Humerus & Femur Fractures

Outline

• Humerus fractures
  • Fracture variety
  • Patient demographics
  • Treatment options
  • Outcomes
  • Complications

• Femur Fractures
  • Similar comprehensive approach
  • But not too much

GOAL:

• Comfortably approach a patient with one of these injuries.
Who & why?

- Young
- Adult
- Elderly

- Young
- Less common
- Simple patterns
- Proximal or distal
- Think about the growth plate
- Monkey bar!
Adult
• Higher energy
• A variety of anatomic locations occur
• More complex fracture patterns
TREATMENT

• A lot of humerus fractures do really well without surgery
When the outcomes or natural history of nonoperative treatment are poor or less desirable, operative treatment is indicated.
TREATMENT

• Proximal to distal
• Couple case examples from my Fellowship

53F - GLF

• Fellowship case example:

• L shoulder pain

• PMH/PSH: Seizure DO, prior R prox hum fx s/p ORIF 3/2017
• Sochx: heavy etoh, denies tobacco

• PE: axex3, nad, LUE w/ gross deformity, closed, NVI, unable to tolerate any shoulder ROM.

Prior R prox hum
New L prox hum

Prior R prox hum

Plan?
TREATMENT

- What if it’s really bad?

TREATMENT

- These do poorly with ORIF
- So if repairing (fixing) is wrong or fails, then replace.
TREATMENT

• Moving distal to humeral shaft
• Fellowship case example:

29M – Ped vs auto

• Helping friend on side of highway, struck by passing car

• PMH/PSH: Denies
• Sochx: No tob, occ etoh

• PE: Axox3, NAD, LUE deformity at humerus, prox ulna, superficial lacs at posterior elbow, rad n out. L tibia closed deformity, compts soft, NVI
Case plan:
57F – Ped vs auto

- Suicide attempt
- Polytrauma
- Open R elbow – s/p I&D, ex-fix
- Open R ankle fx – s/p I&D, ORIF
- Closed L tibial plateau shaft, already ORIF & IMN
• How do they do?
• For the most part, pretty well
OUTCOMES

• How do they do?
• For the most part, pretty well
• 3 big exceptions:
  • 1: Bad proximal humerus fxs
  • Avascular Necrosis (AVN)
  • Screw cutout
  • Diminished strength, motion and overall function

TREATMENT

• Fellowship case example of a complication:
35M – GSW & Ped vs auto

- L shoulder and pelvic pain
- PMH/PSH: Denies
- PE: axox3, LU&E gross deformity at shoulder, closed, NVI.
Plan?

TREATMENT

• Fellowship case example of a new technology to combat the potential complications of collapse

64F - GLF

• R shoulder pain, attempted nonop but returned 4d later w/ increased pain

• PMH/PSH: Obesity, HTN, PTSD, Neuropathy, Fibromyositis, Lumbar fusion
  • Sochx: no tob/etoh

• PE: axox3, nad, R shoulder w/ closed deformity, extreme pain w/ any ROM, NVL.
OUTCOMES

• How do they do?

• For the most part, pretty well
  • 3 big exceptions:
    • 1: Bad proximal humerus fx
      • Avascular Necrosis (AVN)
      • Screw cutout
      • Diminished strength, motion and overall function
    • 2: Radial nerve palsy
    • 3: Bad distal humerus fx
      • Stiffness, decreased ROM, scar tissue and heterotopic ossification (extra bone formation), post-traumatic arthritis.
The Femur

- Head
- Neck
- Shaft
- Distal third
- Distal articular

The Humerus

- Head
- Neck
- Shaft
- Distal third
- Distal articular

Femur Fractures

- Head – very rare
- Neck & Intertrochanteric – exceedingly common in elderly
- Shaft – high energy young adult
- Distal femur
  - Elderly: ground level fall, pretty common
  - Young adult: intra-articular – adult high energy

"Hip" fracture
Femur Fractures

- Rare in pediatrics
Femur Fractures

- Treatment
- Femoral neck fellowship example:

80M - GLF

- R hip pain
- PMH/PSH: Parkinson’s, HTN, L TKA
- Sochx: Household amb w/o assistive device
- PE: limited speech, understands more than he can verbalize.
  - RLE held still, short ER, NVL.
Treatment

Fellowship intertrochanteric femur fracture case example:

At a Lightning game

R hip pain

PMH/PSH: COPD, CAD, A-fib on Warf

Sochx: Community ambulator, former smoker, occ etoh, lives w/ family

PE: axox3, nad, R hip pain, closed, NVI
Treatment

Fellowship polytrauma with bilateral femur fractures:

- Unrestrained driver rear ended by Semi w/ significant intrusion
- Complains of left wrist, bilateral hip and knee, and right ankle pain.
- Other injuries:
  - Right T2 Tp fx
  - Right hemo/pneumothorax with chest tube
  - Rib fx
- Base deficit: Initial 12, later 6
- Lactate: Initial 11, later 4.3
Right leg

Right knee

LUE: 1 cm open dorsal, NVI

Right ankle: DP Doppler biphasic
Fellowship case example:

68F - GLF

- R leg pain
- PMH: RA (Humira, MTX), DM (insulin), COPD
- PSH: BL THA, Lumbar fusion c/b infxn, 2 R knee open limited debridements
- SocHx: ppd smoker, no etoh, married homemaker
- PE: RLE deformity at prox knee, closed, NVL

Treatment:
Outcomes

• Femoral neck fractures
  • High rate of AVN or collapse (up to 30%)
Outcomes

• Hip fractures (femoral neck & intertroch)
  • An indicator of overall health status
  • Many patients have:
    • Osteoporosis
    • Sarcopenia
    • Other medical comorbidities

Outcomes

• After a hip fx, many patients struggle
  • Fail to return to pre-injury living location
  • Fail to return to pre-injury baseline functional status
  • 1 year mortality rate: up to 25%

• Pre-injury mobility, strongest predictor of post-op survival

Outcomes

• Distal femur fracture complications:
  • High rate of nonunion: up to 20%