Objectives

To discuss high-risk orthopedic injuries
To identify common pitfalls in emergency orthopedic care
To elucidate clinical pearls to avoid pitfalls and complications
Case 1:

25 yo M cyclist who missed a small jump, complains of L ankle pain
Ankle deformity, pulses intact
Anesthesia options:

Procedural sedation
US-guided Sciatic nerve block
  – Just above popliteal fossa
  – Entire lower leg except medial skin (saphenous)
Ankle fracture or dislocation

Reduction:
- Flex the knee
- Hand behind heel, and dorsal foot
- Anterior traction, plantar flexed
- Then 90° dorsiflexion
- May need to exaggerate fracture deformity initially
Pearls:

Think of ways to numb the injured part (instead of the whole patient)
- Hematoma block
- Intra-articular injection
- Nerve block

Flex the knee for reduction of an ankle fracture or dislocation
Case 2:

4 yo M pulled by arm, won’t use it
Elbow in slight flexion, pronated
Nursemaid’s elbow

Radial head subluxation, annular ligament
Age 1-5 (usually 2-3 yo)
X-ray?
Reduction

Supination / flexion

Hyperpronation
Studies:

Macias, *Pediatrics*, 1998:
– Prospective, randomized, 90 kids
– Supination/flexion vs hyperpronation
– Pronation (95% vs 77%, 1st attempt)

McDonald, *Acad Emerg Med*, 1999:
– Prospective, randomized, 135 kids
– Pronation (80% vs 69%, 1st attempt)

– 66 kids (94% vs 69%, 1st attempt)
Pearl:

Hyperpronation
Case 3:

75 yo F fell onto her L side
Pain in L hip with weight bearing
What next?

a) Hip contusion—d/c home
b) CT scan
c) MRI
d) Sign out to next doc
Occult hip fracture

Common, and clinically important

Bone Scan (?) vs CT vs MRI

– MRI is most supported by evidence
– All three are superior to plain films
– Local resources dictate choice
MRI

Frihagen, *Acta Orthop*, 2005:
- 100 pts, hip trauma, neg plain films
- All had MRI
- 46 Hip Fx
- 27 other fractures (mostly pelvic)
- 30 had surgery
MRI:
Can CT exclude hip fx?

- Rapid advances in technology
- As good as MRI?
MRI vs CT:

Lubovsky, Injury, 2005:
– 6 pts with suspected fx, negative Xrays
– All had MR and CT (slice?)
– 5 of 6 had fx. CT “misdx’d” three.
  • Greater tuberosity fx in 3 who had inter-trochanteric fx by MRI

Case series (not yet published)
– 4 cases, neg 64-slice CT, pos MRI
82 yo F
Fell on L hip
Plain films negative:
Pearl:

MRI still the gold standard for excluding occult hip fracture

What if I only have CT?
Occult scaphoid fracture?

Patient with snuffbox tenderness, negative X-ray?
Scaphoid fracture

One of most commonly missed fx
Most common carpal fracture
– 10-20% occult

Delayed complications:
– Non-union
– Avascular necrosis
Frequent occult fractures
+
Frequent complications
=
Thumb spica splint and follow-up
Best way to find occult fx?

Bone scan:
- Traditional, tried and true

MRI:
- Better than bone scan, multiple studies
- Gold standard

CT:
- New technology, as good as MRI?
Memarsadeghi, *Radiology*, 2006:
- 29 pts, neg Xray, had CT (4), MRI
- Gold std: plain films at 6 wks
- 11 scaphoid fx
- MR found 11/11, CT found 8/11
CT for scaphoid fracture:

2 small studies used CT
MRI only in selected cases
Reported no missed scaphoid fx
Remaining questions:

Is modern CT as good as MRI?

Should I order MR or CT today instead of splint and f/u?
Case 4:

56 yo F in MVA  
c/o R shoulder pain  
No deformity, slightly swollen  
Markedly decreased ROM
Posterior Dislocation vs Normal
Posterior Dislocation vs Normal
Posterior Shoulder Dislocation

1-2% of shoulder dislocations
Blunt trauma, Seizure, Electrocution
50% initially missed (?)
– Less obvious clinically, radiographically
Anesthesia:

Procedural sedation
– Propofol
– Midazolam / fentanyl
– Ketamine

Intra-articular injection
Traction / counter-traction:
Pearls:

Watch out for posterior dislocation – (2 views, including Y-scapula)

Intra-articular injection
Case 5:

50 yo male fell from a ladder
Right elbow appears dislocated
Absent radial/ulnar pulses
What next?

a) Reduce the dislocation
b) Order an angiogram
c) Order CT angio
d) Sign out to next doc
Immediate limb threat

Reduce the dislocation
Post-reduction exam
  – Still no pulses
CT angio
Pearls:

Careful vascular exam
Reduce immediately for limb threat
CT angio
Summary:

Numb the injury, not the whole patient
Hyperpronation for Nursemaid’s
MRI occult hip, scaphoid
Posterior shoulder is tricky
Reduce fractures/dislocations with limb threat
CT angio for vascular injury
Thank you!

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