



# The Hand

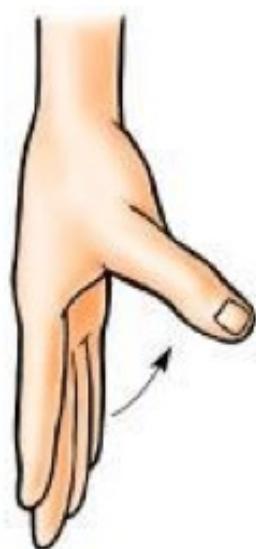
By

**Dr.Ahmed Salman**  
**Associate Professor of Anatomy**

# Muscles of The Hand



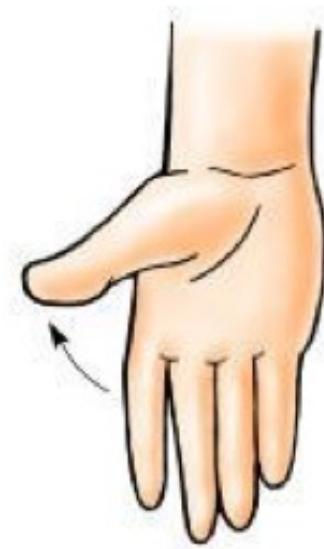
## Thumb and fingers Movements .



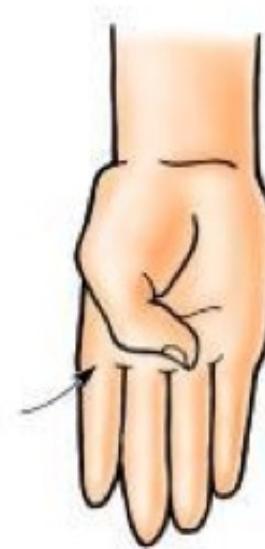
Abduction



Adduction



Extension



Flexion



Opposition



Reposition

© Lippincott Williams & Wilkins



(d) Metacarpophalangeal joints of the fingers (not the thumb)

© John Wiley & Sons, Inc.

## Muscles of The Hand 20 Muscles

### Lateral(Thumb)

1-Adductor Pollicis

### 2-Thenar Muscles

- Abductor Pollicis Brevis
- Flexor Pollicis Brevis
- Opponens pollicis

### Central

4 Lumbricalis

4 Dorsal Interossei

4 Palmar interossei

### Medial (little finger )

1-Palmaris Bervis

### 2- Hypotenar Muscles

- Abductor digit minimi.
- Flexor digit minimi.
- Opponens digit minimi

# Nerve Supply

---

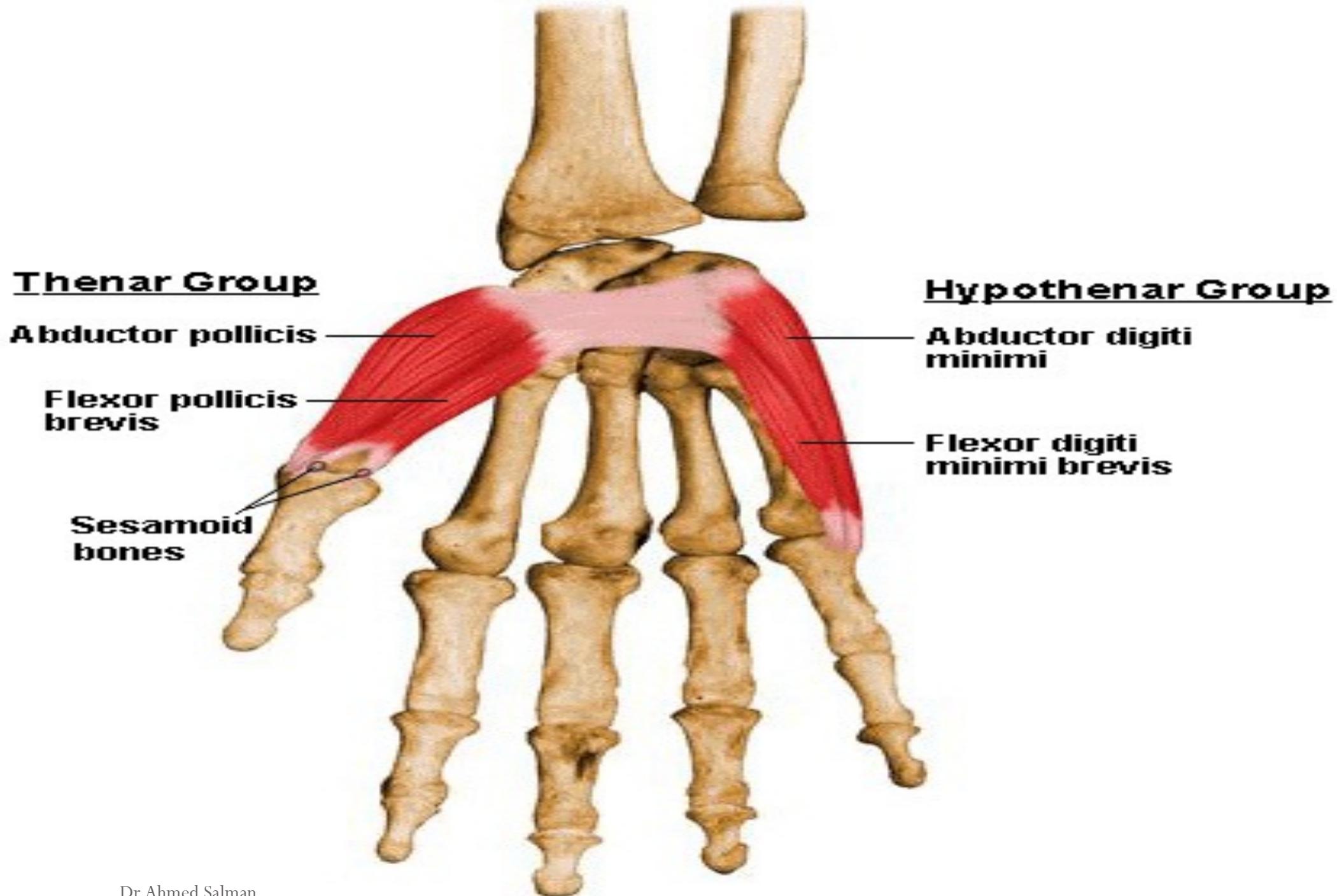
All Muscles of the hand are supplied by **ULNAR nerve**

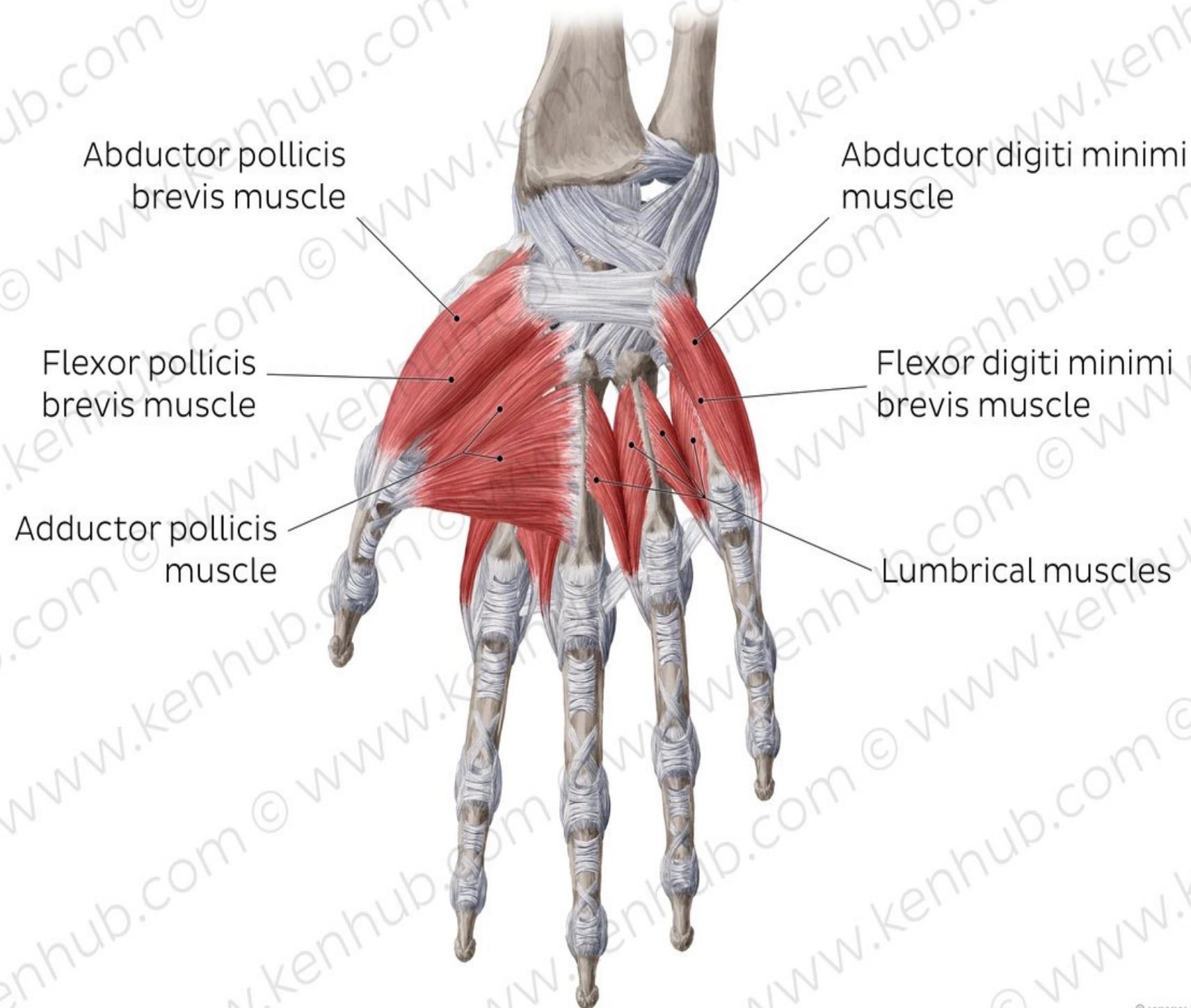
**EXCEPT**

**Thenar Muscles** (Abductor Pollicis Brevis ,Flexor Pollicis Brevis ,Opponens pollicis )

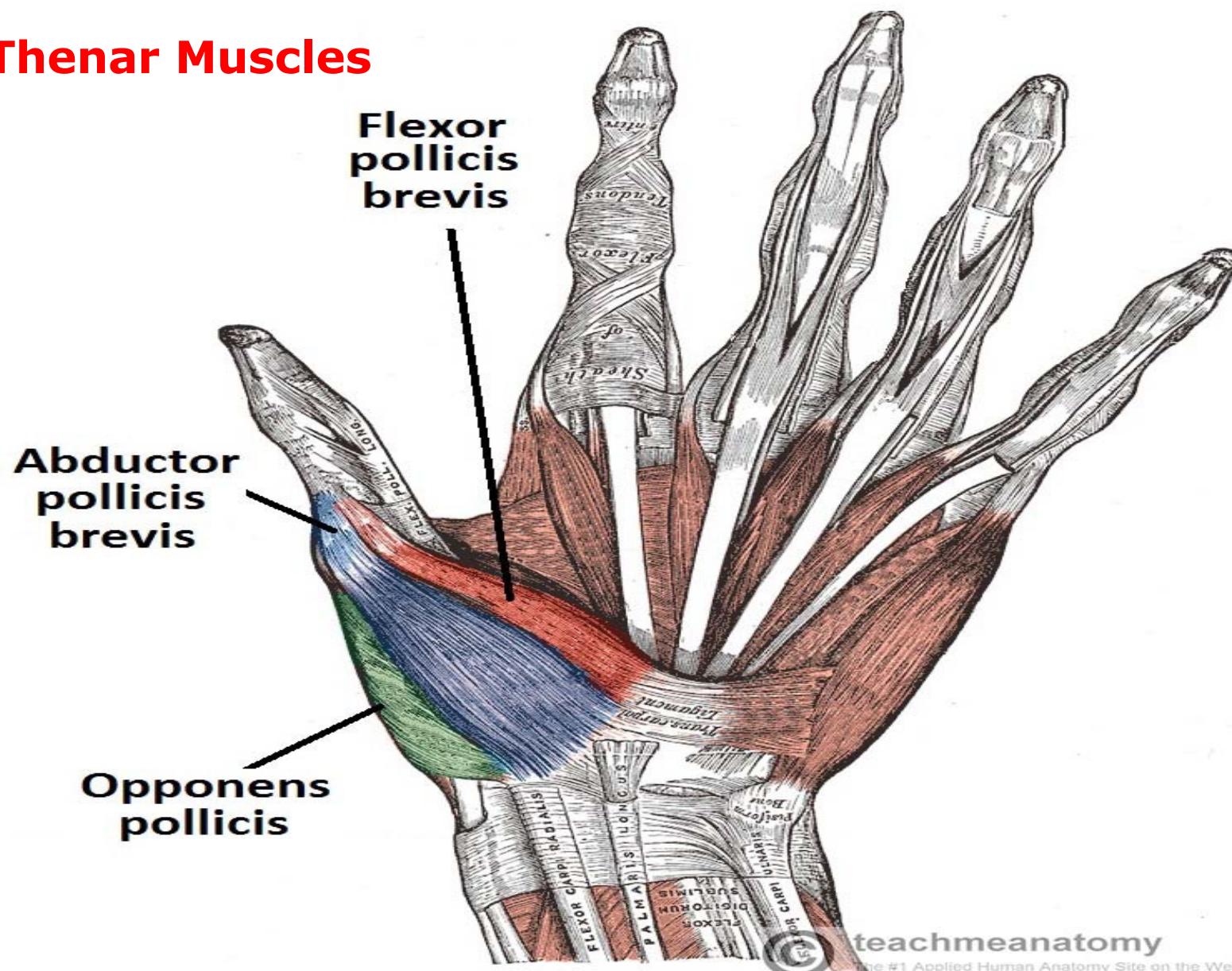
**1<sup>st</sup> and 2<sup>nd</sup> Lumbricalis**

are supplied **by MEDIAN nerve**

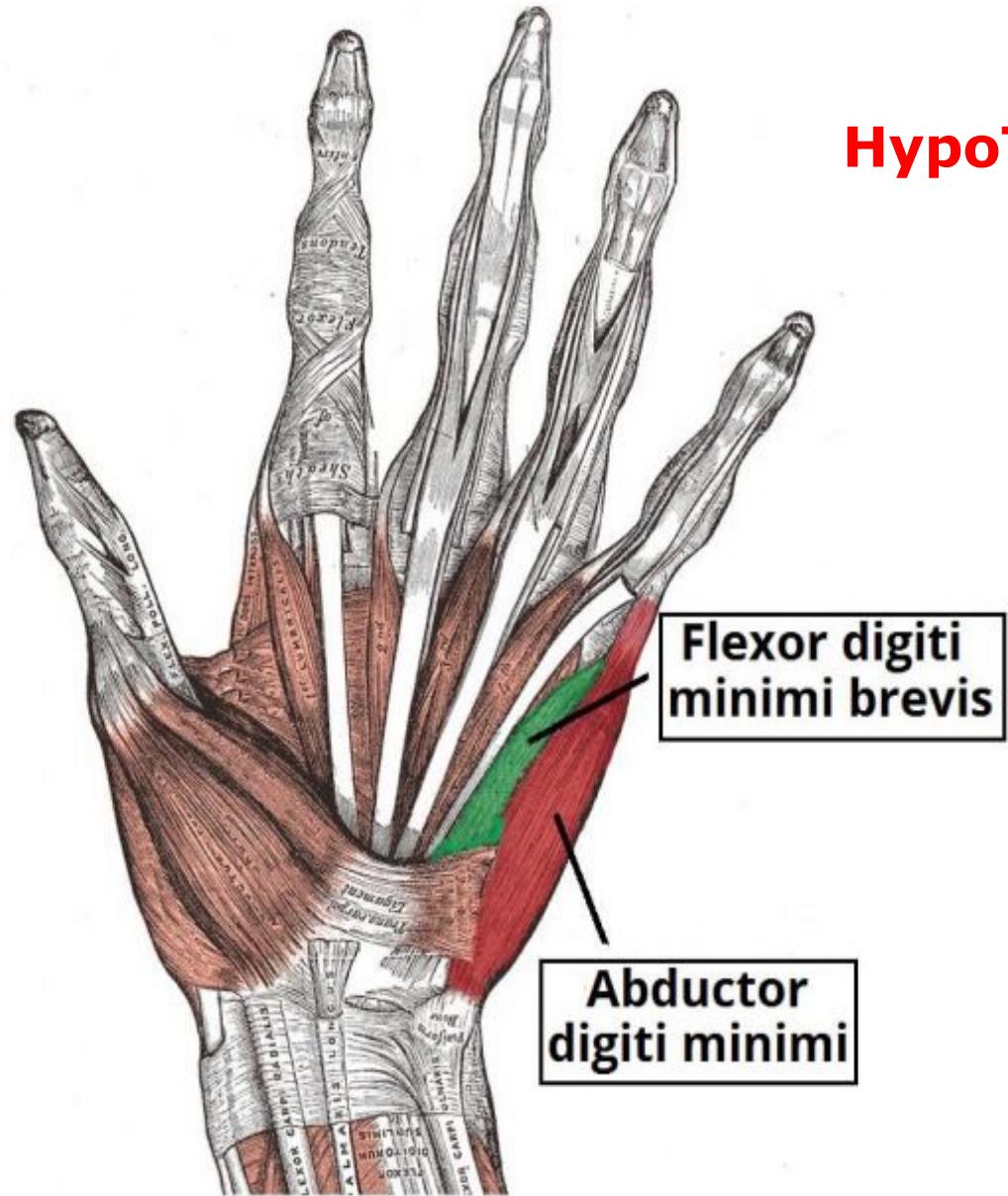




## Thenar Muscles

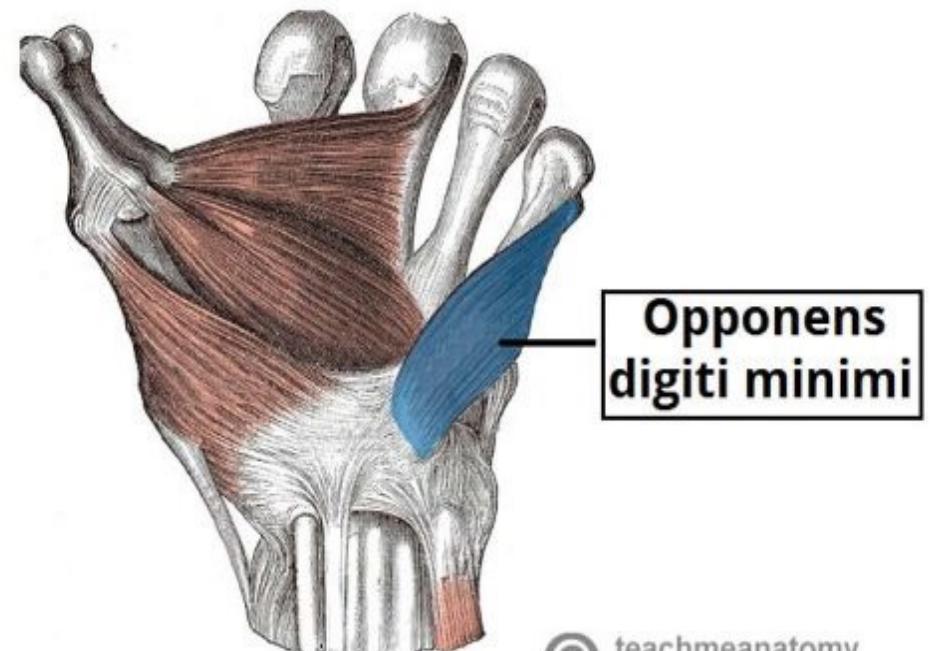


## HypoThenar Muscles

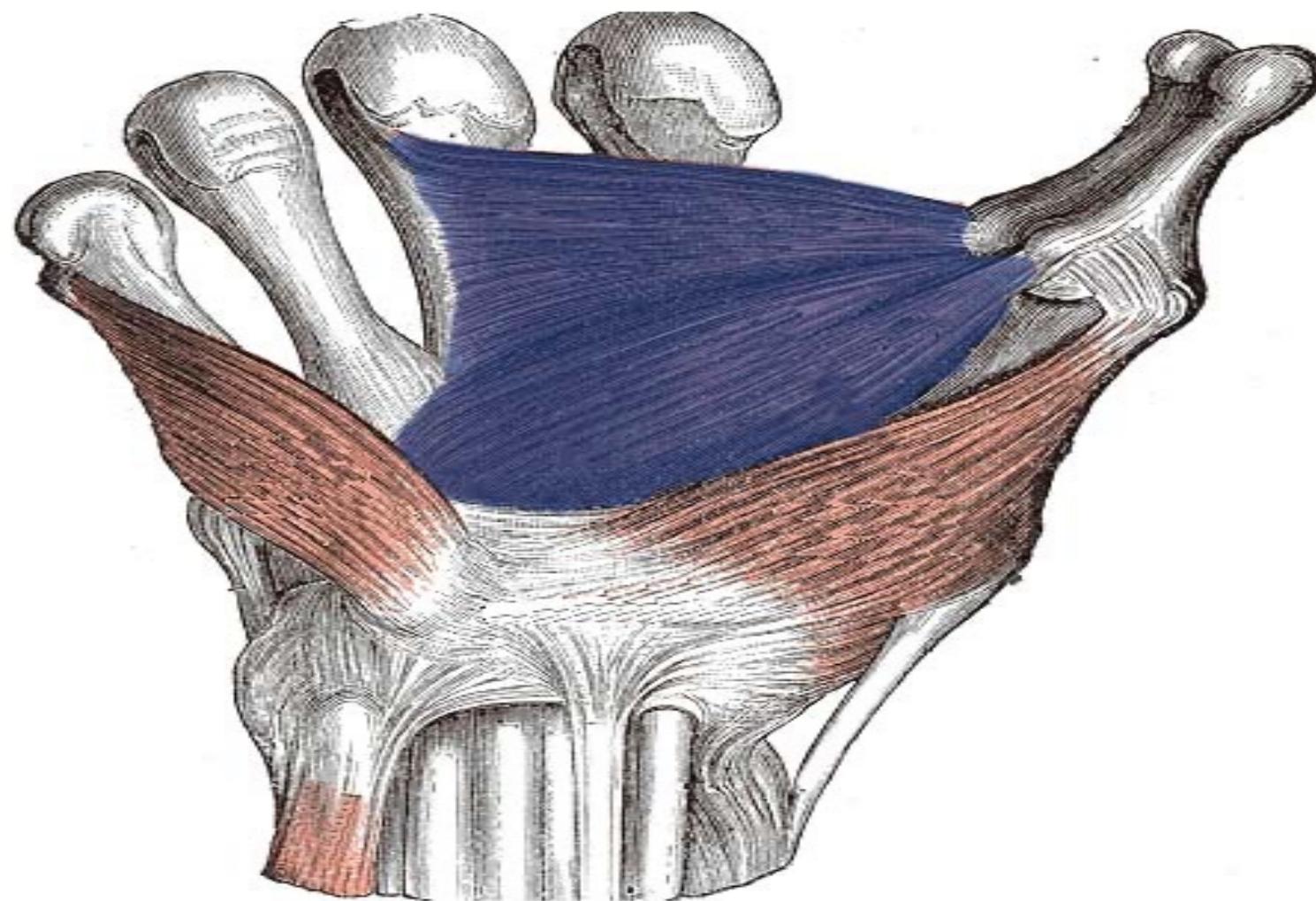


**Flexor digiti  
minimi brevis**

**Abductor  
digiti minimi**



**Opponens  
digiti minimi**



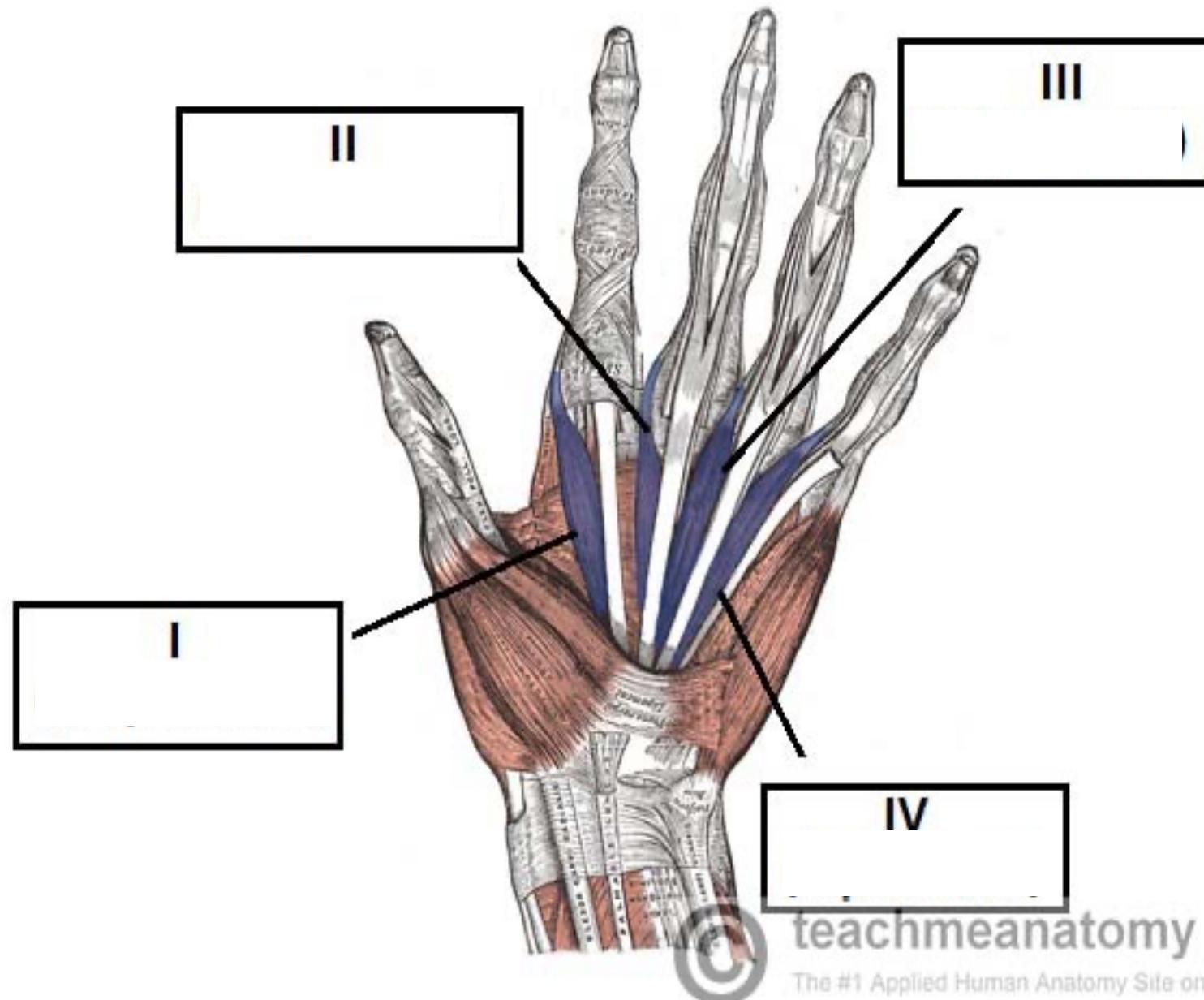
**a) Adductor pollicis**



teachmeanatomy

The #1 Applied Human Anatomy Site on the Web

## Lumbricals Muscles



teachmeanatomy

The #1 Applied Human Anatomy Site on the Web.

## Action

### **1- By name**

Abductor (Pollicis and digit minimi) :

Flexor (Pollicis and digit minimi) :

Opponens (Pollicis and digit minimi) :

Adductor ( Pollicis) :

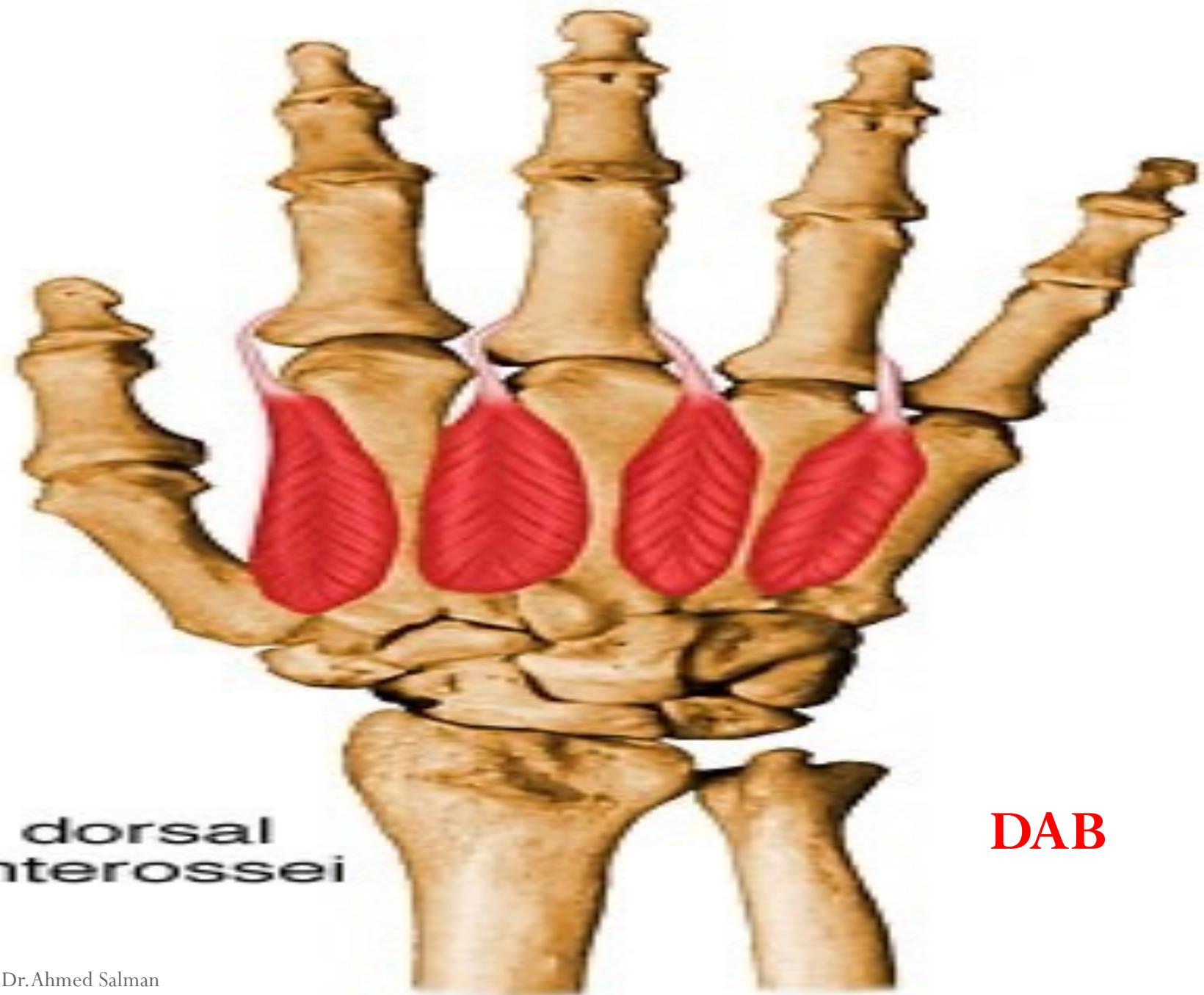
**2-Palmaris Brevis** : Deepening the hollow of the palm

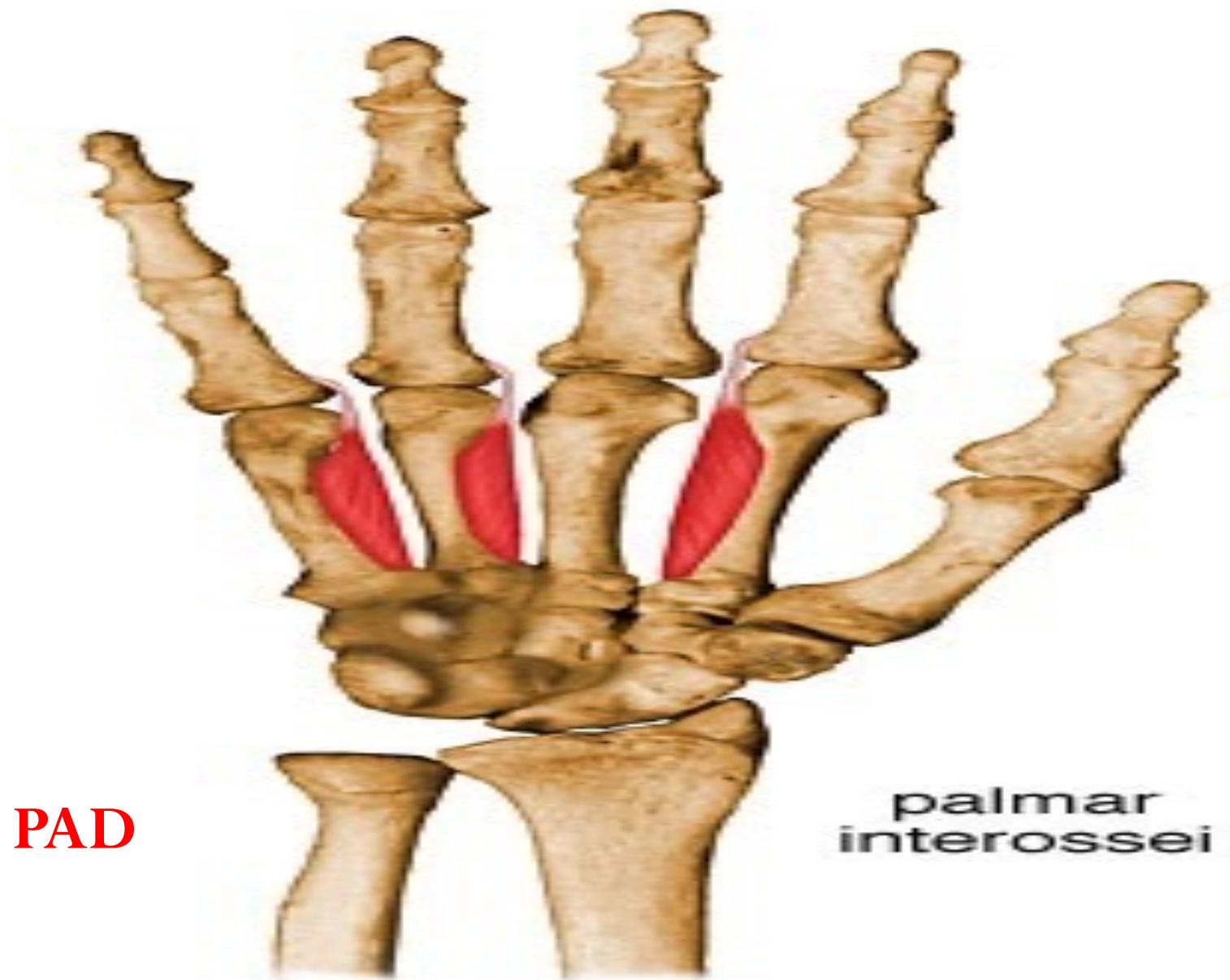
**3-Palmar Interossei** : **PAD** ( **A**Dduction of the little ,ring ,index and thumb fingers towards the middle finger )

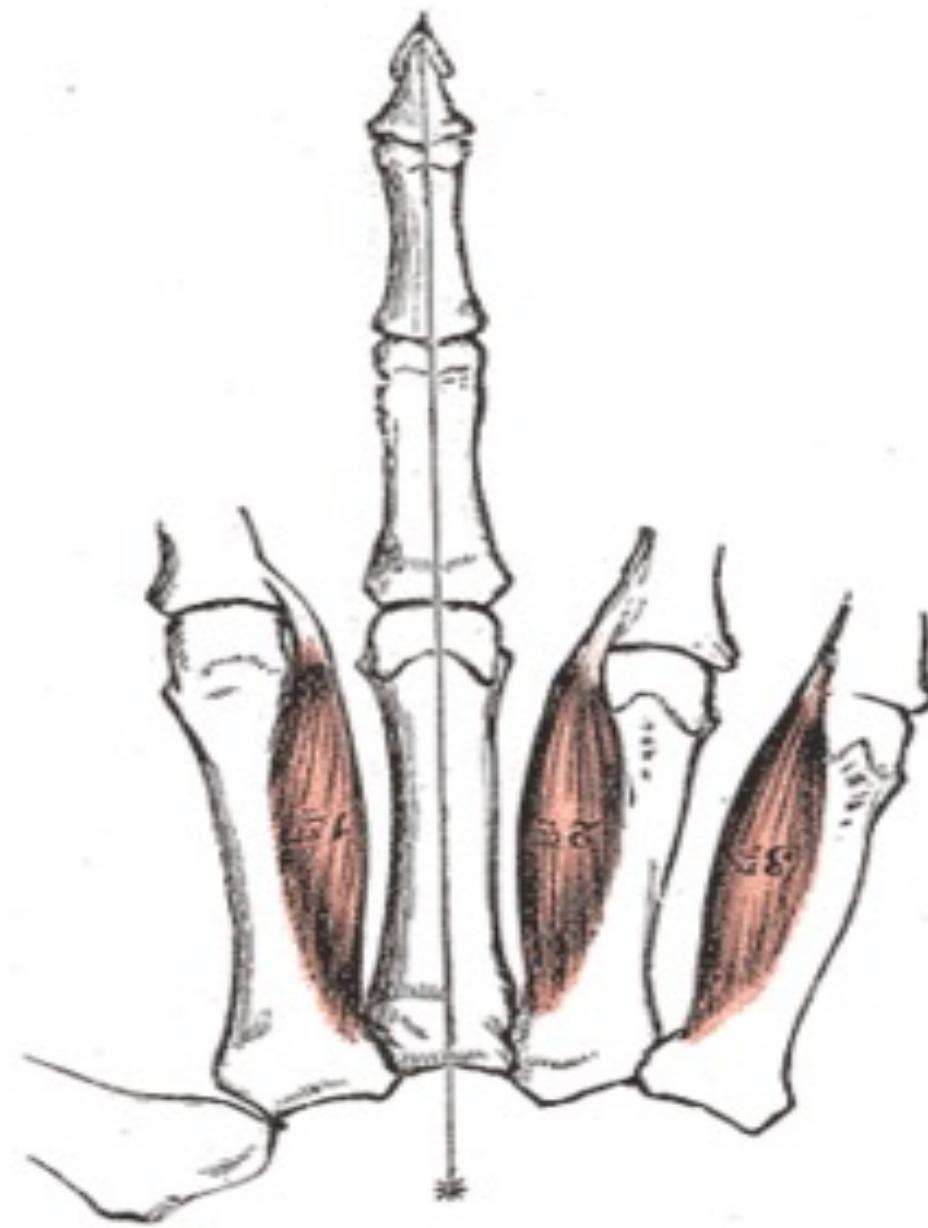
**4-Dorsal Interossei** : **DAB** ( **A**Bduction index , ring and middle fingers )

**5-Lumbercalis and Interossi** : Writing position

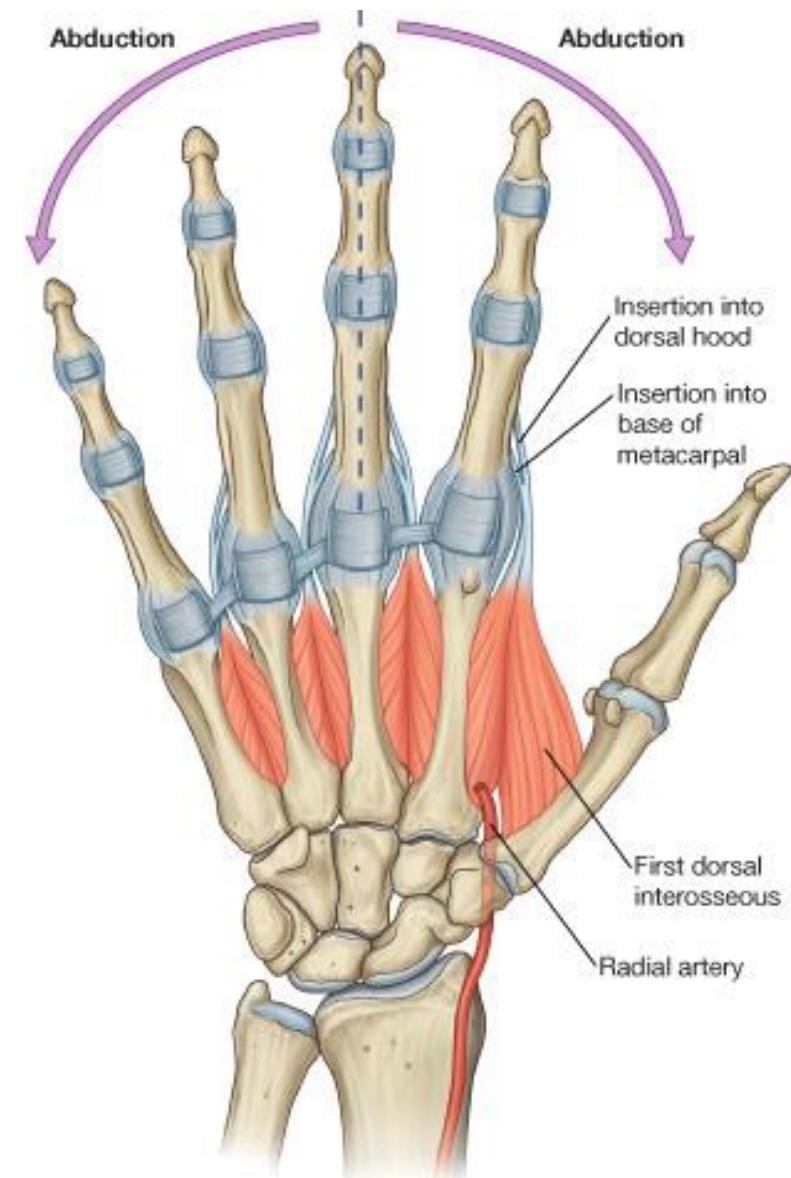
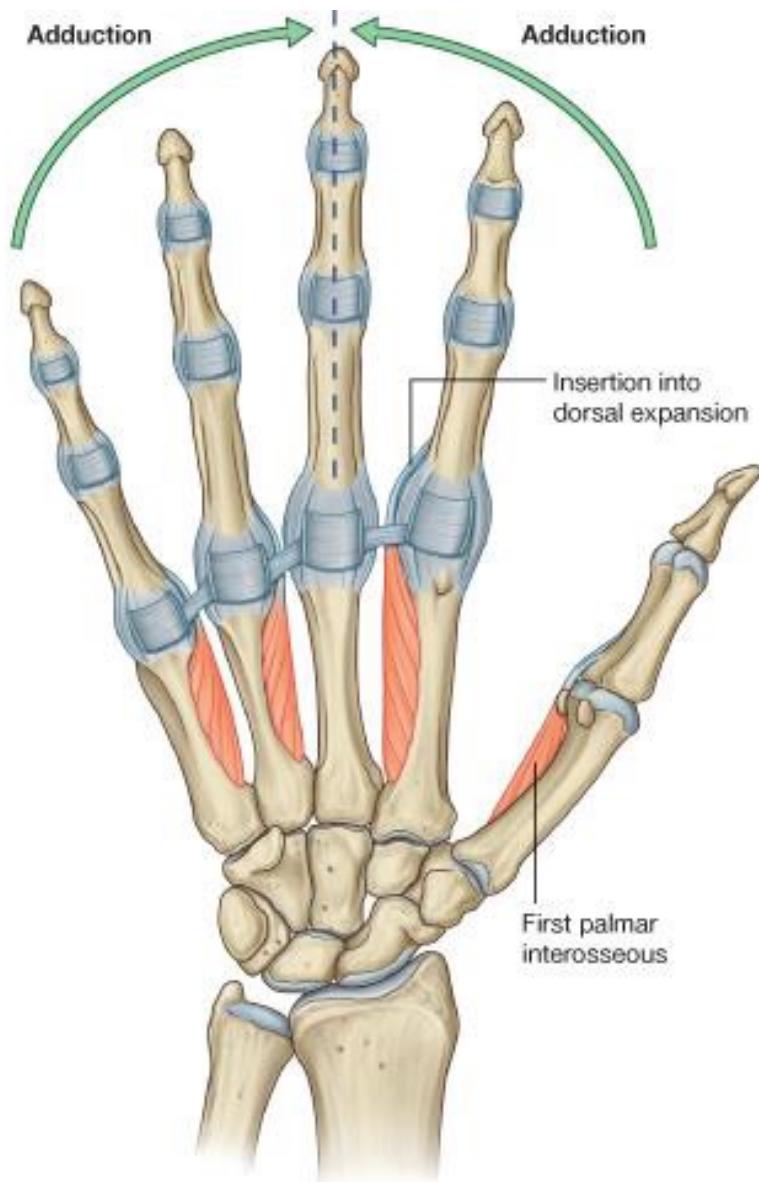
(Flex metacarpophalngeal and extend interphalangeal joint )







Dr. Ahmed Salman



© Elsevier. Drake et al: Grav's Anatomy for Students - [www.studentconsult.com](http://www.studentconsult.com) © Elsevier. Drake et al: Grav's Anatomy for Students - [www.studentconsult.com](http://www.studentconsult.com)

## PALMAR INTEROSSEI PAD

Dr.Ahmed Salman

## DORSAL INTEROSSEI DAB

## **PALMAR INTEROSSEI**

All fingers

Except middle finger **(WHY)**

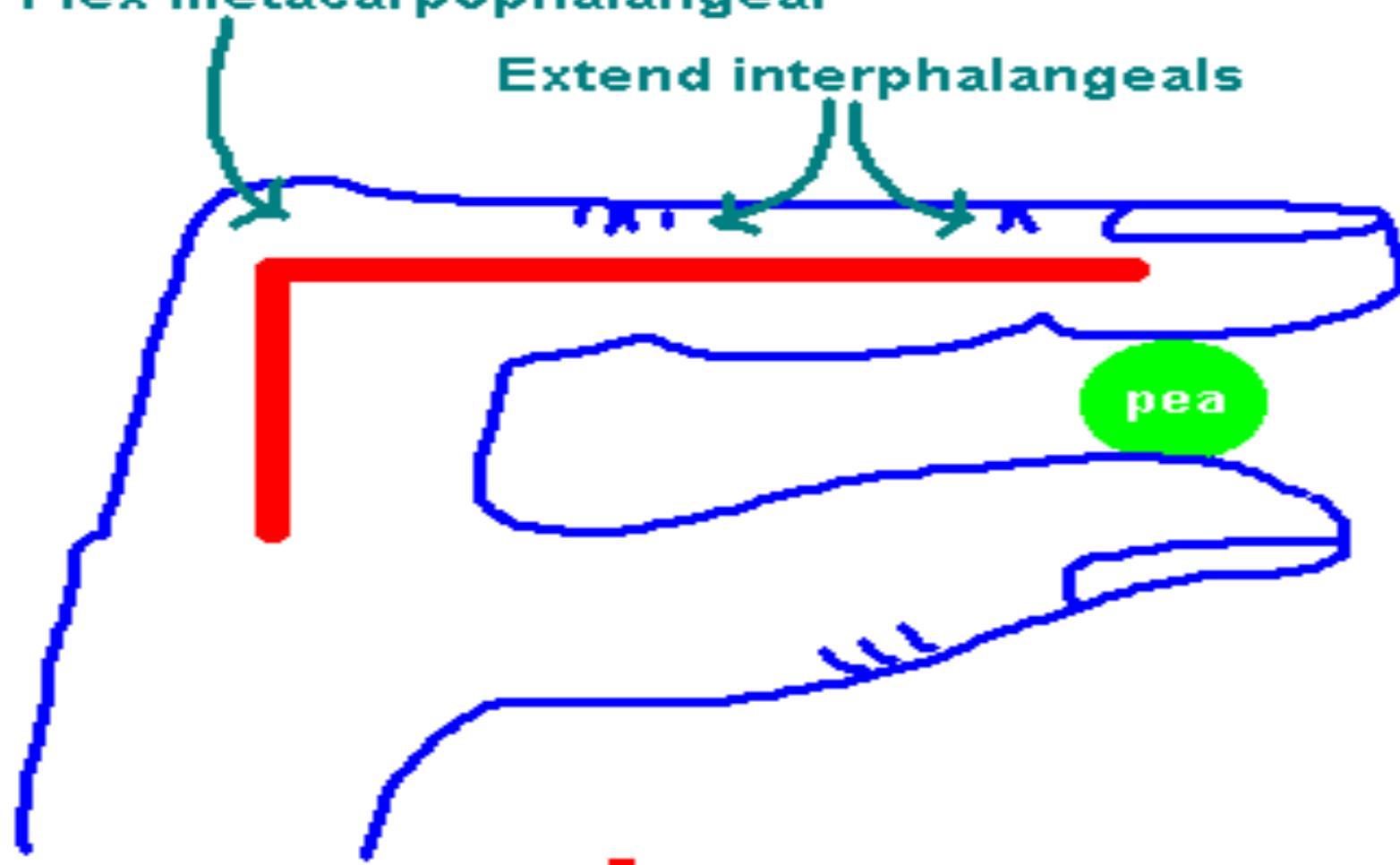
## **DORSAL INTEROSSEI**

All fingers

Except Thumb and little finger **(WHY)**

**Flex metacarpophalangeal**

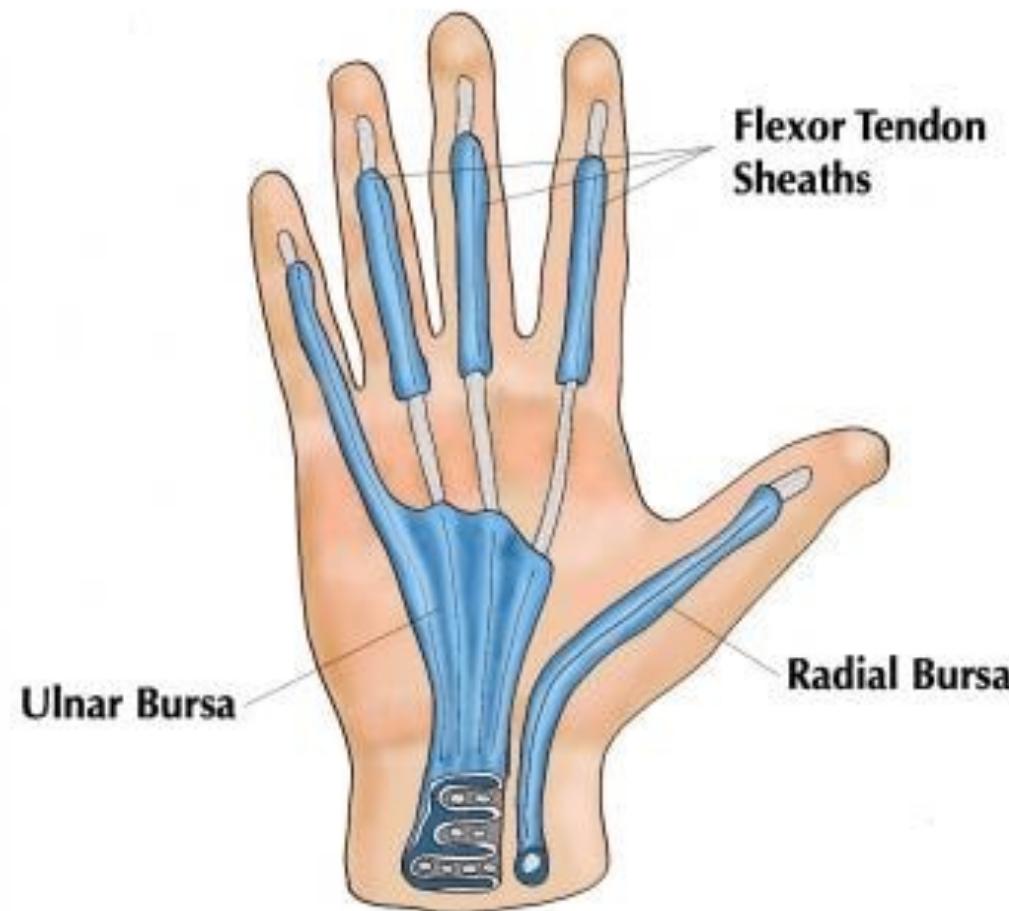
**Extend interphalangeals**

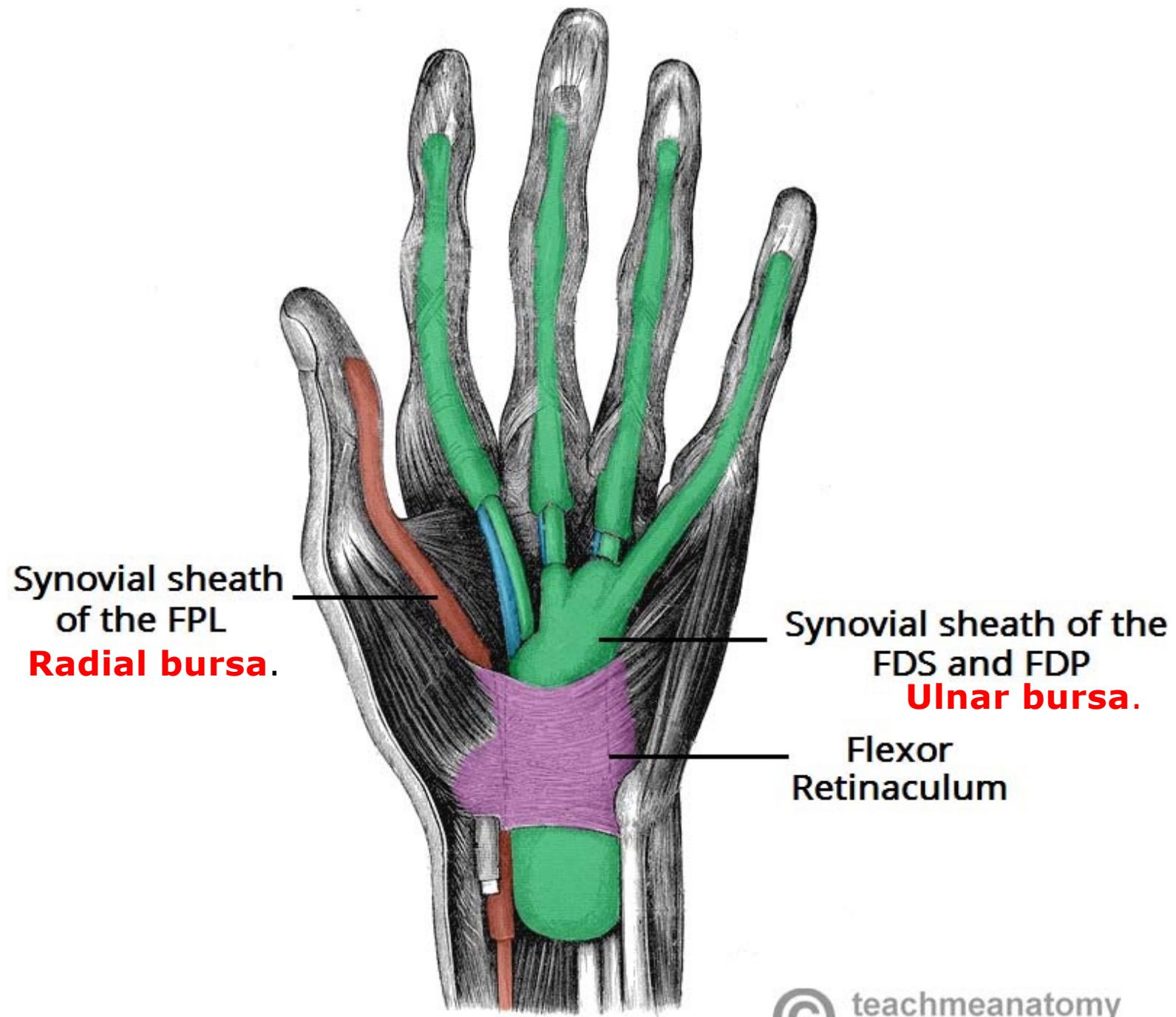


**Lumbrical**

## Synovial sheaths of the flexor tendons

1. The tendon of flexor pollicis longus is surrounded by synovial sheath known as **radial bursa**.
2. The 8 tendons of flexor digitorum superficialis and profundus invaginate a synovial sheath from the lateral side which is called **ulnar bursa**.





teachmeanatomy

The #1 Applied Human Anatomy Site on the Web.

## **Guyon's (ulnar) canal**

It is 4cm in length. It extends from the proximal aspect of the pisiform bone to the origin of the hypothenar muscles

### **Contents**

Ulnar nerve , ulnar artery .

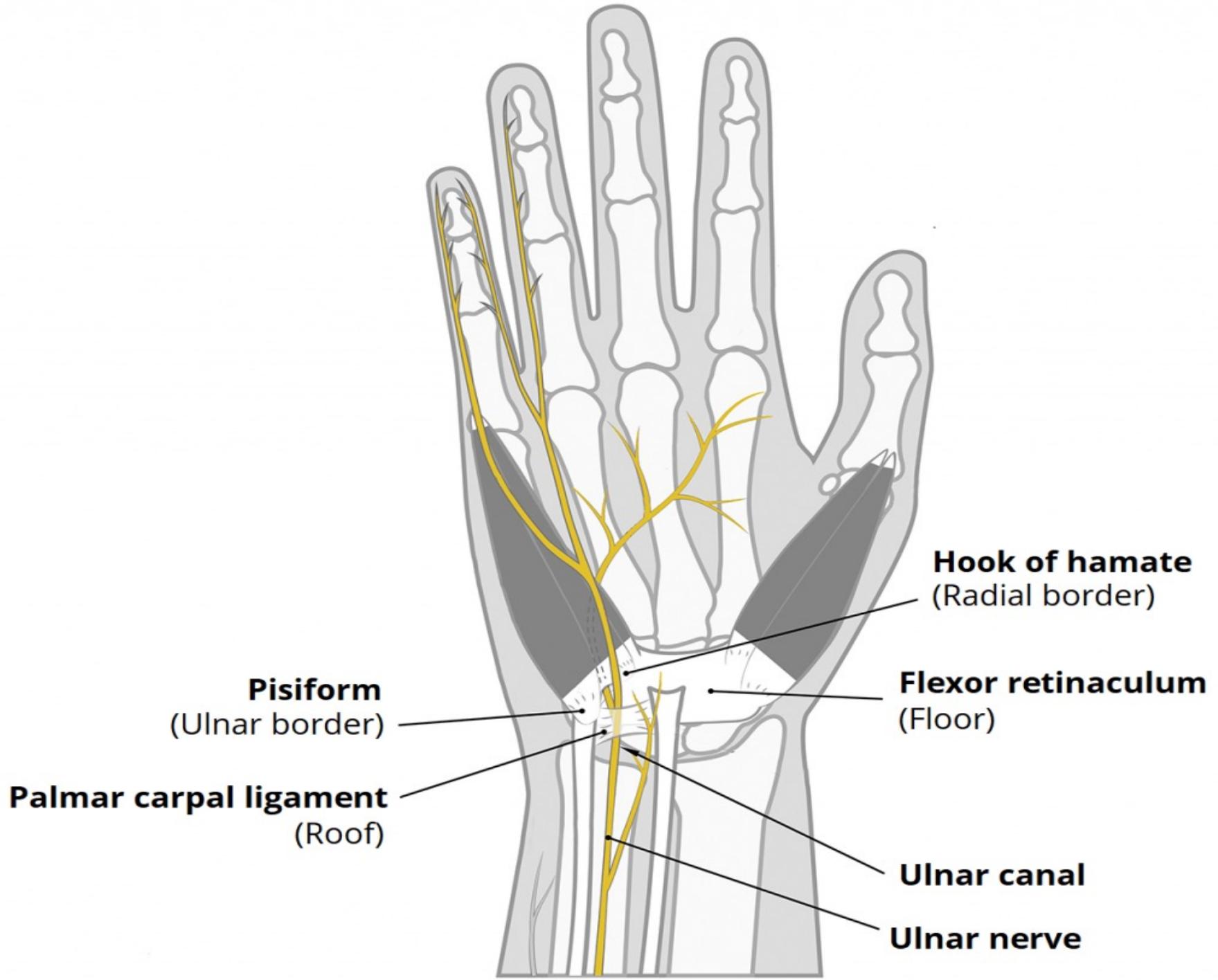
### **Borders (REED ONLY)**

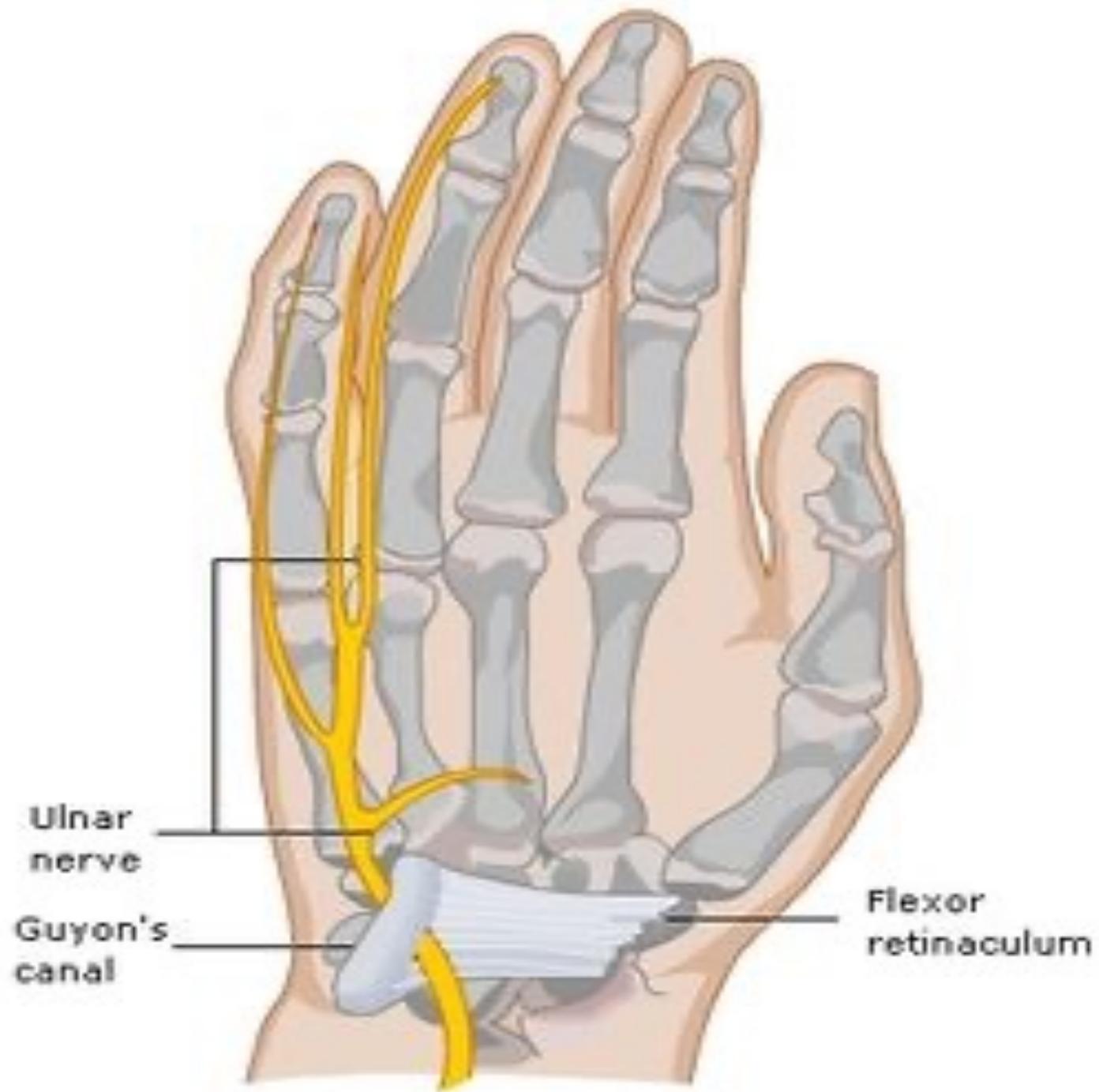
**Medial** : pisiform, flexor carpi ulnaris tendon, abductor digiti minimi muscle.

**Lateral** : hook of hamate.

**Roof** :palmar carpal ligament.

**Floor** : flexor retinaculum, pisohamate ligament, and hypothenar muscles.





## The palmar aponeurosis

### Shape:

Triangular with an **apex** directed proximally and a **base** directed distally.

- The **apex** is attached to the distal border of the flexor retinaculum and receives the insertion of palmaris longus tendon.
- The **base** is divided at the root of the medial 4 fingers into **4 slips**

### Importance of palmar aponeurosis

1. It is firmly attached to the overlying skin so improving hand gripping
2. It protects the underlying structures

### Clinical note:

### Dupuytren's contracture:

It is a deformity in the hand caused by Fibrosis of the medial part of the palmar aponeurosis leads to retraction and shortening which producing progressive flexion of the little and ring fingers.



**Palmar aponeurosis**



**Dupuytren's contracture**

## **The palmar septa**

- The palmar aponeurosis sends a septum into the depth of the palm , known as lateral and medial palmar septa which are attached to the 1st and 5th metacarpal bones respectively .

## **Fascial compartments of the palm**

The lateral and medial palmar septa divide the palm into 3 main fascial compartments;

**a)Lateral compartment:** contains the thenar muscles.

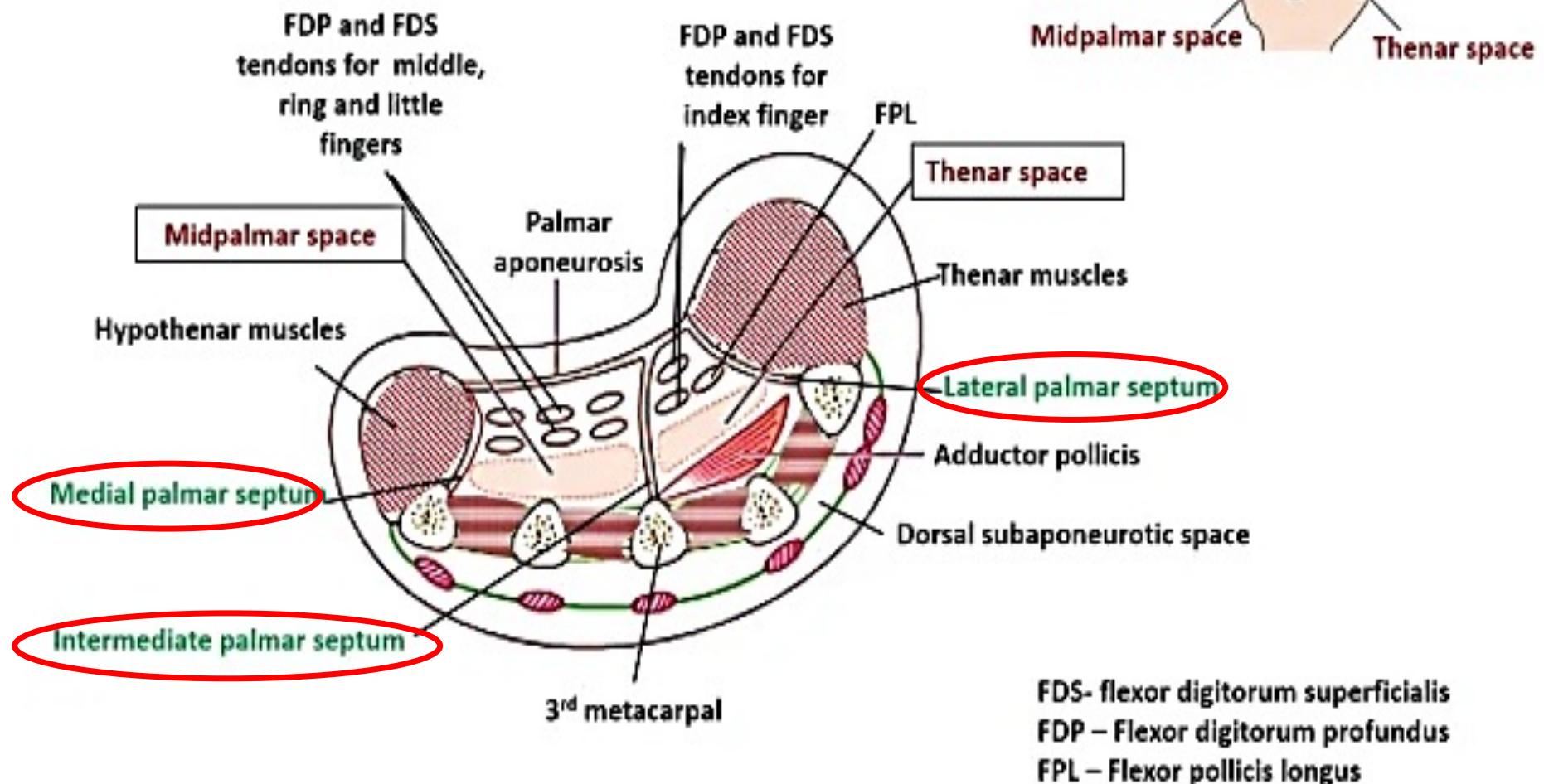
**b)Medial compartment:** contains the hypotenar muscles.

**c)Intermediate compartment:** lies between the lateral and medial palmar septa.

It is divided by intermediate palmar septum into:

1. Lateral part (thenar compartment).
2. Medial part (mid-palmar compartment).

## Midpalmar and Thenar Spaces



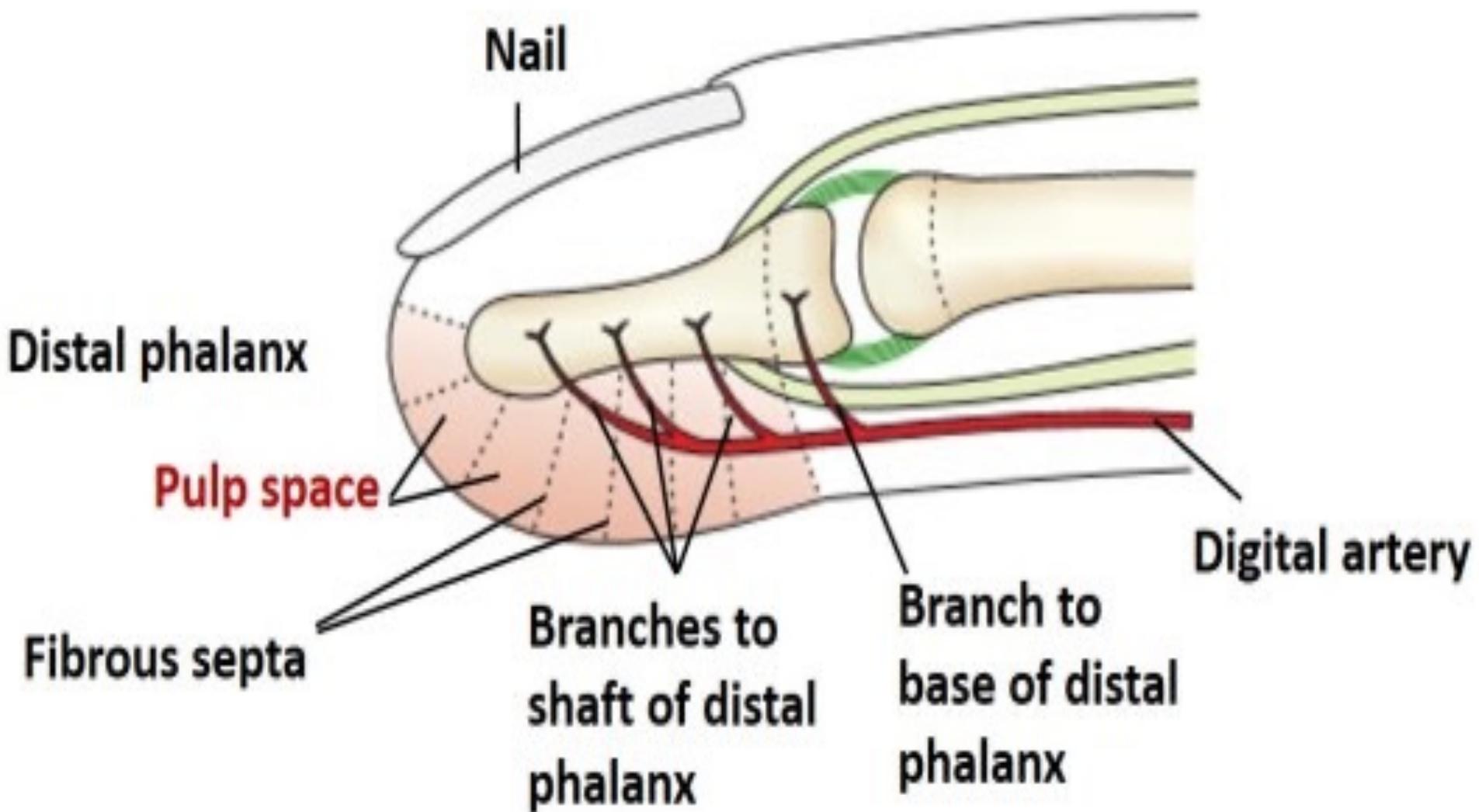
## **Pulp space :**

It is the space which lies over the palmar surface of the distal 3/4 of the terminal (distal) phalanx, just distal to insertion of tendon flexor digitorum profundus.

## **Clinical Anatomy**

- Infection of the pulp space is very painful .
- It leads to accumulation of pus which will cause thrombosis and obstruction of the arteries inside the space causing necrosis of the distal 3/4 of the terminal phalanx.
- The base of the phalanx is not affected because it receives its blood supply from outside the pulp space.

## Digital Pulp Space





Thank  
you

