



اللَّهُمَّ صَلِّ وَسَلِّمْ وَبَارِكْ عَلَى نَبِيِّنَا مُحَمَّدٍ

The Arm

It lies between the elbow joint and the shoulder joint

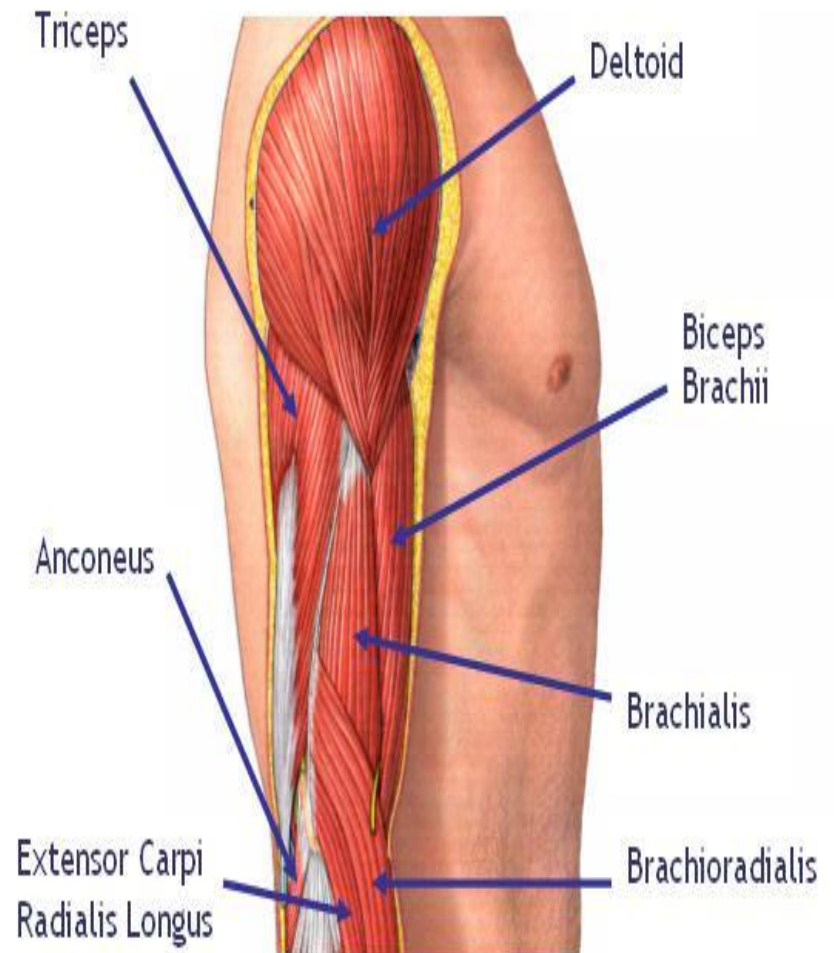
- The upper arm is enclosed in a sheath of deep fascia

Intermuscular septum :

- Two fascial septa, one on the medial side and one on the lateral side, extend from this sheath and are attached to the medial and lateral supracondylar ridges of the humerus

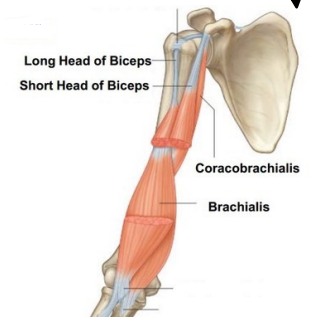


- By this means, the upper arm is divided into an anterior and a posterior fascial compartment, each having its muscles, nerves, and arteries.




Contents of the Anterior Fascial Compartment of the Upper Arm

- **Muscles:** Biceps brachii, coracobrachialis, and brachialis
- **Blood supply:** Brachial artery
- **Nerve supply to the muscles:** Musculocutaneous nerve
→ A branch from the Lateral cord of brachial plexuses
- **Structures passing through the compartment:** Musculocutaneous, median, and ulnar nerves; brachial artery and basilic vein. The radial nerve is present in the lower part of the compartment

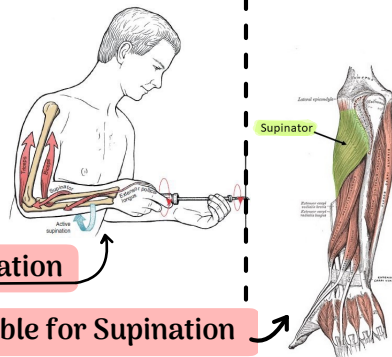
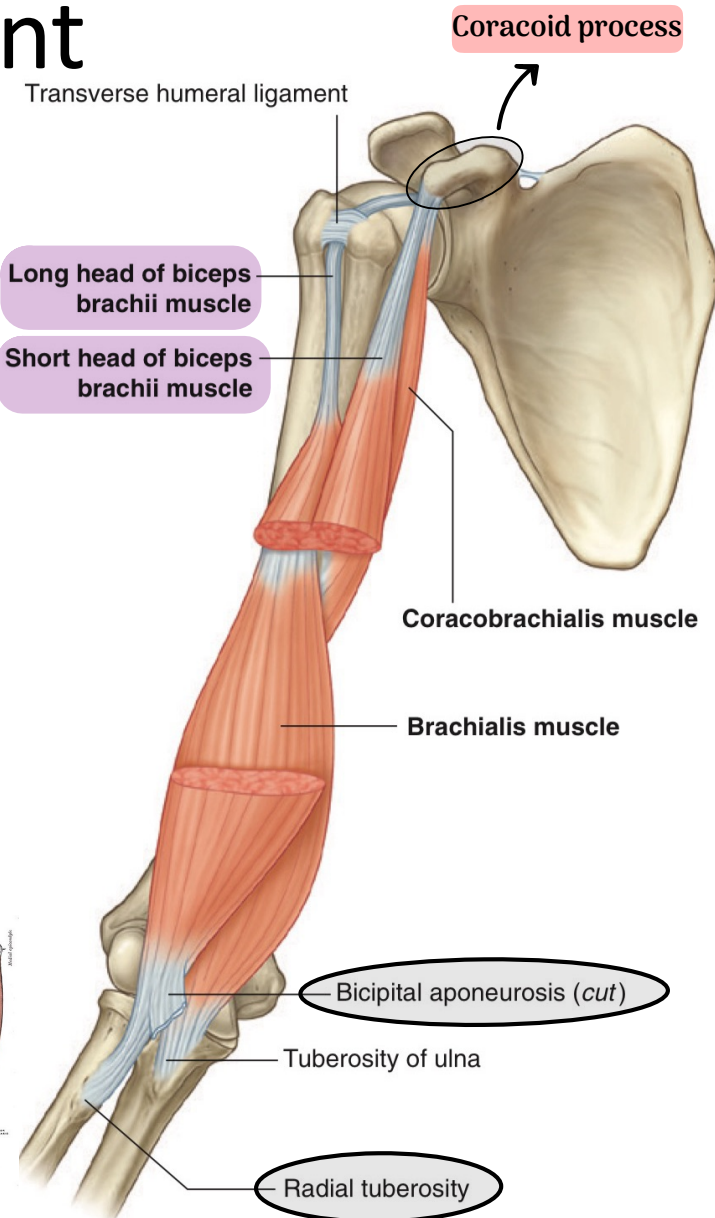
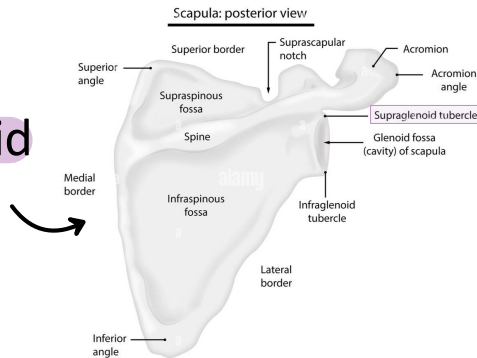


Muscles of the Anterior Fascial Compartment

- **Biceps brachii**
- **Long head** **Supraglenoid tubercle of scapula**
 By passing through the shoulder joint
- **Short head**
- **Coracoid process of scapula**
- **Insertion** : **Tuberosity of radius** and **bicipital aponeurosis** into deep fascia of forearm
- **Musculocutaneous nerve C5, 6**
- **Action :**
- **Supinator of forearm** and **flexor of elbow joint**; **weak flexor of shoulder joint**

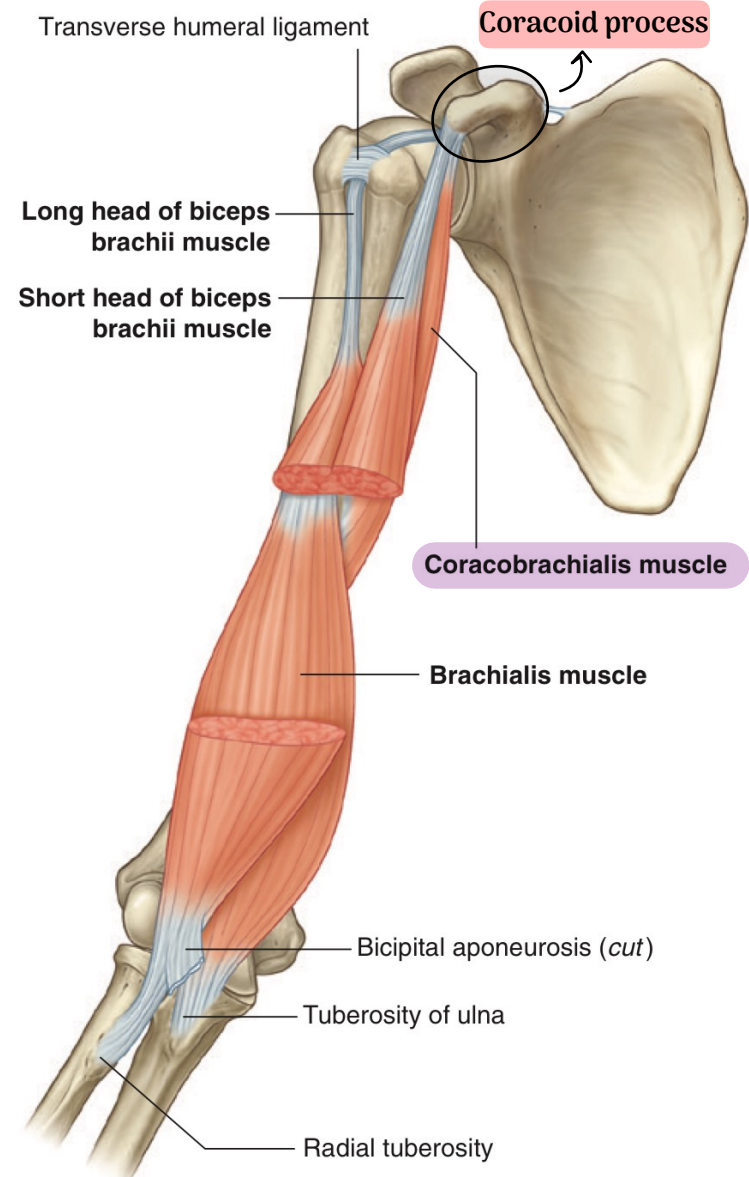
 The most important action **Screwing = flexion + Supination**

At the anatomical position the supinator muscle is responsible for Supination



Coracobrachialis

- **Origin:**
 - Coracoid process of scapula
 - **Insertion:**
 - Medial aspect of shaft of humerus
 - **Innervation:**
 - Musculocutaneous nerve C5, 6, 7
 - **Action:**
 - Flexes arm and also process of weak adductor
- Weak flexion for the shoulder joint



Brachialis

- **Origin:**
- **Front of lower half of humerus**
- **Insertion:**
- **Coronoid process of ulna**

🚫 What is the muscle that have a dual nerve supply?

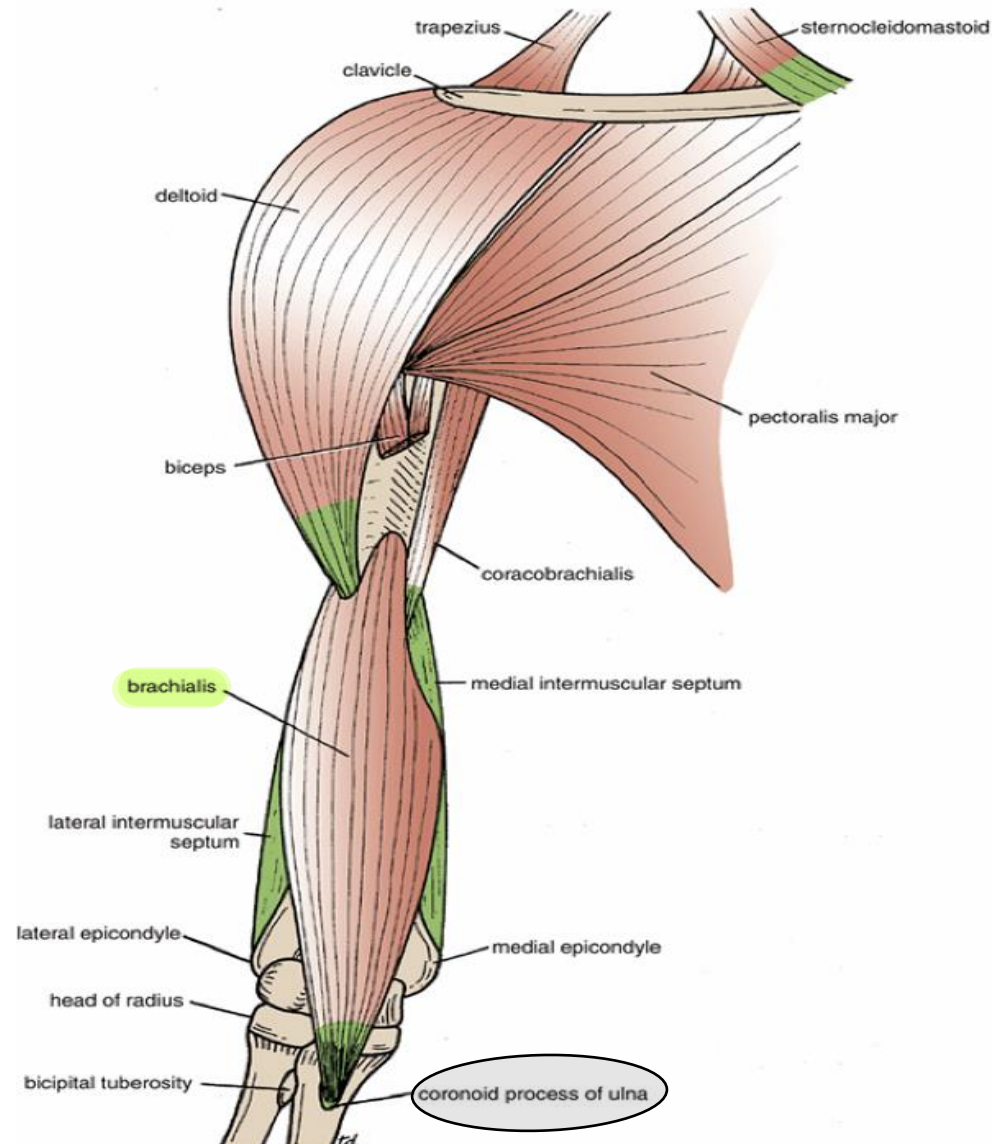
- **Innervation:** ↙ Medial half
- **Musculocutaneous nerve**
- **C5, 6, 7, Radial Nerve.**

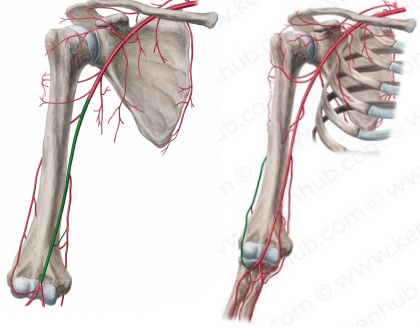
↘ Lateral half

- **Action:**
- **Flexor of elbow joint**

🚫 The prime mover of forearm flexion

Its much more important than the biceps in flexion





Brachial Artery

lie on the medial side subcutaneously
between the biceps and the triceps

- begins at the lower border of the teres major muscle as a continuation of the axillary artery

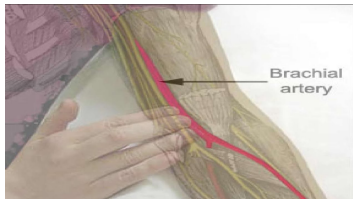
- It provides the main arterial supply to the arm

In the Cubital fossa

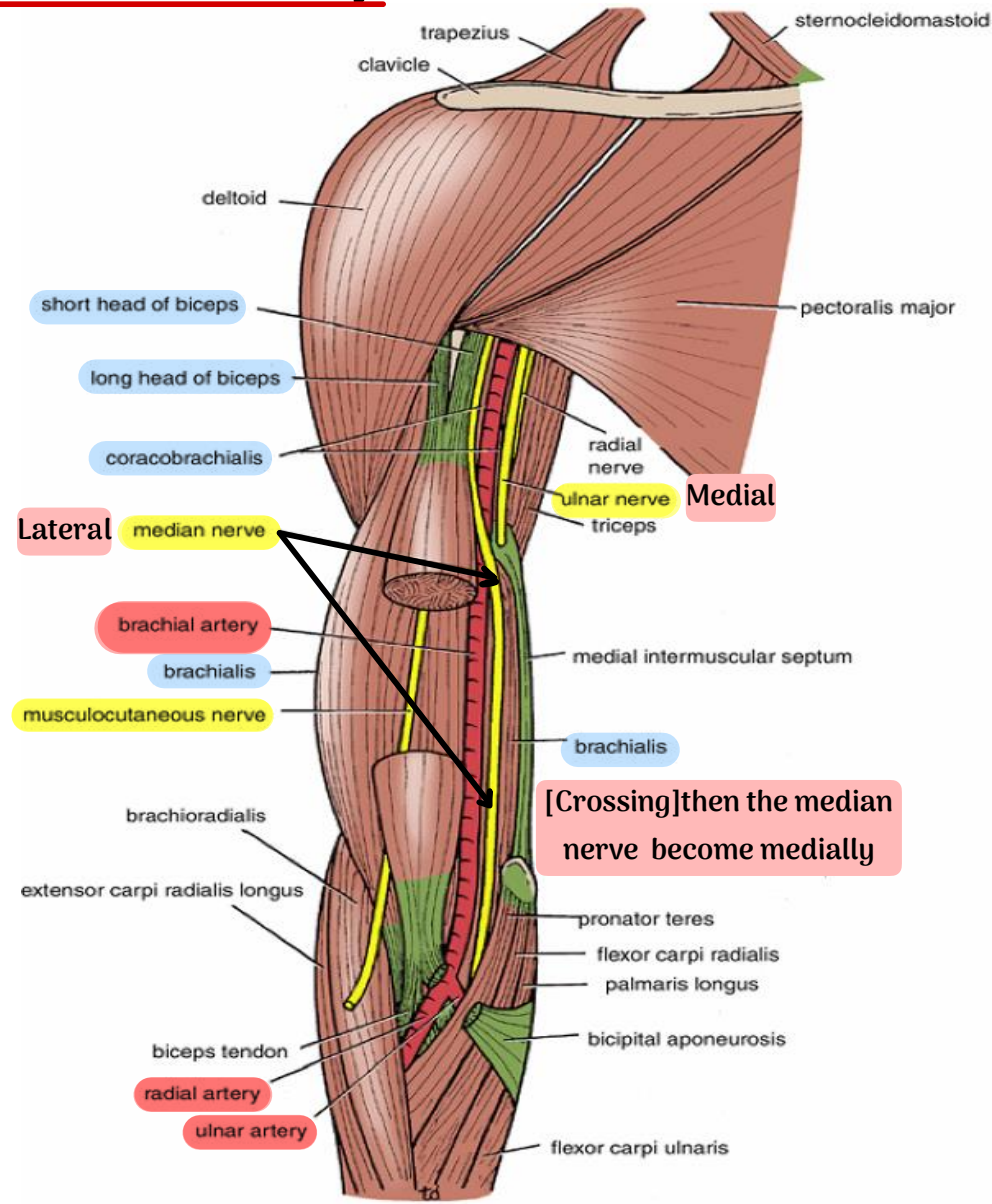
- It terminates opposite the neck of the radius by dividing into the radial and ulnar arteries.

There is a triple relation between the median nerve and the Brachial Artery

- Relations
- Anteriorly: The vessel is superficial and is overlapped from the lateral side by the coracobrachialis and biceps
- The medial cutaneous nerve of the forearm lies in front of the upper part
- the median nerve crosses its middle part
- and the bicipital aponeurosis crosses its lower part
- Posteriorly: The artery lies on the triceps, the coracobrachialis insertion, and the brachialis



Brachial Artery pulsation



- **Medially:** The ulnar nerve and the basilic vein in the upper part of the arm;
- in the lower part of the arm, the median nerve lies on its medial side

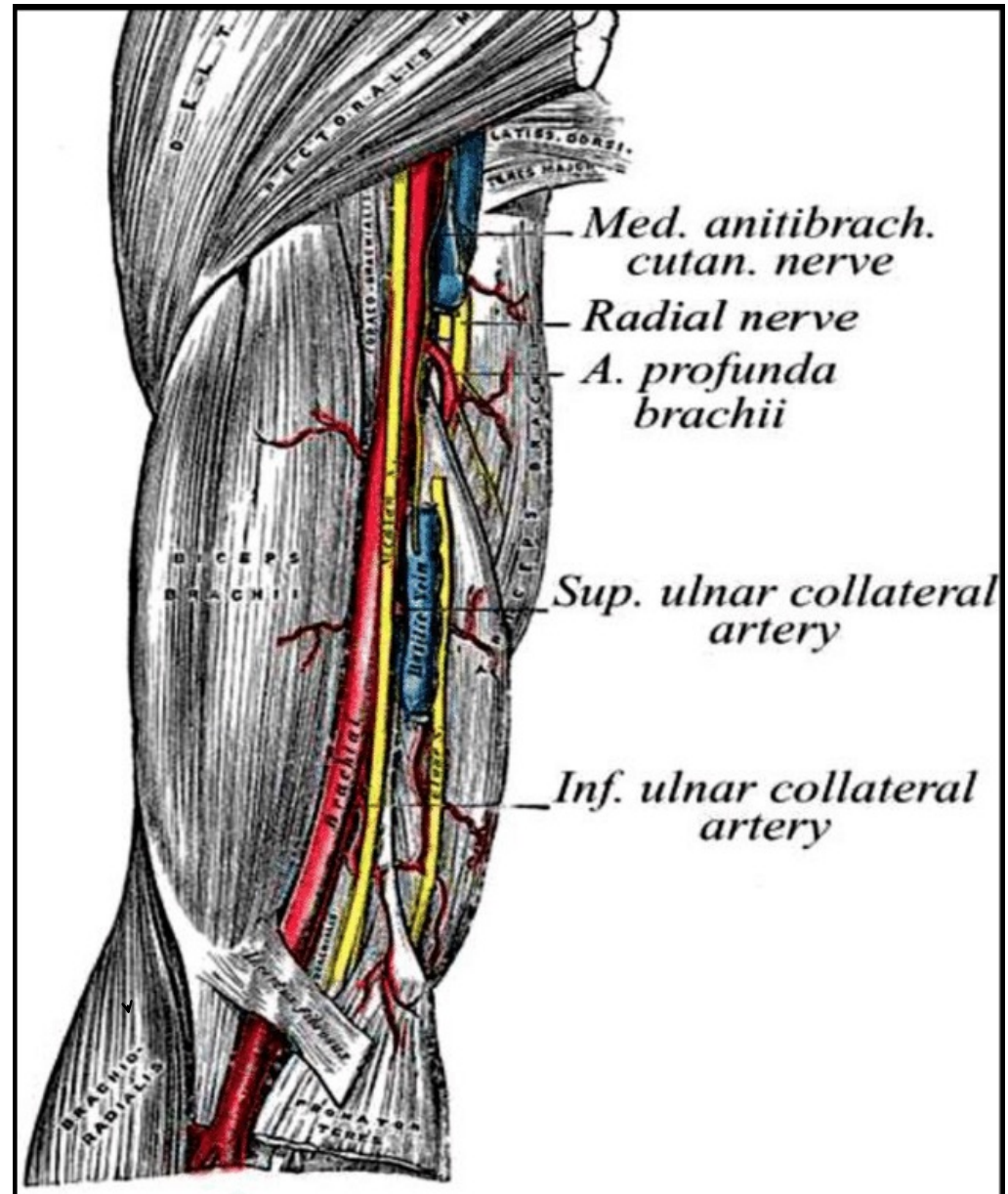
Upper part ↘

- **Laterally:** The median nerve and the coracobrachialis and biceps muscles above;
- the tendon of the biceps lies lateral to the artery in the lower part of its course

Lower part ↘

- Triple relation between the median nerve and the artery :
- It runs downward on the lateral side of the brachial artery , Halfway down the upper arm, it crosses the brachial artery and continues downward on its medial side.

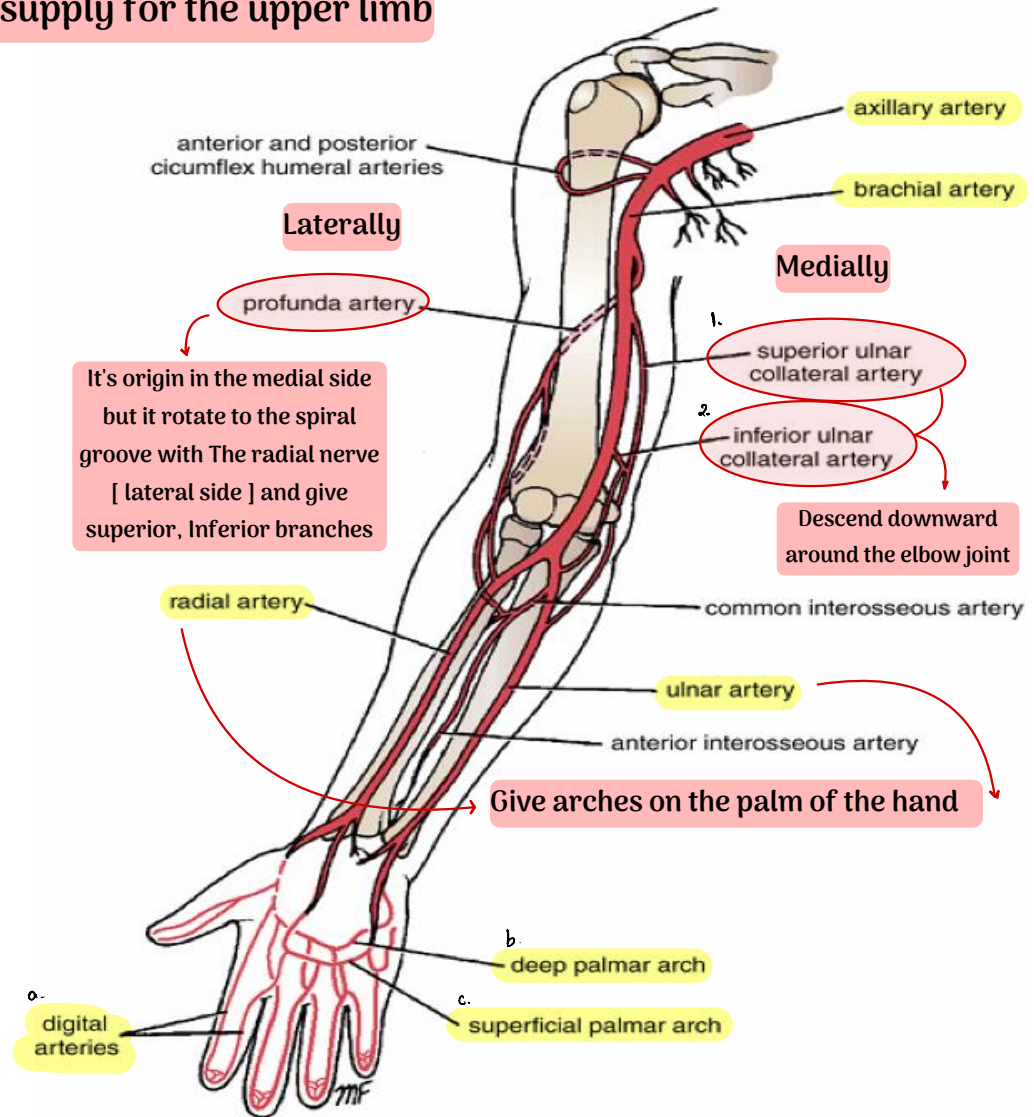
At the level of insertion of deltoid or coracobrachialis



Branches

The blood supply for the upper limb

- 1. Muscular branches to the anterior compartment of the upper arm
- The nutrient artery to the humerus
- 2. The profunda artery arises near the beginning of the brachial artery and follows the radial nerve into the spiral groove of the humerus
- 3. The superior ulnar collateral artery arises near the middle of the upper arm and follows the ulnar nerve
- 4. The inferior ulnar collateral artery arises near the termination of the artery and takes part in the anastomosis around the elbow joint



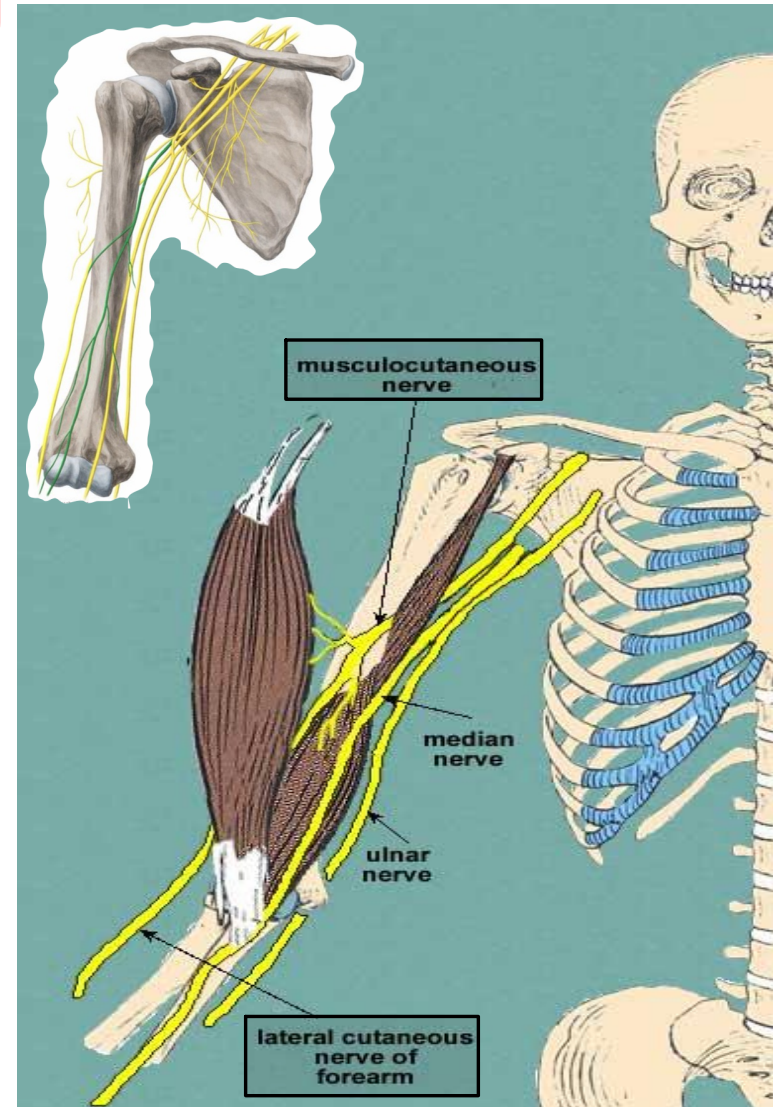
It end as lateral cutaneous nerve of forearm
superficially to the cubital fossa

Musculocutaneous Nerve

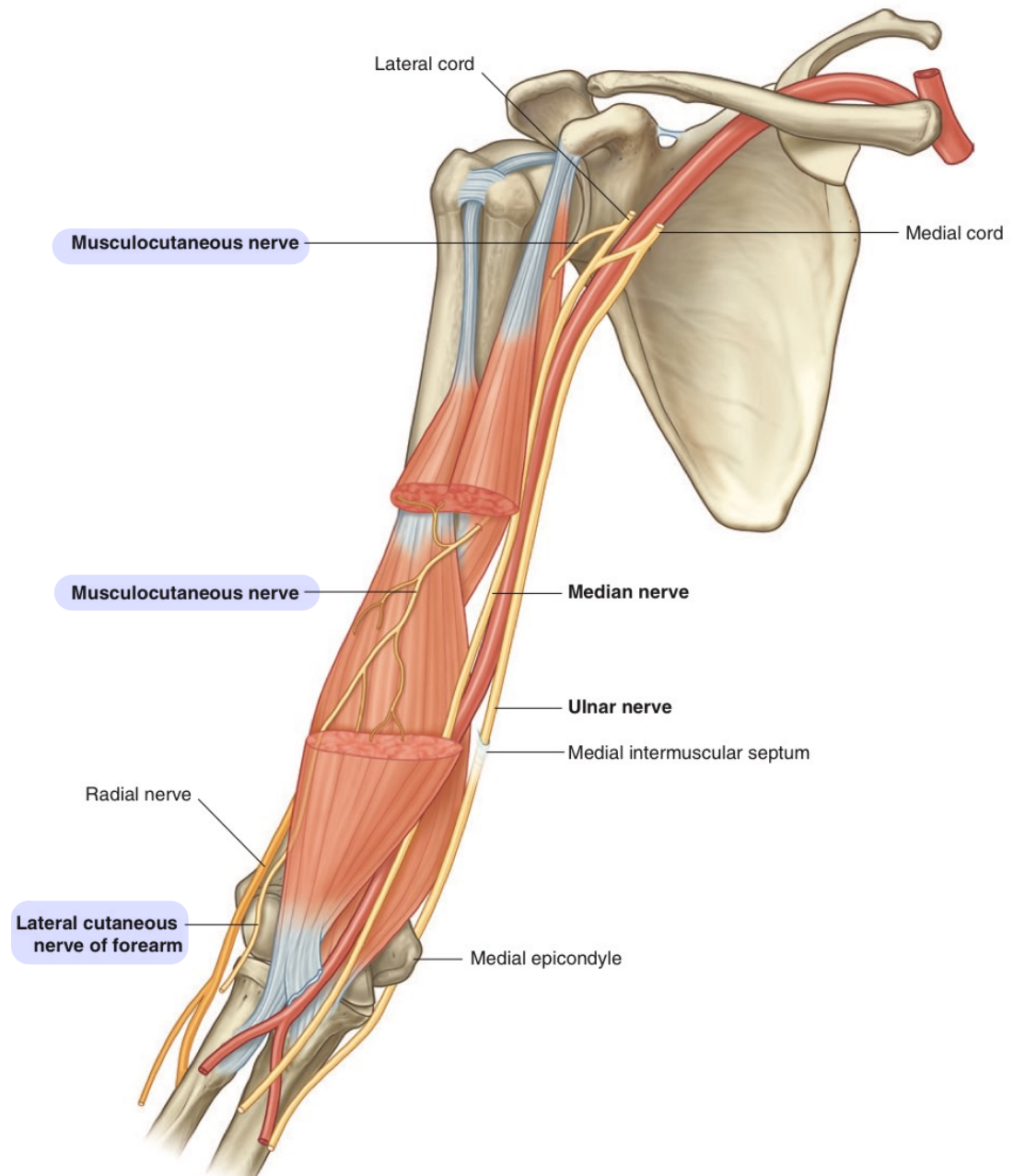
It passes through the coracobrachialis & brachialis

Gives 3 muscles: coracobrachialis muscle, biceps and brachialis muscles

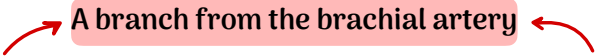
- The origin of the musculocutaneous nerve from the lateral cord of the brachial plexus (C5, 6, and 7) in the axilla
- It runs downward and laterally, pierces the coracobrachialis muscle
- and then passes downward between the biceps and brachialis muscles
- It appears at the lateral margin of the biceps tendon and pierces the deep fascia just above the elbow
- It runs down the lateral aspect of the forearm as the lateral cutaneous nerve of the forearm

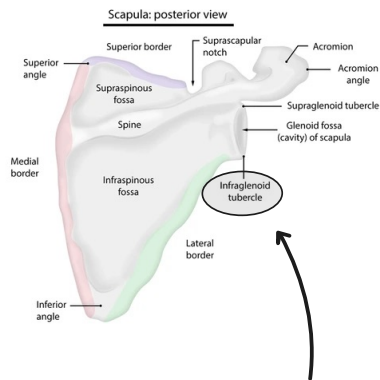


- **Branches**
- **Muscular branches to the biceps, coracobrachialis, and brachialis**
- **Cutaneous branches; the lateral cutaneous nerve of the forearm** supplies the skin of the front and lateral aspects of the forearm down as far as the root of the thumb.
- **Articular branches to the elbow joint**



Contents of the Posterior Fascial Compartment of the Upper Arm

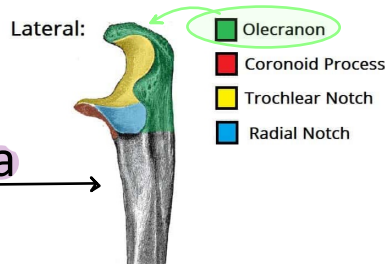
- Muscle: The three heads of the triceps muscle
- Nerve supply to the muscle: Radial nerve
- Blood supply: Profunda brachii and ulnar collateral arteries
A red box containing the text "A branch from the brachial artery" has two red arrows pointing to the "Profunda brachii" and "ulnar collateral arteries" in the text above.
- Structures passing through the compartment: Radial nerve and ulnar nerve



Triceps

- **Origin :**
- **Long head** Infraglenoid tubercle of scapula
- **Lateral head** Upper half of posterior surface of shaft of humerus Above the radial groove
- **Medial head** Lower half of posterior surface of shaft of humerus Below the radial groove/ spiral groove

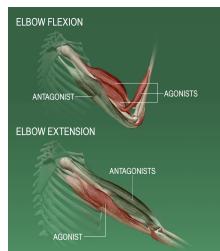
- **Insertion:**
- **Olecranon process of ulna**



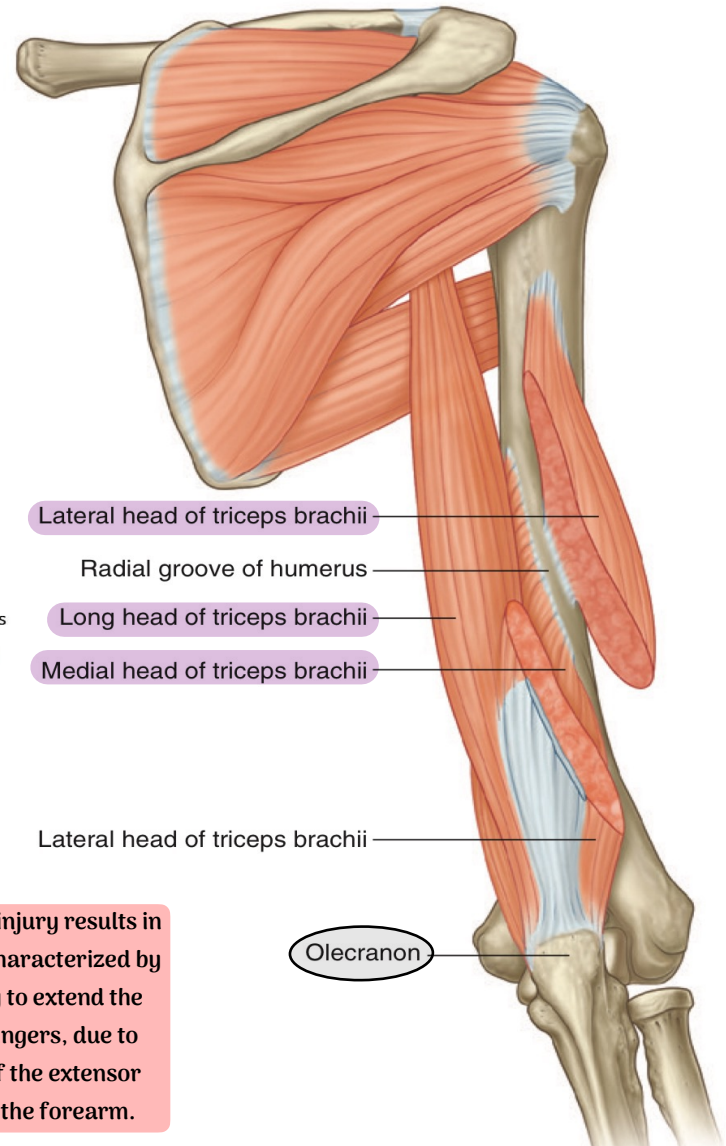
- **Innervation:**
- **Radial nerve C6, 7, 8**

Give branches to the forearm + dorsum of hand
= extension for the forearm and the hand

- **Action :**
- **Extensor of elbow joint**



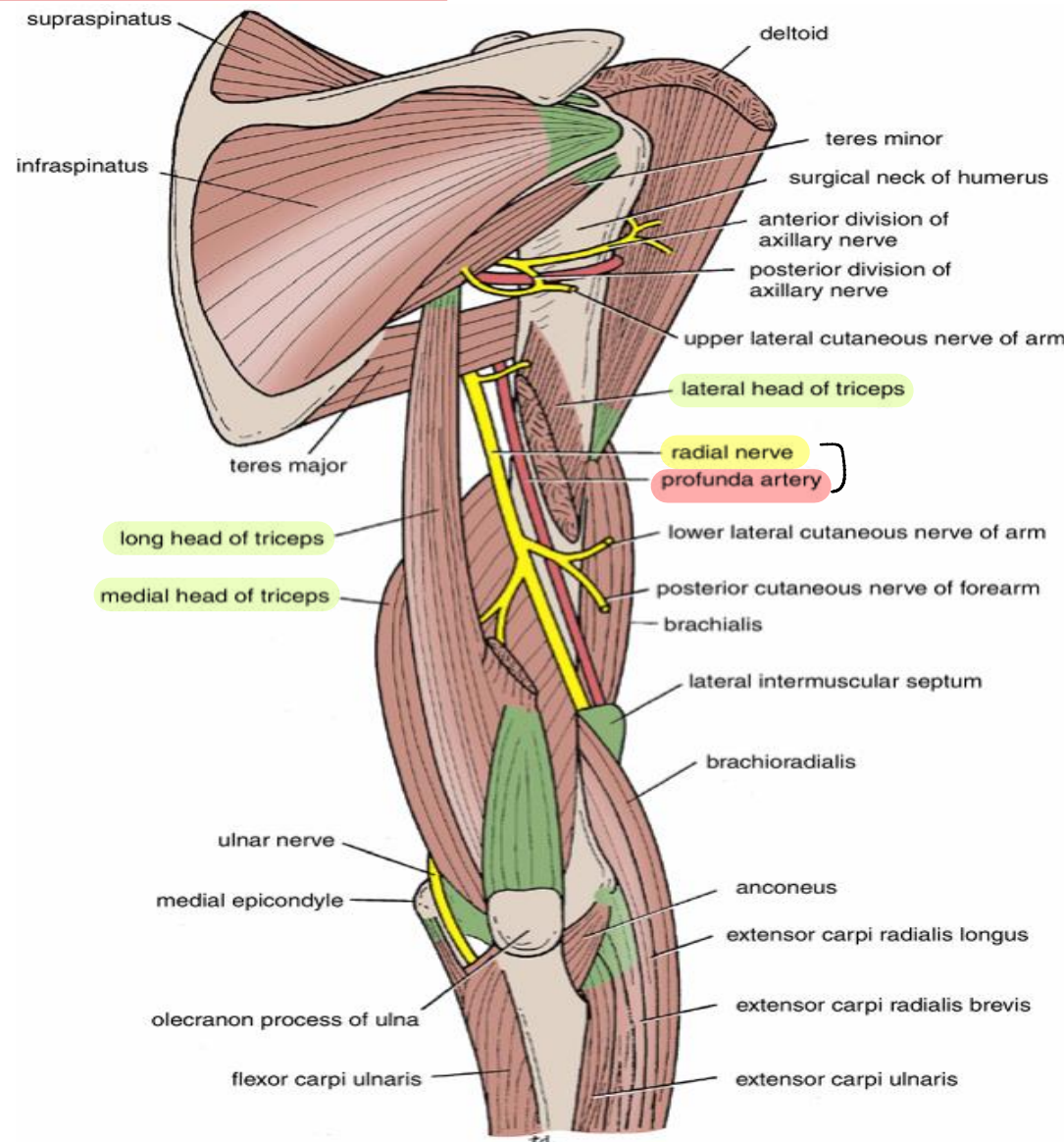
Radial nerve injury results in wrist drop, characterized by the inability to extend the wrist and fingers, due to paralysis of the extensor muscles in the forearm.



The radial nerve courses through the spiral groove of the humerus, traveling from medial to lateral. It then passes around the lateral epicondyle, transitioning from the posterior compartment to the anterior compartment of the forearm, where it becomes a content of the [cubital fossa] and give deep & superficial branch

Radial Nerve

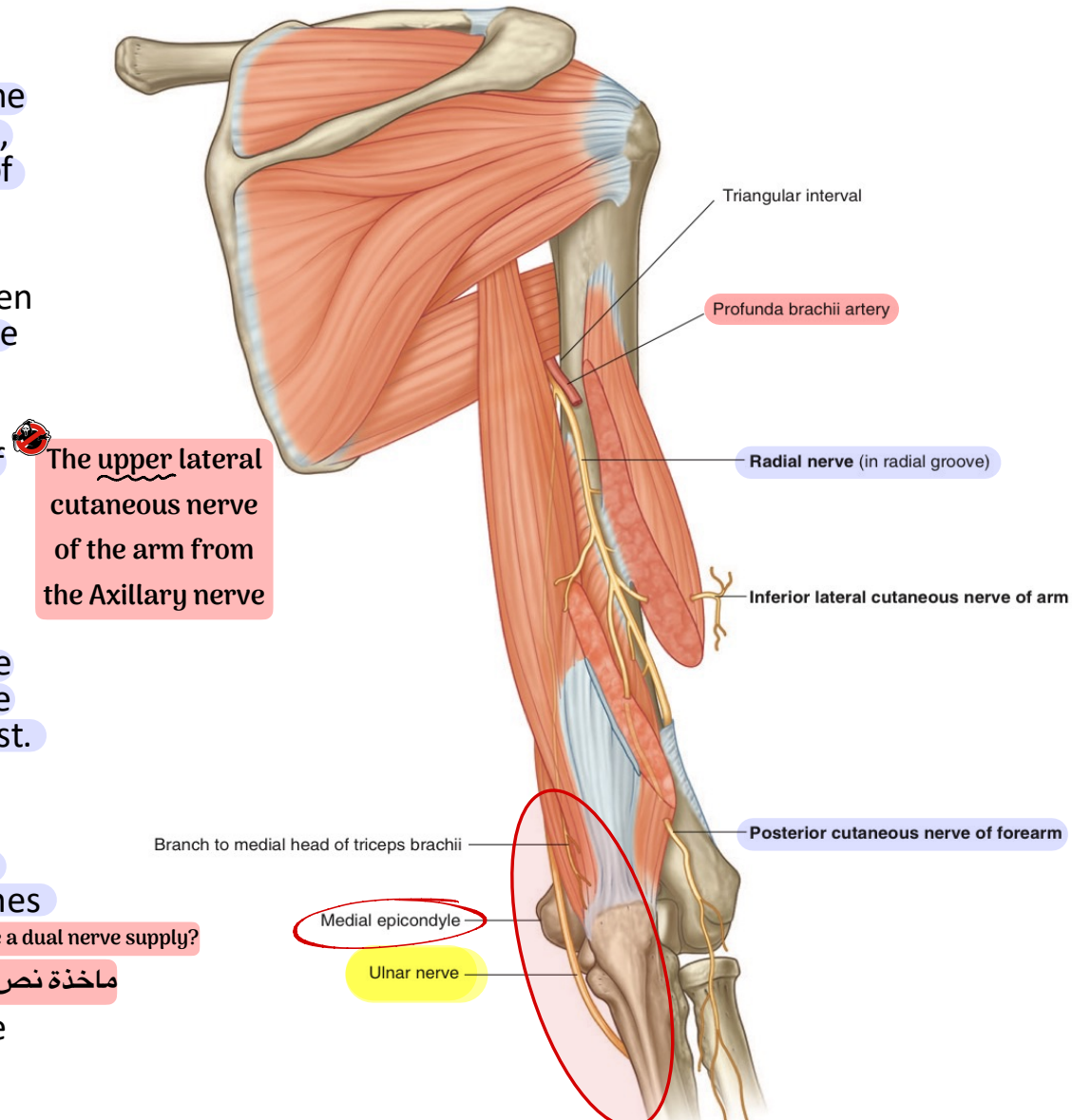
- The origin of the radial nerve from the posterior cord of the brachial plexus in the axilla
- The nerve winds around the back of the arm in the spiral groove on the back of the humerus between the heads of the triceps
- It pierces the lateral fascial septum above the elbow and continues downward into the cubital fossa in front of the elbow, between the brachialis and the brachioradialis muscles
- In the spiral groove, the nerve is accompanied by the profunda vessels, and it lies directly in contact with the shaft of the humerus



Branches

1. In the axilla, branches are given to the long and medial heads of the triceps, and the posterior cutaneous nerve of the arm is given off.
 2. In the spiral groove branches are given to the lateral and medial heads of the triceps and to the anconeus
 3. The lower lateral cutaneous nerve of the arm supplies the skin over the lateral and anterior aspects of the lower part of the arm
 4. The posterior cutaneous nerve of the forearm runs down the middle of the back of the forearm as far as the wrist.
- In the anterior compartment of the arm, after the nerve has pierced the lateral fascial septum, it gives branches to the brachialis → What is the muscle that have a dual nerve supply?

Radial nerve من Musculocutaneous Nerve من



- A branch from the medial cord
 - No branches on the arm
 - lies on the Medial side of the Brachial Artery

Ulnar Nerve

- Having pierced the medial fascial septum halfway down the upper arm, the ulnar nerve descends behind the septum, covered posteriorly by the medial head of the triceps
- The nerve is accompanied by the superior ulnar collateral vessels. At the elbow, it lies behind the medial epicondyle of the humerus

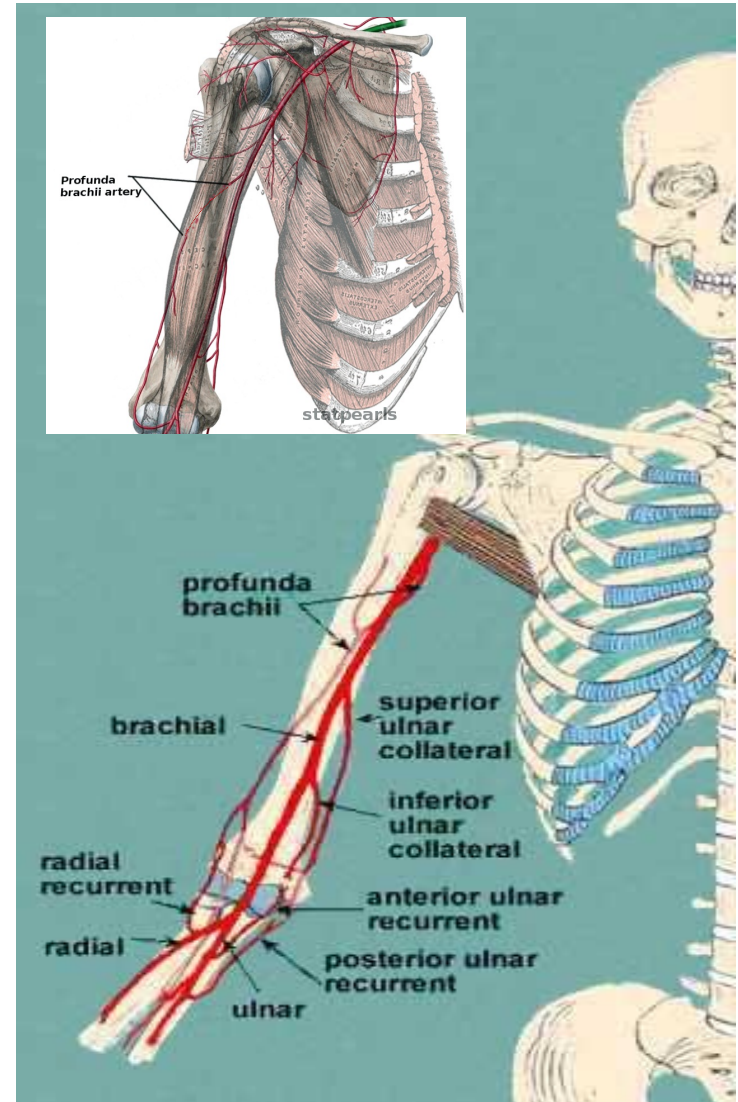
At the insertion of Deltoid or coracobrachialis, the nerve pierces the medial intermuscular septum, transitioning from the anterior compartment near the medial epicondyle to the posterior compartment. It then descends into the forearm, traveling between the flexor carpi ulnaris and the flexor digitorum profundus.

Profunda Brachii Artery

- The profunda brachii artery arises from the brachial artery near its origin
- It accompanies the radial nerve through the spiral groove At the lateral side
- supplies the triceps muscle, and takes part in the anastomosis around the elbow joint

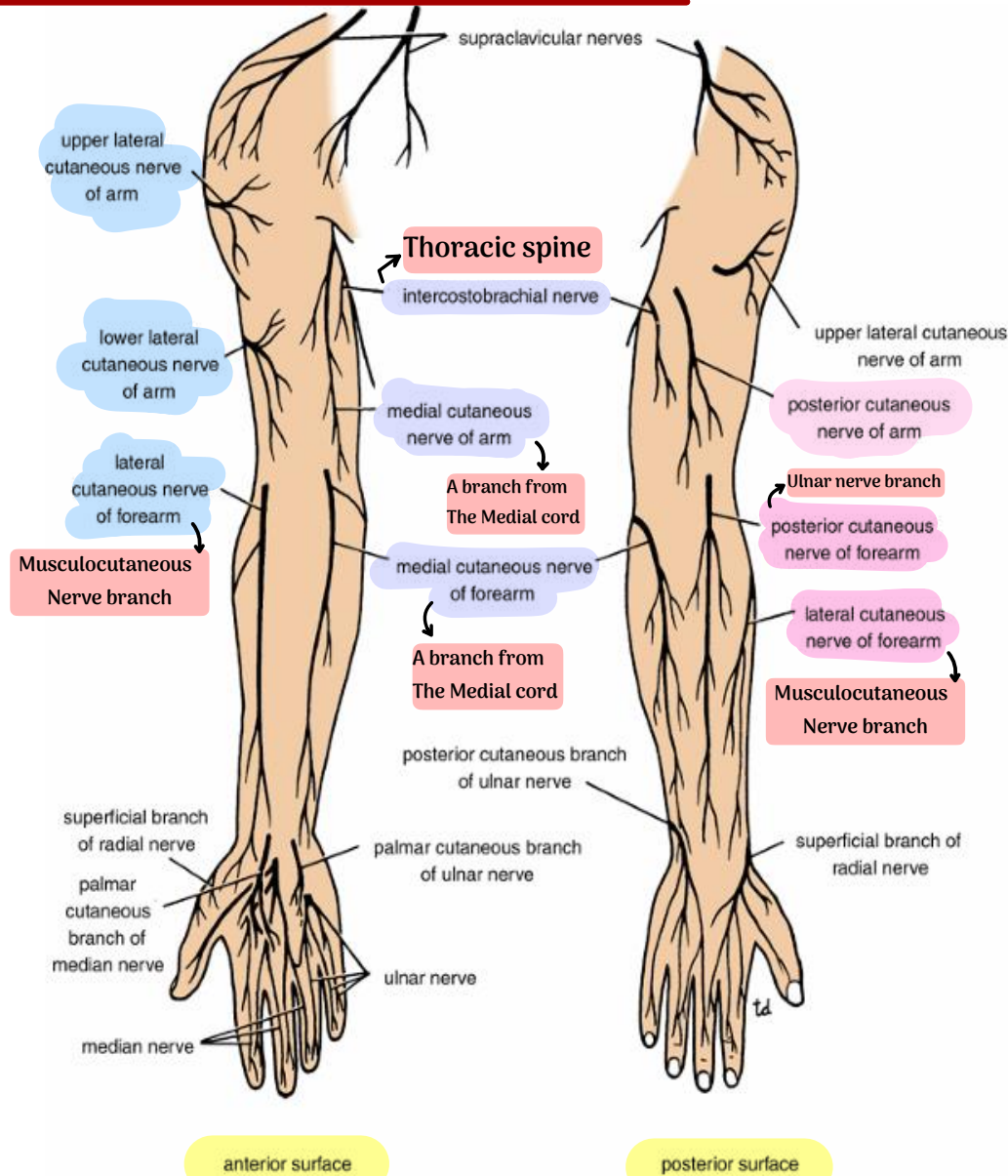
Branches:

- Superior and Inferior Ulnar Collateral Arteries
- The superior and inferior ulnar collateral arteries arise from the brachial artery and take part in the anastomosis around the elbow joint.



Superficial Sensory Nerves

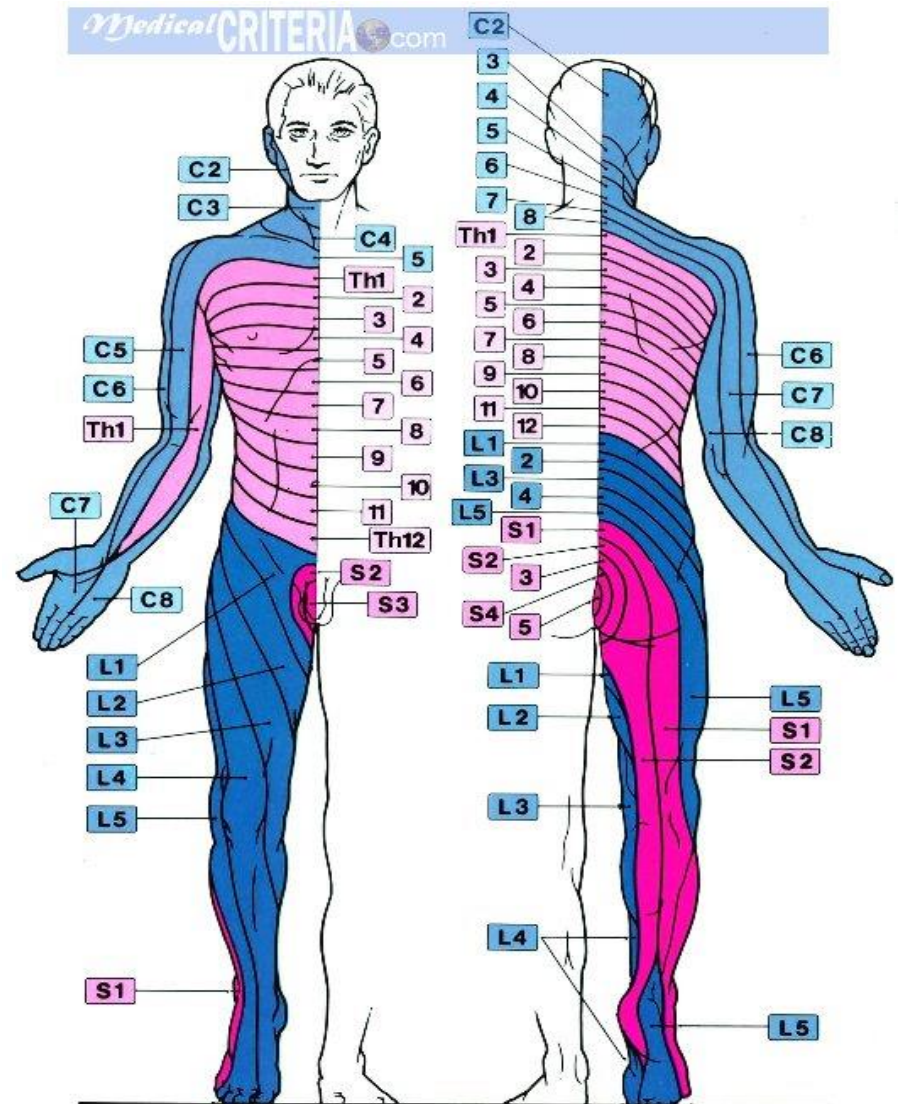
- The sensory nerve supply to the skin over the point of the shoulder to halfway down the deltoid muscle is from the supraclavicular nerves (C3 and 4).
- the lower half of the deltoid is supplied by the upper lateral cutaneous nerve of the arm, a branch of the axillary nerve (C5 and 6).
- The skin over the lateral surface of the arm below the deltoid is supplied by the lower lateral cutaneous nerve of the arm, a branch of the radial nerve (C5 and 6).
- The skin of the armpit and the medial side of the arm is supplied by the medial cutaneous nerve of the arm (T1) and the intercostobrachial nerves (T2).
- The skin of the back of the arm is supplied by the posterior cutaneous nerve of the arm, a branch of the radial nerve (C8).



Dermatomes and Cutaneous Nerves



- necessary for a physician to test the integrity of the spinal cord segments of C3 through T1
- It is seen that the dermatomes for the upper cervical segments C3 to 6 are located along the lateral margin of the upper limb
- the C7 dermatome is situated on the middle finger; and the dermatomes for C8, T1, and T2 are along the medial margin of the limb
- The nerve fibers from a particular segment of the spinal cord, although they exit from the cord in a spinal nerve of the same segment, pass to the skin in two or more different cutaneous nerves.



Superficial Veins

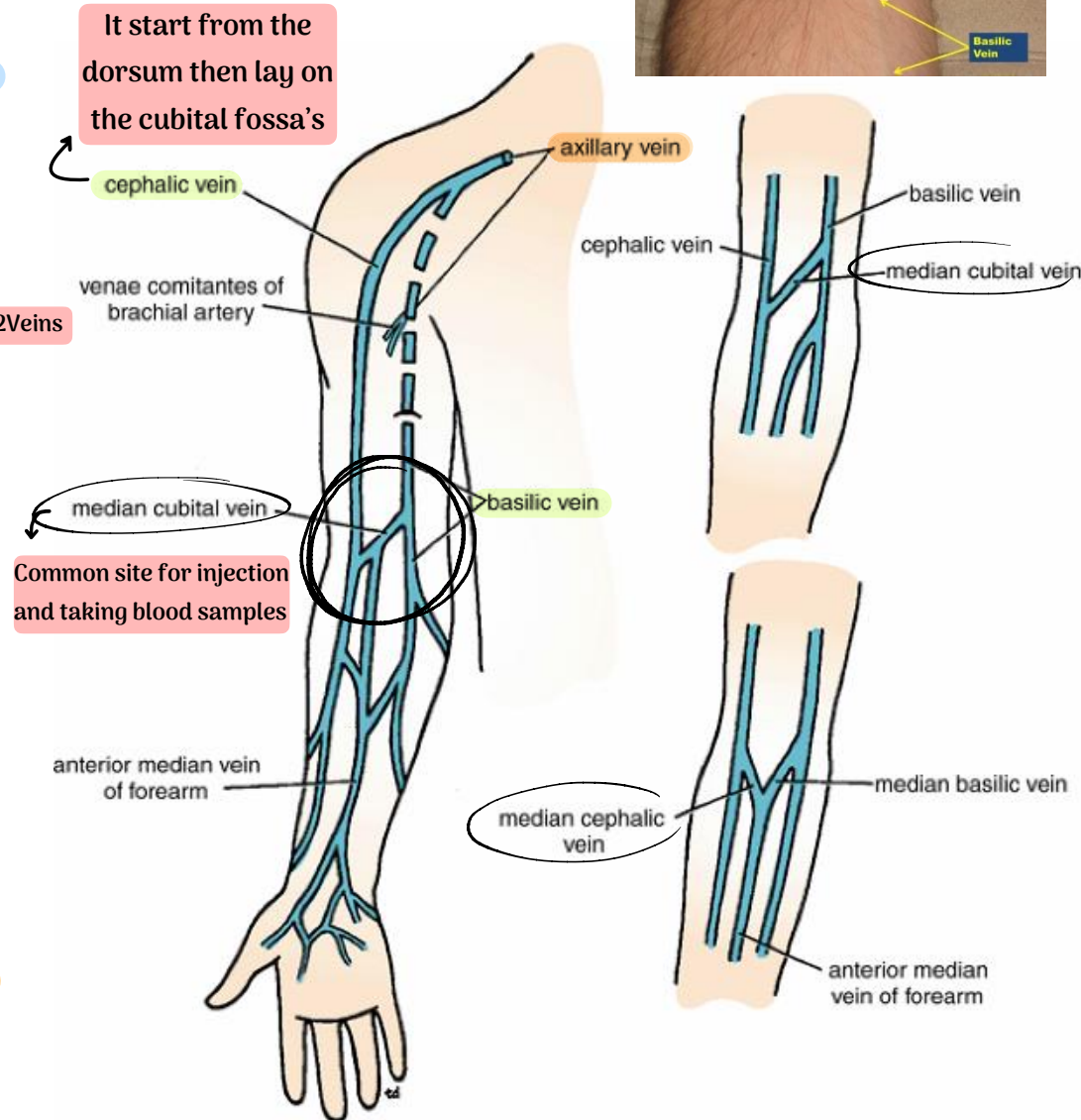
- The veins of the upper limb can be divided into two groups: superficial and deep

- The [deep veins comprise] the venae comitantes, which accompany all the large arteries, usually in pairs, and the axillary vein. The Ulnar, radial, brachial artery have 2 Veins

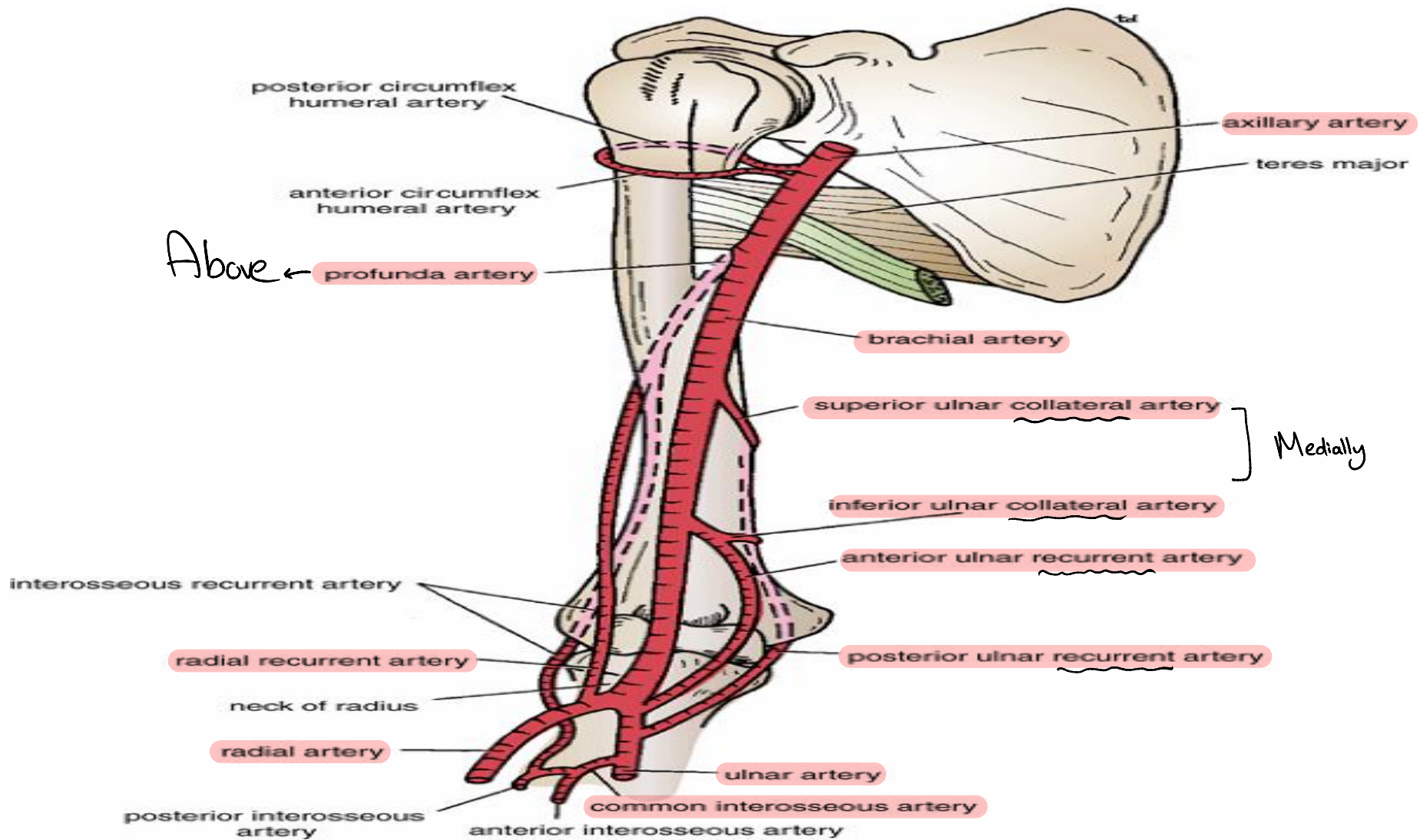
- The [superficial veins] of the arm lie in the superficial fascia

- The cephalic vein ascends in the superficial fascia on the lateral side of the biceps and, Thumb
- on reaching the infraclavicular fossa, drains into the axillary vein.

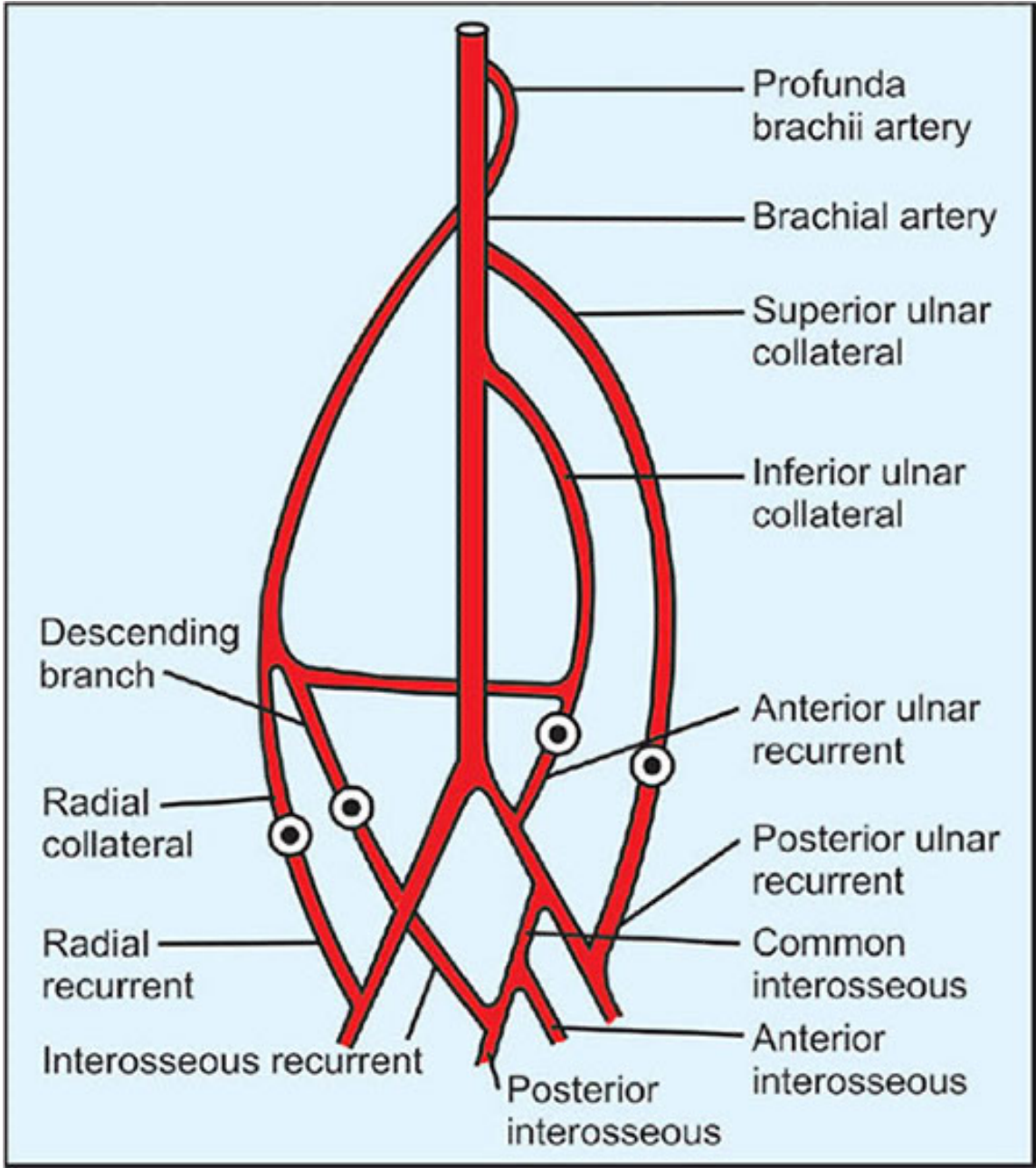
- The basilic vein ascends in the superficial fascia on the medial side of the biceps Little finger
- Halfway up the arm, it pierces the deep fascia and at the lower border of the teres major joins the venae comitantes of the brachial artery to form the axillary vein



the arterial anastomosis around the elbow joint



Extra picture that explain the anastomosis



The Cubital Fossa

- The cubital fossa is a triangular depression that lies in front of the elbow

- Boundaries

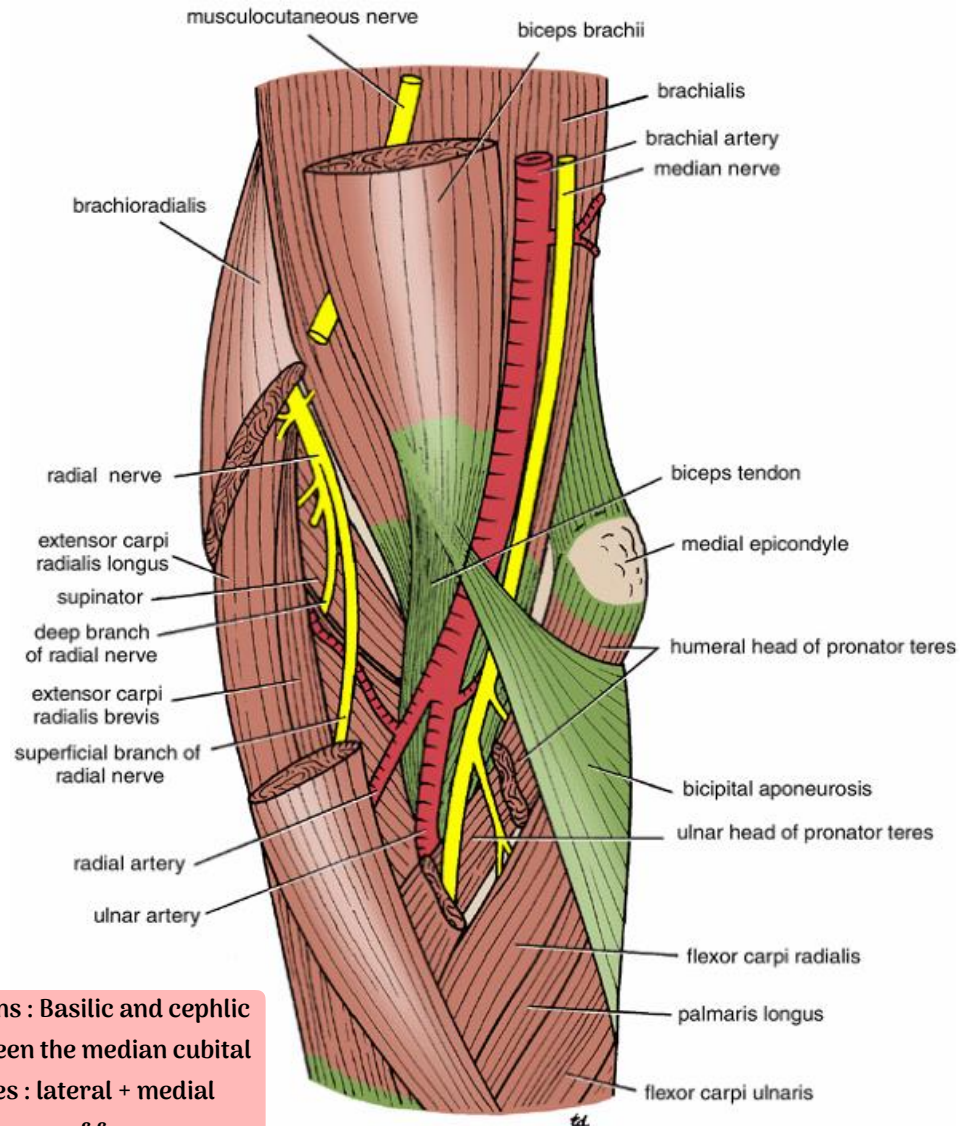
- Laterally: The brachioradialis muscle
 - Medially: The pronator teres muscle
- Apex

- The base of the triangle is formed by an imaginary line drawn between the two epicondyles of the humerus

- The floor of the fossa is formed by the supinator muscle laterally and the brachialis muscle medially

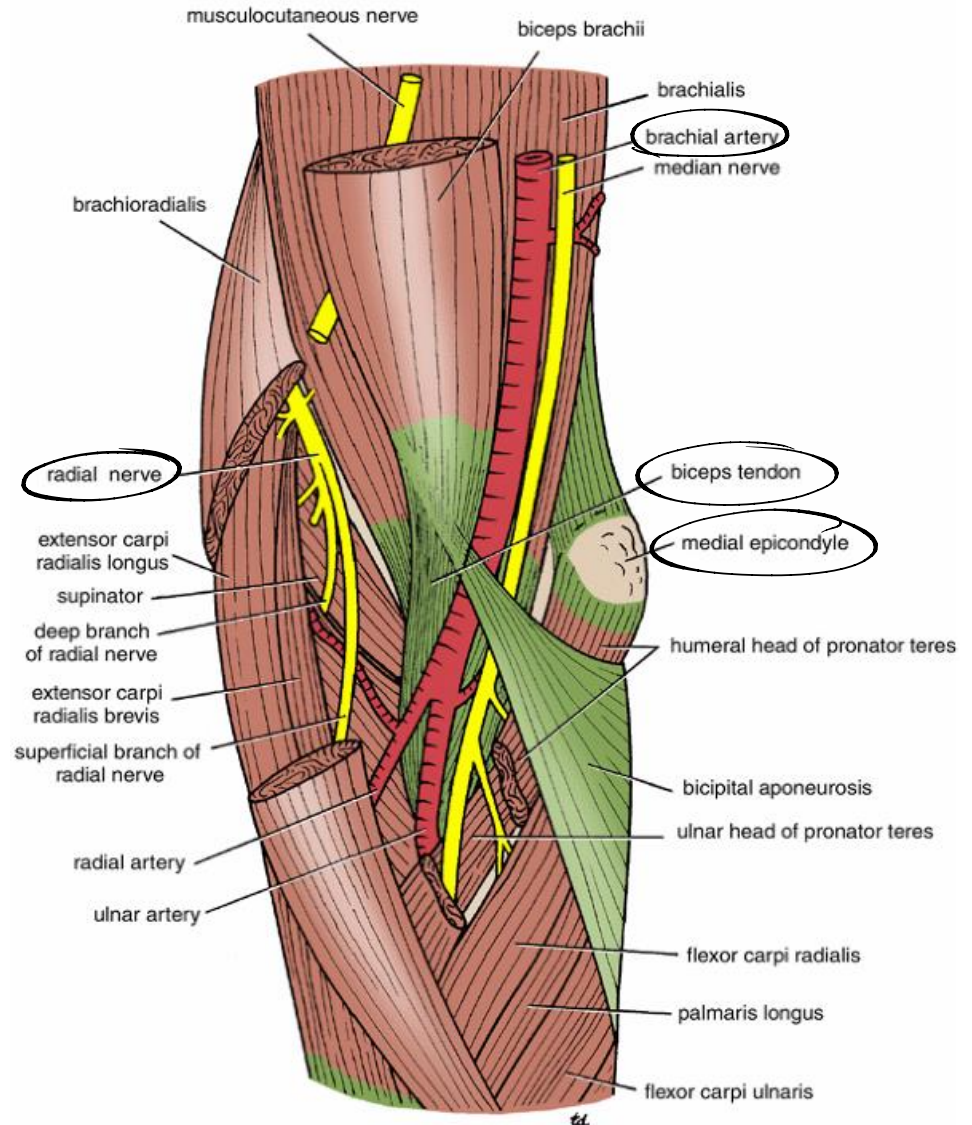
- The roof is formed by skin and fascia and is reinforced by the bicipital aponeurosis.

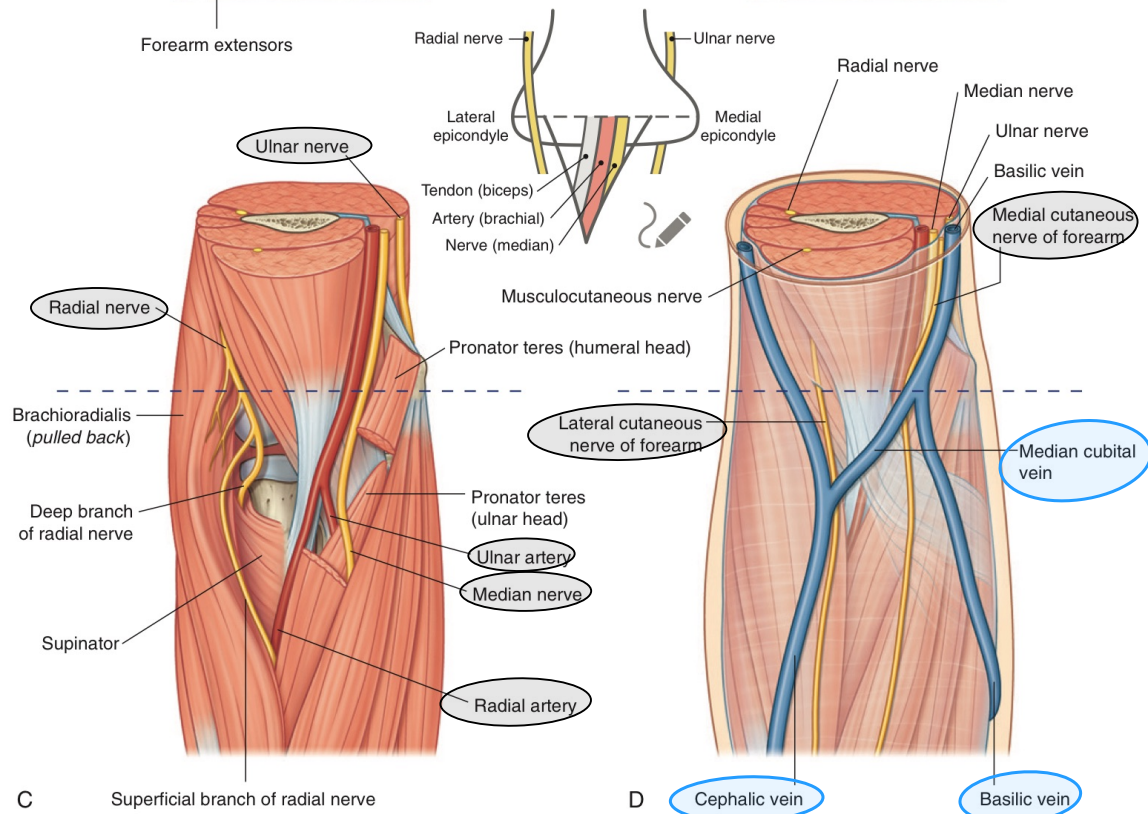
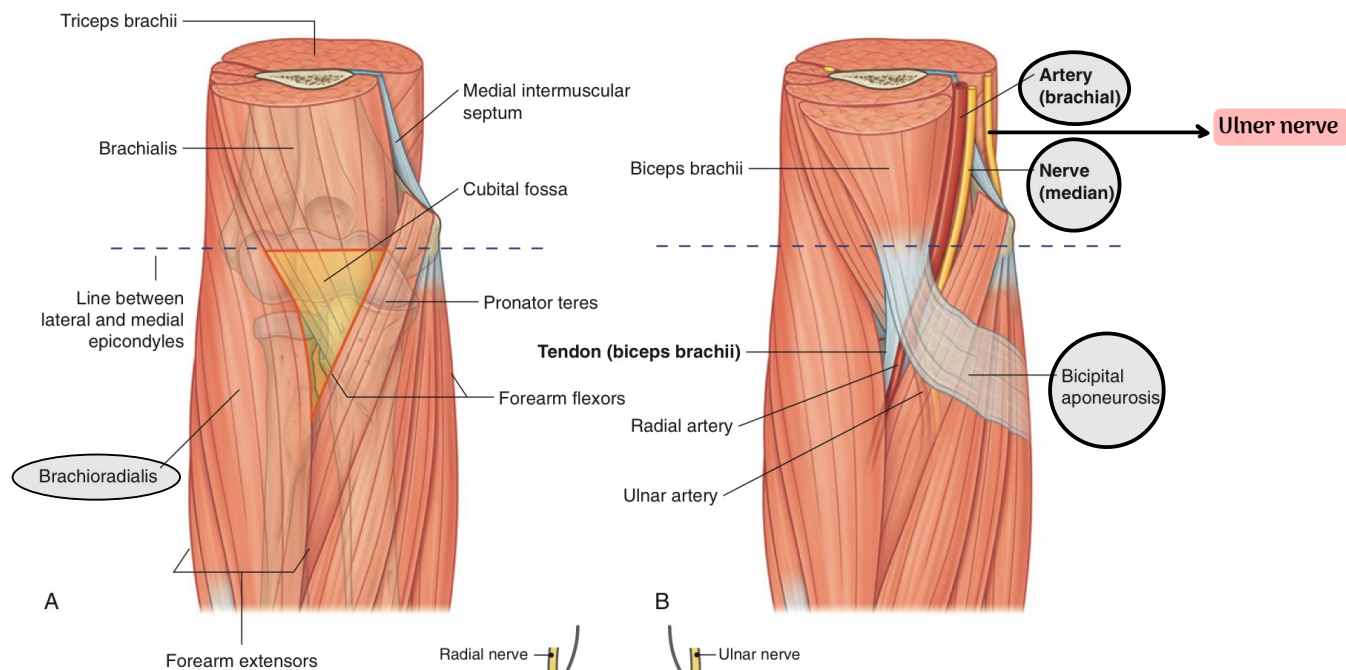
With 2 veins : Basilic and cephalic
2 Nerves : lateral + medial
cutaneous of forearm



Contents

- The cubital fossa contains the following structures, from the medial to the lateral side
- the **median nerve**, the bifurcation of the **brachial artery** into the ulnar and radial arteries, the **tendon of the biceps muscle**, and the **radial nerve** and its deep branch.
- The supratrochlear lymph node lies in the superficial fascia over the upper part of the fossa
- receives afferent lymph vessels from the third, fourth, and fifth fingers; the medial part of the hand; and the medial side of the forearm
- The efferent lymph vessels pass up to the axilla and enter the lateral axillary group of nodes





Thank You

Thank You

Done by Joud Al zubaidi

