

# RADIOULNAR JOINTS & HAND



BY

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# A- SUPERIOR RADIOULNAR JOINT

**Type:-** Synovial

**Variety:-** Pivot

**Articular Surface:-**

- Articular circumference of head of radius
- Radial notch of ulna & annular ligament

**Capsule:-**

covers the annular ligament

continuous above with capsule of elbow joint

**Synovial membrane:-**continuous with that of elbow joint

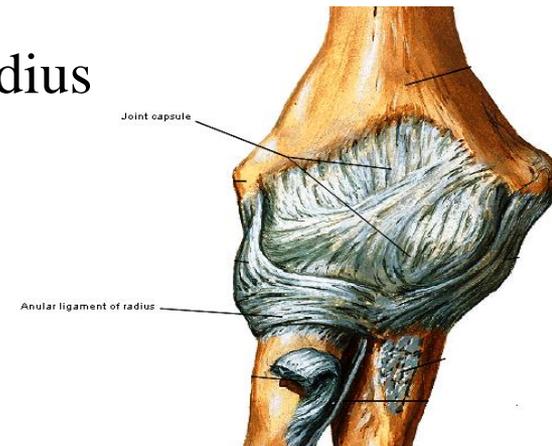
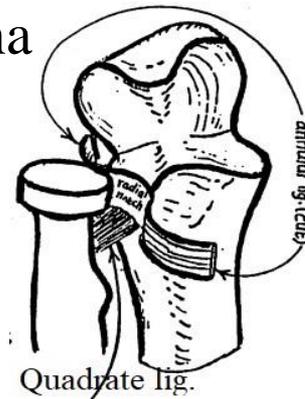
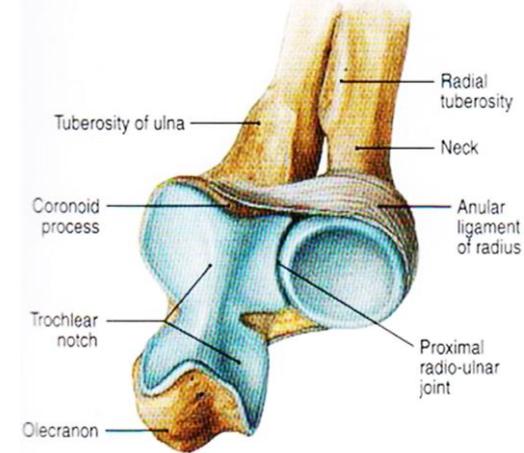
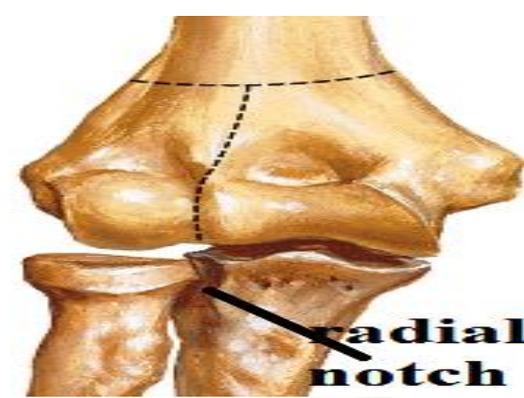
**Ligaments:-**

**Annular ligament:-**fibrous band surrounds the head of radius

Attached to margins of radial notch of ulna

**Quadrata ligament:-**

extends from lower border of radial notch to neck of radius closing the joint cavity inferiorly



# B- INFERIOR RADIOULNAR JOINT

**Type:-** Synovial

**Variety:-** Pivot

**Articular Surface:-**

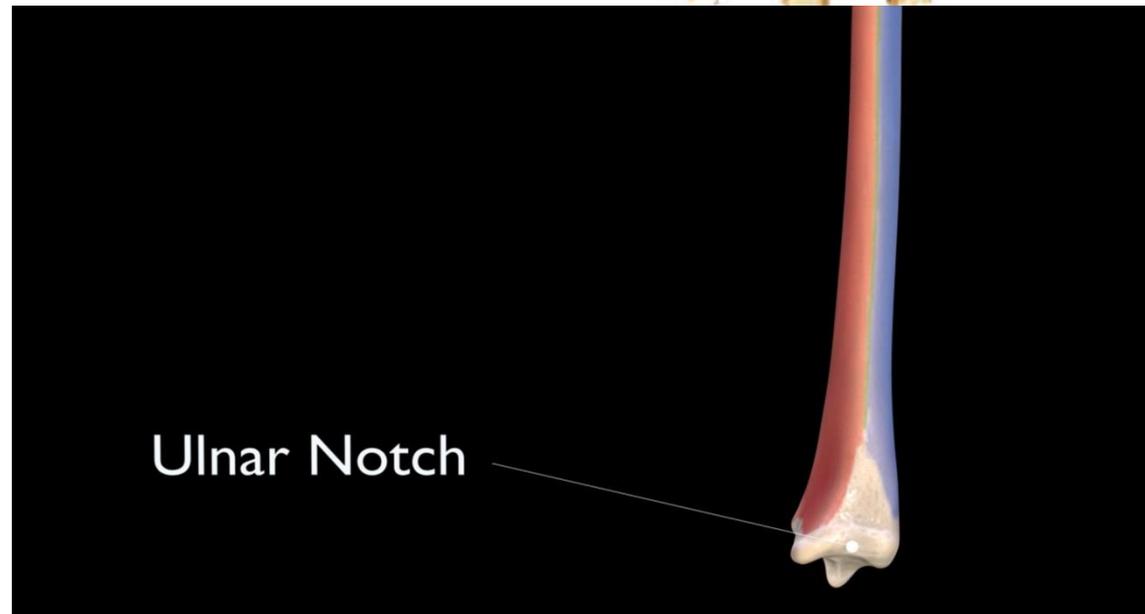
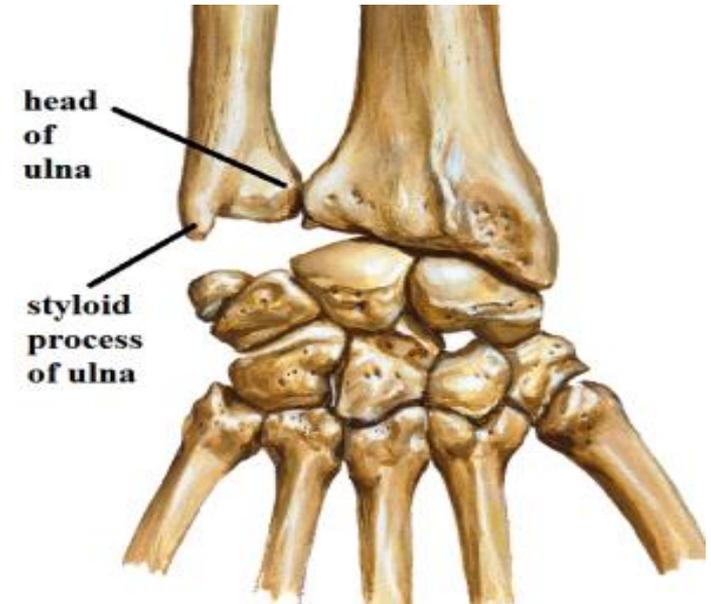
- Head of ulna
- ulnar notch of radius

**Capsule:-**

attach to margins of the articular surface

**Synovial membrane:-**

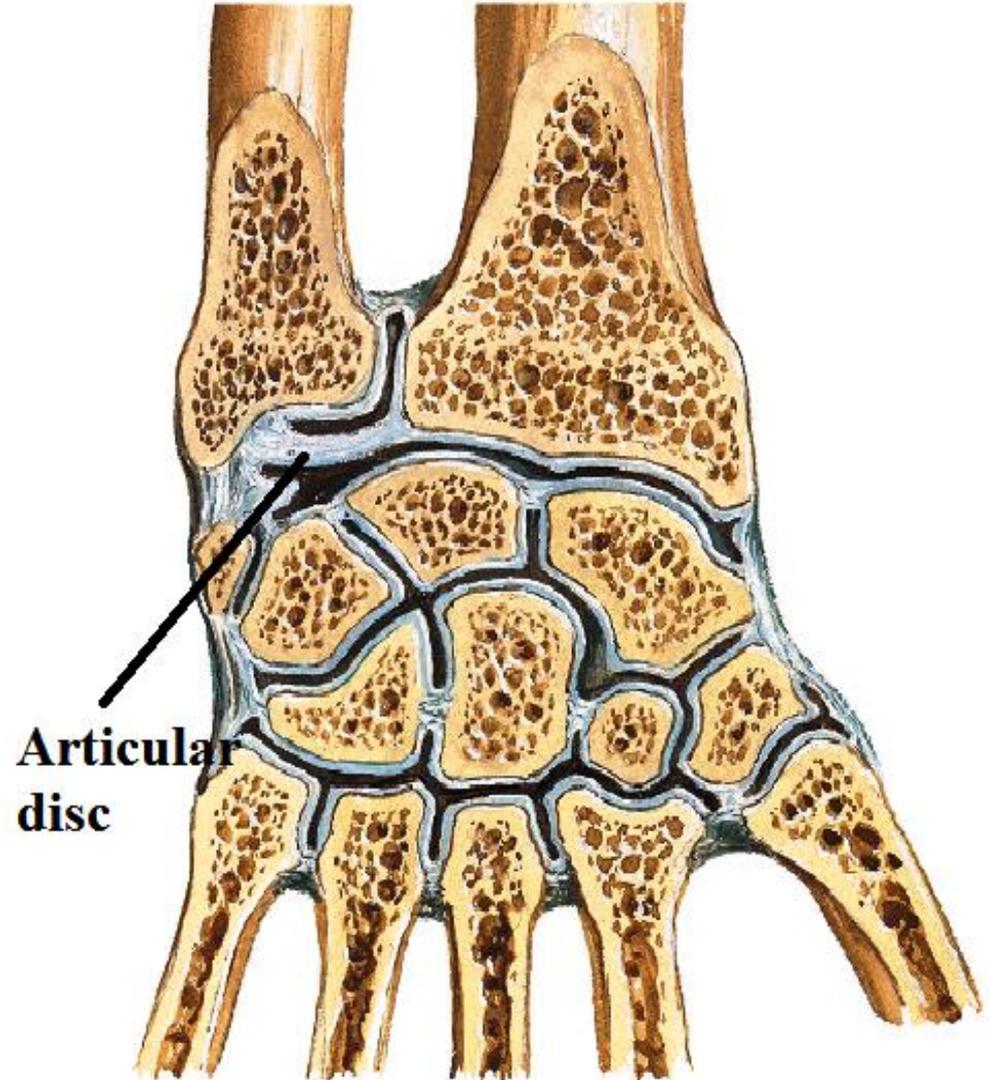
line the capsule



# B- INFERIOR RADIOULNAR JOINT

## Articular disc

- triangular
- fibrocartilagenous disc
- Extends from styloid process of ulna to inferior margin of ulnar notch of radius
- separates inferior radioulnar joint from wrist joint



# RADIOULNAR JOINT

## Movements of radioulnar joints

**pronation:** (radius cross the ulna to direct palm backwards)

Initiated by : brachioradialis

Completed by:

pronator teres

Pronator quadratus

**supination:** (radius parallel to ulna to direct palm forwards)

Initiated by: brachioradialis

Completed by:

Supinator: when forearm is extended

Biceps: when forearm is flexed



# C- MIDDLE RADIOULNAR JOINT

**Type:-** Fibrous joint

2 parts

**Oblique cord:-**

Fibrous band extends from ulnar tuberosity to shaft of radius below radial tuberosity

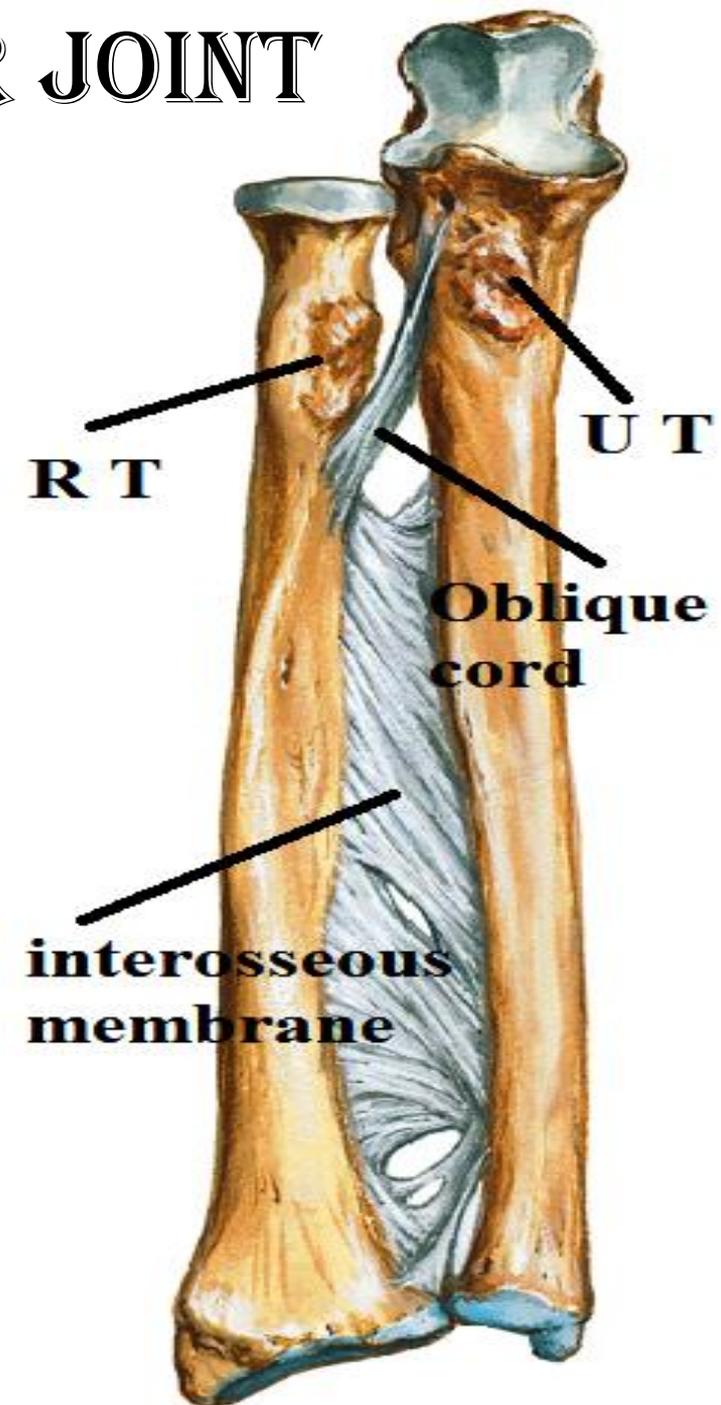
**Interosseous membrane:-**

-Fibrous membrane extends between interosseous border of radius & ulna

-Its fibers directed downwards and medially from radius to ulna

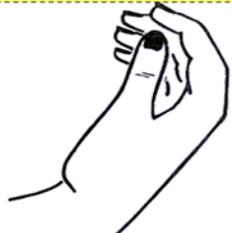
**-Function**

- Binds radius to ulna
- shock absorption
- Gives origin to deep muscles of forearm

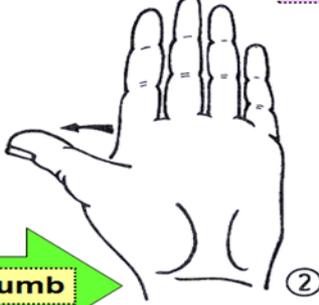


# MUSCLES OF THE HAND

Position of rest



Flexion of thumb



Extension of thumb



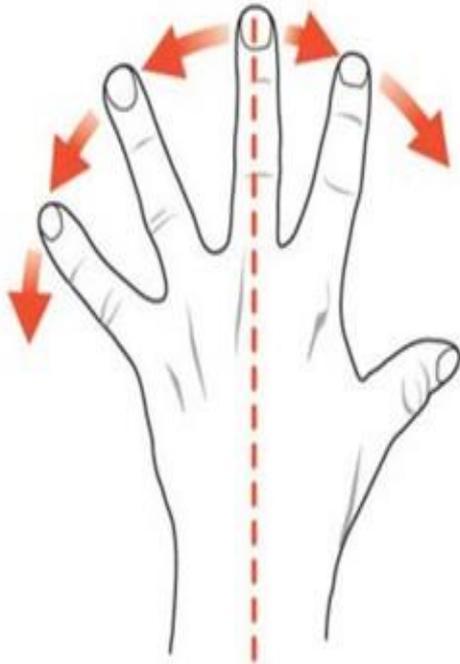
Abduction



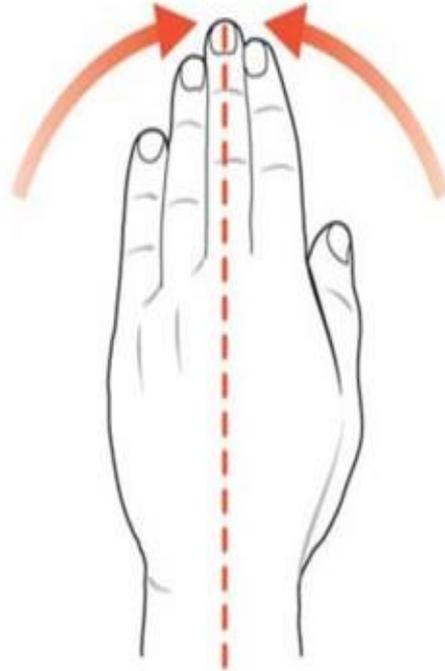
Adduction



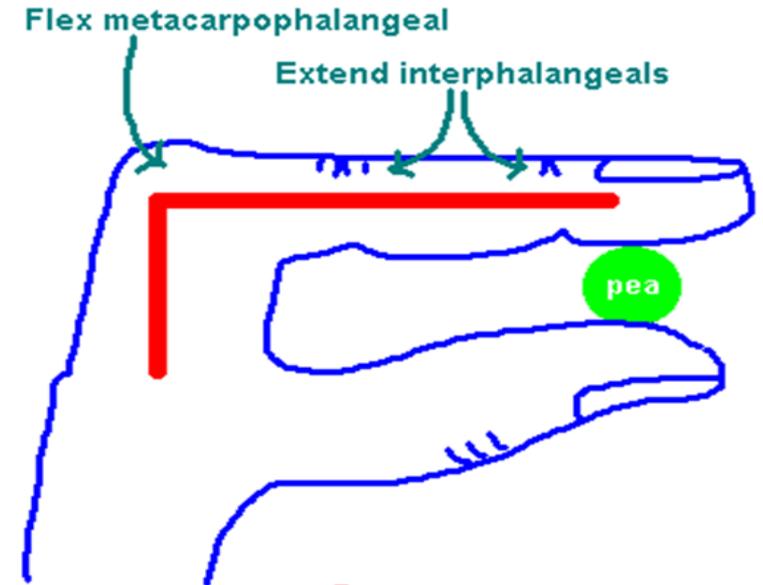
opposition



Abduction



Adduction



Lumbrical

# MUSCLES OF THE HAND

## Short muscles of thumb

1-Abductor pollicis brevis :-

abduction of thumb

2-Flexor Pollicis brevis:-

flexion of thumb

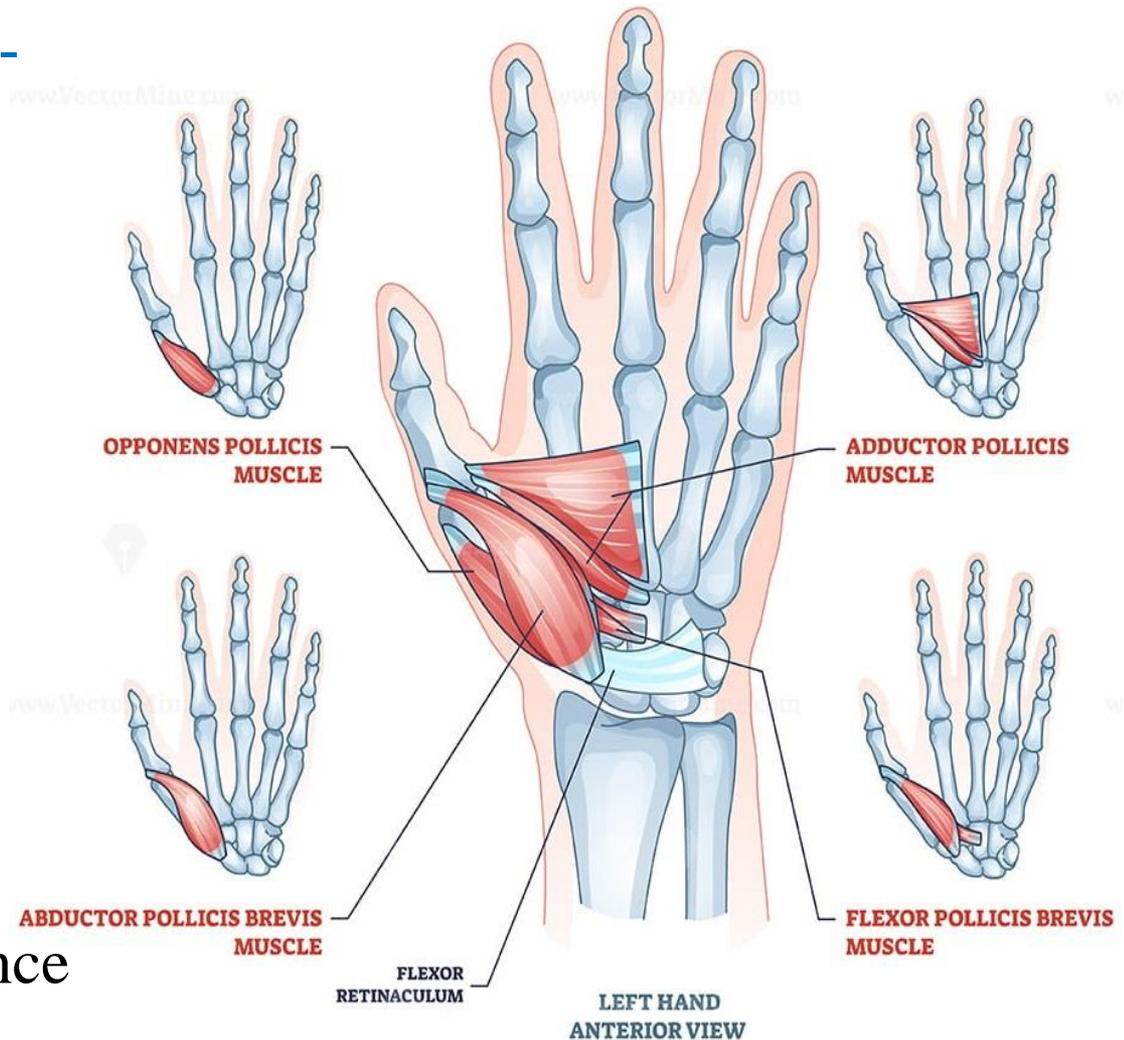
3-Opponens pollicis:-

opposition of thumb by flexion & medial rotation of 1st metacarpal bone

4-Adductor pollicis:-

adduction of thumb

N.B.:- 1,2,3= thenar eminence



# MUSCLES OF THE HAND

## Short muscles of little finger

1-Abductor digiti minimi :-

abduction of little finger

2-Flexor digiti minimi:-

flexion of little finger

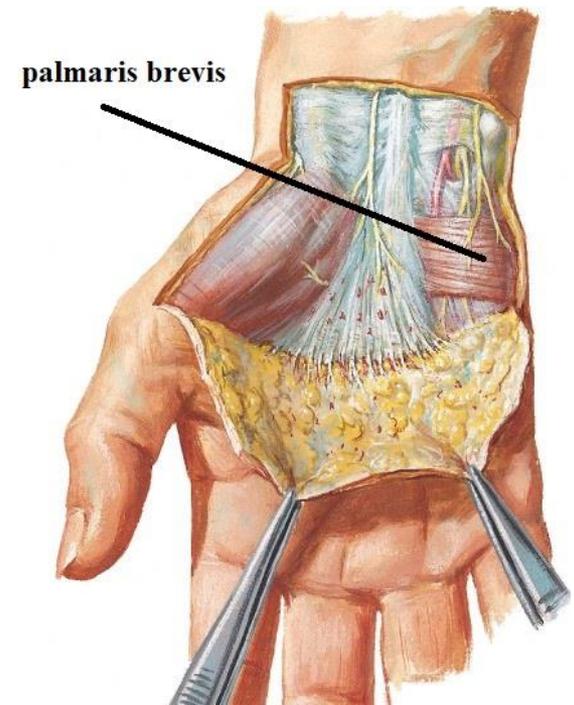
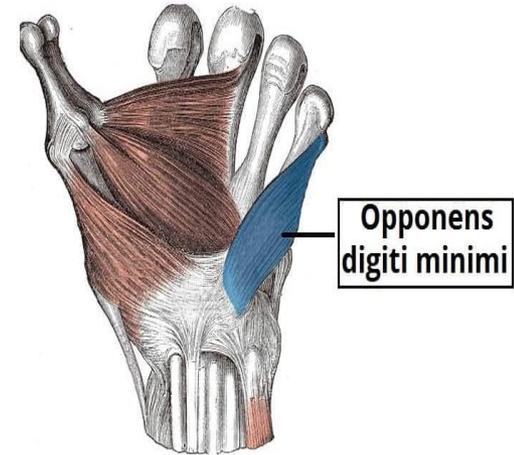
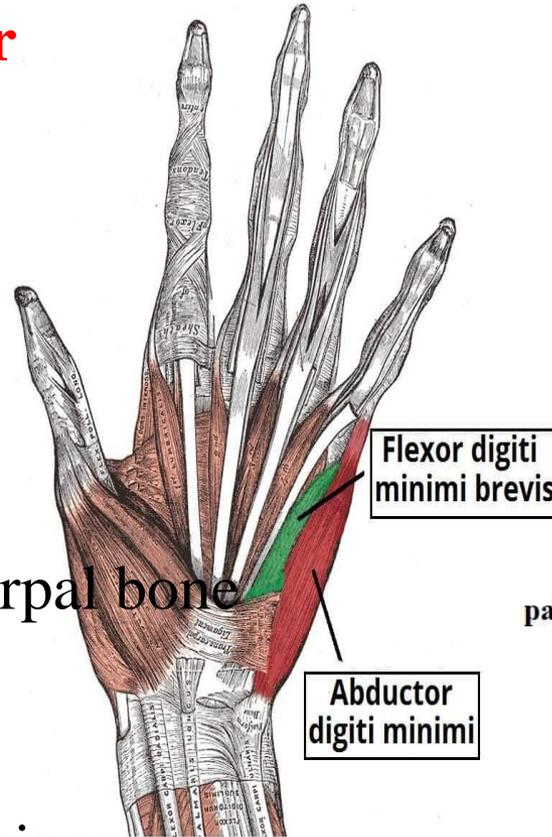
3-Opponens digiti minimi:-

lateral rotation of 5<sup>th</sup> metacarpal bone

4-palmaris brevis:-

to corrugate the skin at the base of the hypothenar eminence and So improve the grip of the palm in holding a rounded object

1,2,3= hypothenar eminence

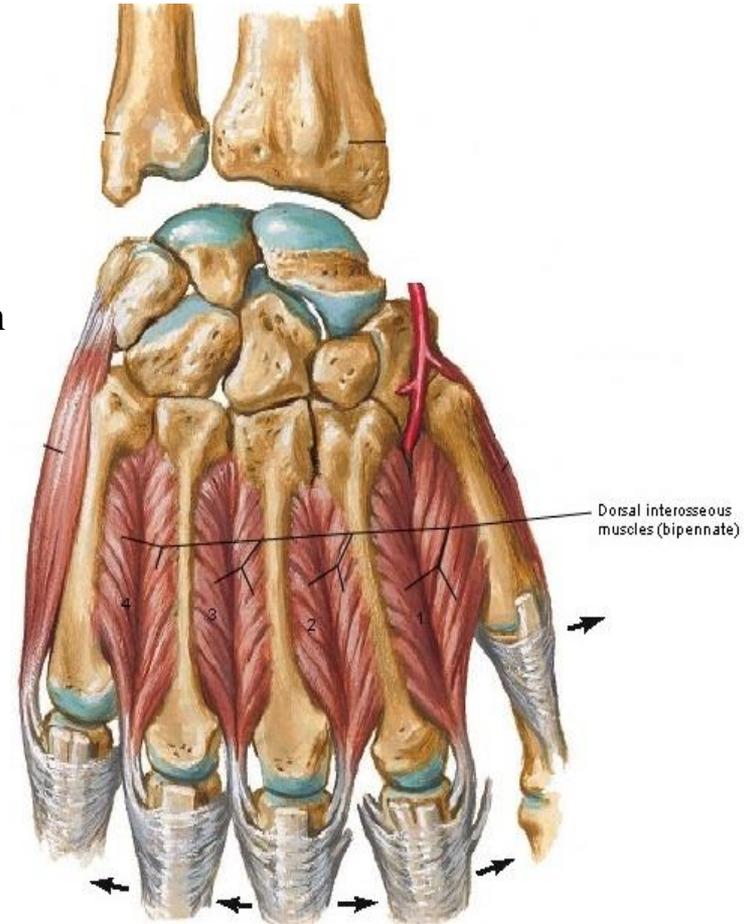


# MUSCLES OF THE HAND

## The intermediate group

### Dorsal interossei:-

- bipennate
- 4 muscles for all fingers except 1<sup>st</sup> & 5<sup>th</sup>
- abduct the middle 3 fingers  
(away from axis of middle finger) DAB

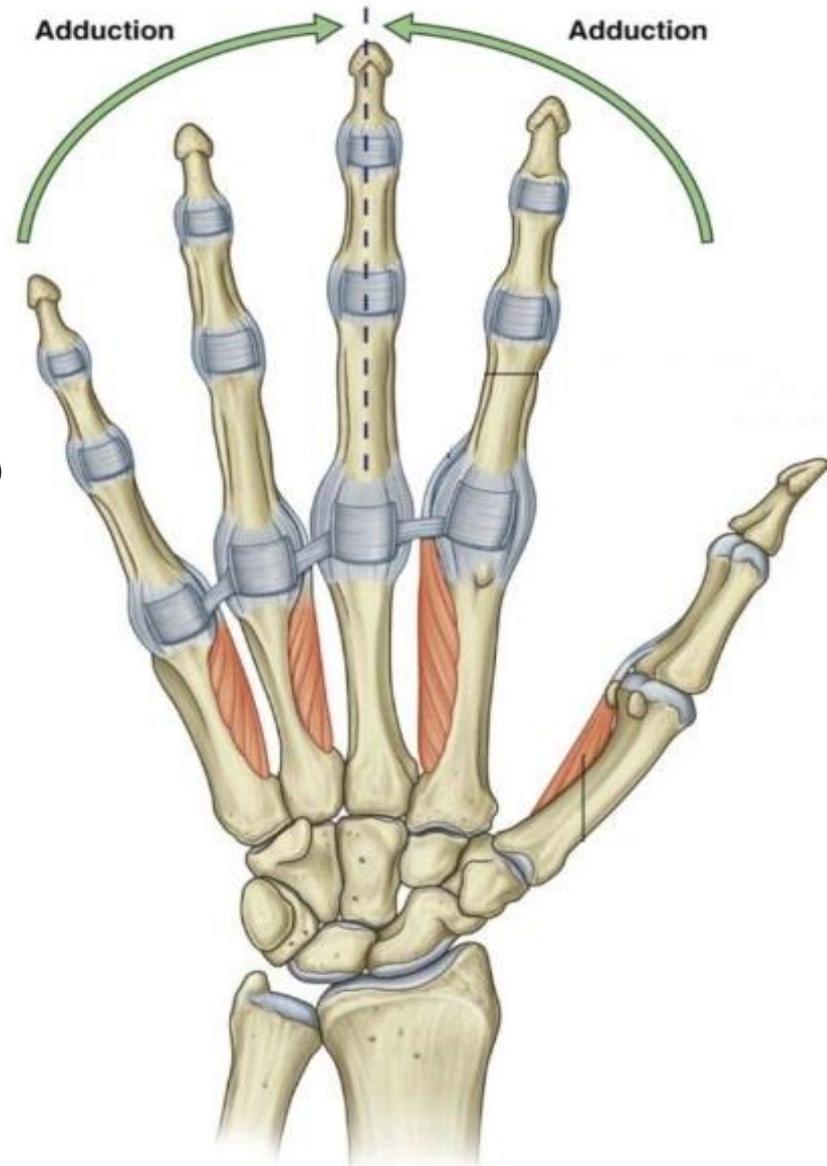


# MUSCLES OF THE HAND

## The intermediate group

### Palmar interossei

- unipennate
- 4 muscles for all fingers except 3<sup>rd</sup>
- adduct the corresponding finger (towards axis of middle finger) PAD

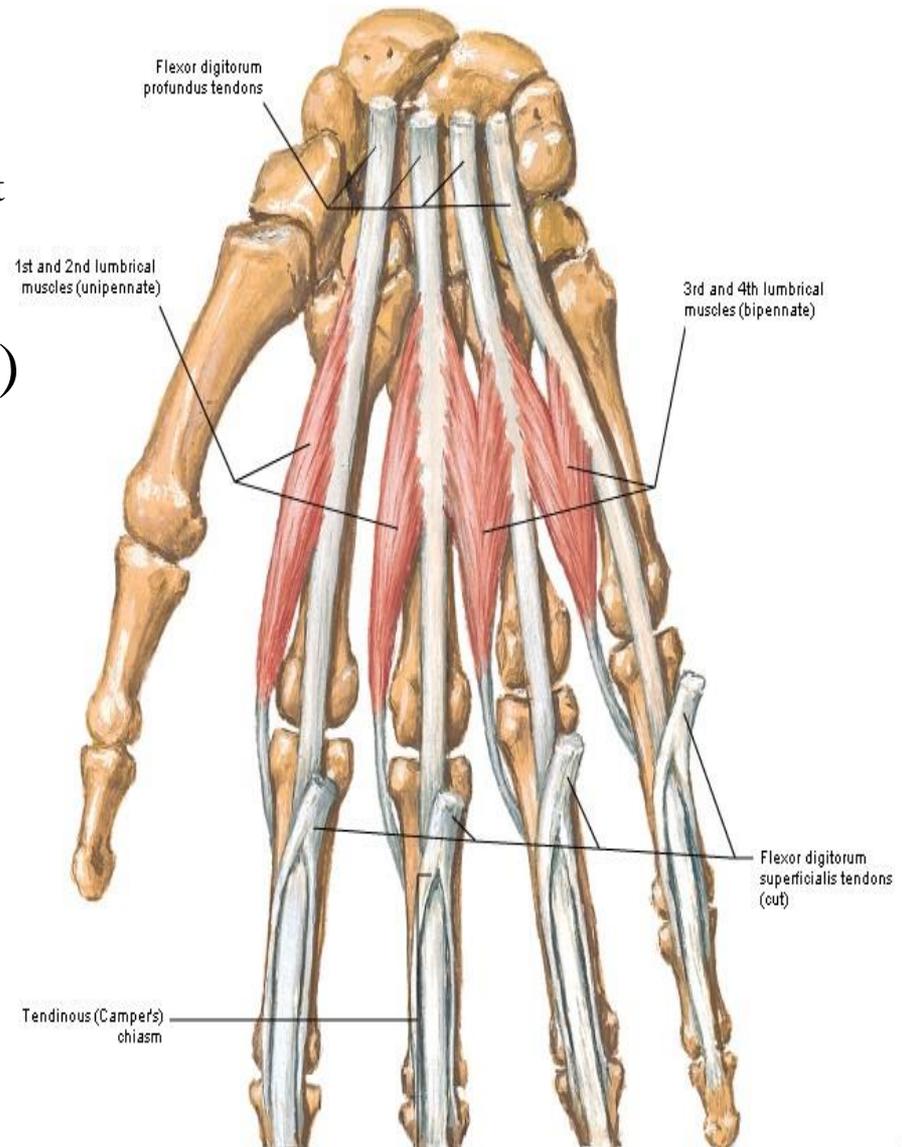


# MUSCLES OF THE HAND

## The intermediate group

### Lumbrical muscles

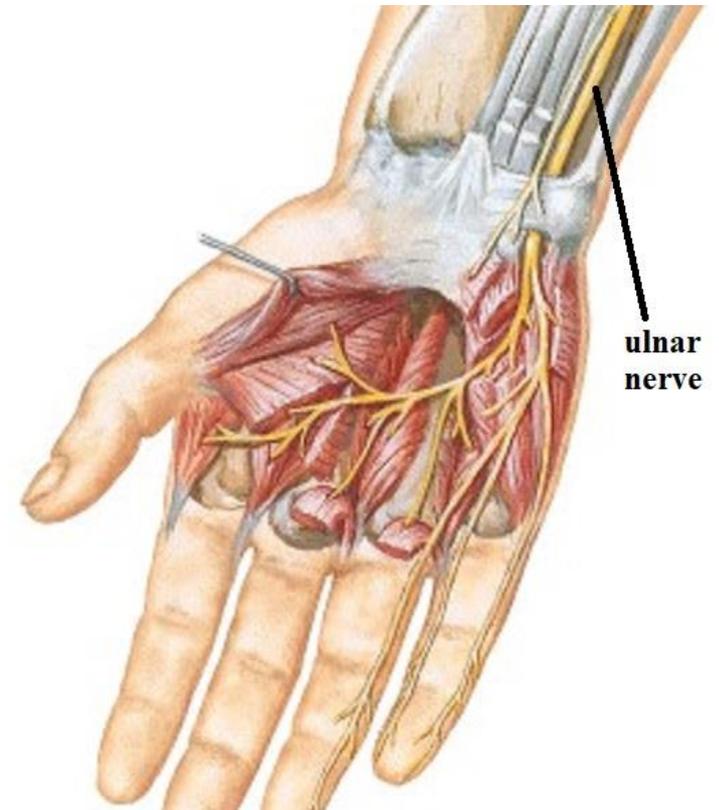
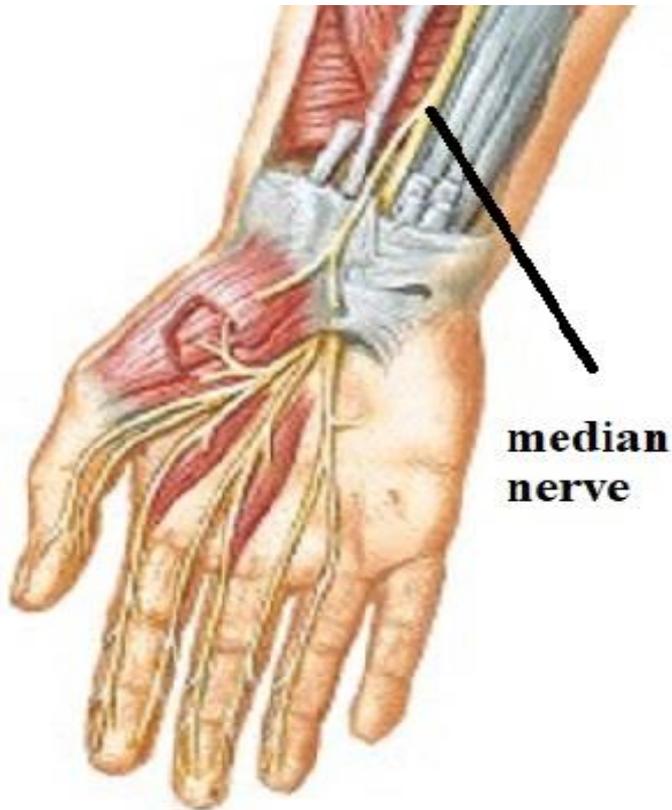
- 4 muscles for all fingers except 1<sup>st</sup>
- put the hand in writing position (flexion of M/P & extension of I/P)



# MUSCLES OF THE HAND

## Nerve supply of muscles of the hand:-

All muscles of the hand are supplied by the **ulnar nerve** except muscles of the thenar eminence and 1<sup>st</sup> & 2<sup>nd</sup> lumbricals which are supplied by **median nerve**

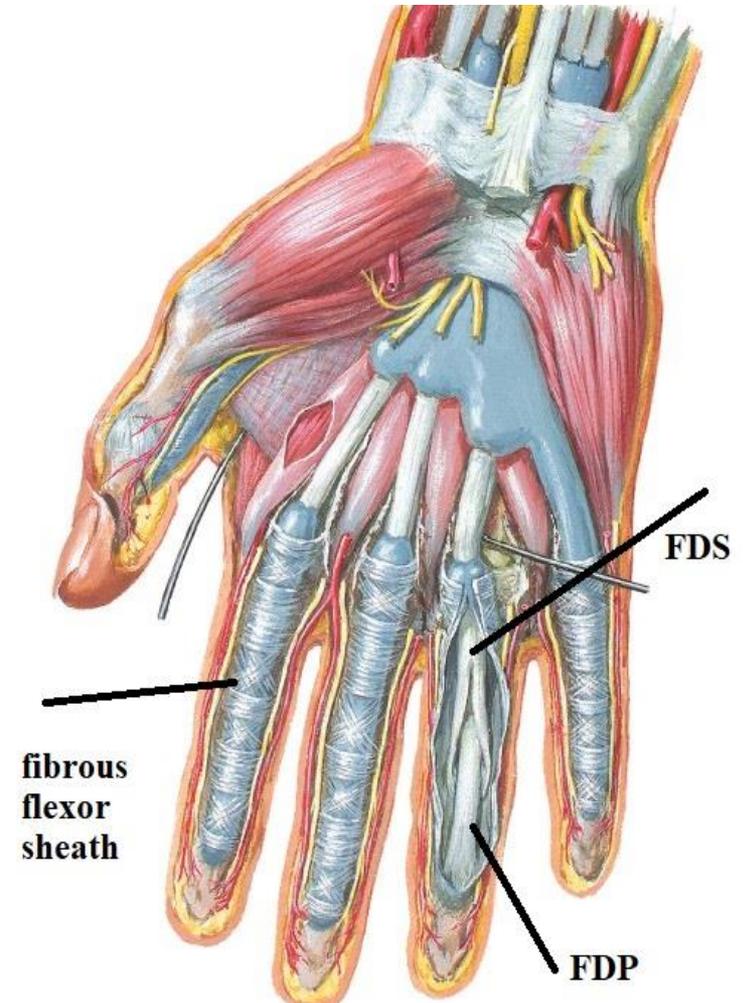


# FASCIA OF THE HAND

## Fibrous flexor sheath:

**Def:** thick deep fascia in front phalanges of medial 4 fingers

**contents:** 2 tendons FDS & FDP.



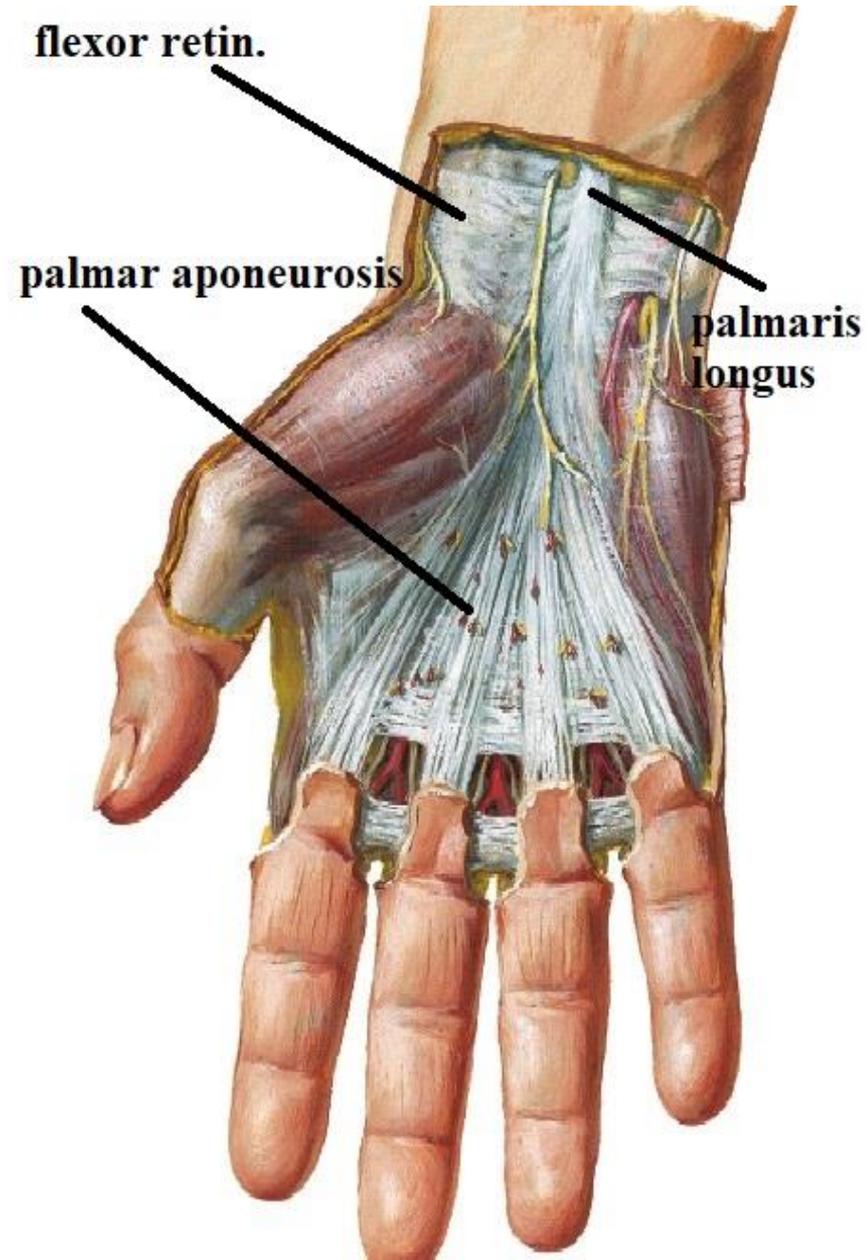
# FASCIA OF THE HAND

## PALMAR APONEUROSIS

**Def:** thick deep fascia in front of middle part of hand.

**shape & attachment:** triangle with  
**apex:** attach to flexor retinaculum & palmaris longus

**base:** give 4 slips to medial 4 fingers  
each attach to skin  
& fibrous flexor sheath  
& proximal phalanx



# FASCIA OF THE HAND

## PALMAR APONEUROSIS

extensions:

lateral palmar septum

attach to 1st metacarpal bone

medial palmar septum

attach to 5th metacarpal bone

intermediate palmar septum

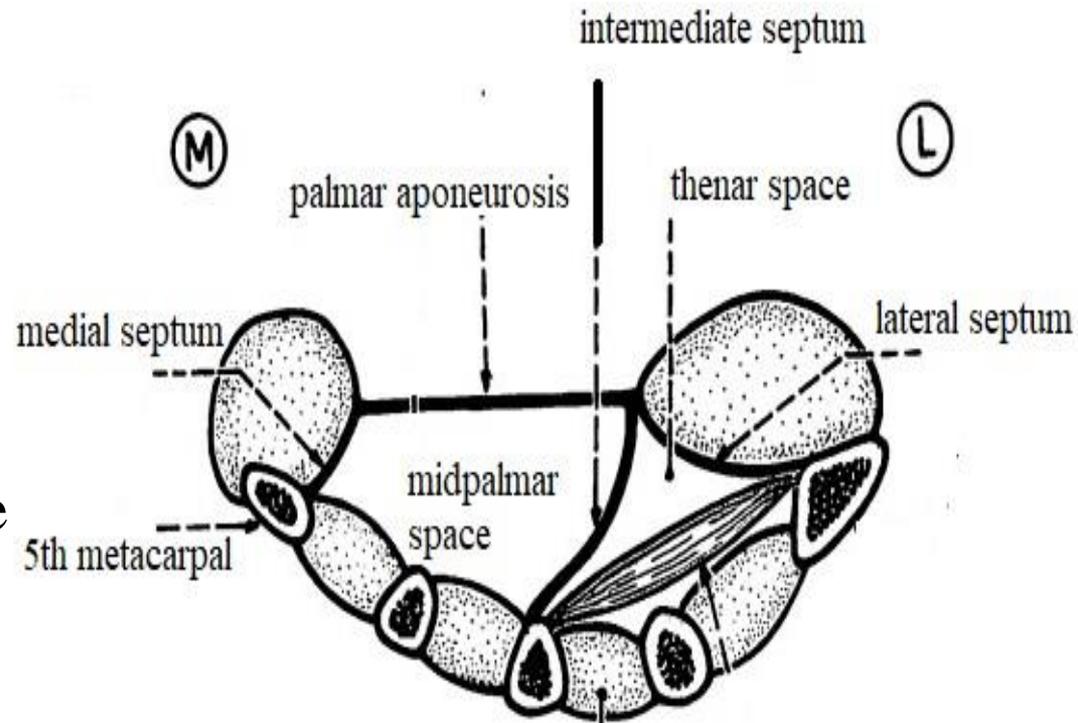
attach to 3rd metacarpal bone

N.B: the medial & lateral septa divide hand into: 3 compartments  
lateral: thenar eminence.

medial: hypothenar eminence

intermediate compartment that is divided by intermediate palmar septum  
Into 1-thenar space: lateral to intermediate septum

2-midpalmar space: medial to intermediate septum



# FASCIAL SPACES OF THE HAND

## Thenar space

### Contents

- 1-Tendon of FPL TO thumb.
- 2- Tendons of FDS & FDP TO index
- 3-digital nerves TO thumb & index

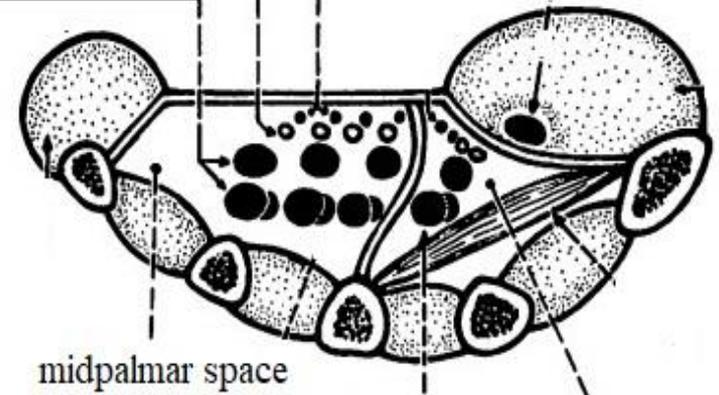
## Midpalmar space:

### contents

- 1- Tendons of FDS & FDP TO 3<sup>rd</sup> , 4<sup>th</sup> , 5<sup>th</sup> fingers
- 2-digital nerves & vessels TO 3<sup>rd</sup> , 4<sup>th</sup> , 5<sup>th</sup> fingers
- 3-superficial palmar arch
- 4-deep palmar arch & deep br. of ulnar nerve

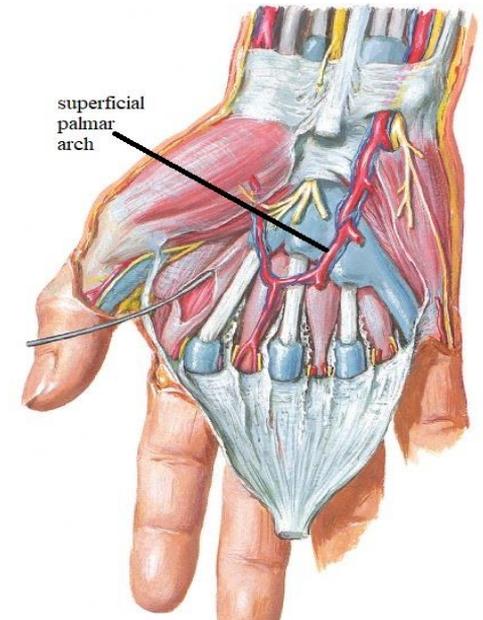
flexor tendons  
to 3 , 4 , 5  
fingers

palmar digital Ns & Vs



flexor tendons  
to 1st , 2nd  
fingers

thenar space



superficial  
palmar  
arch

THANQ