

Forearm

- Forearm extends between the elbow and the wrist joints. Radius and ulna form its skeleton.
- Surface landmarks of front and sides of forearm—
 1. Epicondyles of the humerus
 2. Tendon of the biceps brachii
 3. head of the radius
 4. styloid process

5. Head of the ulna
6. Styloid process of ulna
7. Pisiform bone
8. Hook of the hamate
9. Tubercle of the scaphoid
10. Tubercle of the trapezium
11. Brachoradialis
12. Tendon of flexor carpi radialis, flexor carpi ulnaris, palmaris longus
13. Pulsation of the radial artery

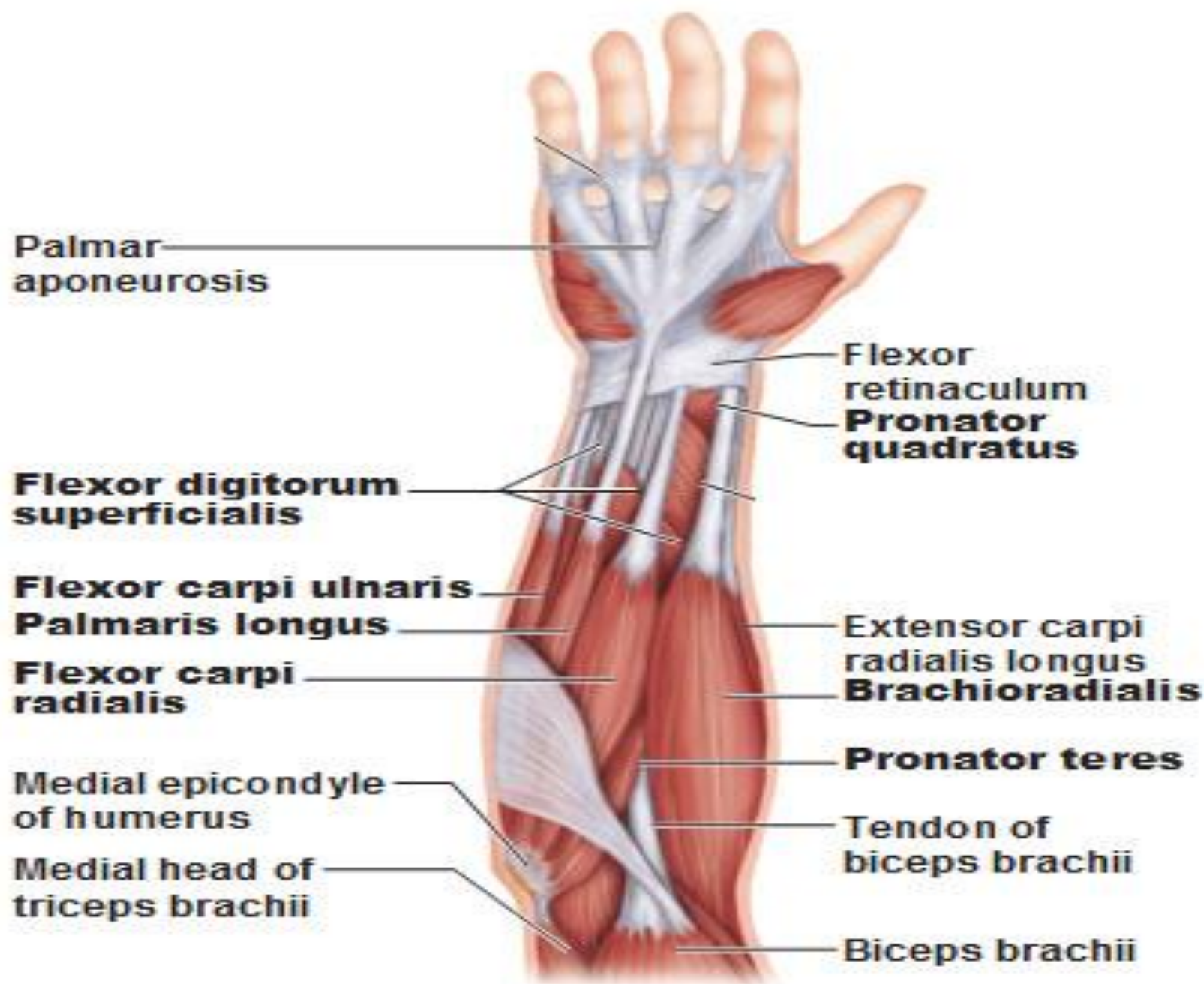
14. Transverse creases

15. Median nerve

Muscles of front of forearm-

Component-

1. 8 muscles, 5-superficial and 3-deep
2. 2 arteries-radial and ulnar
3. 3 nerves-radial, ulnar, median



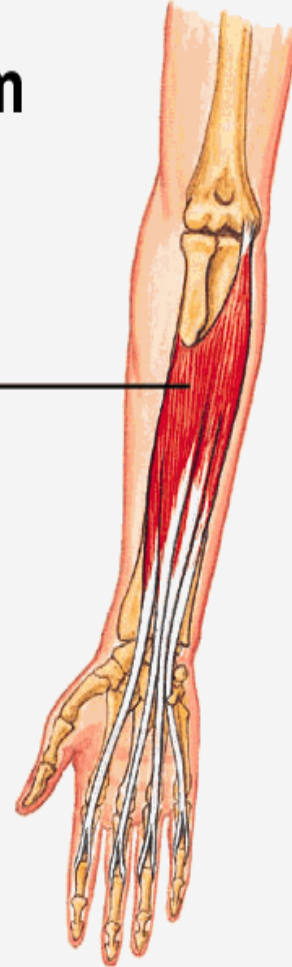
Superficial muscles

1. Pronator teres
2. Flexor carpi radialis
3. Flexor carpi ulnaris(humeral, ulnar head)
4. Flexor digitorum
superficialis(humeroulnar,radial head)
5. Palmaris longus

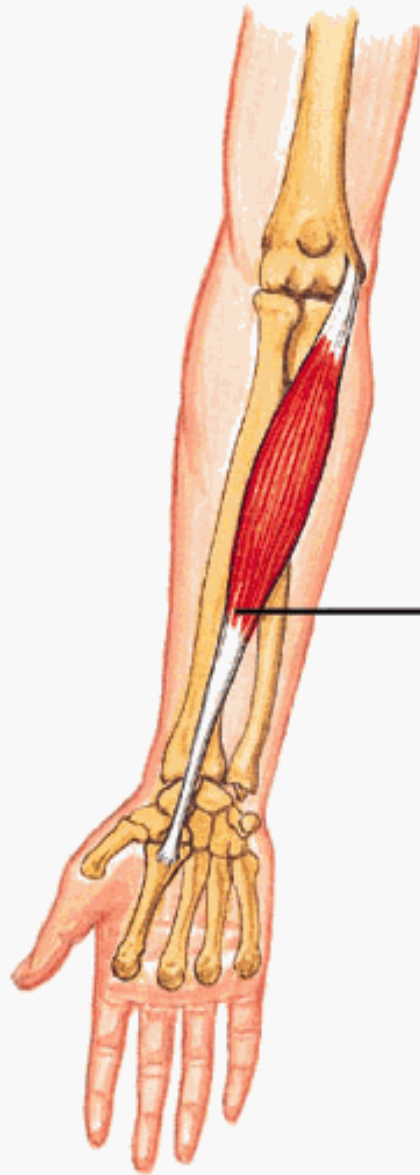
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Anterior Forearm Muscles (5)

Flexor
digitorum
superficialis



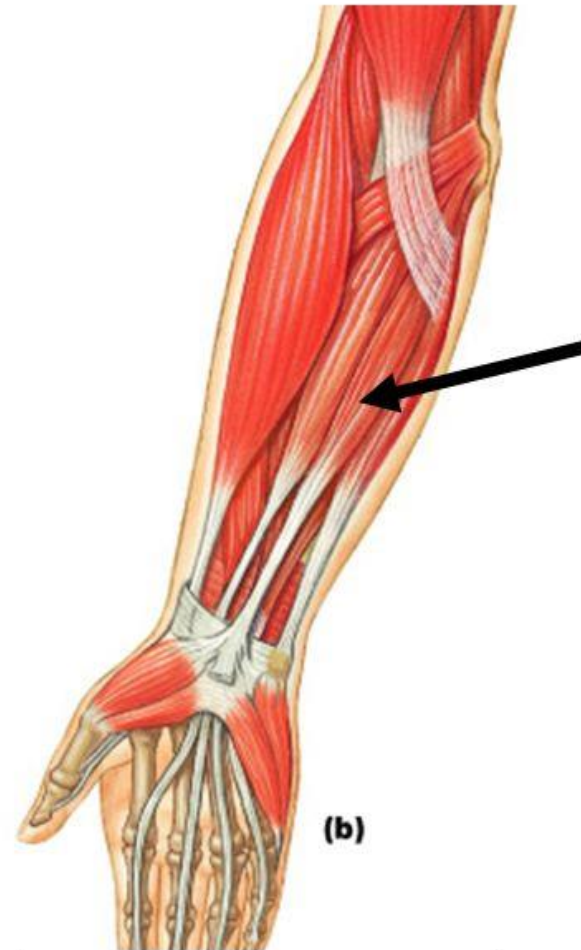
Anterior Forearm Muscles (4)



**Flexor
carpi
radialis**

Palmaris Longus

- **Origin:** Medial epicondyle of the humerus
- **Insertion:** Palmar aponeurosis
- **Action:** Weak flexion of wrist, tenses skin of palm



Anterior, Superficial



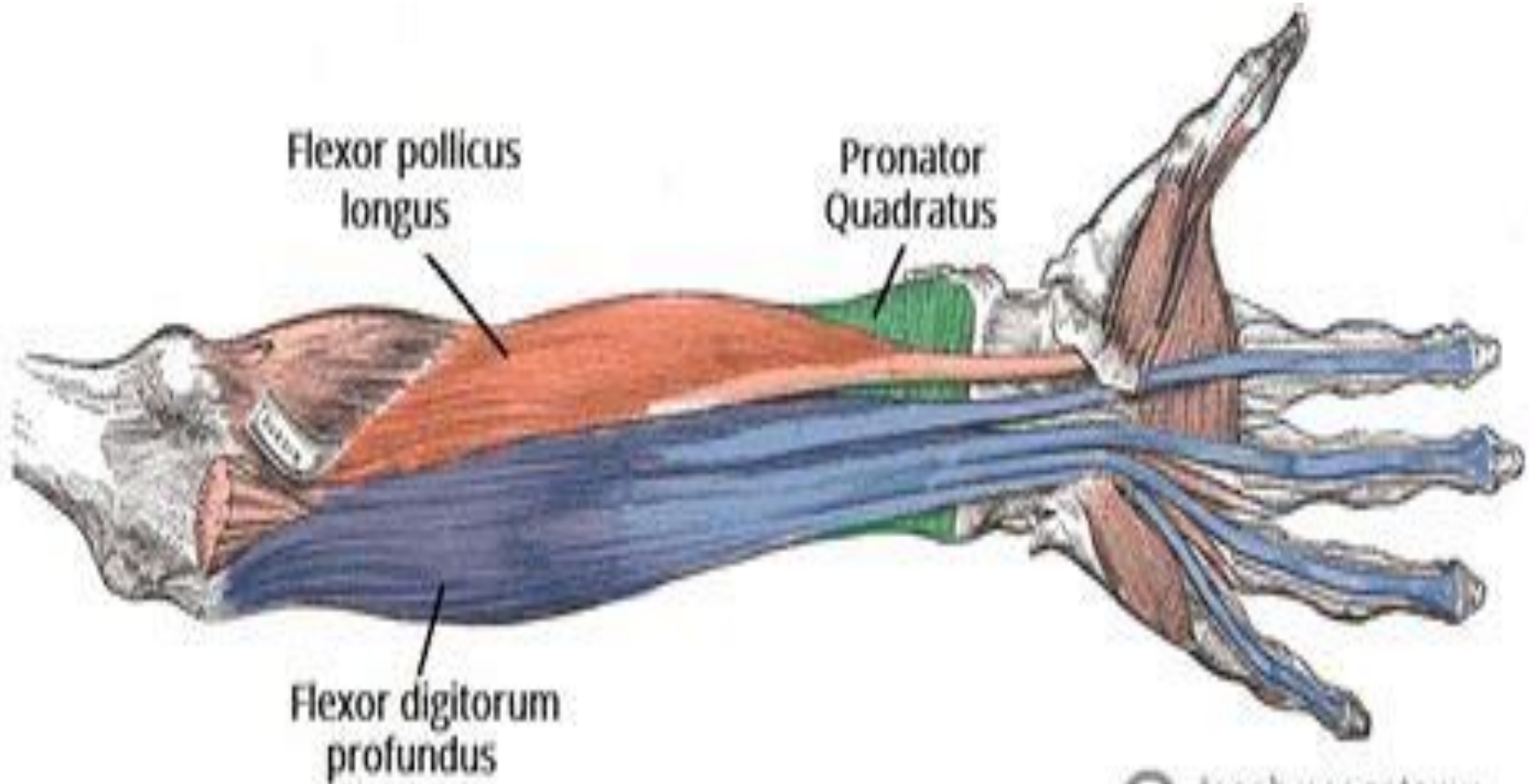
Nerve supply of superficial muscles

- Median nerve
- Flexor carpi ulnaris- ulnar nerve

Actions

- Pronator teres- pronation of forearm
- Flexor carpi radialis- flexes and abducts hand at wrist joint
- Flexor carpi ulnaris- flexes and adducts the hand at wrist joint
- Flexor digitorum superficialis- flexes middle phalanx of fingers and assists in flexing proximal phalanx and wrist joint
- Palmaris longus- flexes wrist joint

Deep muscles



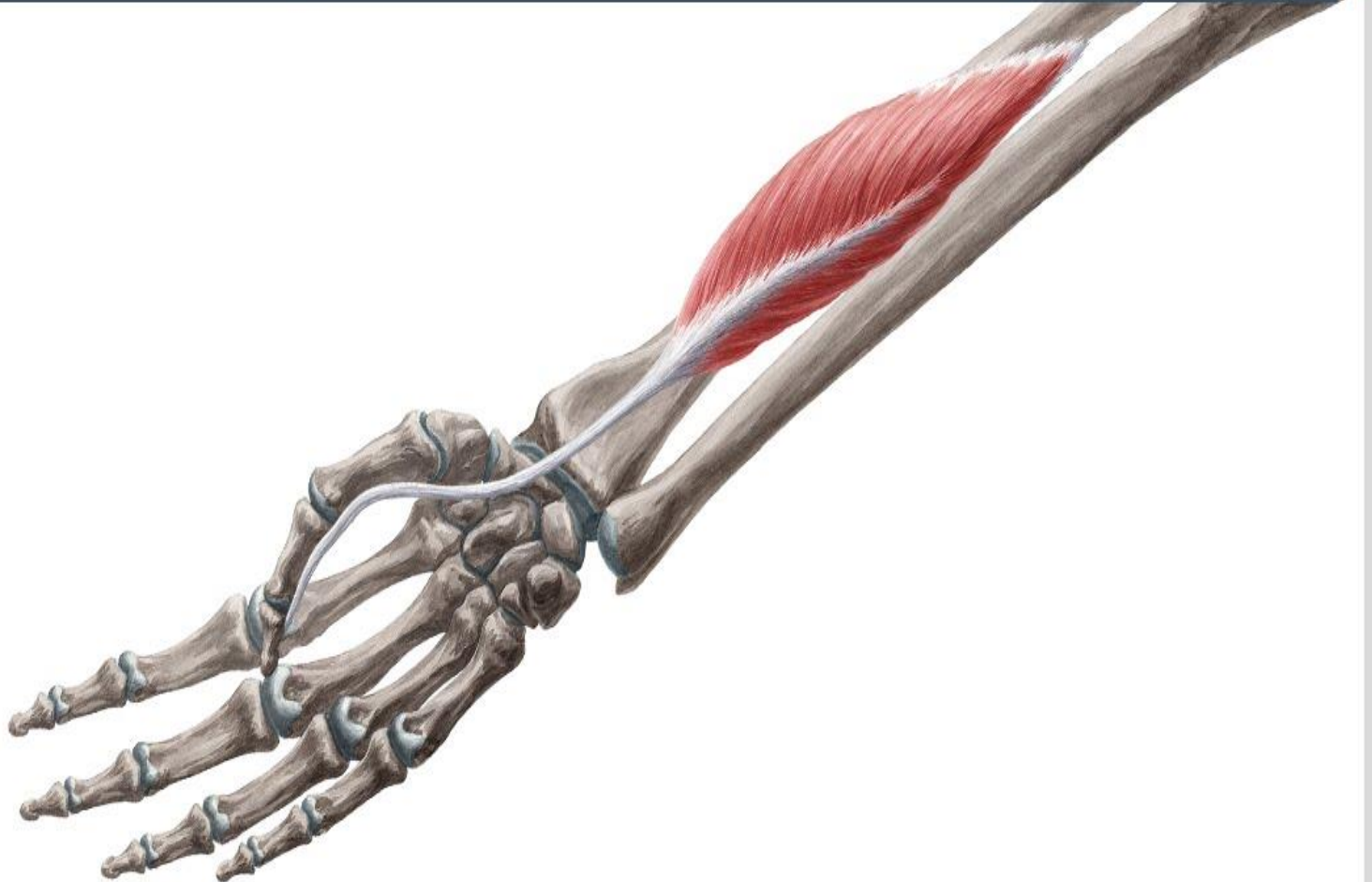
- Flexor digitorum profundus
- Flexor pollicis longus
- Pronator quadratus

Pronator Quadratus

- Origin
 - Distal, anterior end of ulna
- Insertion
 - Distal, anterior end of radius
- Actions
 - Pronation
- Removing a screw with the right hand



Flexor pollicis longus



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Flexor Pollicis Longus

- **Origin:** Middle half of radius, interosseous membrane, coronoid process of ulna
- **Insertion:** Distal phalanx of thumb
- **Action:** Flexes thumb and wrist



Anterior, Deepest Layer



Flexor Digitorum Profundus

- **Origin** Proximal 3/4 of ulna
- **Insertion** Base of the distal phalanx of digits 2 – 5
- **Action** Flexes distal phalanges at distal interphalangeal joints
- **Innervation**
- **Medial part:** ulnar nerve
Lateral part: median nerve

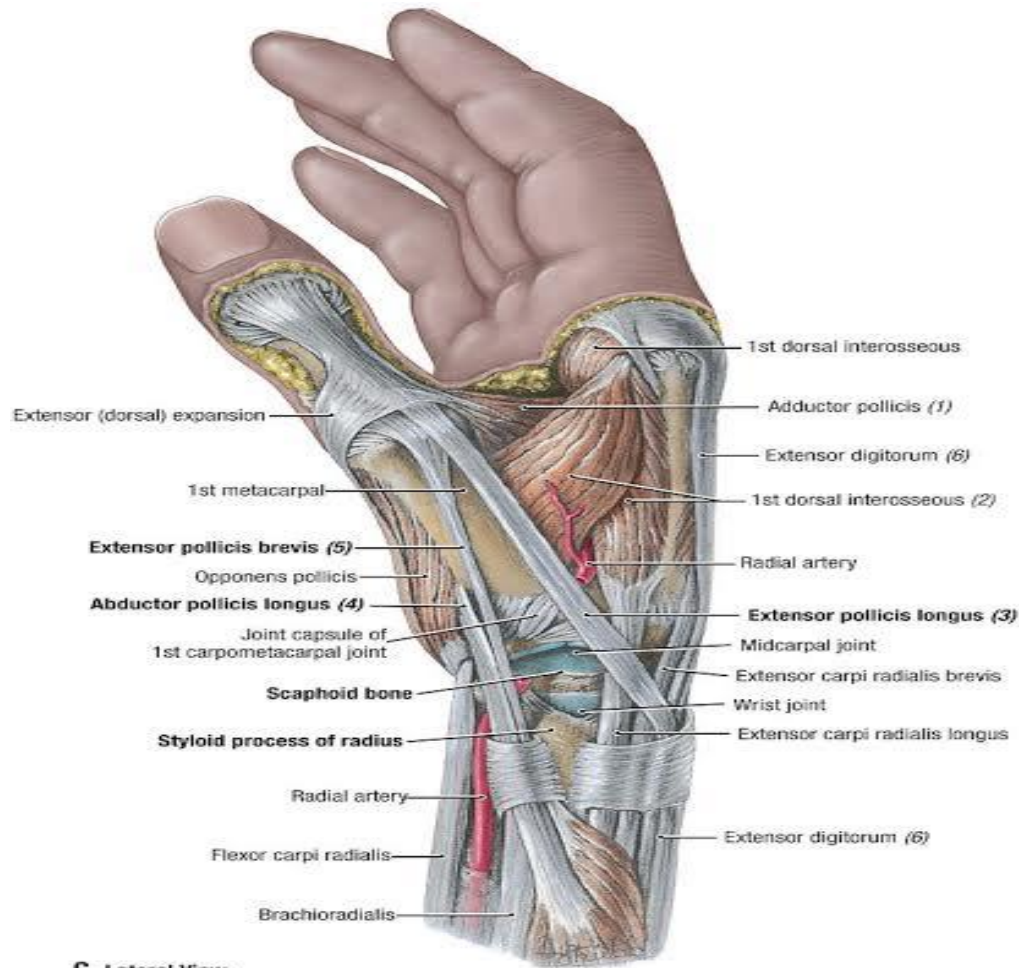


Posterior compartment of forearm-

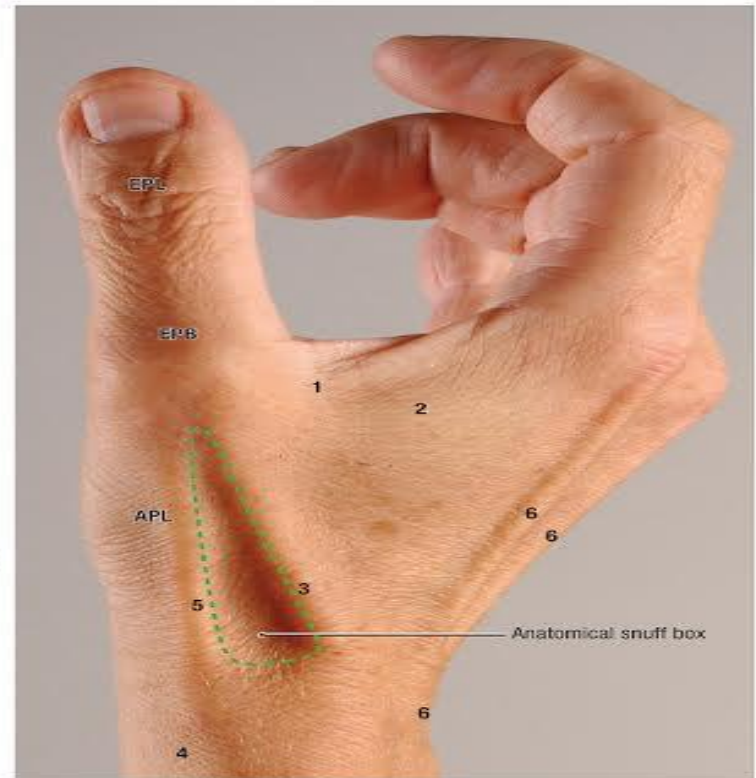
- **The posterior compartment of forearm lies behind the radius, ulna and the interosseous membrane.**
- **It is served by the radial nerve.**
- **Many muscles of this compartment take origin from the lateral epicondyle and the lateral supracondylar ridge of the humerus.**
- **The tendons of these muscles continue into the dorsum and the dorsal aspects of the fingers.**

- **Landmarks of back of forearm and hand-**
 - 1. The olecranon process of the ulna**
 - 2. The head of the radius**
 - 3. Posterior border of the ulna**
 - 4. Head of the ulna**
 - 5. Styloid process of the radius and ulna**
 - 6. Dorsal tubercle of the radius**
 - 7. Anatomical snuff box**
 - 8. Heads of the metacarpals form the knuckles**

Anatomical snuff box



C. Lateral View



D. Lateral View

Distal Extents of:	
EPL	Extensor pollicis longus
EPB	Extensor pollicis brevis
APL	Abductor pollicis longus

14.anatomical snuffbox?



lateral border

tendons of

abductor pollicis longus APB

extensor pollicis brevis

medial border

tendon of extensor pollicis longus



- It is a triangular depression on the lateral side of the wrist. It is seen best when the thumb is extended.

- **Boundaries-**

Anterior- tendons of the abductor pollicis longus and extensor pollicis brevis

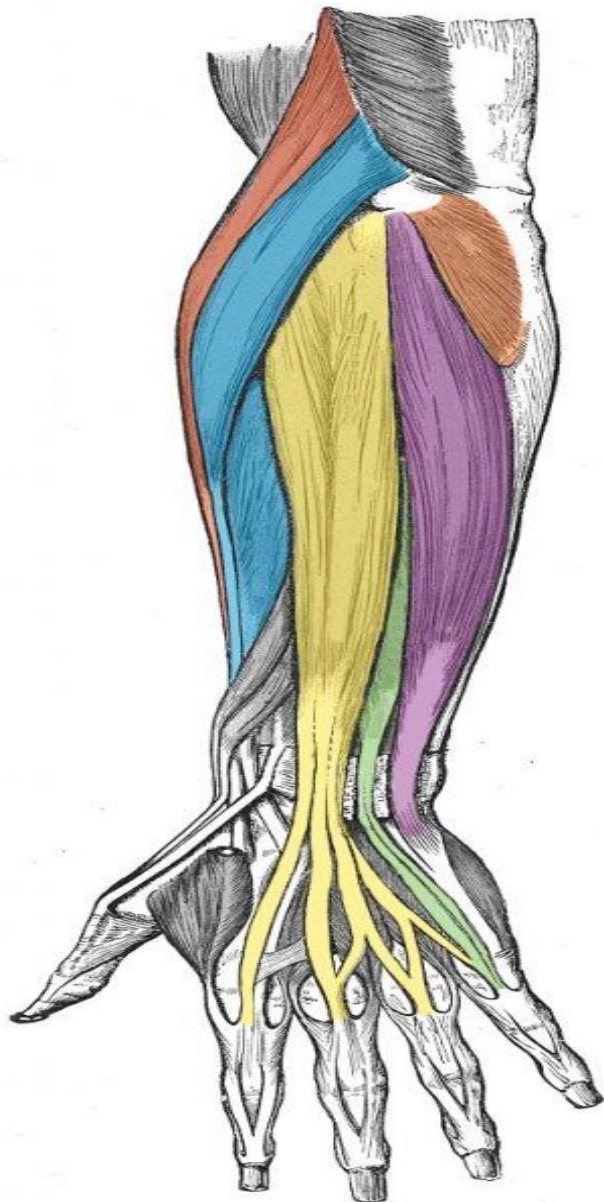
Posterior- tendon of the extensor pollicis longus







Above- styloid process of the radius

Floor- scaphoid and trapezium

Content- radial artery, radial nerve ,cephalic vein

Superficial muscles



	Brachioradialis
	Extensor carpi radialis longus and brevis
	Extensor digitorum
	Extensor digit minimi
	Extensor carpi ulnaris
	Anconeus

ANCONEUS

Origin- lateral epicondyle

Insertion- lateral and posterior part of olecranon process

Action – extension of elbow



Brachioradialis

Origin - upper 2/3 of lateral supracondylar ridge

Insertion- lateral side of radius just above styloid process

Action – flexes the forearm

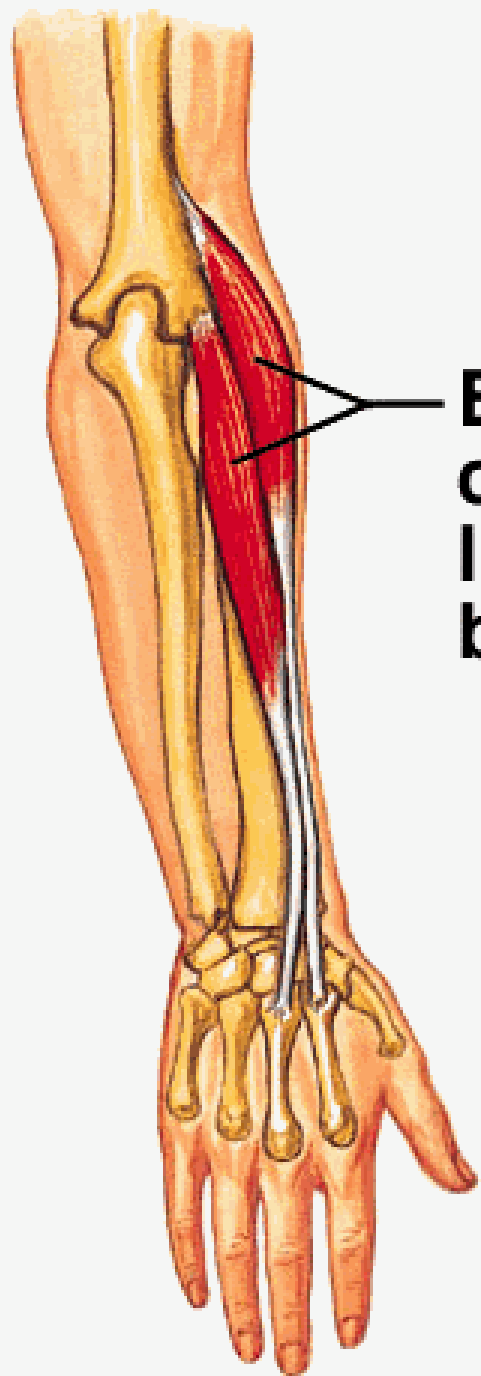


EXTENSOR CARPI RADIALIS BREVIS

ORIGIN- lateral epicondyle of humerus

INSERTION- 3rd metacarpal bone

ACTION – extension of wrist, abduction of wrist



**Extensor
carpi radialis
longus and
brevis**

**Posterior Forearm
Muscles (2)**

Extensor carpi radialis longus

- **Origin-** lower 1/3 of lateral supracondylar ridge
- **Insertion** – base of 2nd metacarpal bone
- **Action** – same as brevis

Extensor digiti minimi

- **Origin-** lateral epicondyle of humerus
- **Insertion-** extensor expansion of little finger
- **Action-** extends metacarpophalangeal joint of little finger



Extensor carpi ulnaris

Origin- lateral epicondyle

Insertion- base of 5th metacarpal bone

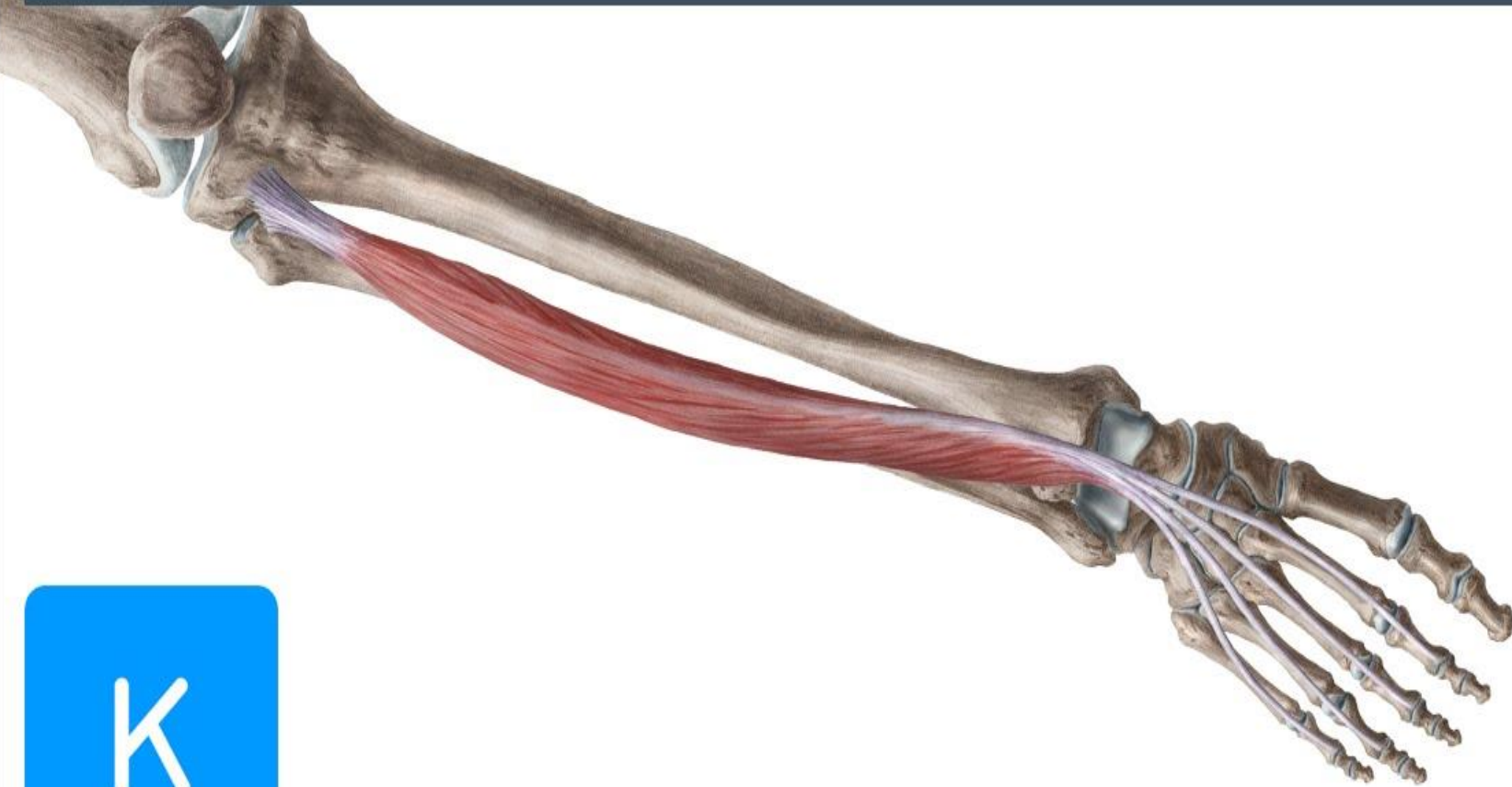
Action –extension of little finger



Extensor digitorum

- **Origin-** lateral epicondyle of humerus
- **Insertion-** bases of middle phalanges of 2-5th digits
- **Action-** extends fingers of hand

Extensor Digitorum Longus



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- **Extensor carpi ulnaris— deep branch of radial nerve**
- **Anconeus— branch from radial nerve**
- **Brachioradialis --radial nerve**
- **Extensor carpi radialis longus— radial nerve**
- **Extensor carpi radialis bravis— deep branch of radial nerve**
- **Extensor digitorum –deep brance of radial nerve**
- **Extensor digiti minimi—deep branch of radial nerve**

DEEP MUSCLES

- **Supinator**
- **Extensor pollicis longus**
- **Abductor pollicis longus**
- **Extensor indicis**
- **Extensor pollicis brevis**

SUPINATOR

- **Origin-** lateral epicondyle of humerus, annular ligament, supinator crest of ulna
- **Inertion** - neck and whole shaft of upper $1/3^{\text{rd}}$ of radius
- **Action-** supination of forearm when elbow is extended

Supinator Muscle



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Abductor pollicis longus

- **ORIGIN-** posterior surface of shafts of ulna and radius , interosseous membrane
- **INSERTION-** base of 1st metacarpal bone
- **Action-** abducts and extends thumb

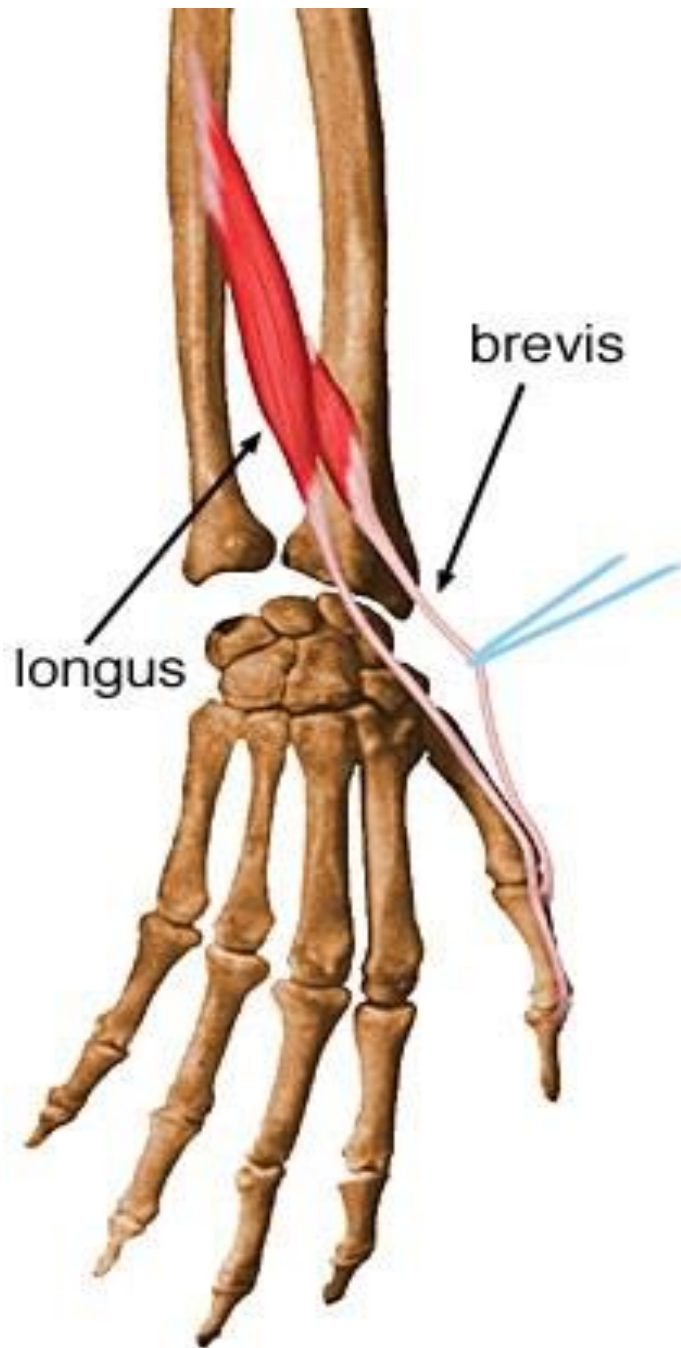
Abductor pollicis longus



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Extensor pollicis longus

- **Origin-** posterior surface of shaft of ulna
- **insertion-** base of distal phalanx of thumb
- **Action-** extends distal phalanx of thumb

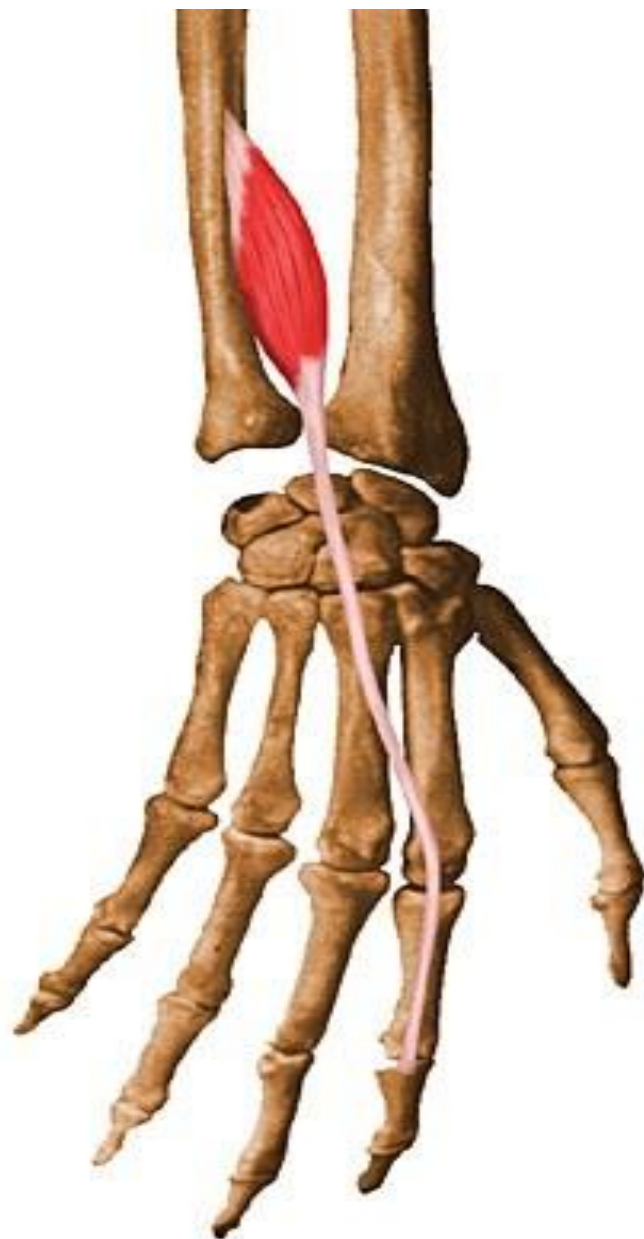


Extensor pollicis brevis

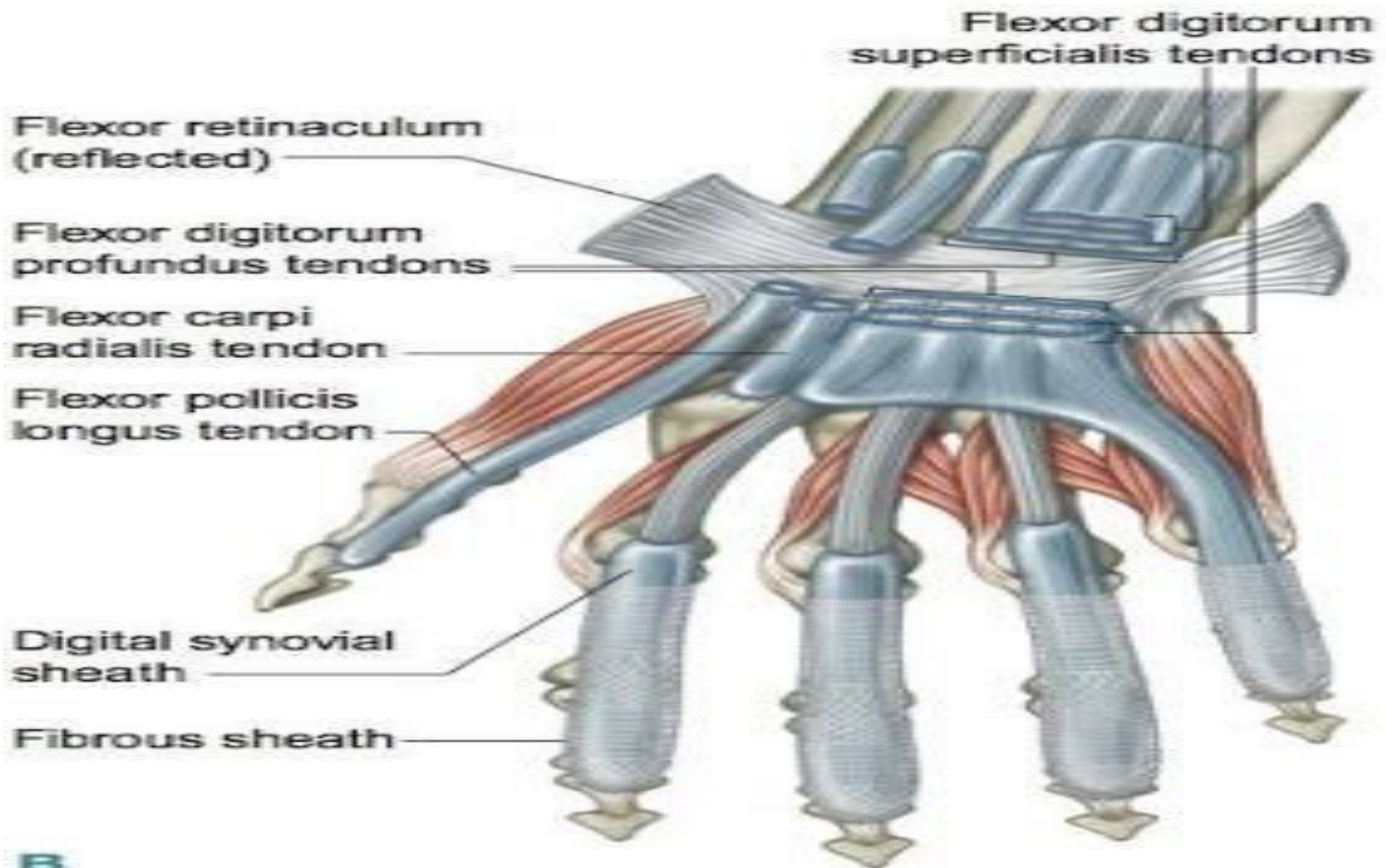
- **Origin-** posterior surface of shaft of radius
- **insertion-** base of proximal phalanx of thumb
- **Action-** extends metacarpophalangeal joint of thumb

Extensor indicis

- **Origin-** posterior surface of shaft of ulna
- **insertion-** extensor expansion of index finger
- **Action-** extends metacarpophalangeal joint of index finger



Flexor retinaculum(transverse carpal ligament)



- It is a strong fibrous band which bridges the anterior concavity of the carpus and converts it into a tunnel, the carpal tunnel.
- 2.5 cm both in length and breadth

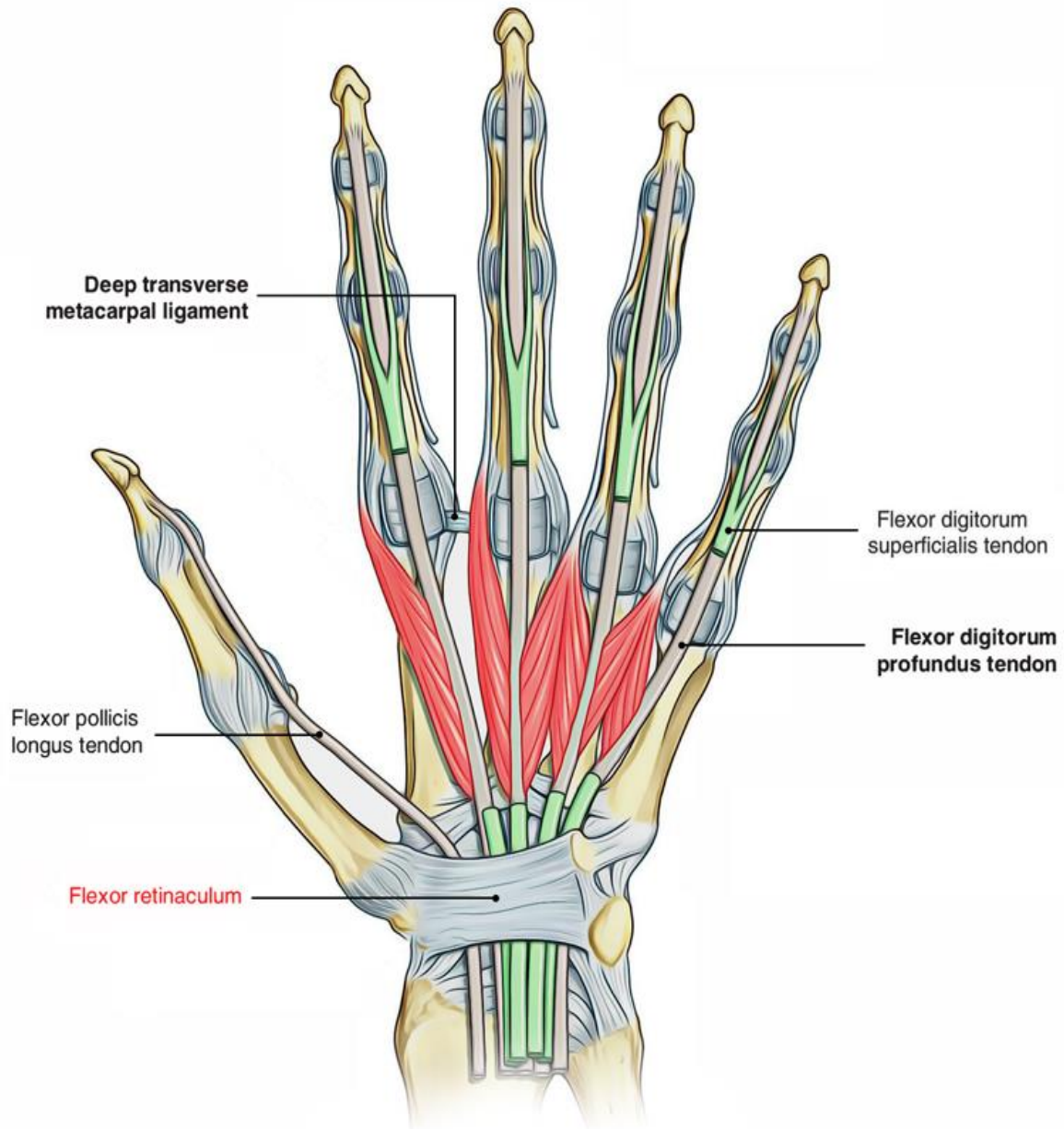
- **Attachments-**

Medially

- 1. The pisiform bone**
- 2. The hook of the hamate**

Laterally

- 1. Tubercle of the scaphoid**
- 2. Crest of the trapezium**



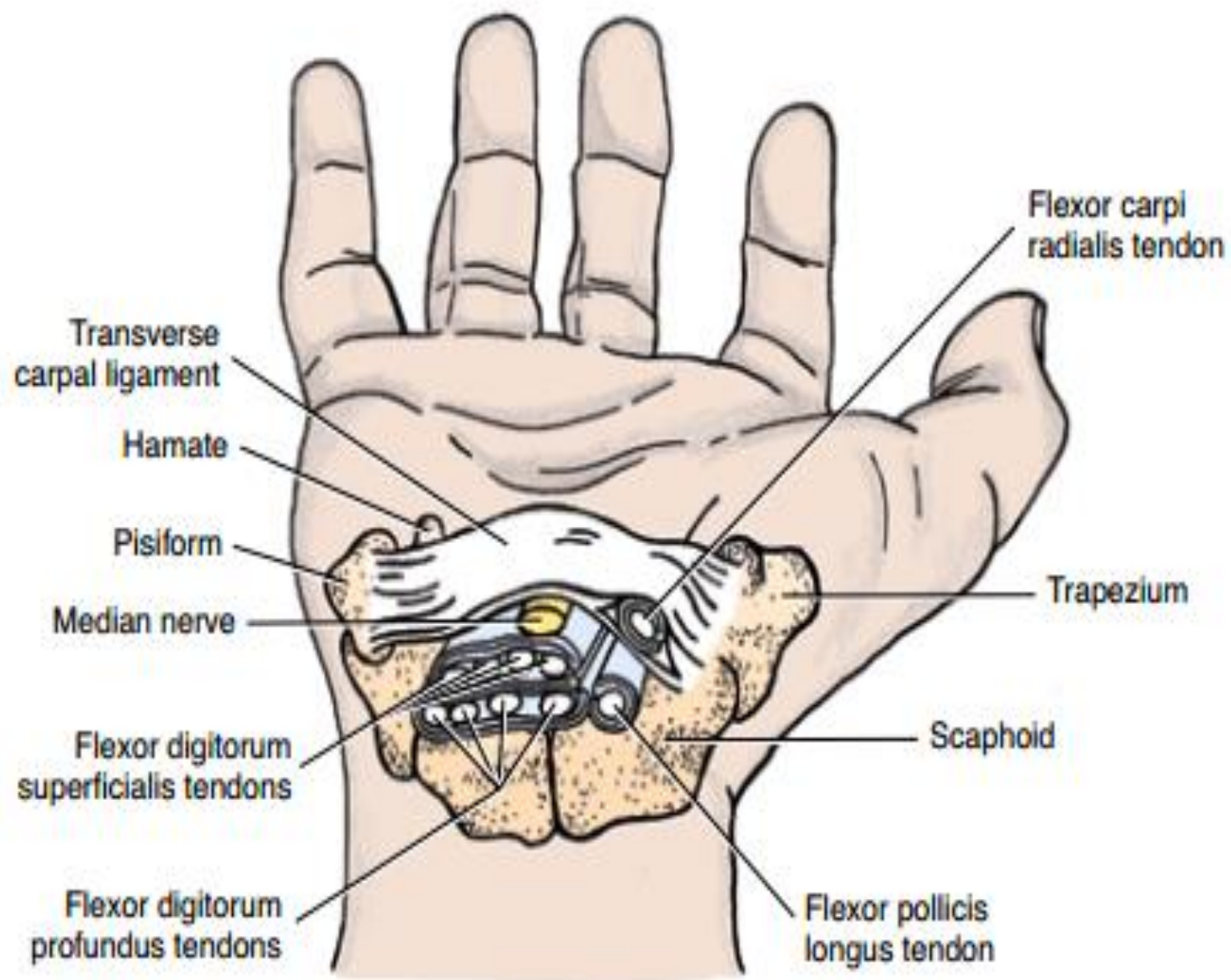
Synovium

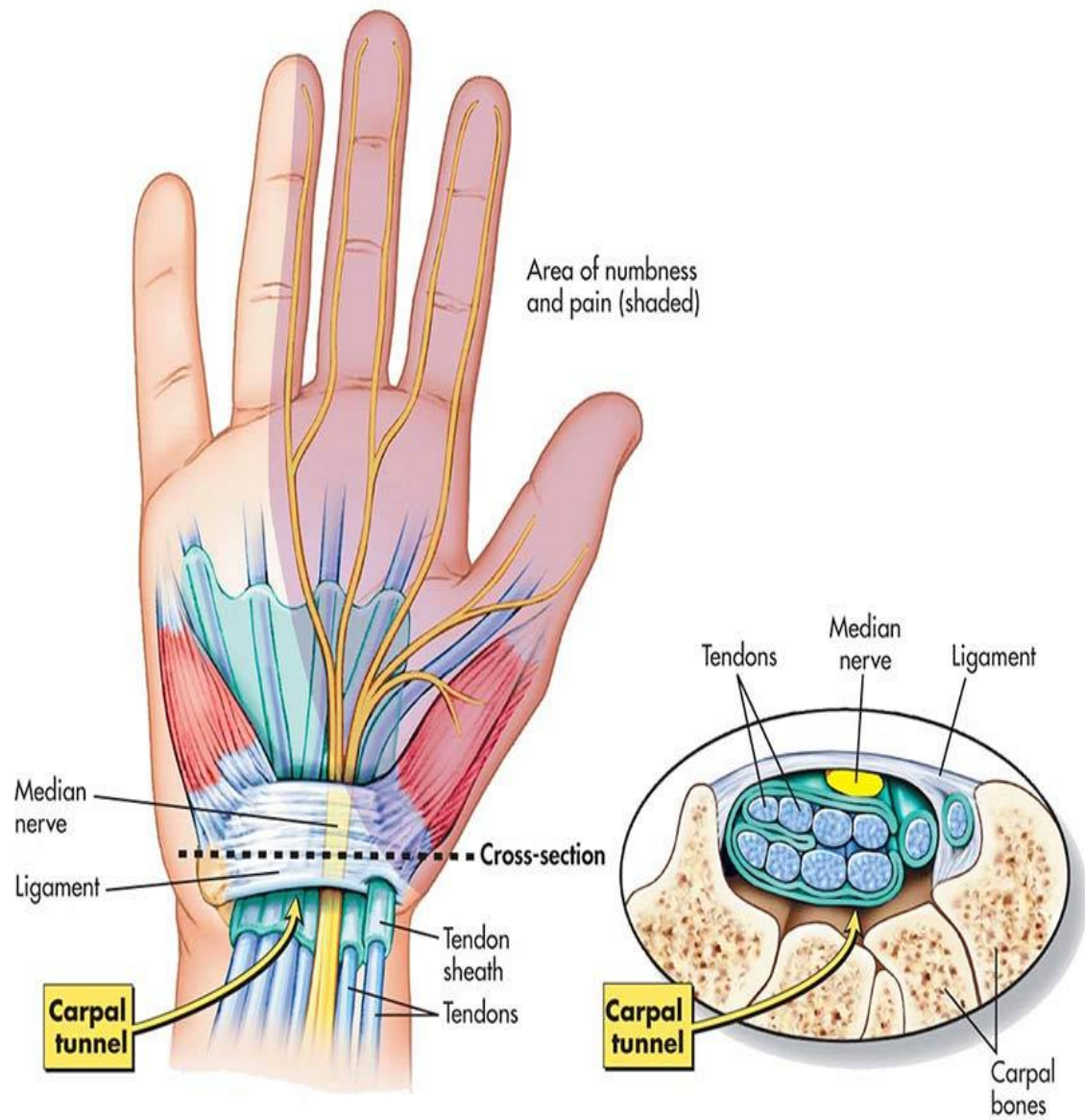
Flexor tendons

Median nerve

Transverse carpal
ligament





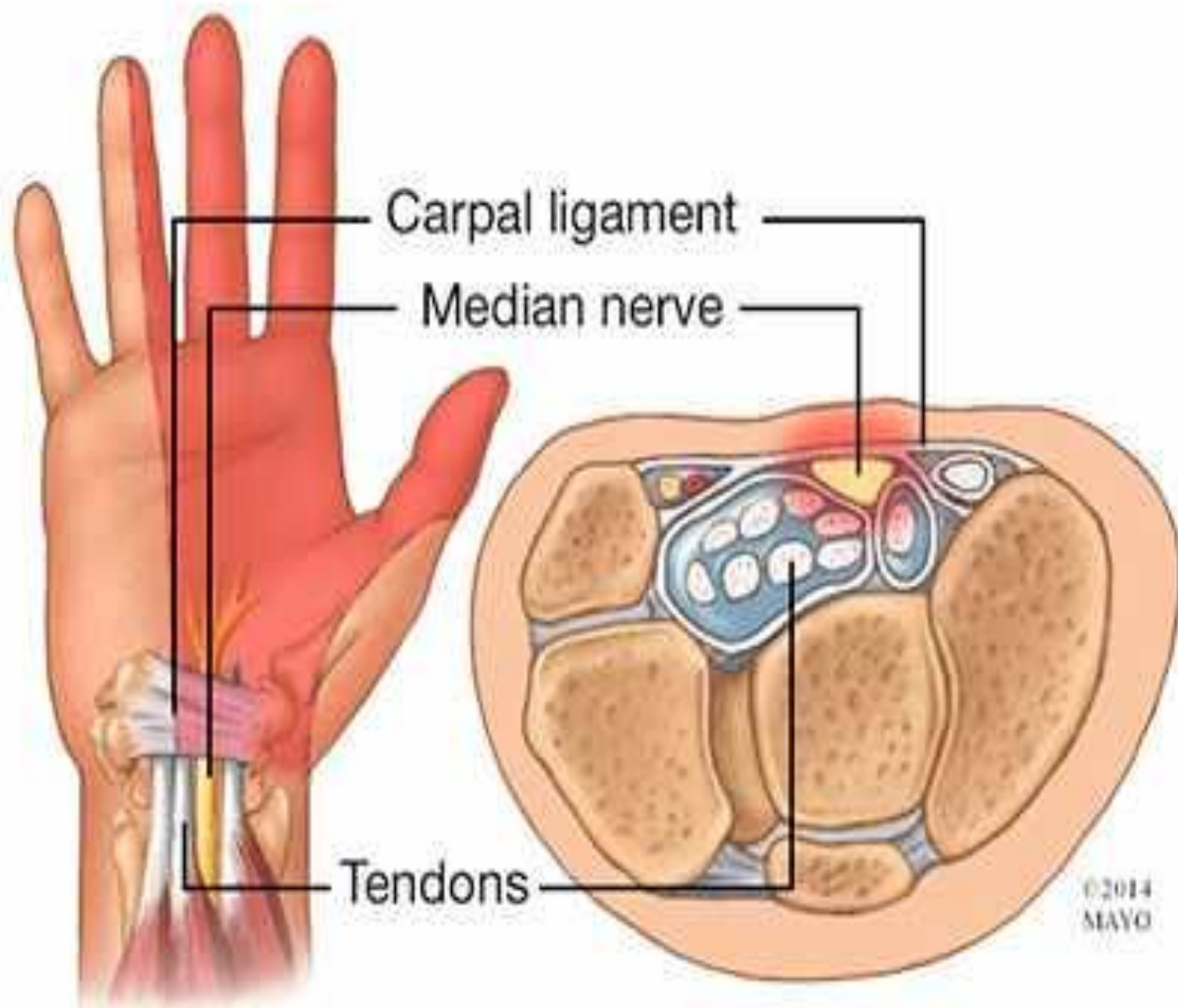


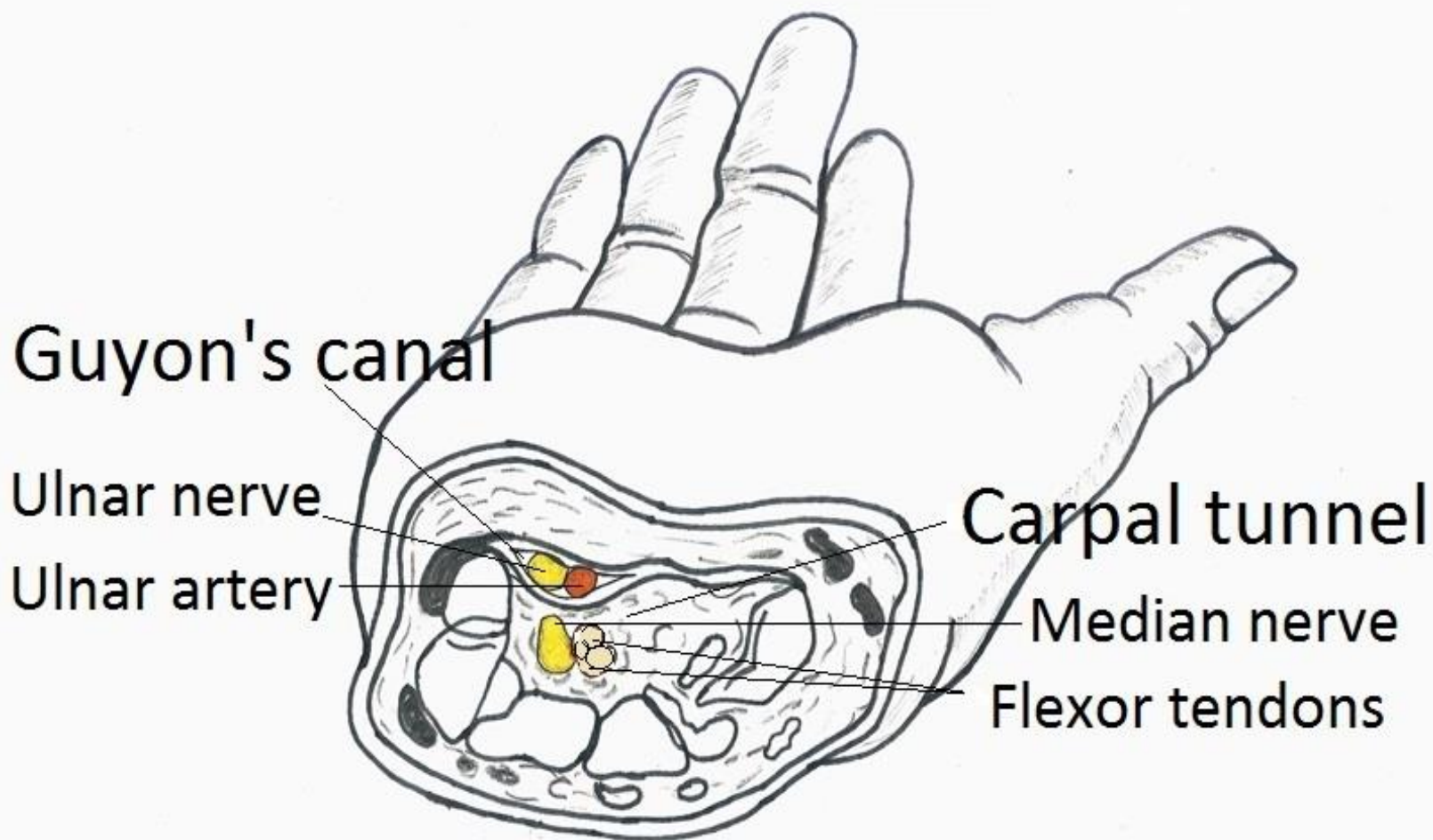
➤ **Superficial** to it-

1. Palmar cutaneous branches of the median nerve
2. Ulnar vessels
3. Ulnar nerve and its branches
4. Tendon of palmaris longus

➤ **Deep** to it-

1. Median nerve
2. 4 tendons of the flexor digitorum superficialis
3. 4 tendons of flexor digitorum profundus
4. Tendon of pollicis longus





On either side, the retinaculum has a strip:

- 1. Lateral deep strip-** it is attached to the medial lip of the groove on the trapezium which is thus converted into a tunnel for the tendon of the flexor carpi radialis.
- 2. Medial superficial strip-** volar carpal ligament- it is attached to the pisiform bone. The ulnar nerve and vessels pass deep to this slip.

Function

- It act as a tie beam to maintain strap across the wrist
- It gives attachment to the thenar or hypothenar muscles
- Its action of bridging across the concavity of the carpal bone and keep the all structure them in position

Palmar aponeurosis



- **This term is often used for the entire deep fascia of the palm.**
- **It is triangular in shape.**
- **Apex-proximal, blends with the flexor retinaculum and is continuous with the tendon of the palmaris longus.**
- **Base- distal, it divides into superficial and deep strata, superficial is attached to dermis. Deep strata divides into 4 slips opposite the heads of the metacarpal of the medial 4 digits.**