



و تعظم في عين الصغير
صغارها...وتصغر في عين العظيم
العظام

Musculoskeletal Block
ANATOMY
team 435



COLOR CODES

- IMPORTANT NOTES
- EXTRA NOTES
- DEFINITION

Retinacula

Flexor & extensor Retinaculum:

Bands of **deep fascia** at wrist

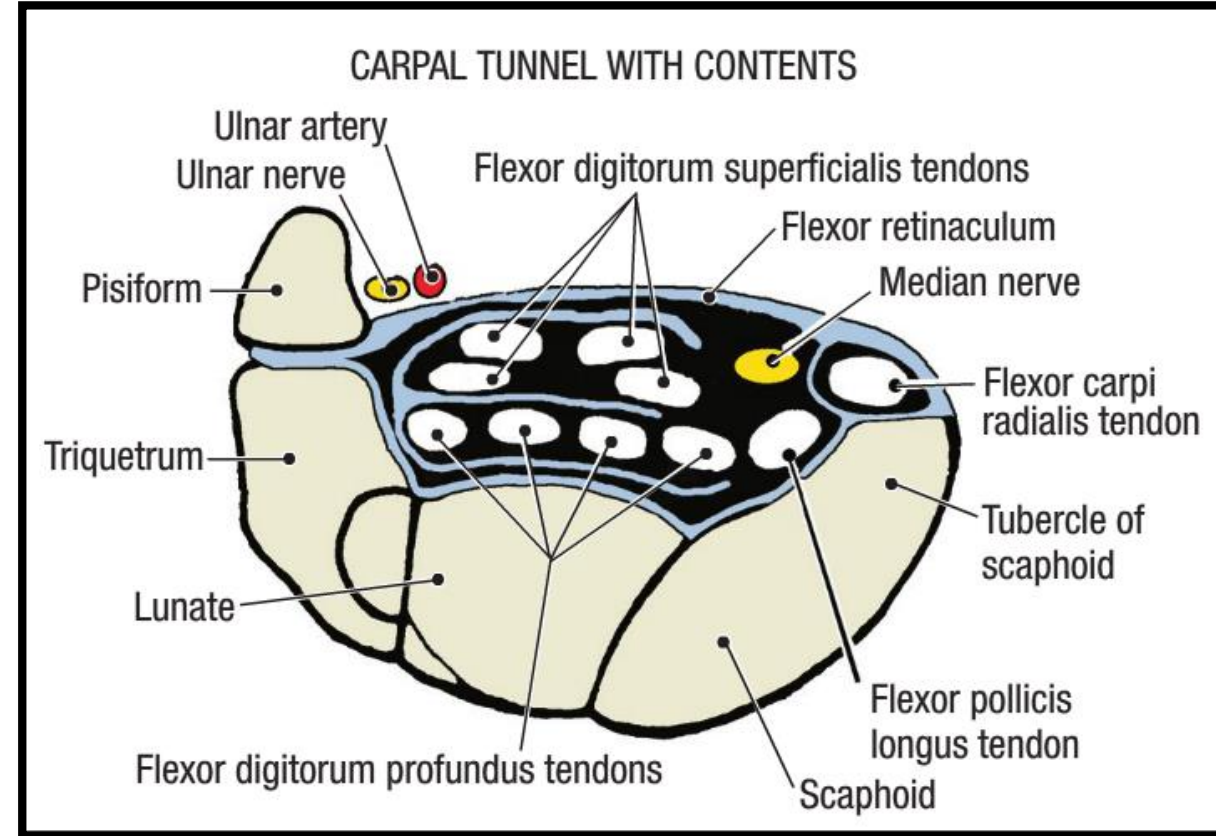
Function:

Hold the long flexor & extensor tendons at Wrist.

Attachments

Medially: both (Flexor & extensor) attached to **pisiform** and **hock of hamate**

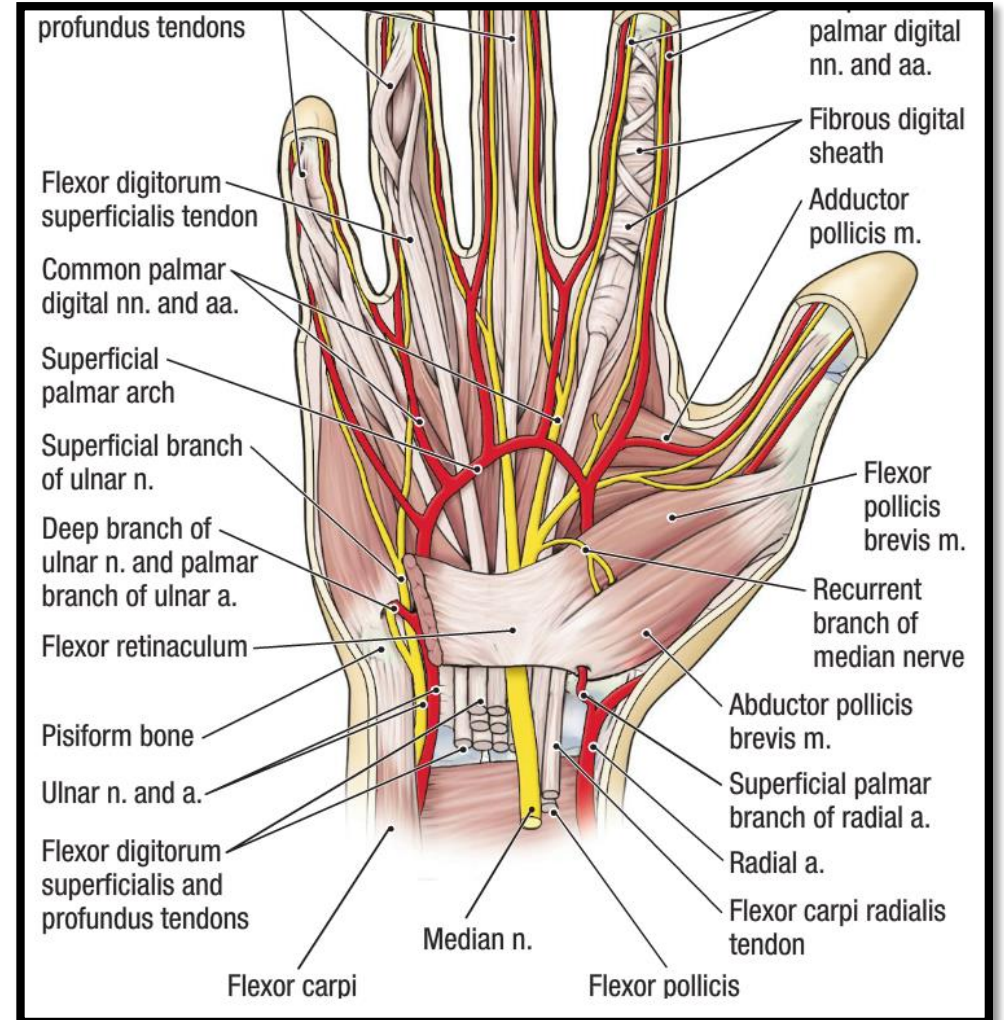
Laterally:
Flexor:(to tubercle of **scaphoid** & **trapezium**)
Extensor:(distal end of **radius**)



Structure superficial to flexor retinaculum

From **medial to lateral**:

1. Flexor carpi ulnaris tendon
2. Ulnar nerve
3. Ulnar artery
4. Palmar cutaneous branch of ulnar nerve
5. Palmaris longus tendon
6. Palmar cutaneous branch of median nerve



Carpal Tunnel

Formed from:

Concave surface of anterior carpus covered by flexor retinaculum

Contents:

From **medial to lateral**

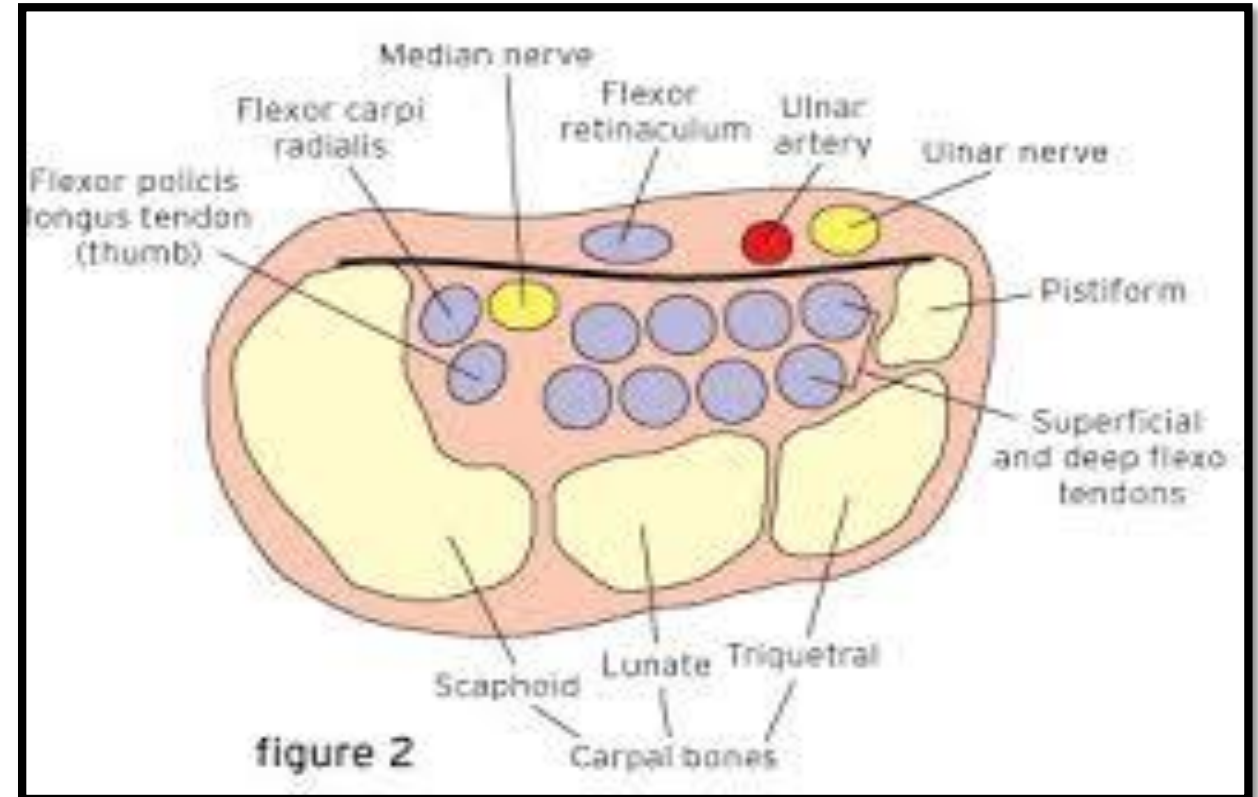
1. Flexor digitorum superficialis & profunda
2. Median nerve
3. Flexor pollicis longus
4. Flexor carpi radialis

Carpal Tunnel Syndrome

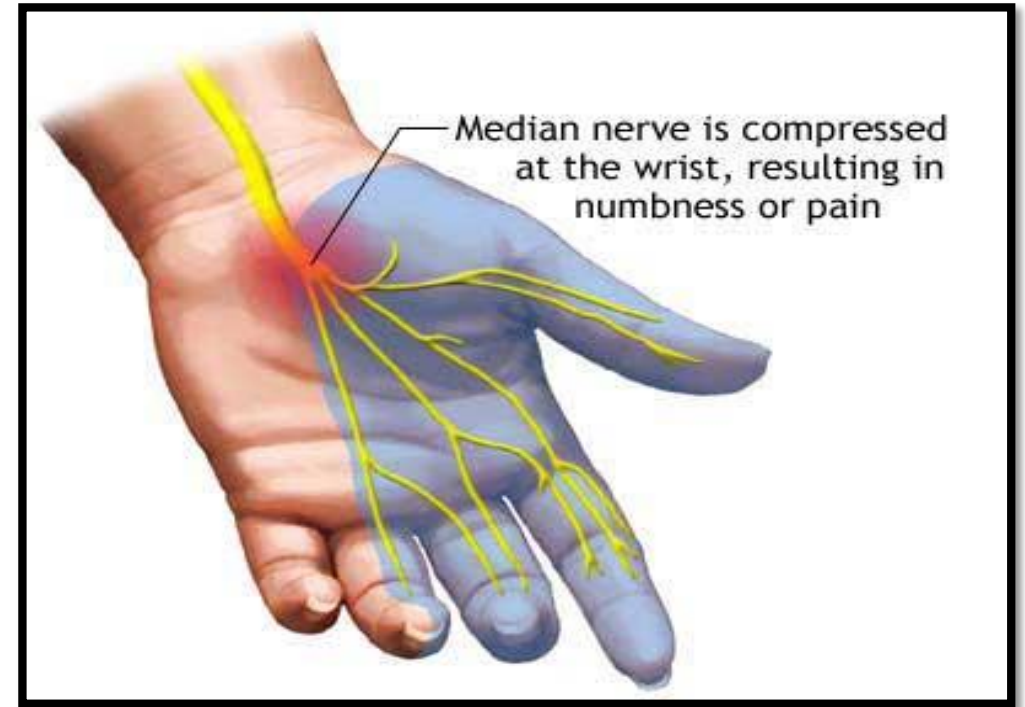
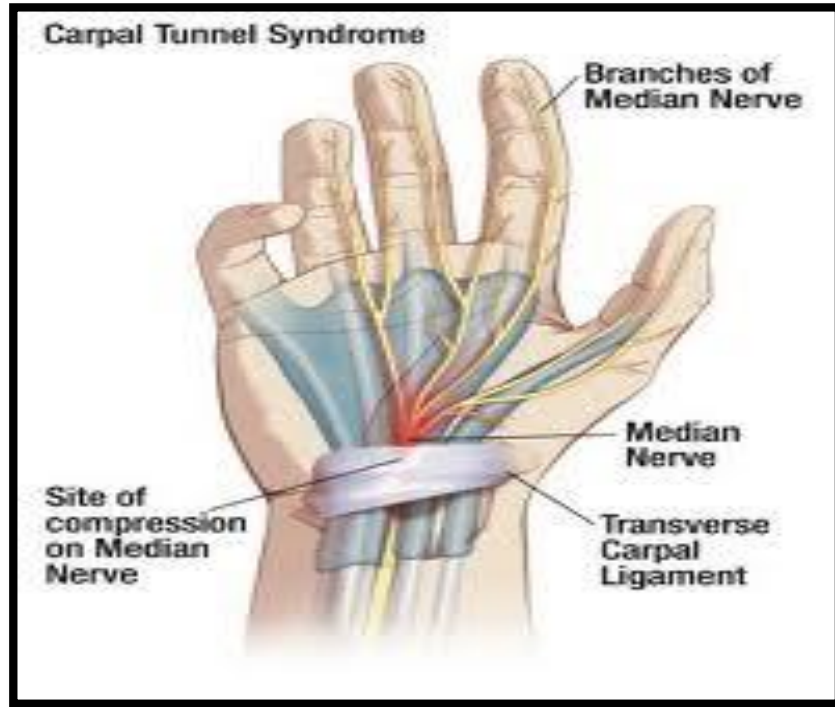
Causes: Compression of median nerve within Carpal Tunnel.

Manifestation:

- burning pain (pins and needles) at lateral three and half fingers
- No paresthesia over the thenar eminence



Carpal tunnel



Carpal Tunnel Syndrome

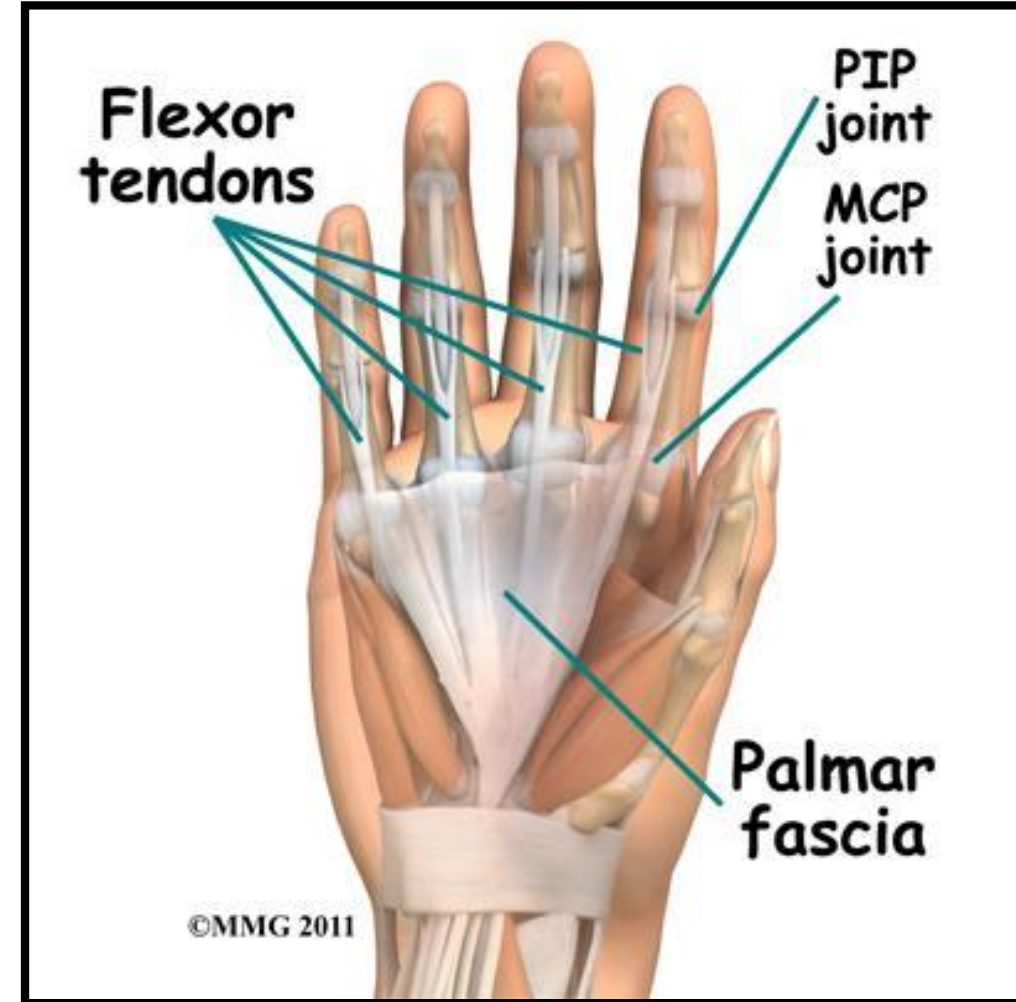


Manifestations:

- *Weakness or atrophy of the thenar muscles (**Ape Hand**).*
- *Inability to **Oppose** the thumb.*

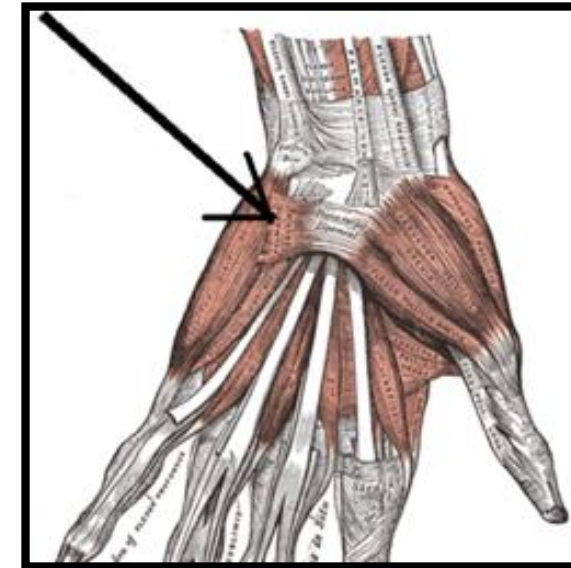
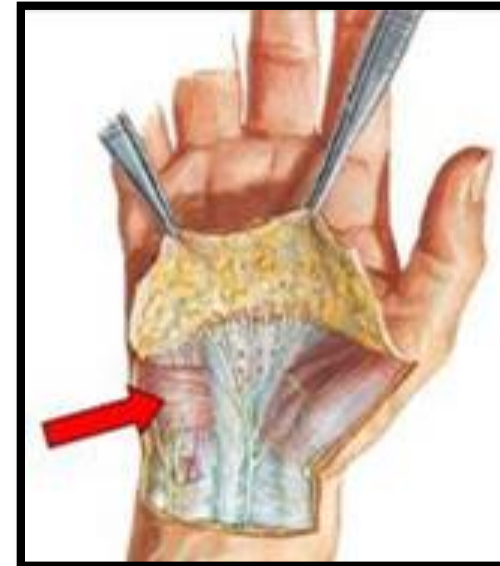
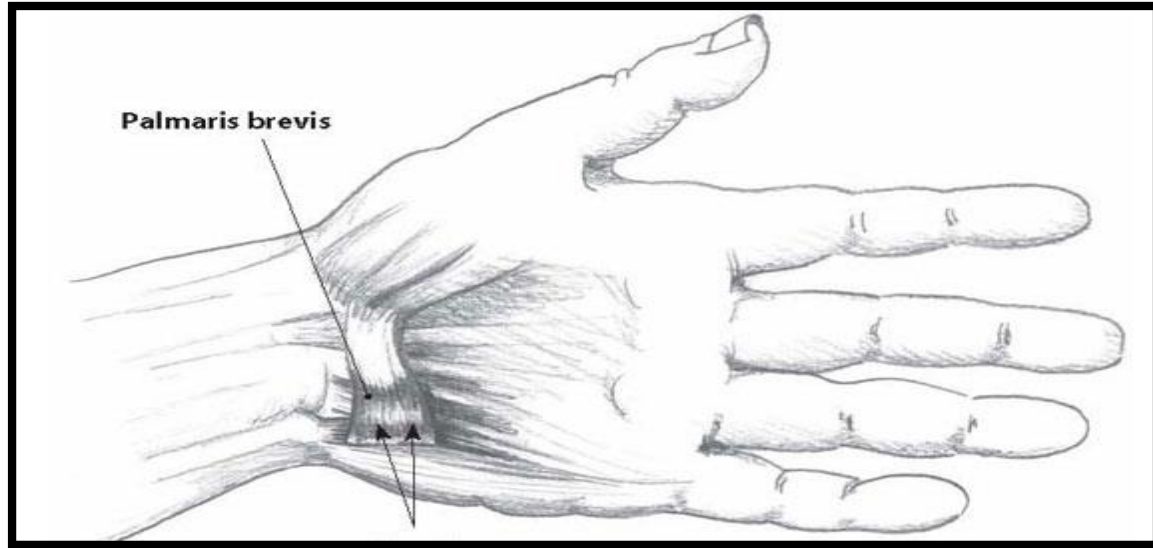
Palmar Aponeurosis

- Thickened deep fascia of the Palm
- Triangular in shape , occupies the central area of the palm
- **Apex:** attached to the distal border of flexor retinaculum and receives the insertion of palmaris longus tendon
- **Base:** divides at the bases of the fingers into four slips that pass into the fingers
- **Functions:**
 1. Firmly attached to the overlying skin and improves the grip
 2. Protects the underlying tendons, vessels & nerves
 3. Gives origin to palmaris brevis muscle

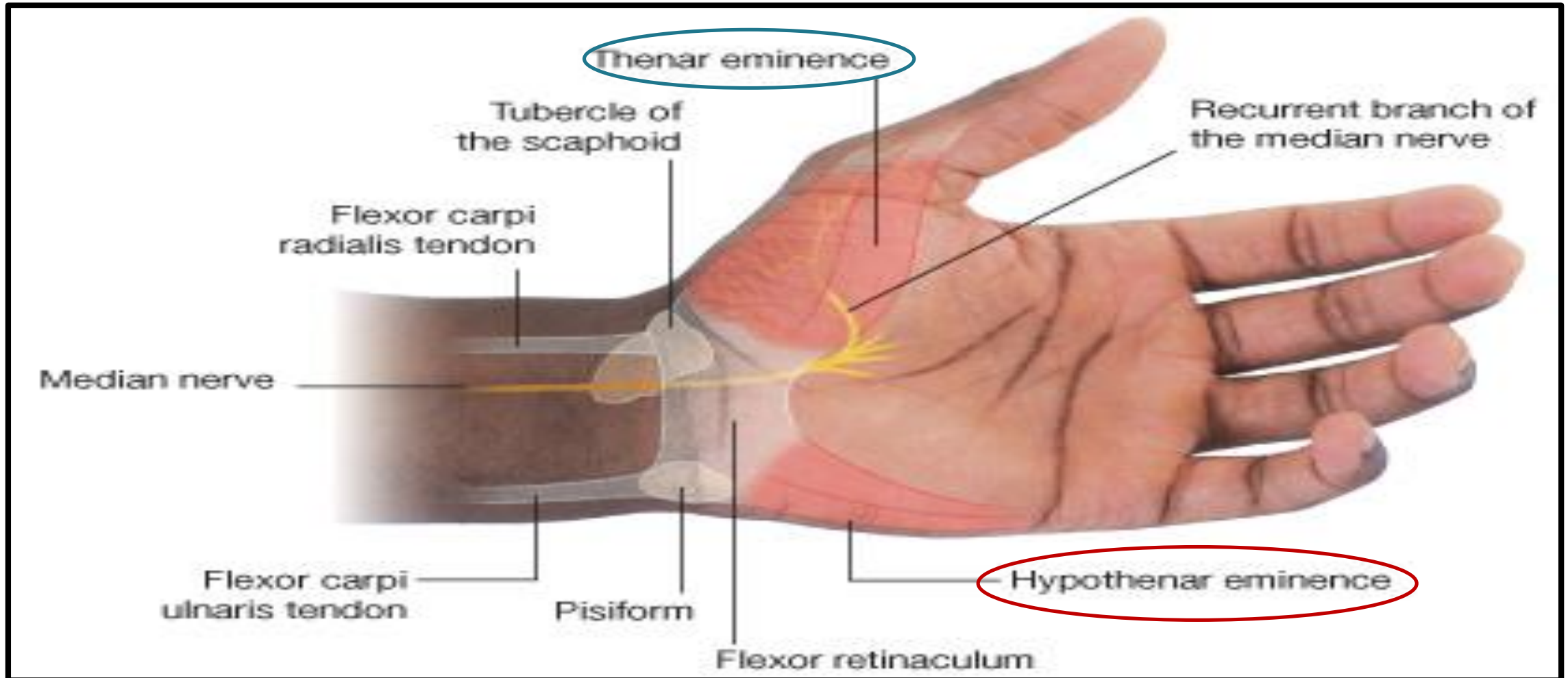


Palmaris Brevis

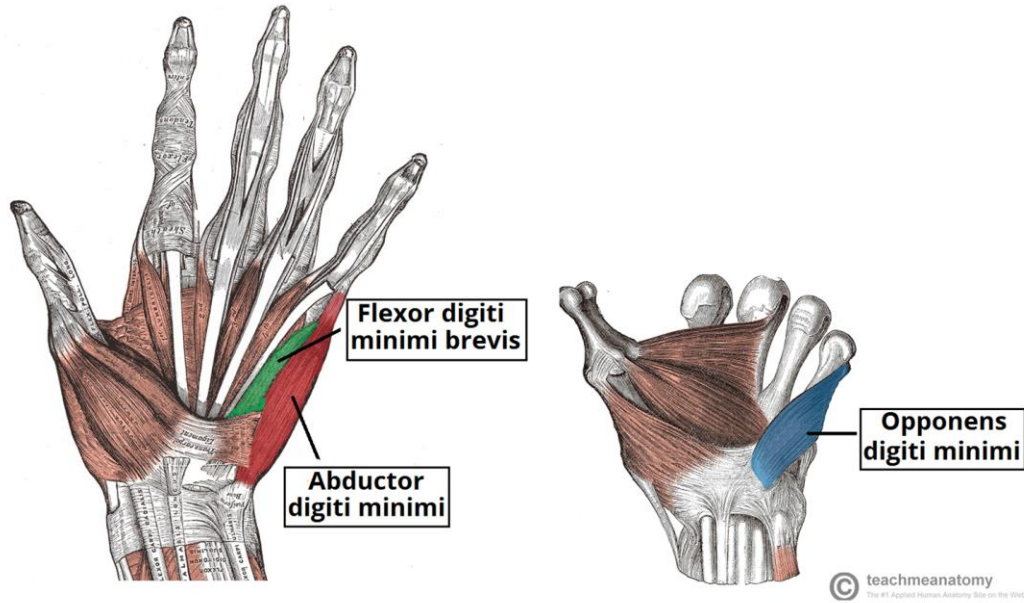
Origin	Insertion	Nerve Supply	Action
Flexor retinaculum (FR) & palmar aponeurosis (PA)	Skin of the palm	Ulnar (Superficial) Branch	Corrugation* of skin to improve the Grip corrugated*: wrinkled, grooved



Short Muscles of Thumb & Little Finger

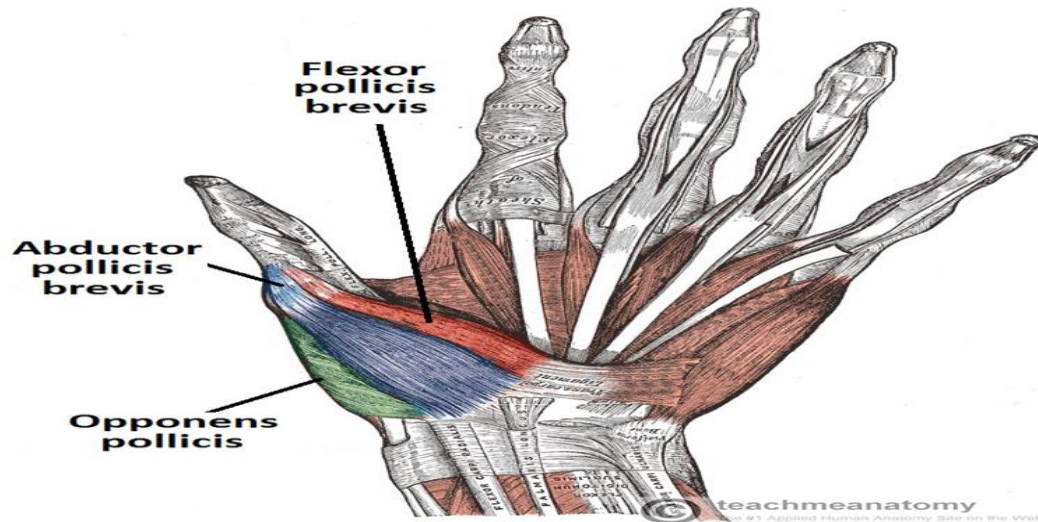


Hypothenar Eminence



Muscle	Abductor digiti minimi	flexor digiti minimi	opponens digiti minimi
Origin	Pisiform	Flexor retinaculum	Palmer surface of 5th metacarpal
Insertion	Base of proximal phalanx		
Nerve supply	All by deep branch of ulnar nerve		
Action	Abduction	Flexion	Pulls the 5th metacarpal forward

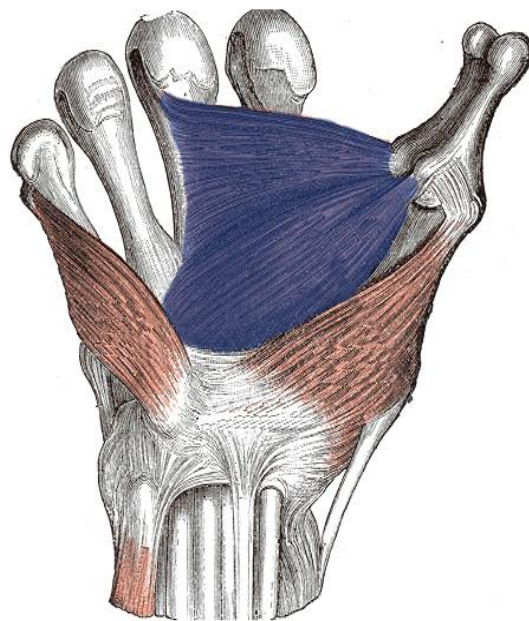
Thenar Eminence



Muscle	Abductor pollicis brevis	Flexor pollicis brevis	Opponens pollicis
Origin	Flexor retinaculum Scaphoid and trapezium	Flexor retinaculum	Flexor retinaculum
Insertion	Base of proximal phalanx		Lateral part of 1st metacarpal
Nerve supply	All supplied by median nerve		
Action	Abduction	Flexion	Opposition

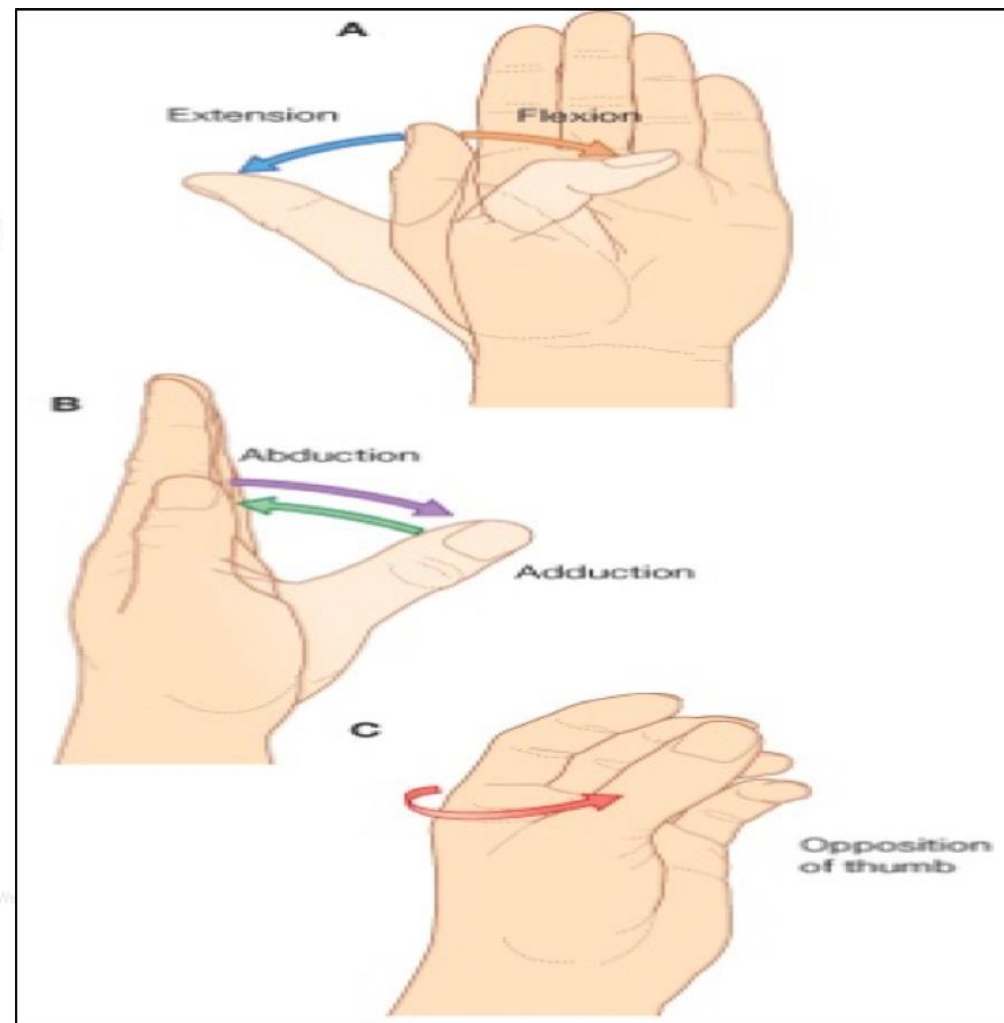
Adductor Pollicis

Abductor pollicis	
Origin	Oblique head: base of 2nd and 3rd metacarpals. Transverse head: palmar border and shaft of 3rd metacarpal.
Insertion	Medial side of base of proximal phalanx of thumb
Nerve supply	Deep branch of ulnar nerve
Action	Adduction



a) Adductor pollicis
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movements of the thumb



Helpful video for the **movements of the thumb**:
<https://www.youtube.com/watch?v=tt79siwHOzI>

Insertion of Flexor Digitorum Superficialis & Profundus

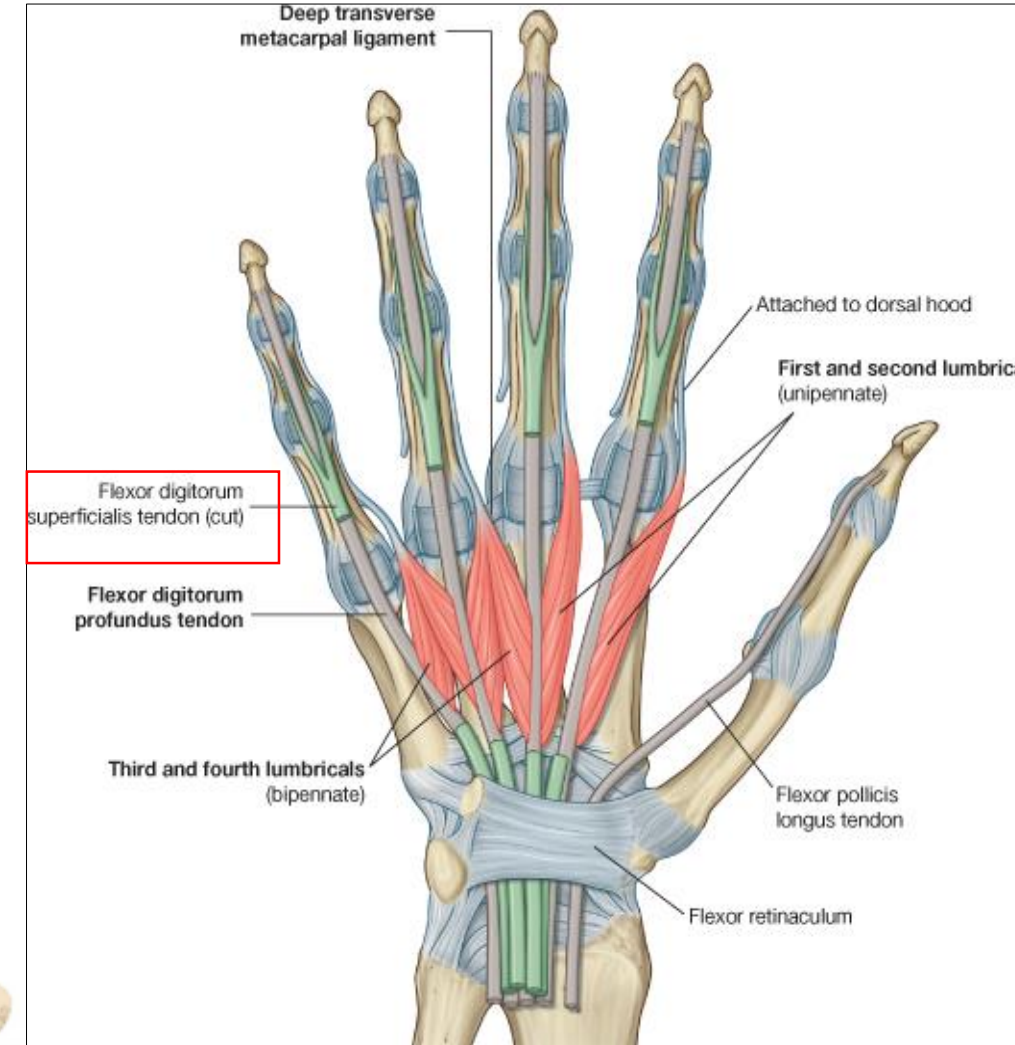
Flexor digitorum superficialis

Each tendon:

- **Divides** into two halves pass around the Profundus Tendon.
- The two halves **Meet** on the posterior aspect of Profundus tendon (partial decussation of fibers).
- **Reunion** of the two halves.
- **Further Division into two slips** attached to the **Borders of Middle Phalanx.**

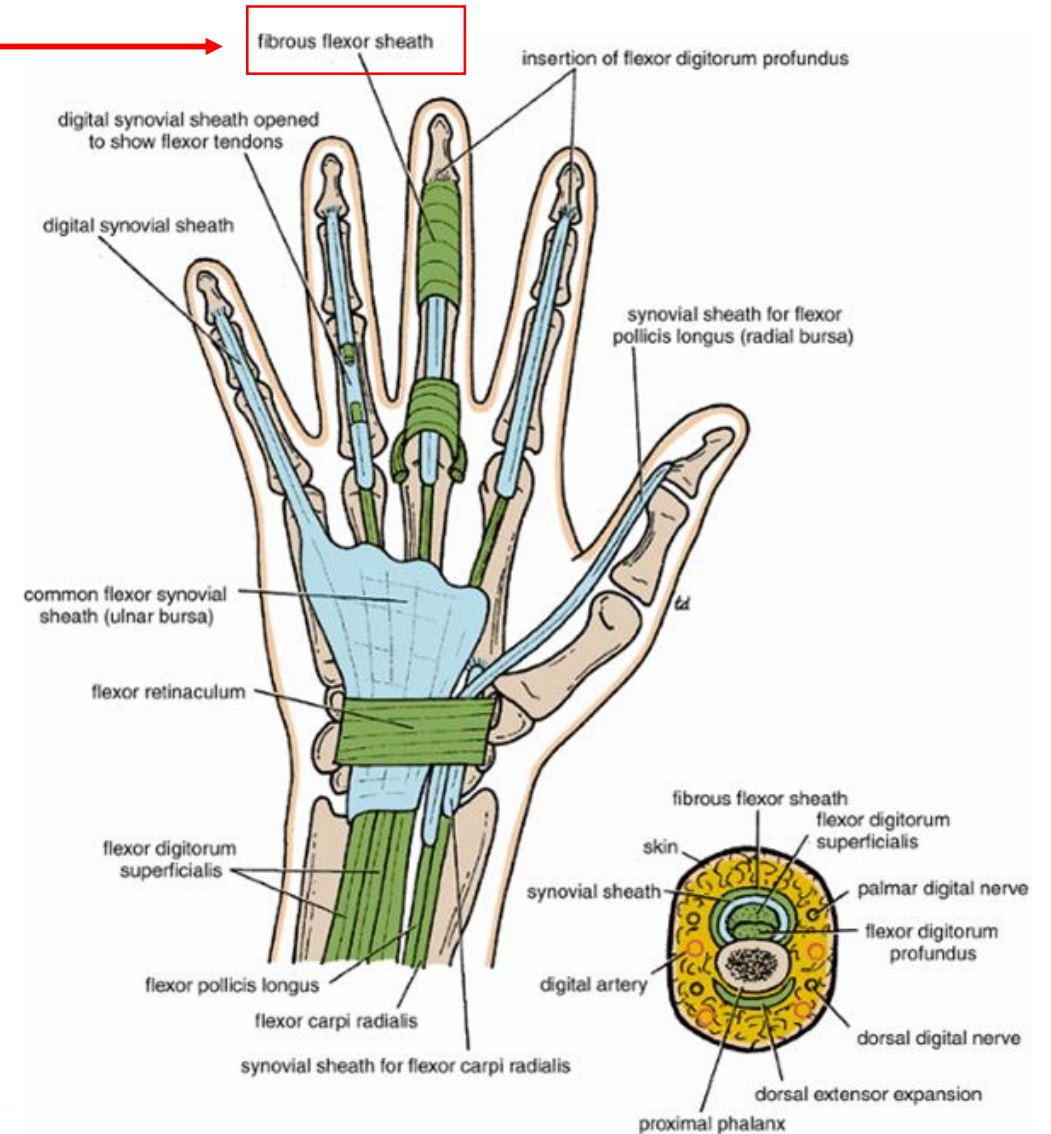
Flexor digitorum Profundus

Inserted into the **Base of the Distal Phalanx.**



Fibrous Flexor (Digital) Sheath

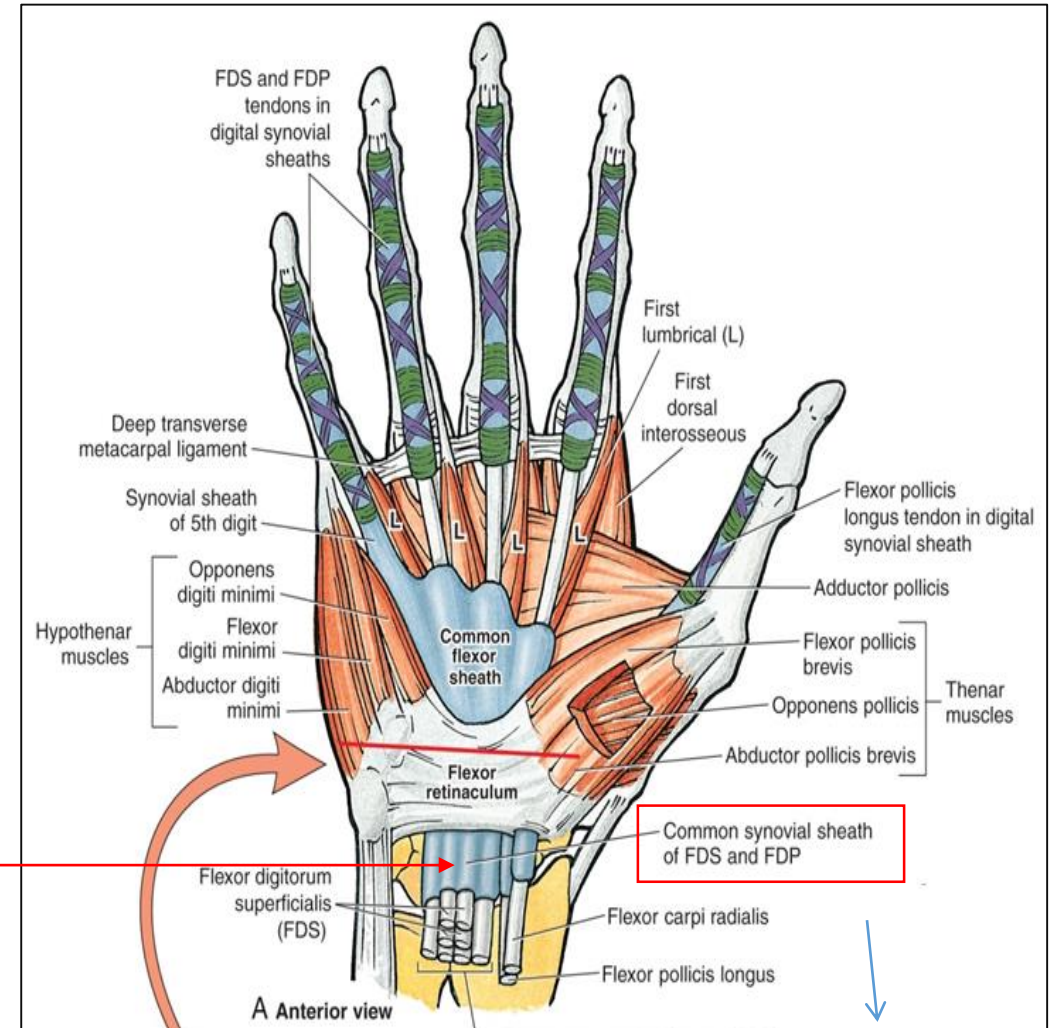
- A Strong Fibrous Sheath it covers the anterior surface of the fingers and attached to the sides of the phalanges.
- Its Proximal end is opened
- Its Distal end is closed
- The Sheath with the anterior surfaces of the phalanges & the interphalangeal joints form an **Osteofibrous blind Tunnel** for the long flexor tendons of the fingers.



Synovial Flexor Sheaths

Common Synovial sheath (Ulnar Bursa)

- **Contains** tendons of Flexor Digitorum Superficialis & Profundus .
- The **Medial** part of the sheath extends distally (without interruption) on the tendons of the **little finger**.
- The **Lateral part** of the sheath **stops** on the middle of the palm.
- The distal ends of the long flexor tendons to **(Index, Middle & Ring)** fingers acquire **Digital Synovial Sheaths**.



FDP = Flexor Digitorum Profundus
FDS = Flexor Digitorum Superficialis

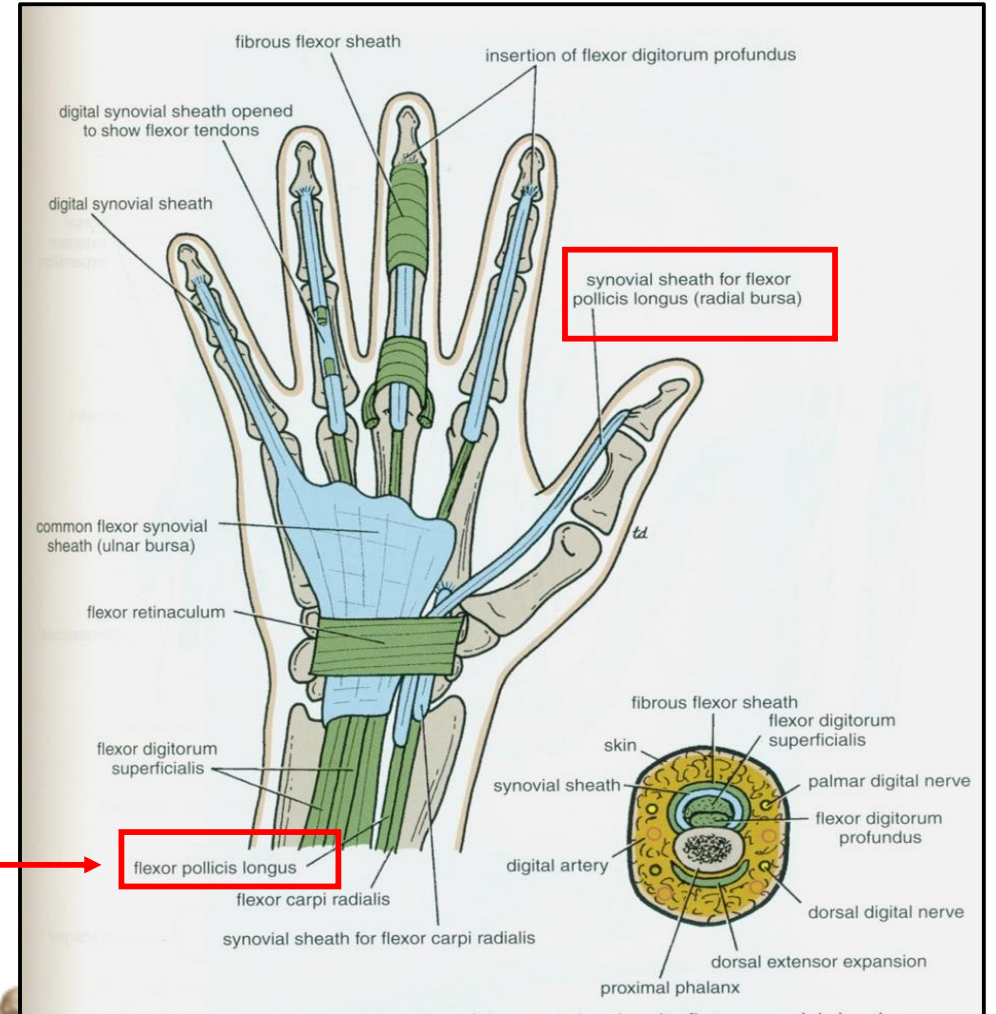


Synovial Flexor Sheaths

Flexor Pollicis Longus tendon has its own synovial sheath (**Radial Bursa**)

Function of Synovial Sheaths:

They allow the long tendons to move smoothly with a minimum of friction beneath the flexor retinaculum and the fibrous flexor sheaths.



Lumbrical Muscles (4)

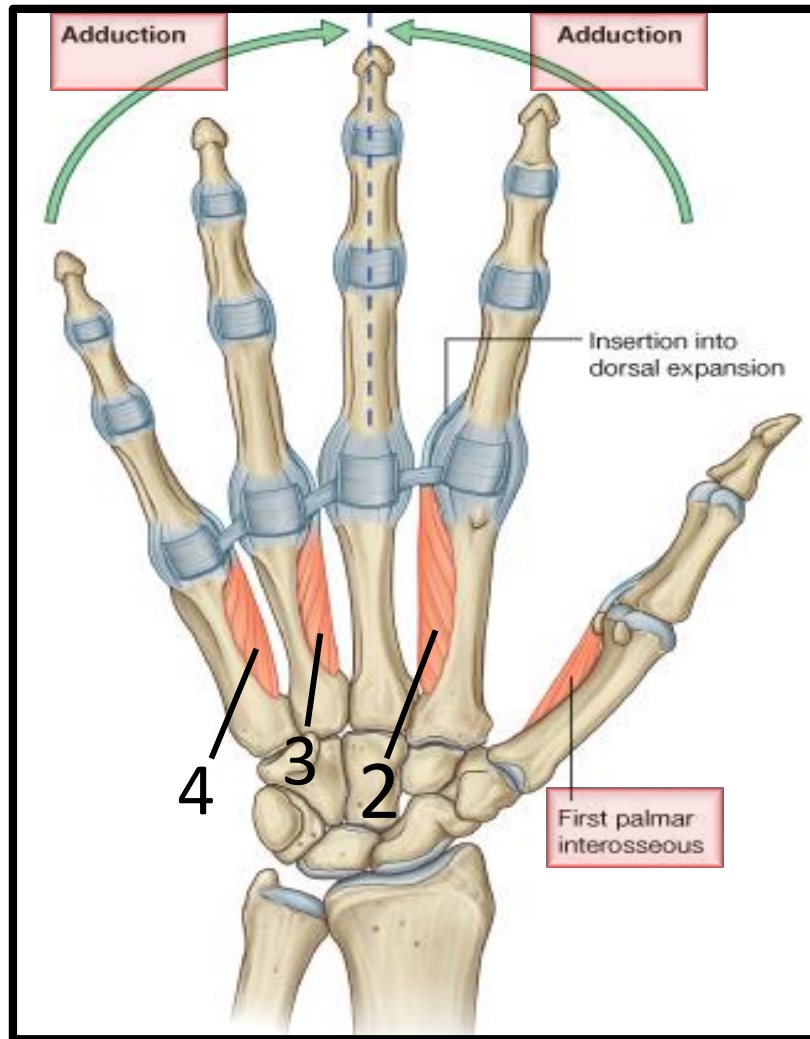


Origin	Insertion	Nerve supply
Tendons of Flex.dig. profundus	EXT. EXP of medial four fingers	1 ST & 2 ND (Lateral two) Median Nerve. 3 RD & 4 TH Ulnar Nerve (Deep branch)

▪ **Action:**

Flex metacarpophalangeal joints and extend interphalangeal joints of fingers except thumb

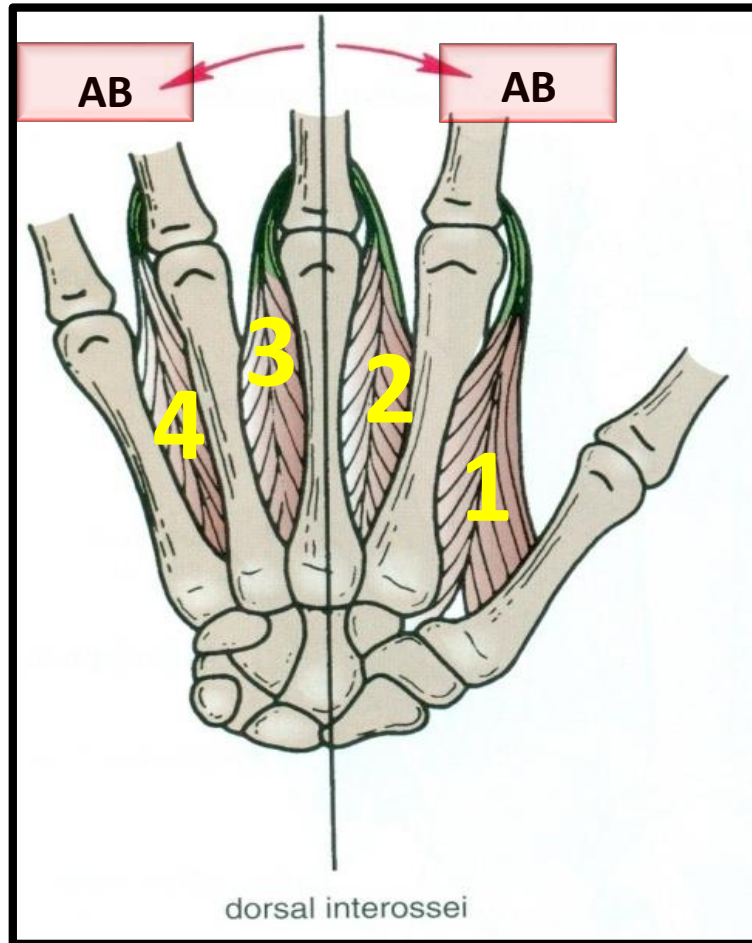
Palmar Interossei (4)



Origin	Insertion	NS
<ul style="list-style-type: none"> ▪ First: Base of 1st metacarpal. 	Proximal phalanges of thumb, index, ring, & little fingers and extensor expansion of each finger	Deep branch of Ulnar Nerve
<ul style="list-style-type: none"> ▪ Other three: Ant. surface of shafts of 2nd, 4rd & 5th metacarpals. 		

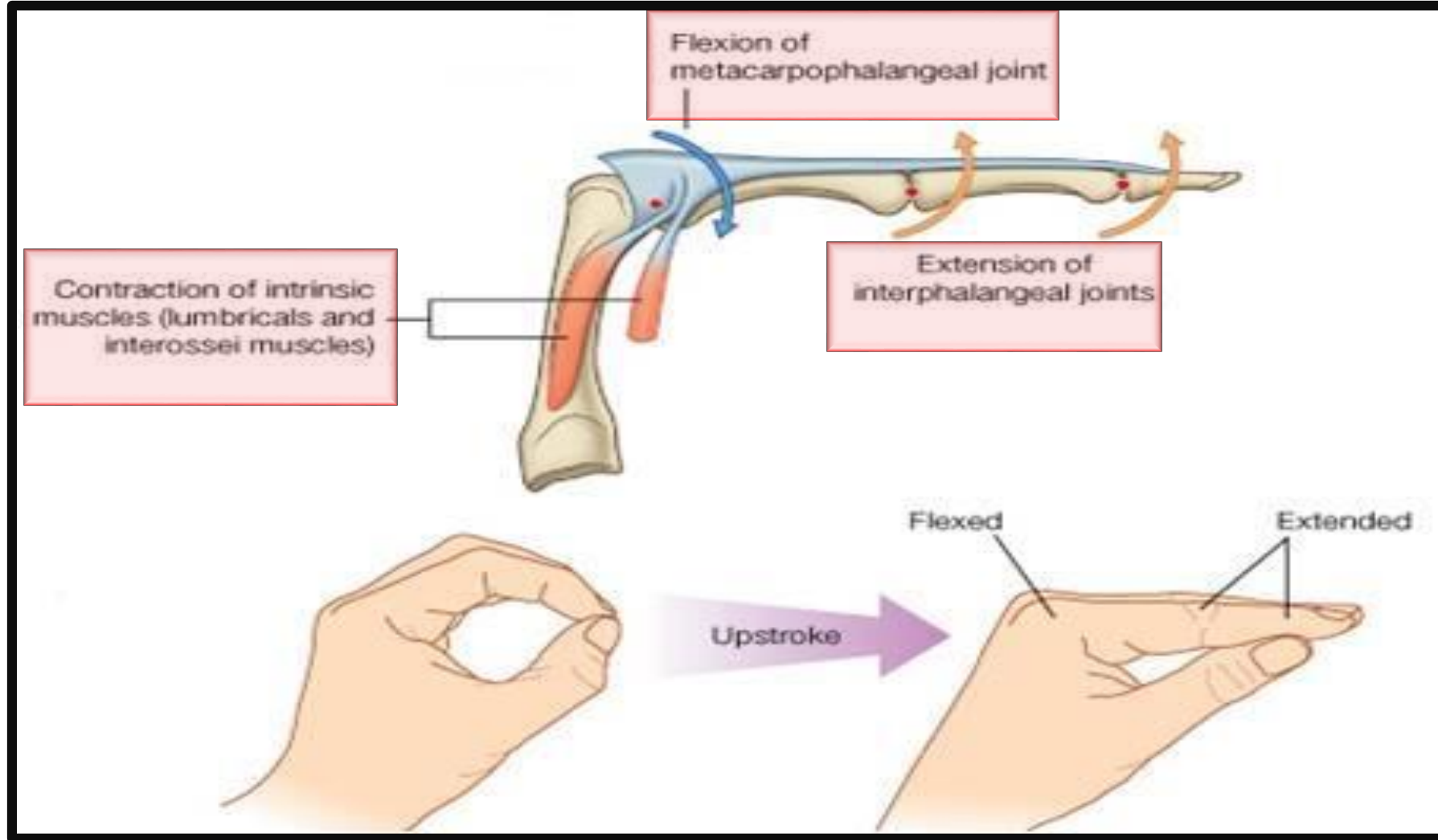
- **Action:**
 - **Adduct** fingers toward center of third finger

Dorsal Interossei (4)



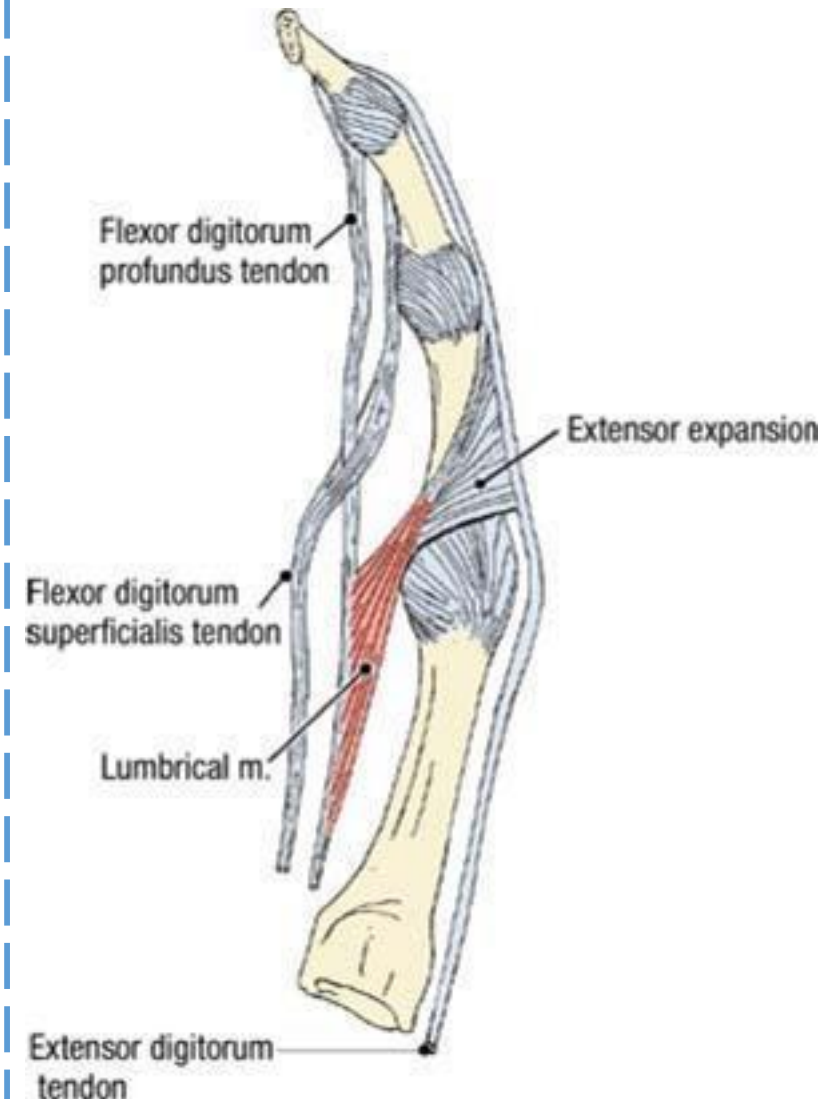
Origin	Insertion	Nerve supply	Action
Contiguous sides of shafts of Metacarpals	Proximal Phalange of index, ring, mid finger & extensor expansion	Ulnar deep branches	Abduct fingers away from center of the 3 rd finger

Action of Lumbricals & Interossei



Extensor Expansion:

- Formed from the expansion of the tendons of extensor dig(Digitorum). at the **PIJ(Proximal interphalangeal joint)**, the expansion
- The tendon splits into **three** parts:
 - One Central:** inserted into the **base** of **Middle phalanx**
 - Two laterals:** inserted into the **base** of the **Distal phalanx**
- The Expansion Receives the insertions of: Corresponding (متناظر) **Interosseous muscle** (on each side) **Lumbrical muscle** (on the lateral side)





Video: joints of the wrist and hand.

<https://www.youtube.com/watch?v=uiyqVsSPD1w>

Video: muscles of the hand.

<https://www.youtube.com/watch?v=Q6s1eHmsd5w>



Application: Essential anatomy 5
you can have it for free, ask

https://twitter.com/Med_435



Quiz:

<https://www.onlinequizcreator.com/bone-of-lower-limb/quiz-139640>

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