



ANATOMY TEAM

Lecture 12

WRIST & HAND

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Objectives:

- **At the end of the lecture, students should be able to:**
- *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)

تنويه / هذا العمل لا يعتبر مصدر أساسي للمذاكرة وإنما هو للمراجعة فقط والمصدر الأساسي هو السلايدز ، وقد تم التأكيد بأنه لا يوجد أي اختلاف بين سلايدز الأولاد والبنات ما عدا هذه النقطة البسيطة موجودة عند البنات فقط "الفرق انه مكتوب عند البنات flexor pollicis longus اما الأولاد مو مكتوبة هذه النقطة "

Contents of carpal tunnel

(Structures beneath Flexor Retinaculum

Flexor digitorum Superficialis & Profundus

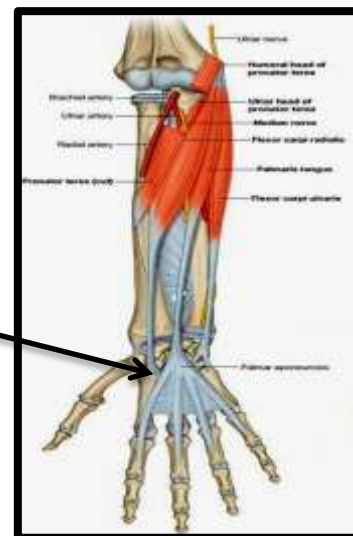
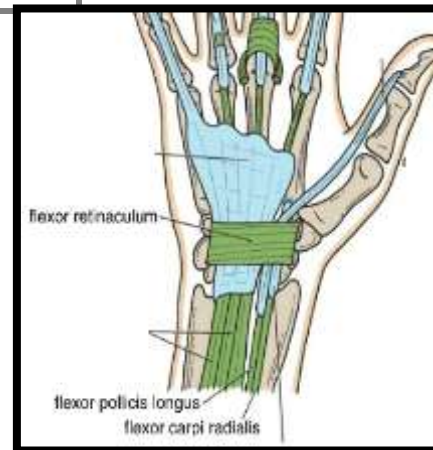
Median nerve

Flexor pollicis longus

Flexor carpi radialis

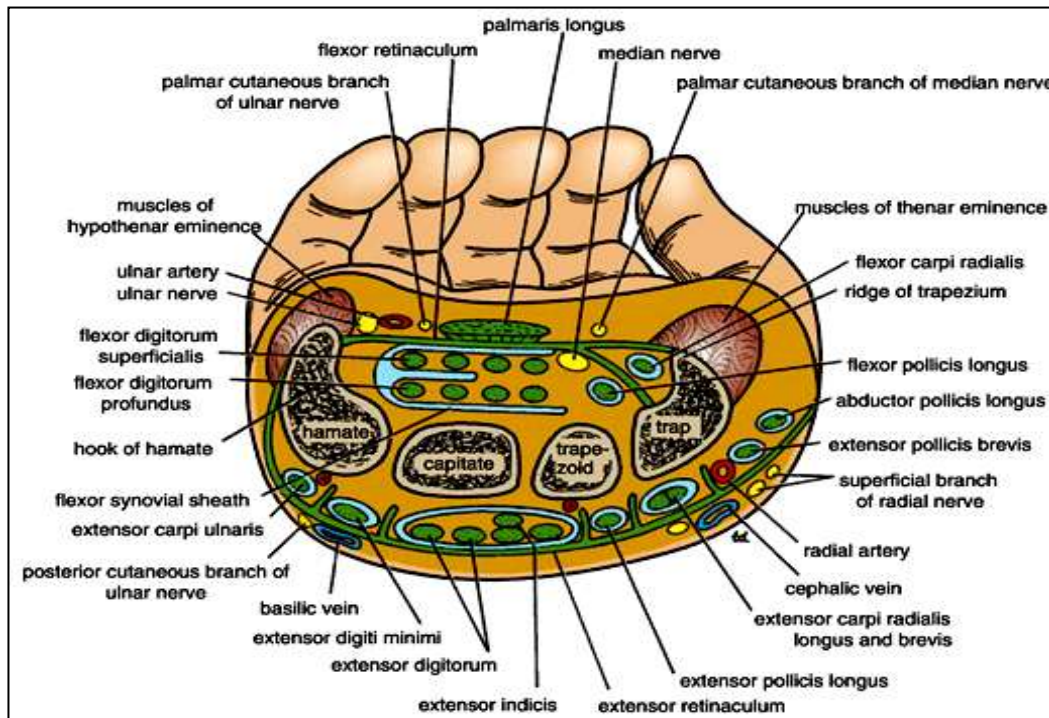
Important Notes:

- ❖ **RETINACULAE/RETINACULUM** (اللون الأخضر في الصورة) = Bands of **Deep Fascia** of the wrist
- ❖ Carpal tunnel is a **fibro osseous tunnel concave anteriorly & covered by flexor retinaculum**
- ❖ **Carpal tunnel syndrome causes is** compression of median nerve and the cause is **unknown** but in most cases its **due thickening of synovial sheath of flexor tendon or arthritics.**
- ❖ Palmar Aponeurosis = Thickened **deep fascia** of the hand, **Triangular** in shape. (Like retinaculum)
- ❖ Synovial Flexor Sheaths = (Ulnar Bursa)
- ❖ Flexor Pollicis Longus tendon has its own synovial sheath = (Radial Bursa)
- ❖ synovial sheaths Function :protect and lubricate the flexor & extensor tendons
- ❖ muscles of hand: **Lumbrical Muscles (4)**, **Palmar Interossei (3or4)** (some say 3 other 4"each one is correct") and **Dorsal Interossei (4)** + Short Muscles of Thumb (**Thenar Eminence**) & Little Finger (**Hypothenar Eminence**)
- ❖ **Action of Lumbricals & Interossei** is\ 1) flexion of metacarpophalangeal joint.. 2) extension of interphalangeal joints.. 3) contraction of intrinsic muscles..
- ❖ **Extensor Expansion** is tendons divided to 3 parts: **1 central + 2 lateral.**



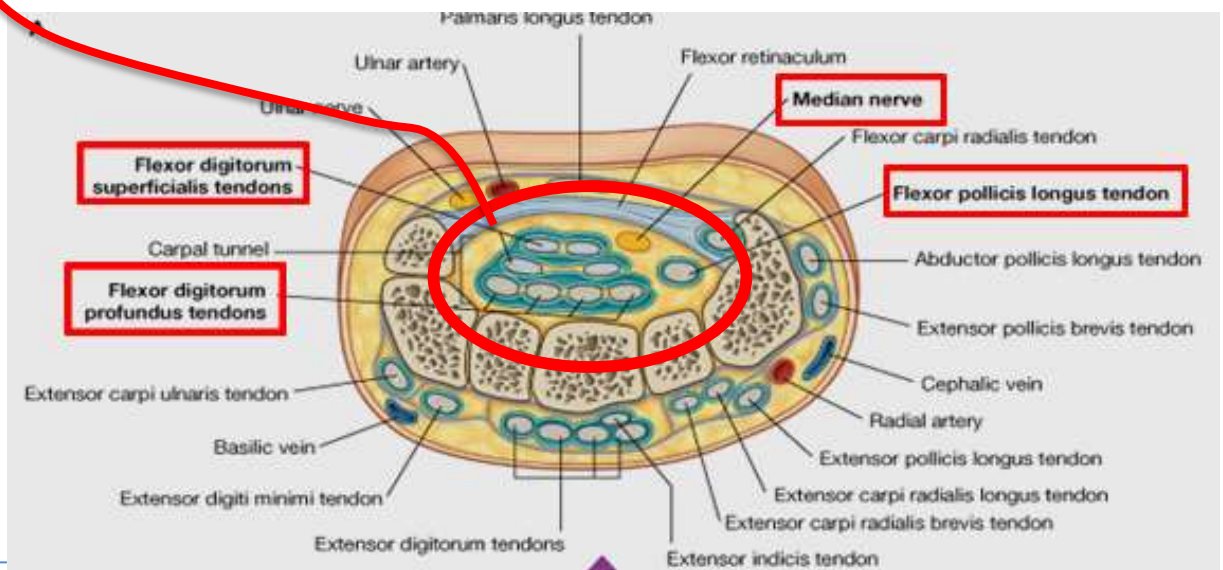
((The Wrist)) Flexor & Extensor Retinaculum

| | <u>FLEXOR</u> RETINACULUM (medial to lateral) | <u>EXTENSOR</u> RETINACULUM (medial to lateral) |
|--|---|---|
| Function | Hold the long flexor and extensor tendons in position at the wrist. | |
| Attachments | <u>Medially:</u> <i>Pisiform & Hook of Hamate.</i> <u>Laterally:</u> <i>Scaphoid & Trapezium.</i> | <u>Medially:</u> <i>Pisiform & Triquetrum</i> <u>Laterally:</u> <i>Distal end of Radius</i> |
| Structures passing Superficial: | # Ulnar nerve # Ulnar artery # Palmar cutaneous branch of ulnar nerve # Palmaris longus # Palmar cutaneous branch of median nerve | # Dorsal cutaneous branch of the ulnar nerve # Basilic vein # Cephalic vein # Superficial branch of the radial nerve |
| Structures passing Deep: | # Flexor digitorum profundus & flexor digitorum superficialis # Median nerve # Flexor pollicis longus # Flexor carpi radialis | # Extensor carpi ulnaris # Extensor digiti minimi # Extensor digitorum and Extensor indicis # Extensor pollicis longus # Extensor pollicis brevis # Abductor pollicis longus |



Carpal Tunnel (نفق الرسغ)

—It is a Fibro Osseous Tunnel formed from:



Carpal Tunnel Syndrome

It's a compression of median nerve in the carpal tunnel is called **carpal tunnel syndrome**

Causes: the cause of the compression of nerve is unknown but most cases due to flexor tendon or arthritics.

Manifestations (صفات المرض):

*Burning pain “pins & needles” in the lateral 3 1/2 fingers.

::: General Questions :::

Q1) what is the function of Flexor & Extensor Retinaculum?

Hold the long flexor and extensor tendons in position at the wrist.

Q2) what are the two thickened deep fascia of hand:

- 1) Flexor & Extensor Retinaculae
 - 2) Palmar Aponeurosis
-

Q3) What are the Short Muscles of Thumb & Little Finger?

Hypothenar Eminence(little finger), Thenar Eminence(Thumb)

Q5) what are the muscles supplied by ulnar nerve in hand?

- 1) Adductor Pollicis Brevis, 2) Hypothenar Eminence
 - 3) Palmaris Brevis
-

Q6) there is two sheaths in hand?

- 1) Fibrous Flexor Sheath .. 2) Synovial Flexor Sheaths
-

Q7) insertion of the two Tendons of hand:

- 1) Tendons of Flexor Dig Superficialis (Divides into two slips attached to the borders of middle phalanx)
 - 2) Flexor Dig Profundus (each inserted in *Base of the Distal Phalanx*)
-

MCQs

Q₁) Flexor Retinaculum medially attach to :

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

Q₂) Which structure passing deep extensor retinaculum:

- A- Basilic vein
- B- Cephalic vein
- C- Extensor digiti minimi
- D- Superficial branch of the radial nerve

Q₃) Carpel tunnel is :

- A- Fibro cartilaginous
- B- Synovial
- C- Fibro osseous
- D- Fibro collagen

Q₄) Both Palmar Aponeurosis & Retinaculum are:

- A- Thick superficial fascia
- B- Thick deep fascia
- C- Thin superficial fascia
- D- Thin deep fascia

Q₅) ulnar nerve and artery is passing through:

- A- Superficial structure of FLEXOR RETINACULUM
- B- Deep structure of FLEXOR RETINACULUM
- C- Superficial structure of EXTENSOR RETINACULUM
- D- Deep structure of EXTENSOR RETINACULUM

Q₆) Palmaris Brevis origin from:

- A- Flexor retinaculum & Palmar Aponeurosis
- B- Extensor retinaculum & Palmar Aponeurosis
- C- Flexor & Extensor retinaculum
- D- Only Palmar Aponeurosis

Q₇) Thenar Eminence muscle is supplied by which nerve:

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

Q₈) Carpal tunnel is covered by:

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

| No. of Questions | Answers |
|------------------|---------|
| 1 | A |
| 2 | C |
| 3 | C |
| 4 | B |
| 5 | A |
| 6 | A |
| 7 | C |
| 8 | D |

GOOD LUCK ;)