

## Common Disorders of the Hand and Wrist

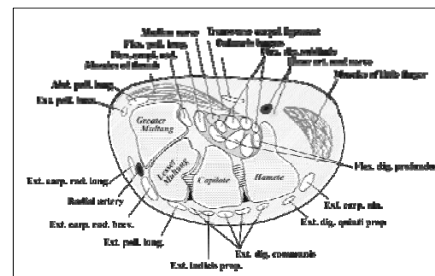
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## Carpal Tunnel Syndrome

- Compression of the median nerve
- Causes numbness, tingling and pain
- Often night pain/numbness

## NERVE COMPRESSION DISORDERS

## Carpal Tunnel Syndrome



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## Median Nerve Distribution



Author: Wellcome Images; Creative Commons by-nc-nd 2.0 UK: England & Wales

## Carpal Tunnel Syndrome

- Treatment
  - Splints
  - Corticosteroid injection
  - Endoscopic or open carpal tunnel release



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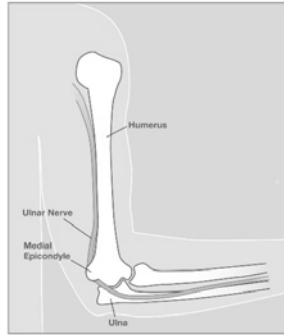
## Carpal Tunnel Syndrome

- Diagnosis
  - Tinel's
  - Durkin's
  - Phalen's
  - EMG

## Cubital Tunnel Syndrome

- Compression of the ulnar nerve
- Typically presents at the elbow
- Diagnosis:
  - Tinel's
  - Elbow Flexion test
  - EMG
- Treatment:
  - "Splinting" (volleyball kneepad, etc)
  - Surgical release

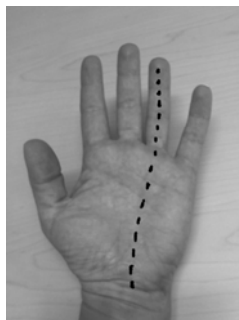
## Cubital Tunnel Syndrome



Author: ASSH - Image provided courtesy of the American Society for Surgery of the Hand

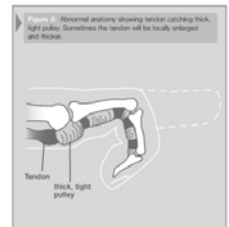
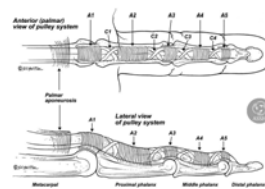
## TENDON DISORDERS

## Sensory distribution of the hand



## Trigger Finger

- Stenosing Tenosynovitis of finger flexor tendons
- Discrepancy in size between the tendon and the flexor tendon sheath



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## Trigger Finger

- **Physical Exam:**
  - Pain at level of A1 pulley
  - Triggering as finger is brought from flexion into extension
  - Locking
  - Most common in thumb

## Trigger Finger Treatment

- **Corticosteroid injection**
  - 50-90% success rate



Author: ASSH - Image provided courtesy of the American Society for Surgery of the Hand

## Trigger Finger

- **Risk Factors:**
  - Women
  - Diabetes
  - Hypothyroidism
  - Gout
  - Renal disease

## Trigger Finger Treatment

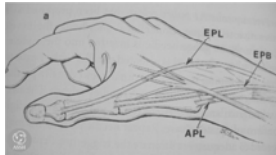
- **Surgery**
  - Release of A1 pulley



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## DeQuervain's Tenosynovitis

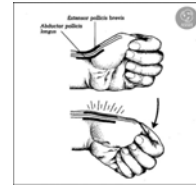
- Stenosing tenosynovitis of the 1st dorsal compartment
  - Abductor pollicis longus (APL)
  - Extensor pollicis brevis (EPB)



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## De Quervain's Tenosynovitis

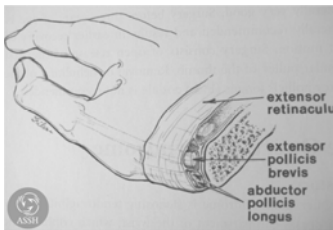
- Physical Exam
  - Radial sided wrist pain worsened by thumb motion or ulnar deviation
  - Swelling
  - Finkelstein's test
- Treatment:
  - Splinting
  - Injection
  - Surgery (First Dorsal Compartment Release)



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## De Quervain's Tenosynovitis

- Pathophysiology:
  - 1st dorsal compartment subdivided into 2 compartments
    - EPB is in its own compartment
    - Up to 34% of the population



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## De Quervain's Tenosynovitis Treatment

- Thumb spica splint
- Corticosteroid injection
- Surgery - release of first dorsal compartment and subcompartment



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# FRACTURES

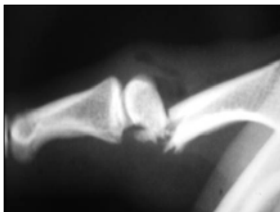
## Metacarpal Fracture (Boxer's)



- Commonly caused by punching an object
- Surgery for multifragmented, severely displaced, multiple metacarpal, short oblique or spiral with soft-tissue injury<sup>2</sup>
- "Fight bite" wound needs to be extended and irrigated with appropriate antibiotics.

## Phalanx Fractures

- May be seen at proximal, middle or distal phalanx
- May have an associated joint dislocation
- Surgery versus splinting



## Scaphoid Fracture



## Scaphoid Fracture

- Often missed on x-ray
- Most commonly fractured carpal bone
- Tenderness in the anatomic snuffbox
- May require CT or MRI to evaluate
- Can go on to non-union
- Treatment is often surgery
- Generally caused by a fall on an outstretched hand (FOOSH)

## Scaphoid Fracture

- X-ray: PA, oblique, lateral views plus a PA view in ulnar deviation
- Nondisplaced fractures may not be visible on initial xray
  - Thumb spica splint
  - Repeat X-rays in 10-14 days



## Scaphoid Fracture

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## Risks Factors for Scaphoid Nonunion

- Displaced fracture (>1mm)
- Proximal pole fracture
- Delayed diagnosis (>28 days)
- Smoking

## Treatment

- **Nondisplaced fracture:**
  - Long arm thumb spica cast X 6 wks followed by short arm thumb spica cast X 6 wks
  - Percutaneous screw fixation
- **Displaced fracture – open reduction, internal fixation with compression screw**



## Distal Radius Fractures

- **Mechanism: Fall on outstretched hand**
- **Requires proper treatment**

## Imaging

- **Standard**
  - AP
  - Lateral
  - Oblique



Images provided courtesy of the American Society for Surgery of the Hand



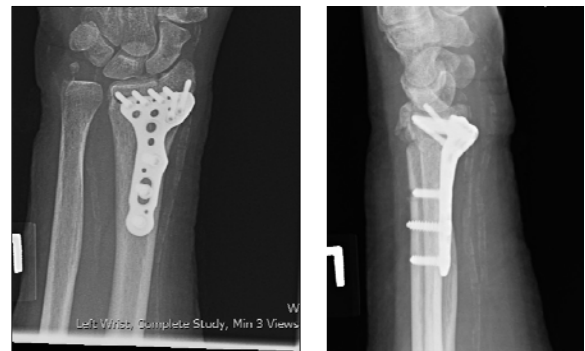
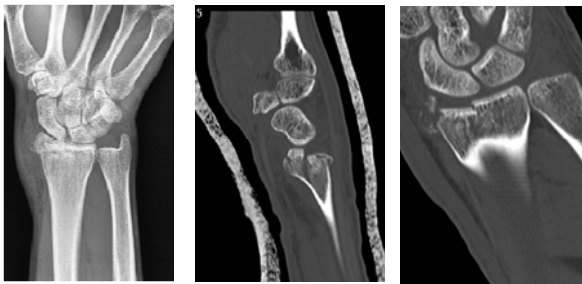
## Suggestions for PCP

- Splint for comfort
- Quick referral for displaced fractures
- Do not immobilize too long
- Beware of apparently benign fracture patterns.



## Treatment

- Primary decision – non-operative vs. operative treatment
- Must be individualized
  - Physiologic age
  - Individual needs
  - Medical co-morbidities



# JOINT DISORDERS

## Thumb Carpometacarpal Arthrosis



## Osteoarthritis

- Finger (PIP/DIP)
- Thumb CMC
- Wrist (Radio-carpal)
  - SLAC wrist



## Thumb Carpometacarpal Arthrosis

- Conservative treatment
  - NSAID
  - Splinting
  - Activity Modification
  - Injection
- Surgical treatment



## IP Joint Arthritis



- Conservative
  - Splinting
  - Injections
- Operative
  - PIP joint arthroplasty
  - Joint fusion

## Wrist arthritis

- Conservative treatment
  - Splinting
  - Injections
- Operative treatment
  - Proximal row carpectomy
  - Joint fusion
  - Wrist arthroplasty

## SLAC Wrist (Scapho-Lunate Advanced Collapse)



## Ganglion Cyst

- General
  - Most common hand tumor
  - Female : Male (3:1)
  - 2<sup>nd</sup> – 4<sup>th</sup> decades of life
  - Rapid or gradual development of mass
  - Arises from a joint capsule or tendon sheath
- Etiology:
  - Trauma
  - Mucoïd degeneration
  - Synovial herniation



Image provided courtesy of the American Society for Surgery of the Hand

## Ganglion Cyst

### Diagnosis

- Clinical examination
  - Mildly tender or non-tender
  - Vary in size
  - Patients may complain of pain / aching, stiffness, weakness or concerns for aesthetics
  - Mass may transilluminate
  - Concomitant carpal instability may contribute to wrist symptoms
  - Vascular evaluation (Allen's test/ thrill) for volar ganglions due to the potential for radial artery aneurysm

## Ganglion Cyst Diagnosis

- Imaging studies
  - Radiographic assessment is usually normal
  - MRI is useful to identify occult ganglion cysts, as a source of local symptoms

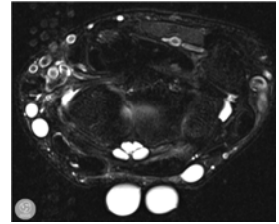


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## Ganglion Cyst Locations

- Dorsal wrist
  - Scapholunate interval, most common
- Volar wrist
  - Radioscaphoid and scaphotrapezial joints, most common
- Other sites:
  - Thumb carpometacarpal joint
  - Flexor carpi radialis tendon sheath
  - Distal palm / proximal digit
  - Distal interphalangeal joint
  - Carpal Canal, Guyon's canal
  - Almost any joint hand and wrist

## Ganglion Cyst Treatment

- Observation
  - Splinting
  - Aspiration +/- steroid injection
  - Surgical excision



Image provided courtesy of the American Society for Surgery of the Hand

## Dupuytren's Disease

- Normal palmar and digital fascia transform to form abnormal palmar and digital cords which lead to nodule formation and contracture



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## Anatomy

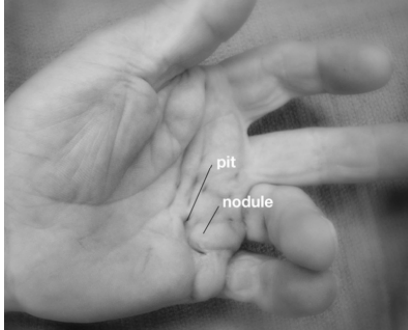
- Involves the palmar and digital fascia
  - Tethers the skin to the underlying bony structures
  - Limits sliding of skin
  - Prevents skin avulsion

## Risk Factors

- Alcoholism
- Diabetes
- Epilepsy
- Smoking
- Chronic pulmonary disease
- HIV

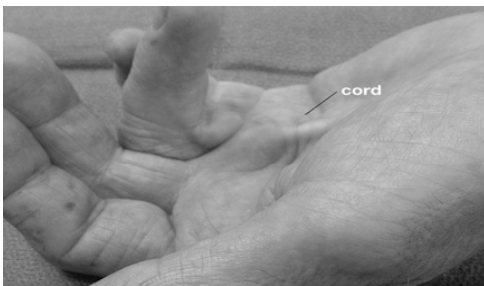
## Presentation

- Painless nodule
- Skin changes
  - Pitting
  - Dimpling
- Cords
- Contractures
- Often bilateral
- Ring and small finger most common



## Treatment

- What doesn't work:
  - Stretching
  - Manipulation
  - Steroid injections
  - Splinting/casting



## Treatment

- What does work:
  - Surgery
  - Collagenase
  - Radiation



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## Surgical Indications

- All are relative indications:
  - MCPJ contracture  $> 30^\circ$
  - Any PIPJ contracture
  - Table top test

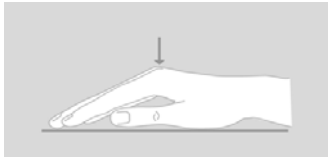


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