

Hand and Wrist

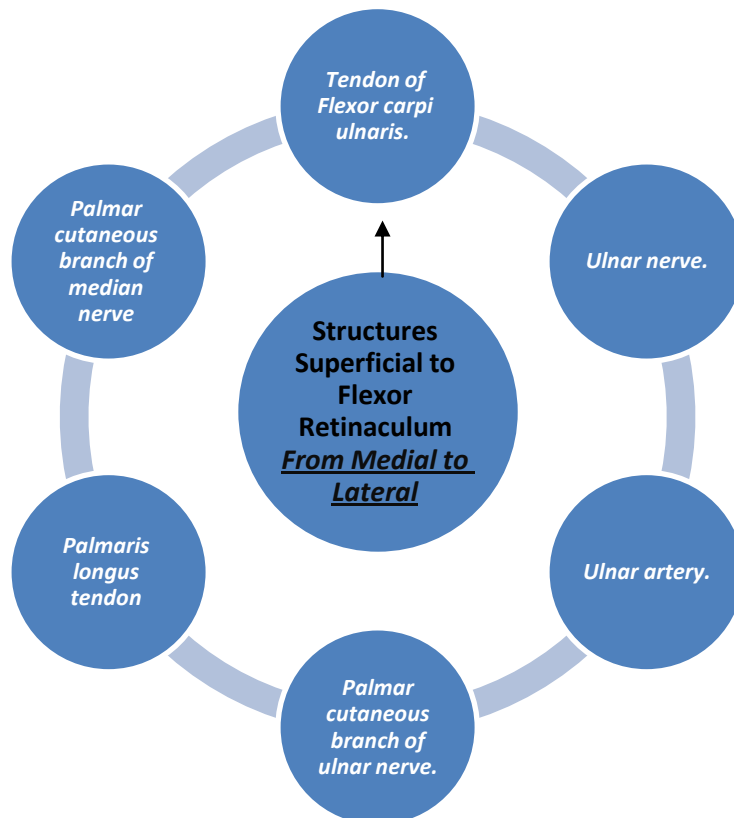
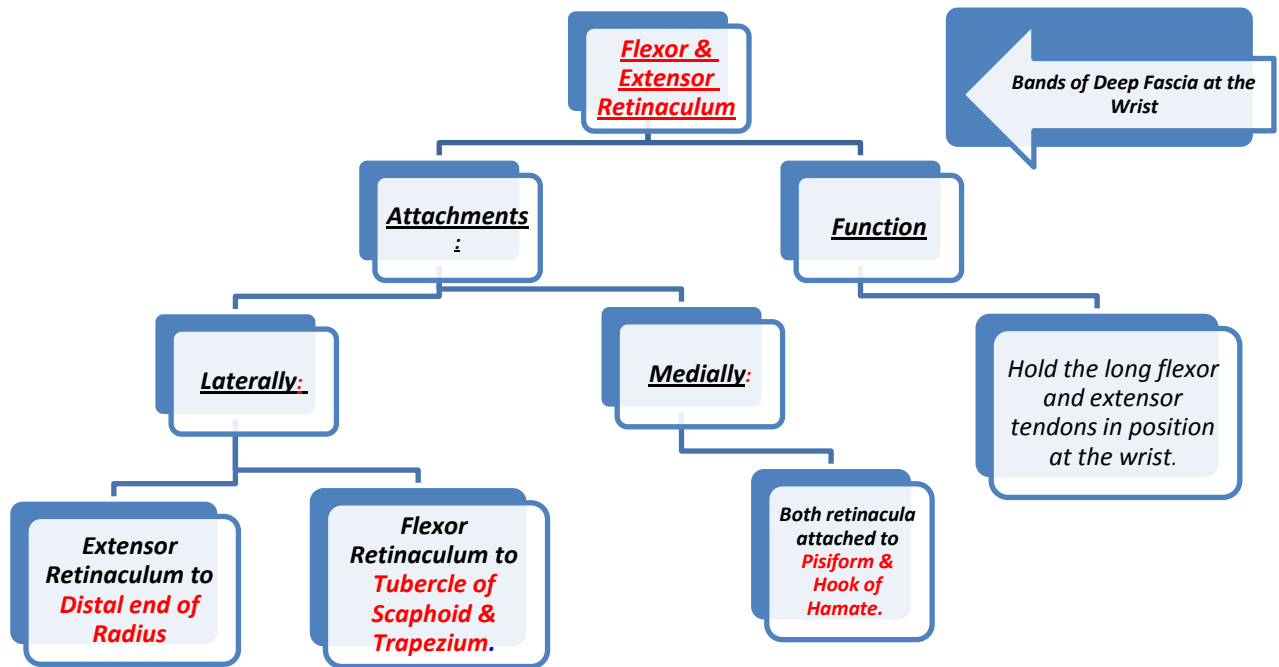
Objectives

- Describe the anatomy of the deep fascia of the wrist & hand (flexor & extensor retinaculae & palmar aponeurosis).
- List the structures passing superficial & deep to flexor retinaculum.
- Describe the anatomy of the insertion of long flexor & extensor tendons.
- Describe the anatomy of the small muscles of the hand (origin, insertion action & nerve supply)

Color Index

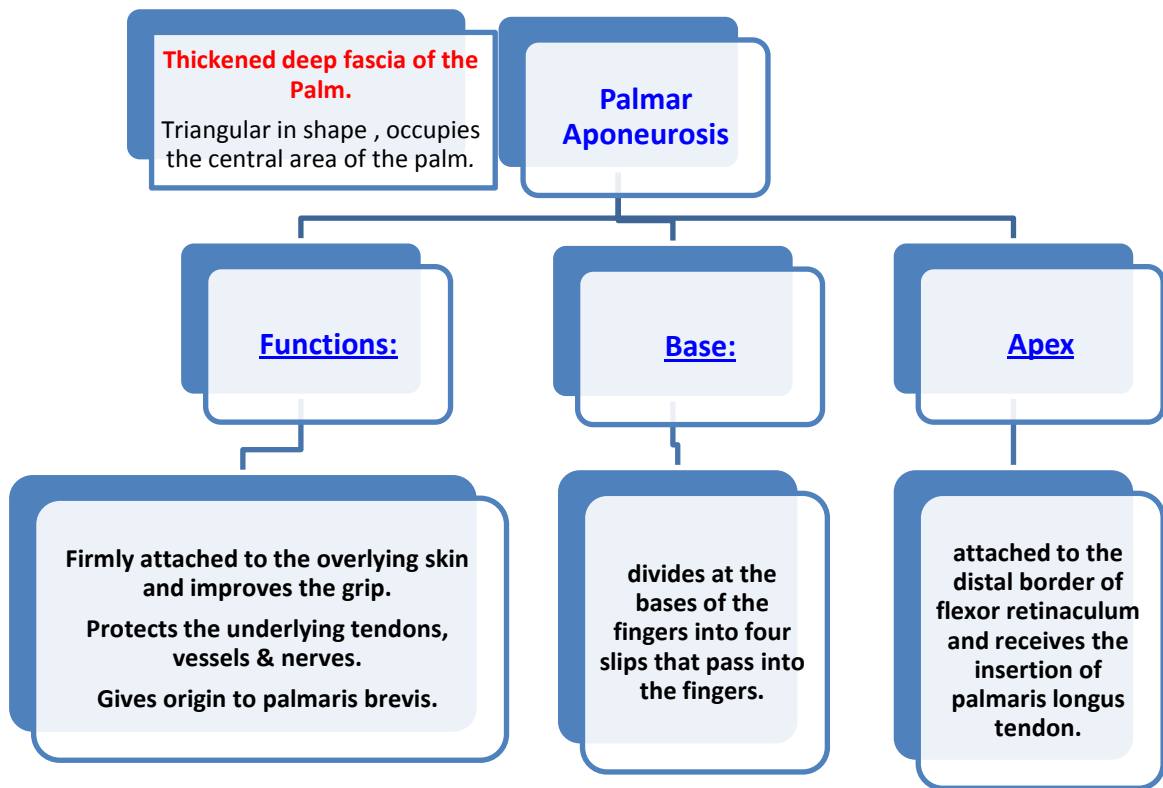
- Red : Important.
- Violet: Explanation.
- Gray: Additional Notes.

Other colors are for
Coordination



Carpal Tunnel

<p><u>Formed from</u> Concave anterior surface of the Carpus covered by Flexor Retinaculum</p>	<p><u>Contents</u> <u>From Medial to Lateral</u> Tendons of flexor digitorum superficialis & profundus Median nerve Flexor Pollicis Longus Flexor carpi radialis</p>	<p><u>Manifestations:</u> Burning pain (pins and needles) in the lateral three and half fingers. No paresthesia over the thenar eminence Weakness or atrophy of the thenar muscles (Ape Hand). Inability to <u>Oppose</u> the thumb.</p>	<p><u>Causes:</u> Compression of the median nerve within the carpal tunnel</p>
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	Hypothenar Eminence				Thenar Eminence		
muscle	Palmaris Brevis	Ab Dig Min	Flx Dig Min	Opp Dig Min	AB Poll Brev	Flex Poll Brev	Opp Poll
Origin	FR and PA.	Pisiform	FR	Palmar surface of 5th metacarpal	FR Scaphd & Trapez	FR	FR
Insertion	Skin of Palm	Base of Prox ph	With AB DIG MIn		<i>Base of Prox ph</i>	<i>With AB Poll Brev</i>	<i>1ST Met (Lat)</i>
NS	UN Sup. Branch	Deep branch of Ulnar	Deep branch of Ulnar	Deep branch of Ulnar	<i>Median</i>	<i>Median</i>	<i>Median</i>
Action	Corrugation of skin to improve grip	AB	FLX	<i>Pulls the 5th metacarp forward (Cup the palm)</i>	AB	FLX	<i>opposition</i>

NB:

FR = flexor retinaculum

PA = palmaris aponurosis

Insertion of Flexor Dig Superficialis & Profundus:

— Flexor dig superficialis

— Each tendon:

- Divides into two halves pass around the Profundus Tendon.
- The two halves Meet on the posterior aspect of Profundus tendon (partial decussation of fibers).
- Reunion of the two halves.
- Further Division into two slips attached to the **Borders of Middle Phalanx**.

— Flexor dig Profundus

- Inserted into the **Base of the Distal Phalanx**

Fibrous Flexor (**Digital**) Sheath

A Strong Fibrous Sheath, which covers the anterior surface of the fingers and attached to the sides of the phalanges.

Its Proximal end is **opened**
Its Distal end is **closed**

The Sheath with the anterior surfaces of the phalanges & the interphalangeal joints **form an Osteofibrous blind Tunnel** for the long flexor tendons of the fingers.

Synovial Flexor Sheaths

Common Synovial sheath (*Ulnar Bursa*)

Contains tendons of Flexor Digitorum Superficialis & Profundus	The Medial part of the sheath extends distally (without interruption) on the tendons of the little finger . The Lateral part of the sheath stops on the middle of the palm.	The distal ends of the long flexor tendons to (Index, Middle & Ring) fingers acquire Digital Synovial Sheaths	Flexor Pollicis Longus tendon has its own synovial sheath (Radial Bursa)
<u>Function of Synovial Sheaths:</u> They allow the long tendons to move smoothly with a minimum of friction beneath the flexor retinaculum and the fibrous flexor sheaths			

	Adductor Pollicis	Lumbrical Muscles (4)	Palmar Interossei (4)	Dorsal Interossei (4)
Origin	<i>Oblique H: ant. bases of 2nd & 3rd meta Trans H: 3rd meta</i>	Tendons of Flex.dig. profundus	1st : Base of 1st metacarpal. Other three: Ant. Surface of Shafts of 2nd, 4rd & 5th metacarpals	Contiguous sides of shafts of Metacarpals
Insertion	<i>Med. of base of prox.ph of thumb</i>	EXT. EXP of medial four fingers	Proximal phalanges of thumb, index, ring, & little fingers and EX	Proximal Phalang of index, ring, mid finger & EX
Action	Adduction	Flex metacarpophalangeal joints and extend interphalangeal	Adduct fingers toward center of third finger	AB fingers away from center of the 3rd

		joints of fingers except thumb		
NS	Deep branch of <i>Ulnar</i>	1 ST & 2 ND (Lateral two) Median N. 3 RD & 4 TH Ulnar N (Deep branch)	Un	

Extensor Expansion

Formed from the expansion of the tendons of extensor dig. at the **PIJ**, the expansion

The tendon splits into three parts:

One Central: inserted into the **base of Middle phalanx.**

Two laterals: inserted into the **base of the Distal phalanx.**

The Expansion Receives the insertions of:

Corresponding **Interosseous muscle (on each side).**

Lumbrical muscle (on the lateral side).

Multiple Choice Questions

1- Retinaculum is Bands of Deep Fascia in front & back of Wrist .

- A) T B) F

2- Flexor Retinaculum medially attach to :

- A) Pisiform & Hook of Hamate B) Pisiform & Triquetrum
C) Pisiform & Scaphoid D) scaphoid & Trapezium.

3- Carpel tunnel is :

- A) Fibro cartilaginous B) Synovial c) Fibro osseous D) Fibro collagen

4- Thenar Eminence muscle is supplied by which nerve:

- A) Ulnar nerve B) Axillary nerve C) Medial nerve D) Deep branch of ulnar nerve

5- Carpal tunnel is covered by:

- A) Extensor Retinaculum B) Palmar Aponeurosis C) Wrist Aponeurosis
D) - Flexor Retinaculum

Q Ans. :

1- a 2- a 3- c 4- c 5- d



Anatomy Team

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Good luck

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For any comments

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