



Muscles of The Front of the forearm

By

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Bones of the hand

Carpal bones

The **proximal row** is formed of 4 bones from lateral to medial:

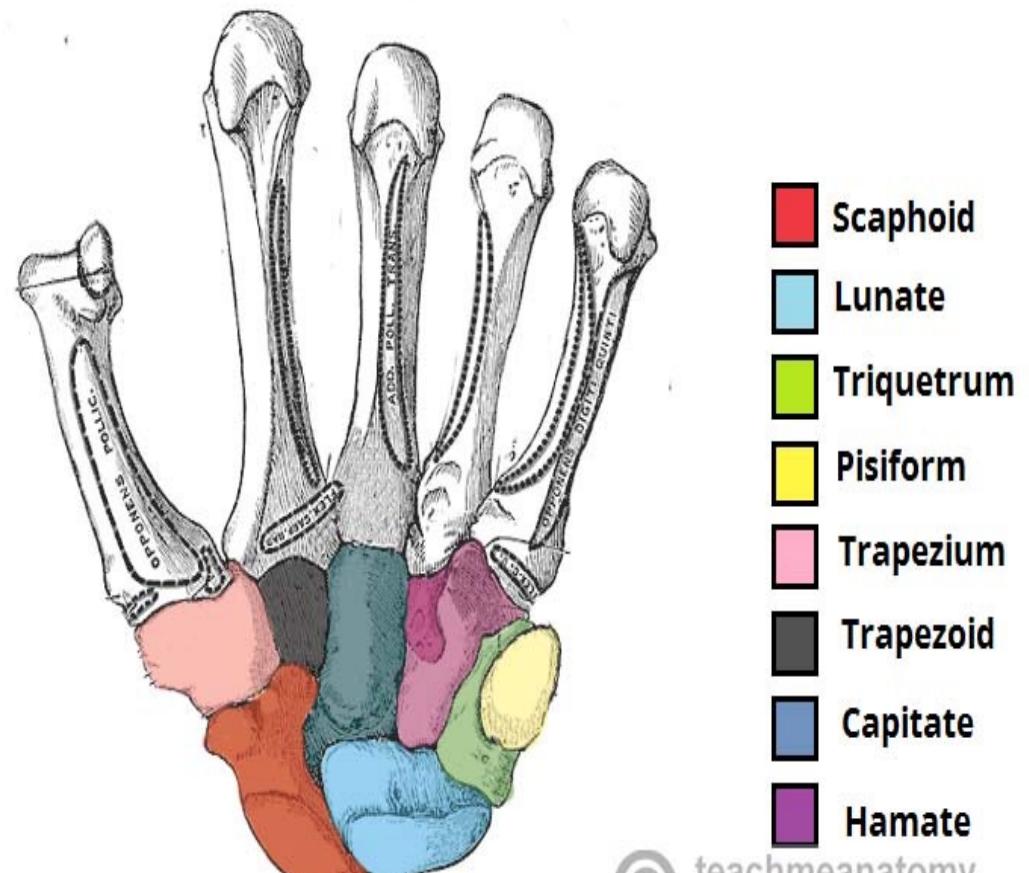
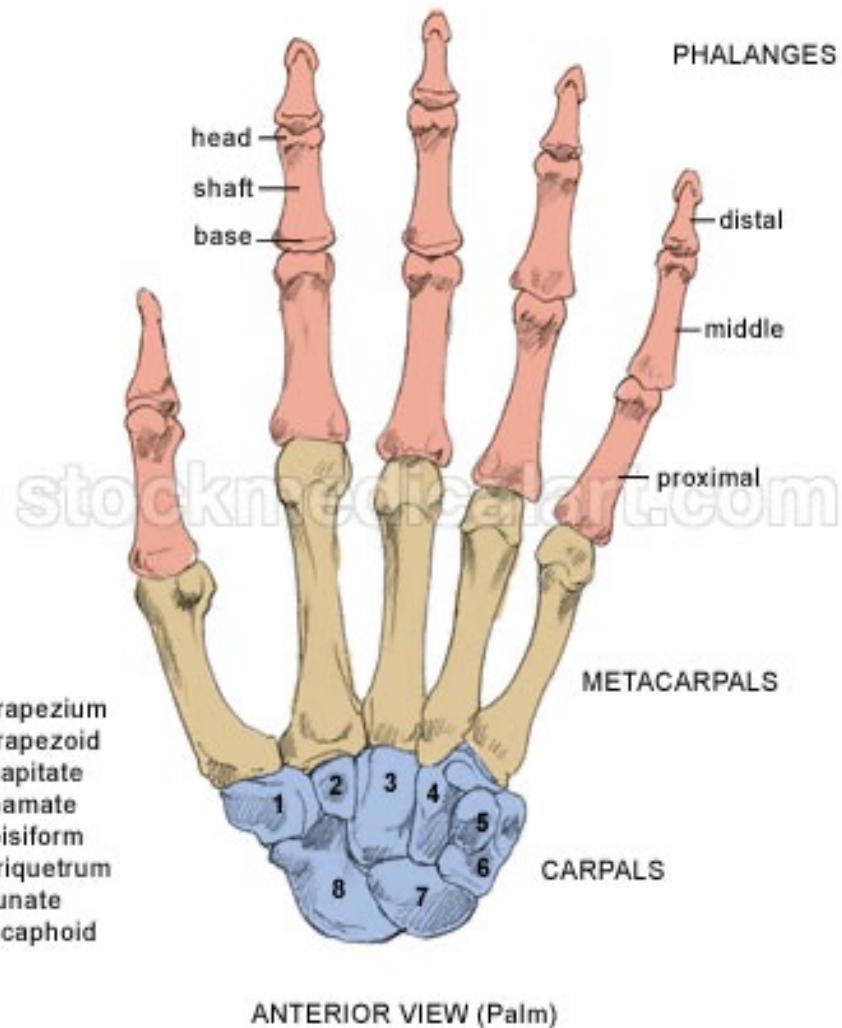
Scaphoid - lunate - triquetrum - **Pisiform.**

The **distal row** is formed of 4 bones from lateral to medial:

Trapezium - trapezoid - capitate - **Hamate**

5 Metacarpal

14 Phalanges



General Rules (Anterior compartment)

1- Pronation means medial rotation of the forearm by movement of radius at radioulnar joint.

SO any muscle produce pronation is inserted into radius

2- Origin

All superficial and intermediate muscles originate from the common flexor origin (**front of the medial epicondyle**). **EXCEPT** (**Pronator teres, flexor digitorium superficialis, flexor carpi ulnaris**) have an additional origin

3-Insertion

- ❖ Carpi means muscle attached to carpal or metacarpal bone
- ❖ Digitorum means insertion is into medial four fingers
- ❖ Pollicis is referred to the thumb

4-Action

The function is mainly flexion / pronation

Radialis : Abduction of the hand

Ulnaris : Adduction of the hand

5-Nerve Supply

All superficial and intermediate muscles are supplied by **Median nerve** and the deep

group are supplied by a branch from median nerve ; ***the Anterior interossus nerve***

EXCEPT (**Flexor carpi ulnaris and medial half of Flexor digitorum Profundus**) are supplied by ***Ulnar nerve***

Muscles of Anterior compartment of the forearm

Superficial

- 1- Pronator teres
- 2-Flexor carpi radialis
- 3-Plmaris longus
- 4- Flexor carpi ulnaris

Intermediate

- 1-Flexor digitorum superficialis

Deep

- 1-Flexor digitorum Profundus
- 2- Flexor pollicis longus
- 3- Pronator Qudratus

Superficial Group

- 1- Pronator teres
- 2-Flexor carpi radialis
- 3-Plmaris longus
- 4- Flexor carpi ulnaris

Pronator teres

Origin: It has 2 heads

Know insertion ,nerve supply ans action

Humeral head:

Common flexor origin.

Ulnar head:

From coronoid process of the ulna.

Insertion

Lateral surface of the shaft of the radius.

Nerve supply:

Median Nerve.

Action:

1. Pronation of the forearm.
2. Assists in flexion of the elbow joint.

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Flexor carpi radialis

Know insertion ,nerve supply ans action

Origin:

Common flexor origin.

Insertion

Bases of the 2nd and 3rd metacarpal bones.

Nerve supply:

Median Nerve.

Action:

1-Flexion of the wrist joint

2- Abduction of the hand



Plmaris longus

Origin:

Common flexor origin.

Know nerve supply ans action

Insertion

Palmar aponeurosis of the hand.

Nerve supply:

Median Nerve.

Action:

- 1-Flexion of the wrist joint.
- 2-A tensor of the palmar fascia.



Palmar aponeurosis



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Intermediate Group

Flexor digitorum superficialis

Flexor digitorum superficialis

Origin: It has 2 heads

Know insertion ,nerve supply ans action

Humero-ulnar head: From common flexor origin and the coronoid process of the ulna . [\(origin of pronator teres\)](#)

Radial head: Anterior border of the radius

Insertion

Has 4 tendons which is inserted into middle phalanx of the medial 4 fingers .

Nerve supply:

Median Nerve.

Action:

1-Flexion of the wrist.

2-Flexion of the metacarpophalangeal and proximal interphalangeal joints of the medial 4 fingers.



Flexor carpi ulnaris

Origin: It has 2 heads

Know insertion ,nerve supply ans action

The common flexor origin. +

Ulnar head: from the olecranon process of the ulna

Insertion

Pisiform bone and the base of the 5th metacarpal bone.

Nerve supply:

Ulnar Nerve.

Action:

1-Flexion of the wrist joint.

2-Adduction of the hand .

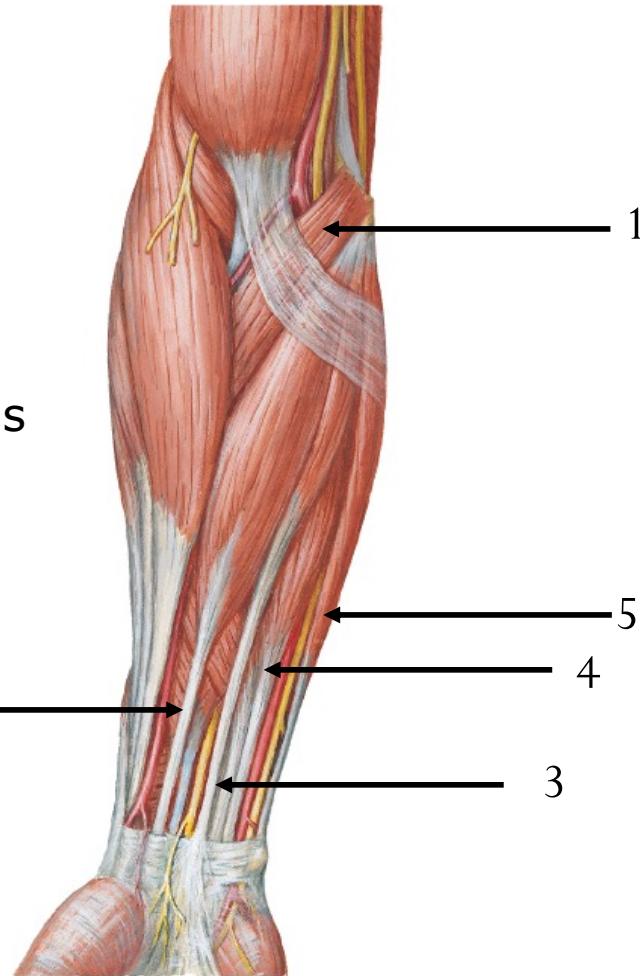


Lateral

- 1- Pronator teres
- 2-Flexor carpi radialis
- 3-Plmaris longus
- 4-Flexor digitorum superficialis
- 5- Flexor carpi ulnaris



Medial



Deep Group

- 1- Felxor digitorum proufundus
- 2-Flexor pollicis longus
- 3-Pronator Qudratus

Flexor digitorum Profundus

(ORIGIN is READ ONLY)

Origin:

Anterior surfaces of the of the ulna

Insertion

By 4 tendons which inserted into the bases of the distal phalanges of the medial 4 fingers

Nerve supply:

- Its medial part by the ulnar nerve.
- Its lateral part by the anterior interosseous branch (of the median nerve).

Action:

1. Flexion of the distal interphalangeal joints of the medial 4 fingers.
2. Assists in flexion of proximal interphalangeal joints of the medial 4 fingers and the wrist

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Flexor pollicis longus

(ORIGIN is READ ONLY)

Origin:

Anterior surface of the radius.

Insertion

Base of the terminal phalanx of the thumb

Nerve supply:

Anterior interosseous branch of the median nerve.

Action:

1. Flexion of the metacarpophalangeal and interphalangeal joints of the thumb.
2. Assists in flexion of the wrist joint



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Terminal phalanx of the thumb

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Pronator Quadratus

Origin:

Anterior surface of the ulna.

Insertion

Anterior Surface of the Radius.

Nerve supply:

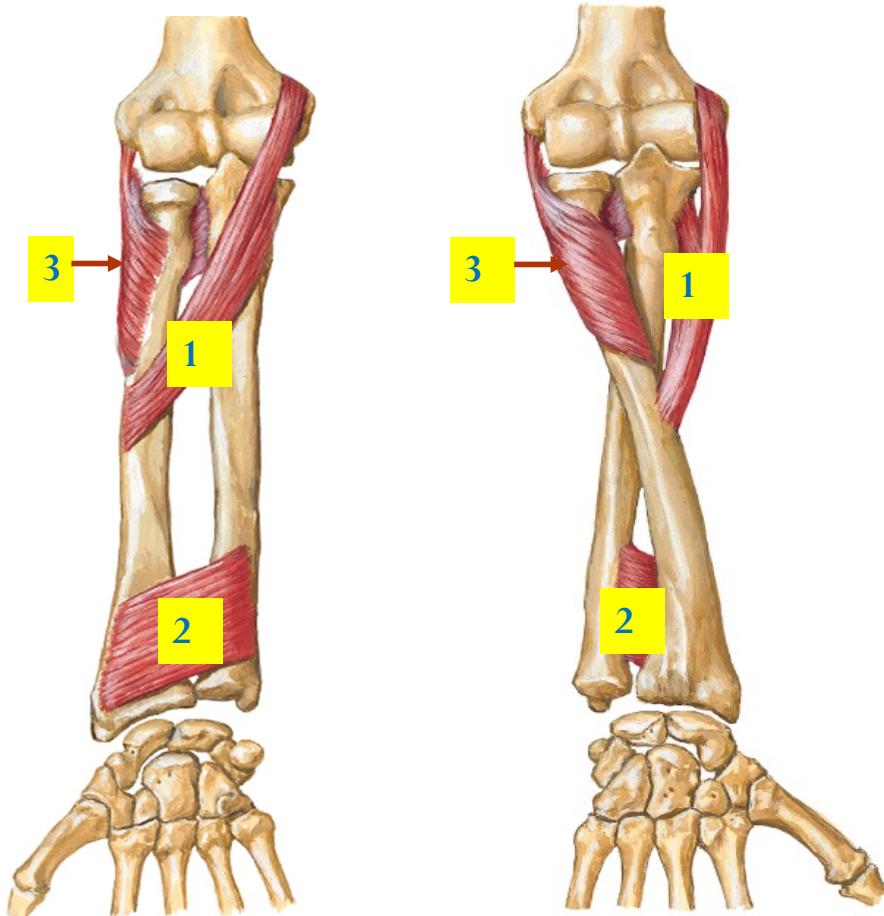
Anterior interosseous branch (of the median nerve).

Action:

It is the main pronator of the forearm.



- 1-Pronator teres
- 2- Pronator quadratus
- 3- Supinator



Flexor Retinaculum

It is a thickened strong fibrous crosses in front of the carpus and converts its anterior concavity into the carpal tunnel



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Flexor Retinaculum Attachment

Lateral		Medial
Scaphoid		Pisiform
Trapezium		Os of Hamate

Structure pass superficial to Flexor Retinaculum

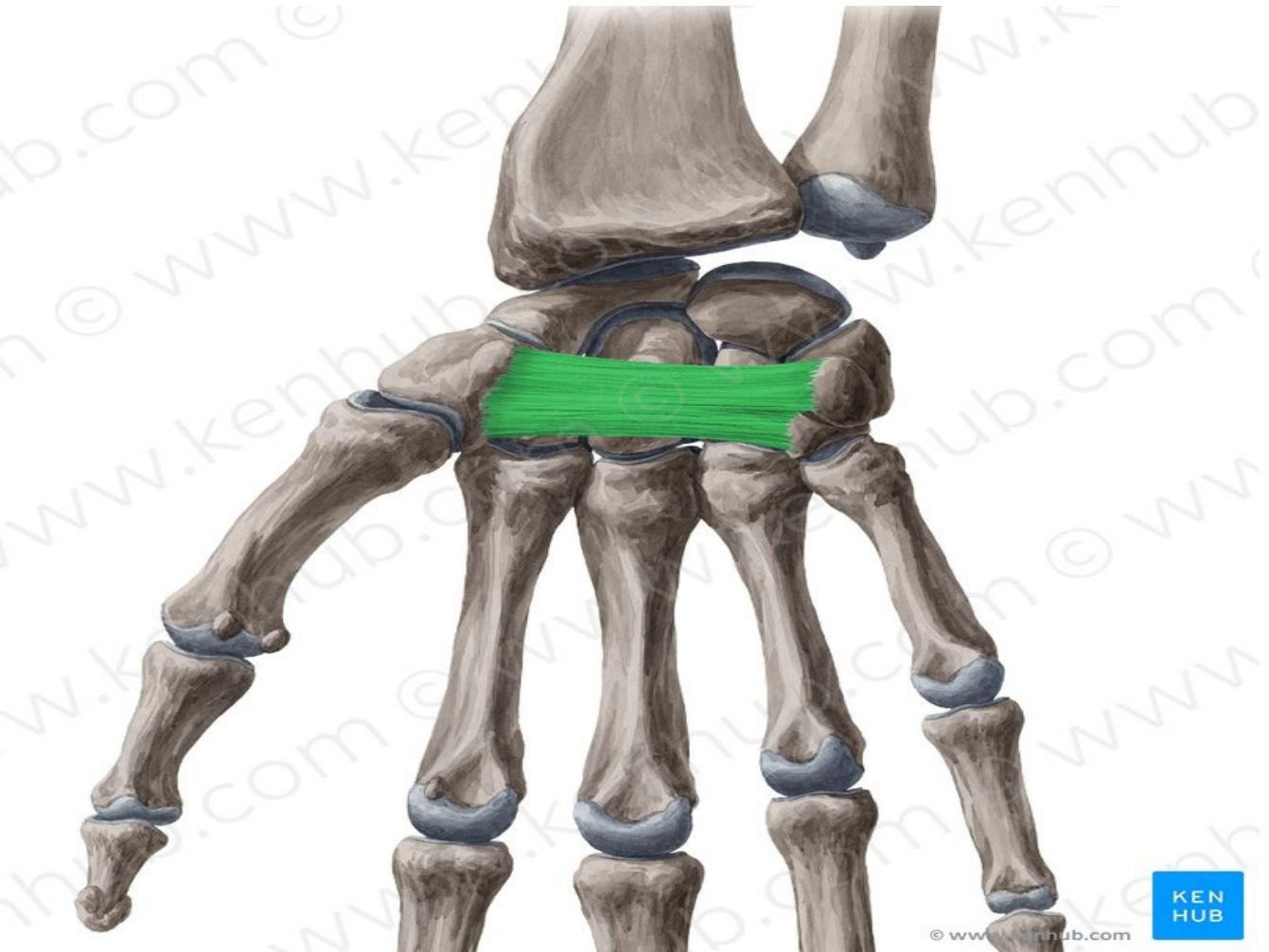
- 1- Ulnar artery
- 2- Ulnar nerve
- 3- Palmar cutaneus branch of Ulnar nerve
- 4- Palmar cutaneus branch of median nerve
- 5- Palmaris longus

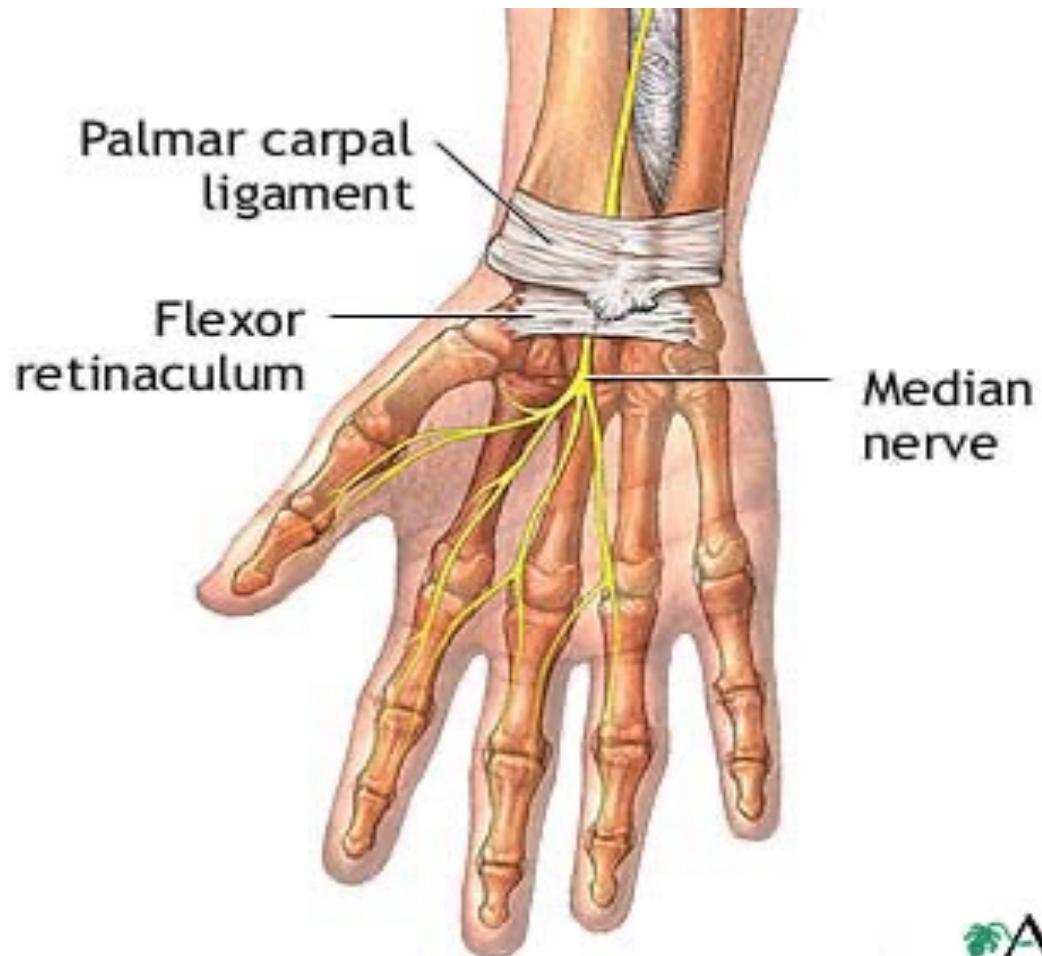
2U 3P

Structures pass deep to the retinaculum

(through the carpal tunnel)

1. Tendons of flexor digitorum superficialis.
2. Tendons of flexor digitorum profundus.
3. Common synovial sheath for the tendons of flexor digitorum superficialis and profundus.
4. Tendon of flexor pollicis longus and its synovial sheath.
5. Median nerve.
6. Tendon of flexor carpi radialis in **a special compartment**





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Carpal Tunnel

Boundaries

Carpals bone concavity anteriorly

Flexor retinaculum covers it

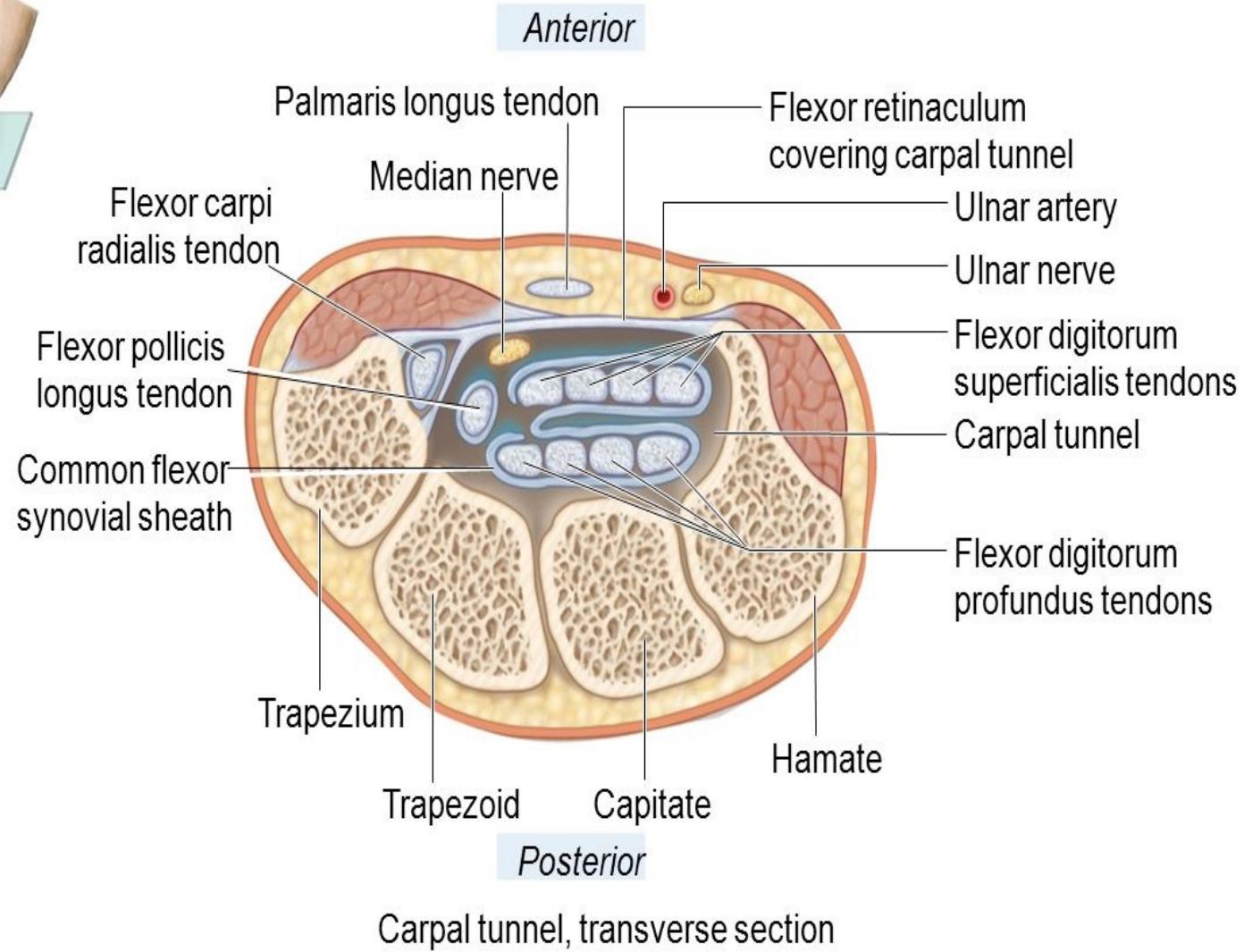
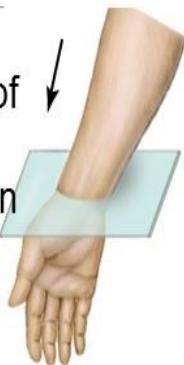
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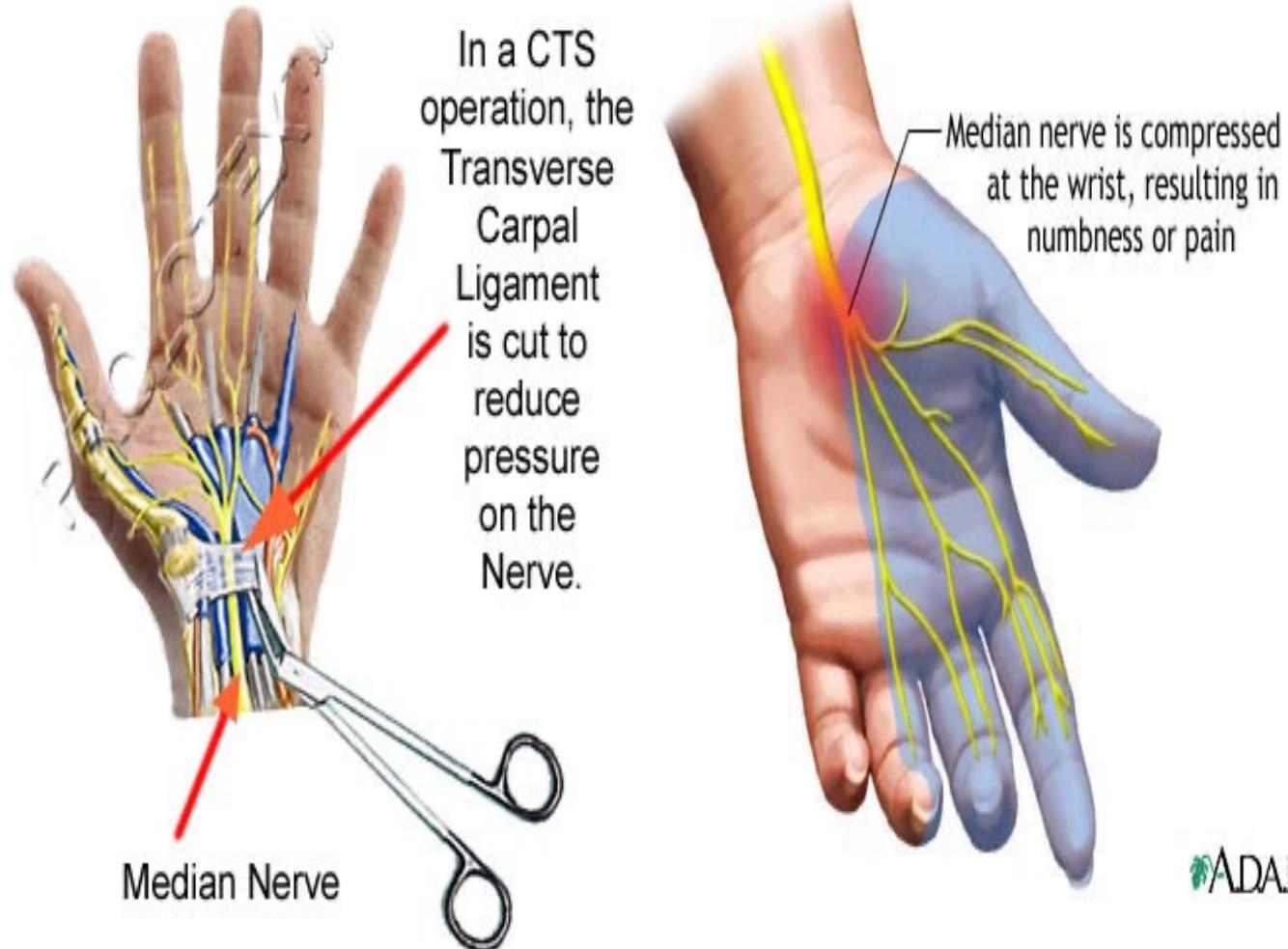
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6. Tendon of flexor carpi radialis in **a special compartment**

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View of
cross
section





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Thank,
you