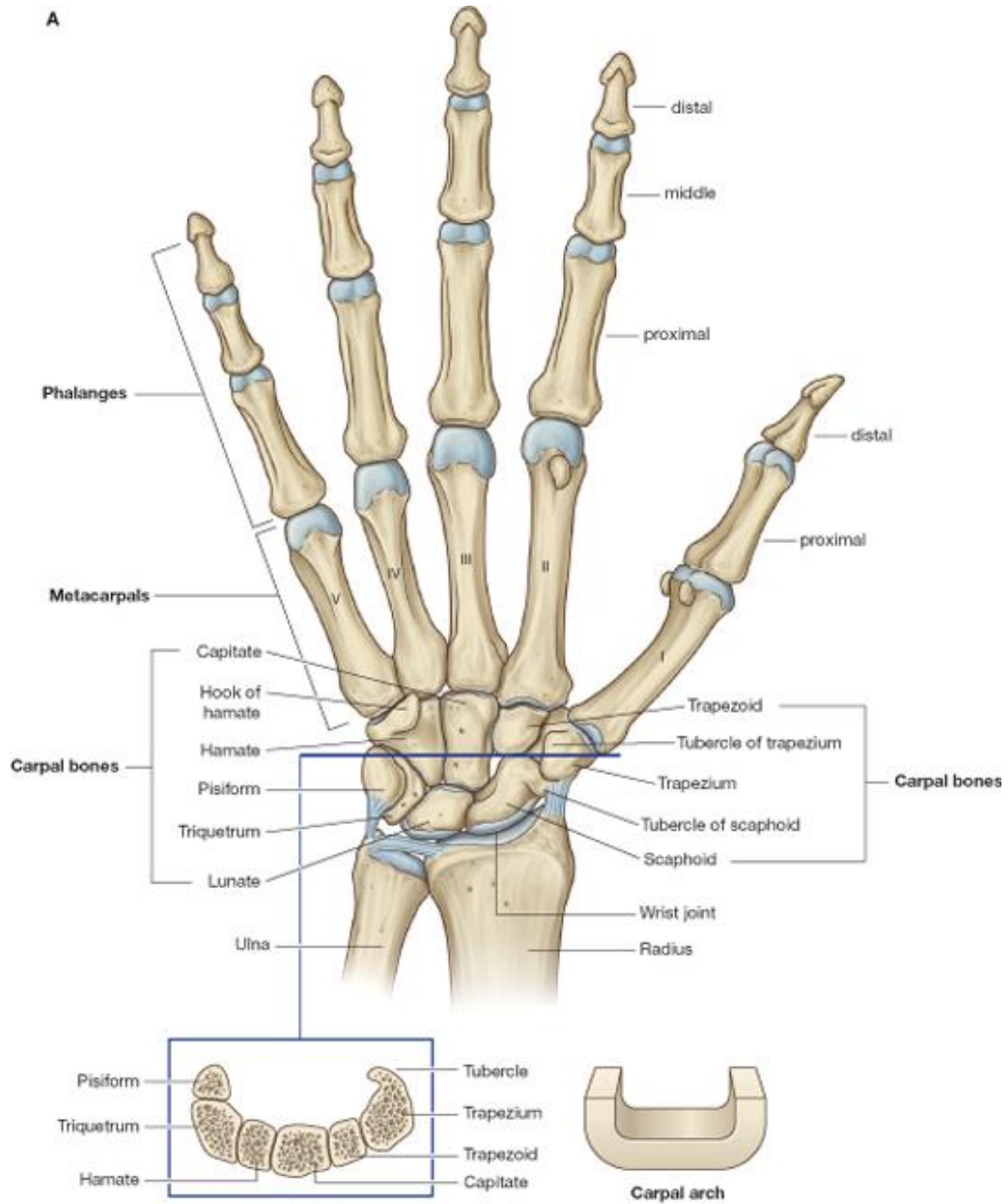
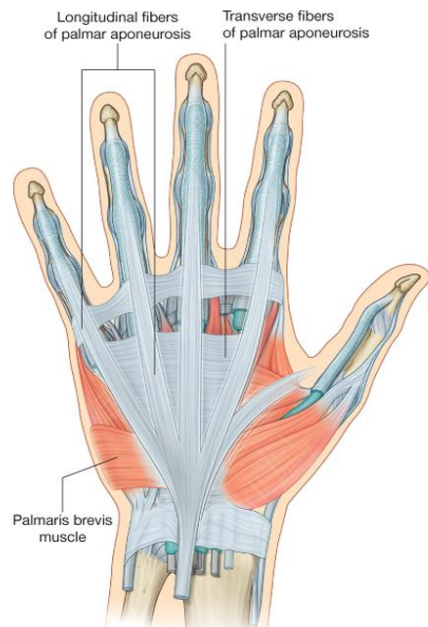
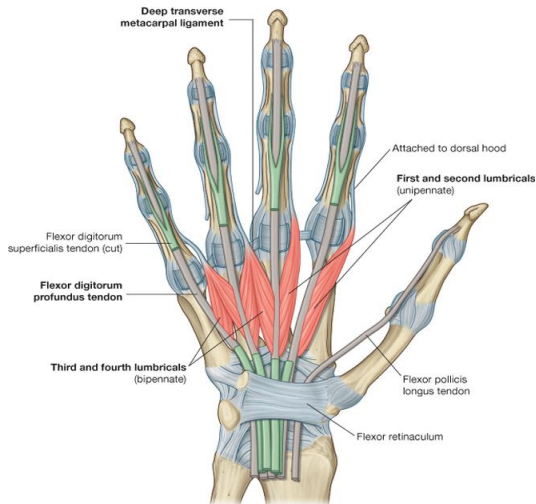


Hand muscle and wrist joint



- Palmaris brevis
- Improve grip



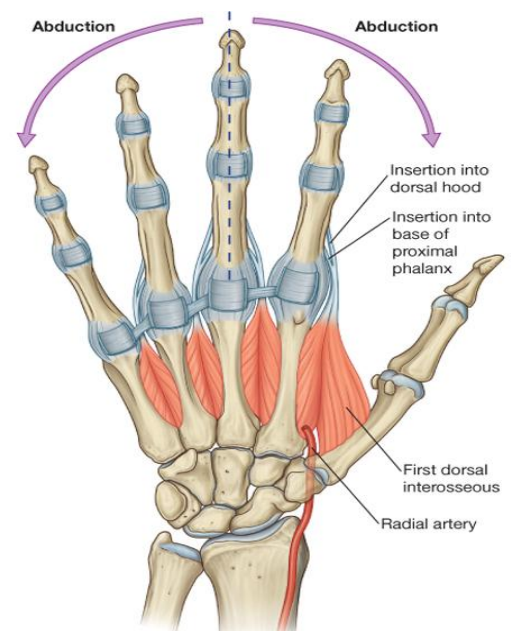
- Lumbricals (4)
- There are four (worm-like) muscles, each of which is associated with one of the fingers. The muscles originate from the tendons of the flexor digitorum profundus in the palm

Interossei

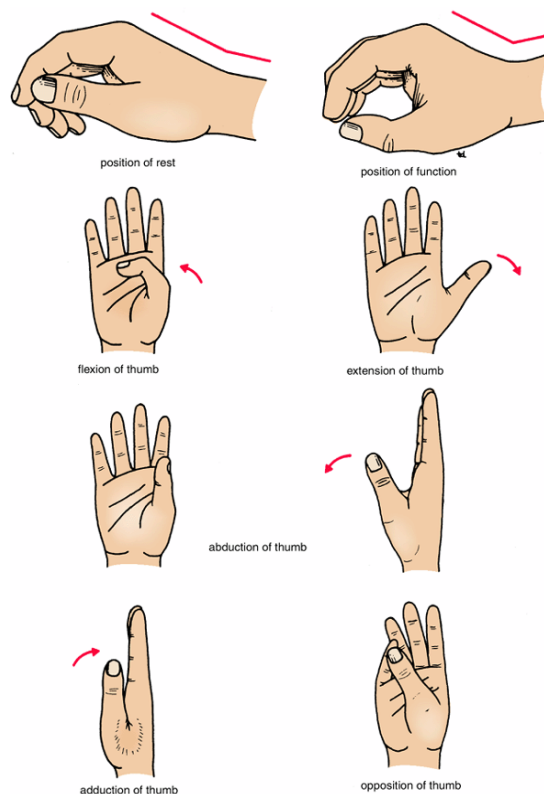
- 8 muscles
- The interossei are muscles between and attached to the metacarpals
- they insert into the proximal phalanx of each digit and into the extensor hood and are divided into two groups, the dorsal interossei and the palmar interossei
- **All of the interossei are innervated by the deep branch of the ulnar nerve**

Dorsal interossei

- Each muscle inserts both into the base of the proximal phalanx and into the extensor hood of its related digit



Muscle	origin	Insertion	Action
Palmaris brevis	Flexor retinaculum, palmar aponeurosis	Skin of palm	Improve grip
Lumbricals (4)	Tendons of flexor digitorum profundus	Extensor hoods of index, ring, middle, and little fingers	Flex metacarpophalangeal joints and extend inter phalangeal joints . Thumb ? NO
Palmar interossei	1 st arises from base of 1 st metacarpal, remaining three from anterior surface of shafts of 2, 4, and 5 metacarpals	Proximal phalanges of thumb and index, ring, and little fingers and dorsal extensor expansion of each finger	Adduct (PAD)
Dorsal interossei	Adjacent sides of metacarpals	Proximal phalanges of index, middle, and ring fingers and dorsal extensor expansion	Abduct (DAB)

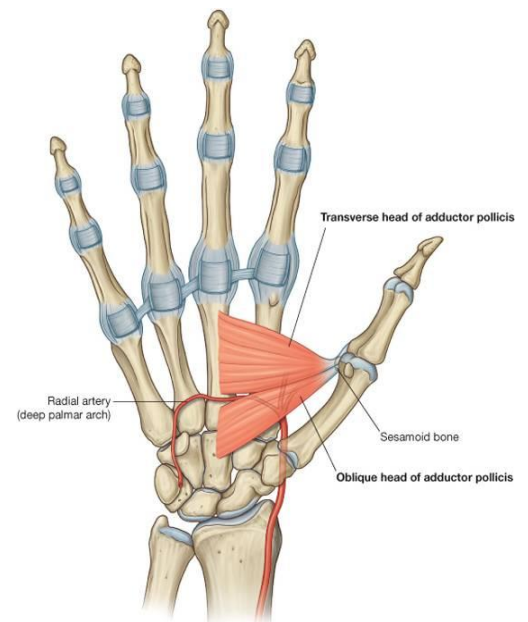


Adductor pollicis

- The **adductor pollicis** is a large triangular muscle anterior to the plane of the interossei that crosses the palm.
- It has 2 origins :
 - Transverse head : 3rd metacarpal bone
 - Oblique head : 2nd and 3rd metacarpal bones

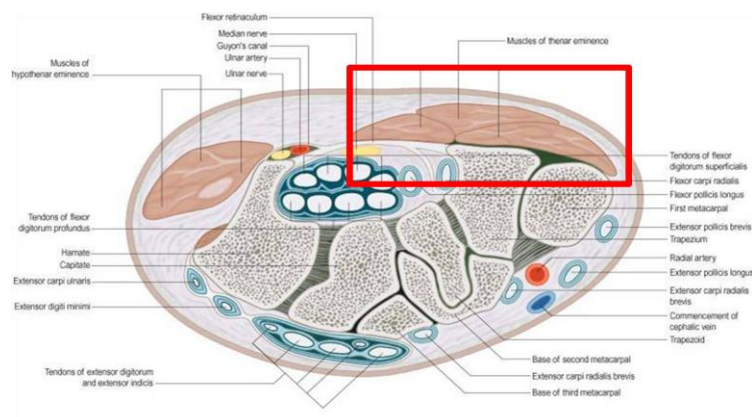
Inserts :

Base of proximal phalanx of thumb



Thenar muscles

- There are 3 thenar muscles
 - Abductor pollicis brevis
 - Flexor pollicis brevis
 - Opponens pollicis
- responsible for the prominent swelling (**thenar eminence**) on the lateral side of the palm
- **The thenar muscles are innervated by the recurrent branch of the median nerve.**

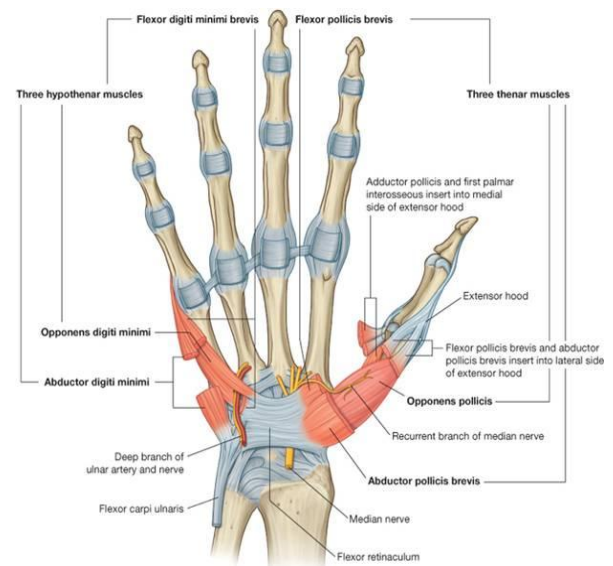


Muscle	origin	Insertion	Action
Abductor pollicis brevis	Scaphoid, trapezium, flexor retinaculum	Base of proximal phalanx of thumb	Abduction of thumb
Flexor pollicis brevis	Flexor retinaculum	Base of proximal phalanx of thumb	Flexes metacarpophalangea I joint of thumb
Opponens pollicis (lies deep to the other two)	Flexor retinaculum	Shaft of metacarpal bone of thumb	Pulls thumb medially and forward across palm (counting)

Lies proximal to flexor pollicis brevis

Hypothenar muscles

- There are three hypothenar muscles :
 - Abductor digiti minimi
 - Flexor digiti minimi
 - Opponens digiti minimi
- contribute to the swelling (**hypothenar eminence**) on the medial side of the palm at the base of the little finger
- The hypothenar muscles are similar to the thenar muscles in name and in organization
- Unlike the thenar muscles, the hypothenar muscles are innervated by the deep branch of the ulnar nerve and not by the recurrent branch of the median nerve



Muscle	origin	Insertion	action
Abductor Digiti Minimi	Pisiform	Base of proximal phalanx of little finger	Abducts little finger
Flexor Digiti Minimi	Flexor retinaculum	Base of proximal phalanx of little finger	flexes little finger
Opponens Digiti Minimi	Flexor retinaculum	Medial border fifth metacarpal bone	Pulls fifth metacarpal forward as in cupping the palm

All of the intrinsic muscles of the hand are innervated by the deep branch of the ulnar nerve except for the three thenar and two lateral lumbrical muscles, which are innervated by the median nerve

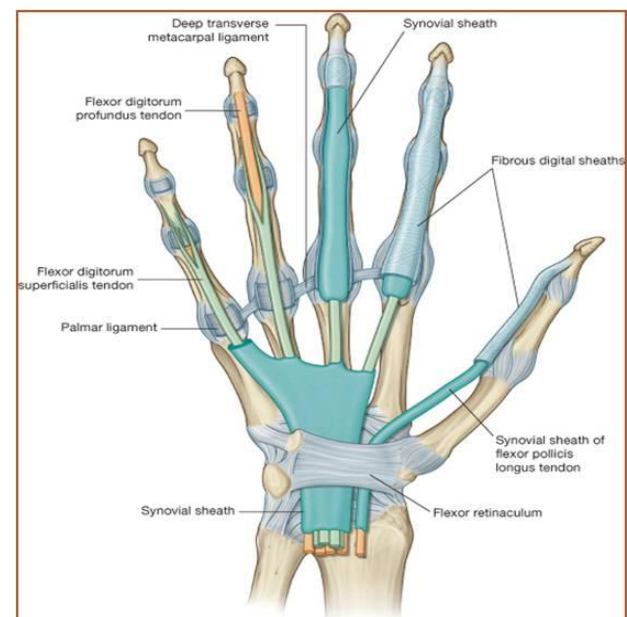
Fibrous flexor sheath

- Anterior surface of each finger from the metacarpal head to the base of the distal phalanx is provided with a strong fibrous sheath
- It is attached to the sides of the phalanges
- Forms a blind tunnel together with the bones in which the long flexor tendons of the finger lie

Synovial Flexor Sheath

- Tendons of the flexor digitorum superficialis and profundus muscles invaginate a common synovial sheath from lateral side
- Medial part of the sheath extends distally without interruption on the tendons of little fingers
- Laterally it stops abruptly on the middle of the palm
- Distal ends of long flexor tendons of the index, the middle and ring fingers acquire digital synovial sheaths as they enter the fingers
- Flexor pollicis longus tendon has its own synovial sheath that passes into the thumb

These sheaths allow the long tendons to move smoothly beneath the flexor retinaculum and the flexor sheaths

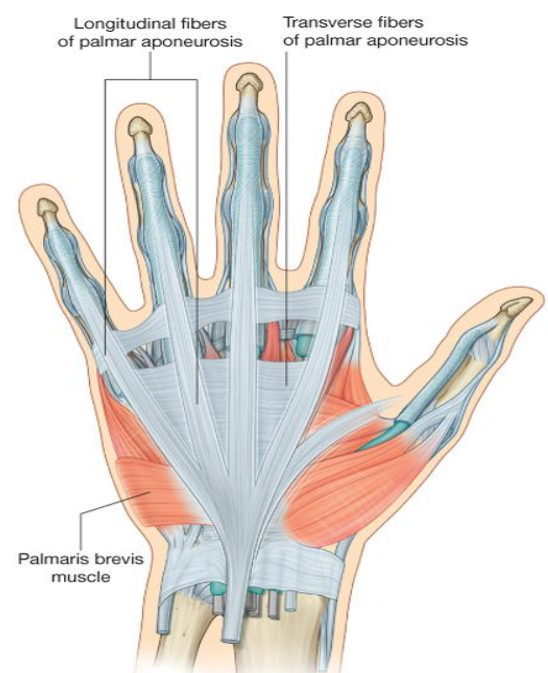


Palmar Aponeurosis

- the deep fascia of the wrist and hand is thickened to form the palmar aponeurosis and flexor retinaculum
- The aponeurosis is Continuous proximally with the palmaris longus tendon
- Attached to the retinaculum
- Its distal edge divides at the base of the finger into four slips that pass into the fingers

Wrist Joint

- Articulation: Between the distal end of radius and articular disc above and scaphoid, lunate and triquetral below
- Type: Synovial ellipsoid joint
- Capsule: It encloses the joint and attached above to the distal ends of the radius and ulna and below to the proximal row of carpal bones



Ligaments

- Anterior and posterior ligaments strengthen the capsule
- The medial ligament is attached to the styloid process of ulna and to the triquetral bone
- Lateral ligament is attached to the styloid process of the radius and to the scaphoid bone

Synovial Membrane

- This lines the capsule
- Attached to the articular surfaces
- Joint cavity does not communicate with that of the distal radioulnar joint or with the joint cavities of the intercarpal joints
- **Anterior interosseous nerve and the deep branch of the radial nerve supply the joint**

Movements

Flexion :

- Flexor carpi ulnaris
- Palmaris longus
- Flexor digitorum superficialis
- Flexor digitorum profundus
- Flexor pollicis longus

Extension :

- extensor carpi radialis longus
- extensor carpi radialis brevis
- extensor carpi ulnaris
- extensor digitorum
- extensor indicis
- extensor digiti minimi
- extensor pollicis longus

Abduction

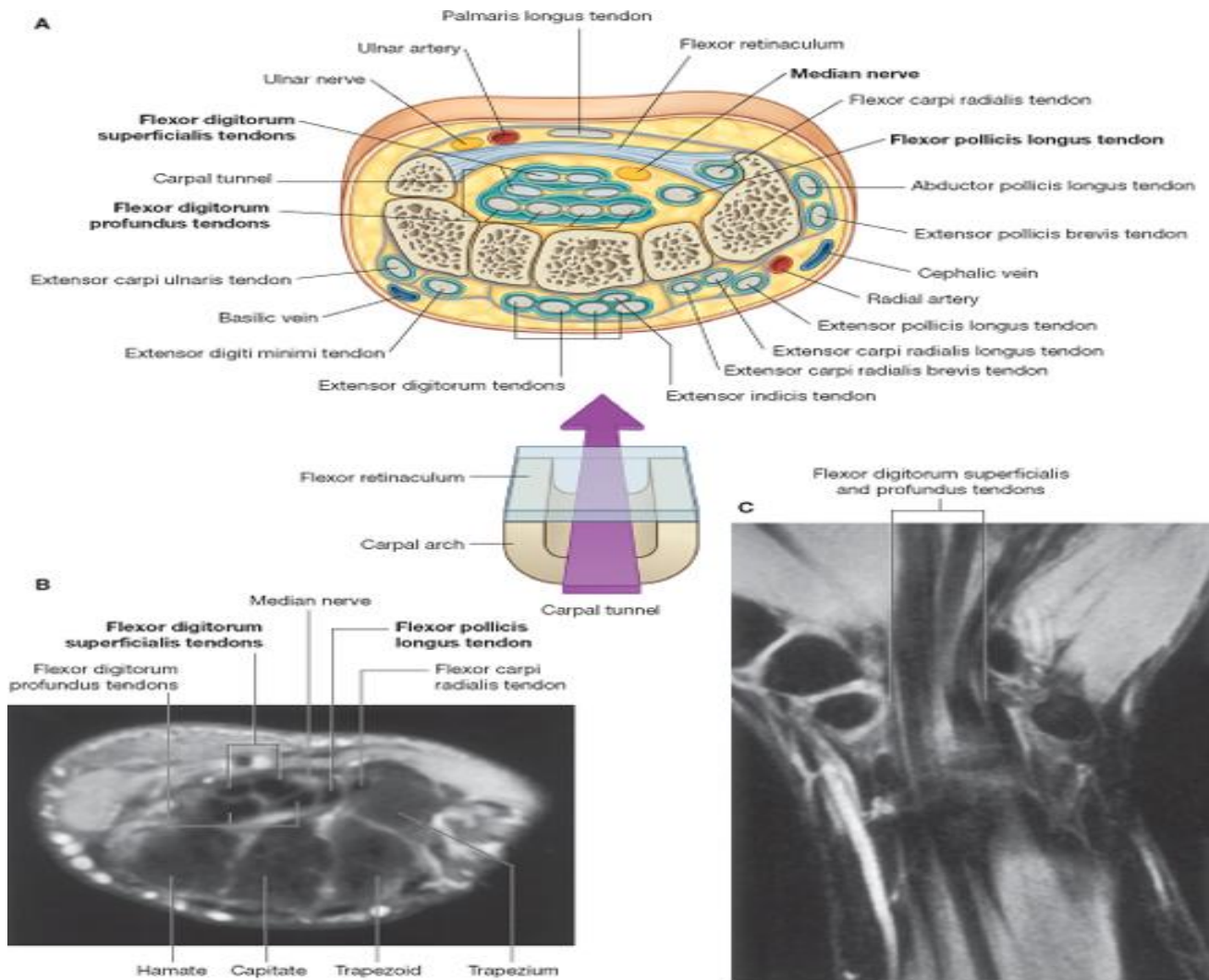
- flexor carpi radialis
- extensor carpi radialis longus
- extensor carpi radialis brevis
- abductor pollicis longus
- extensor pollicis longus
- extensor pollicis brevis

Adduction

- Flexor carpi ulnaris
- Extensor carpi ulnaris

Because the radial styloid process extends further distally than does the ulnar styloid process, the hand can be adducted to a greater degree than it can be abducted

Relations



- **Anteriorly:** tendons of flexor digitorum profundus and superficialis, flexor pollicis longus, flexor carpi radialis, flexor carpi ulnaris, median and ulnar nerves
- **Posteriorly:** tendons of extensor carpi ulnaris and extensor digiti minimi, extensor digitorum, extensor indicis, extensor carpi radialis longus and brevis, and abductor pollicis longus
- **Medially:** posterior cutaneous branch of the ulnar nerve
- **Laterally:** radial artery

NOTE : relations are very easy because you have studied all flexors all extensors and nerve relations so I suggest you look at the pictures for a couple of times before reading the relations :)

Also I suggest you look at pictures when trying to memorize actions by looking at the insertion of each muscle although most are not required in our curriculum