

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

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Look/inspect

- Prior to any examination the position of the patients 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



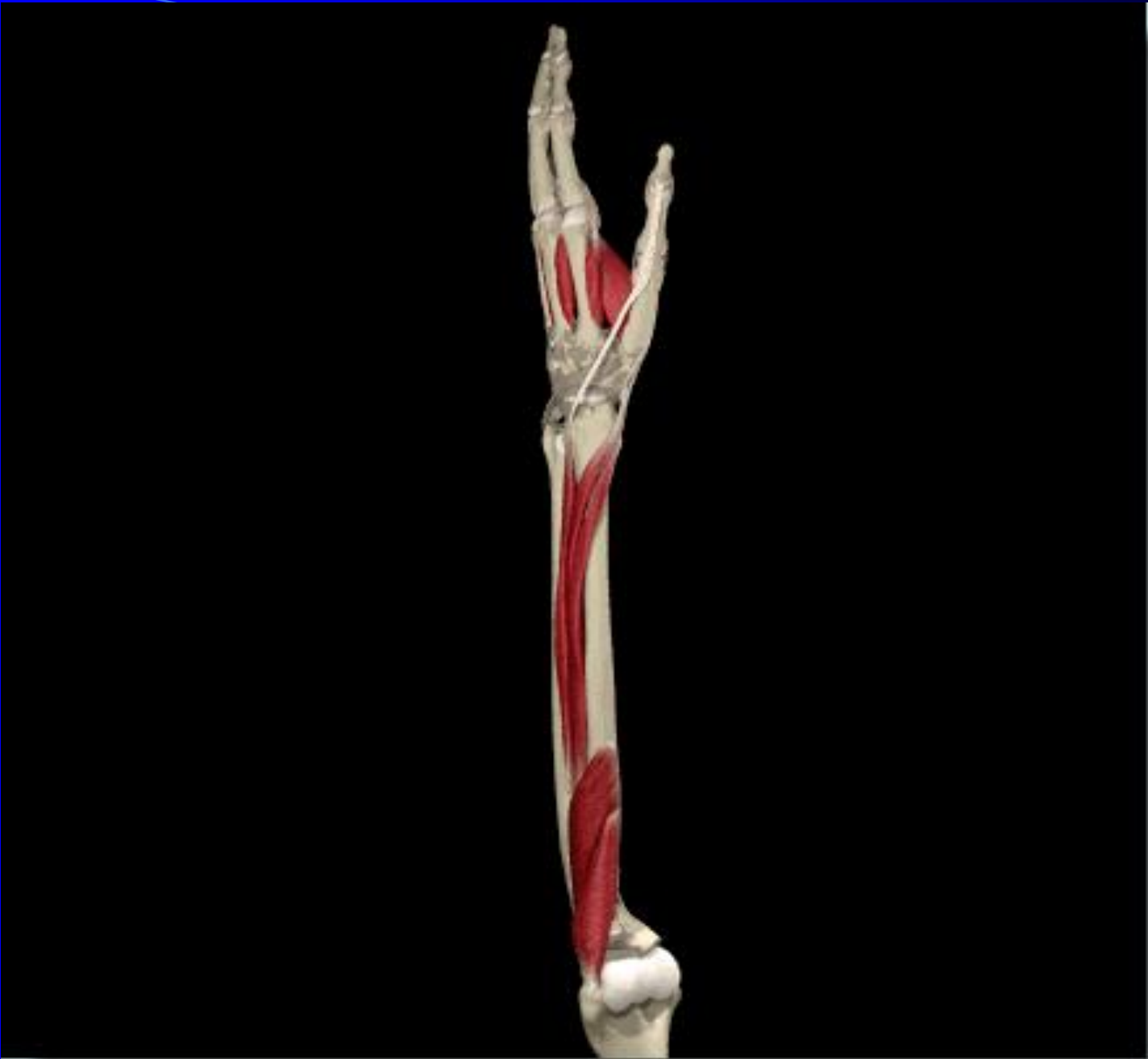
Flexor Digitorum superficialis

- ***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

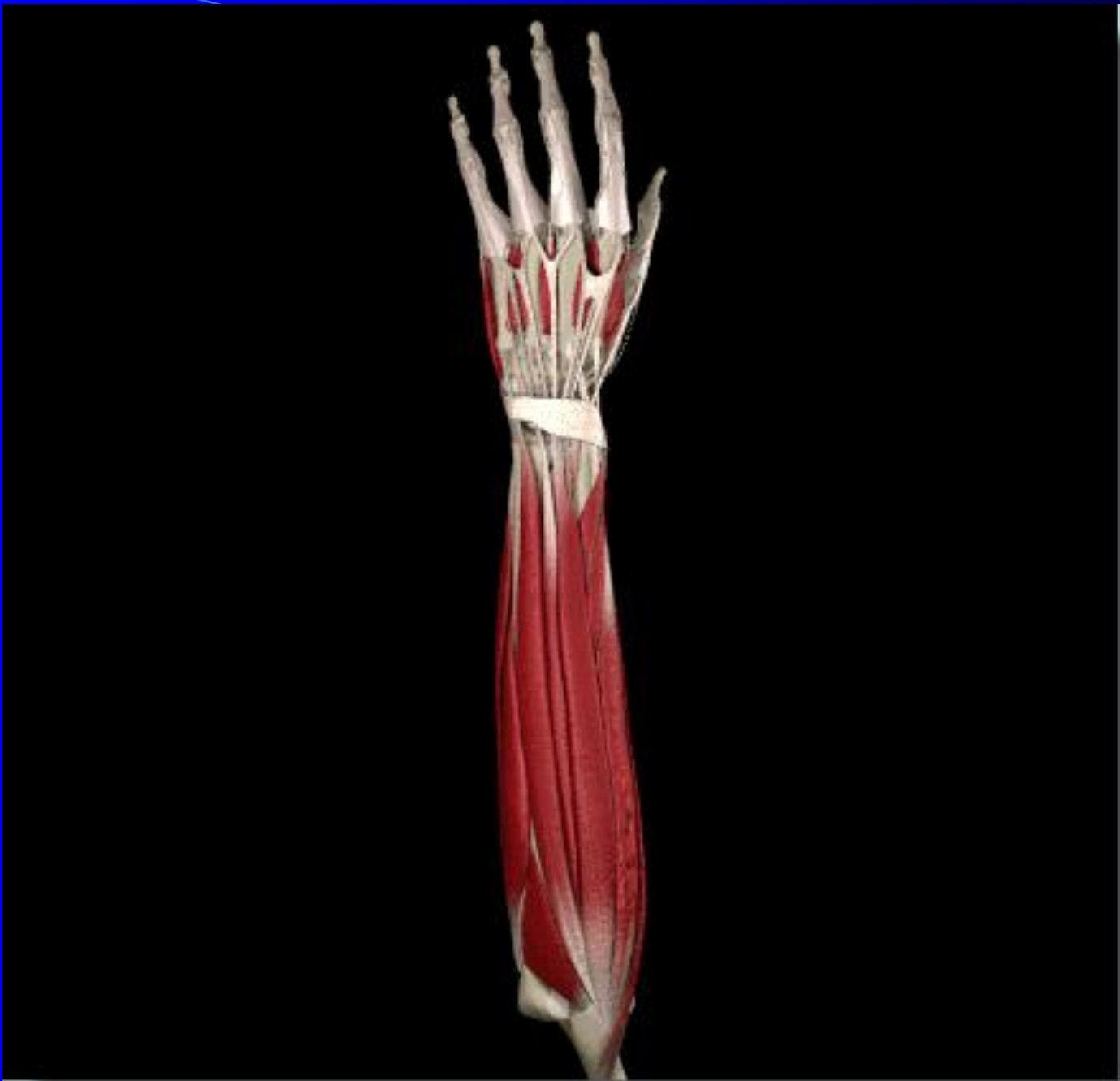
Insertion: Base of proximal phalanx of the thumb. (dorsal aspect)

Action: Extends thumb (abducts hand)



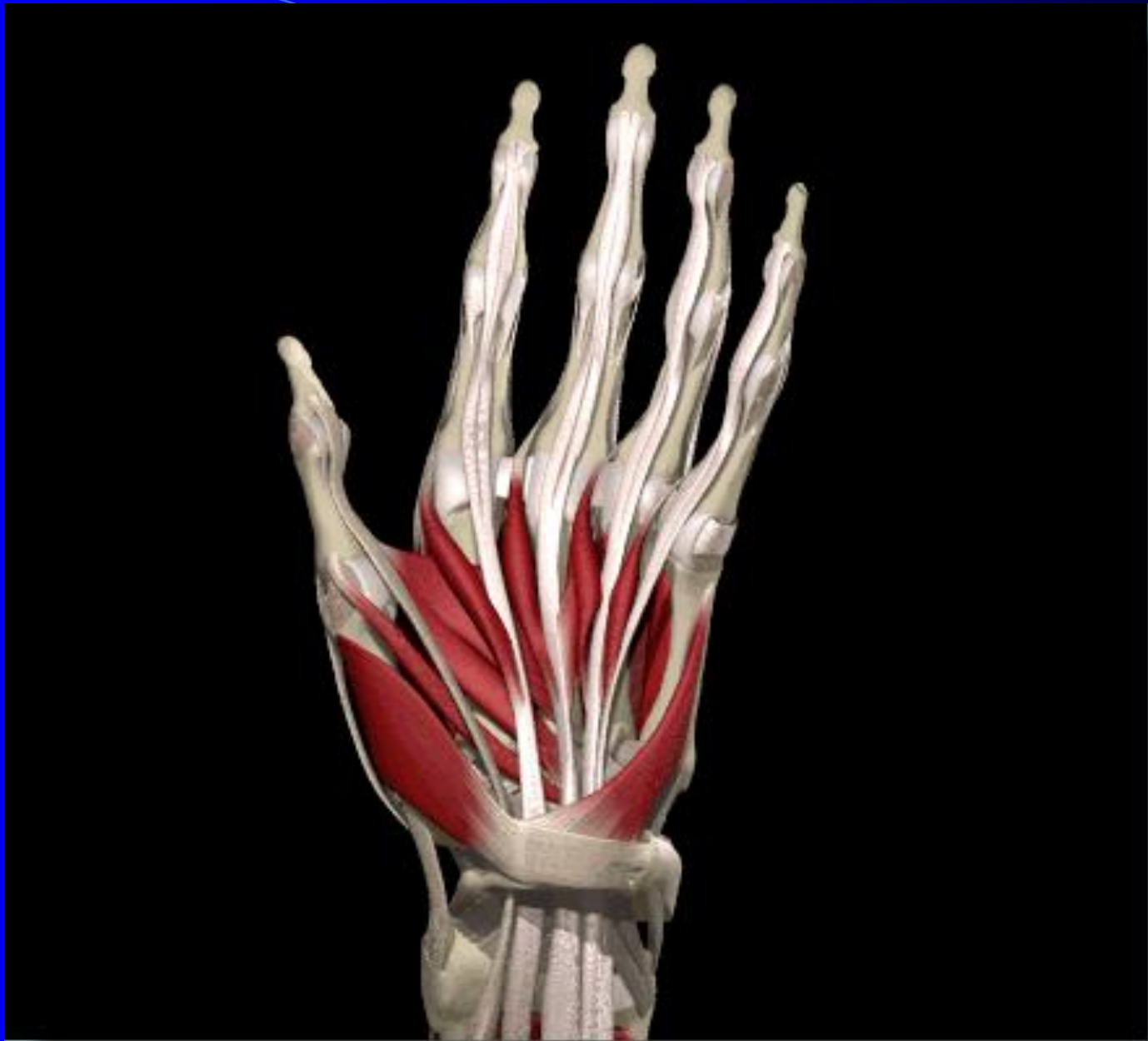
Extensor Communis Digitorum

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



Opponens Digiti Minimi

- *Insertion:* whole length of medial border of 5th metacarpal.
- *Insertion:* Rotates 5th 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

- Lister G.: The Hand; diagnosis and indications. 1997
- Pechlaner S, Hussl H, Kerschmauner L: Atlas of Hand injury. 2000
- Tubianna R, Thomme J.M, Mackin E: Examination of hand and wrist. 1998
- Wilson G.K, Nee P.A: Emergency management of hand injuries. 1997

