Acute Wrist Injuries
Case – the athlete

- FOOSH from sporting event 2 days ago
- C/O wrist swelling, pain, worse with movement

Hmmm... Wrist pain
Exam of the wrist - basics

- **Appearance**
  - Swelling, bruising, deformity

- **Function**
  - Range of motion, grip, neurovascular status

- **Pain**
  - With motion, palpation
Anatomy review – honing in

THINK
- Dorsal vs Ventral
- Radial vs. Ulnar
Carpals
Differential Diagnosis

- **Benign Stuff**
  - Sprain
  - Tendonitis
  - Contusion

- **Can’t Miss Stuff**
  - Fractures
  - Tendon rupture
  - Ligament disruptions
  - Carpal dislocation
Imaging – review of normal
Additional views

Clenched fist PA

Clenched fist Oblique
Additional views

Scaphoid View

Tunnel View
Key measures on X-ray

- Radial inclination - 23°
- Volar Tilt – 11°
- Radial Height -12mm
- Scapholunate angle – 30° to 60°
- Scapholunate joint width – 2mm
- Capitate-Lunate angle <10°-20°
Radial Inclination & Height

23°

12mm
Volar tilt - 11°
Scapholunate angle & joint width

2mm
Captitate - Lunate association/angle
Fractures

- Radius / Ulna
- Carpals
  - Scaphoid*
  - Triquetrium
  - Hamate
Distal Radius Fracture

- **RED FLAGS**
  - Inclination < 20°
  - Dorsal Tilt
  - Shortening > 5mm
Other Radius / Ulna fractures

- Distal ulna
- Ulnar styloid
- Radial styloid
Carpal Fractures

- Scaphoid #1
- Triquetrium
- Then the rest
Scaphoid

- Check snuffbox tenderness
- Order scaphoid view
- May not be seen on initial x-ray
- Consider alternate imaging (CT, Bone scan, MRI)
- Treat until ruled out
- High incidence of non-union with proximal fx
Scaphoid x-rays

Initial

2 month f/u
Triquetrium

- Pain ulnar sided and dorsal
- Associated with ulnar styloid fx and TFCC injury
- Oblique film with slight pronation best view
- Dorsal chip avulsion most common
Hamate

- Pain ulnar sided and palmar
- Hook of hamate common site
- Tunnel view xray
- Associated with club/racquet use
Don’t confuse with pisiform
Pisiform

- Similar to hamate
- Ulnar and palmar pain
Ligament Injury

- Scapholunate dissociation
- Lunate dislocation
- Perilunate dislocation
- TFCC injury
- DRUJ injury
Scapholunate dissociation

- Terry Thomas or ‘Newman’ sign
Tests to assess scapholunate instability

*Watson test* showing the starting position (A) and end position (B) testing for scapholunate instability.
Perilunate & Lunate dislocation

- Associated with significant wrist injury (scaphoid, radius, ulnar styloid fracture)

- **Remember** the lunate-capitate association on lateral film
  - Capitate–lunate lines < 20°
  - Triple C
Perilunate dislocation
Lunate dislocation
The Shuck Test for perilunate instability

(Left) The wrist is held in flexion by the physician, and the patient extends his or her fingers. (Right) The physician resists this movement. Significant parascaphoid inflammation, radial carpal, or midcarpal instability may cause considerable pain with this maneuver.
TFCC injury

- **Triangular Fibrocartilage Complex**
  - Mechanism: ulnar loading with rotational stress (FOOSH)
  - Symptoms: ulnar wrist pain, worse with extension, pronation/supination
  - Exam: TFCC compression, Press test, supination lift test
  - Imaging: MRI (Xray typically normal)
TFCC anatomy
TFCC exam tests

- **Palpate TFCC** – elicits tenderness
- **TFCC Compression:**
  - ulnar deviation, axial load, flex and extend – produces pain or clicking in TFCC
- **Press test:**
  - Lift self from chair while bearing wt on extended wrists – produces pain
- **Supination lift test:**
  - Attempt to lift table/desk with palm flat on underneath side
DRUJ injury/dislocation

- **Distal Radioulnar Joint**
  - Closely associated with TFCC
  - Mechanism: axial load and rotational stress (FOOSH)
  - Symptoms: Ulnar wrist pain
  - Exam: Loss or prominence of ulnar styloid
  - Imaging: Xray PA/LAT
DRUJ – volar dislocation
Tendon injury

- Flexor tendon rupture
- Extensor tendon rupture
Management points

- **Recognition!**
  - Fracture, ligament/tendon injury
- Basic acute management
  - Splinting
- Ortho referral
Back to our case

- **Exam**
  - Slightly swollen dorsally
  - Pain with supination/pronation & flexion
  - Able to flex/extend finger
  - No obvious deformity or bruising

- Any other exam tests?
Further exam tests

- Radial testing
  - Snuffbox palpation
  - Distal radius/styloid palpation

- Ulnar testing
  - Pisiform/hamate palpation
  - TFCC testing (compression, press, supination lift)

- Ligament stability
  - Scapholunate – Watson test / Shuck test
  - DRUJ – grip, direct palp

Tender!
Film

- Scaphoid fx - proximal pole
- High incidence AVN
  - ortho consult to consider initial operative rx
Treatment
If you miss it.....

...AVN chronic wrist pain, loss of mobility, unhappy patient