

بسم الله الرحمن الرحيم

السلام عليكم ورحمة الله وبركاته

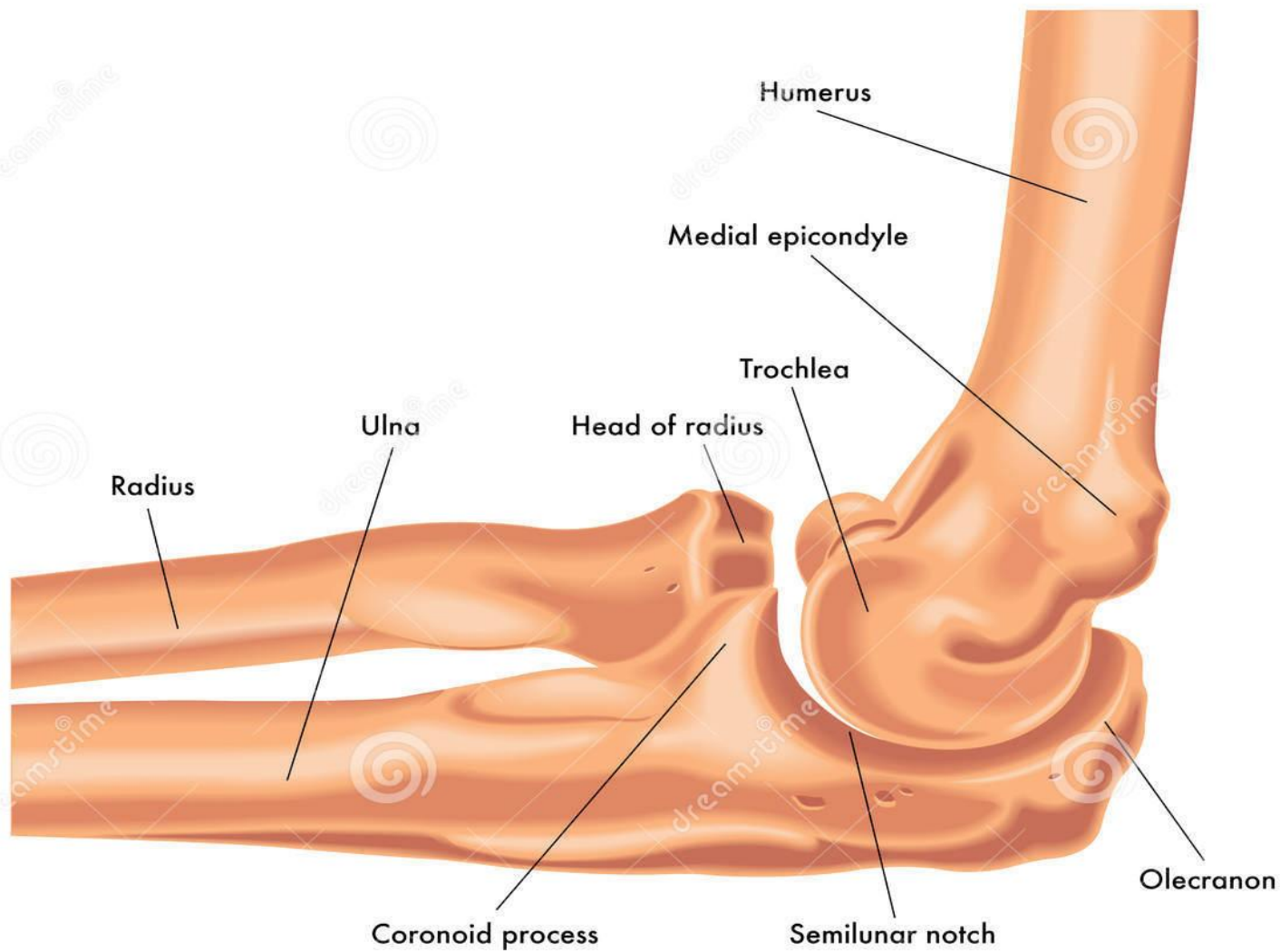
# Lec. 3 upper limb.

اعداد

د.مثنى الطائي

## Bones of Right Elbow Joint



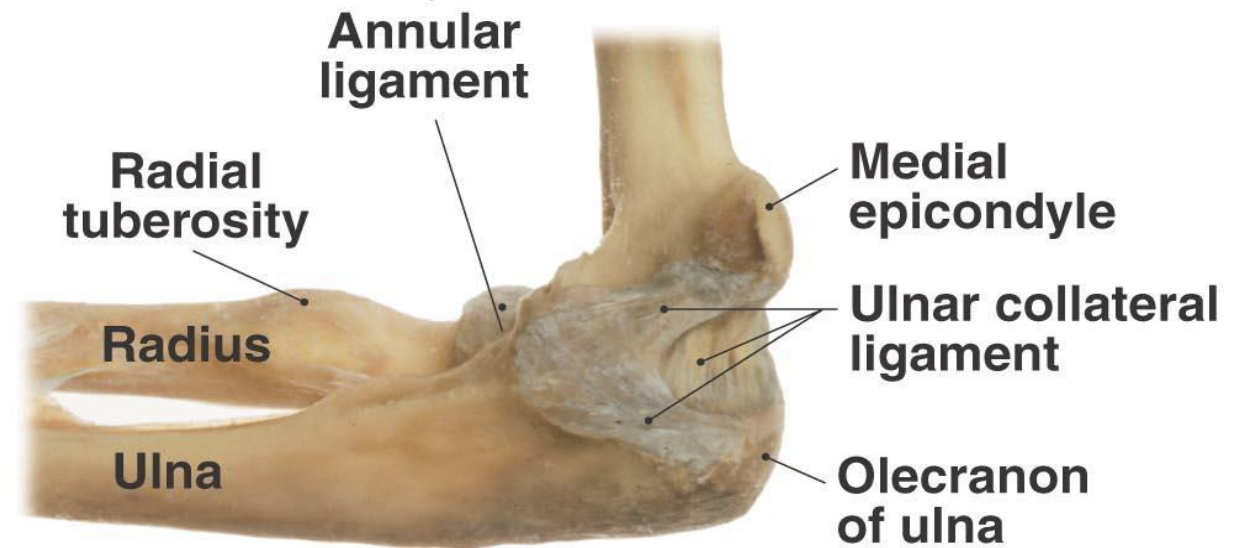
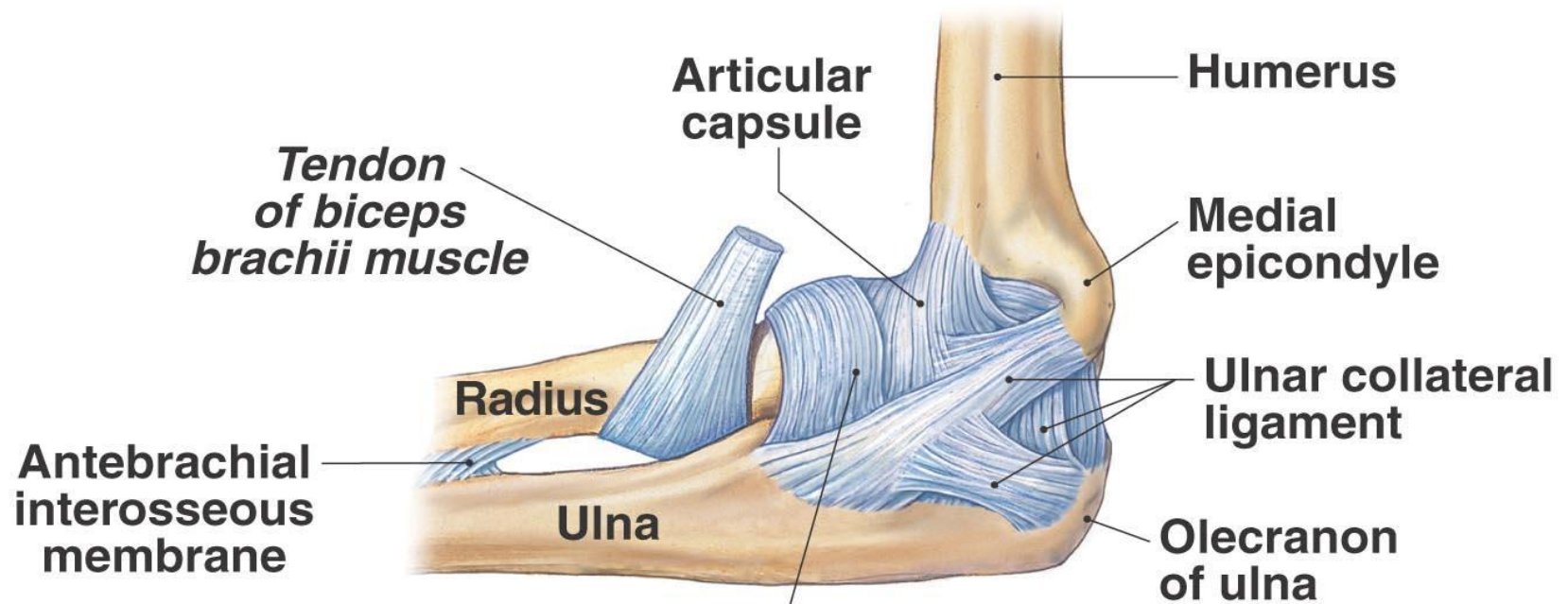


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**(b) Medial view**

# Lig. of the elbow

Medial ulnar collateral ligament “Mcl” : The main stabilizer against valgus forces & the ant.band is the most important part. The main stabilizer against varus forces& posterolateral rotation is the lateral ulnar collateral ligament“Lcl”.

The annular ligament “also called orbicular lig.”is a rounded lig.that raps around the radial head in the elbow & functions to stabilize the radial head during rotation “pronation & supination”

The joint capsule also plays apart in stabilizing the joint.

# Elbow movements



Flexion



Extension



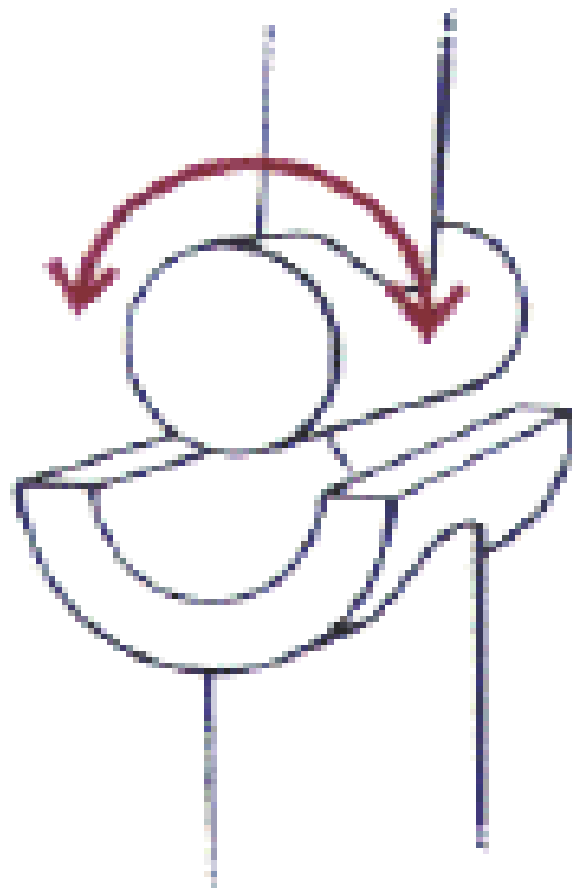
Pronation



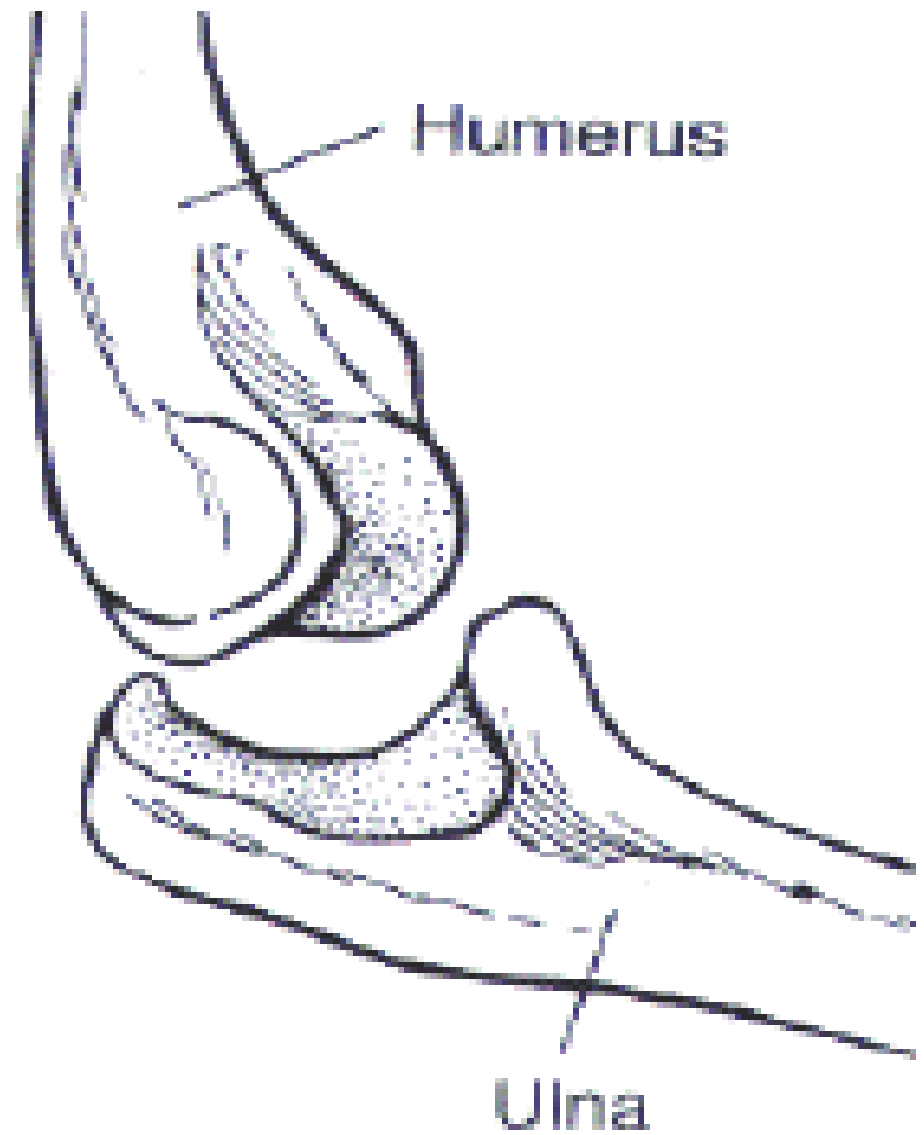
Supination

➤ All these movements take place in the sagittal and frontal plane

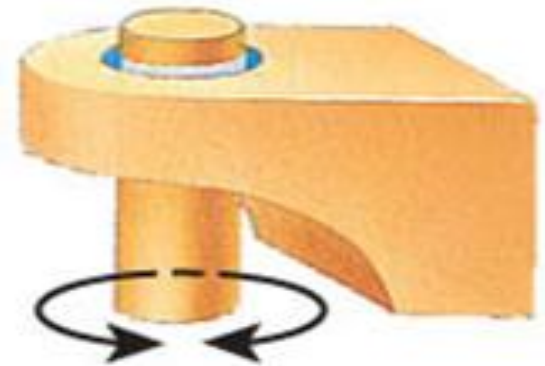
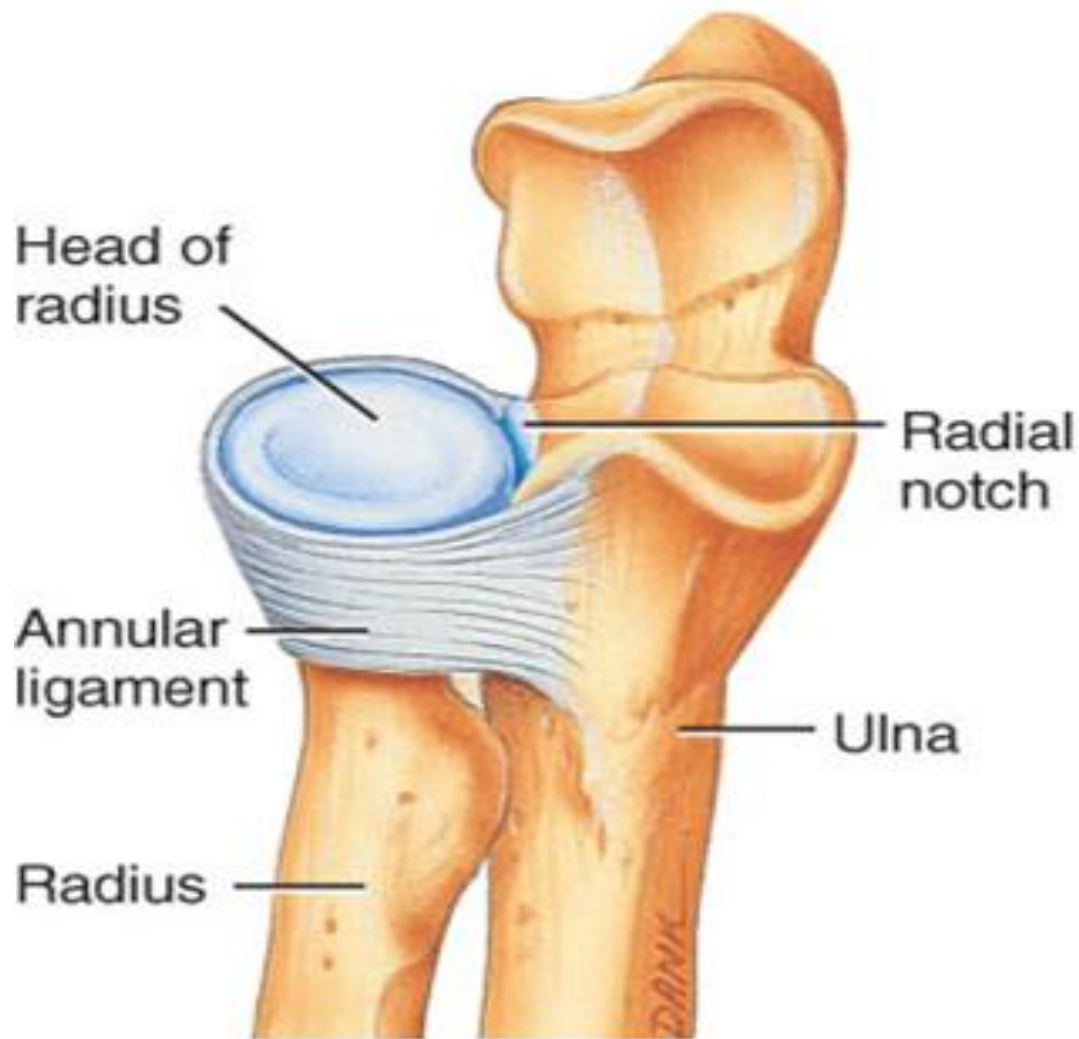
The elbow is a hinge joint that allow flexion & extension from a range of “0-130 degrees” & flexion –supination from “0-90 degrees each”.



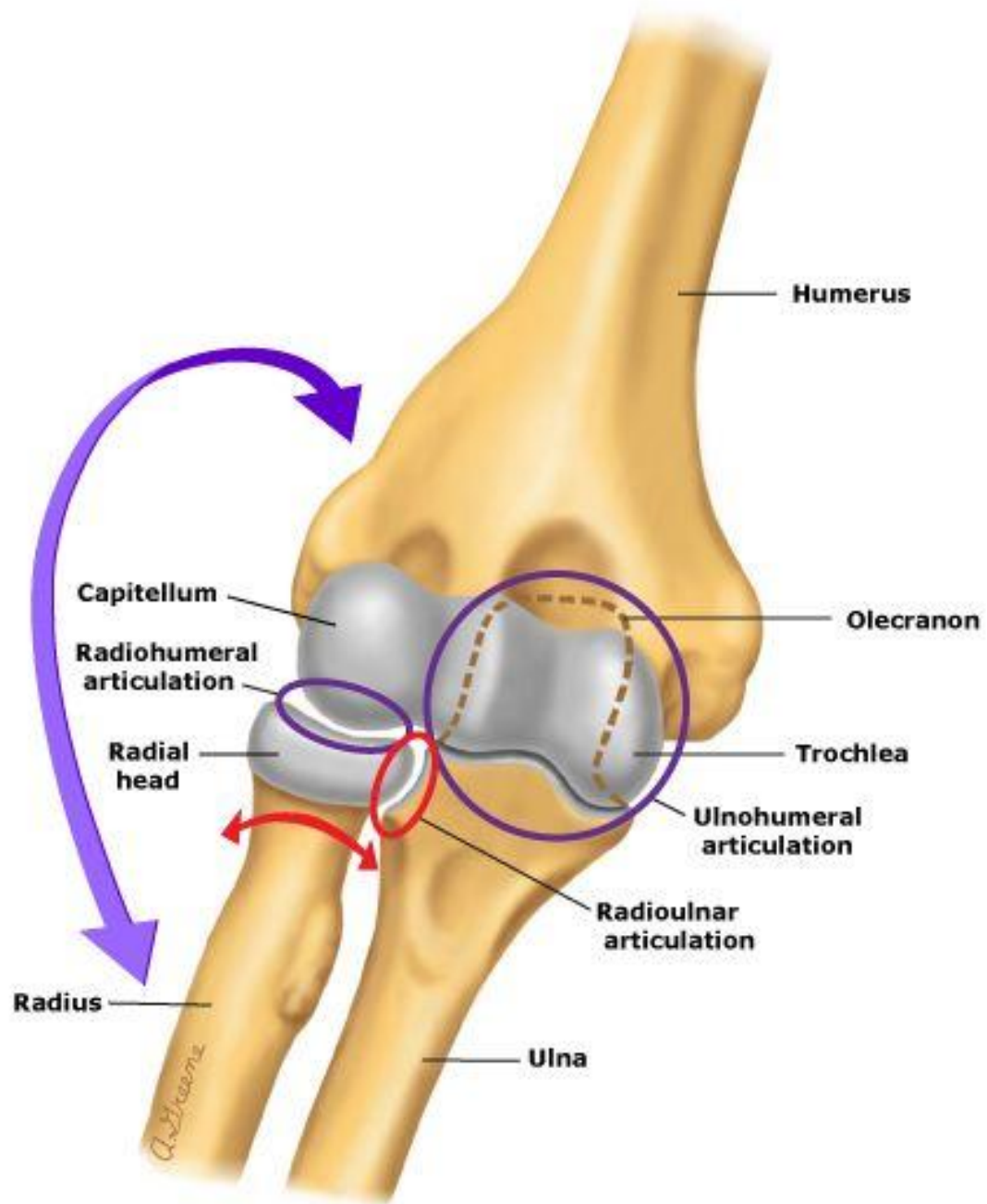
HINGE





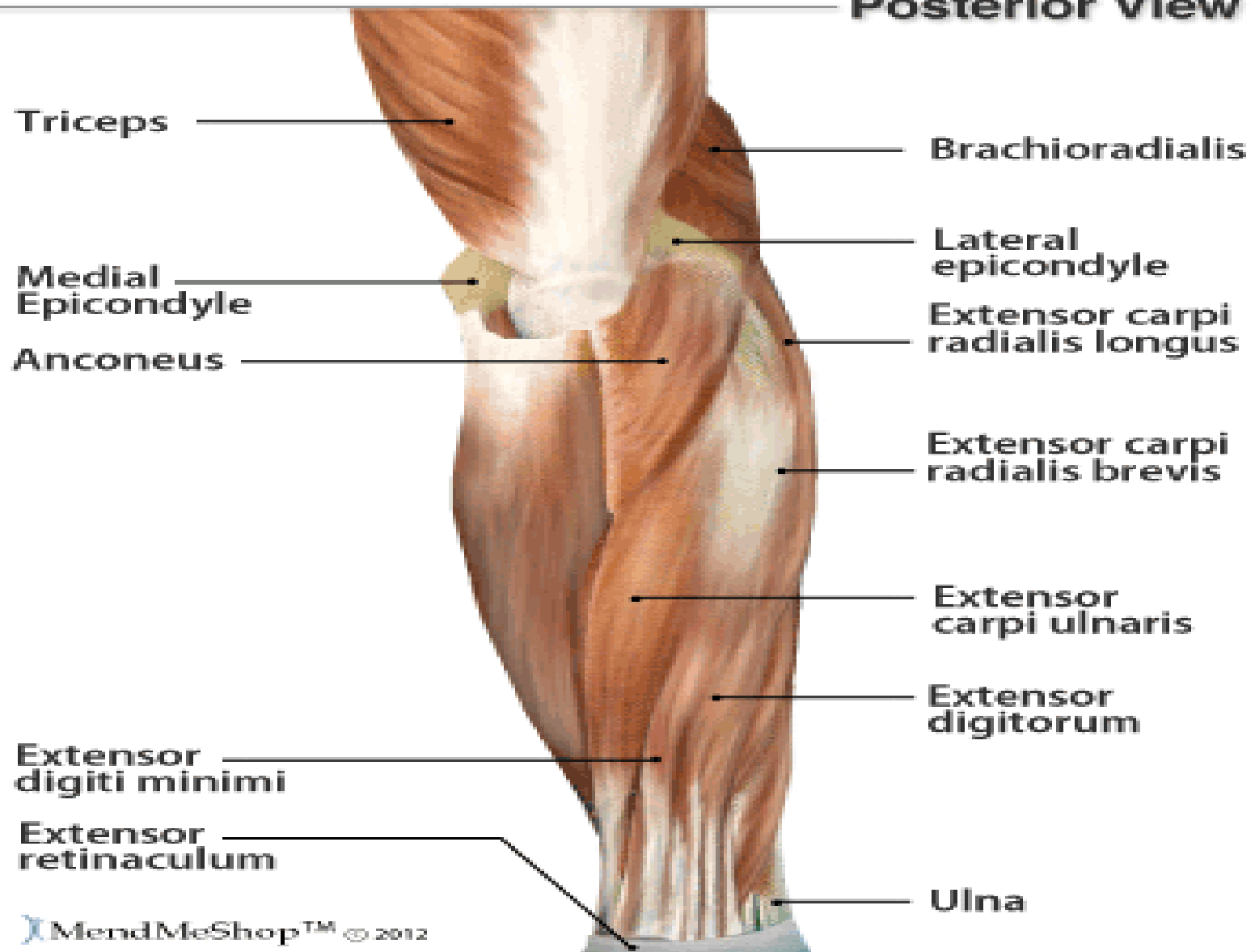


(c) Pivot joint between head of radius and radial notch of ulna

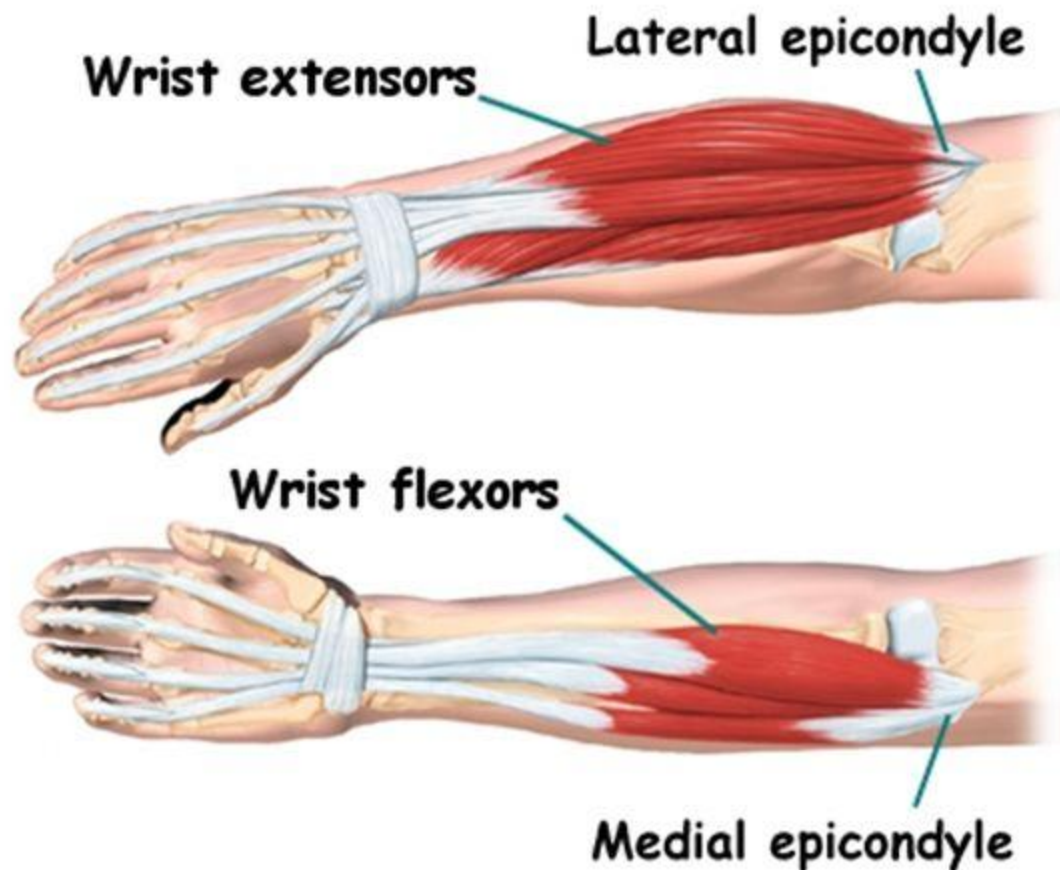


# Elbow Anatomy

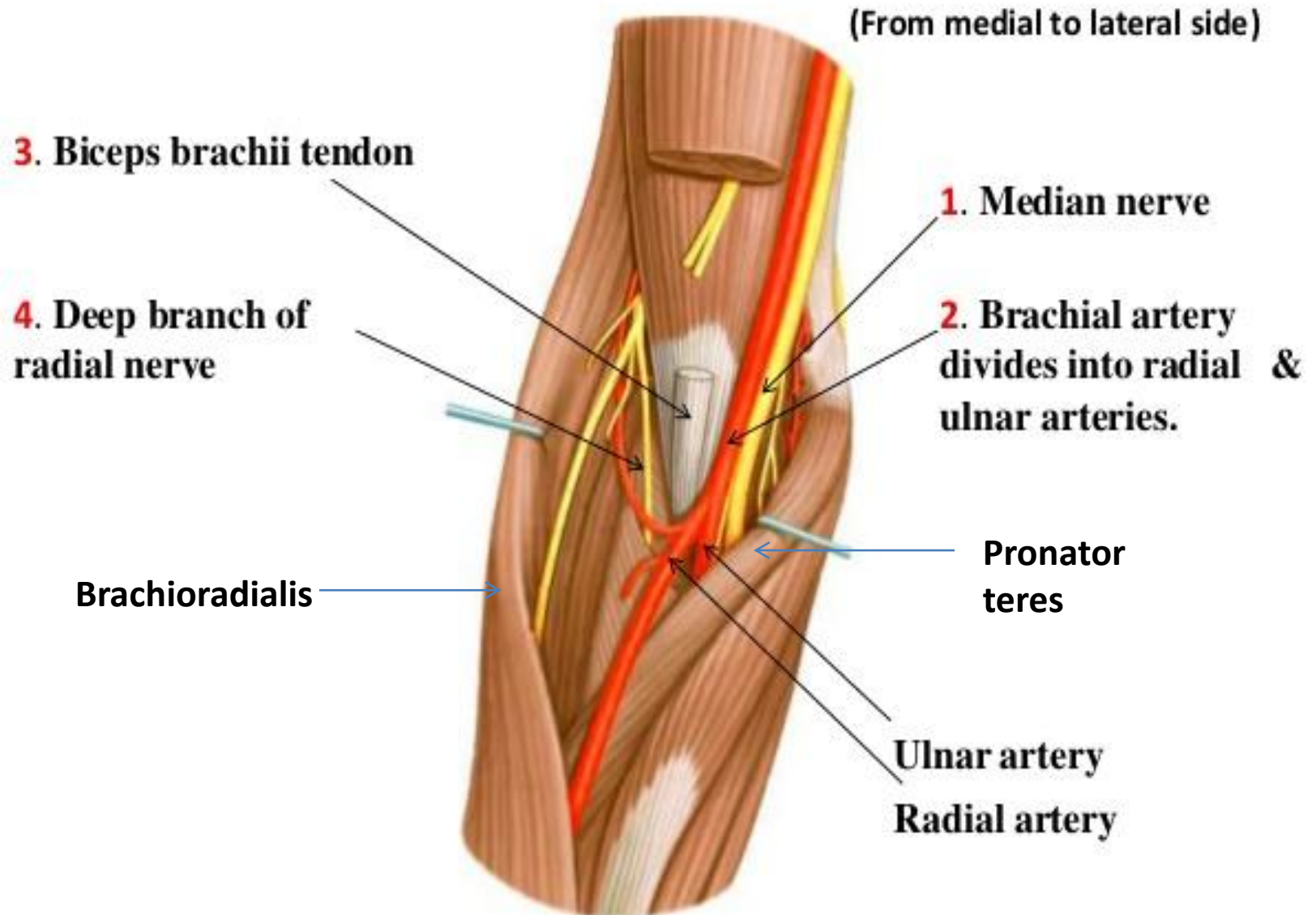
Posterior View



- Common Extensor Origin
- Common Flexor Origin



# CONTENT OF CUBITAL FOSSA



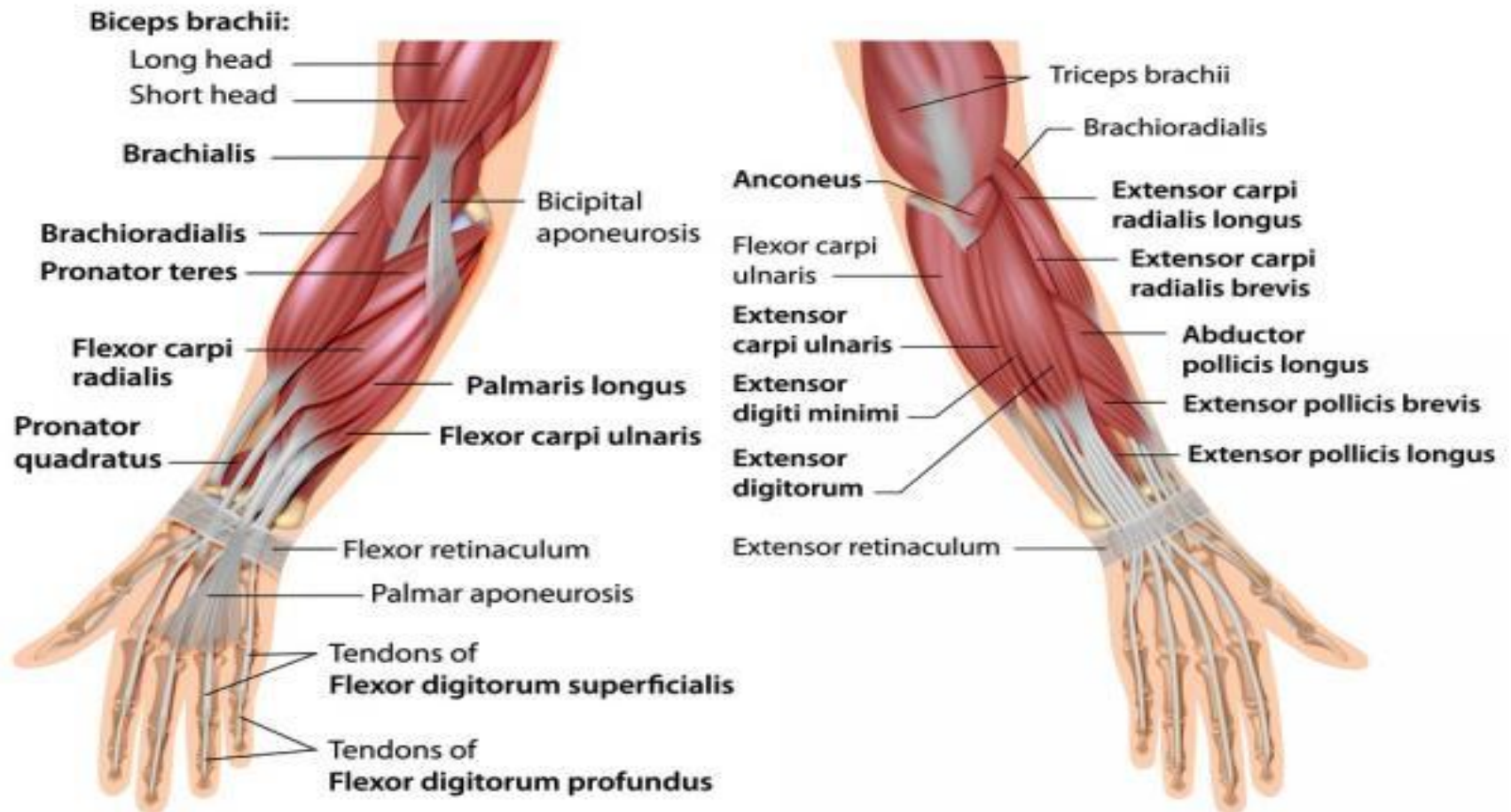


# Muscles of the Forearm

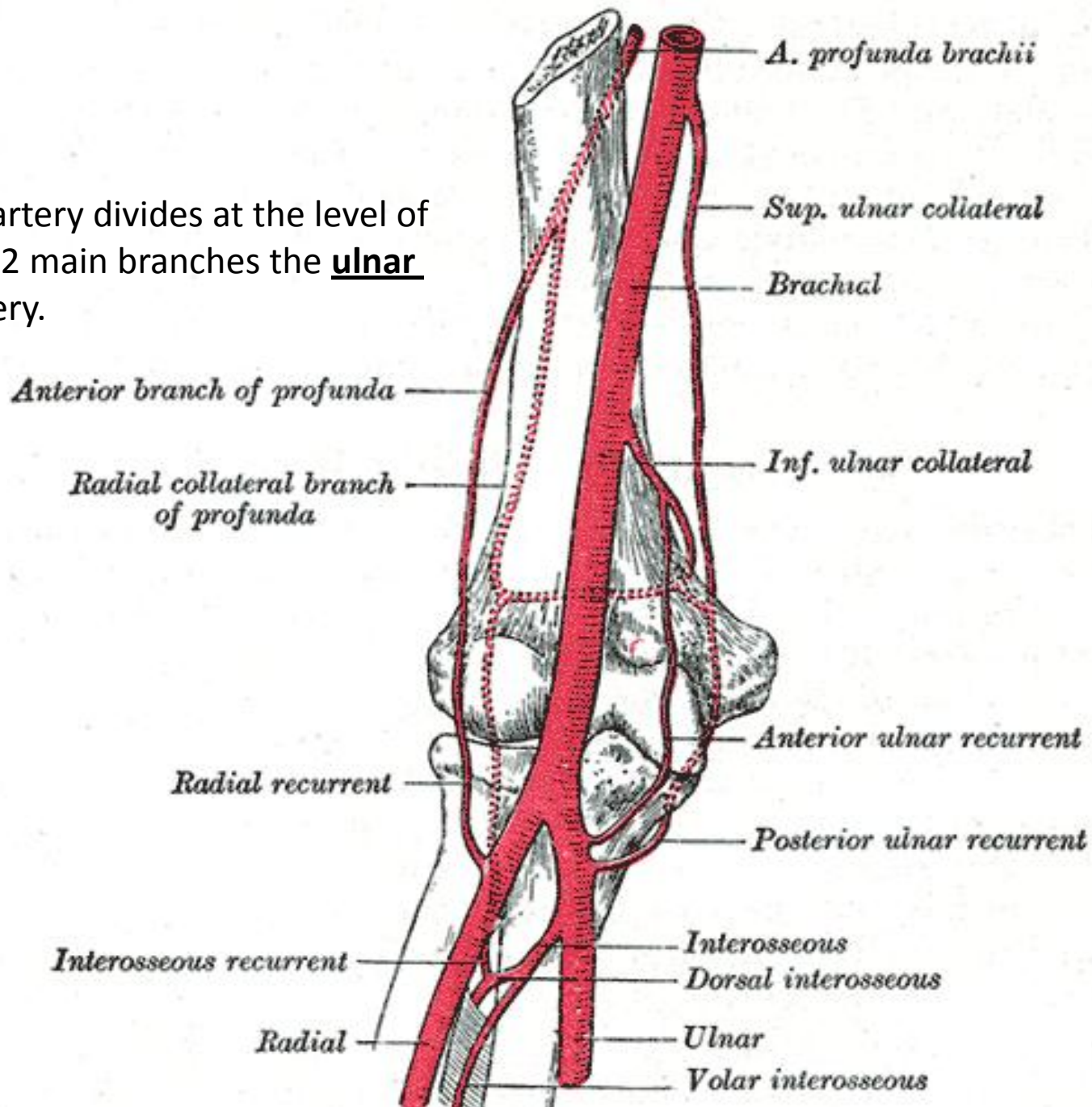
*(right arm)*

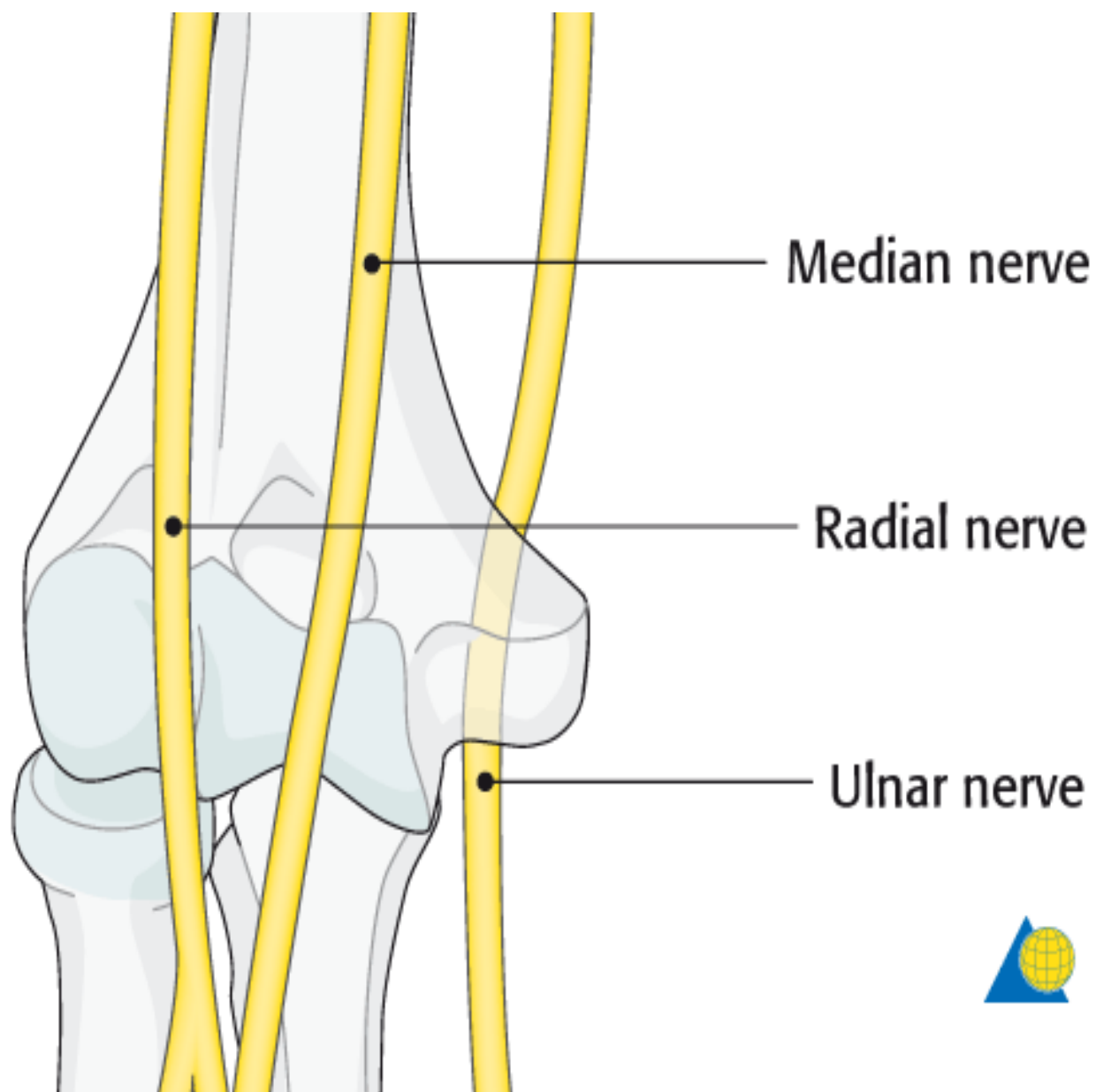
Anterior

Posterior

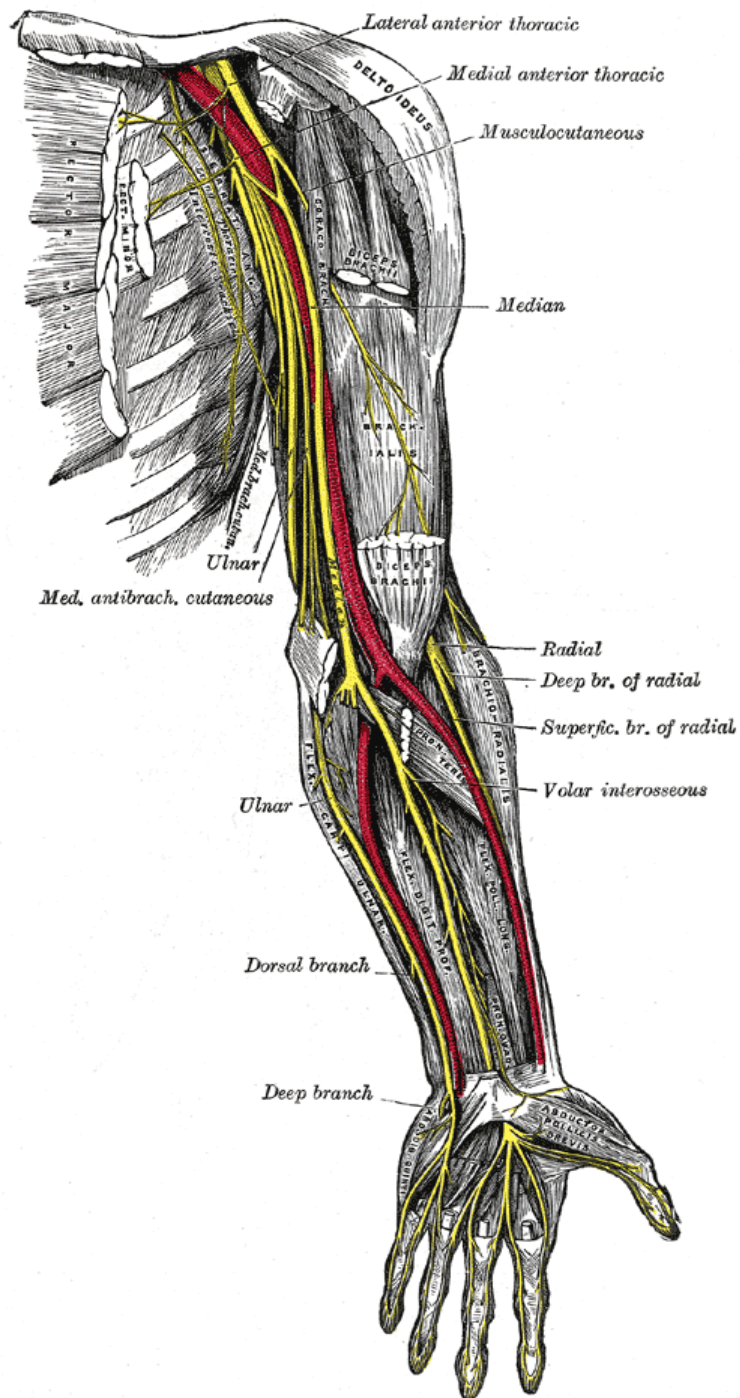


The **brachial** artery divides at the level of the elbow into 2 main branches the **ulnar** & the **radial** artery.









Muscle	Origin	Insertion	Nerve	Action
Pronator teres	Medial epicondyle and coronoid process of ulna	Middle of lateral side of radius	Median	Pronates and flexes forearm
Flexor carpi radialis	Medial epicondyle of humerus	Bases of second and third metacarpals	Median	Flexes forearm, flexes and abducts hand
Palmaris longus	Medial epicondyle of humerus	Flexor retinaculum, palmar aponeurosis	Median	Flexes forearm and hand
Flexor carpi ulnaris	Medial epicondyle (humeral head); medial olecranon, and posterior border of ulna (ulnar head)	Pisiform, hook of hamate, and base of fifth metacarpal	Ulnar	Flexes forearm; flexes and adducts hand
Flexor digitorum superficialis	Medial epicondyle, coronoid process, oblique line of radius	Middle phalanges of finger	Median	Flexes proximal interphalangeal joints, flexes hand and forearm
Flexor digitorum profundus	Anteromedial surface of ulna, interosseous membrane	Bases of distal phalanges of fingers	Ulnar and median	Flexes distal interphalangeal joints and hand
Flexor pollicis longus	Anterior surface of radius, interosseous membrane, and coronoid process	Base of distal phalanx of thumb	Median	Flexes thumb
Pronator quadratus	Anterior surface of distal ulna	Anterior surface of distal radius	Median	Pronates forearm



<b>Superficial Muscle</b>	<b>Group Origin</b>	<b>Insertion</b>	<b>Action</b>	<b>Innervation</b>
<b>Brachioradialis</b>	Upper 2/3 of the lateral supracondylar ridge of the humerus	Lateral side of the base of the styloid process of the radius	Flexes the elbow; assists in pronation and supination	Radial (C5-7)
<b>Extensor carpi radialis longus</b>	Lower 1/3 of the lateral supracondylar ridge of the humerus	Dorsum of the 2nd metacarpal bone (base)	Extends the wrist; abducts the hand	Radial (C6-7)
<b>Extensor carpi radialis brevis</b>	Common extensor tendon (the lateral epicondyle of the humerus)	Dorsum of the 3rd metacarpal bone (base)	Extends the wrist; abducts the hand	Radial (C7-8)
<b>Extensor digitorum</b>	Common extensor tendon (the lateral epicondyle of the humerus)	Extensor expansion of digits 2-5	Extends the metacarpophalangeal, proximal interphalangeal and distal interphalangeal joints of digits 2-5; extends the wrist	Deep radial (C7-8)
<b>Extensor digiti minimi</b>	Common extensor tendon (the lateral epicondyle of the humerus)	Joins the extensor digitorum tendon to the 5th digit and inserts into the extensor expansion	Extends the metacarpophalangeal, proximal interphalangeal, and distal interphalangeal joints of the 5th digit	Deep radial (C7-8)
<b>Extensor carpi ulnaris</b>	Common extensor tendon and the middle 1/2 of the posterior border of the ulna	Medial side of the base of the 5th metacarpal	Extends the wrist; adducts the hand	Deep radial (C7-8)
<b>Anconeus</b>	Lateral epicondyle of the humerus	Lateral side of the olecranon and the upper 1/4 of the ulna	Extends the forearm	Radial (C7-8, T1)

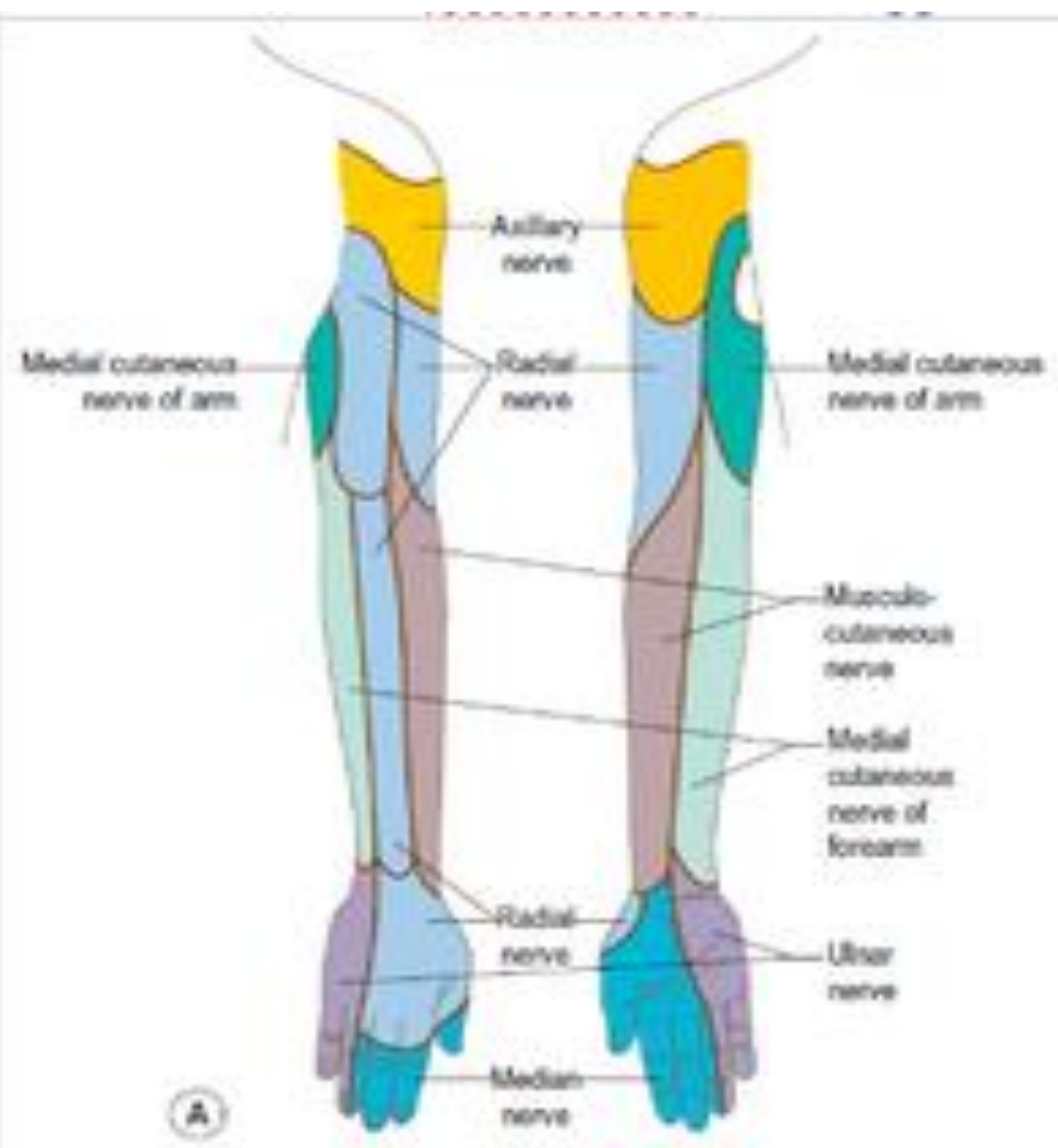
## Superficial Extensor Forearm Muscles

Name	Origin	Insertion	Innervation	Function
<b>Extensor Digitorum</b>	lateral epicondyle of the humerus (ulnaris also from the ulna)	<ul style="list-style-type: none"> <li>- forms the dorsal aponeurosis of the 2nd-5th fingers</li> <li>- slips of the tendons run to the bases of the proximal phalanges and to the capsules of the metacarpophalangeal joints</li> <li>- intertendinous connections between 3rd, 4th and 5th fingers</li> </ul>	deep branch of the radial nerve	<ul style="list-style-type: none"> <li>- extends and spreads the fingers</li> <li>- strong dorsiflexor of wrist and midcarpal joints</li> <li>- ulnar adductor</li> </ul>
<b>Extensor Digiti Minimi</b>		dorsal aponeurosis of the 5th finger		<ul style="list-style-type: none"> <li>- extends the 5th digit</li> <li>- helps in dorsiflexion and adduction of the hand</li> </ul>
<b>Extensor Carpi Ulnaris</b>		base of the 5th metacarpal		<ul style="list-style-type: none"> <li>- strong ulnar adductor</li> </ul>

## Deep Extensor Forearm Muscles

Name	Origin	Insertion	Innervation	Function
<b>Supinator</b>	<ul style="list-style-type: none"> <li>- supinator crest of the ulna</li> <li>- lateral epicondyle of the humerus</li> </ul>	radius	deep branch of the radial nerve	<ul style="list-style-type: none"> <li>- supinates the forearm (in every position of flexion and extension)</li> </ul>
<b>Abductor Pollicis Longus</b>	<ul style="list-style-type: none"> <li>- dorsal surface of the ulna (distal to the supinator crest)</li> <li>- interosseous membrane</li> <li>- dorsal surface of the radius</li> </ul>	base of 1st metacarpal bone		<ul style="list-style-type: none"> <li>- flexes hand towards palm</li> <li>- abducts it radially</li> <li>- extension of the thumb</li> </ul>
<b>Extensor Pollicis Brevis</b>	radius (distal to abductor pollicis longus)	base of proximal phalanx of thumb		<ul style="list-style-type: none"> <li>- extends the thumb</li> </ul>
<b>Extensor Pollicis Longus</b>	dorsal surface of the ulna	base of distal phalanx of thumb		<ul style="list-style-type: none"> <li>- extends the thumb</li> <li>- at the wrist, dorsiflexes and abducts the hand radially</li> </ul>
<b>Extensor Indicis</b>	distal 1/3 of dorsal surface of ulna	dorsal aponeurosis of index finger (2nd finger)		<ul style="list-style-type: none"> <li>- extends index finger</li> <li>- participates in dorsiflexion at the wrist and midcarpal joints</li> </ul>

NERVE(S)	SPINAL SEGMENT(S)	DISTRIBUTION
Nerves to subclavius	C5,C6	Subclavius muscle
Dorsal scapular nerve	C5	Rhomboid muscles and levator scapulae muscle
Long thoracic nerve	C5 through C7	Serratus anterior muscle
Suprascapular nerve	C5, C6	Supraspinatus and infraspinatus muscles
Pectoralis nerve (medial and lateral)	C5 through T1	Pectoralis muscles
Subscapular nerves	C5, C6	Subscapularis and teres major muscles
Thoracodorsal nerve	C6 through C8	Latissimus dorsi muscle
Axillary nerve	C5 and C6	Deltoid and teres minor muscles; skin of shoulder
Radial nerve	C5 through T1	Extensor muscles of the arm and forearm (triceps brachii, extensor carpi radialis, extensor carpi ulnaris), supinator, anconeus, and brachioradialis muscles; digital extensors and abductor pollicis longus muscle; skin over posterolateral surface of the arm, forearm, and hand
Musculocutaneous nerve	C5 through C7	Flexor muscles of the arm (biceps brachii, brachialis, coracobrachialis); skin over lateral surface of the forearm
Median nerve	C6 through T1	Flexor muscles of the forearm (flexor carpi radialis, palmaris longus); pronator quadratus and pronator teres muscles; digital flexors (through the palmar interosseous nerve); skin over anterolateral surface of the hand
Ulnar nerve	C8, T1	Flexor carpi ulnaris muscle, adductor pollicis muscle, the hypothenar muscles and small digital muscles; skin over medial surface of the hand



شکرا جزىلا