I have no disclosures relevant to the material presented in this discussion.

Good Stuff!!!
Really? – Really!

Musculoskeletal Objectives

- Components in Interpretation
- Normal Findings
- Abnormal Findings
- Common Pathology
- Zebras

Musculoskeletal

- Classification and Names = Overwhelming!!!
- Basics
  - Open vs. Closed
  - Location
    - Proximal – Shaft – Distal
    - Which bone
  - Fracture Type
    - Avulsion - Spinal - Oblique - Transverse - Comminuted
  - Alignment

  "Open Distal Radius Fracture that is Comminuted and Dorsally angulated"
History

- First x-ray in 1895
- Wilhelm Roentgen (1845-1923)
- Wife’s hand

Know the Bones

Sesamoid Bones
Basic Views

“One view is no view!”

Basic Views

Fracture Concepts

- Cortical breaks
- Radiolucent lines
Special Views
“Standard” Pronated oblique view

Special Views
Supinated oblique view

Special Views
Supinated oblique view – Arthritis & Fracture
Joints

Arthritis presents with:

- Joint space narrowing
- Sclerosis
- Cysts
- Osteophytes
Tuft Fracture

YOU'RE IN 10/10 PAIN AND NO VISIBLE DISTRESS?
I'M GOING TO GO AHEAD AND NOT BELIEVE YOU.

---

---

---

---
Carpal Fracture / Dislocations

- Scaphoid Fractures
- Perilunate dislocations

Scaphoid Fracture

- Can be occult!
- Proximal
- Middle
- Distal

Galulas' Lines

Metacarpals
Capitate
Lunate
Radius
Galeas' Lines
Perilunate Dislocation

- ~40% missed in ER
- Can be devastating when missed

Galulas' Lines

Metacarpals
Capitate
Lunate
Radius
Most Common Missed Fracture?

Diagnosis

Distal Radius Fracture

- Colles'
- Smith's
- Barton's
- Volar
- Dorsal
- Chauffeur
- Galleazi
Distal Radius

Bad vs. Not So Bad

Colles’ Fracture
- Distal Radius Fracture
- Dorsal angulation
Smith’s Fracture
- Distal Radius Fracture
- Volar angulation

Barton’s Fracture
- Distal Radius fracture
- Volar or Dorsal lip

Chauffeur’s Fracture
- Radial styloid fracture
Galleazi Fracture
- Radius Fracture
- DRUJ dislocation

Forearm Fractures

Various Flavors!
Elbow Fx/Dislocations

Distal Humerus Fractures
- Supracondylar
- Medial & Lateral Condyle
- Capitellum

Supracondylar
Medial & Lateral Condyle

Capitellum Fracture

Olecranon Fractures
Lower Extremity

- Pelvis & Hip
  - Hip Fractures
  - Rami Fractures
- Knee
  - Supracondylar
  - Patella
  - Tibial Plateau
  - Tibial Spine

Lower Extremity

- Ankle
  - Mallicol Fractures
  - Maisonneuve
- Foot
  - Lisfranc Injury
Hip Fractures

Types of Fractures

Femoral Neck Fx
Distal Femur

Patella Fractures

Bipartite Patella
Maisonneuve Fracture
- Spiral fracture of the proximal fibula with a tear of the syndesmosis
- Associated fracture of the medial malleolus or rupture of the deltoid ligament

Lisfranc Injury
- Ligament that runs between medial cuneiform and 2nd metatarsal

Pediatric MSK Imaging
- Salter-Harris Classification
- Growth plates / Ossification centers look weird!!
- Immobilize if painful
- Compare with contralateral side if necessary
Pediatric Elbow

- Fat Pads
- Anterior Humeral Line
- Radiocapitellar Line

Alignment

- Fat Pads
- Anterior Humeral Line
- Radiocapitellar Line

Advanced Imaging

- Ultrasound
- Bone Scan
- CT Scan
- MRI
Bone Scan
- Technetium-labeled bone scintigraphy
  - High sensitivity, low specificity
  - Increased uptake indicates increased blood flow (immediate) and bone turnover (delayed phase)
- Useful for detecting:
  - Osteomyelitis
  - CRPS

CT Scan
- Quick 3D view possible
- Useful for detecting:
  - Suspected fractures not easily seen on X-ray
  - Assess union
  - Evaluate cortical integrity with bony tumors
  - Study fracture pattern and plan surgical approach

MRI Scan
- Expensive, Timely
- Useful for detecting:
  - Soft Tissue Anatomy (mass/swelling)
  - Ligament injuries - May use arthrography
  - Vascularity (Kienböck’s, Scaphoid Non-union)
Other Modalities

Removing a Ring

FREE BONUS: