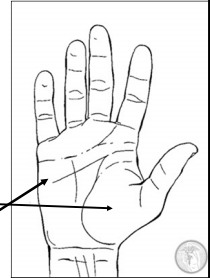


## Outline

- Terminology and Axes of Motion
- Fundamental Surface Anatomical Landmarks
- Physical Examination & Diagnoses for PCP's

## Terminology

- Hand
  - Dorsal surface
  - Volar or palmar surface
  - Radial and ulnar borders
- Palm
  - Thenar area
  - Mid-palm area
  - Hypothenar area



Palmar view of the hand

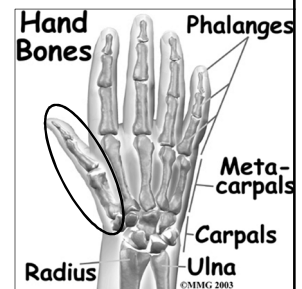
## Terminology

- **Fingers**
  - Thumb, index, middle/ long, ring, & small (1<sup>st</sup> to 5<sup>th</sup>)
- **Each digit (except thumb)**
  - 3 phalanges (prox, middle, distal)
  - metacarpal



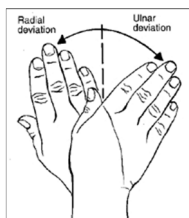
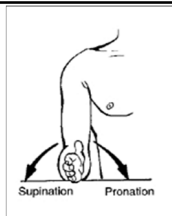
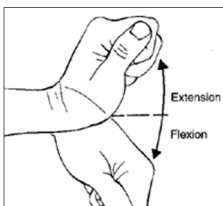
## Terminology

- **Each finger has three joints:**
  - Metacarpophalangeal (MP)
  - Proximal interphalangeal (PIP)
  - Distal interphalangeal (DIP)
- **Thumb**
  - Two phalanges & two joints (MP, IP)



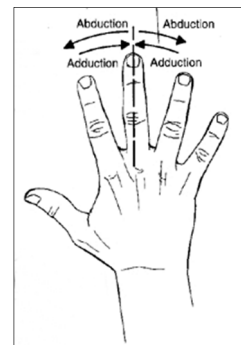
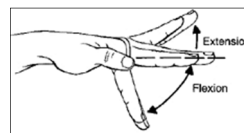
## Hand Motion

- **Standardized**
  - Forearm
  - Wrist



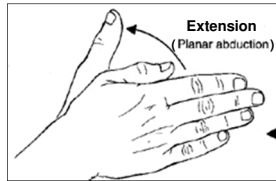
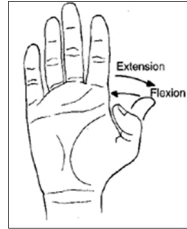
## Hand Motion

- **Standardized**
  - Digits
- **Center of hand**
  - Long finger ray



## Thumb Motion

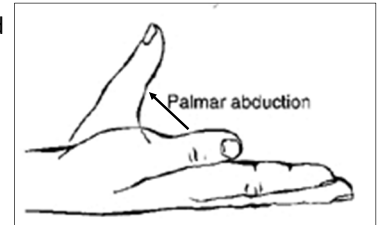
- Standardized
  - Flexion
  - Extension (Planar abduction)



Essentials of Hand Surgery 2002

## Thumb Motion

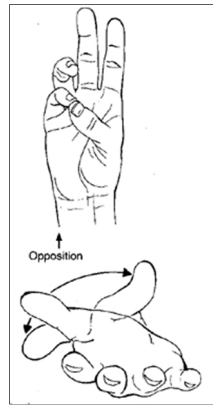
- Standardized
  - Abduction (Palmar)



Essentials of Hand Surgery 2002

## Thumb Motion

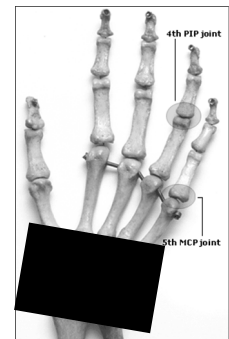
- Standardized
  - Opposition
    - Abduction
    - Flexion (Adduction)
    - Pronation



Essentials of Hand Surgery 2002

## Surface Anatomy of Hand

- **Bones**
  - Metacarpal
  - Phalanges
- **Joints**
  - DIP, PIP, IP, MCP

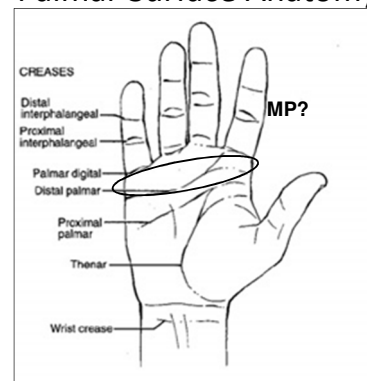


## Dorsal Surface Anatomy

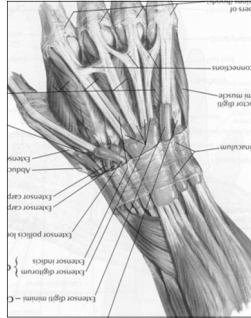
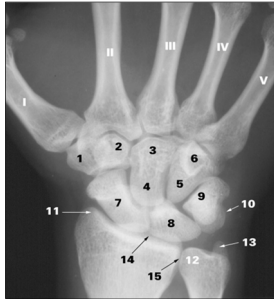
- **Bones**
  - Metacarpal
  - Phalanges
- **Joints**
  - DIP, PIP, IP, MP



## Palmar Surface Anatomy



## Wrist



## Anatomical Structures of the Wrist

- # bones: 15
- # joints: 17
- # tendons: 24 (25)

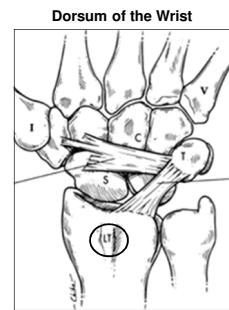
## Surface Anatomy of Wrist

- First landmark:
  - Snuff box
    - CMC thumb
    - Thumb Extensors
    - Scaphoid



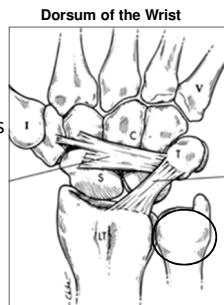
## Surface Anatomy of Wrist

- Second Landmark
  - Lister's tubercle
    - Distal Radius
    - Scapho-Lunate Ligament



## Surface Anatomy of Wrist

- Third Landmark
  - Distal Ulna
    - Extensor Carpi Ulnaris (ECU) Tendonitis
    - Triangular Fibro-Cartilage Complex (TFCC) ligament



## Surface Anatomy Summary

- Volar MP joints
- PIP and DIP Joints
- Metacarpals
- Phalanges
- **Snuffbox**
- **Lister's Tubercle**
- **Distal Ulna**

## P.E. & Diagnoses of Hand & Wrist Pain

### Case Study

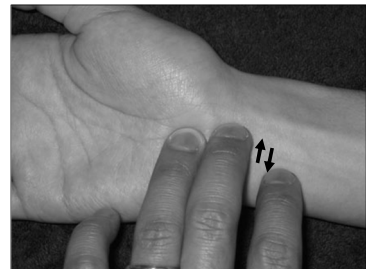
- 47 y.o. woman c/o 6 months h/o of numbness and tingling in right hand
  - Wakes her up at night

### Finger Sensation to Light Touch

- Normal?
- Symmetric?

### Carpal Tunnel Syndrome

- Tinel's



### Carpal Tunnel Syndrome

- Median Nerve Compression (Durkin)

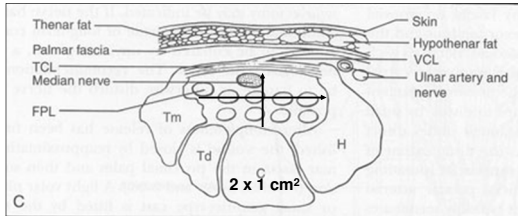


### Carpal Tunnel Syndrome

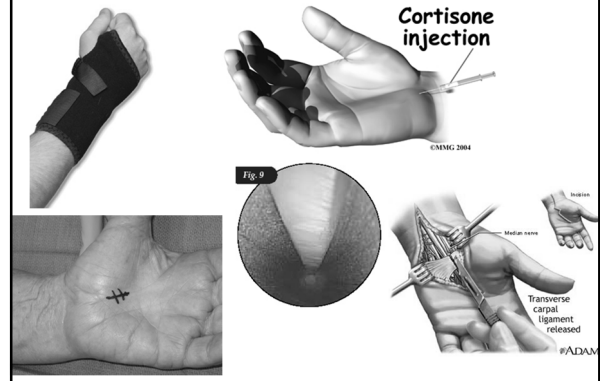
- Phalen's



## Carpal Tunnel Syndrome



## CTS Treatments



## Clinical messages

- Clinician
  - Ask about night pain
  - May lead to irreversible median nerve damage
  - Refer to hand surgeon if splint not helpful
- Patient
  - Start with wrist splints at night
  - F/u if symptoms no better

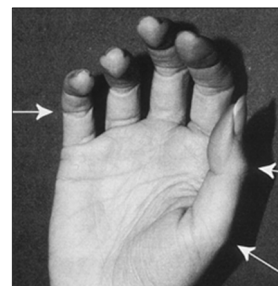
## Case Study

- 53 y.o. male with diabetes c/o clicking in right ring finger joint
  - Worse in the mornings
  - Sometimes the finger “sticks”

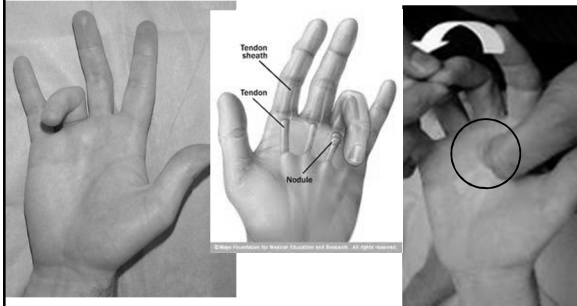
## Trigger Finger

## Flexor Tendon

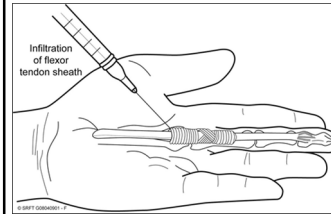
- Normal Finger Cascade



### Flexor Tenosynovitis (Trigger Finger)



### Treatment



### Clinical messages

- Clinician
  - Examine the volar MP joint of the finger
  - Increased risk in diabetics and rheumatoids
- Patient
  - Therapy is unreliable
  - Steroid injection has 70% success rate

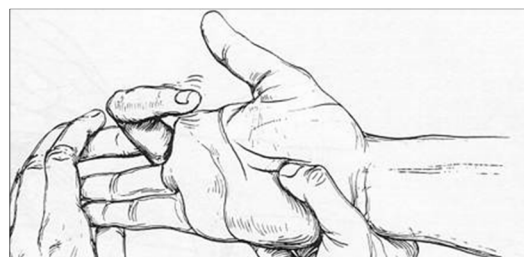
### Case Study

- 27 y.o. male RHD (right-hand dominant) male accidentally cut his left index finger while opening up frozen hamburger patties

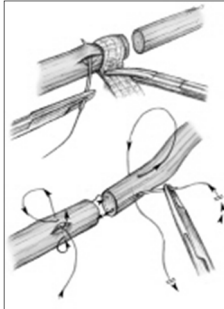
### Flexor Digitorum Profundus



### Flexor Digitorum Superficialis



### Treatment



### Clinical messages

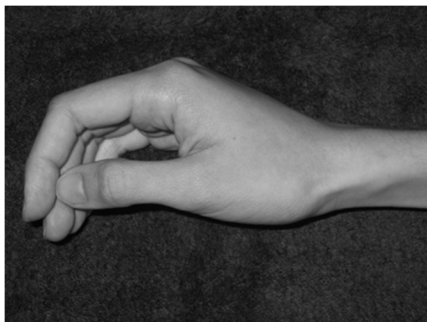
- Clinician
  - Urgent hand surgery referral
  - Check digital sensation
- Patient
  - May need surgery

### Case Study

- 24 y.o. male fell on outstretched hand (FOOSH) while skateboarding on sidewalk, now has wrist pain

### Radial Wrist Pain

### Radial Sided Wrist Pain



### Radial Sided Wrist Pain



### Snuffbox Palpation



### Scaphoid Fracture



### Treatment



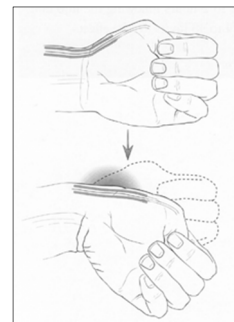
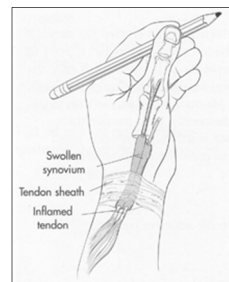
### Clinical messages

- Clinician
  - Thumb spica splint/cast if h/o of FOOSH and snuffbox tenderness
  - Refer to orthopaedic surgeon
- Patient
  - Need to follow up for persistent wrist pain after falls

### Case Study

- 31 y.o. woman who has a 2 month old baby at home c/o right thumb/ wrist pain for the last month
  - Worse with picking up baby

### De Quervain's Tenosynovitis



Finkelstein's Exam



## Treatment



## Clinical messages

- Clinician
  - Thumb spica splint and NSAIDs
  - Steroid injection is 70% effective
- Patient
  - Try not to extend the thumb, especially young mothers

## Case Study

- 67 y.o. woman c/o 1 year h/o of pain in her right wrist area
  - Worse with turning on ignition
  - Worse with twisting open bottle caps

## Bony Prominence Distal to Snuffbox



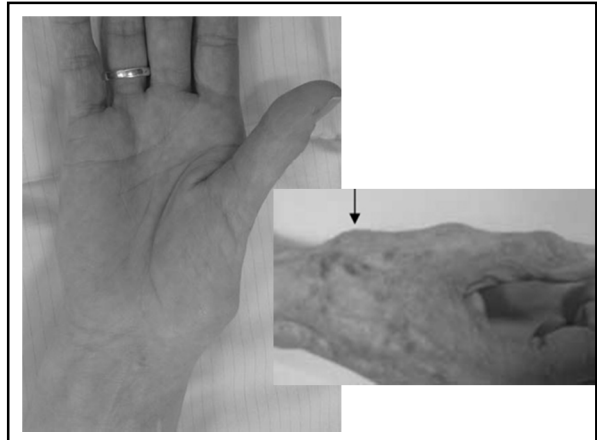
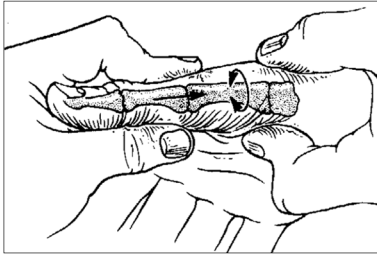
## CMC arthritis of the Thumb



## CMC Arthritis of the Thumb



## CMC Arthritis of the Thumb (Grind Test)



## Treatment



## Clinical messages

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Clinician           <ul style="list-style-type: none"> <li>– Thumb spica splint</li> <li>– Steroid injections<br/>ONLY 40% effective</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Patient           <ul style="list-style-type: none"> <li>– Activity modification, ie, opening bottle caps</li> </ul> </li> </ul> |
|--|---|

## P.E. & D.Dx. Summary

- **P.E. for**
  - MC/ Phalanx Fx
  - Trigger Finger
  - FDS/ FDP Injuries
  - Carpal Tunnel Syndrome
  - Scaphoid Injury
  - CMC arthritis of the Thumb
  - DeQuervain's Tendonitis
  - Scapho-Lunate Injury
  - TFCC Injury

## For more information on:

- Scapho-Lunate Injury
- TFCC Injury

Please visit Orthopedic Update of the Hand at;  
<http://www.pri-med.com/online-education/clinical-coffee-break/orthopedic-update-of-the-hand.aspx>

or search for Charles S. Day on [www.pri-med.com](http://www.pri-med.com) for online activities.