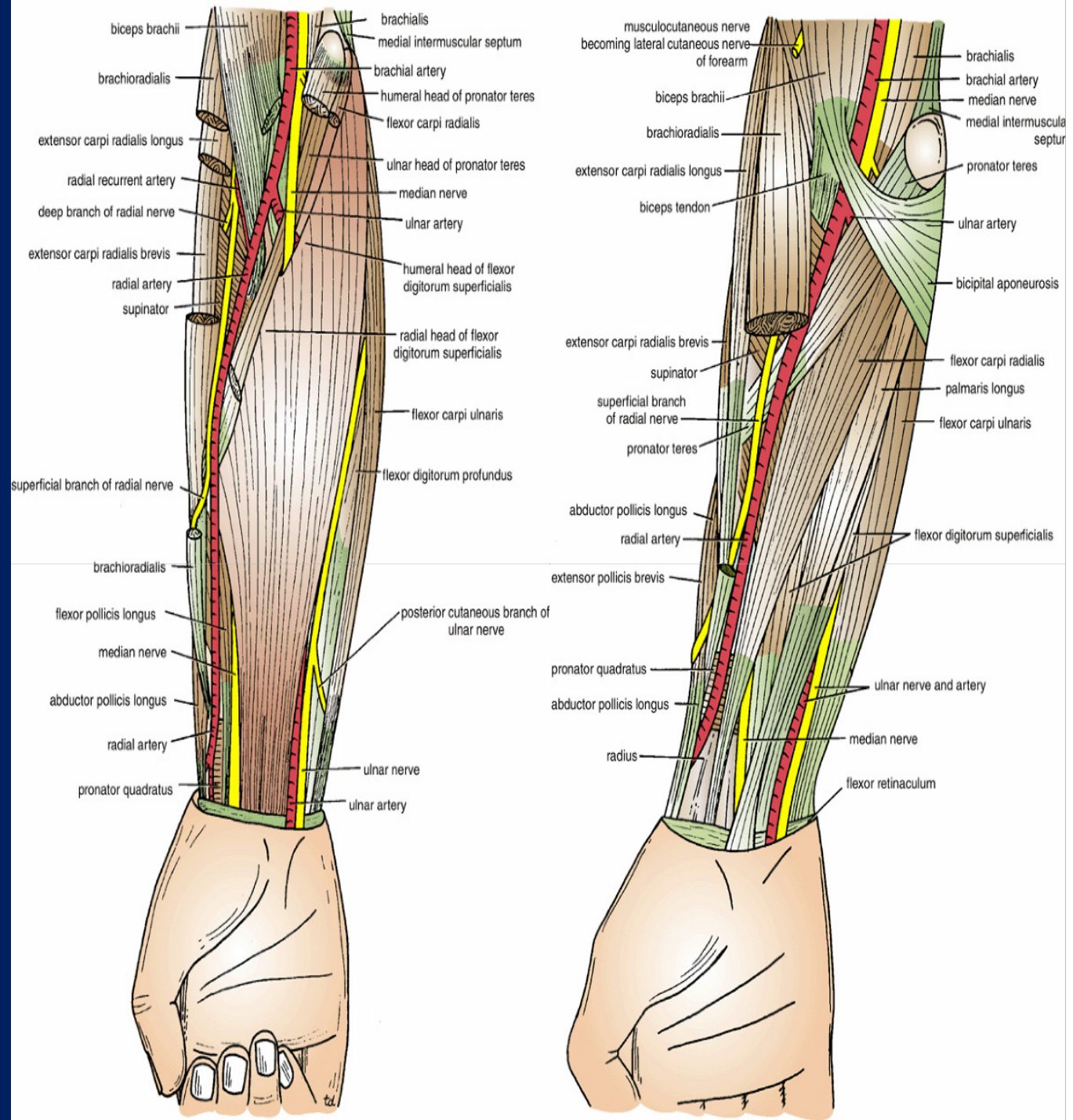




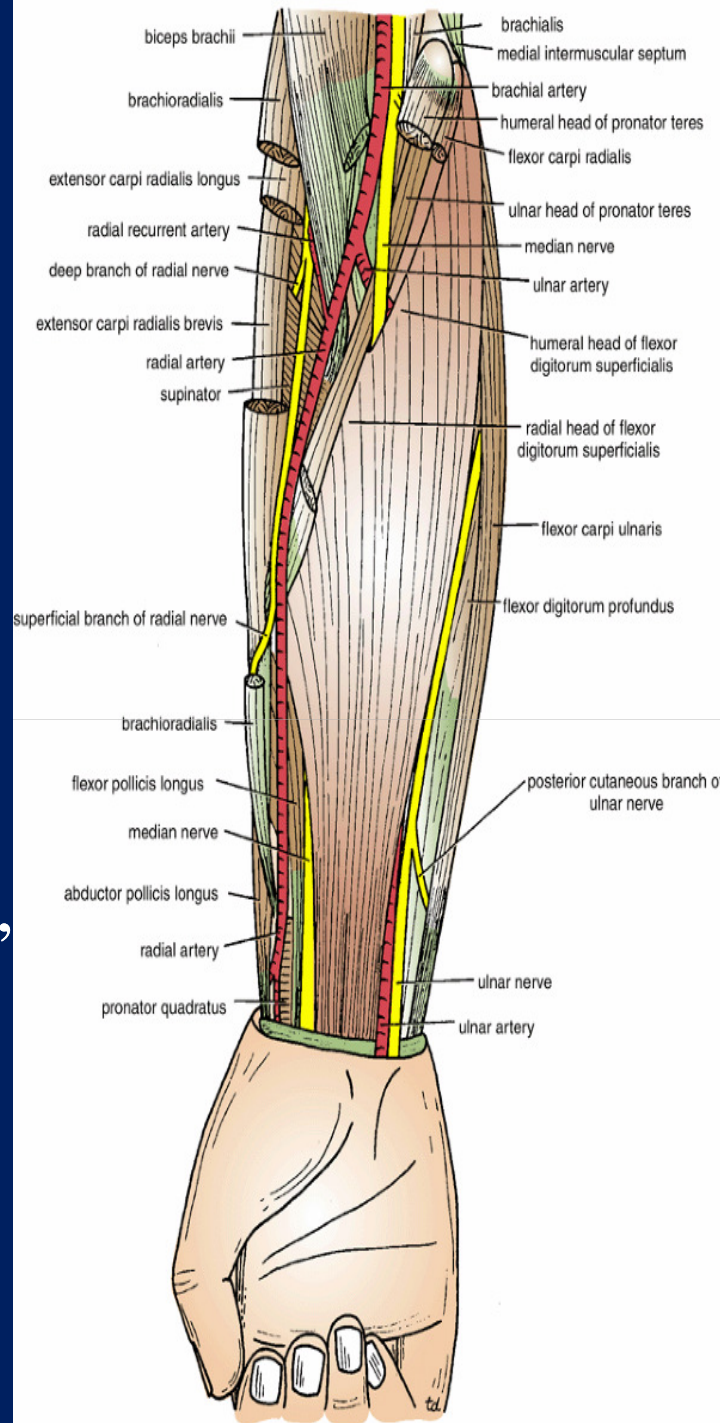
Radial Artery

- The radial artery is the smaller of the terminal branches of brachial artery.
- It begins in **cubital fossa**.
- It passes downward and **laterally**, beneath the **brachioradialis** muscle and resting on the deep muscles of the forearm.
- In the **middle third** of its course, the superficial branch of the radial nerve lies on its lateral side.
- In the **distal part** of the forearm, the radial artery lies on the anterior surface of the radius and is covered only by skin and fascia (site for taking the radial pulse).
- The radial artery leaves the forearm by winding around the lateral aspect of the wrist to reach the posterior surface of the hand.



Branches of the Radial Artery in the Forearm

- **Muscular branches** to neighboring muscles
- **Recurrent branch**, which takes part in the arterial anastomosis around the **elbow joint**.
- **Superficial palmar branch**, which arises just above the wrist, enters the palm of the hand, and frequently joins the ulnar artery to form the **superficial palmar arch**.



Radial artery and branches

- Radial recurrent a.
- Superficial palmar branch Principal artery of thumb

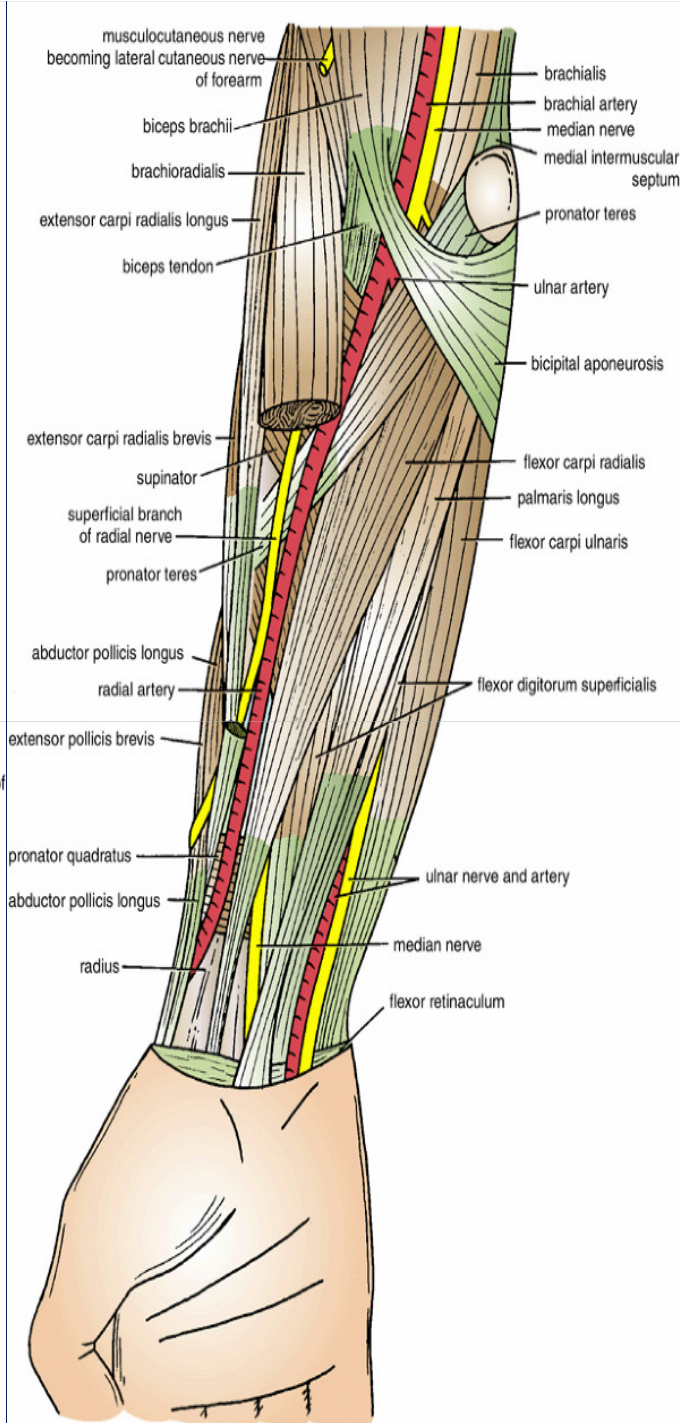
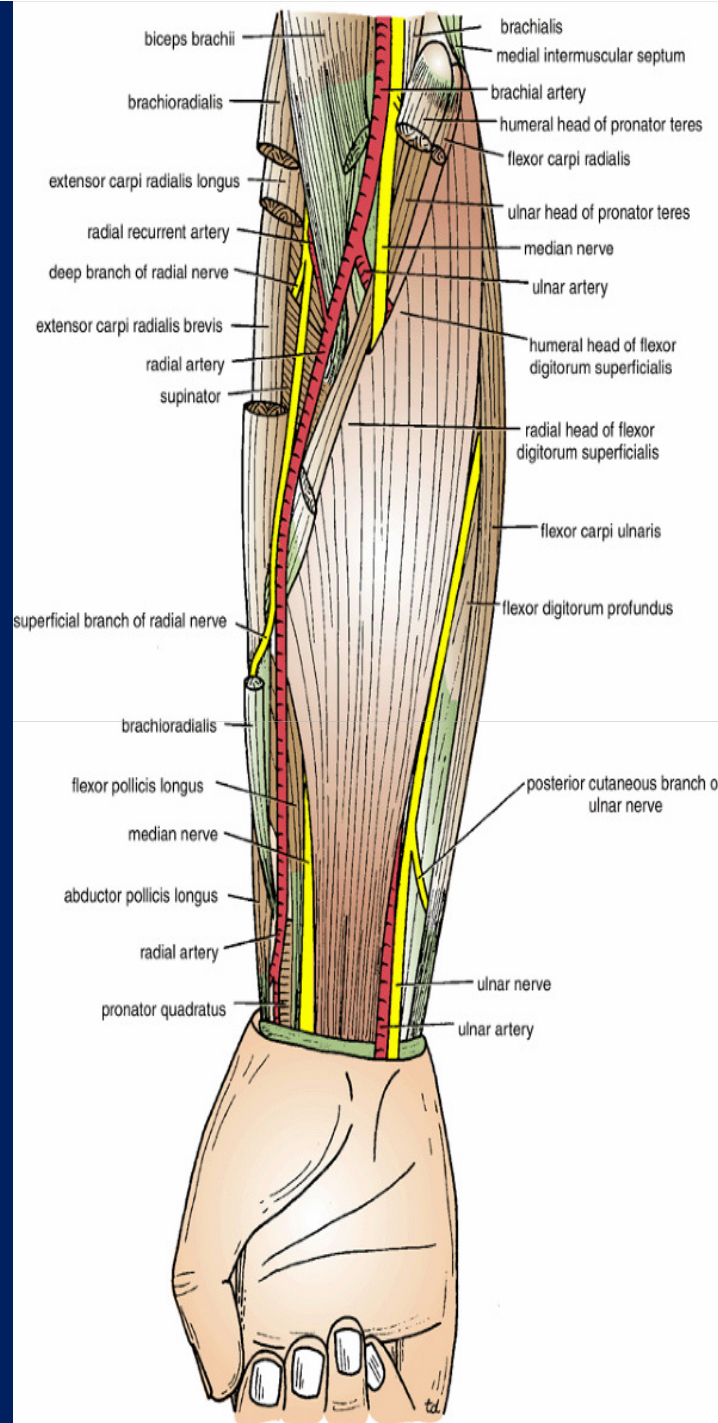
Ulnar artery and branches

- Ulnar recurrent a.
- Common interosseous artery
 - Anterior interosseous a.
 - Posterior interosseous a.
- Deep palmar branch



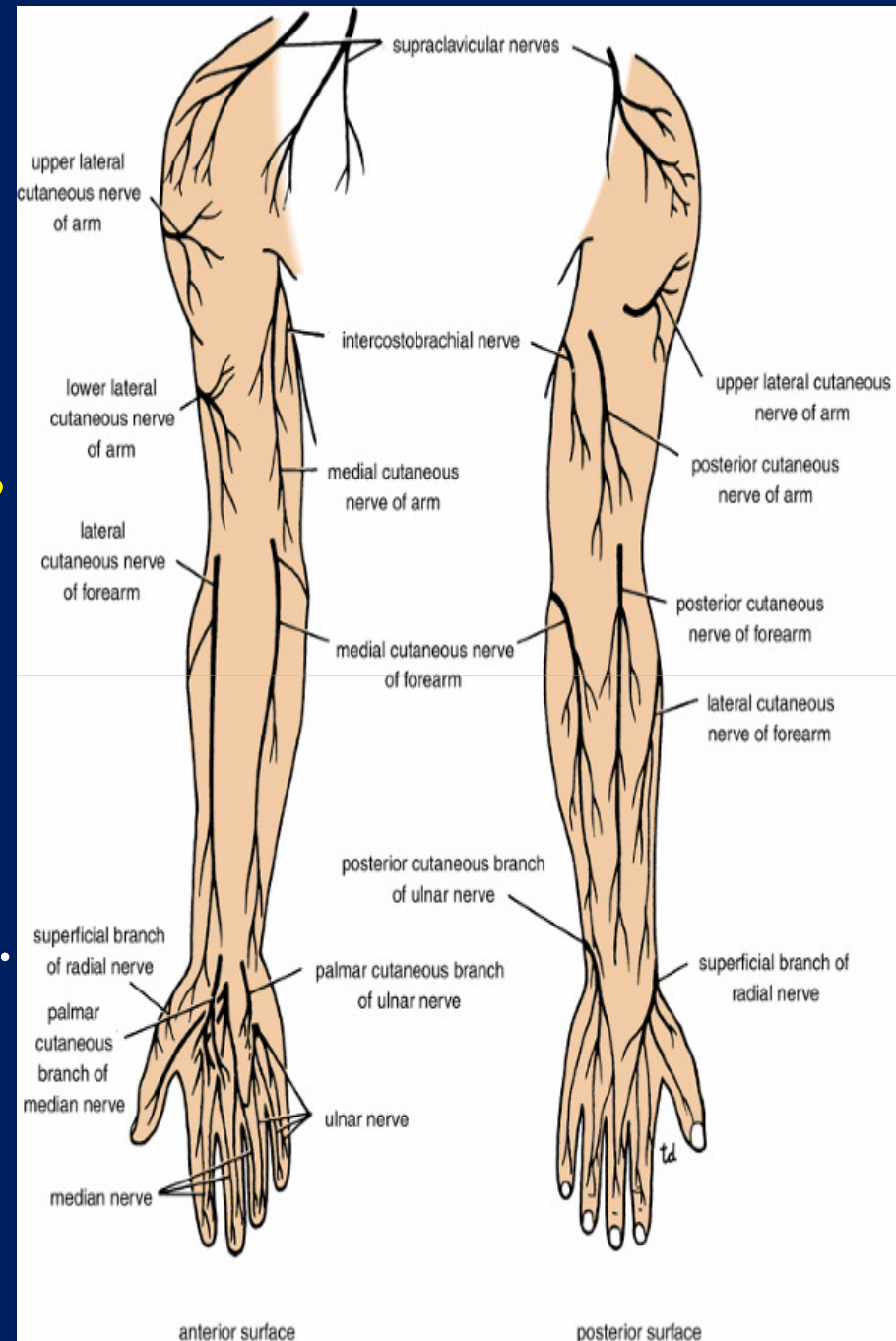
Median Nerve

- The **median nerve** leaves the **cubital fossa** by passing between the **two heads** of the **pronator teres**.
- It continues downward **behind** the **flexor digitorum superficialis** and rests **posteriorly** on the **flexor digitorum profundus**.
- At the **wrist**, the median nerve emerges from the **lateral border** of the **flexor digitorum superficialis** muscle and lies **behind** the tendon of the **palmaris longus**.
- It enters the **palm** by passing **behind** the **flexor retinaculum**.



Branches of the Median Nerve

- **Muscular branches** in the cubital fossa to the pronator teres, the flexor carpi radialis, the palmaris longus, and the flexor digitorum superficialis.
- **Articular branches** to the elbow joint.
- **Anterior interosseous nerve**.
- **Palmar cutaneous branch**
This arises in lower part of forearm and is distributed to skin over lateral part of palm.

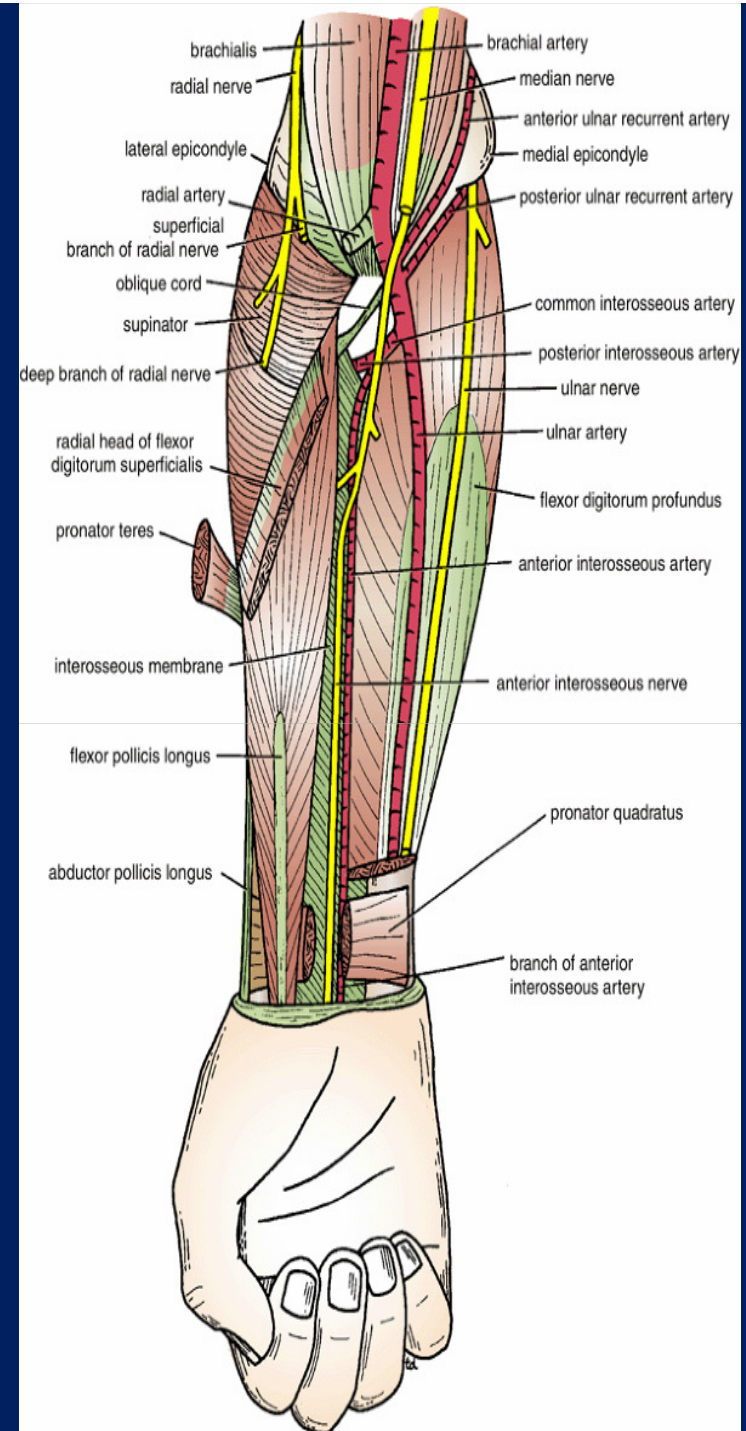


Anterior Interosseous Nerve

- The anterior interosseous nerve arises from **median nerve** as it emerges from between **two heads** of pronator teres.
- It passes downward on the **anterior surface** of the interosseous membrane, **between** the flexor pollicis longus and the flexor digitorum profundus.
- It ends on anterior surface of the carpus

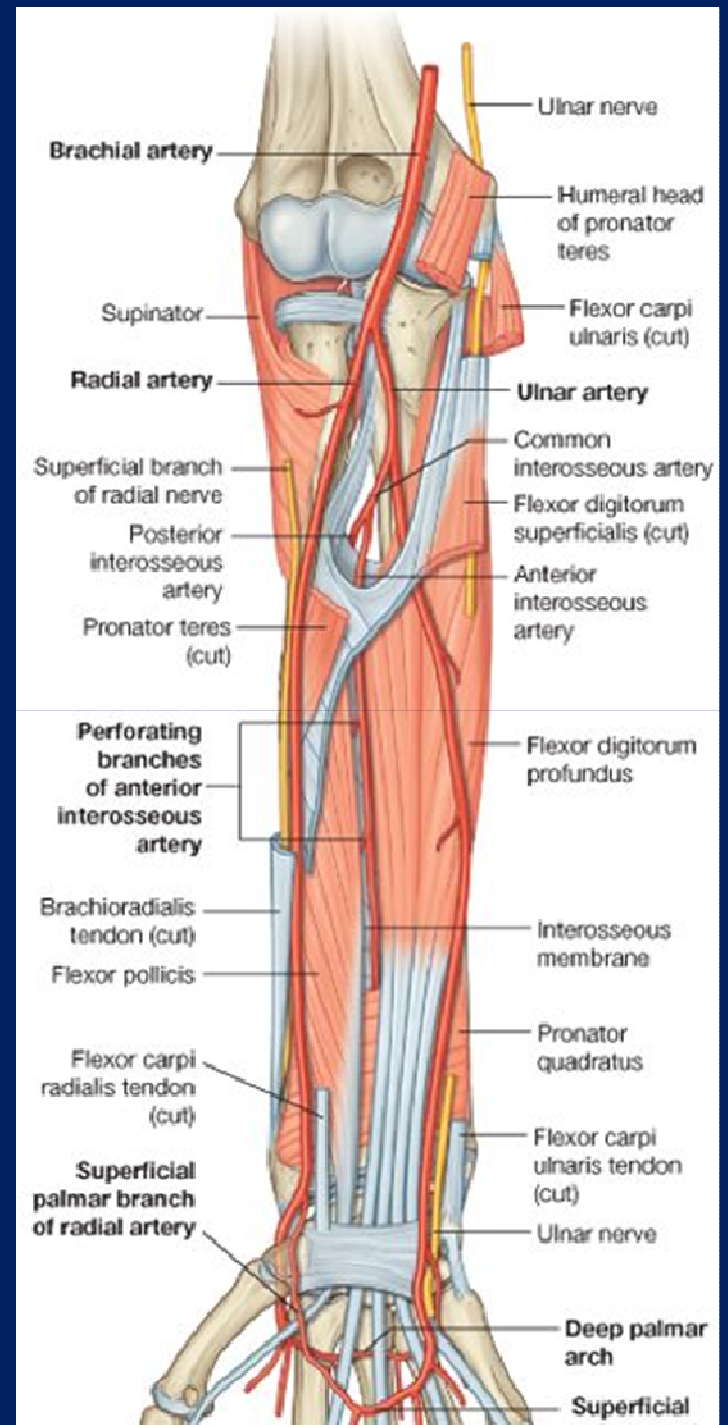
Branches

- **Muscular branches** to the flexor pollicis longus, the pronator quadratus, and the lateral half of the flexor digitorum profundus.
- **Articular branches** to the wrist and distal radioulnar joints.
- It also supplies the joints of the hand.



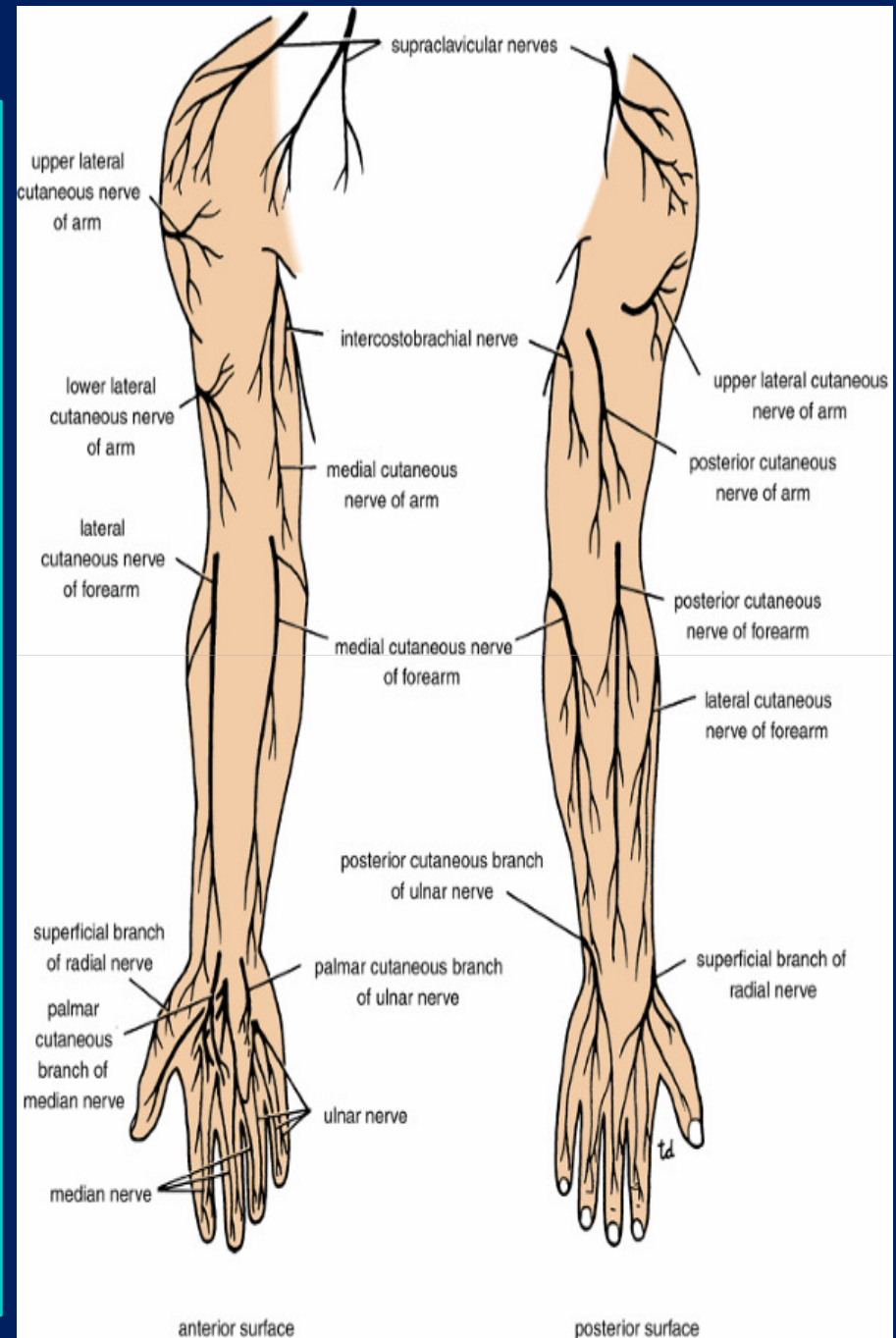
Ulnar Nerve

The ulnar nerve passes from behind the **medial epicondyle** of the humerus, crosses the medial ligament of the elbow joint, and enters the front of the forearm by passing between the **two heads** of the **flexor carpi ulnaris**. It then runs down the forearm **between** the **flexor carpi ulnaris** and **flexor digitorum profundus** muscles. In the distal two thirds of the forearm, the ulnar artery lies on the lateral side of the ulnar nerve. At the wrist, the ulnar nerve becomes **superficial** and lies between the tendons of **flexor carpi ulnaris** and **flexor digitorum superficialis** muscles. The ulnar nerve enters the palm of the hand by passing in **front** of the **flexor retinaculum** and **lateral** to the pisiform bone . it has the ulnar artery lateral to it.



Branch of the Ulnar Nerves

- **Muscular branches** to the flexor carpi ulnaris and to the medial half of the flexor digitorum profundus.
- **Articular branches** to elbow joint
- The **palmar cutaneous branch** is a small branch that arises in the middle of the forearm and supplies the skin over the hypothenar eminence.
- The **dorsal posterior cutaneous branch** is a large branch that arises in the distal third of the forearm.
- It passes medially between the tendon of the flexor carpi ulnaris and is distributed on the posterior surface of the hand and fingers.



Contents of the Lateral Fascial Compartment of the Forearm

The lateral fascial compartment may be regarded as part of the posterior fascial compartment.

- **Muscles:**

Brachioradialis and extensor carpi radialis longus

- **Blood supply:**

Radial and brachial arteries

- **Nerve supply to the muscles:**

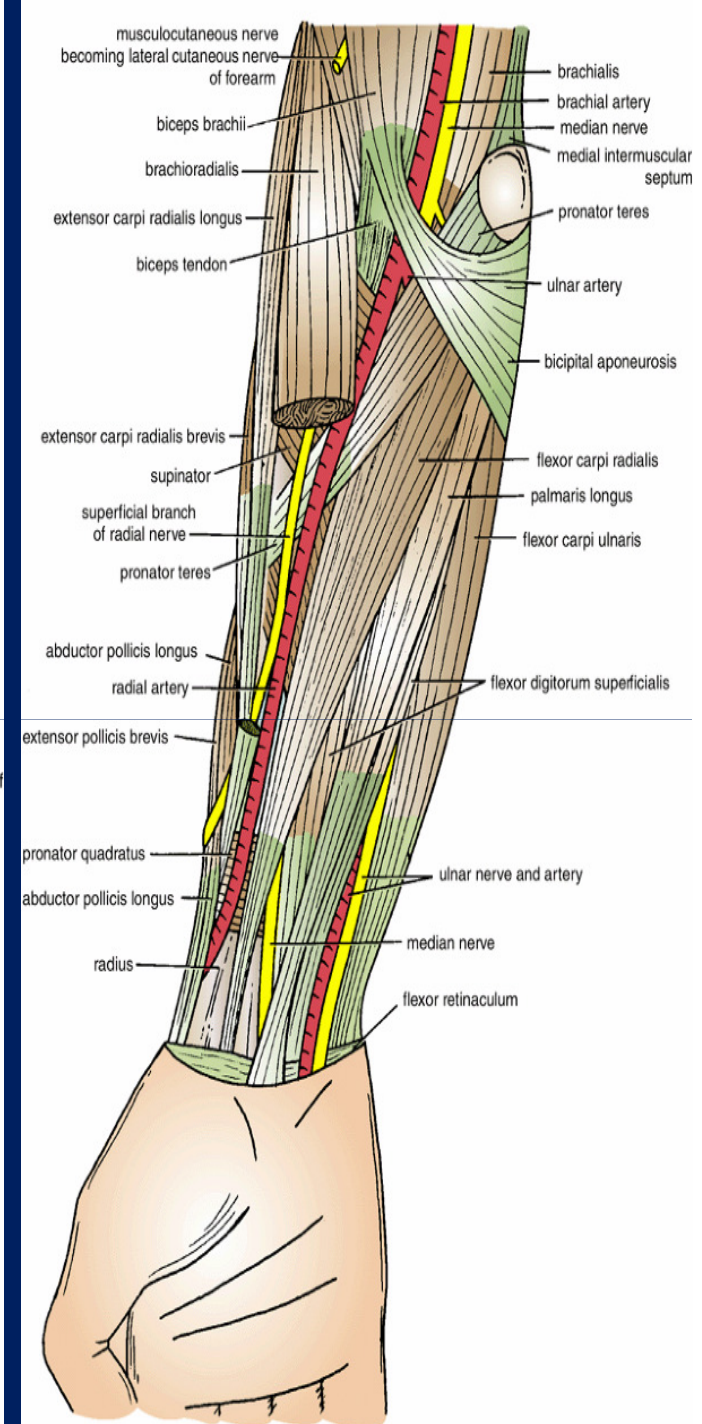
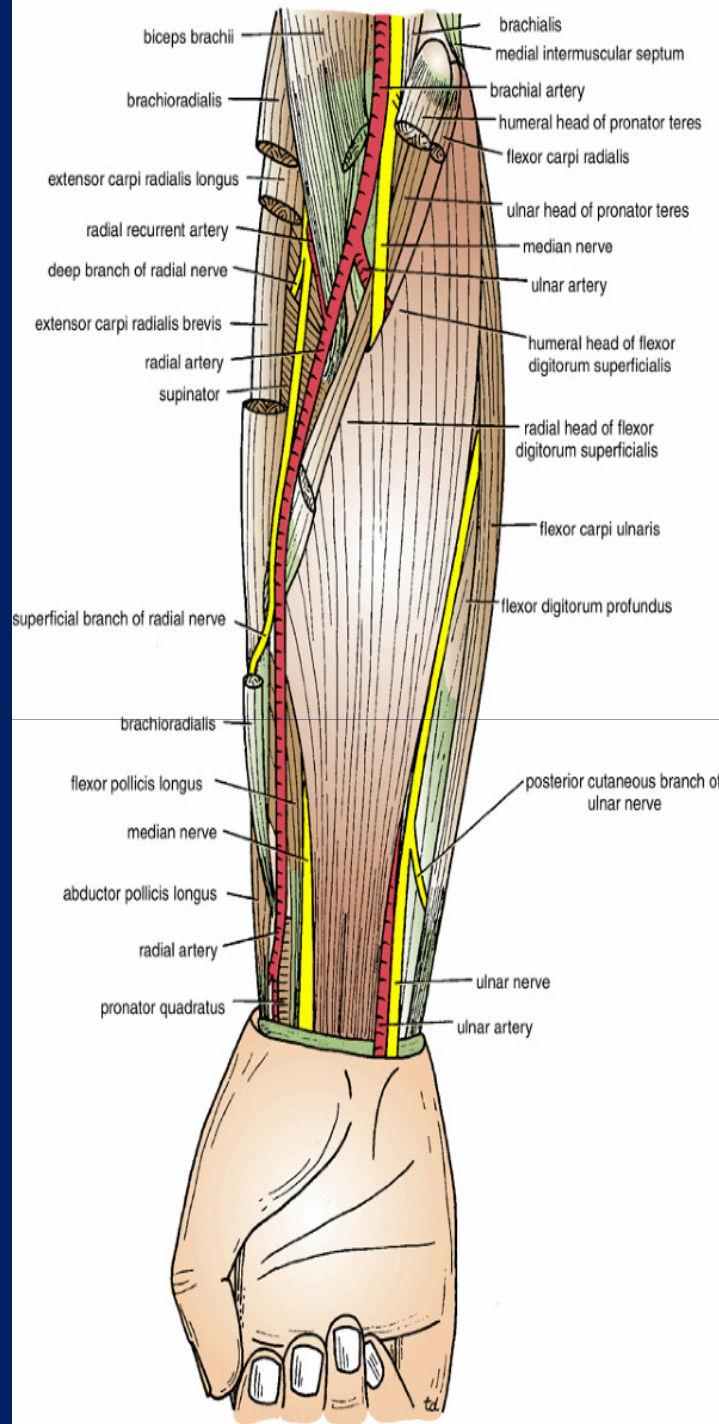
Radial nerve

Table 9-7 Muscles of the Lateral Fascial Compartment of the Forearm

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots^a	Action
Brachioradialis	Lateral supracondylar ridge of humerus	Base of styloid process of radius	Radial nerve	C5, 6 , 7	Flexes forearm at ridge of humerus elbow joint; rotates forearm to the midprone position
Extensor carpi radialis longus	Lateral supracondylar ridge of humerus	Posterior surface of base of second metacarpal bone	Radial nerve	C6, 7	Extends and abducts hand at wrist joint

^a The predominant nerve root supply is indicated by boldface type.

Muscles of the Lateral Fascial Compartment of the Forearm



Arteries of the Lateral Compartment of the Forearm

- The arterial supply is derived from branches of the **radial** and **brachial arteries**.

Branches of Radial Nerve

Muscular branches

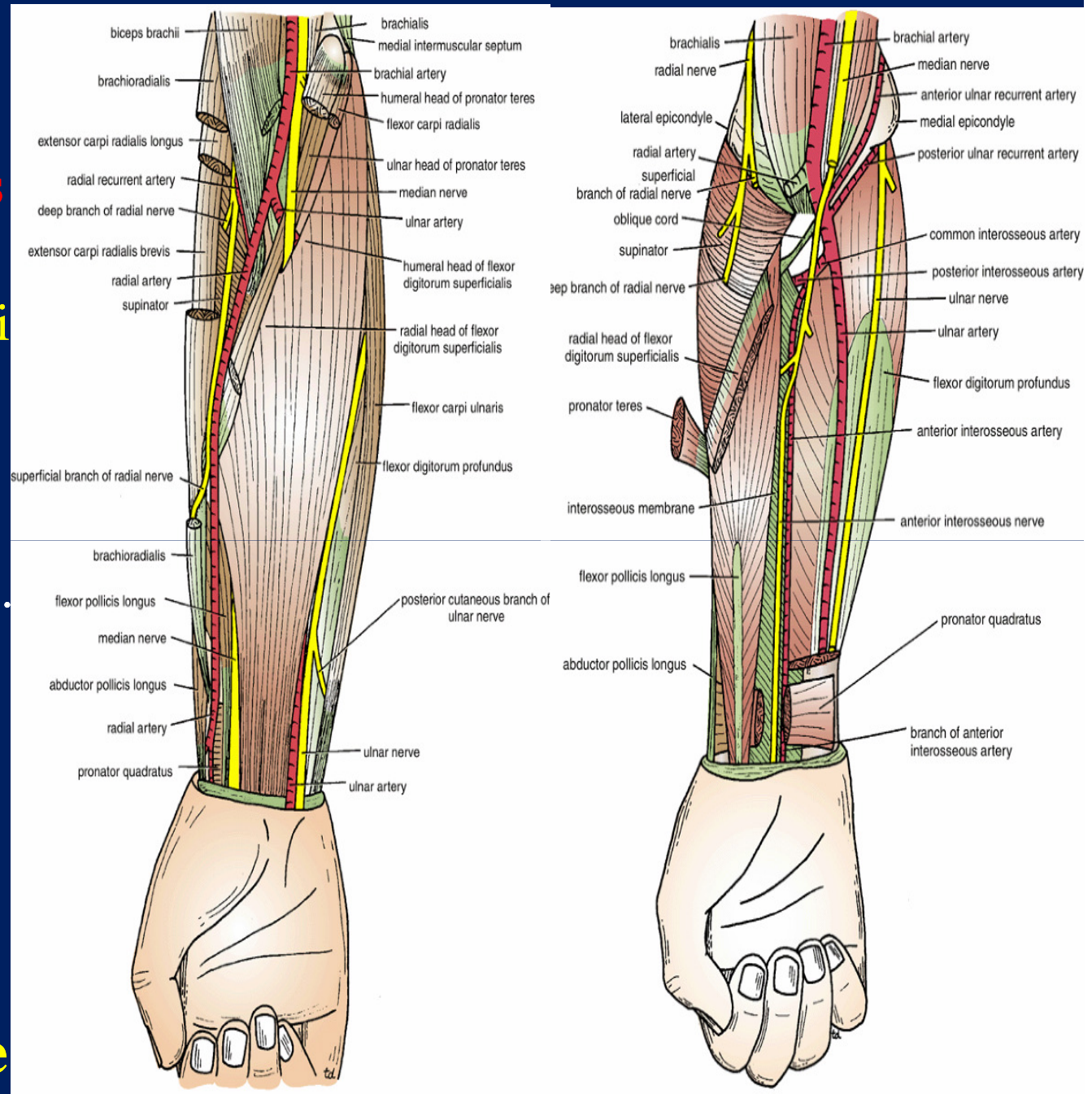
- to the **brachioradialis**,
to the **extensor carpi radialis longus**, and
a small branch to
the lateral part of
the **brachialis** muscle.

Articular branches

to the **elbow joint**

Deep branch of
the **radial nerve**.

Superficial branch
of the **radial nerve**



Contents of the Posterior Fascial Compartment of the Forearm

- **Muscles:** The **superficial group** includes the **extensor carpi radialis brevis**, **extensor digitorum**, **extensor digiti minimi**, **extensor carpi ulnaris** and **anconeus**.

These muscles possess a common tendon of origin, which is attached to the lateral epicondyle of the humerus.

The **deep group** includes the **supinator**, **abductor pollicis longus**, **extensor pollicis brevis**, **extensor pollicis longus** and **extensor indicis**.

- **Blood supply:**

Posterior and anterior interosseous arteries .

- **Nerve supply to the muscles:**

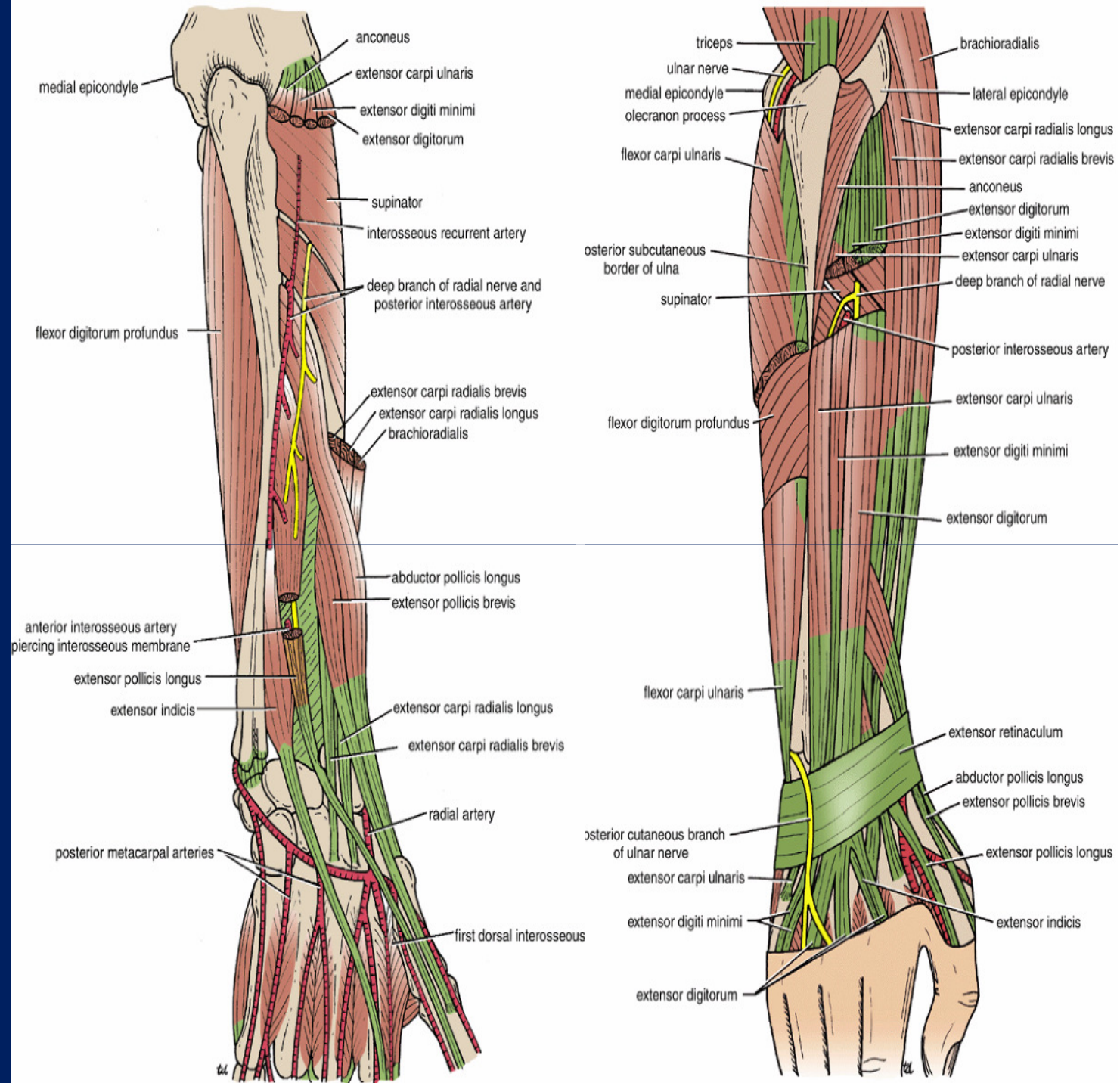
Deep branch of the radial nerve .

Muscles of the Posterior Fascial Compartment of the Forearm

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots ^a	Action
Extensor carpi radialis brevis	Lateral epicondyle of humerus	Posterior surface of base of third metacarpal bone	Deep branch of radial nerve	C7, 8	Extends and abducts hand at wrist joint
Extensor digitorum	Lateral epicondyle of humerus	Middle and distal phalanges of medial four fingers	Deep branch of radial nerve	C7, 8	Extends fingers and hand (see text for details)
Extensor digiti minimi	Lateral epicondyle of humerus	Extensor expansion of little finger	Deep branch of radial nerve	C7, 8	Extends metacarpal phalangeal joint of little finger
Extensor carpi ulnaris	Lateral epicondyle of humerus	Base of fifth metacarpal bone	Deep branch of radial nerve	C7, 8	Extends and adducts hand at wrist joint
Anconeus	Lateral epicondyle of humerus	Lateral surface of olecranon process of ulna	Radial nerve	C7, 8; T1	Extends elbow joint
Supinator	Lateral epicondyle of humerus, anular ligament of proximal radioulnar joint, and ulna	Neck and shaft of radius	Deep branch of radial nerve	C5, 6	Supination of forearm
Abductor pollicis longus	Posterior surface of shafts of radius and ulna	Base of first metacarpal bone	Deep branch of radial nerve	C7, 8	Abducts and extends thumb
Extensor pollicis brevis	Posterior surface of shaft of radius	Base of proximal phalanx of thumb	Deep branch of radial nerve	C7, 8	Extends metacarpophalangeal joints of thumb
Extensor pollicis longus	Posterior surface of shaft of ulna	Base of distal phalanx of thumb	Deep branch of radial nerve	C7, 8	Extends distal phalanx of thumb
Extensor indicis	Posterior surface of shaft of ulna	Extensor expansion of index finger	Deep branch of radial nerve	C7, 8	Extends metacarpophalangeal joint of index finger

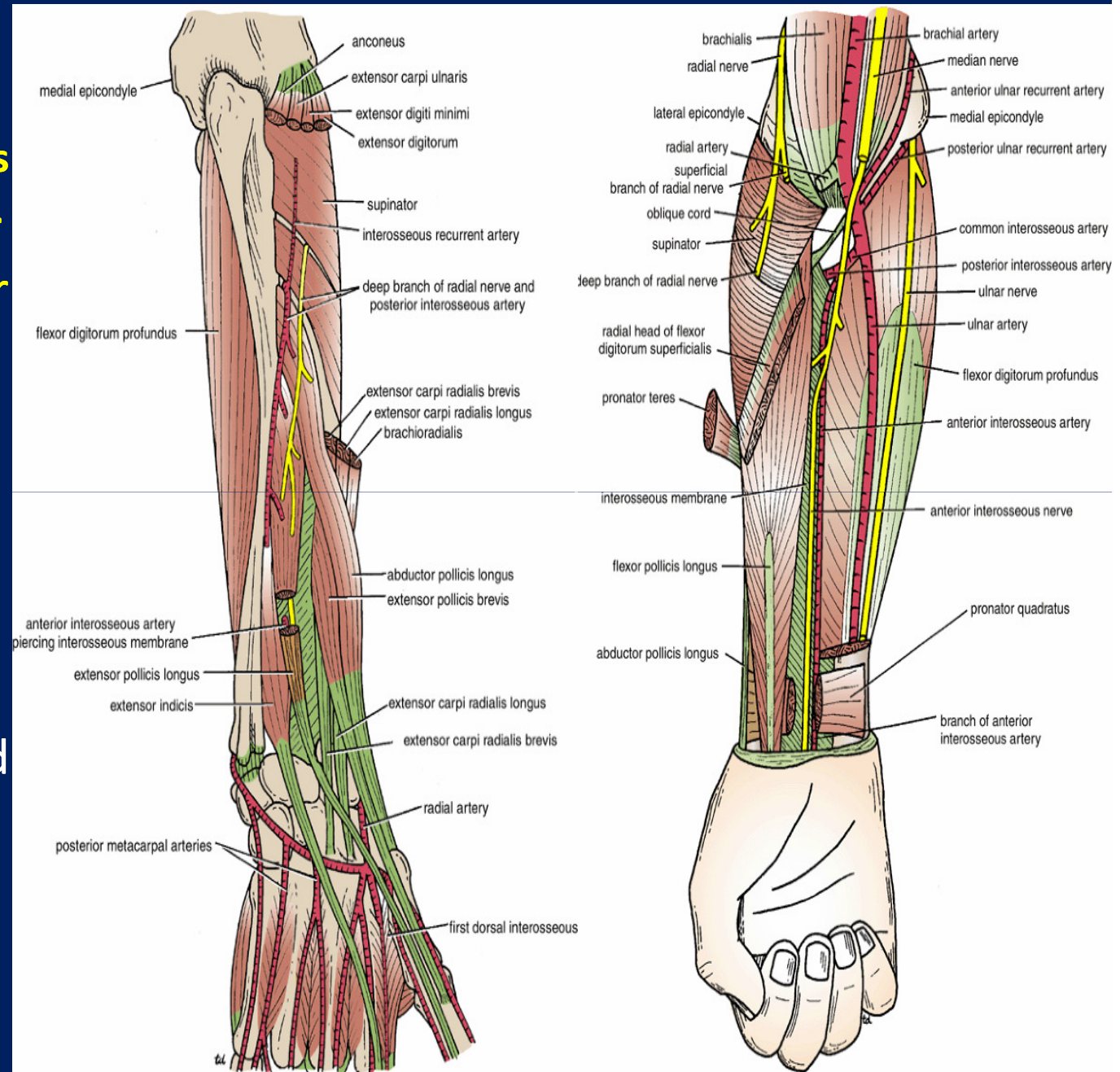
^a The predominant nerve root supply is indicated by boldface type.

Muscles of the Posterior Fascial Compartment of the Forearm



Branches Of Deep Branch of the Radial Nerve

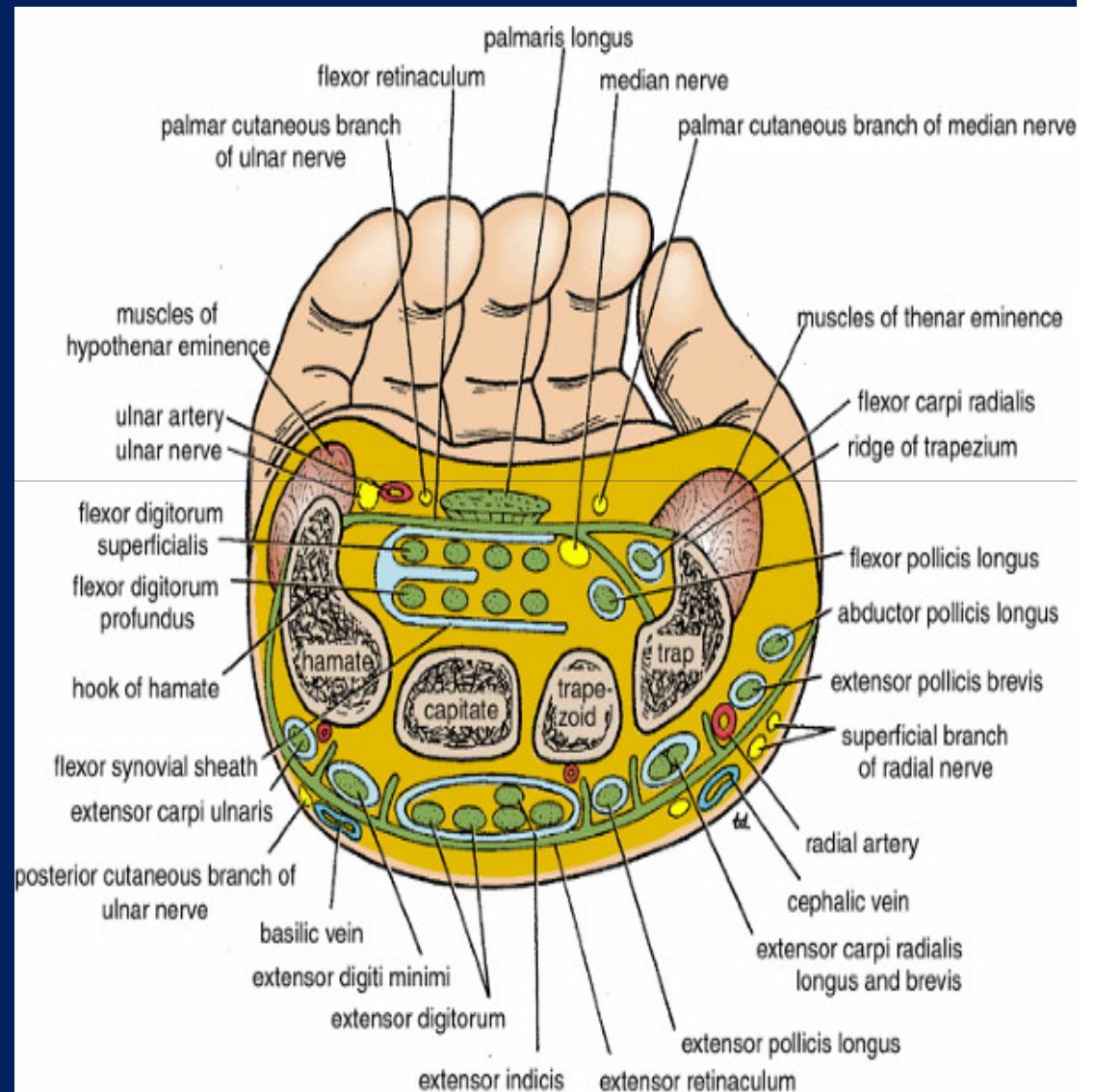
- Muscular branches** to the **extensor carpi radialis brevis**, **supinator**, **extensor digitorum**, **extensor digiti minimi**, **extensor carpi ulnaris**, **abductor pollicis longus**, **extensor pollicis brevis**, **extensor pollicis longus** and **extensor indicis** .
- Articular branches** to the wrist and carpal joints .



Structures on the Anterior Aspect of the Wrist

□ from medial to lateral:

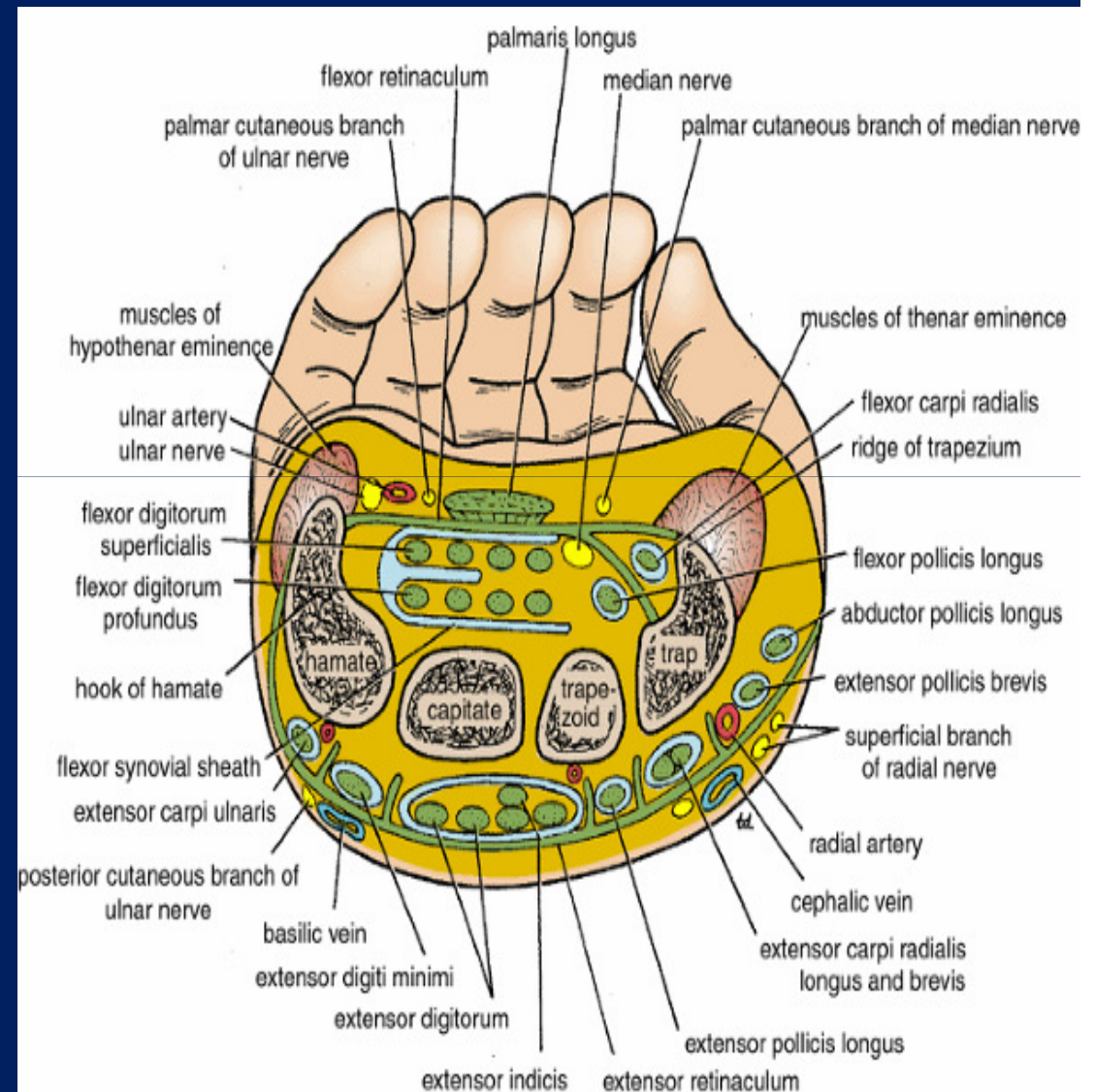
- **Flexor carpi ulnaris tendon**
- **Ulnar nerve**
- **Ulnar artery**
- **Palmar cutaneous branch of the ulnar nerve**
- **Palmaris longus tendon**
- **Palmar cutaneous branch of the median nerve.**



structures pass beneath the flexor retinaculum

□ from medial to lateral:

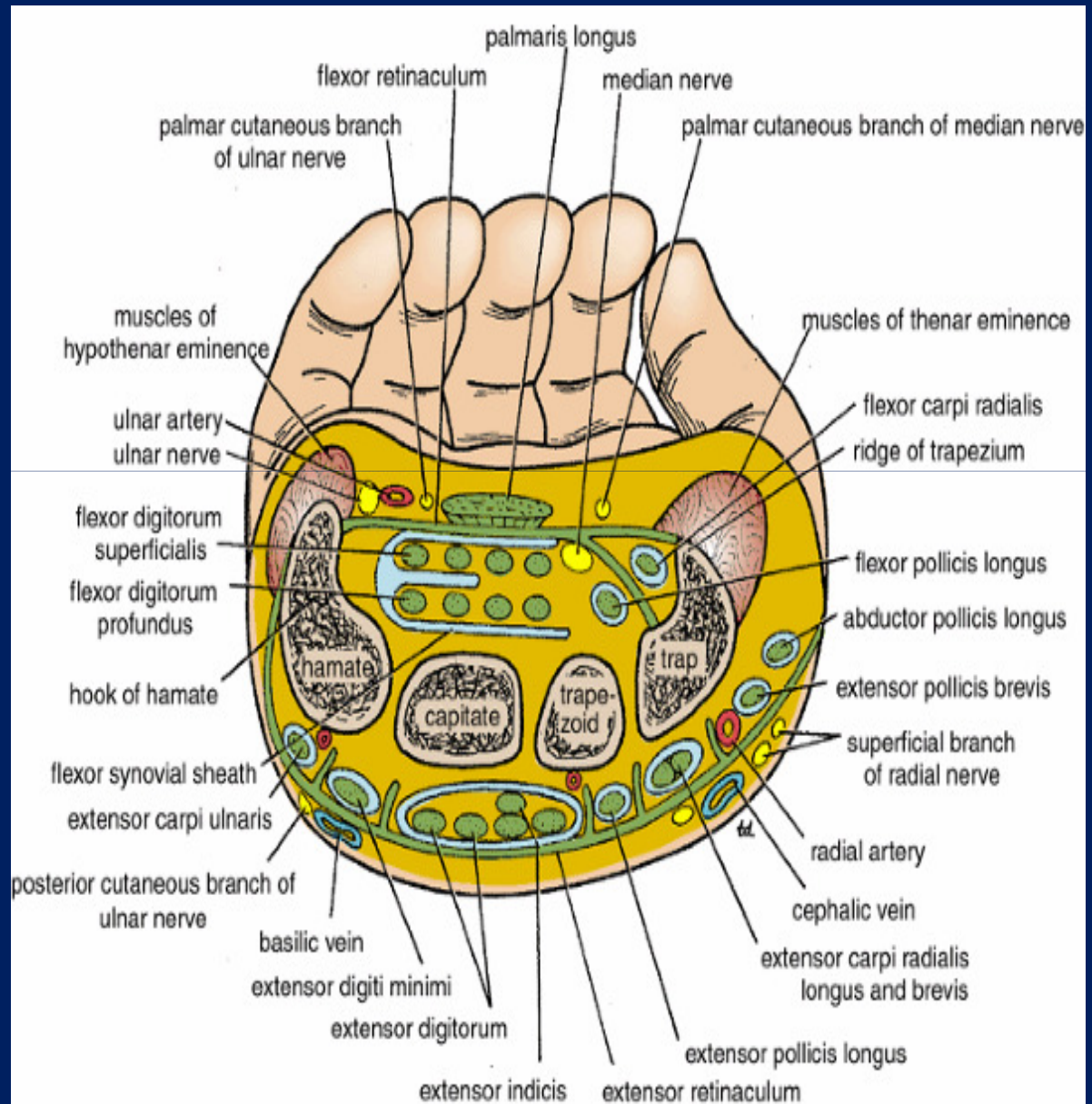
- **Flexor digitorum superficialis tendons**
- **Median nerve**
- **Flexor pollicis longus tendon**
- **Flexor carpi radialis tendon**



structures pass superficial to the extensor retinaculum

□ from medial to lateral:

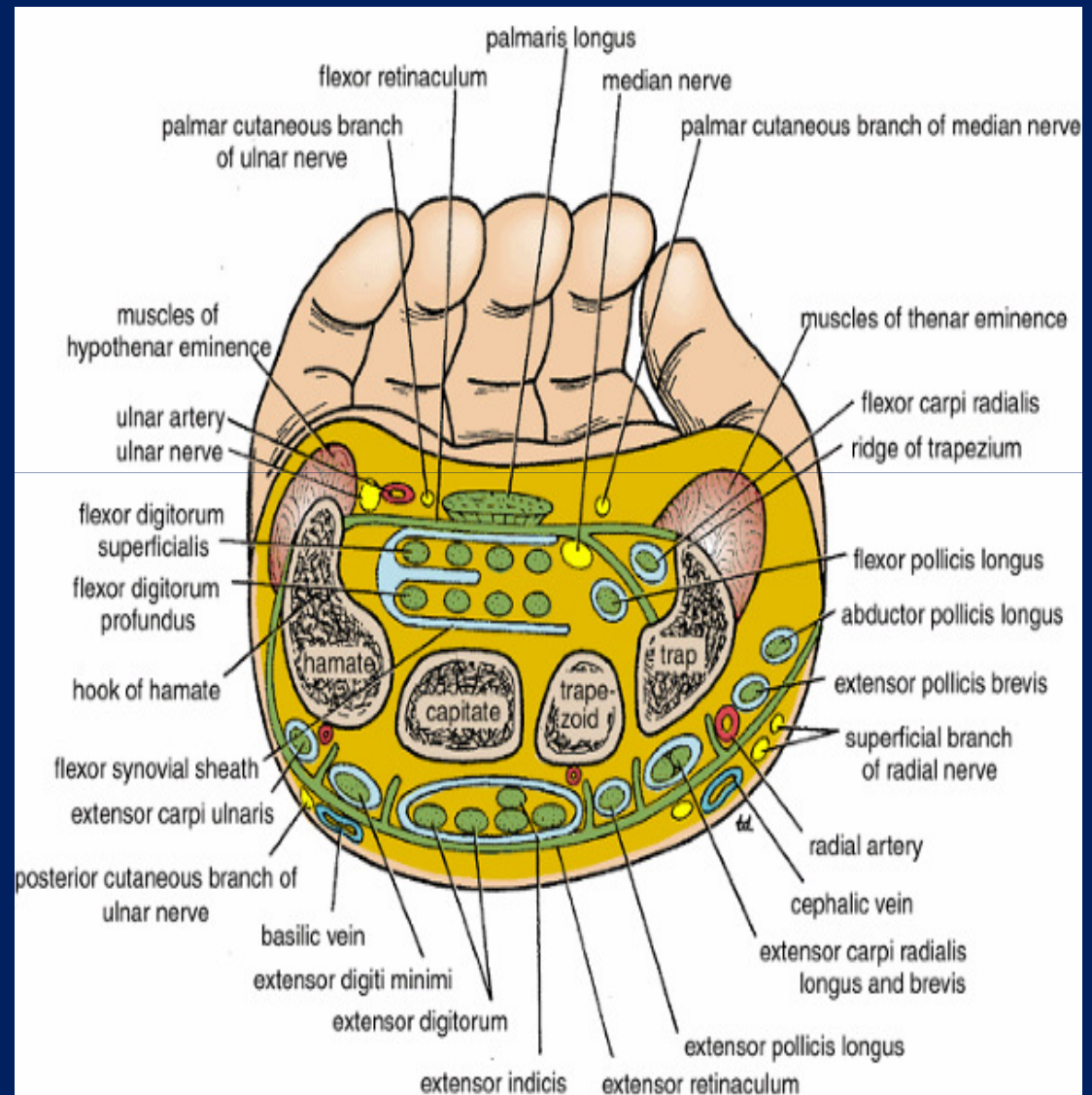
- Dorsal (posterior) cutaneous branch of the ulnar nerve.
- Basilic vein.
- Cephalic vein.
- Superficial branch of the radial nerve.



Structures pass beneath the extensor retinaculum

□ from medial to lateral:

- Extensor carpi ulnaris tendon.
- Extensor digiti minimi tendon.
- Extensor digitorum and extensor indicis tendons.
- Extensor pollicis longus tendon.
- Extensor carpi radialis longus and brevis tendons.
- Abductor pollicis longus and the extensor pollicis brevis tendons.



***Elbow joint:**

Is a compound joint:

This occurs between the trochlea and capitulum of the humerus and the trochlear notch of the ulna and the head of the radius.

Type: Synovial hinge joint

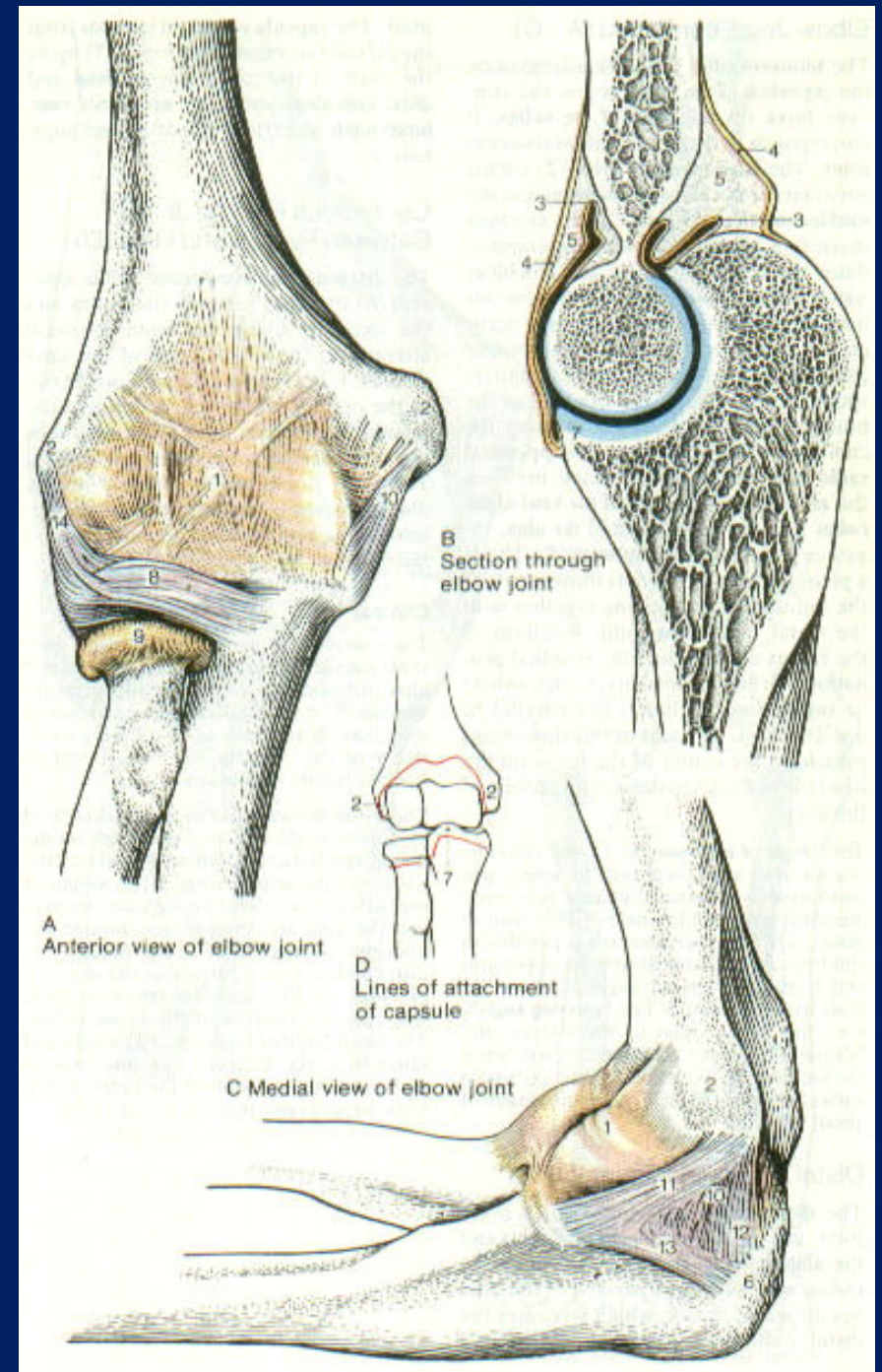
Movements: Flexion and extension.

Ligaments:

Ulnar (medial) collateral ligament.

Radial (lateral) collateral ligament .

Nerve supply: Branches from the median, ulnar, musculocutaneous and radial nerves.



Proximal Radioulnar Joint

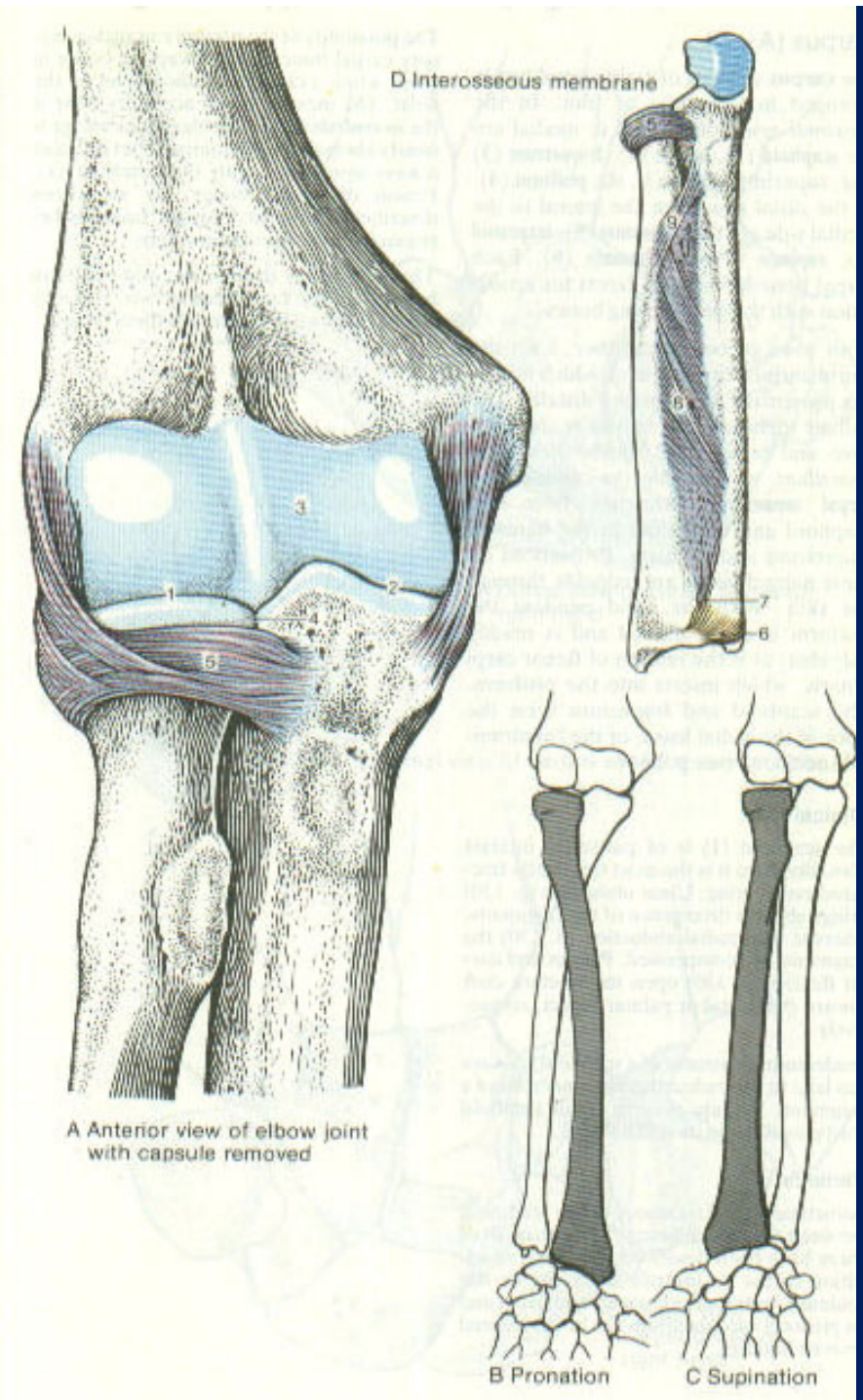
Articulation: Between the head of the radius and the anular ligament and the radial notch on the ulna.

■ **Type:** Synovial pivot joint

■ **Capsule:** The capsule encloses the joint and is continuous with that of the elbow joint.

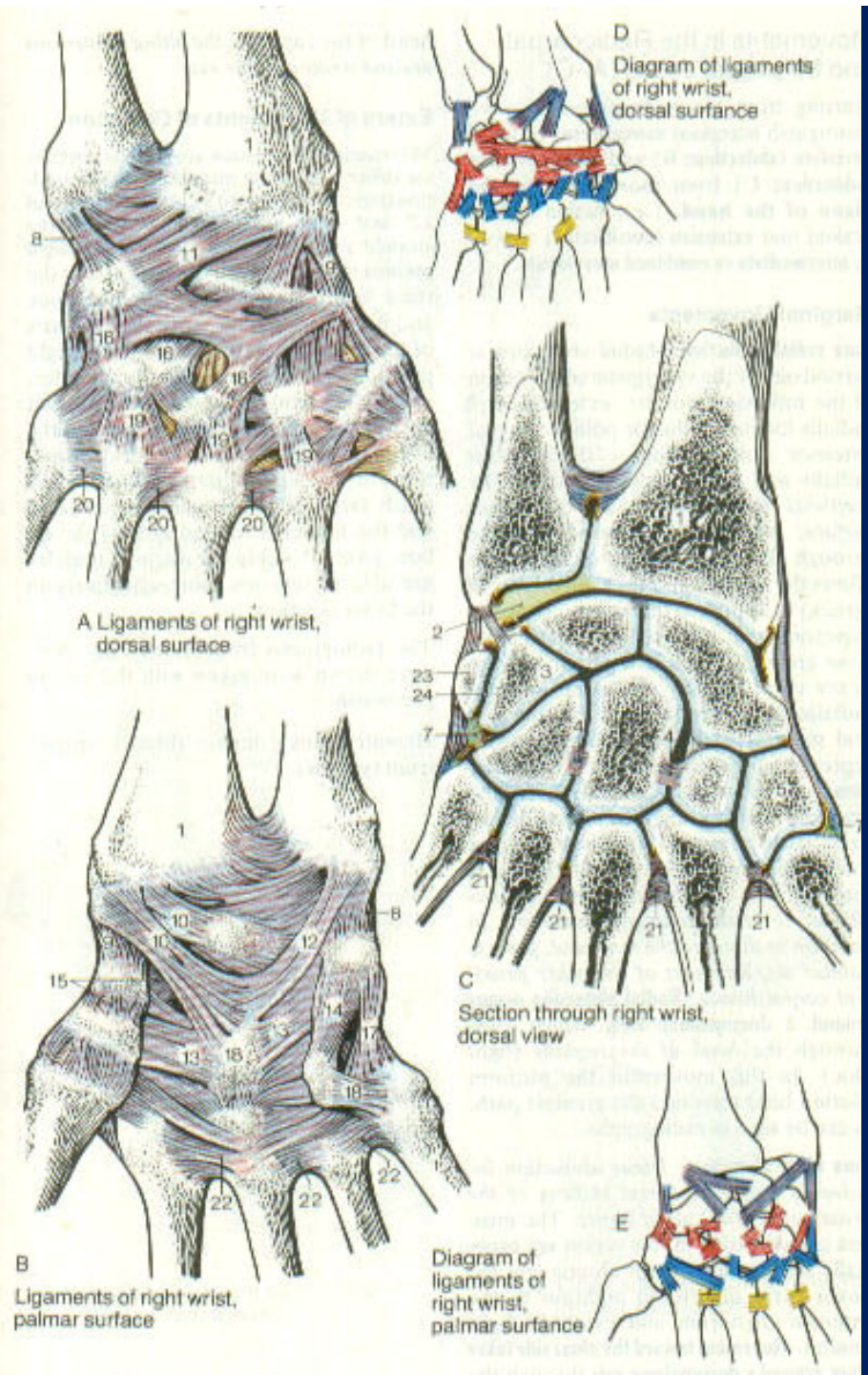
■ **Ligament:** The anular ligament is attached to the anterior and posterior margins of the radial notch on the ulna and forms a collar around the head of the radius. It is continuous above with the capsule of elbow joint. It is not attached to the radius.

■ **Nerve supply:** Branches of the median, ulnar, musculocutaneous, and radial nerves.

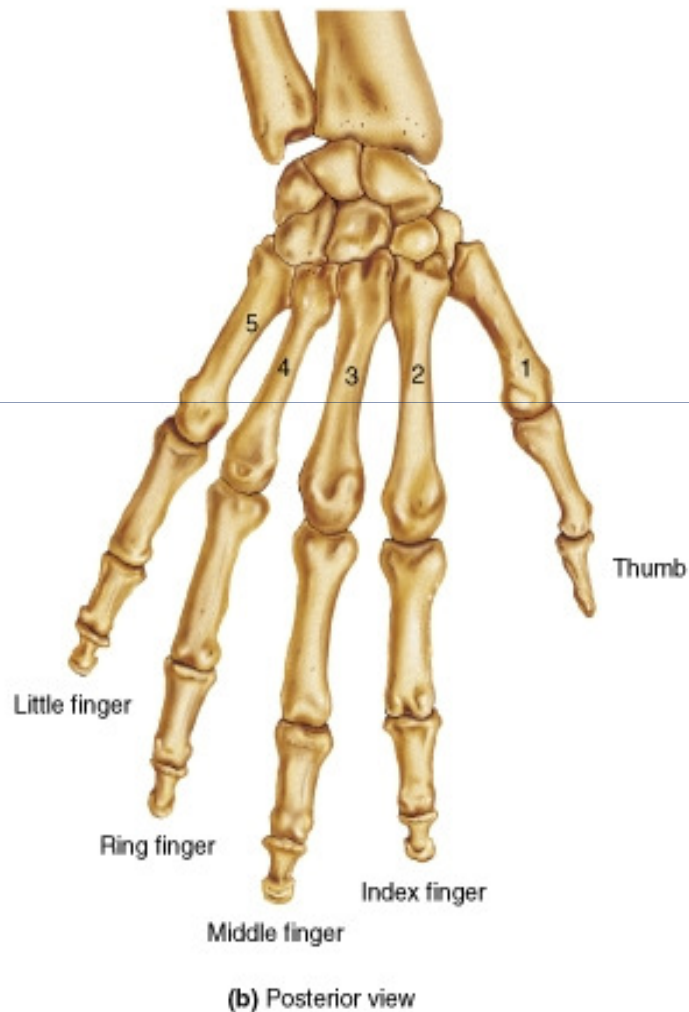


Distal Radioulnar Joint

- **Articulation:** Between the rounded head of the ulna and the ulnar notch on the radius.
- **Type:** Synovial pivot joint
- **Capsule:** The capsule encloses the joint but is deficient superiorly.
- **Ligaments:** Weak anterior and posterior ligaments strengthen the capsule.
- **Articular disc:** This is triangular and composed of fibrocartilage.
- **Synovial membrane:** This lines capsule passing from the edge of one articular surface to that of the other.
- **Nerve supply:** Anterior interosseous nerve and the deep branch of the radial nerve.

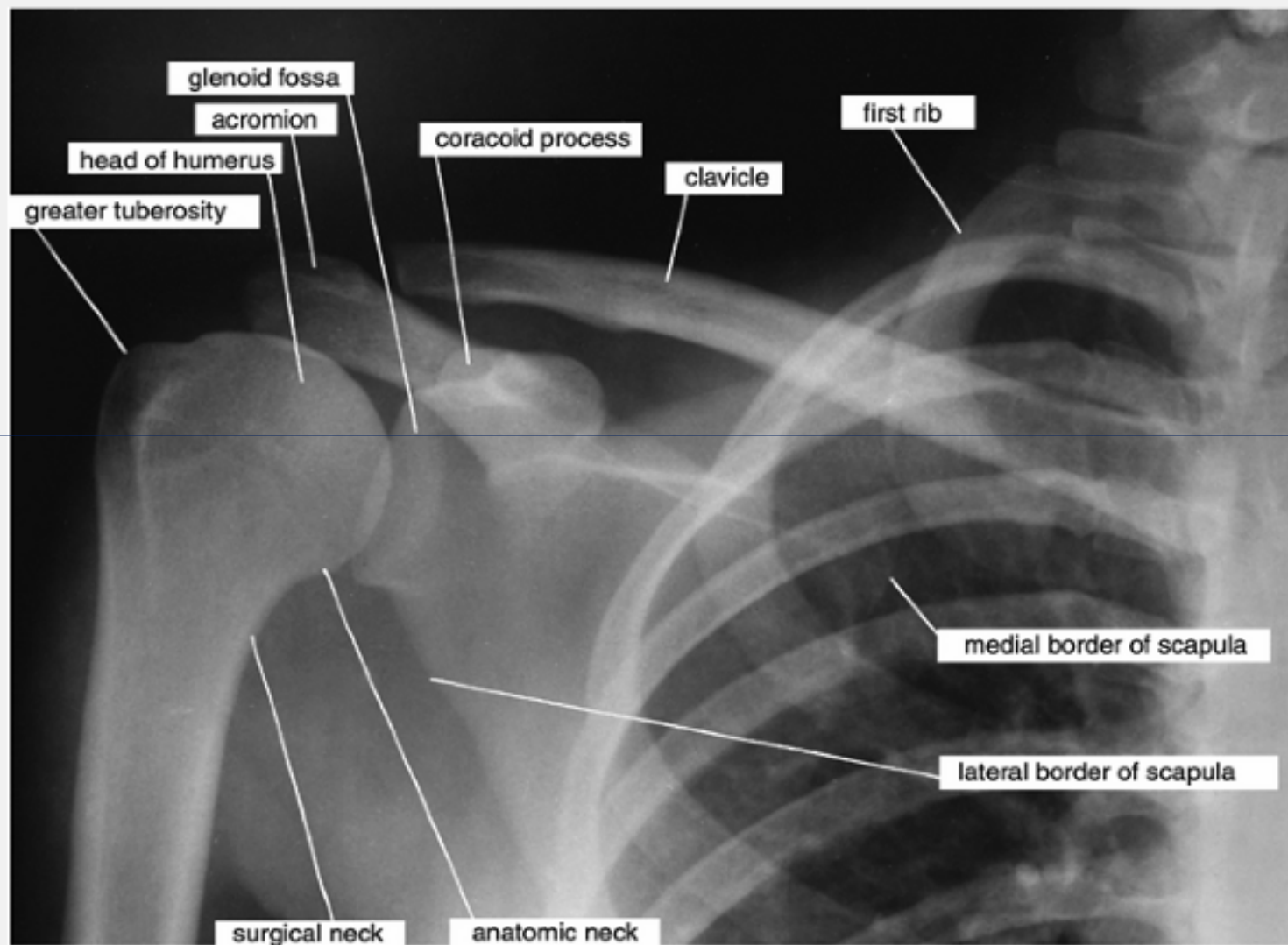


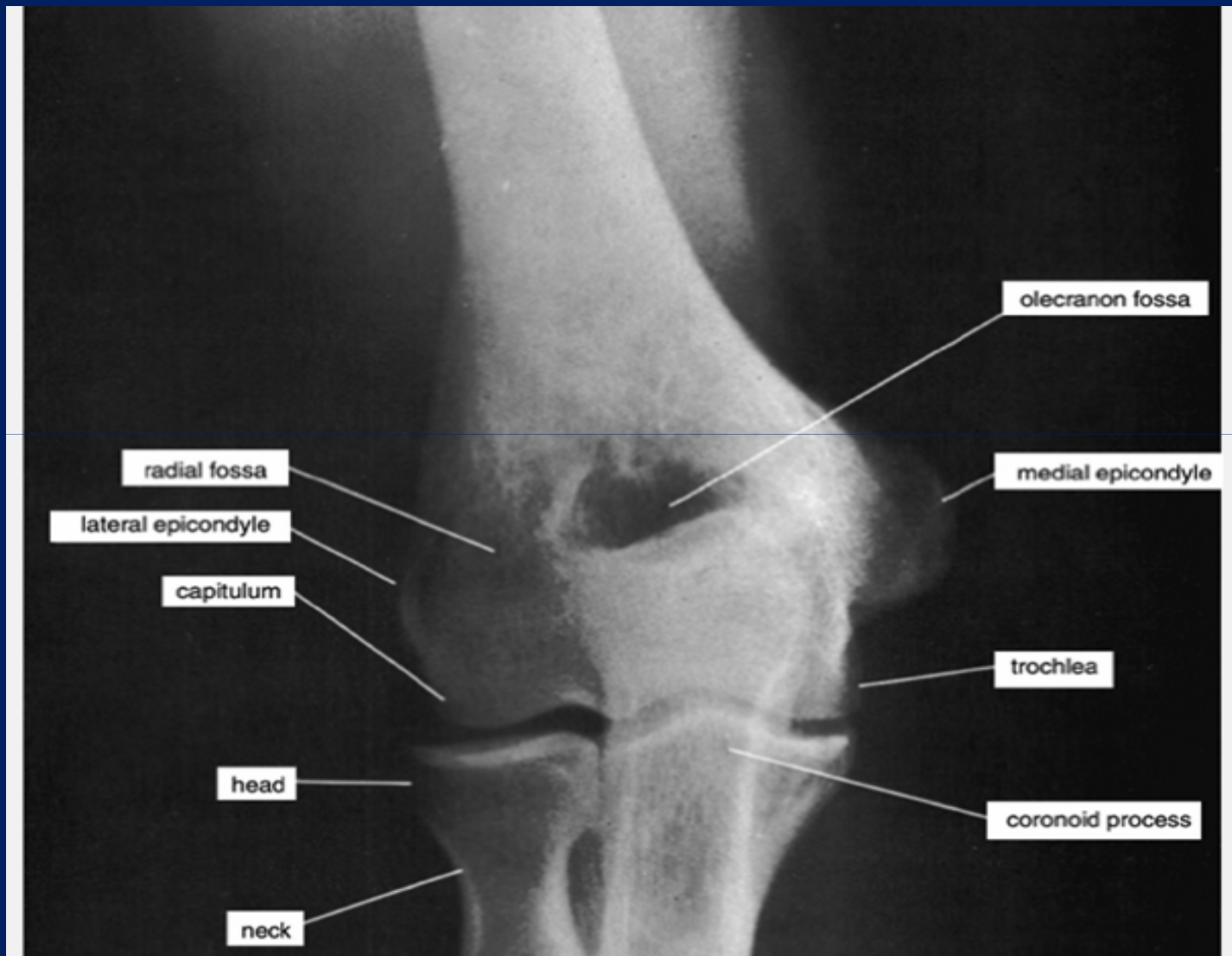
Joints of the Upper Extremity



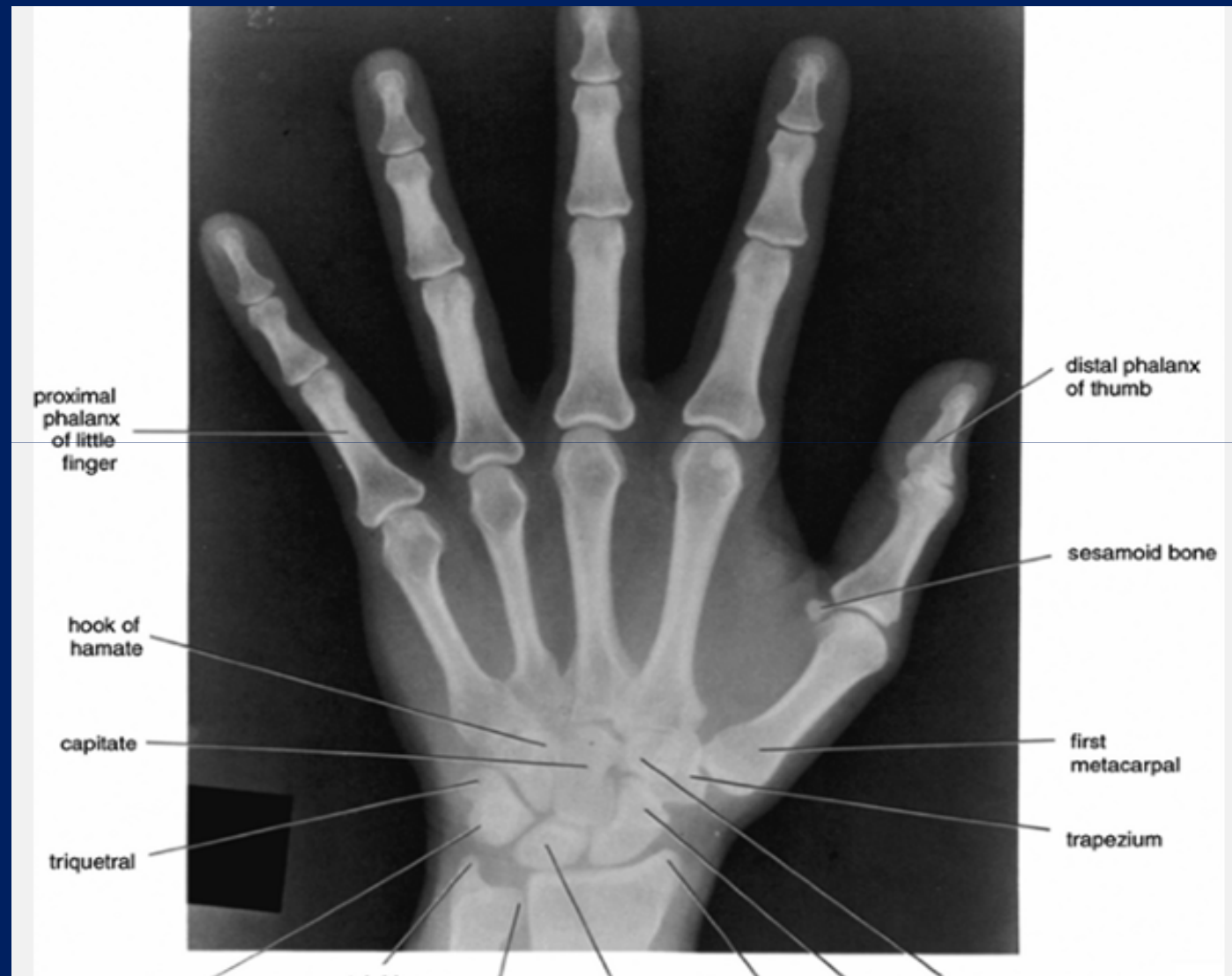
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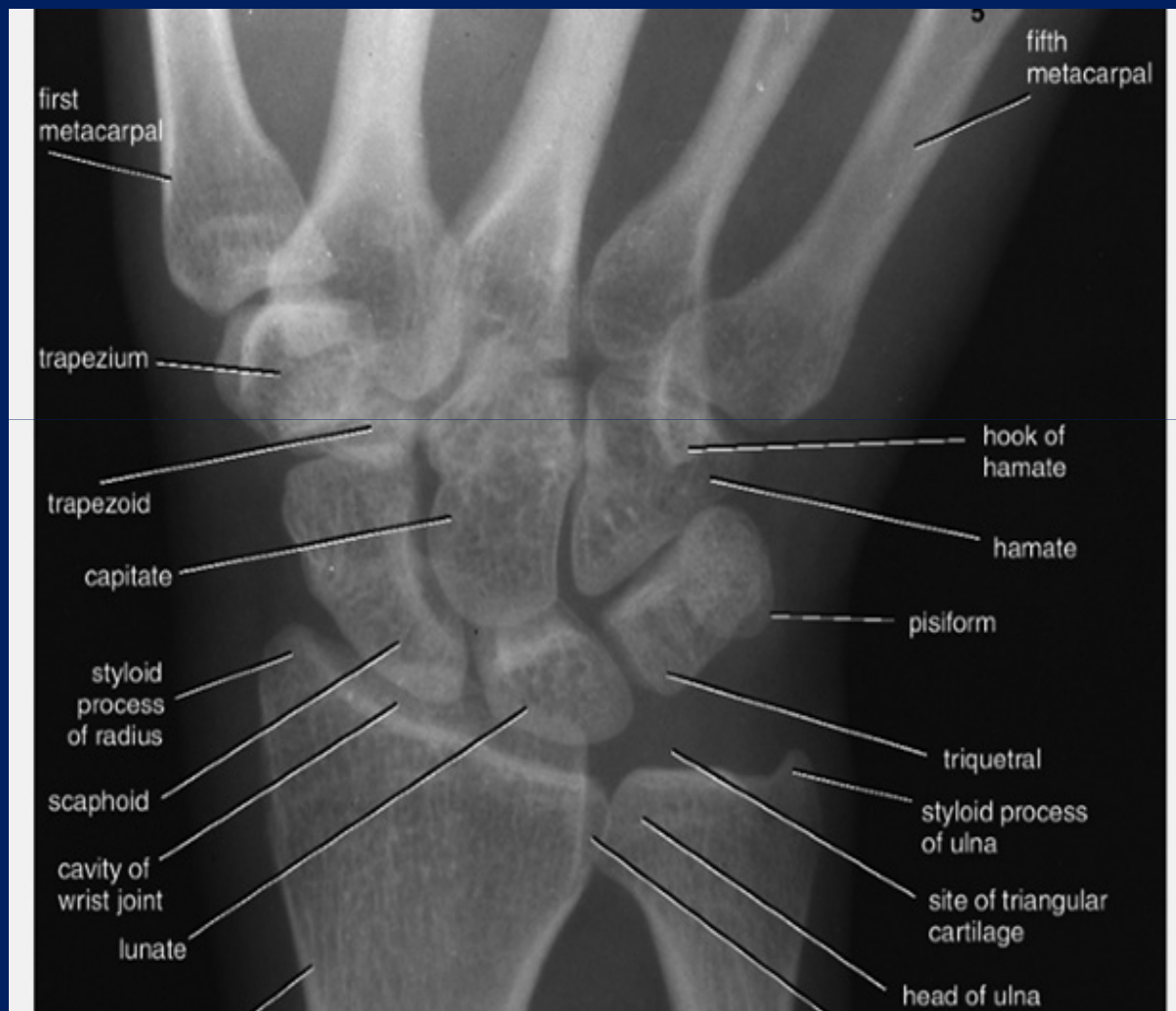
- Radiocarpal joint
 - ◆ Synovial-condyloid
 - ◆ Distal radius with proximal row of carpals
- Intercarpal joints
 - ◆ Synovial-plane
- Carpal-metacarpal (2-5)
 - ◆ Synovial-plane
- Trapezium-metacarpal 1
 - ◆ Synovial-saddle
- Metacarpal-phalangeal
 - ◆ Synovial-condyloid
- Interphalangeal
 - ◆ Synovial-hinge

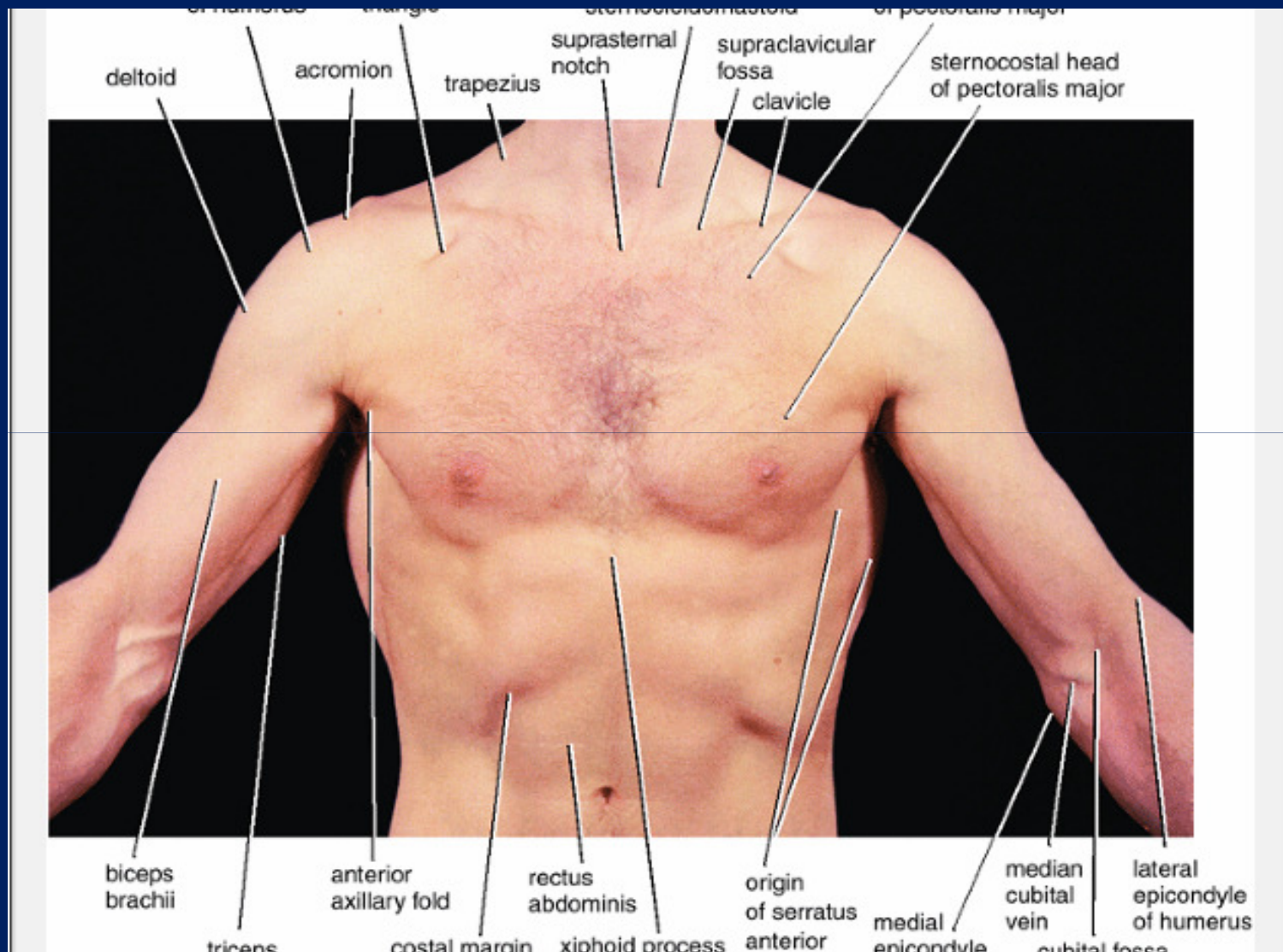












Thank You & Good Luck

