PRESENTATIONS AND EXAMINATION OF HAND TENDONS

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Common presentations

- Injury/Trauma e.g. lacerations, crush injuries.
  - Pain.
  - Swelling.
  - Mobility
- Sensation
- Deformity
Function of the hand

- Superficial sensation (external stimuli)
- Deep sensation (position of skeleton & muscle)
- Tact & Touch
- Stereognosis (recognition of object by touch)
- Grip & prehension
  3 stages: opening the hand, closing the digits, regulation of force of grip
Muscles & Tendons

- Muscles: generate the tension & create excursion.

- Tendons: are responsible for transmitting the muscle work to part of the skeleton that is to be moved.
Potential presenting conditions

- Tendon ruptures: (flexor & extensor)
- Mallet finger
- Boutonniere deformity
- DeQuervion disease
- Tenosynovitis
- Carpal tunnel syndrome
Hand Anatomy

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Tendon injury

- Tendon examination is an essential component to any examination of an injured hand/forearm, particularly in the case of wounds.
- A systematic approach in examination of forearms/hands should ensure tendon & nerve damage is not overlooked. This includes:
  - Look (inspect)
  - Feel (palpate)
  - Move (passive, active, resistance)
  - Special Tests
Mechanism of injury
Mechanism of injury “red flags”

- Stanley Knife.
- Glass.
- Deep wound with bone visible
- Open Fractures
- Chain/rotatory saws
Look/inspect

- Prior to any examination the position of the patient's wrist, hand & fingers should be noted.

- When the flexor tendon is completely severed the unsupported fingers rest in extension.

- When the extensor tendon is completely severed the fingers rest in flexion.
Tendons of wrist & hand

- Flexor Pollicis Brevis
- Flexor Pollicis Longus
- Flexor Digitorum Profundus
- Flexor Digitorum Superficialis
- Abductor Pollicis Longus
- Abductor Pollicis Brevis
- Extensor Pollicis Longus
- Extensor Pollicis Brevis
- Extensor Digitorum Communis
- Opponens Digiti Minimi
- Opponens Pollicis
Flexor Pollicis Brevis

*Insertion:* Palmar aspect of base of proximal phalanx of thumb.

*Action:* Flexes thumb at MCPJ
Flexor Pollicis Longus

- **Insertion:** Palmar aspect of base of thumb.
- **Action:** Flexes the thumb
Flexor digitorum profundus

- **Insertion:** Front of base of distal phalanx of fingers (palmar aspect)

- **Action:** Flexes distal phalanx
Flexor Digitorum superficialis

**Insetion:** the 4 tendons divide into 2 slips and insert into the sides of middle phalanges of the 4 fingers

**Action:** Flexes fingers at PIPJ
Abductor Pollicis longus

- **Insertion:** Dorsal surfaces of the base of metacarpal

- **Action:** Abducts, Rotates & extends thumb.
**Abductor Pollicis Brevis**

- **Insertion:** Base of proximal phalanx of thumb.

- **Action:** abducts the thumb, acts with muscles of the thenar eminence to oppose the thumb.
Extensor Pollicis Longus

- **Insertion**: Dorsal surface of the base of the distal phalanx of the thumb

- **Action**: Extends thumb
Extensor Pollicis Brevis

**Insertion:** Base of proximal phalanx of the thumb. (dorsal aspect)

**Action:** Extends thumb (abducts hand)
Extensor Communis Digitorum

- **Insertion:** Lateral & dorsal surfaces of the 4 fingers.

- **Action:** Extends the fingers & the wrist
Opponens Digiti Minimi

- **Insertion:** whole length of medial border of 5\textsuperscript{th} metacarpal.

- **Insertion:** Rotates 5\textsuperscript{th} metacarpal bone forward,
Opponens Pollicis

- **Insertion:** Lateral border of 1st metacarpal.

- **Action:** Rotates the thumb in opposition with fingers.
Mallet Finger

- Involves extensor tendon.

- Cause: usually by trauma (direct blow or pulling action)

- Rupture at insertion with or without avulsion fracture of base of distal phalanx

- Treatment; mallet splint if no or small avulsion fracture.
Swan neck deformity

- Presentation: PIPJ in hyperextension & DIPJ in flexion resulting from excessive traction of the extensor tendon at base of middle phalanx insertion site, thus forcing the lateral slip midline reducing its function.

- Causes:
  - Articular – preventing extension
  - Contracture of interosseous muscle
Boutonniere deformity

- Presentation: PIP joint held in flexion. This is a result of a lateral dislocation of the lateral extensor tendon allowing the head of the proximal phalanx to push through with all force transmitted to the distal phalanx and hyperextending the DIPJ.

- Causes: Division or rupture of tendon
  Degeneration, due to rheumatoid arthritis
DeQuervians

- Presentation: Swelling at level of radial styloid. Tenderness proximal to tip of radial styloid.
- Cause: repetitive strain, trauma
- Special test: Finkelsteins test. (make fist around flexed thumb and passively move in ulnar deviation. Positive elicits pain over APL)
Ulnar Claw Hand

- Presentation: Ring & little finger MCPJs hyperextended and IPJ kept in flexion

- Cause: Usually related to Ulnar nerve palsy. Loss of interosseus muscle function.

- If index & middle finger involved Median nerve involvement
Carpal tunnel syndrome

- **Presentation:** Pain, numbness particularly during the night
- **Causes:** Trauma, swelling (ganglion/lipoma)
  - Inflammatory (rheumatoid, gout)
  - Metabolic (endocrine imbalance, pregnancy)
- **Special tests:**
  - Tinels sign – tapping nerve over retinaculum producing paraesthesia.
  - Phalens test – Compression on nerve. Hands touching dorsum to dorsum with wrists in acute flexion. Paraesthesia positive sign.
References


- Tubianna R, Thomme J.M, Mackin E: Examination of hand and wrist. 1998
