



CVS.....

Lecture (9)

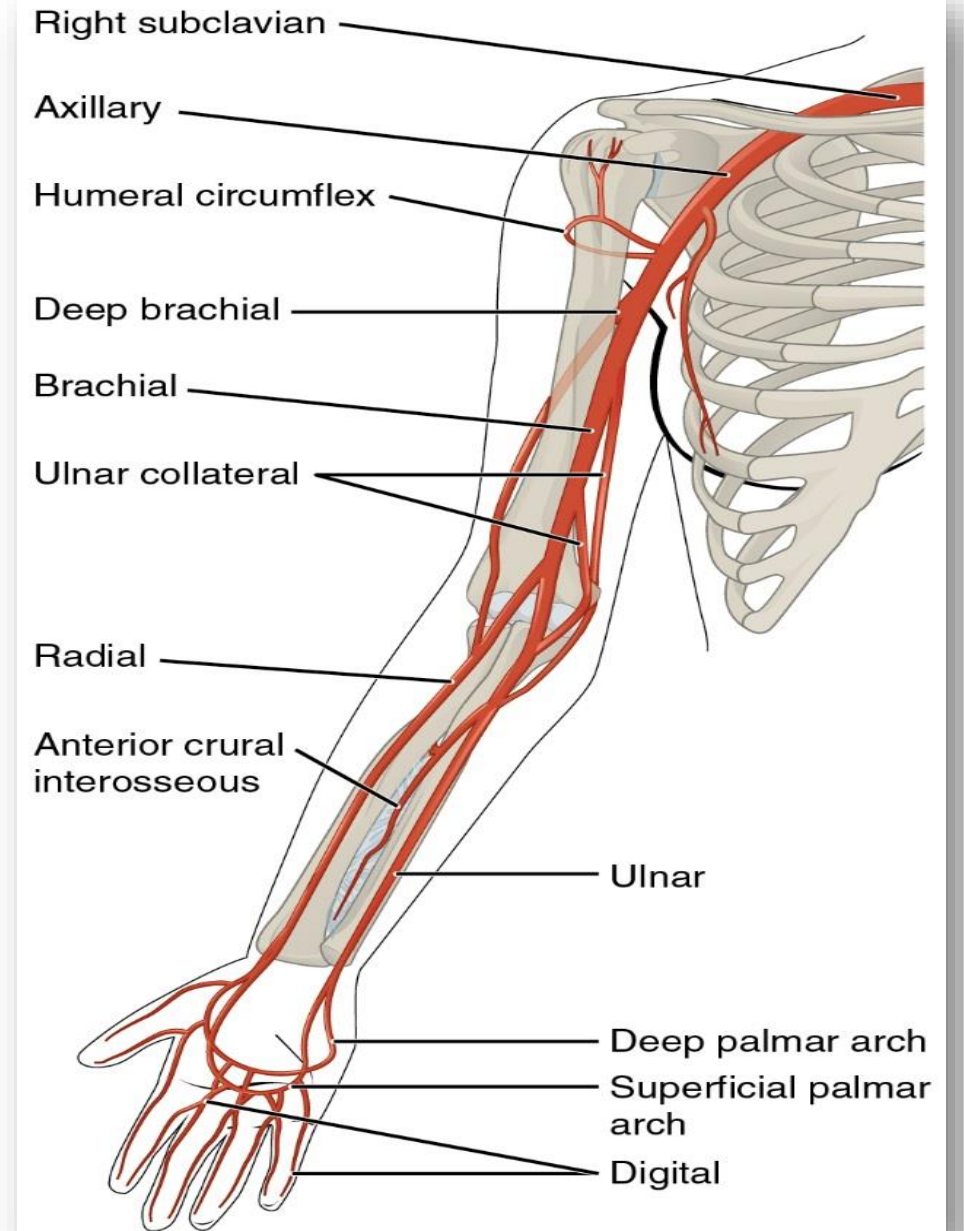
Arteries& veins in the upper Limb region

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ILOs

1. To describe the course, relations and branches of the axillary artery.
2. To describe the course, relations and branches of the brachial artery.
3. To describe the anastomosis around the shoulder and scapula.
4. To describe the course, relation and branches of the radial artery.
5. To describe the course, relation and branches of the ulnar artery.
6. To describe the anastomosis around the elbow and wrist joints.
7. To describe the locations and branches of the superficial and deep palmar arches.
8. Superficial & deep veins of upper limb.



Axillary Artery (Right & Left)

Beginning:

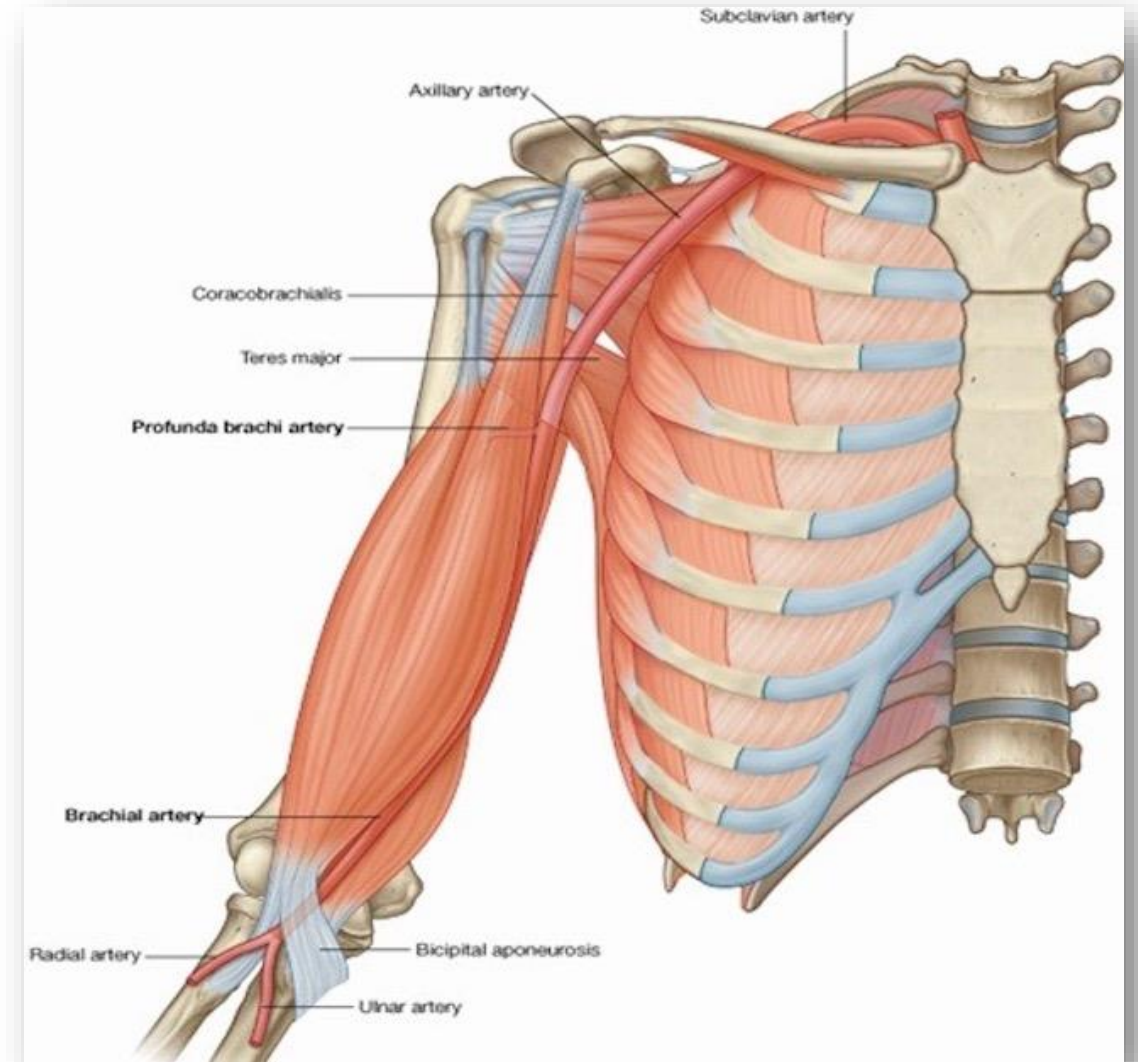
- It **begins** at the outer border of the first rib as a **continuation** of the Subclavian artery.

Course:

- It **enters the axilla** through its apex & course through it.

Termination:

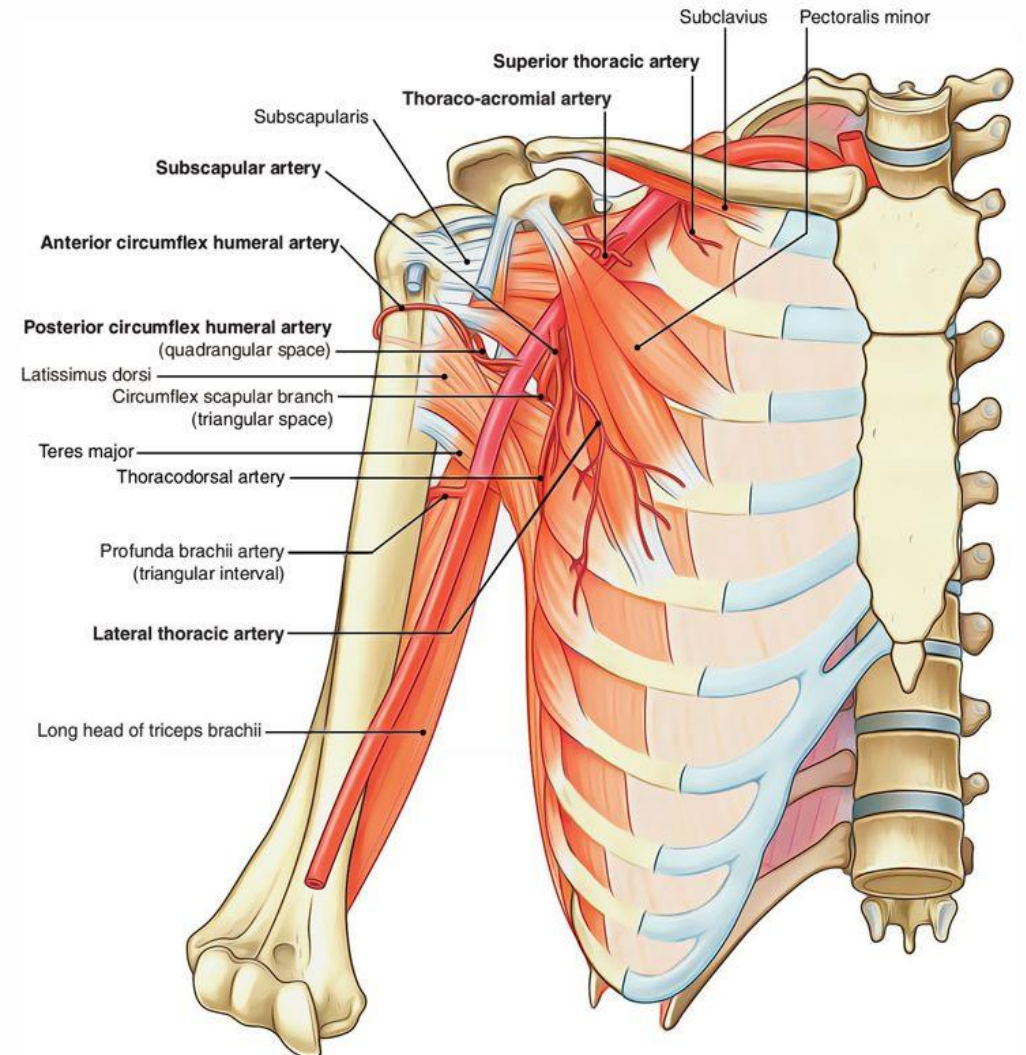
- It **ends at** the lower border of the teres major **to become** the brachial artery.



Parts of axillary artery:

Pectoralis minor muscle crosses the axillary artery and so **divides it** into three parts;

- **First part;** proximal to it.
- **Second part;** posterior to it.
- **Third part;** distal to it.



Relations of the Axillary Artery:

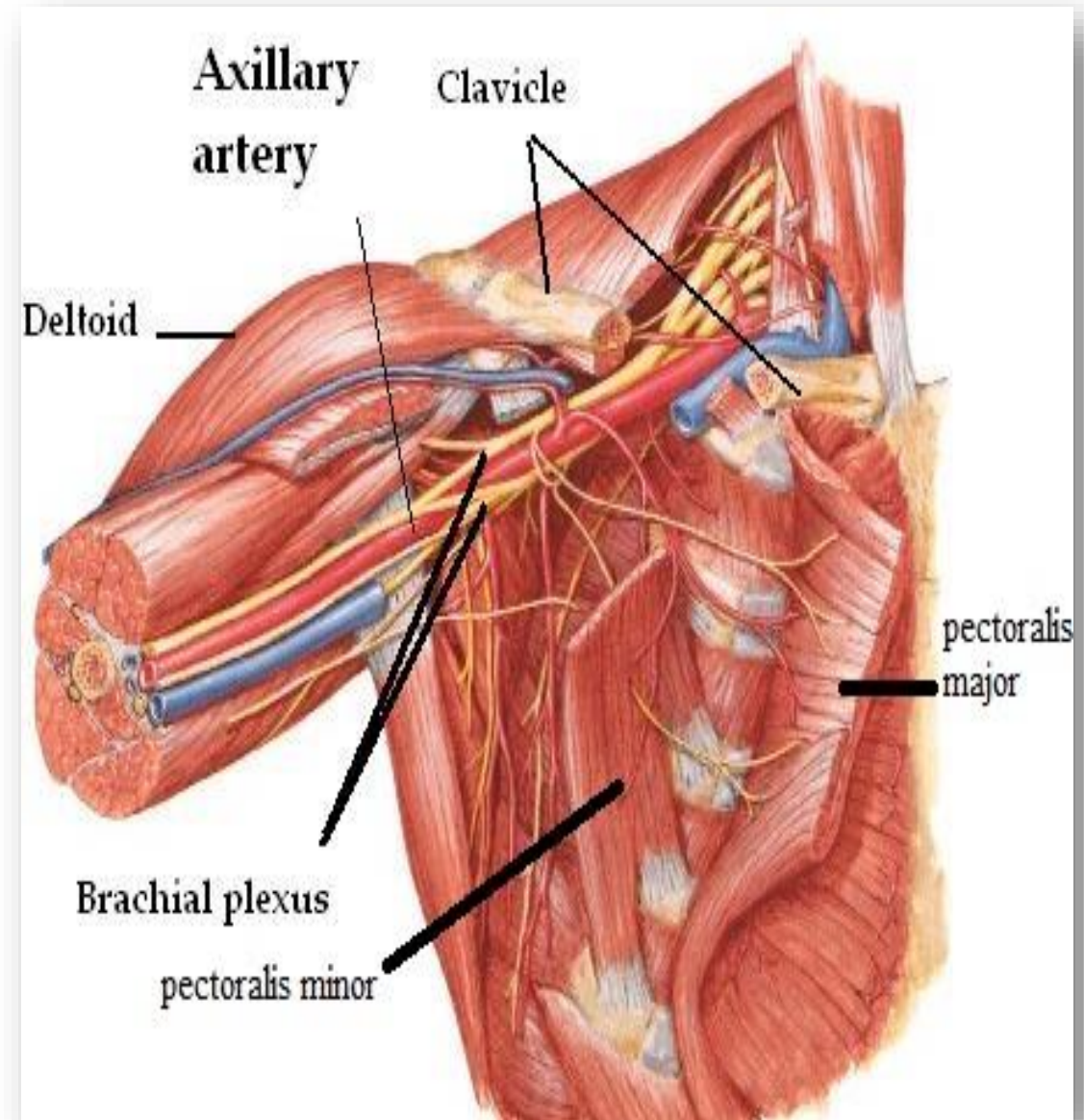
Relations of 1st part:

- It is **covered** by the pectoralis major.

Relations of 2nd part:

- It is **covered** by pectoralis major & minor muscles.

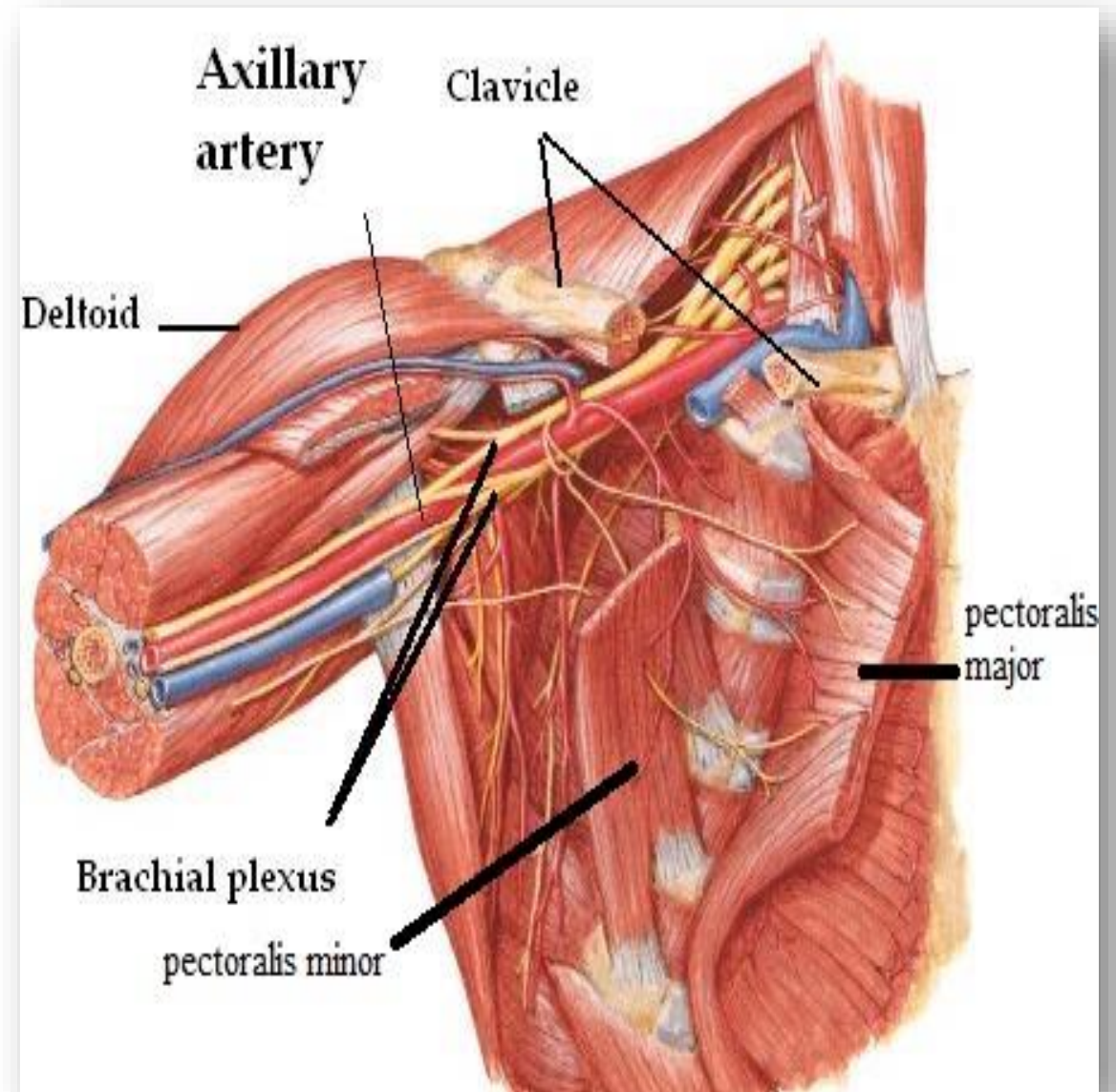
□ **The first and second parts** of the artery are related to the cords of the brachial plexus.



Relations of 3rd part:

- Its upper part is **covered by** pectoralis major.
- Its lower part is **covered by** skin and fascia only.
- **It is related to branches of brachial plexus:**
 - Median nerve lie lateral to it.
 - Ulnar nerve lies medial to it.
 - Radial nerve lie behind it.

❑ **The axillary vein** lies **medial** to all parts of the axillary artery.



Branches of axillary artery:

1st part (1 branch):

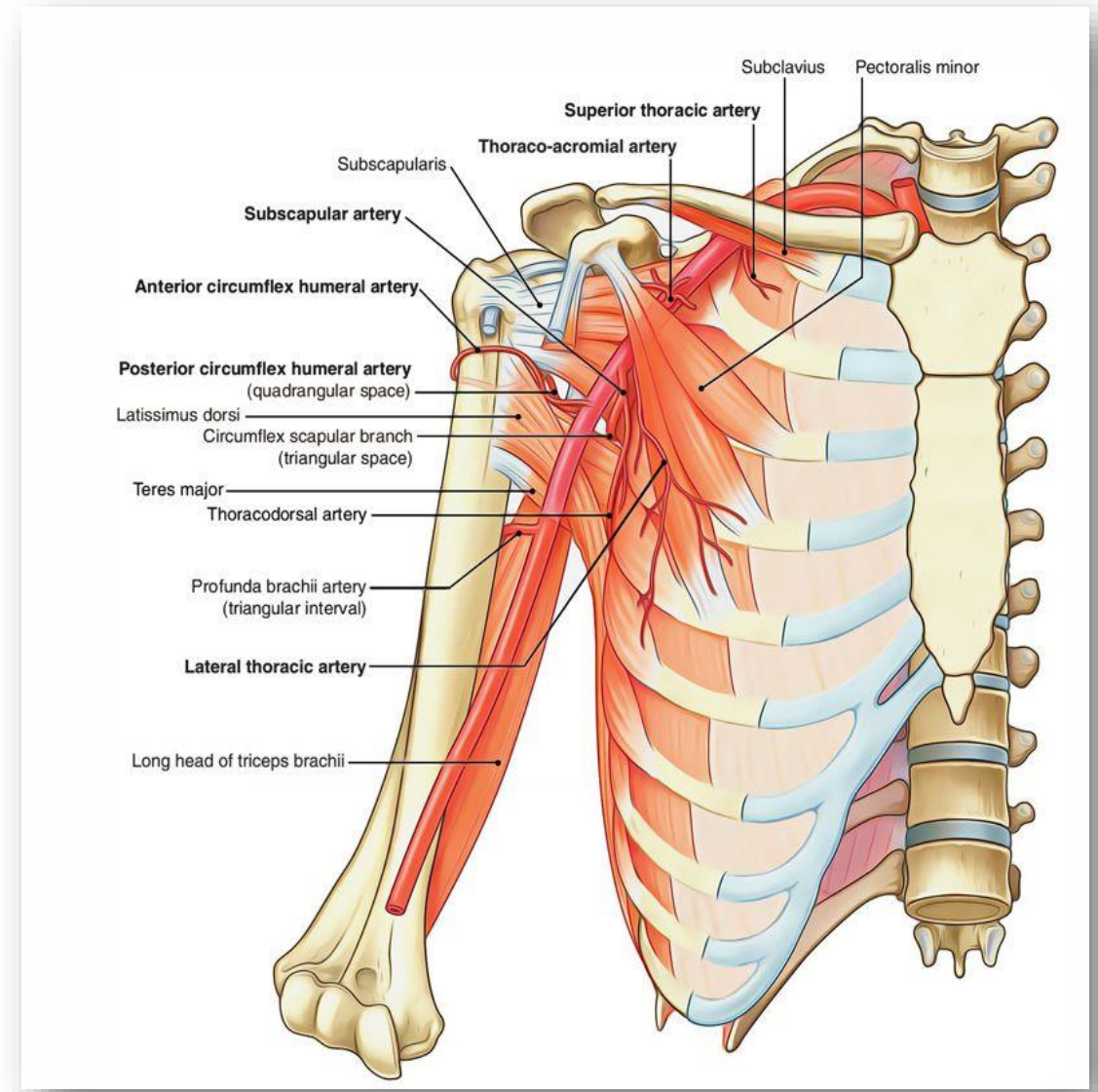
- **Superior thoracic artery;** supply pectoralis muscles.

2nd part (2 branches):

- **Thoracoacromial artery;** supplies pectoralis & deltoid.
- **Lateral thoracic artery:** supplies the breast.

3rd part (3 branches):

- **Subscapular artery.**
- **Anterior & posterior circumflex humeral arteries:** run laterally around surgical neck of the humerus.



Anastomosis around the scapula:

- It is an important anastomosis **between** the branches of the 1st part of subclavian artery and branches of 3rd part of axillary artery:

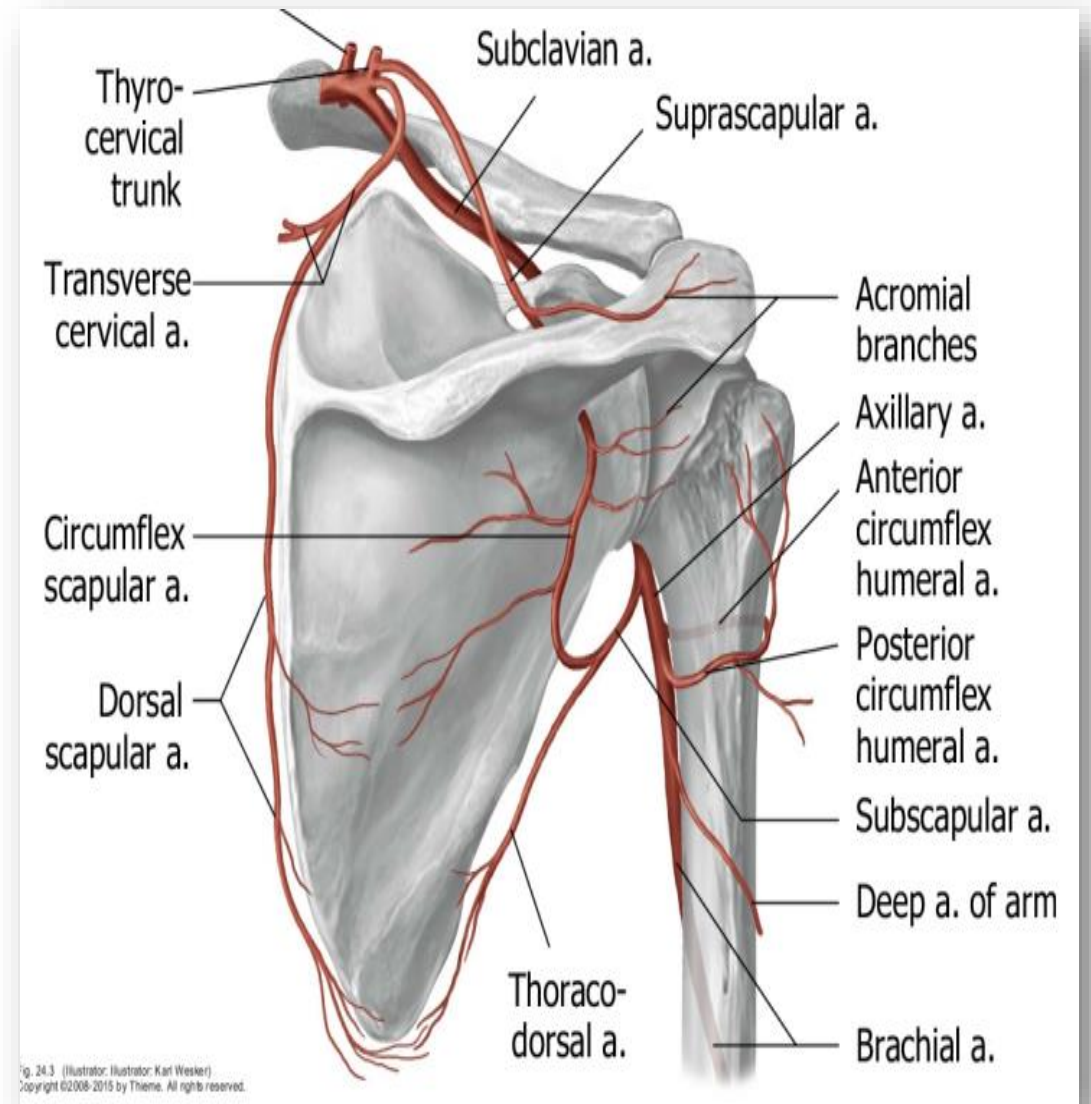
1-Dorsal scapular artery (1st part of subclavian artery).

2-Suprascapular artery (1st part of subclavian artery).

3-Subscapular artery (3rd part of axillary artery).

Importance of this anastomosis:

- Allows the blood to bypass in case of obstruction of the artery between the 1st part of subclavian artery and 3rd part of axillary artery.



Brachial artery (right& left)

Beginning:

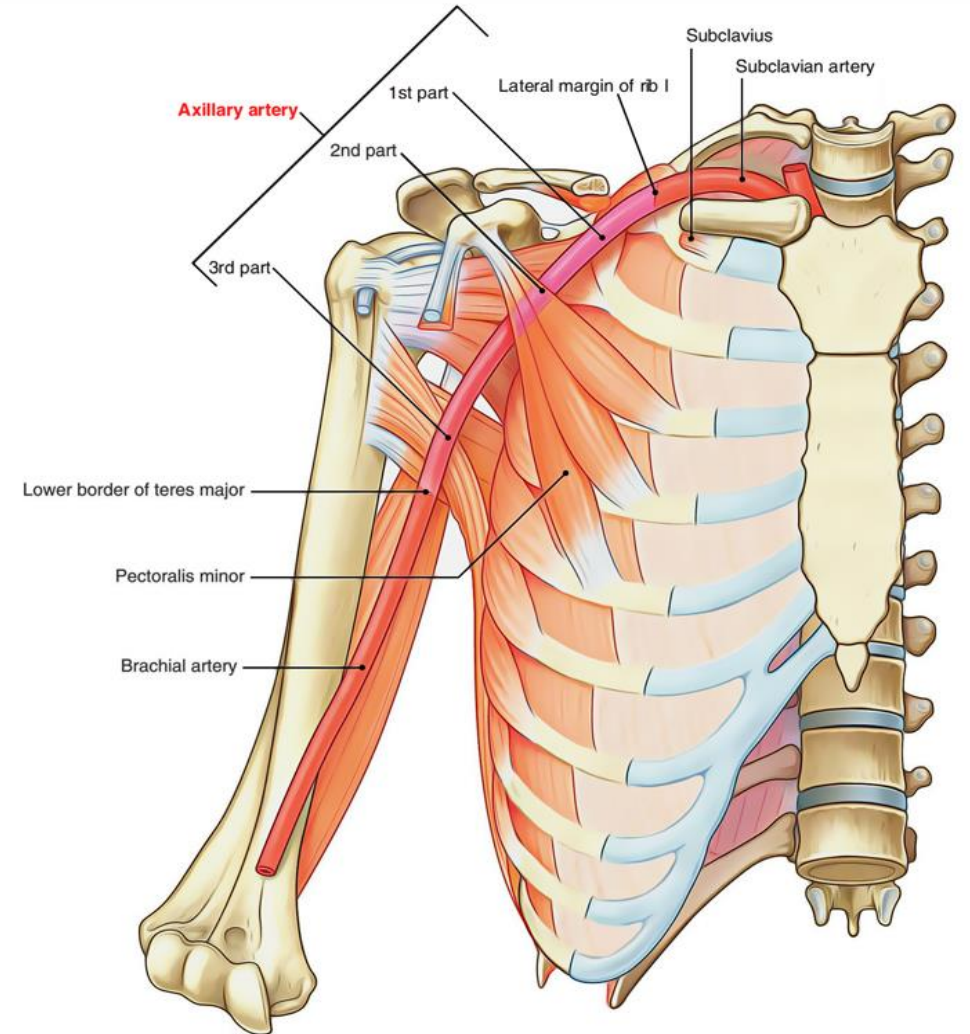
- It begins at the inferior border of the teres major, as a continuation of the axillary artery.

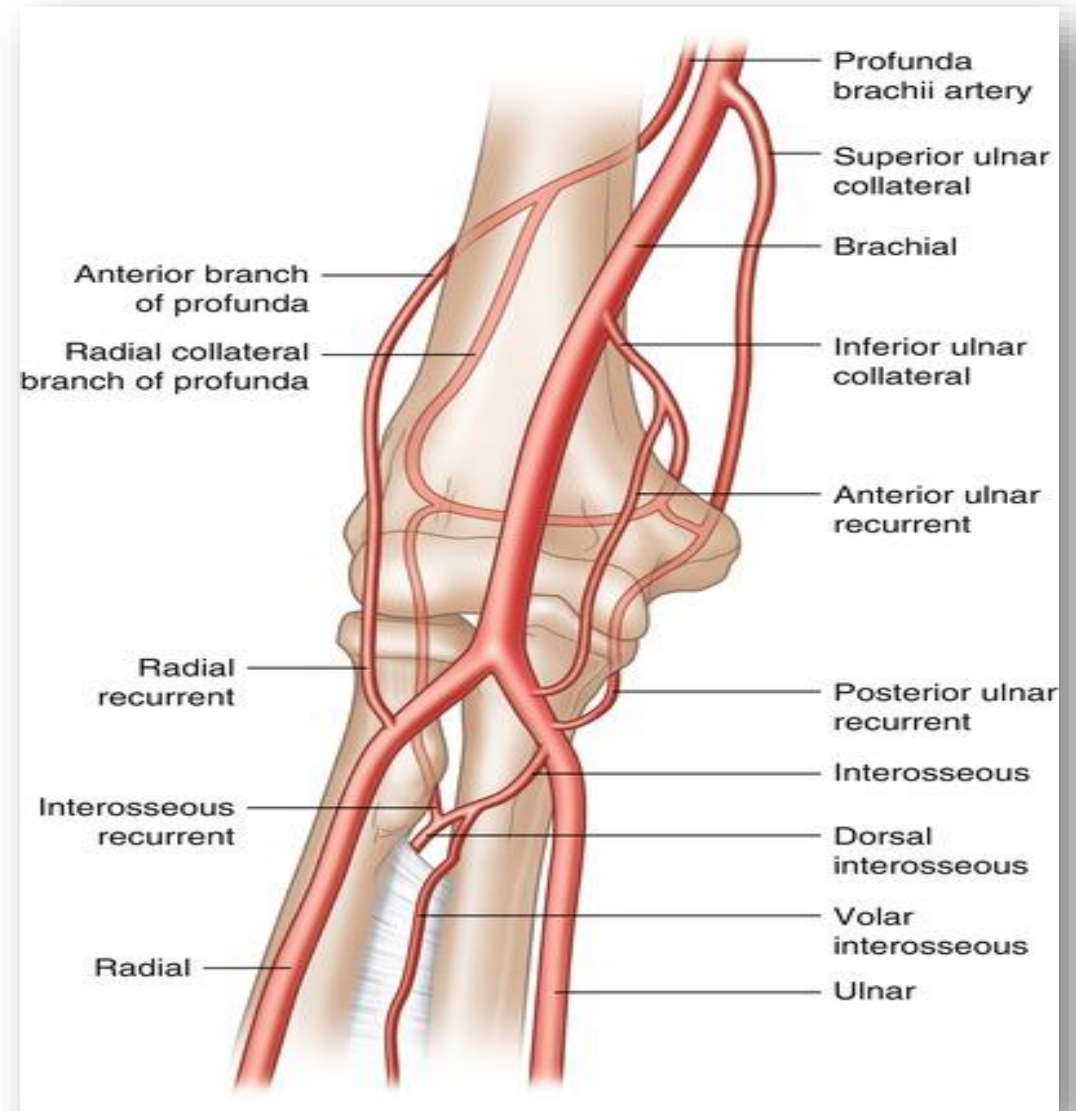
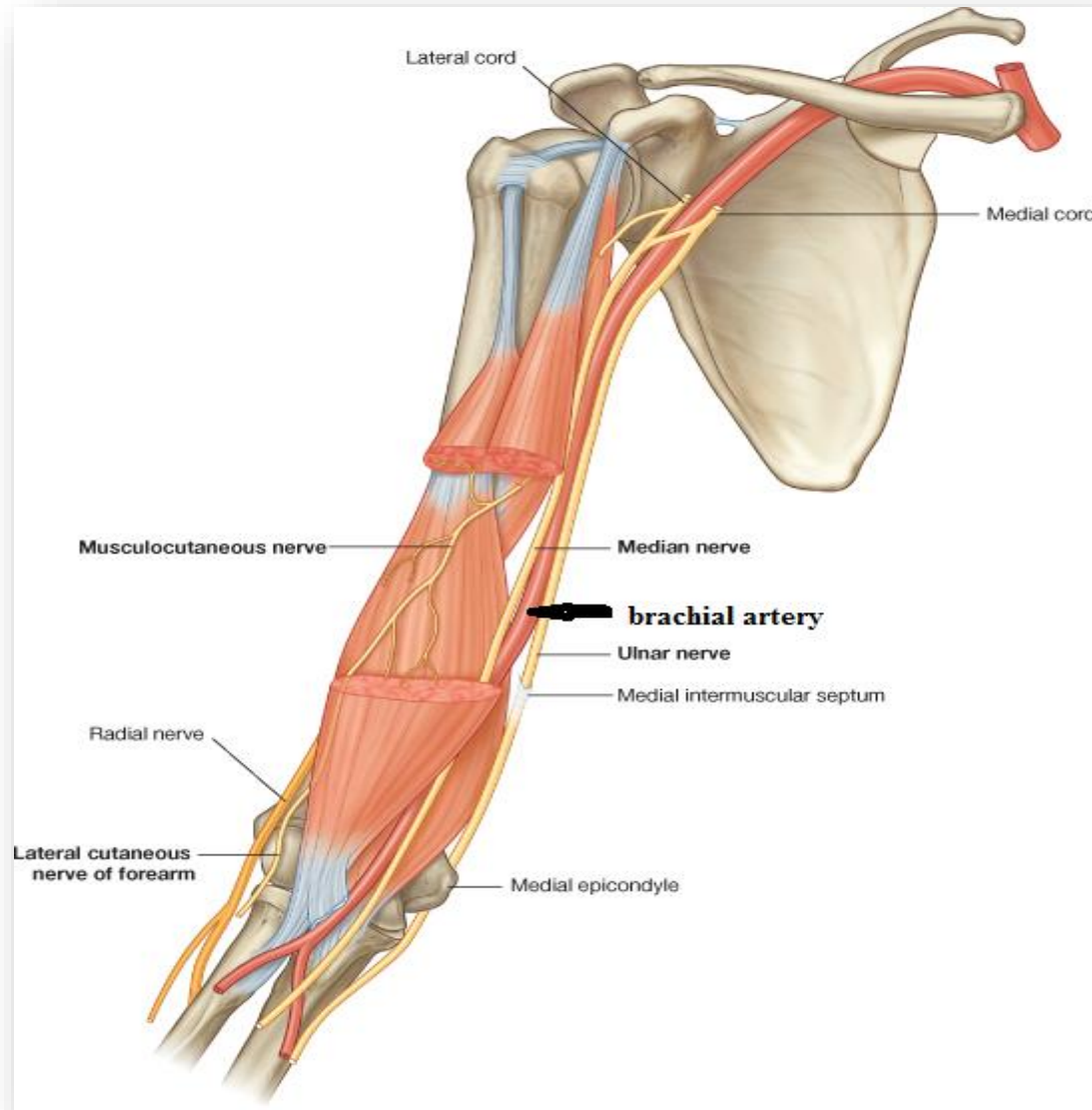
Course:

- It **descends at first** medial to the humerus, **then** gradually turns anterior to it.
- Its pulsation can be felt throughout.

End:

- It **ends at the level** of the neck of the radius (about a centimetre distal to the elbow joint) by **dividing into** radial and ulnar arteries.





Relations of Brachial Artery:

Anterior relations:

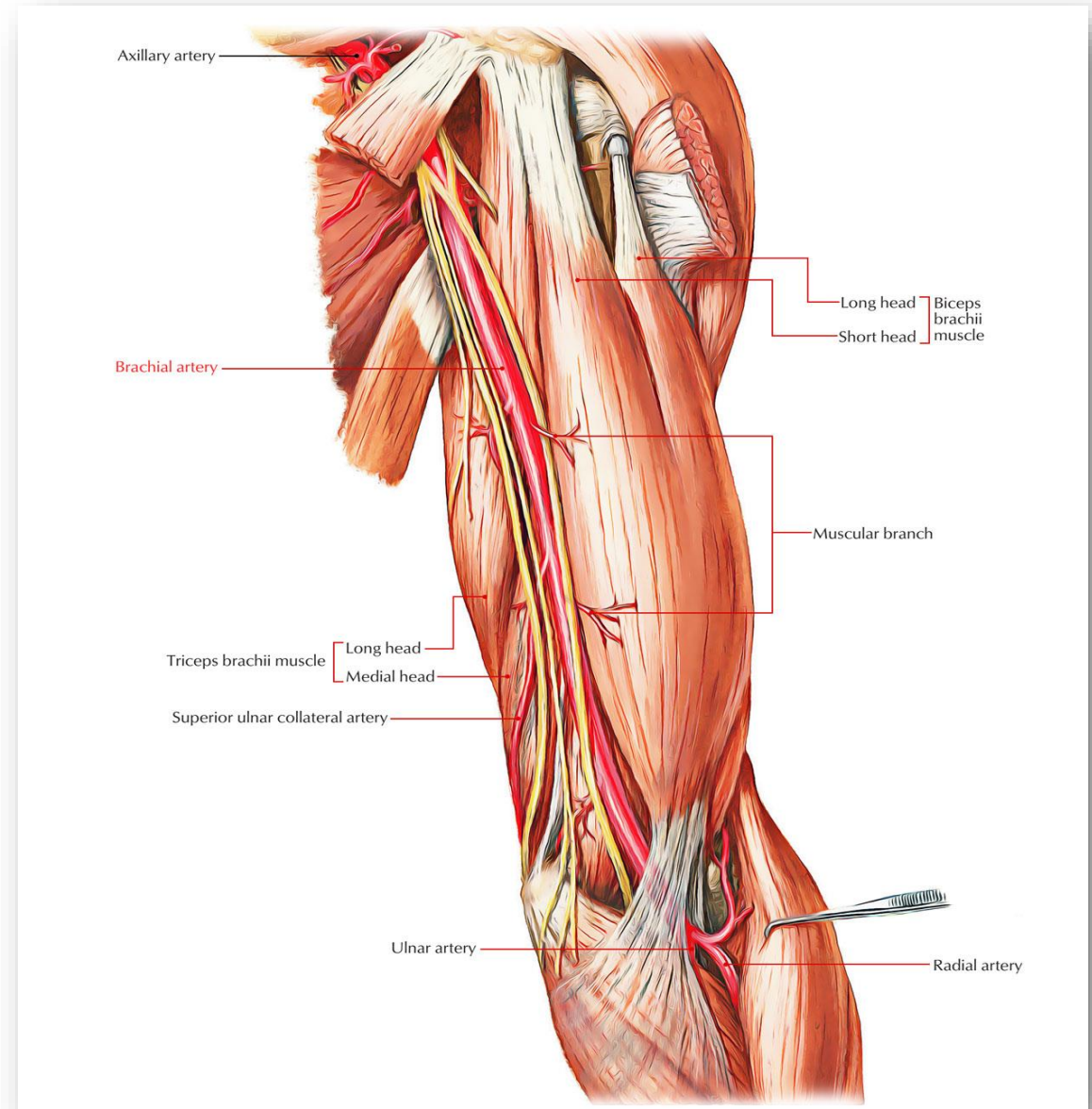
- It is wholly superficial, covered only by skin and fascia.
- The **bicipital aponeurosis** crosses it anteriorly at the elbow.

Posterior relations:

- **From above downward; Triceps & Brachialis** muscles.

Lateral relations: Biceps muscle.

Medial relations: Basilic vein.

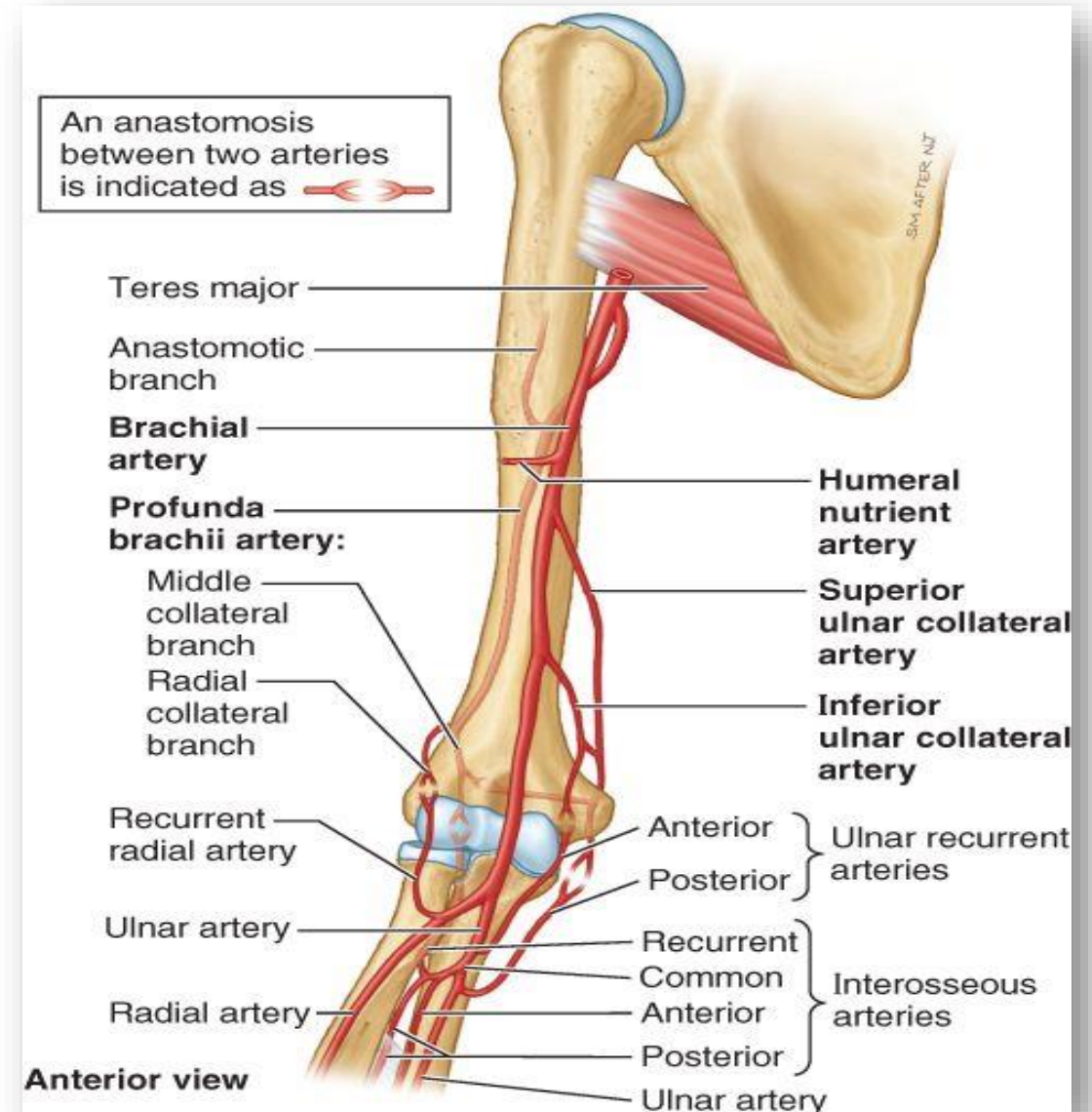


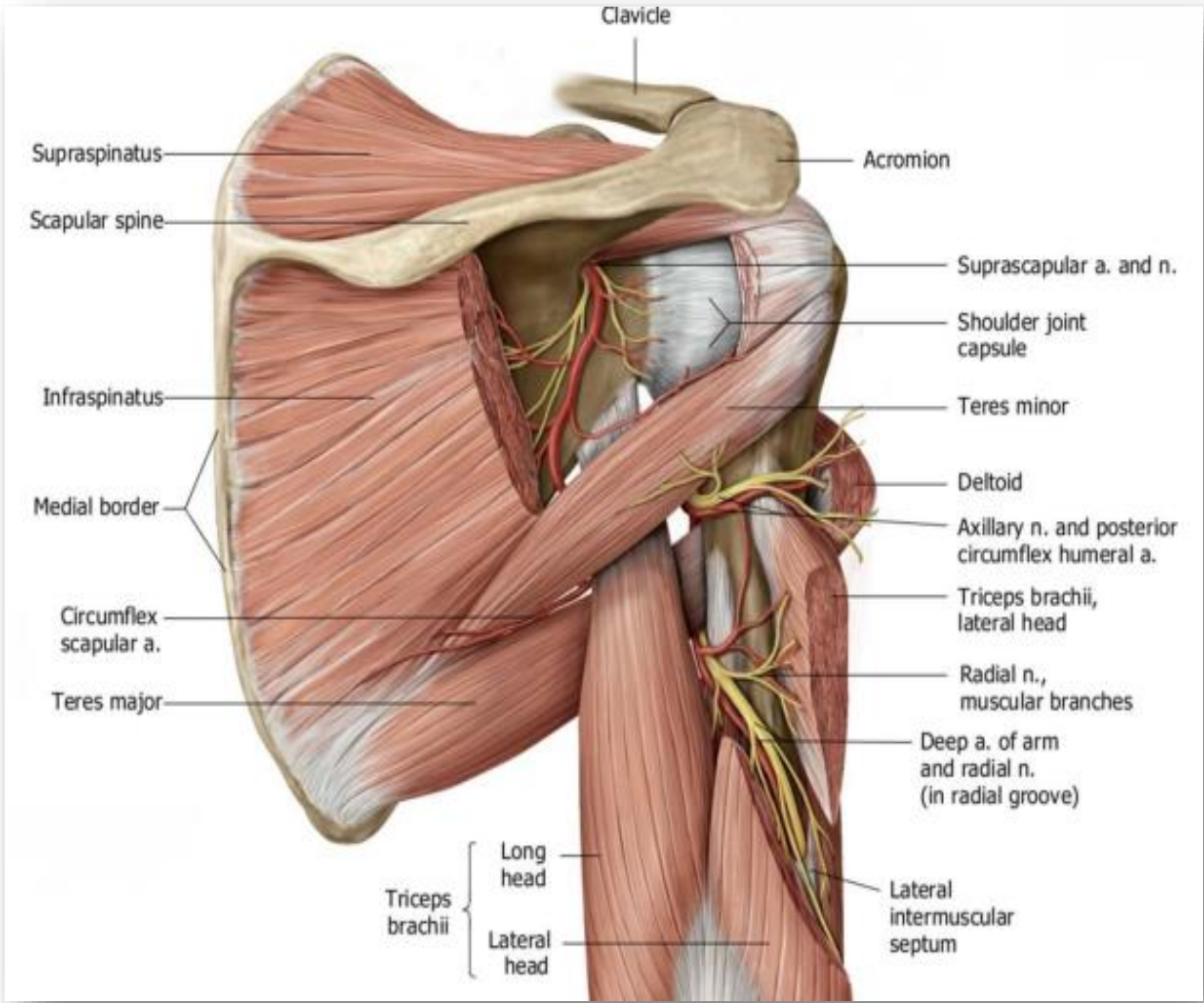
Branches of brachial artery:

- 1- Profunda brachii.
- 2- Nutrient.
- 3- Superior & inferior ulnar collaterals.
- 4- Muscular.
- 5- Terminal branches: radial and ulnar arteries.

1- Profunda brachii artery:

- It **runs** in the spiral groove of humerus.
- Its ascending branch anastomoses with the posterior circumflex humeral artery.
- **End by** dividing into collateral branches that share in the anastomosis around the elbow.





2- Superior ulnar collateral artery:

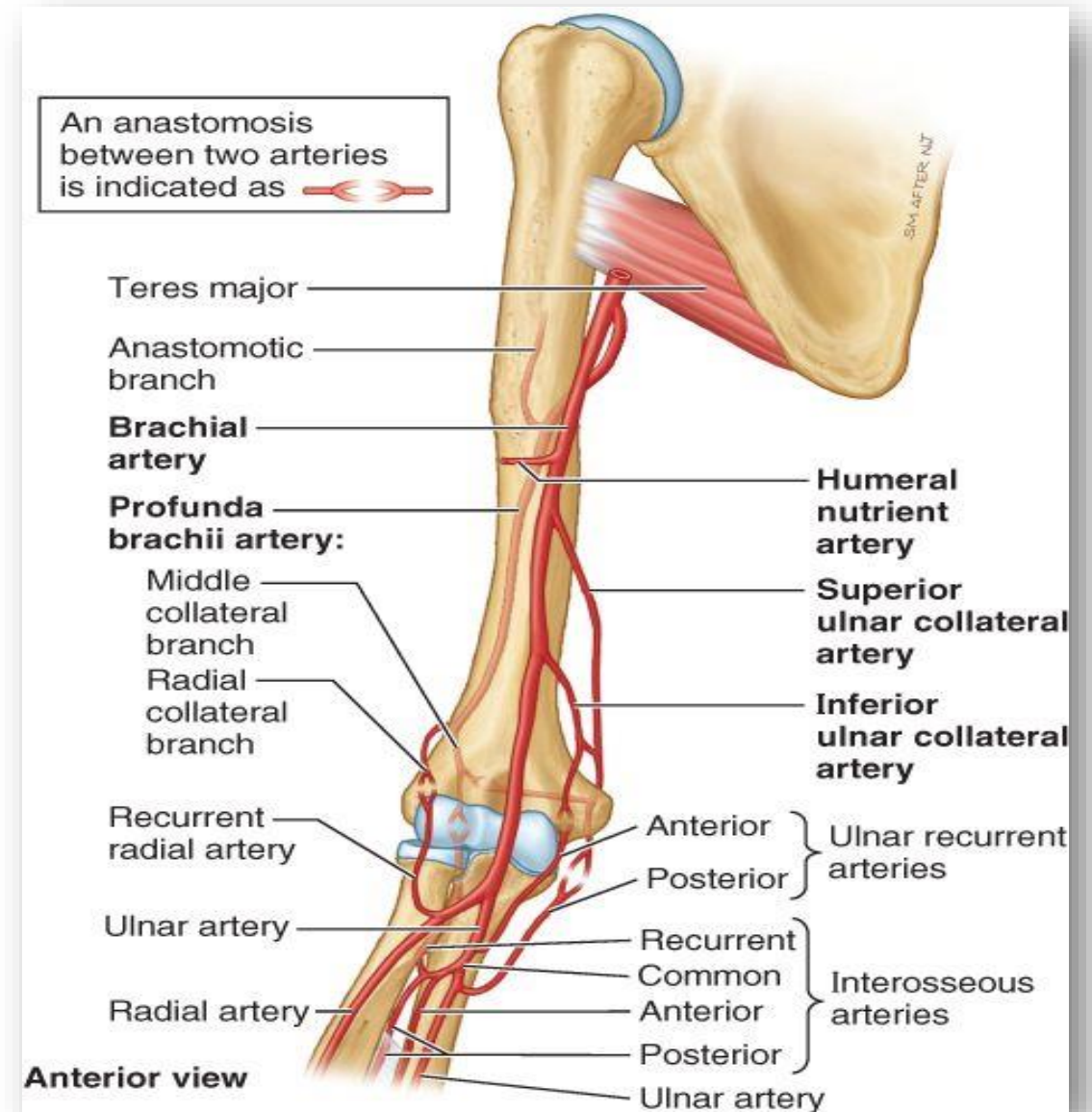
- It share in anastomosing around the elbow.

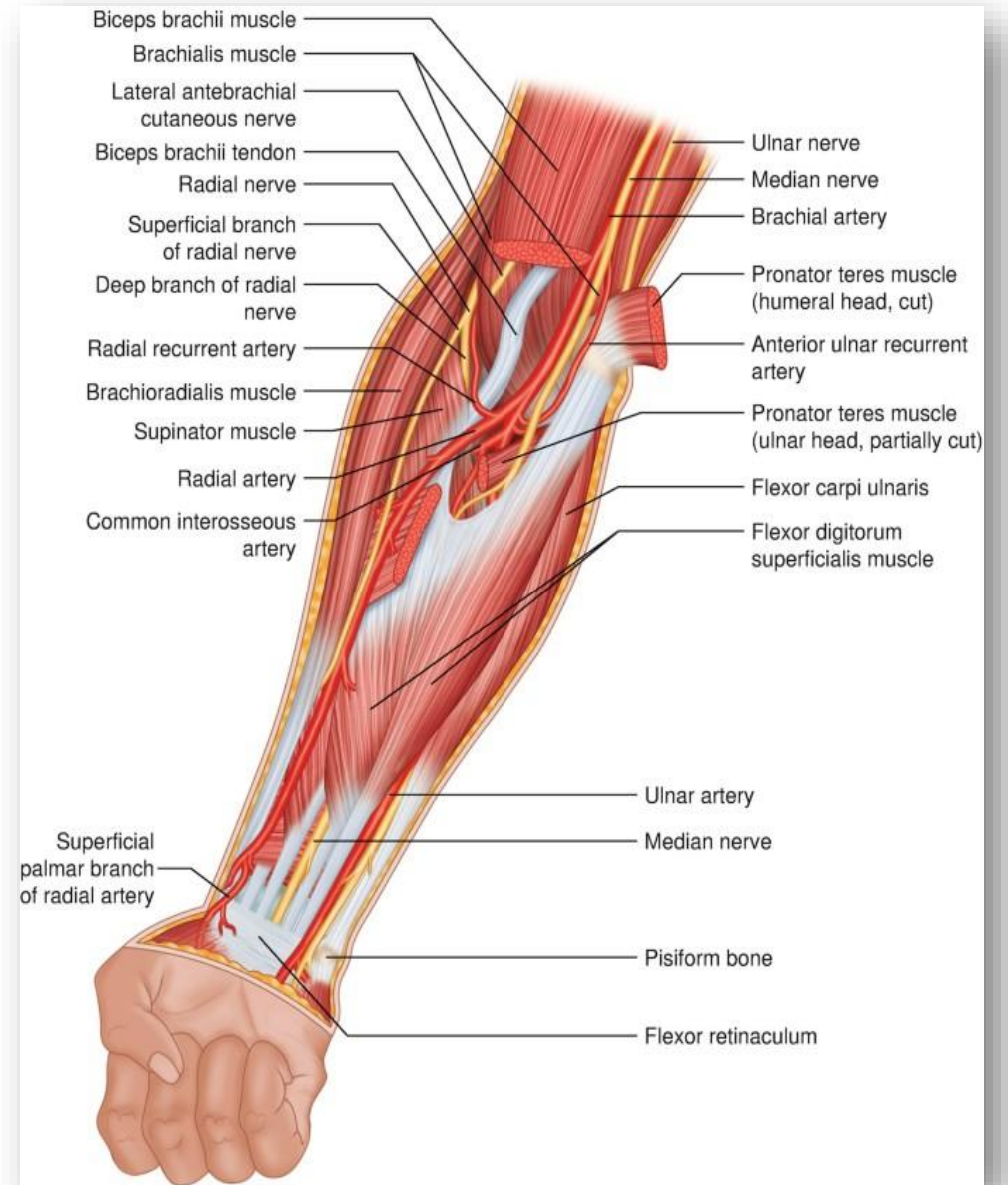
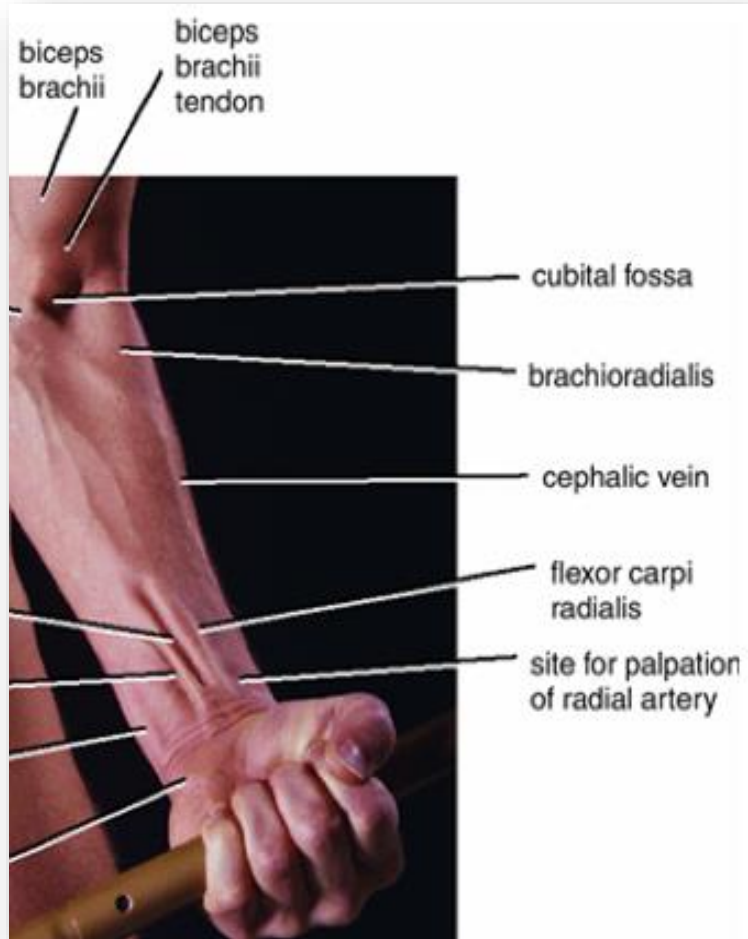
3- Inferior ulnar collateral artery:

- Share in anastomosis around the elbow.

4- Muscular branches:

- For coracobrachialis, biceps and brachialis muscles.



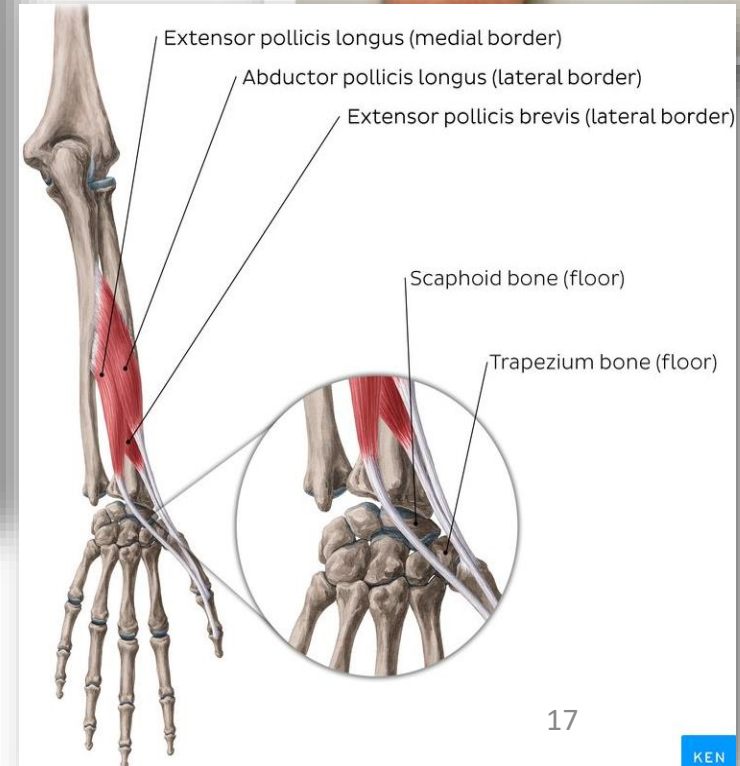
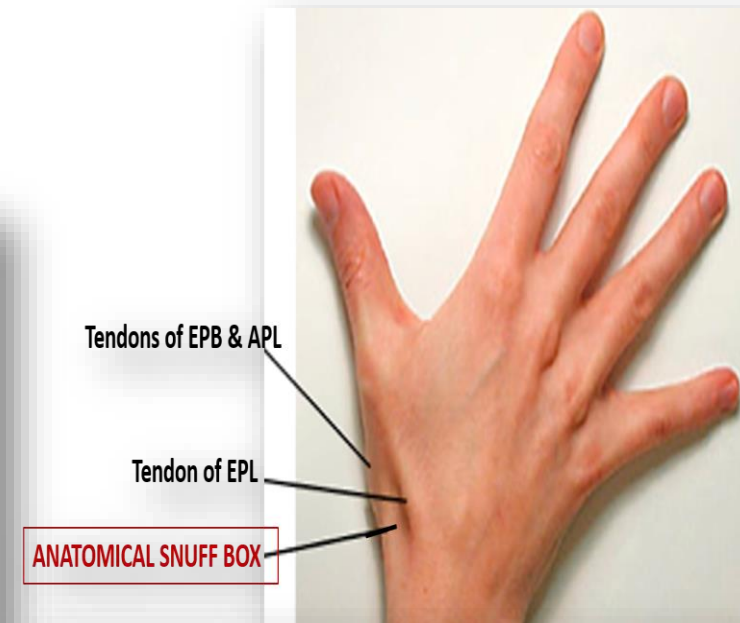
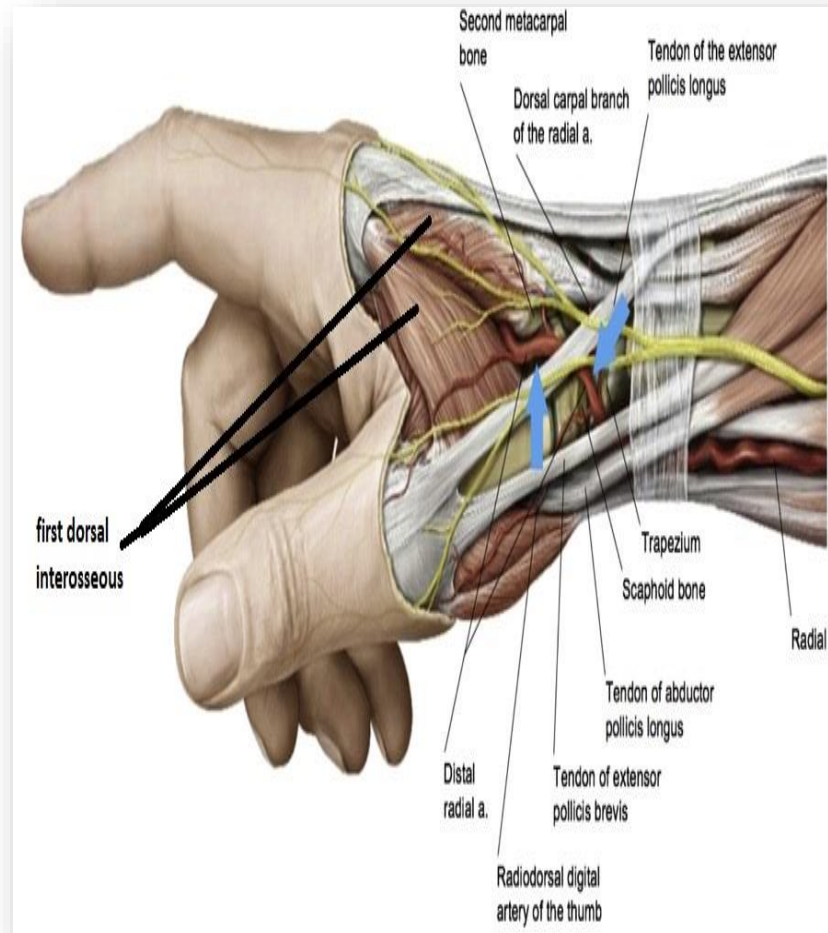


At the wrist:

- The radial artery **crosses** the dorsal aspect of the scaphoid and trapezium, here it is in the ‘**anatomical snuff-box**‘.

In the hand:

- The radial artery **passes** between the heads of the **first dorsal interosseous** to **enter** the palm of the hand.
- Then, it crosses the palm and **ends** by it **anastomoses** with the ulnar artery, completing the **deep palmar arch**.



Branches of Radial Artery:

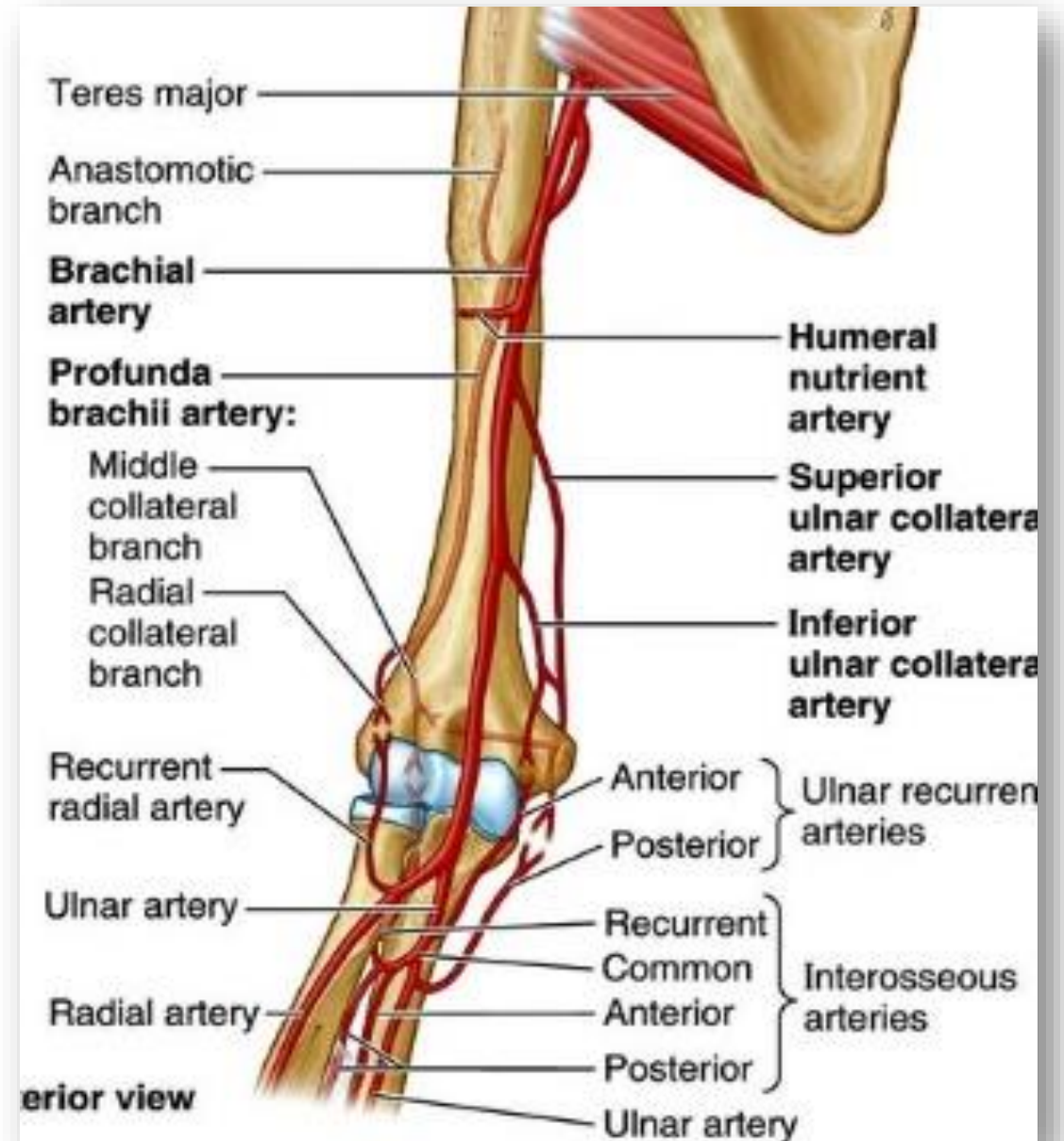
Branches in the forearm:

1-Radial recurrent artery:

- Share in anastomosis around elbow.

2-Muscular branches:

- For muscles on the radial side of the forearm.



Branches of radial artery in the wrist& hand:

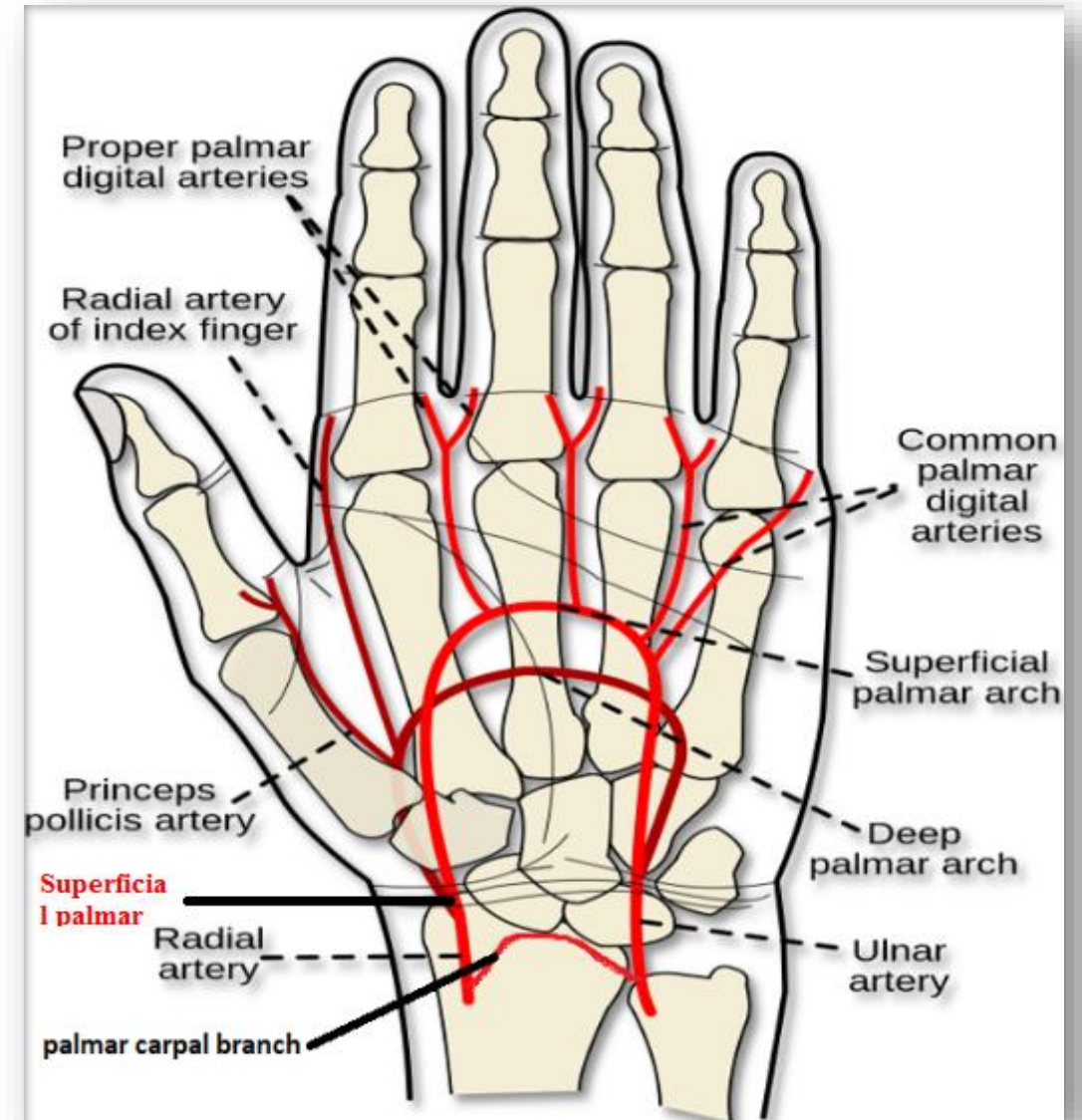
1- Palmar carpal branch:

- It anastomose with the palmar carpal branch of the ulnar artery to form palmar carpal arch.

2- Superficial palmar branch:

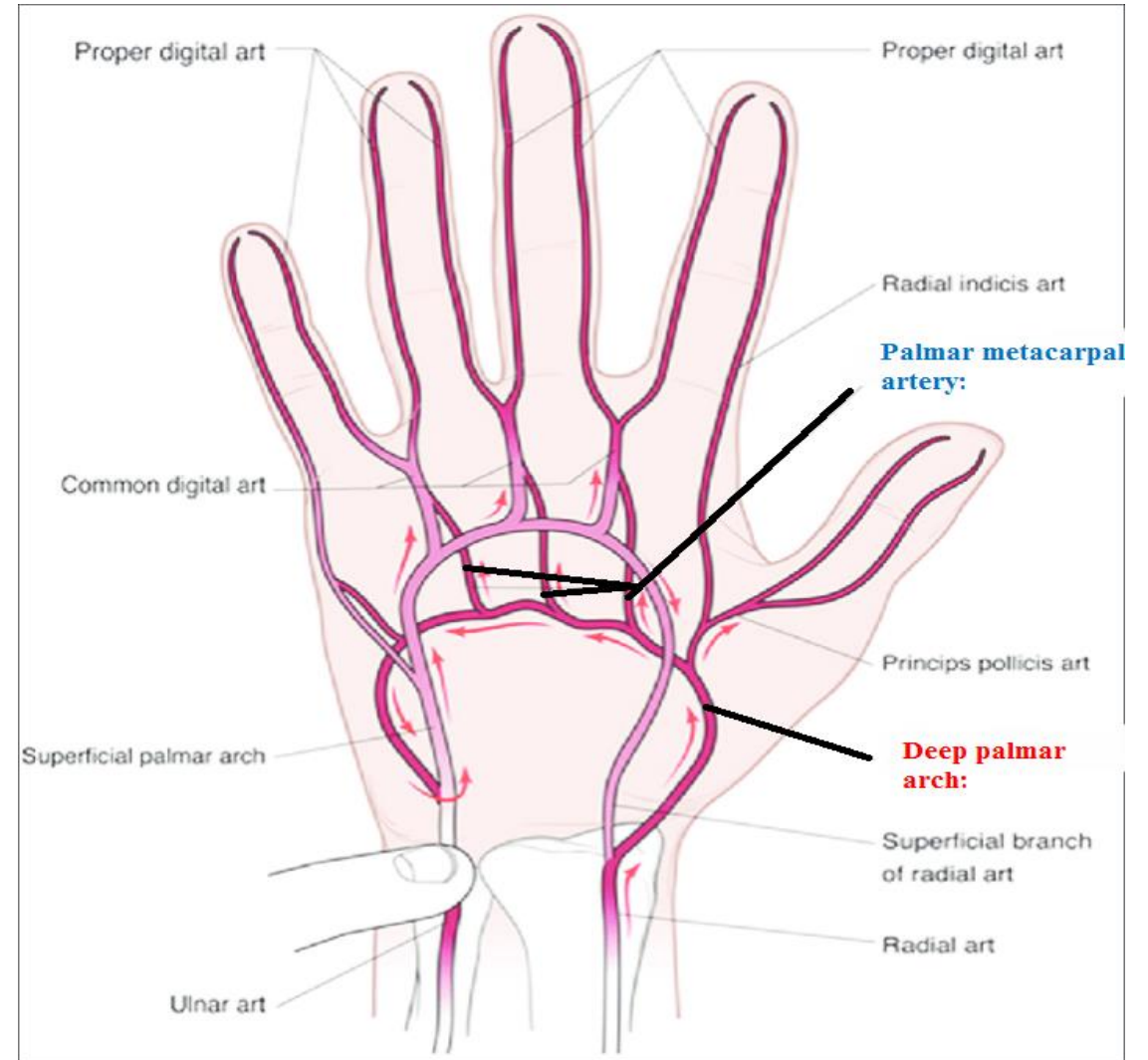
It anastomose **with** the end of the ulnar artery to complete a **superficial palmar arch**.

3- Princeps pollicis artery.



4- Deep palmar arch:

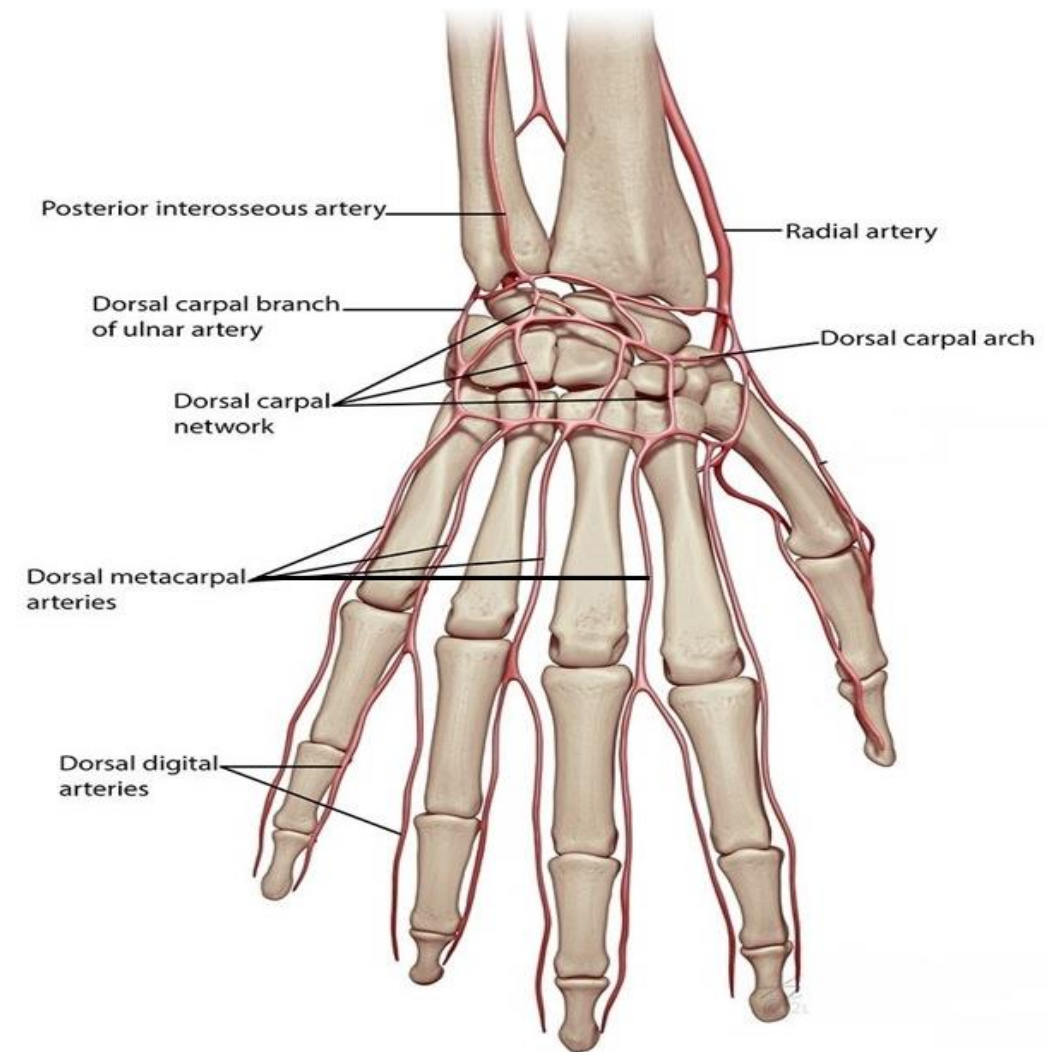
- It is formed by anastomosis of the end of the radial artery with the deep palmar branch of the ulnar artery.
- It gives palmar metacarpal arteries.



5-Dorsal carpal branch:

It anastomoses with the ulnar dorsal carpal branch to form a dorsal carpal arch.

Dorsal carpal arch gives **dorsal metacarpal arteries**: each bifurcate into the dorsal digital branches to supply the adjacent sides of four fingers.



Ulnar Artery (right & left)

Beginning:

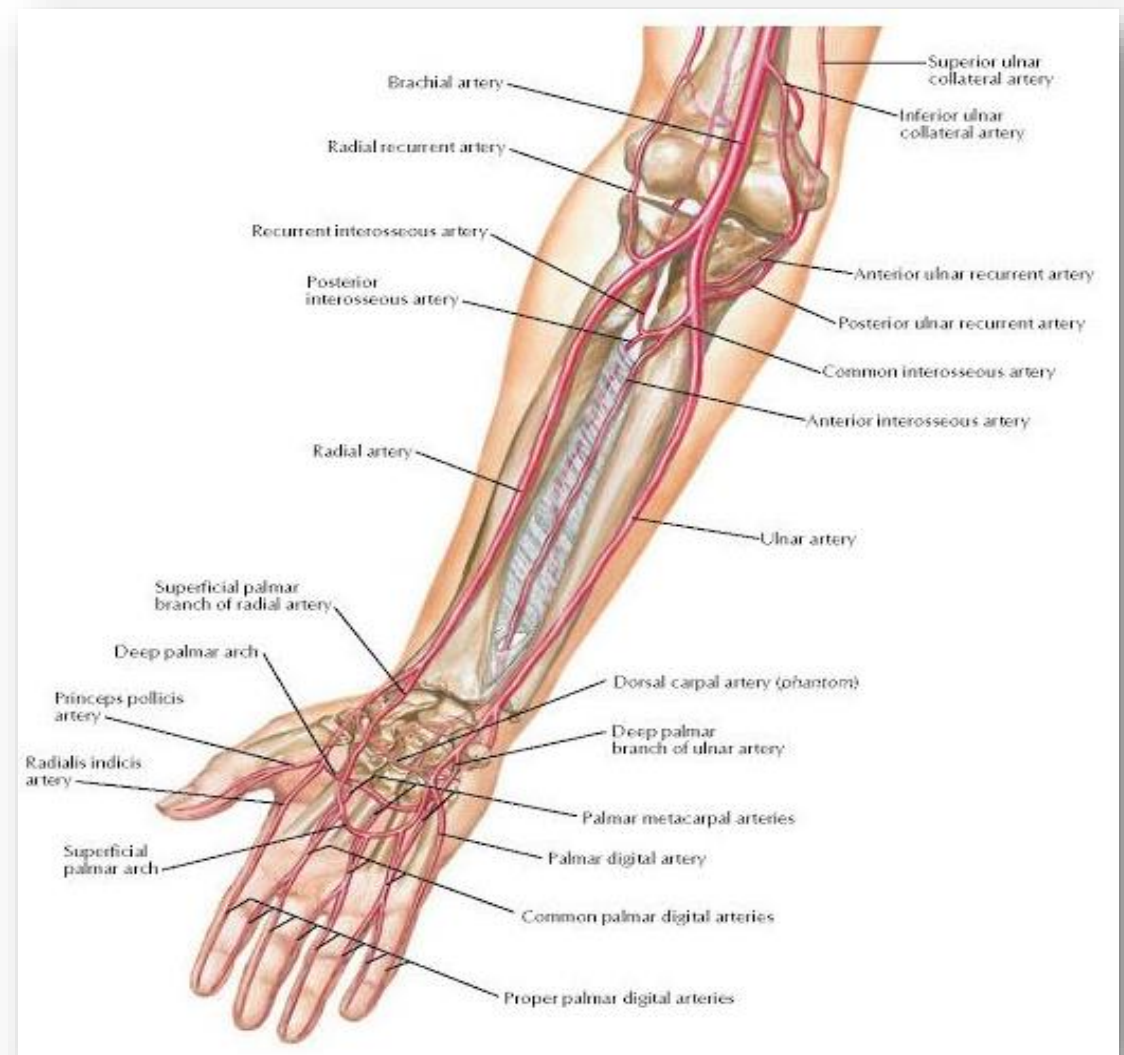
- It begins as one of the two terminal branches of brachial artery.

Course:

- It descends along the medial side of the forearm.

End:

- It terminates at the hand via giving its branches.



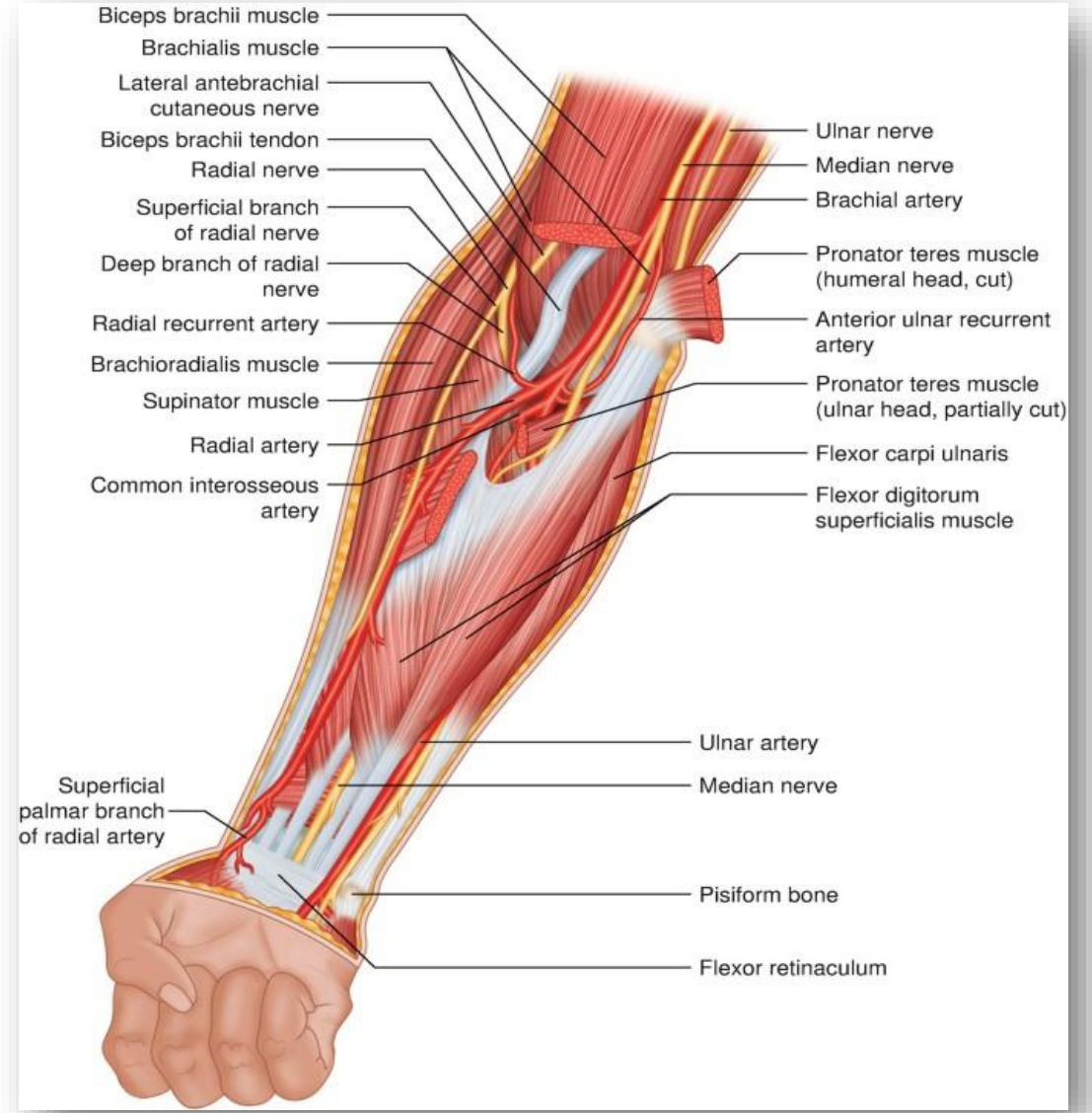
Relations of Ulnar artery:

In the forearm:

- It lies deep to the flexor carpi ulnaris, then become superficial lateral to this muscle.

At the wrist:

- **It crosses the flexor retinaculum lateral to the ulnar nerve & pisiform to enter the hand.**



Branches of Ulnar Artery while in the forearm:

1- Ulnar recurrent arteries:

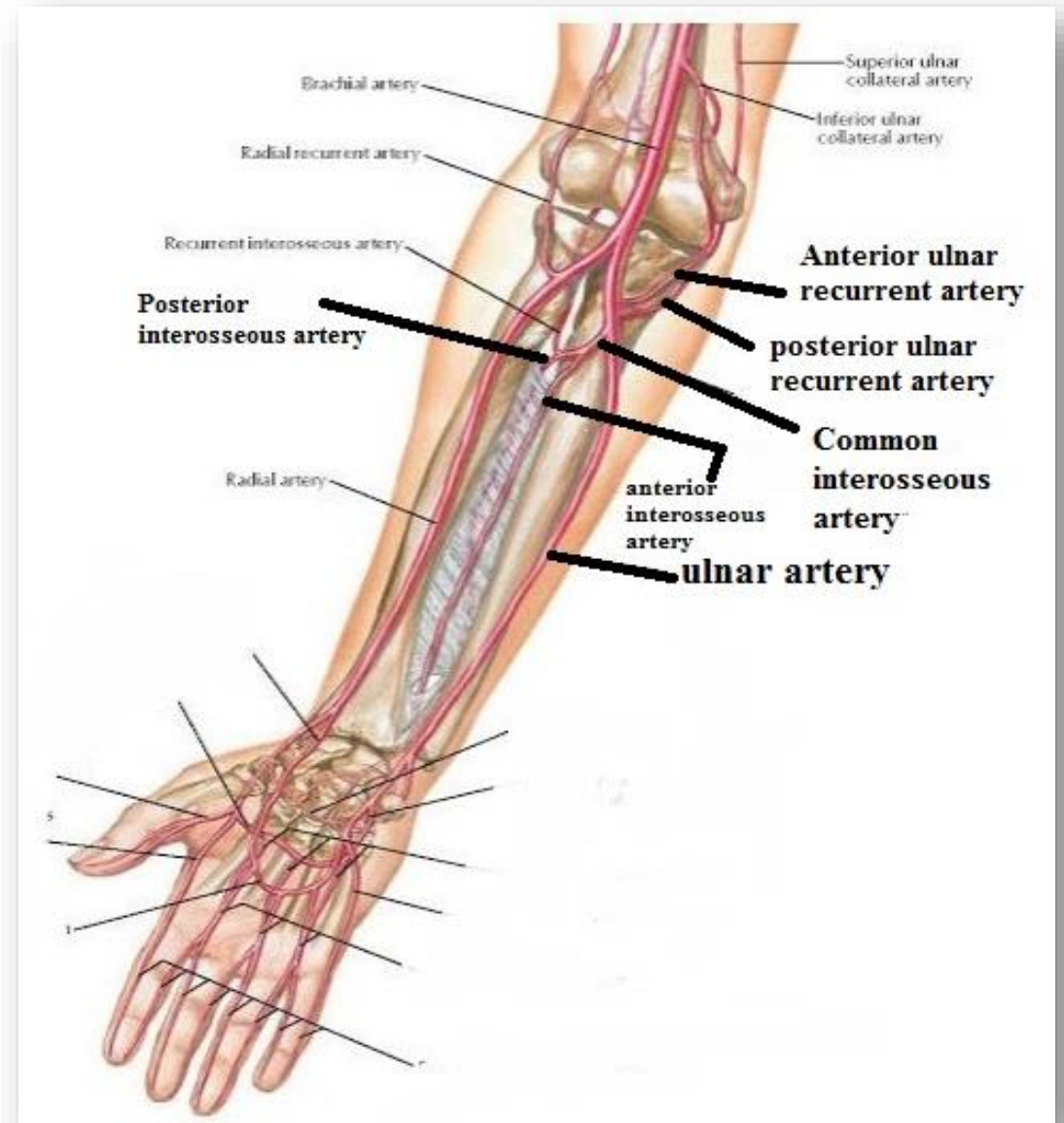
- Share in anastomoses around elbow.

2-Muscular branches:

- For muscles on the ulnar side of the forearm.

3- Common interosseous artery:

- It **divides into** the anterior and posterior interosseous arteries.



Branches of Ulnar Artery in hand:

1- Palmar carpal branch.

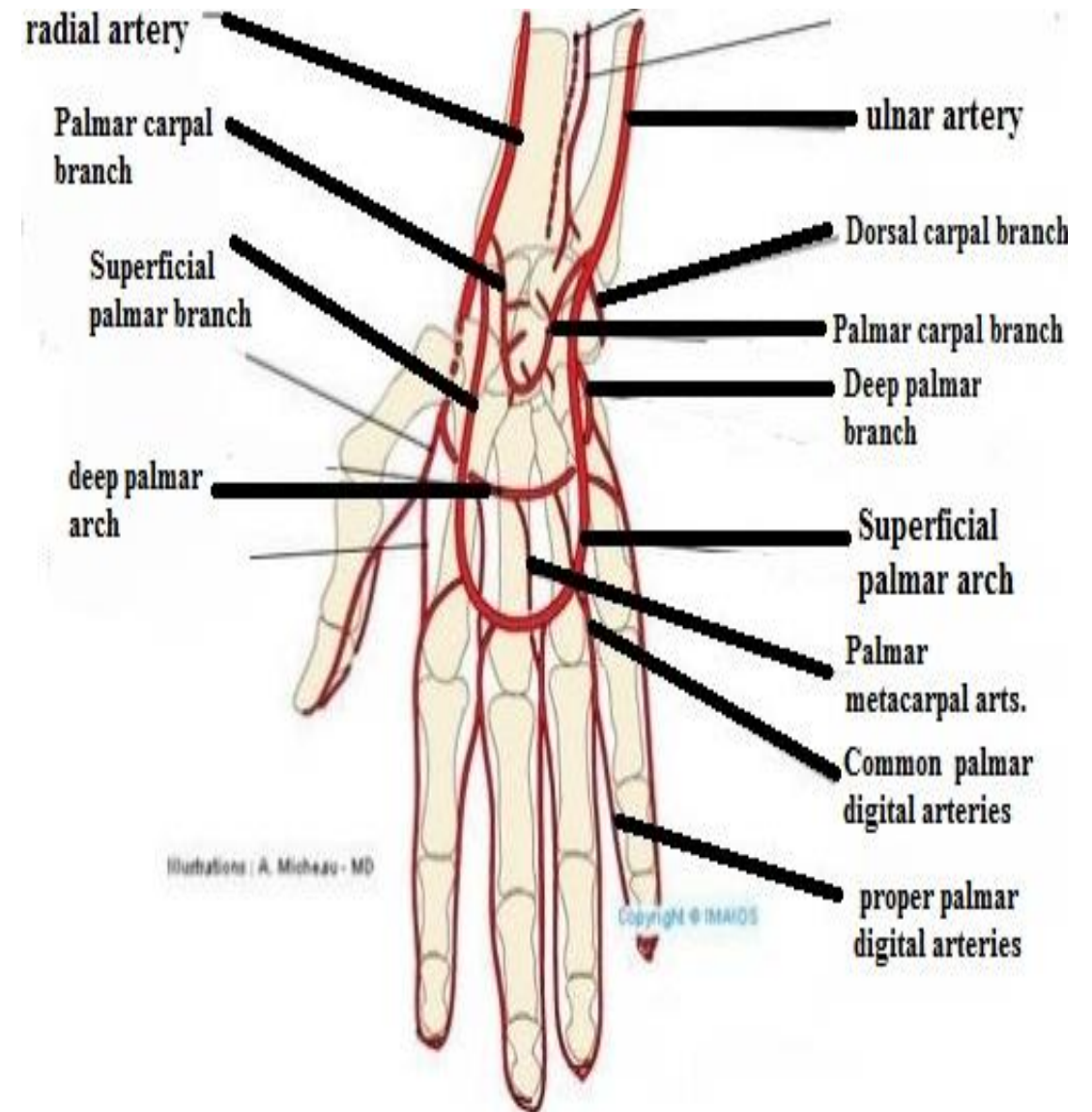
2- Dorsal carpal branch.

3- Deep palmar branch:

- It anastomoses with the radial artery, completing the **deep palmar arch**.

4- Superficial palmar arch:

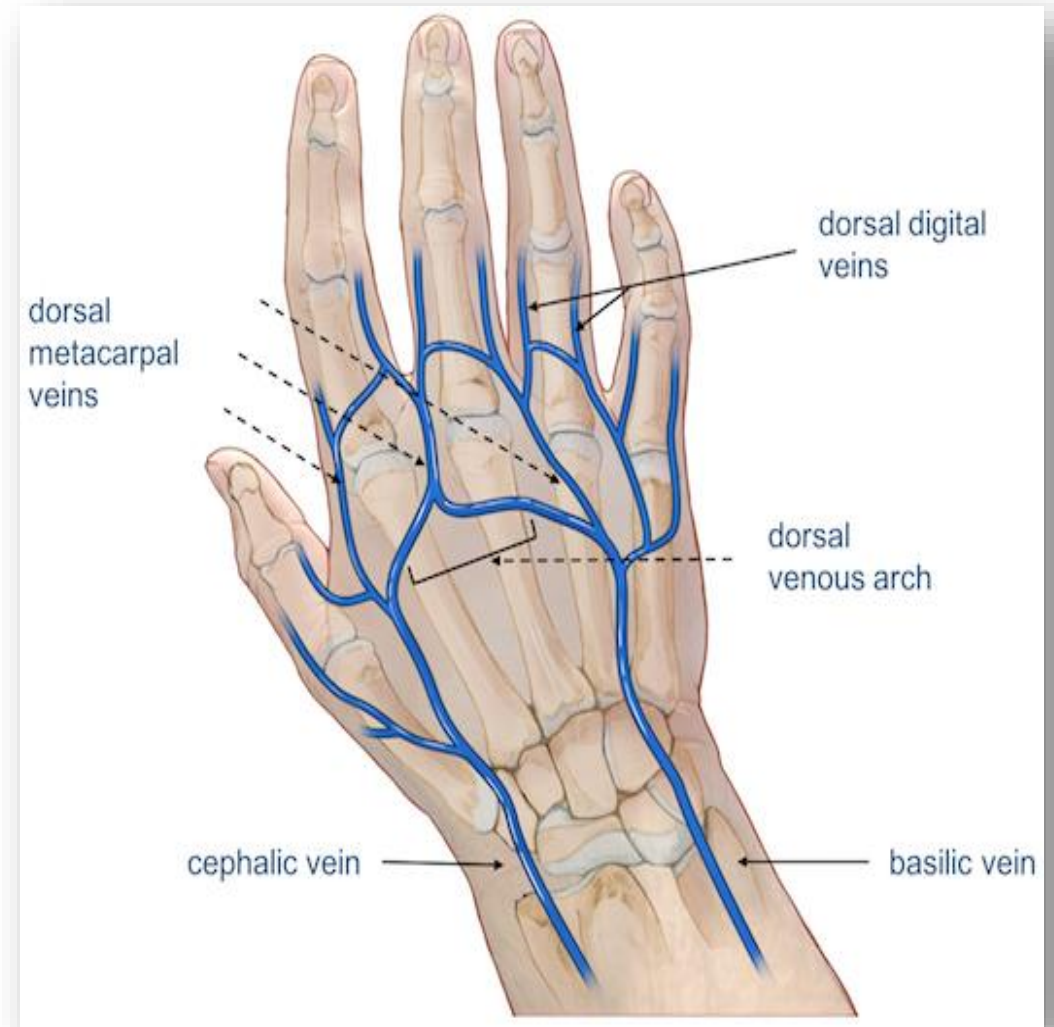
- The ulnar artery curves laterally to form this arch, and **completed** by the superficial palmar branch of the radial artery.
- It gives **palmar digital arteries** for the adjacent sides of medial four fingers.



Veins of the Upper Limb

I – Superficial Veins:

- Dorsal venous arch.
- Medially the arch is continued proximally as the **basilic vein**.
- Laterally, is continued proximally as the **cephalic vein**.



Basilic vein:

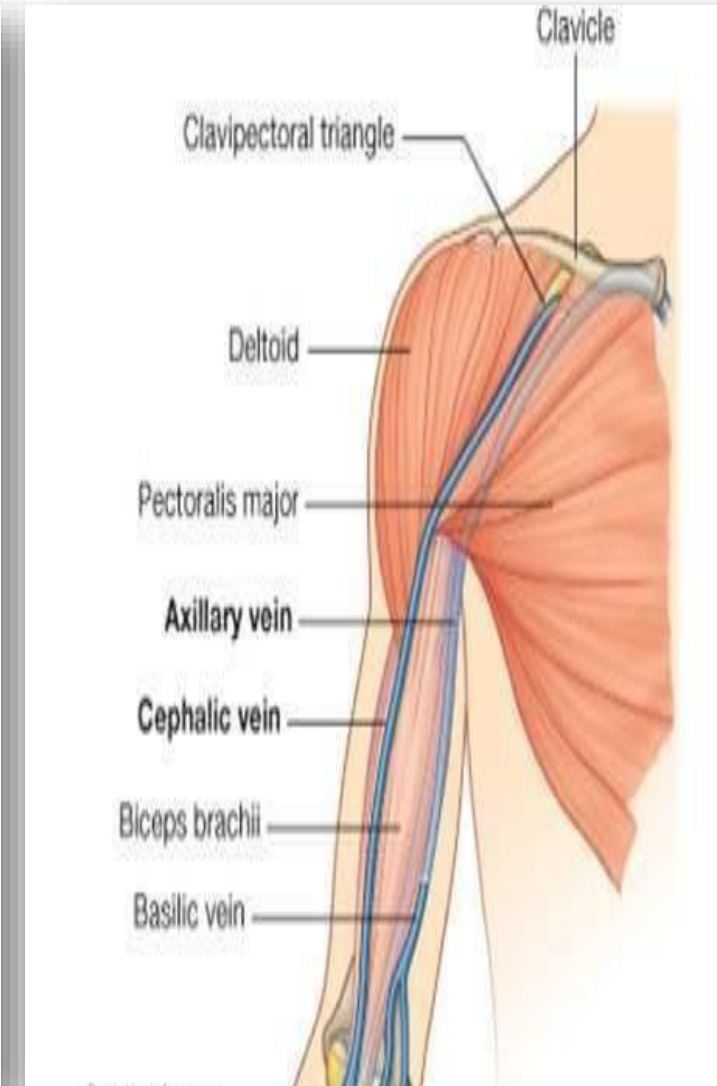
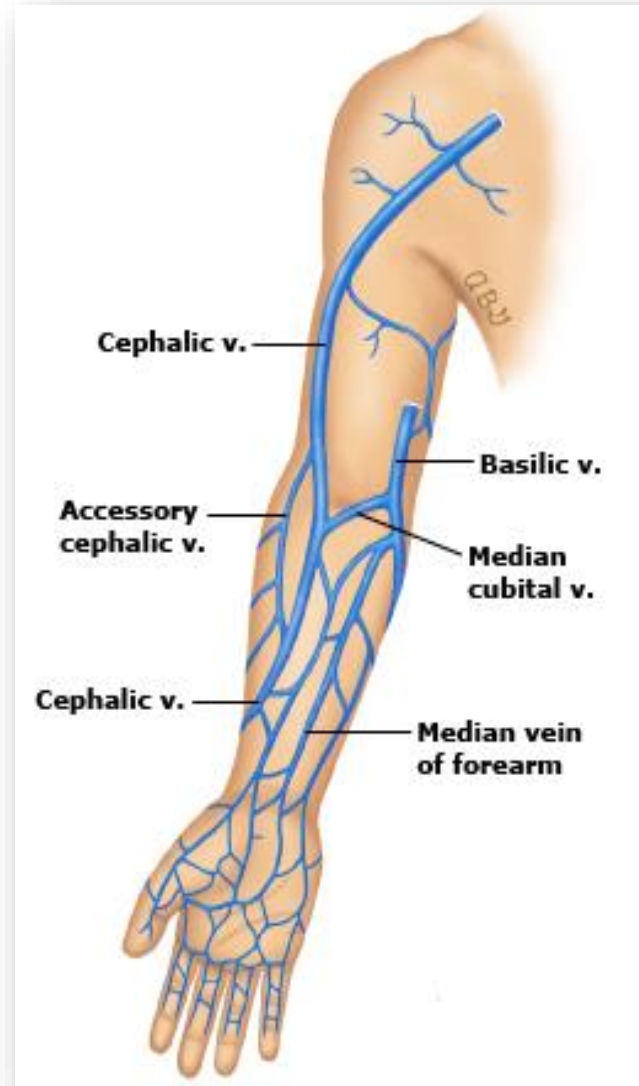
- Runs along the medial side of the forearm.
- At the middle of the arm, it pierces the deep fascia, and runs along the brachial artery, then it **continues as the axillary vein**.

Cephalic vein:

- Ascends along the lateral side of the forearm and arm.
- Pierces the clavipectoral fascia and **end in** the axillary vein.

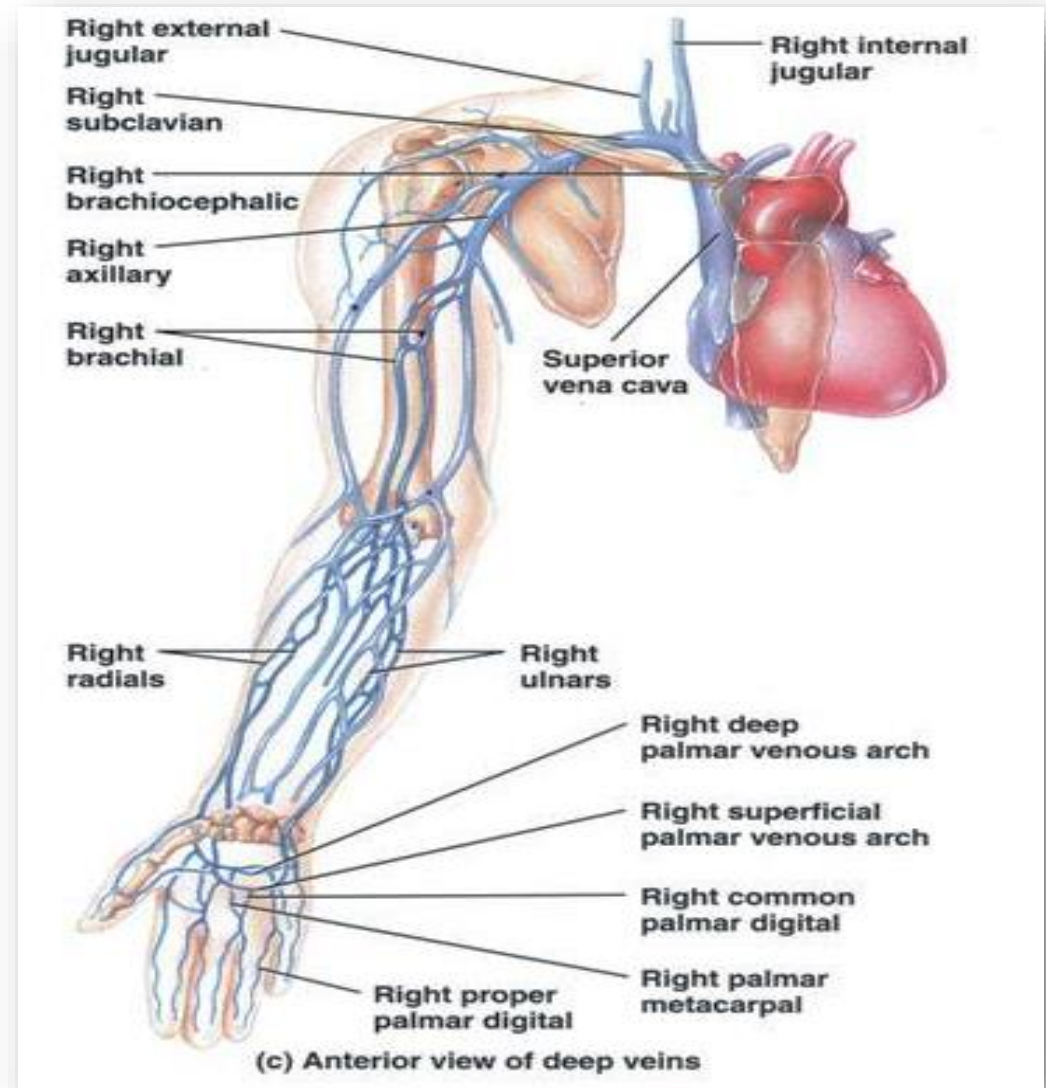
Median cubital vein

- It joins the cephalic& basilic veins.
- It is routinely used for venipuncture (taking blood) and as a site for an intravenous cannula.



II- Deep vein of the upper limb:

- The venae comitantes of the radial and ulnar arteries unite as paired brachial veins.
- **The brachial veins:** drain into the axillary vein.
- **The axillary vein:** Becomes the **subclavian vein** at the outer border of the 1st rib.



Quiz

A 17 year-old boy received multiple injuries on the upper part of the arm and required surgery. If the brachial artery were ligated at its origin, which of the following arteries would supply blood to the profunda brachii artery?

- (A) Lateral thoracic
- (B) Subscapular
- (C) Posterior circumflex humeral
- (D) Superior ulnar collateral
- (E) Radial recurrent

The Thoracoacromial artery is a branch of the.....

- A) Subclavian artery.
- B) First part of the axillary artery.
- C) Second part of the axillary artery.
- D) Third part of the axillary artery.
- E) Brachial artery.

THANK YOU!