Wrist and Hand injuries
Carpals

- 2 rows, lateral to medial
  - Distal
    - Trapezium, trapéziod, capitate, hamate
  - Proximal
    - Scaphoid (navicular), lunate, triquetral, pisiform
Metacarpals

- 5 bones
- Numbered 1 through 5
- Thumb is #1
- Pinky is #5
Phalanges

- 5 proximal
- 4 middle
- 5 distal
Joints

- Distal radioulnar
- Carpal
- Carpometacarpal
- Metacarpalphalangeal (MCP)
- Interphalangeal (PIP and DIP)
Muscles

• **Intrinsic muscles**
  – Originate in the hand
  – Thenar and hypothenar eminence
    • Actions include abduction/adduction & opposition of thumb

• **Extrinsic muscles**
  – Originate outside the hand
    • Actions include flexion/extension of wrist, hand, fingers
Bones most often injured

- Radius
- Ulna
- Lunate (dislocation)
- Scaphoid (fracture in anatomical snuffbox)
- Metacarpals
- Phalanges
Wrist Injuries

- Colle’s Fracture
- Sprain
- Tendonitis
- Ganglion cyst
Colle’s Fracture

Involves the distal end of radius

Deformity
Mechanism of Injury

- Fall on an outstretched hand
- Run into wall, etc, with wrist hyperextended
S/S – Signs and Symptoms

- Visible deformity
- Swelling
- Pain
- POT - point tender
- Wrist is bent like a fork
Care

- Splint in position you find it
- Ice
- Emergency room
- 1-2 month recovery time

YOU

DOCTOR
Wrist Sprain

- Mechanism of Injury:
  - Abnormal forced movement of the wrist
  - Falling on hyperextended or hyperflexed wrist
  - Violent torsion

![Diagram showing grades of wrist sprain](image)
Wrist Sprain

• Signs and Symptoms:
  – Pain
  – Point tenderness
  – Swelling
  – Difficulty moving wrist
    —limited ROM
Wrist Sprain

- **Treatment:**
  - RICE for mild/moderate
  - Physician referral to rule out fractures for severe
  - Splint if necessary
  - Exercises for strengthening and ROM (range of motion)
  - Tape for support
Treatment for wrist injuries

Wrist Sprain Rehabilitation Exercises

- Wrist range of motion
- Wrist stretch
- Wrist extension stretch
- Wrist flexion stretch
- Forearm pronation and supination
- Wrist flexion
- Wrist extension
- Grip strengthening
Wrist Tendonitis

- Mechanism of injury: repetitive motion at wrist—usually in flexion/extension
  - Seen more often in athletes involved in sports with repetitive acceleration and deceleration
  - i.e. weight lifters, rowers
Tendonitis

Signs and Symptoms:

• Pain with active motion
• Pain with passive stretching
• Point tenderness over either flexor or extensor tendons
• Swelling
Tendonitis

Treatment:

• Ice
• Heat
• Pain medications – Panadol, ibuprophen
• Modify activity
• Splint
• Strengthening and ROM exercises
Ganglion Cyst

- herniation of joint capsule, synovial sheath of tendon or cystic structure

Mechanism of injury:
- Appears slowly after repeated forced hyperextension of wrist.
  - Contains clear mucous fluid
  - Appears most often on dorsum of hand
Ganglion cyst

S/S:

• pain on dorsum of hand that increases with wrist extension
• May feel soft and rubbery or hard
• May appear bigger with flexion of wrist
Ganglion Cyst
Ganglion cyst
Ganglion Cyst

Treatment:

• Break down swelling with digital pressure and padding
• Aspiration and chemical cauterization followed by pressure padding
• Will usually come back
• Surgical removal
• HIT IT WITH A BOOK
Hand injuries

- Dislocation of lunate
- Scaphoid Fracture
- Hamate Fracture
- Metacarpal Fracture—Boxer’s fracture
Dislocation of Lunate

Mechanism of Injury:

– Forced hyperextension of wrist

S/S:

– Pain
– Swelling
– Difficulty moving wrist and fingers into flexion
– Numbness/paralysis of flexors due to pressure of lunate on median nerve
– deformity
Lunate dislocation

- Treatment:
  - Splint
  - Ice
  - Physician referral for reduction
  - 1-2 month recovery time
Lunate Dislocation
Scaphoid Fracture

• Mechanism of Injury:
  – Fall on hyperextended wrist
  – Force on outstretched hand (hyperextended wrist) that compresses the bone between the radius and 2\textsuperscript{nd} row of carpal bones

• S/S:
  – Pain and Point tenderness over the anatomical snuffbox
  – Swelling
  – Possible discoloration
  – Loss of motion
Scaphoid fracture
Scaphoid Fracture

• Treatment:
  • Ice
  • Splint
  • Physician referral
  • Initial immobilization for 6 weeks
  • If not recognized as fracture, could have non-union then surgery is required
Hamate Fracture

• **Mechanism of Injury:**
  
  – Fall on hand
  
  – Contact to palm of hand with sports implement
    
    • Swinging baseball bat
    • Swinging tennis racquet
    • Swinging golf club
Hamate fracture

- **S/S:**
  - Wrist pain
  - Weakness in wrist motion
  - Point tenderness over hook of hamate
  - Possible tingling, numbness due to compromise of ulnar nerve
Hook of hamate fracture

- Treatment:
  - Ice
  - Splint
  - Physician referral
  - Cast
Metacarpal (Boxer’s) Fracture

• Most common of all metacarpal fractures
• Associated with martial arts/boxing

• **MXN:**
  • direct axial force caused by punching another person or object
  • Direct impact to hand
Boxer’s fracture
Boxer’s Fracture

- S/S:
  - Point tenderness over the metacarpal involved
  - Palpable defect in the shaft of the 5th metacarpal (or other metacarpals)
  - Swelling
  - Discoloration
  - Pain with movement
Boxer’s fracture
Boxer’s (Metacarpal) Fracture

- Treatment:
- Ice
- Splint
- Physician referral for x-ray
- Reduction and casting (3-4 weeks)
Finger Injuries

- Mallet Finger
- Jersey Finger
- Gamekeeper’s Thumb
- Sprain
- Subungual hematoma
Mallet Finger

Mechanism of Injury:

- Blow to tip of finger, jamming it and tearing of extensor tendon at the distal phalanx
- Can cause fracture as well
Mallet Finger

S/S:

• Pain
• Point tenderness of distal phalanx
• Deformity
• Unable to extend finger at DIP joint
• Detached bone may be palpable
Treatment:

- RICE
- Splint into extension 6-8 weeks
- Physician referral
Mallet finger
Jersey Finger

Mechanism of Injury:

• Forced extension/hyperextension of DIP joint
• Grabbing on to a jersey
• Rupture of flexor digitorum profundus tendon and or tearing fracture
Jersey Finger

S/S:

• Point tenderness of DIP joint
• DIP joint cannot flex
• Finger is in extended position
• Pain
• Swelling
• discoloration
Jersey Finger

Treatment:

- Ice
- Splint
- Physician referral
- Surgery to repair tear
- 12 week recovery
- May have weakness with motion due to poor gliding motion of tendon
Gamekeeper’s Thumb

Mechanism of Injury:

• Forced abduction and hyperextension of the proximal phalange of thumb
• Falling on the thumb
• Sprains UCL of 1st MP joint
Gamekeeper’s Thumb

S/S:
- Pain
- POT over UCL of thumb
- Swelling
- Discoloration
- Instability of joint
- Unable to grip
Gamekeeper’s Thumb

Treatment:
- Ice
- Splint
- Physician referral for x-ray to rule out tearing fracture
- Possible surgery
Finger Sprain

MXN – Mechanism of Injury:

• Axial (twisting) force to the tip of the finger, “jamming” it
Finger Sprain

S/S:
- Pain
- Point tenderness over the collateral ligaments
- Swelling
- Discoloration
- Joint instability

Treatment:
- Ice
- Splint
- Physician referral if necessary for x-rays
Subungual Hematoma

- **Mechanism of Injury**: direct blow to the fingernail
- **S/S**: throbbing pain due to accumulation of blood under the nail
- **Treatment**: ice (water) to numb, release pressure under nail by drilling/burning a hole in the nail
Ring injury

• Mechanism of Injury: getting ring/jewelry caught on something
• S/S: deformity, bleeding, pain, loss of body part
• Treatment: find body part, control bleeding, cover open wound, treat for shock, send to ER
Ring injury