

HAND

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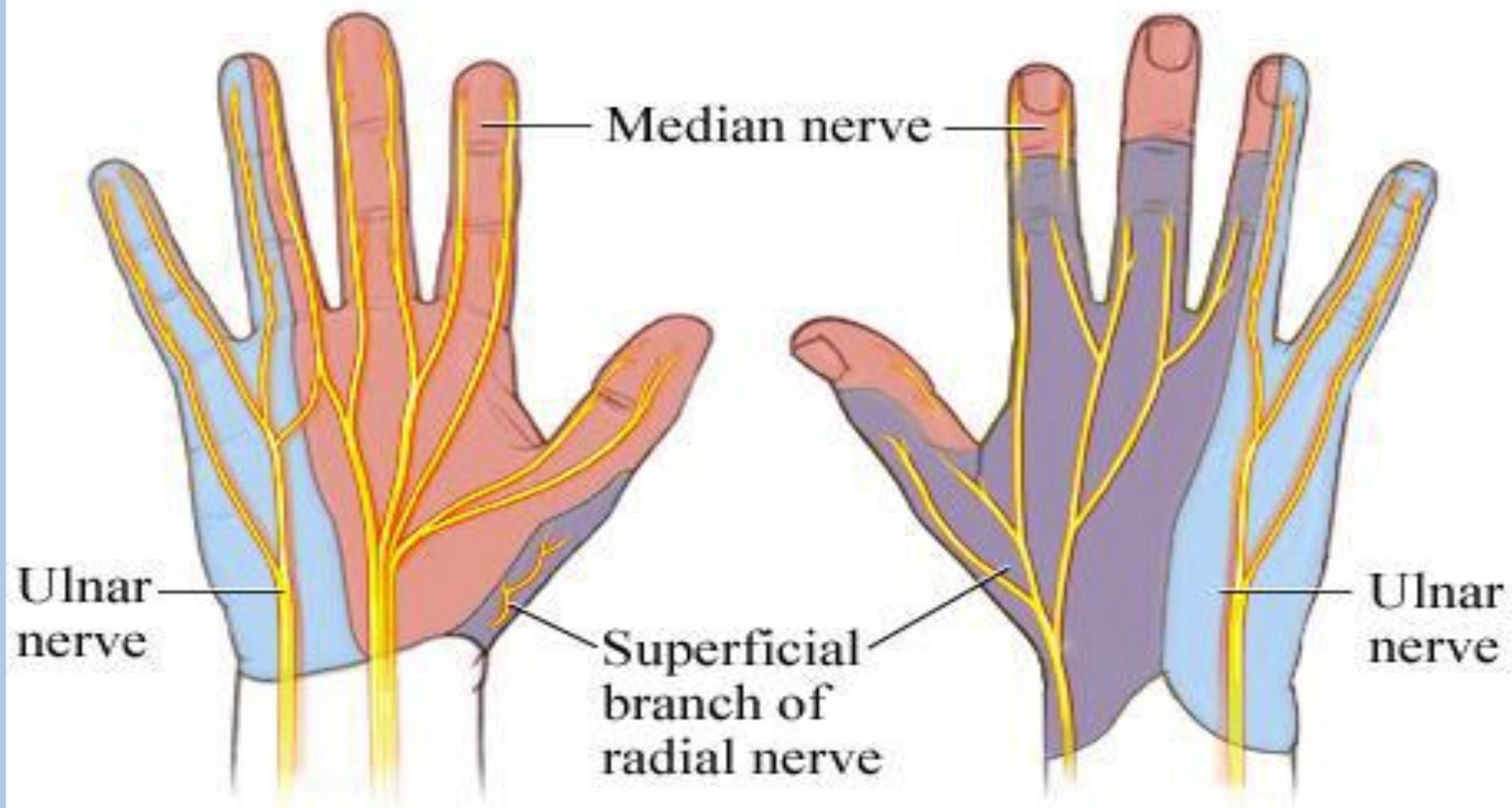
Cutaneous nerve supply:

- **Palm of the hand:**

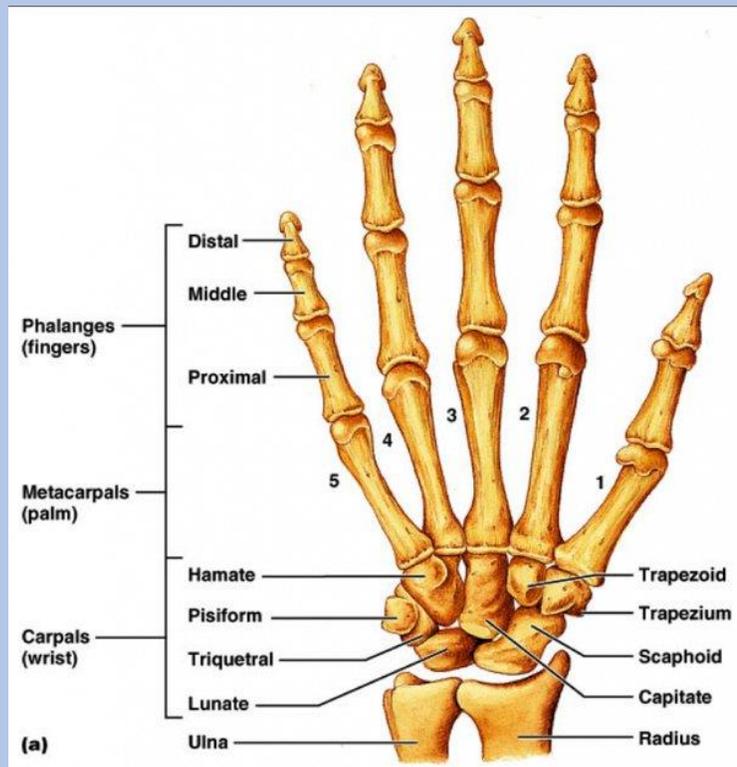
- Cutaneous branches of median nerve (lateral 2/3 and lateral 3 1/2 fingers)
- Cutaneous branches of ulnar nerve (medial 1/3 of palm and medial 1 1/2 fingers).

- **Dorsum of the hand:**

- Cutaneous branches of radial nerve (lateral 2/3 and lateral 3 1/2 fingers except the nail bed and adjacent skin by median nerve)
- Cutaneous branches of ulnar nerve (medial 1/3 and medial 1 1/2 fingers)



PALMER ASPECT



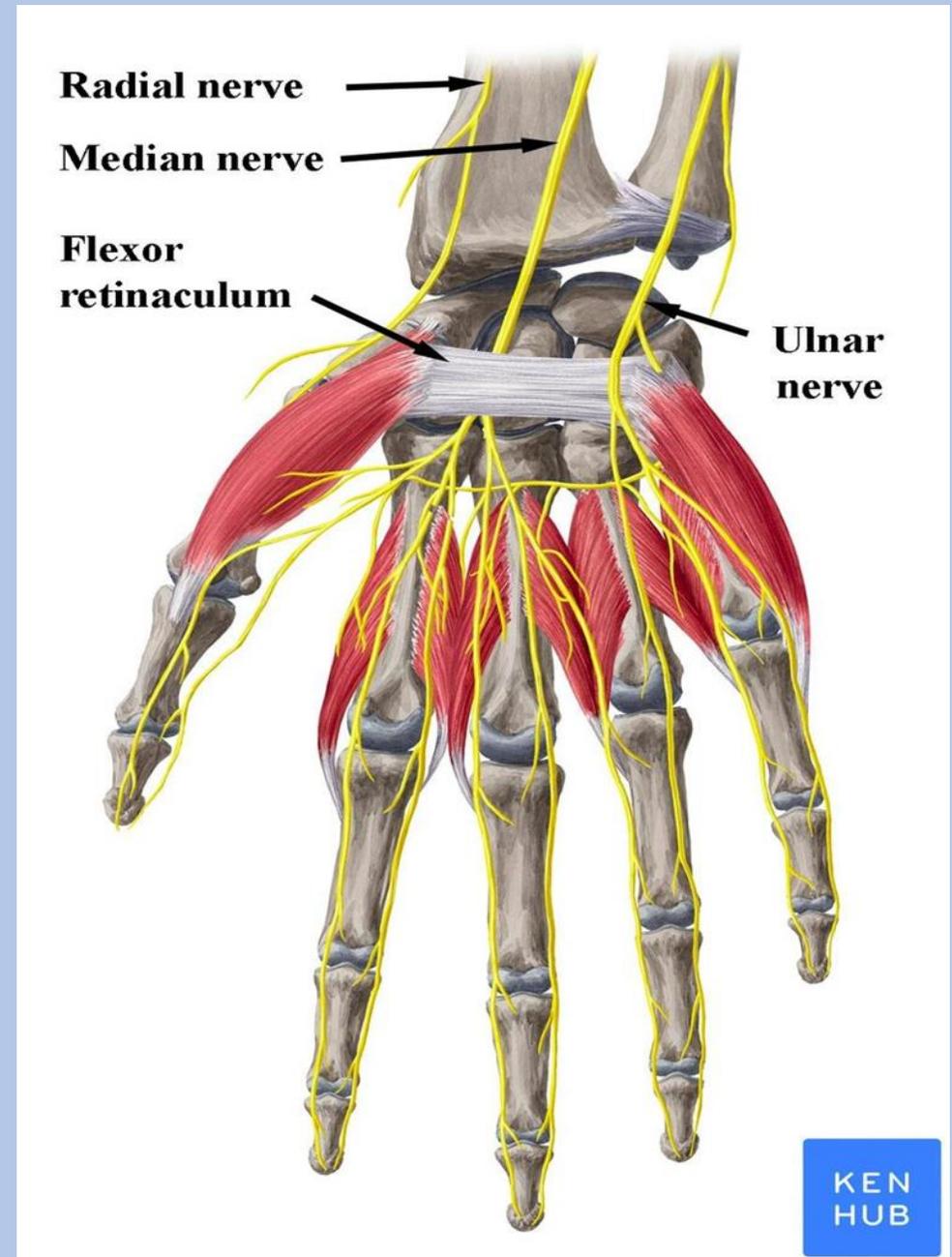
DORSAL ASPECT

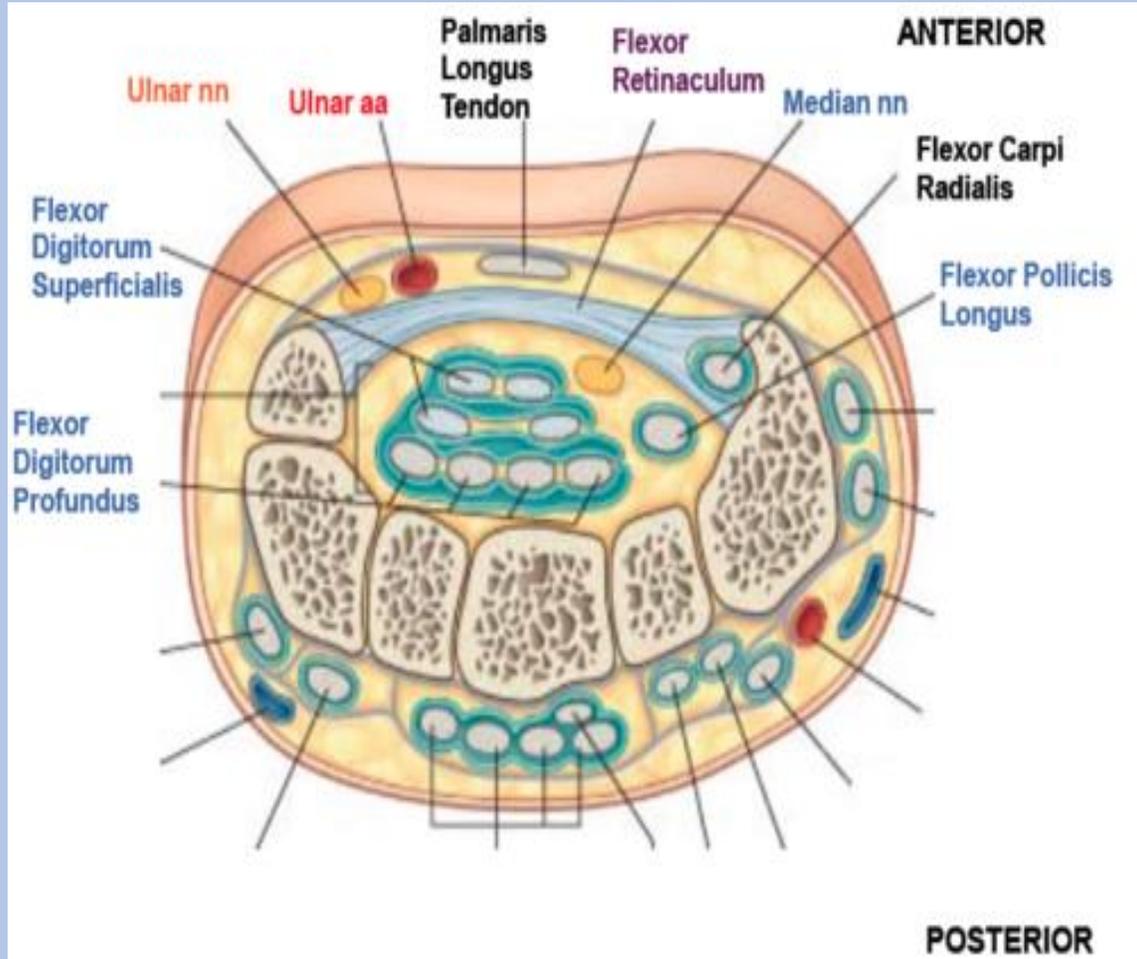


Deep fascia of the hand:

• 1. Flexor Retinaculum

- It is a thick and strong fibrous band that bridges over the carpal groove (made by carpal bones). It converts the carpal groove into an osseo-fibrous tunnel(carpal tunnel).
- It keeps the long flexor tendons in position during movements of the wrist.
- The retinaculum is attached **medially** to **pisiform** and **hamate**, while **laterally** is attached to **scaphoid** and **trapezium**





• **Structures deep to the flexor retinaculum:**

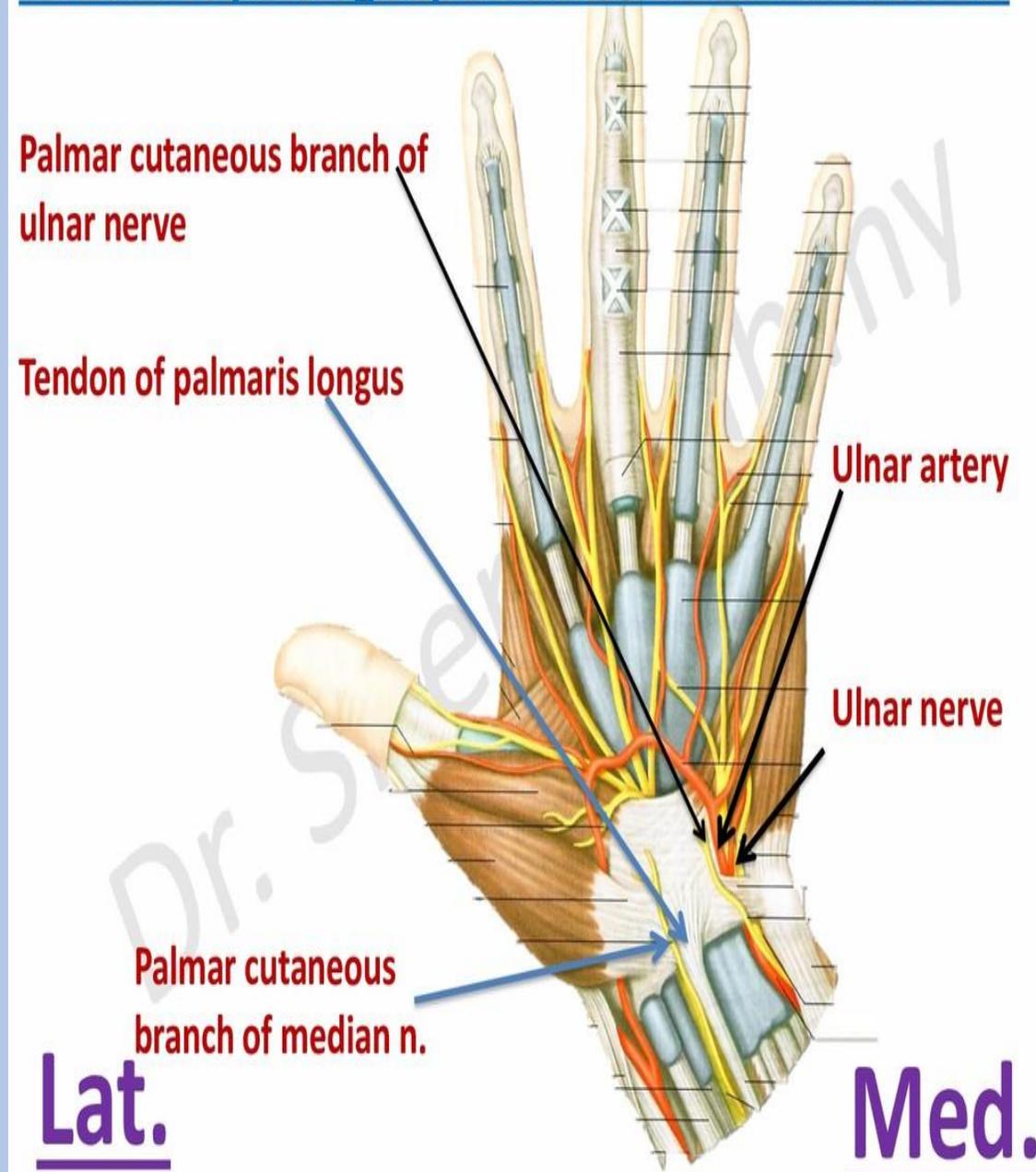
1. Median nerve.
2. Flexor digitorum profundus and flexor digitorum superficialis tendons with a common synovial sheath.
- 3-Flexor pollicis longus and its synovial sheath.
- 4-Flexor carpi radialis in a separate tunnel.

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• **Structures superficial to flexor retinaculum:**

1. Ulnar nerve.
2. Ulnar vessels.
3. Palmar Cutaneous branches of ulnar nerve.
- 4- palmar Cutaneous branch of median nerve.
- 5-Tendon of palmaris longus.

Structures passing superficial to flexor retinaculum



2. Palmar aponeurosis:

- It is a triangular thickening of the deep fascia of the palm.
- Its apex is proximal while the base is divided distally into 4 slips; each for each of the medial 4 fingers .

Function:

- Protection of the underlying vessels and nerves of the palm of the hand.

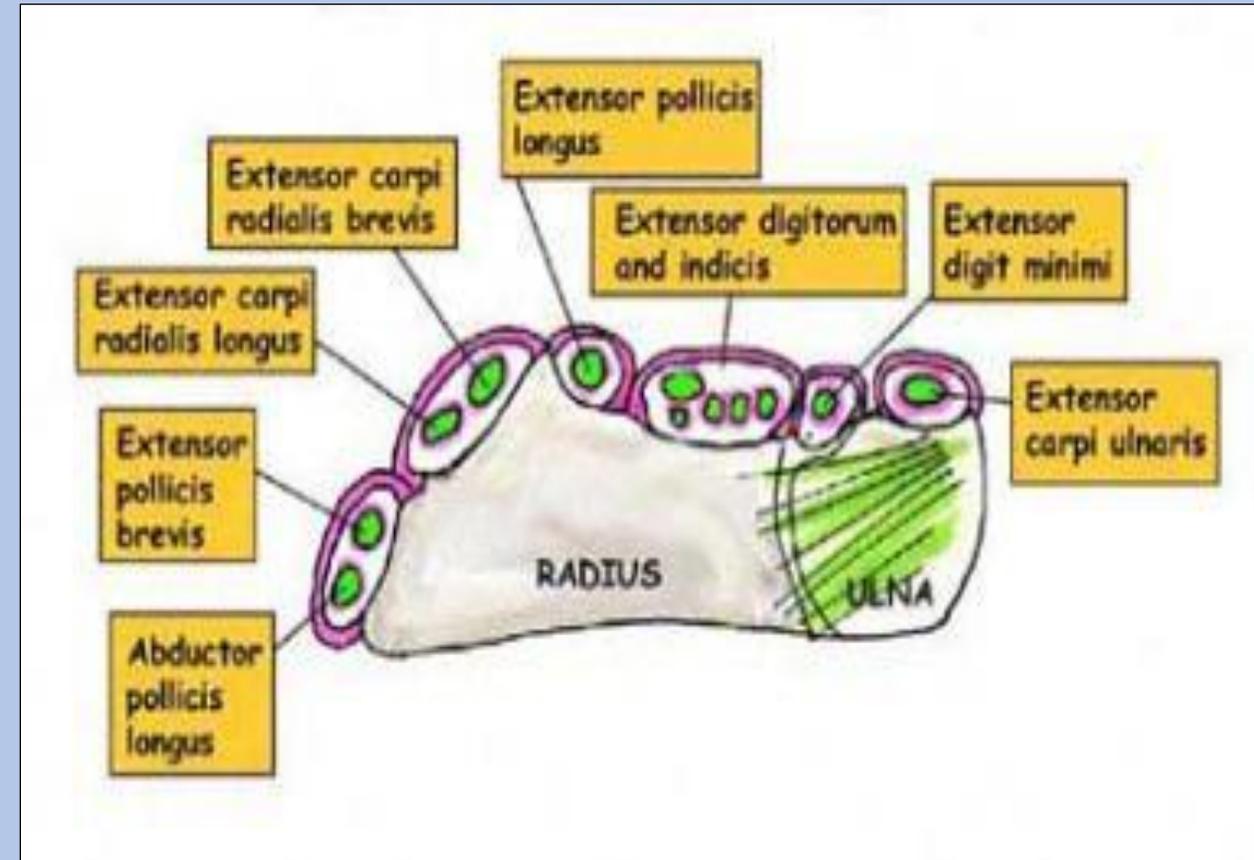


3. Extensor retinaculum:

It is a thickening of the deep fascia at the back of the wrist. It is attached laterally to the anterior border of the radius and medially to the triquetral and pisiform bones

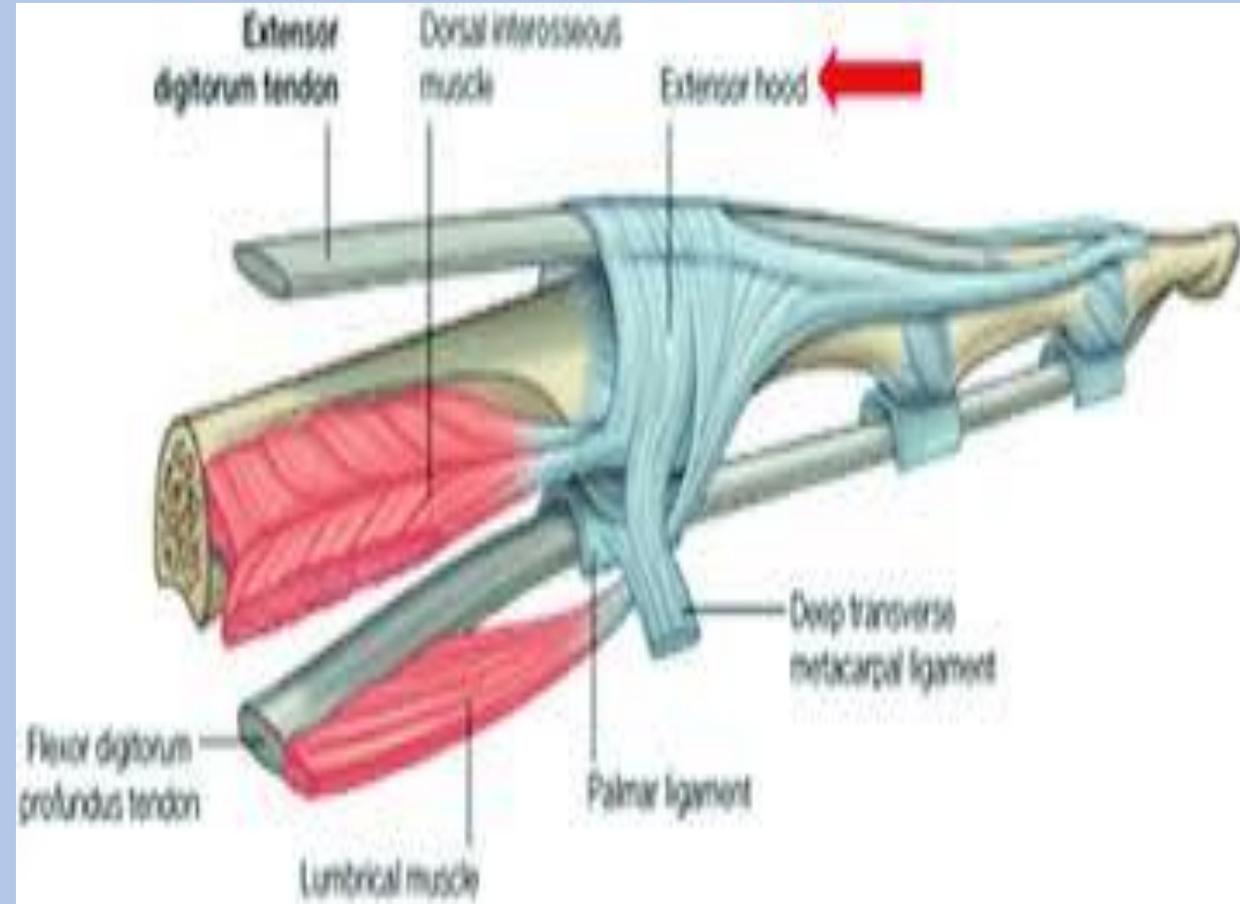
• Structures superficial to the extensor retinaculum:

1. Basilic vein.
2. Dorsal cutaneous branch of ulnar nerve.
3. Superficial branch of radial nerve



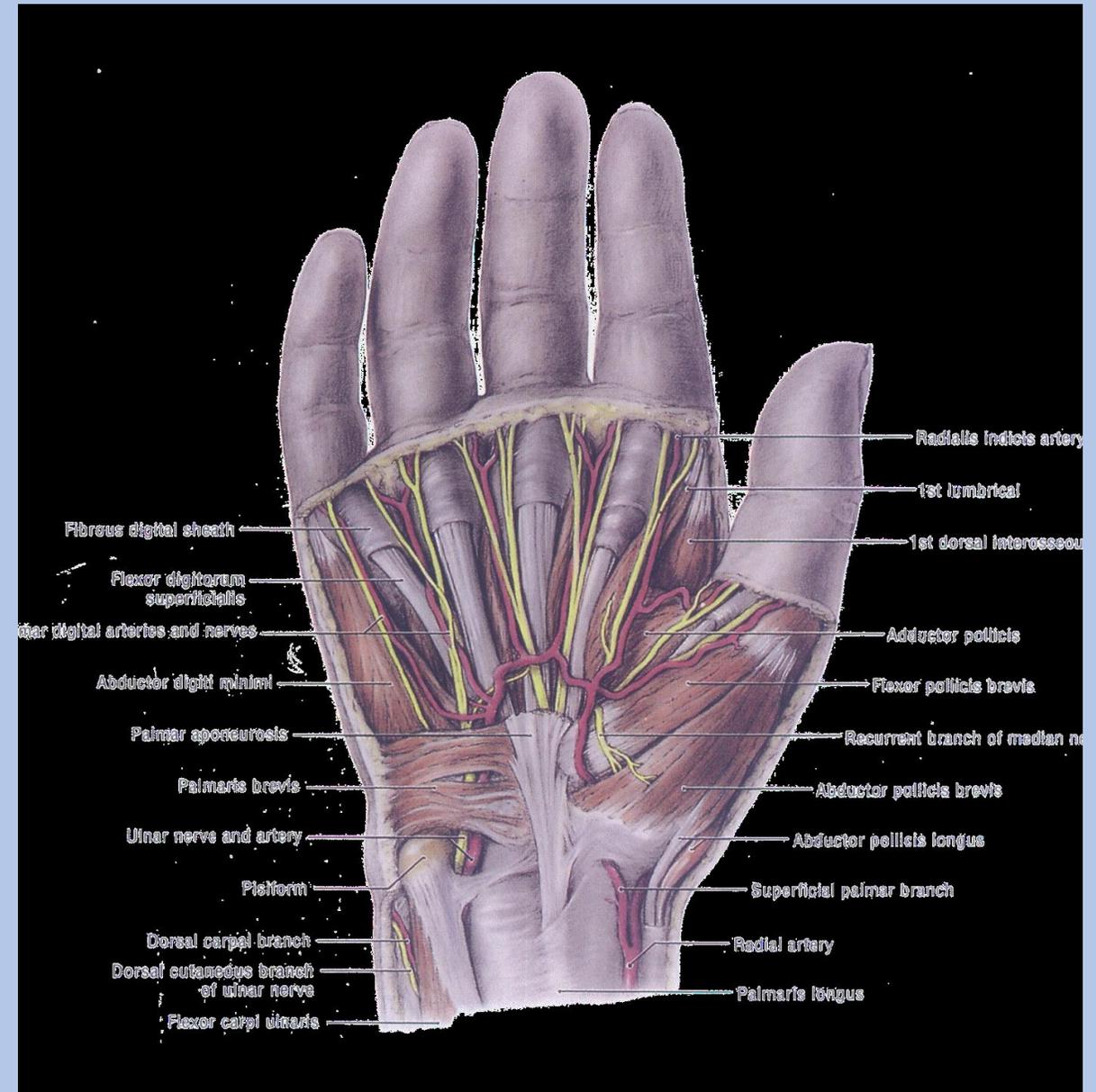
4. Extensor expansion

- It is the flattening of the tendons of extensors of the fingers. It gives attachment to the lumbricals and interossei. Through this attachment, the writing position (Flexion of metacarpophalangeal joints and extension of interphalangeal joints of the medial four fingers) can be done.



MUSCLES OF THE HAND

- They are 4 groups:
- **Thenar muscles.**
- **Hypothenar muscles.**
- **Lumbricals.**
- **Interossei (palmar and dorsal)**
- And **Palmaris brevis** muscle (small muscle lies in the superficial fascia of the palm)
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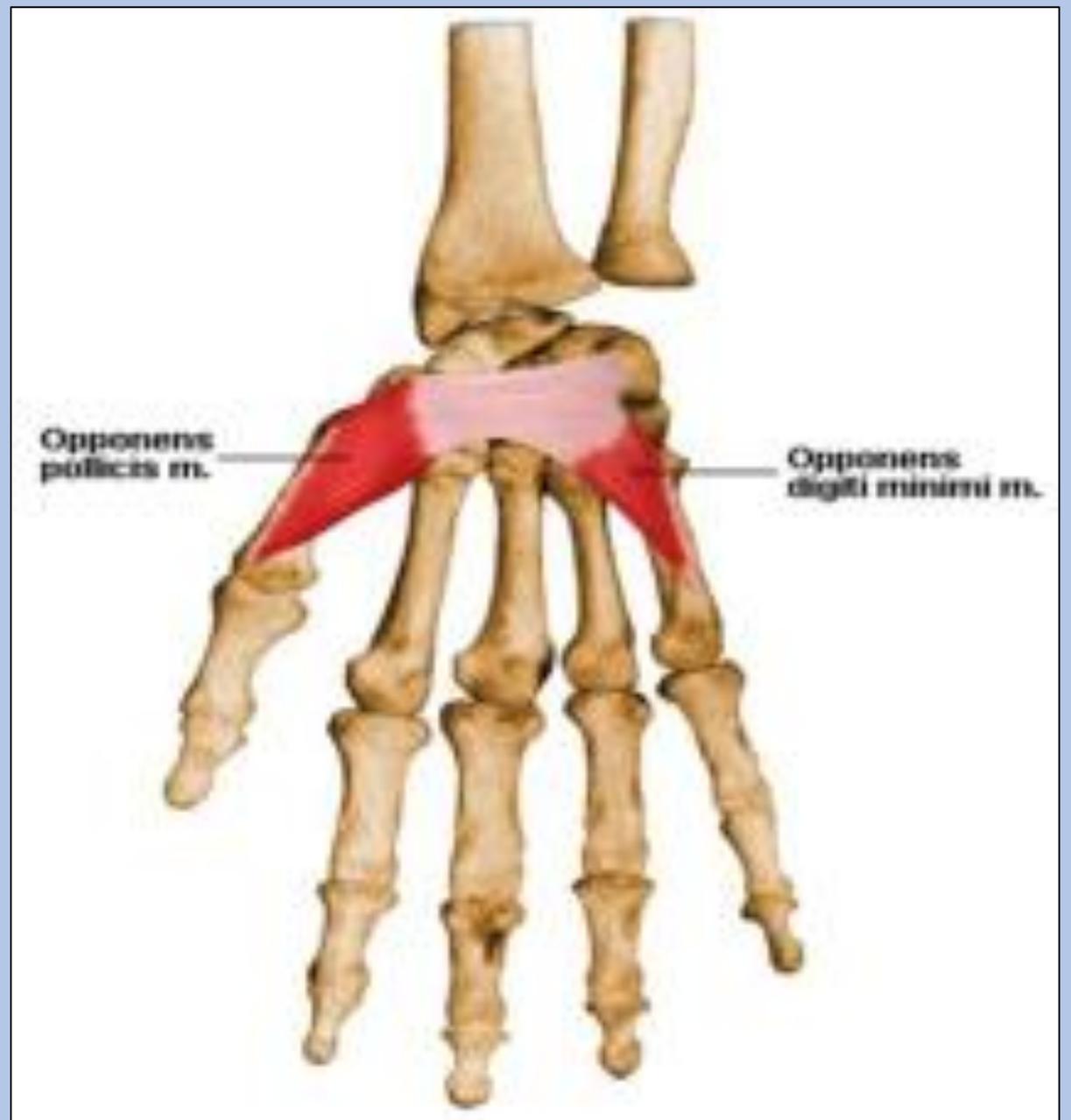
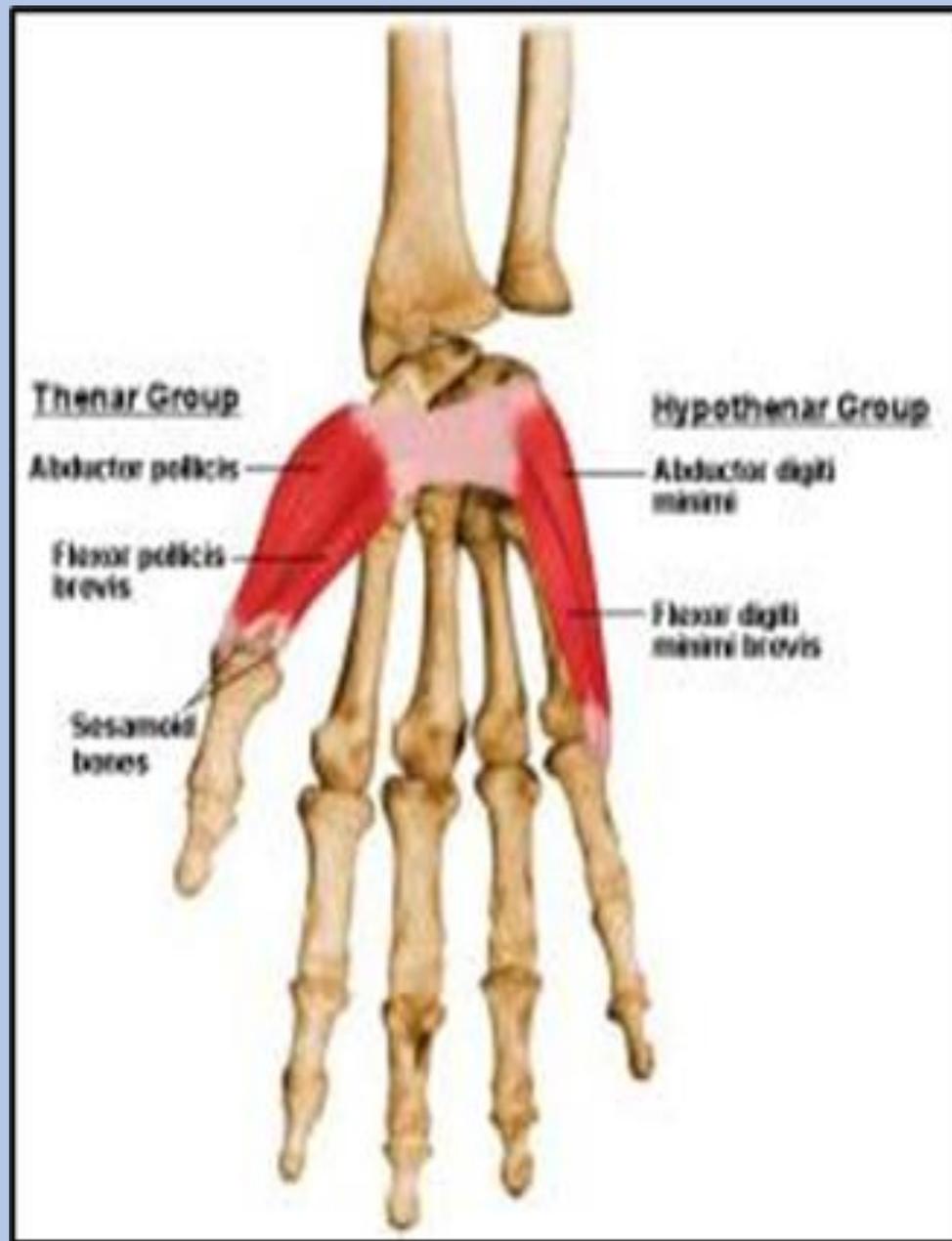


1. Thenar muscles

- They are 4 muscles that include:
- Muscles of thenar eminence (abductor pollicis brevis, flexor pollicis brevis and Opponens pollicis) .
- Adductor pollicis

• **Actions:**

- Flexor pollicis brevis helps in flexion of the thumb.
- Abductor pollicis brevis helps in abduction of the thumb.
- Opponens pollicis: opposition of the thumb.
- Adductor pollicis: adduction of the thumb.
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Adductor Pollicis

- **Origin** 2nd and 3rd metacarpals, capitate,
- **Insertion** Medial side of base of proximal phalanx of thumb
- **Action** Adducts thumb
- **Innervation** ulnar nerve

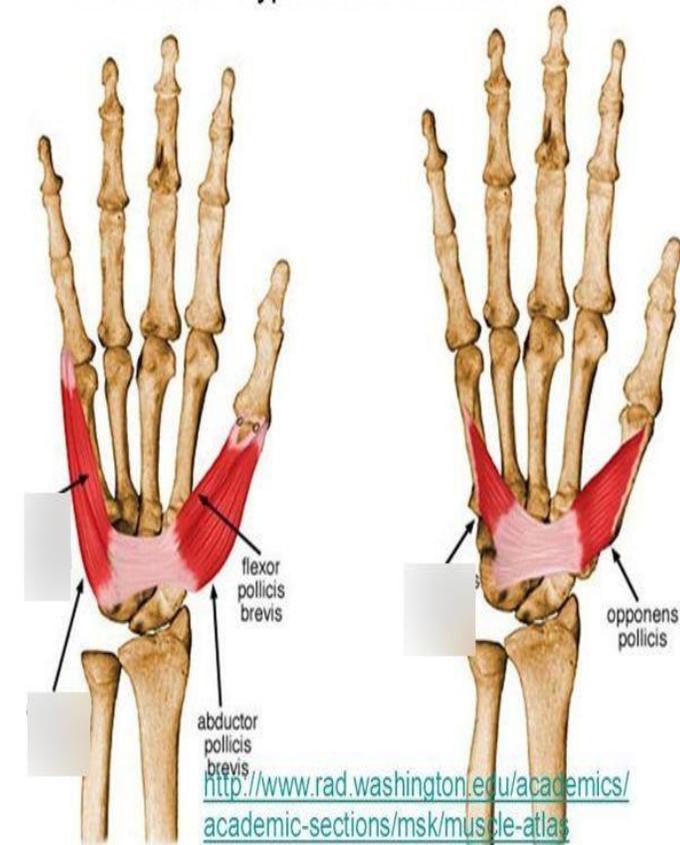


2. Hypothenar muscles

- **Flexor digit minimi.**
- **Abductor digiti minimi.**
- **Opponens digiti minimi.**
- **Actions:**
 - **Flexor digit minimi** helps in flexion of the little finger.
 - **Abductor digiti minimi** helps in abduction of the little finger.
 - **Opponens digiti minimi:** opposition of the little finger.

Thenar & Hypothenar muscles

Thenar and hypothenar muscles



3. Lumbrical muscles

- **Lumbricals**

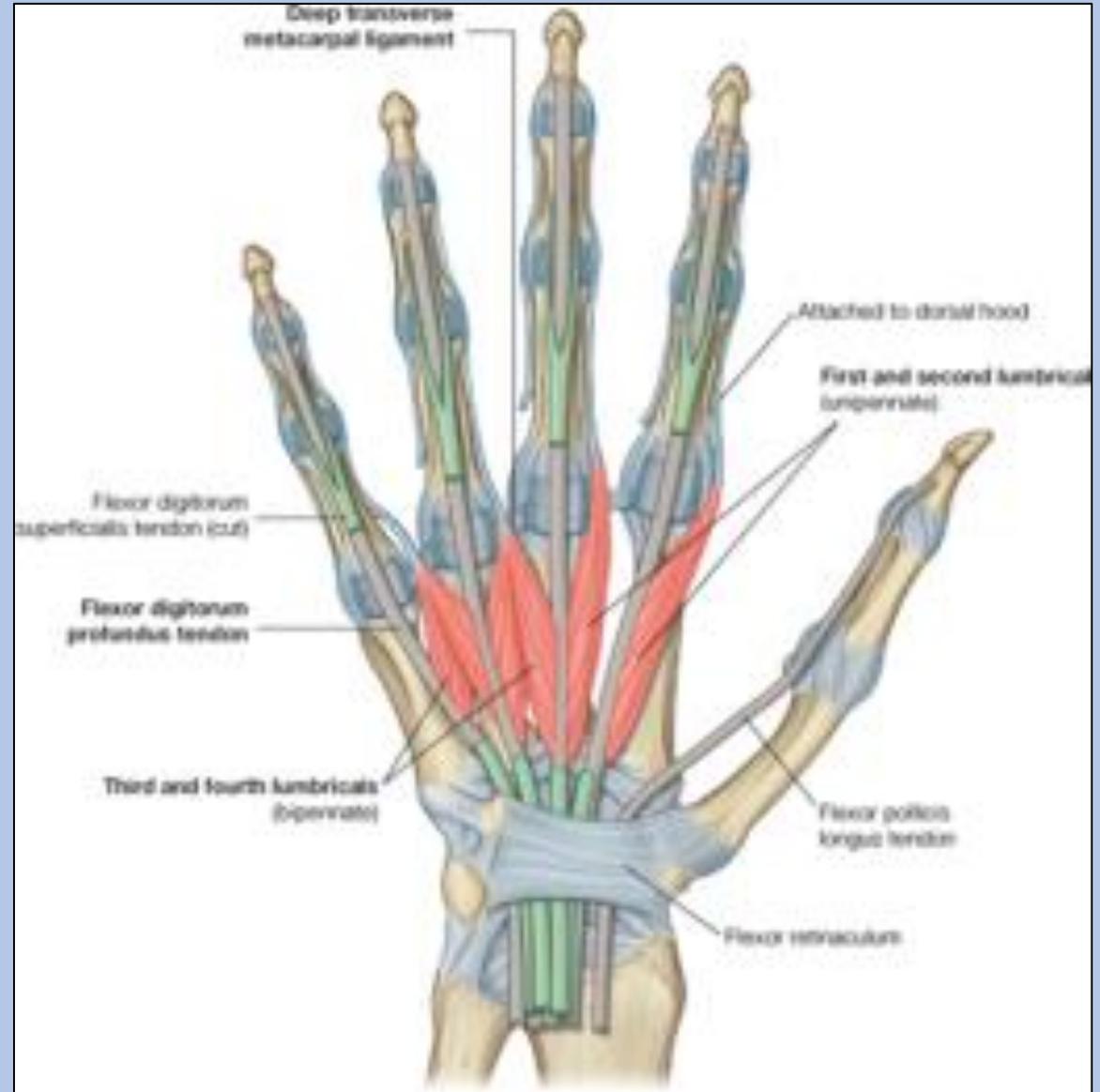
- .four muscles

- .The lat. 2 supplied by **median** nerve.

- 3.The med. 2 supplied by **ulnar** nerve.

- 4.Action writing position.

- 5.Arising from lateral aspect of the tendons of **F.D.P** AND INSERTED INTO EXTENSOR EXPANSION



• **The lumbrical muscles, choose the correct answer:**

a-Arise from the tendons of flexor digitorum superficialis.

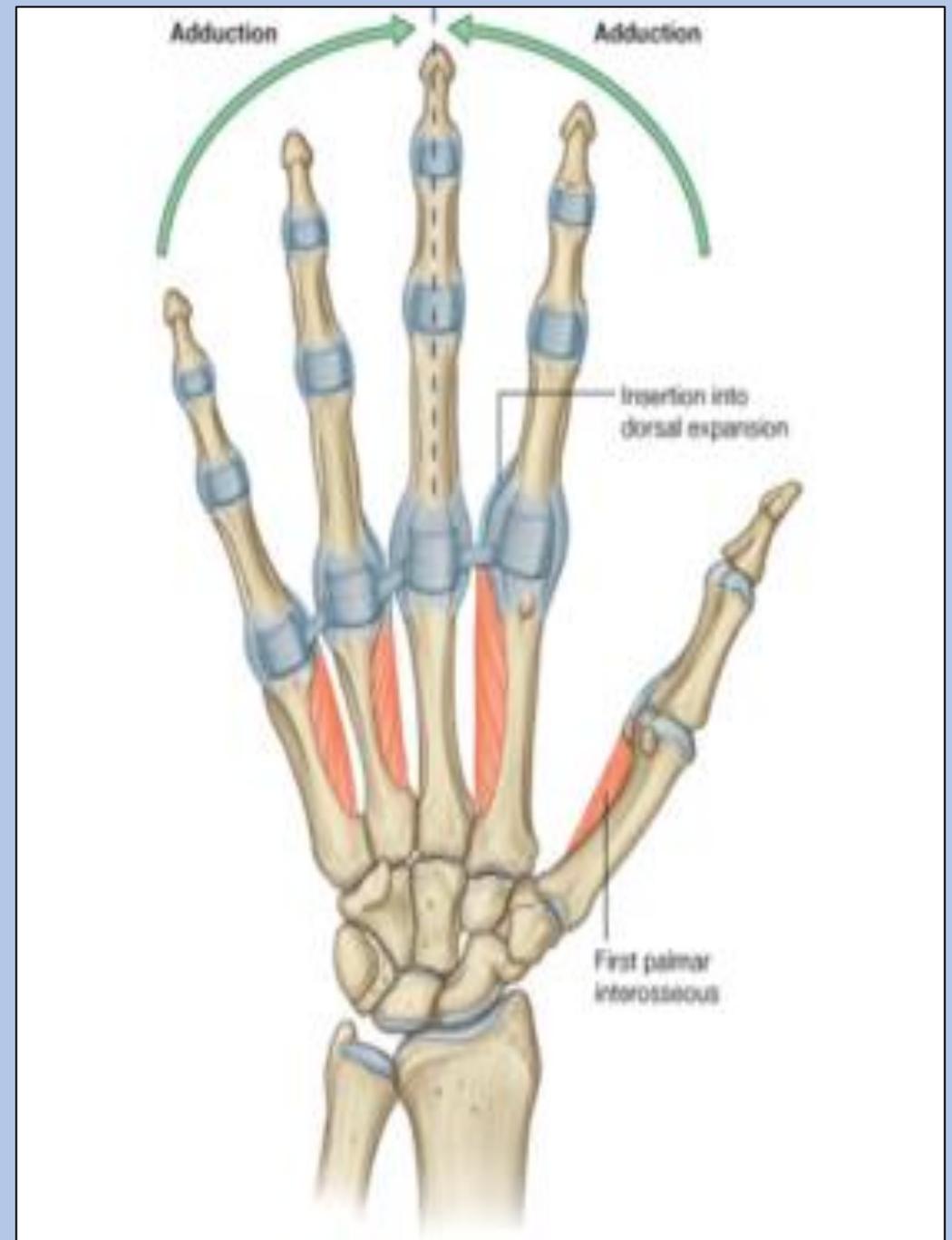
b-Are inserted into the radial side of extensor expansion.

c-Are innervated by ulnar and radial nerves.

d-In association with the interossei, extend the digits at the metacarpophalangeal joints.

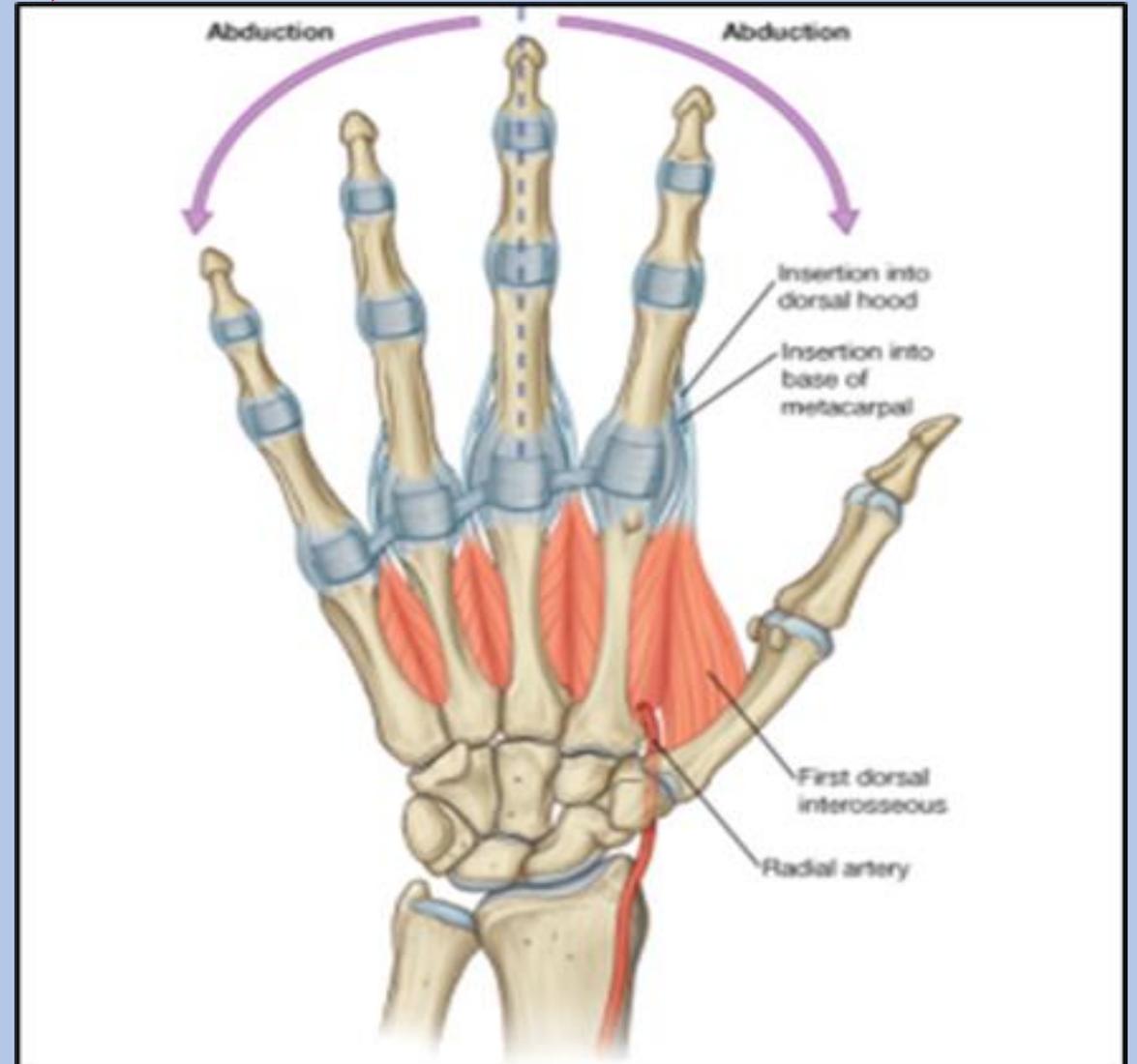
4. Interossei

- **Palmar interossei (PAD)**
- They are 4 in number.
- They are much smaller than the dorsal ones.
- Their action is to adduct the fingers (move them towards the axis that passes through the middle finger).
- The first palmar interosseous is usually rudimentary or completely absent as its action is carried by the adductor pollicis muscle.



Dorsal interossei (DAB)

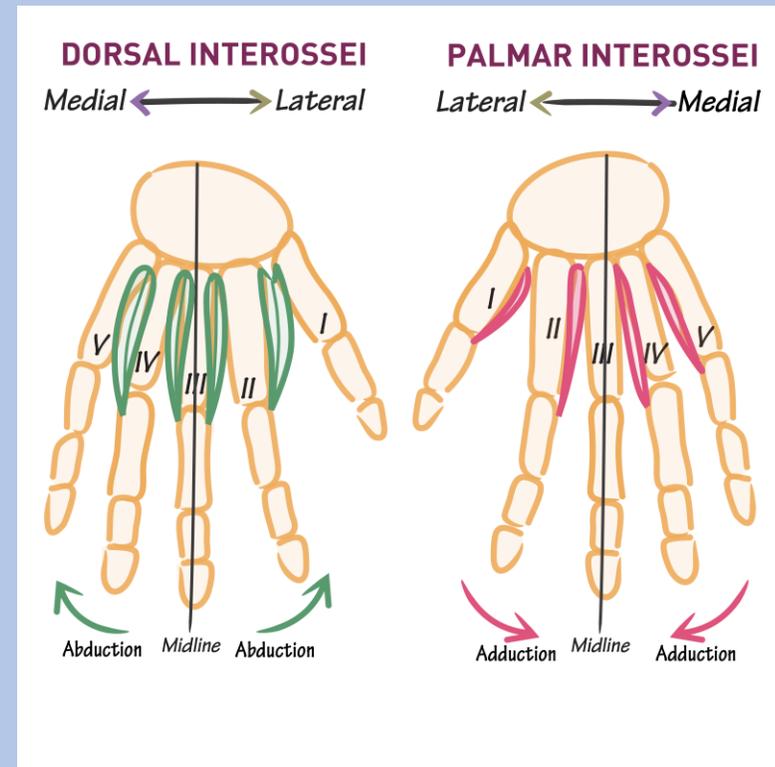
- They are 4 in number.
- They are much larger than the palmar interossei.
- Their action is to abduct the fingers (move them away from the middle finger).



Writing position



Actions



Nerve supply of the small muscles of the hand

- All muscles of the hand are supplied by deep branch of ulnar nerve **EXCEPT:**
 - The first and second lumbrical (median nerve).
 - The palmaris brevis (superficial branch of ulnar nerve).
 - Muscles of thenar eminence (flexor pollicis brevis, abductor pollicis brevis & Opponens pollicis) are supplied by median nerve.

