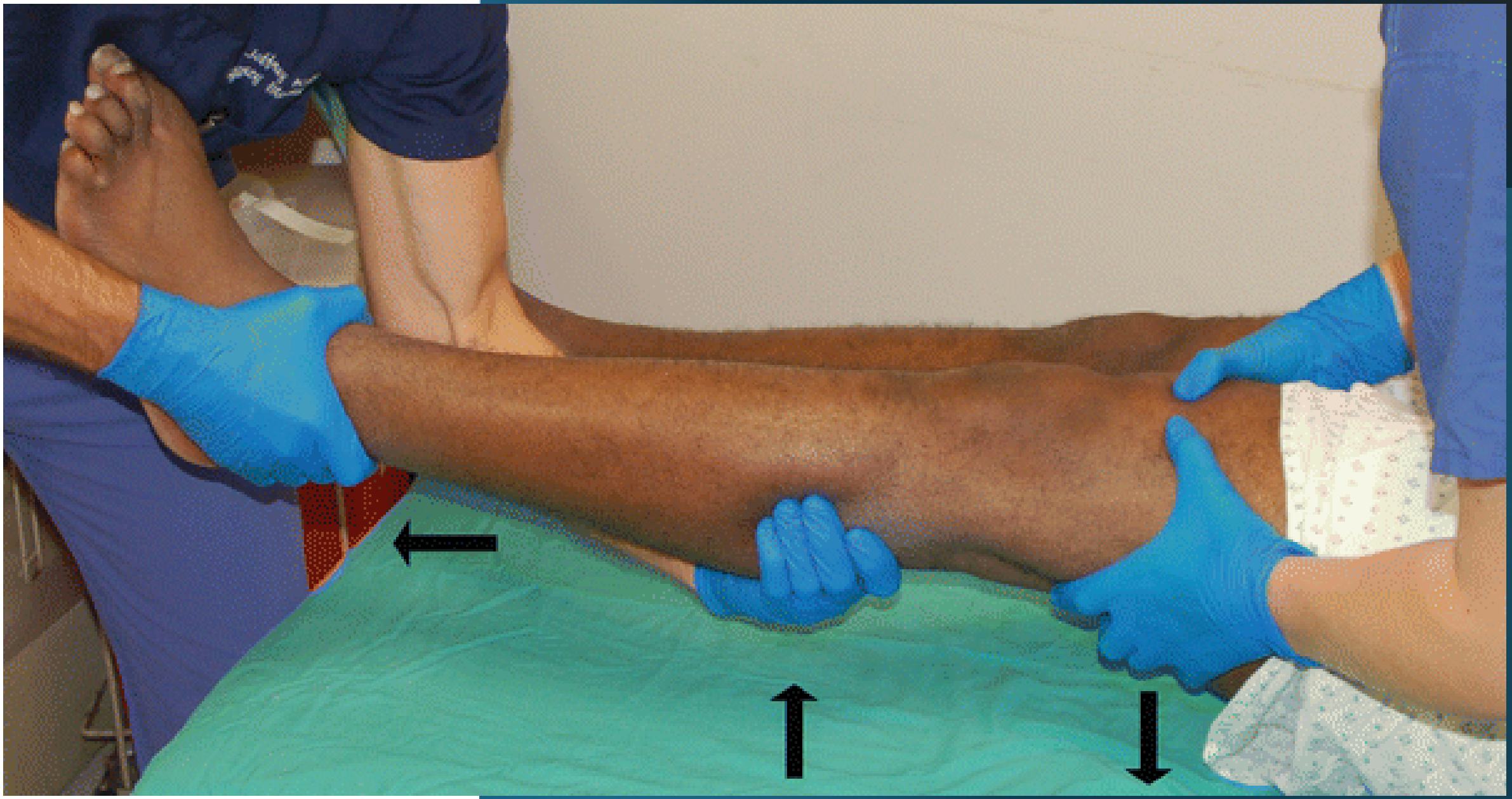
Shoulder Dislocation Pitfalls

- Believing it is a procedure of strength
- Not recognizing posterior dislocations



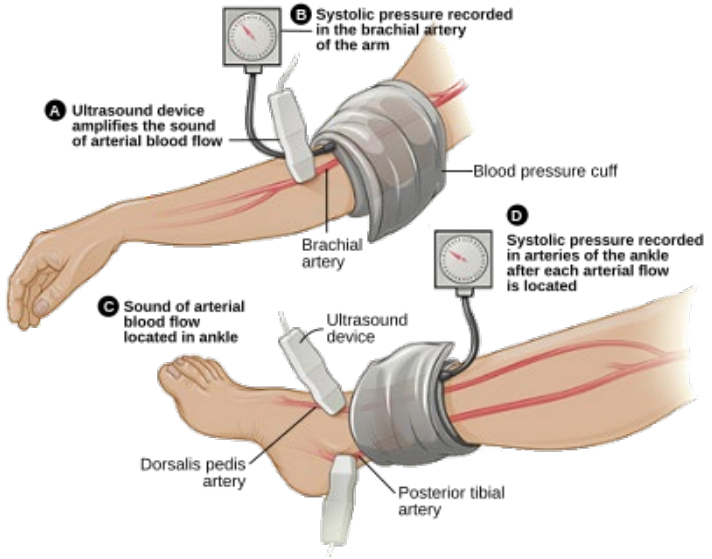
Knee Dislocation Pitfalls

- Not appreciating a dislocation occurred
  - 50% self-reduce before ED arrival
    - Sillanpaa et al
      - J Trauma Acute Care Surg, 2014
- Associated injuries
  - Popliteal artery
  - Peroneal nerve
- Normal exam does not exclude vascular injury



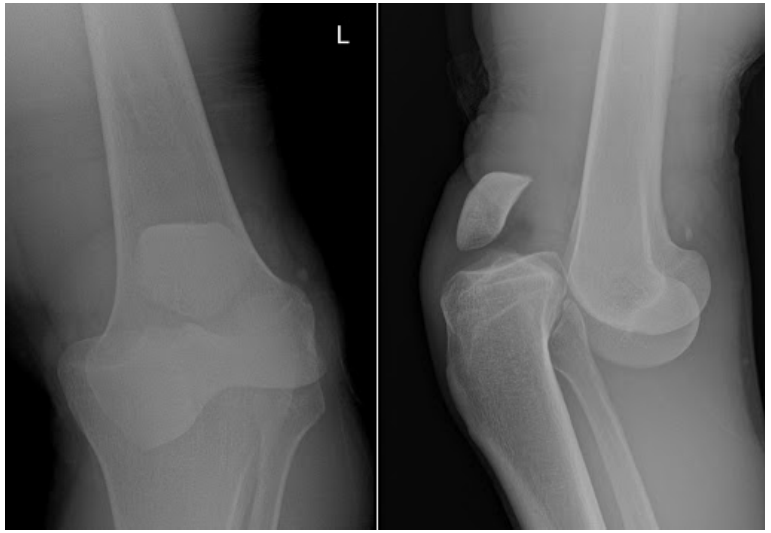
Knee Dislocations

- Careful neurologic exam
  - Signs of peroneal nerve injury
    - Foot drop
    - Weakness in dorsiflexion
    - Numbness/paresthesia in the lateral leg/dorsal foot
- Ankle-brachial index (ABI)
  - Ratio of the systolic blood pressure of the lower extremity (ankle) and upper extremity
    - Normal is > 0.9



Knee Dislocations

- Larger individuals can dislocate with more minor mechanisms
- Posterolateral dislocations are very difficult to reduce in the ED
- Delay of popliteal artery repair of greater than 8 hours often results in amputation



Patella Dislocations

- Hyper-extend the knee
- Flexion at the hip shortens the quadriceps

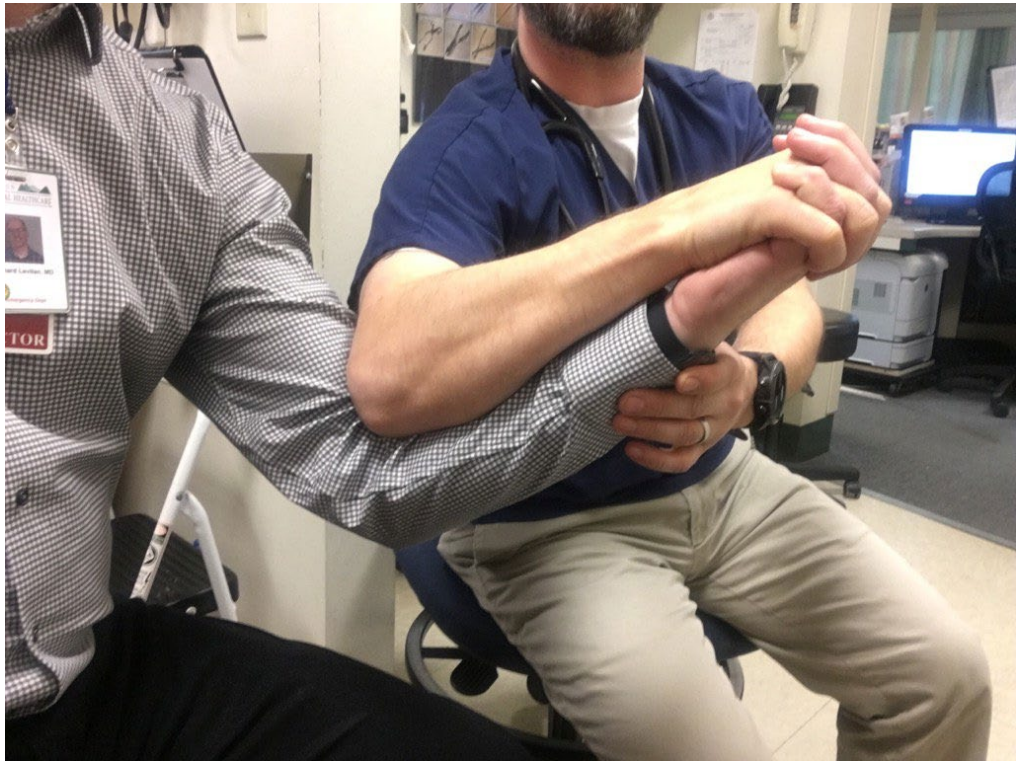
Ankle Dislocation

- Ankle rarely dislocates without associated fractures
  - Ligamentous injury
- Imaging is not needed prior to reduction
- Counter-traction is key
  - May need to “re-create” the injury (direction)

Elbow Dislocation

- Slow, steady traction-counter traction
  - Matched with appropriate sedation/analgesia
- May require a particular “closeness” with your patient
- Brachial artery
- Ulnar and median nerves

Elbow Reduction



Elbow Reduction

Wrist Dislocation

- This can be for
  - Wrist dislocation
  - Displace distal radius fracture
    - Works great with hematoma blocks

Wrist Dislocation/Reduction

Summary

- Adequate analgesia/sedation is the key
- Have a go to method
  - At least 1 back up
    - 2 for shoulders
- Good neurovascular exam before and after
  - Specific to the injury

Thank You!

- Christopher.Colwell@ucsf.edu