

Quick revision:

The anterior compartment of the forearm contains of 8 muscles

-4 superficial

-1 intermediate

-3 deep

*All supplied by median nerve except 1 and 1/2 muscle (by ulnar N.)

forearm posterior compartment

*Muscles arranged in 3 layers (according to snell book):

-lateral group → 2 muscles

-superficial group → 5 muscles

-deep group → 5 muscles

*All muscles of the posterior compartment are supplied by the radial nerve (because all of them are extensors).

*Most originate from the **lateral epicondyle** of humerus which also called **common extensor origin (CEO)**.

*Most extend wrist joint .

***Lateral group**: contains 2 muscles

1) **Brachioradialis** :

*origin: lateral supracondylar ridge of humerus .

*Insertion: it goes down to insert in styloid of radius .

*nerve supply: Radial nerve .

*Action:

*Restore **mid prone** position (also called mid supinate position) .

*Assist in supination .

*flexes elbow joint.

2) **Extensor carpi radialis longus:**



function insertion Radial side far away from carpal bones

*Origin: lateral supraepicondylar ridge of humerus.

*Insertion: 2nd metacarpal bone .

*Nerve supply: Radial nerve .

*Action: Extension of wrist joint.

****NOTE:**

→ Some books divide the posterior compartment of the forearm into 2 division (superficial & deep only) , but Snell (the required book) divide it into 3 groups as we mentioned .

→ Some of posterior muscles shared the (Origin ...NS...Action)



*see figure 4 *

***Superficial group:** contains 5 muscles...

1) **Extensor carpi radialis brevis:**

→ Brevis means **SHORT**....

*Origin: CEO

*insertion: 3rd metacarpal bone.

*N.S: Radial nerve.

*Action: Extend wrist joint.

2) **Extensor digitorum:**

→ The name of this muscle without longus or brevis ..That means both of them at the same time ..

*Origin: CEO.

*Insertion:

- This muscle divides into 4 tendons to the 4 medial fingers.
- These tendons are rounded-shape before they reach the proximal phalanx of the fingers.
- These tendons pass below the **Extensor retinaculum ER**.
- Each tendon when it reaches the proximal phalanx of the medial 4 fingers, flattens to form **Extensor Expansion(hood)**.
- Extensor Expansion** divides into :
 - Central part(slip) → for middle phalanx .
 - 2 lateral parts(slip) → for distal phalanx.
- *N.S: Radial nerve.
- *Action:
 - Flex **metacarpophalangeal joint(MCP)**..
 - Extend the interphalangeal joints..
 - We use this muscle at..
 - writing & drawing.
 - Insertion **thread in a needle**.
- *see figure 3 at the end***

***NOTE:**

- 1) The lateral slip(part) receives some muscles that center the finger when you point to sth.
- 2) This view of central and two lateral parts looks like a bird ,the wings(lateral parts) can reach points distal than the points that beak(central) can reach .

3) Extensor carpi ulnaris:

→ **Without longus or brevis.**

*Origin: CEO.

*Insertion: 5th metacarpal bone.

*N.S: Radial nerve.

*Action:Extend wrist joint.

4)Ext.digiti minimi:



finger small

→This muscle is considered part of Ext.Digitorum.

→ This muscle passes below the ER.

*Origin:CEO.

*Insertion:The **Extensor hood (from ext.digitorum)**of little finger.

*N.S: Radial nerve.

*Action: Extend MCPJ of little finger .

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5)Anconeus:

→triangular in shape.

→it separates radius from ulna.

*Origin:CEO.

*INS:The lateral side of **Olecranon process**.

*N.S:Radial nerve.

*Action: Extend elbow joint...

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*The muscles of the (superficial &lateral) group arranged from lateral →medial

Brachioradialis→Ext.carpi radialis longus→ Ext.carpi radialis brevis→Extensor digitorum→Ext.digiti minimi→Ext.carpi ulnaris→Anconeus.

*Deep group: figure 1

→ Contains 5 muscles..All supplied by deep branch of radial nerve.

1)Supinator:

*Origin:CEO.

*INS: wind around the proximal quarter of radius.

*Action: Supinate the forearm.

*NOTES:

→The muscles that supinate the forearm are **Biceps & Supinator**



→The muscles that pronate the forearm are **Teres pronator & Pronator quadrates** → **Median.N**

→The Radial nerve passes between the layers of supinator muscle.

Remember



2)Abductor pollicis longus:

*Origin: Radius & ulna.

*INS: Base of 1st metacarpal bone.

*Action: Abduct & Extend the thumb.

DR said..we cannot abduct the thumb before we extend it.
(Extension → Abduction)

see figure 2 at the end 😊

3)Ext.pollicis brevis:

*Origin:Radius.

*INS:Base of proximal phalanx of thumb.

***Action:** Extend MCP joint of thumb.

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4)**Ext.pollicis longus:**

***Origin:** The posterior surface of the ulna.

***INS:**Distal phalanx of thumb.

***Action:** Extend distal phalanx.

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5)**Ext.indicis(index):**

***Origin:** The posterior surface of the ulna.

***INS:**the tendon goes to the base of middle phalanx of index and insert into Extensor expansion(hood) of index.

***Action:**Extend **MCPJ of index.**

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**Ext.pollicis longus → Ext.pollicis brevis → Abd.pollicis longus **

-This order from medial to lateral...and there is an important region between them which called **SNUFFBOX** .

****QUICK REVISION****

Muscle	Insertion(no. of metacarpal bone)
Abd. pollicis longus	1 st
Ext. carpi radialis longus	2 nd
Ext. carpi radialis brevis	3 rd
Ext. carpi ulnaris	5 th

*****Snuffbox*****

→ Triangular depression at the lateral side of the dorsal part of the

hand.

→An important clinical region on the dorsal side of the wrist.

****Borders** → Medial..(Ext.pollicis longus)
 → Lateral..(Ext.poll.brevis & Abd.poll.longus)

****Remember**→one longus muscle in each border**

****Floor: Scaphoid bone at the base of snuffbox.**

⇒ **Content: Radial artery ..site to feel the pulse**

Clinical Application 😊

1) if we want to know if the scaphoid bone is fractured ,we allocate base(floor) of snuffbox.

2) if the patient has a casted arm and the doctor wants to know if there is a blood supply to the hand...He only has the snuffbox to feel the pulse by the **Radial artery**.

Arterial supply of the forearm

→The arteries of the forearm branch from the **Brachial Artery**.

→2 main arteries found in the forearm ...

1)Ulnar artery 2)radial artery

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Ulnar artery:

*The largest branch of brachial artery.

***Course**→

- **Start** at the opposite neck of radius.

-gives a branch called **interosseous artery**...and continue to pass deep to **flexor digitorum superficialis** .

-continue down to be **superficial** between **Flexor carpi ulnaris (medial)** and **Flexor digitorum superficialis(lateral)**.

-**Ulnar artery continue lateral** to ulnaris and pisiform board.

- Accompanied with **Ulnar Nerve**.

- **Both ulnar nerve & artery** pass superficial to **Flexor retinaculum** and the artery divides to superficial and deep branches.

* **Common interosseous artery:**

- gives anterior and posterior interosseous arteries.

1) Anterior →

- located in the anterior compartment.

- located anteriorly to the interosseous membrane.

- Accompanied with the anterior interosseous nerve (branch from median nerve)

- Both nerve and artery dive behind **Pronator quadratus muscle**.

2) posterior →

- located in the posterior compartment.

- located posteriorly to the interosseous membrane.

→ At the end of flexor retinaculum the ulnar artery gives 2 branches

* superficial * deep

- Superficial branch goes to the palm and unit (anastomose) with the superficial branch of the **Radial artery** to form **superficial palmar arch which**

* Located at the level of the distal border of the over(hyper)extended thumb.

* Mainly from **Ulnar Artery**.

* The direct continuation of the **ulnar artery**.

→ **Dr said : No connection or attachment between vessels, vessels tubes called anastomosis.**

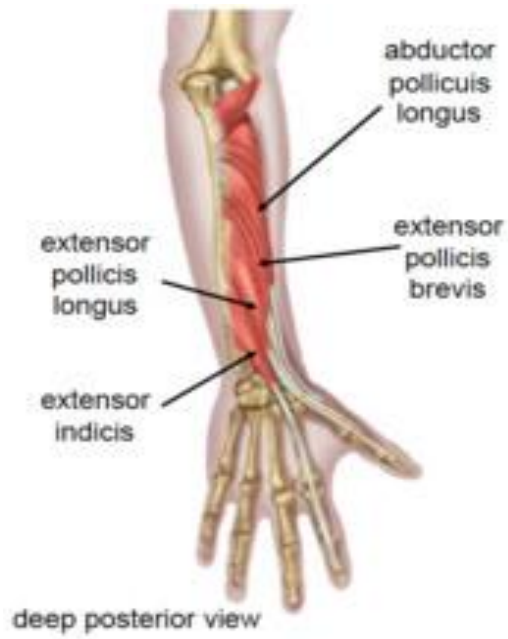


figure1

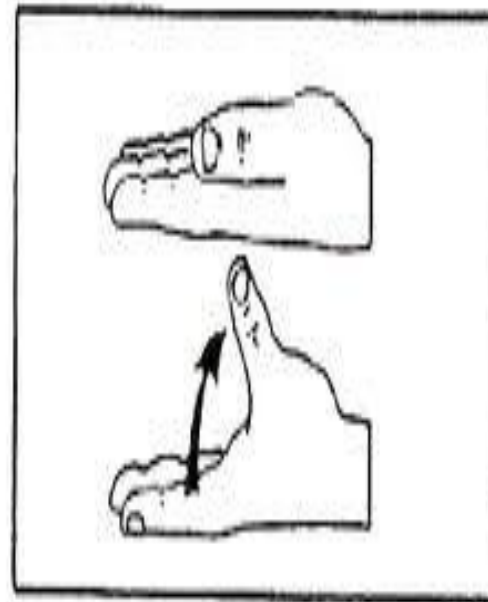


figure 2

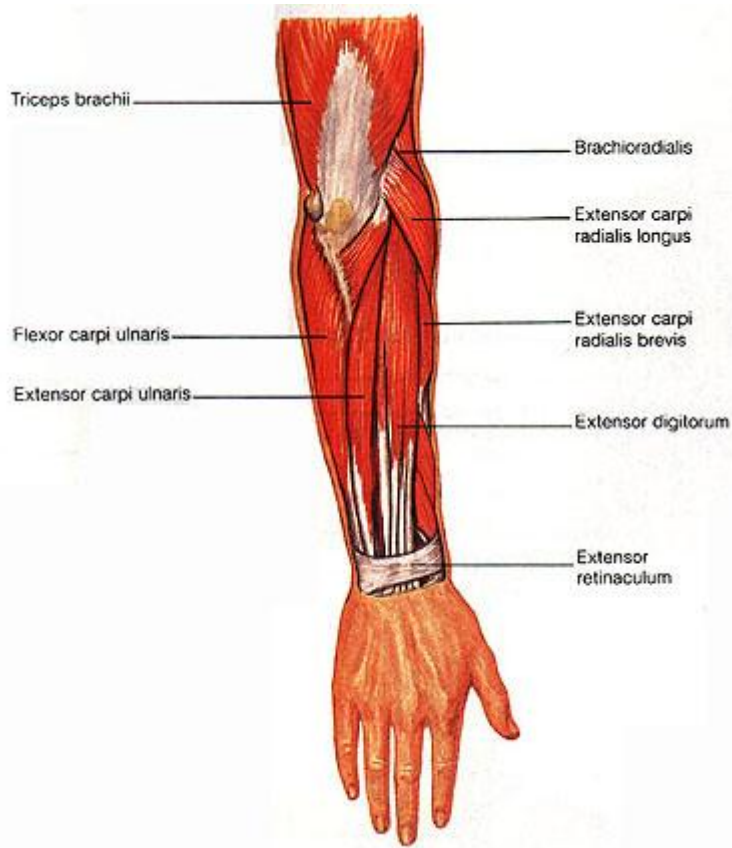


figure 4

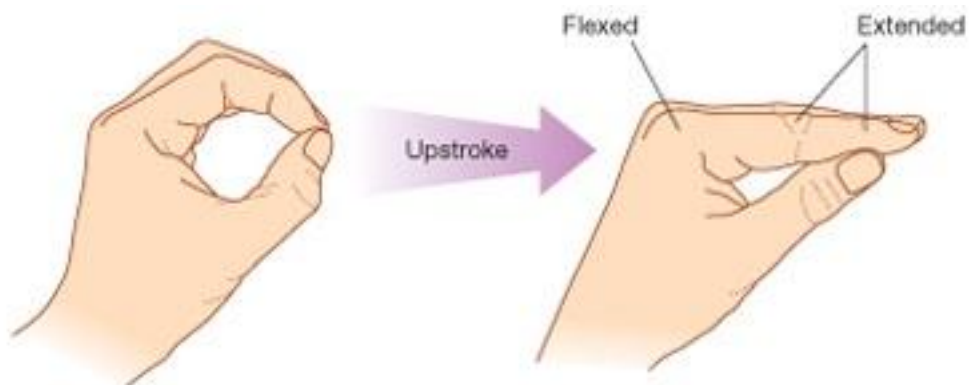


figure 3