



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

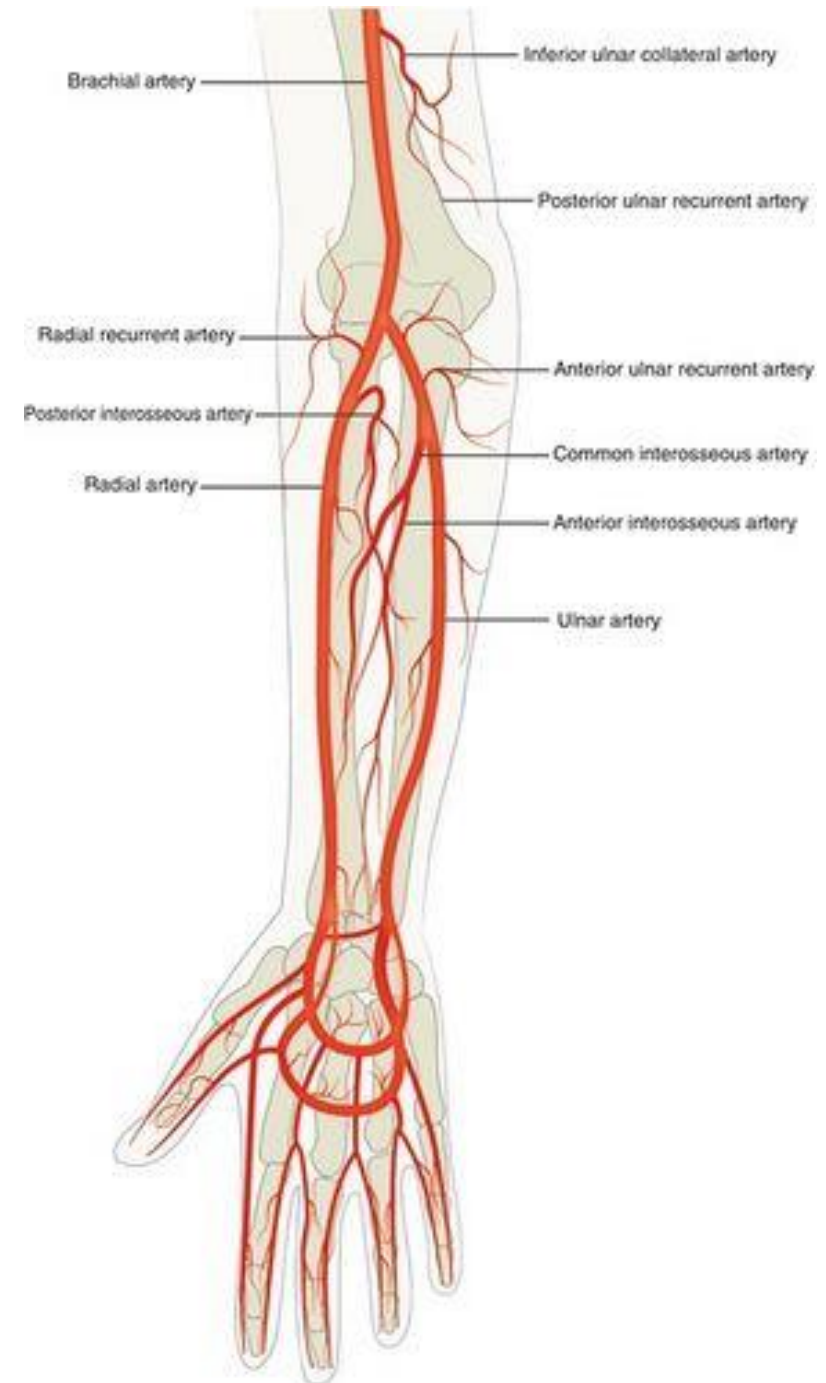
In the name of Allah, the most gracious, the most merciful

RADIAL & ULNAR ARTERIES

DR. NOMAN

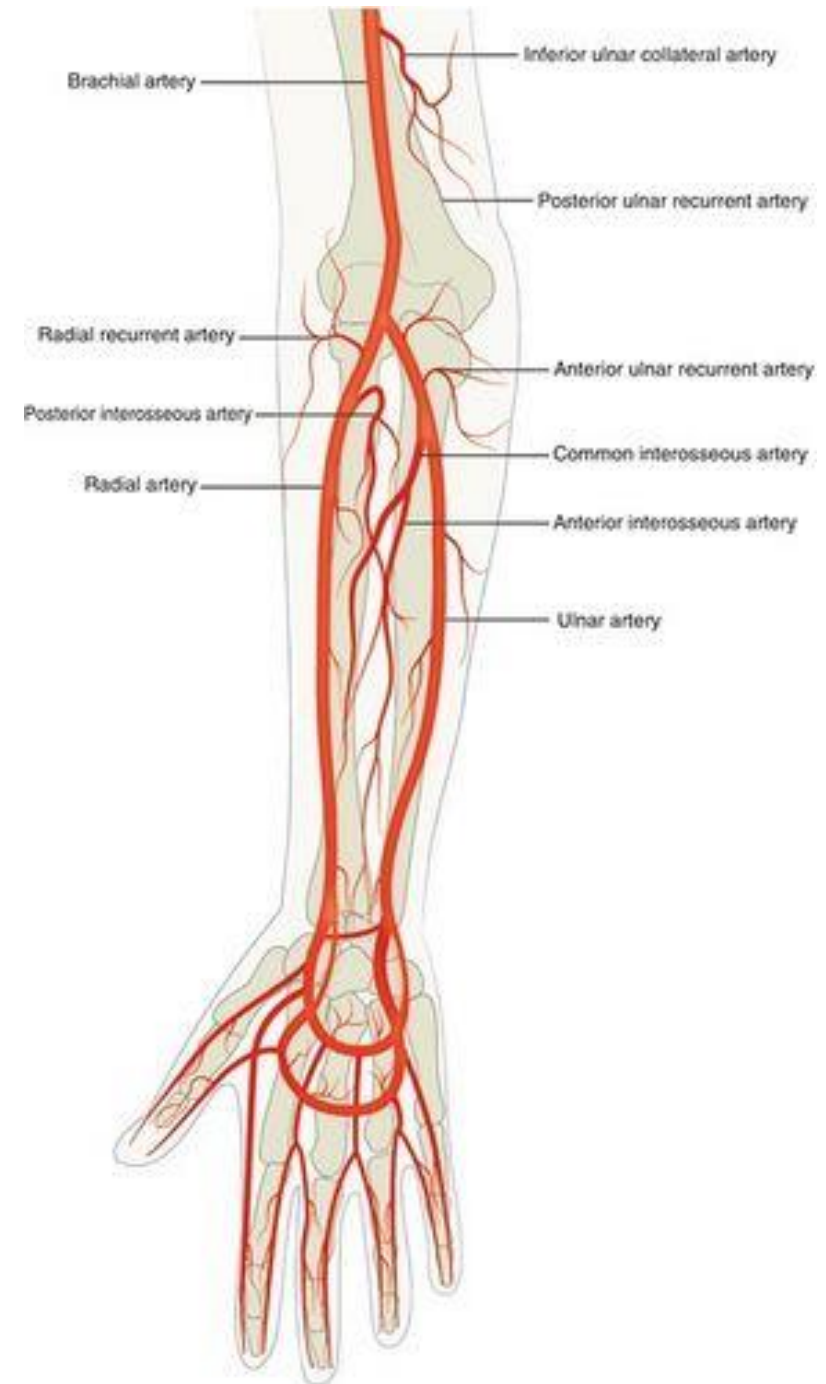
RADIAL ARTERY

- The **radial artery** is a continuation of the **brachial artery** and is one of the major blood supplying vessels to the structures of the forearm.
- The **brachial artery** terminates at the **cubital fossa** where it bifurcates into the **ulnar artery** and a smaller **radial artery**.



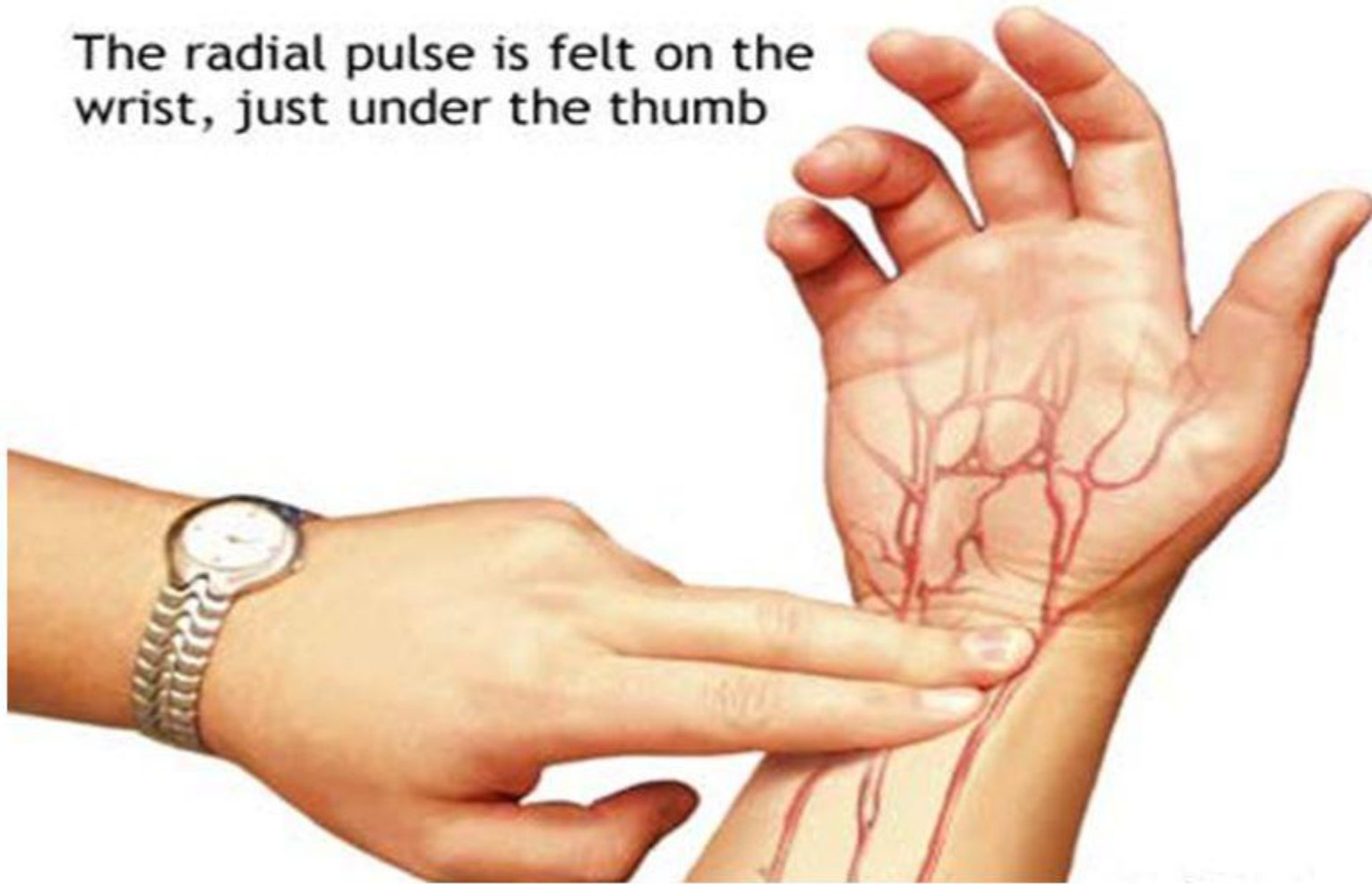
RADIAL ARTERY

- It runs on the lateral aspect of the forearm before it reaches the wrist and branches out to supply the hand.
- The radial artery is also important clinically due to its location at the wrist, as it can be felt as a pulse and can be used to determine the heart rate.



Taking a radial pulse

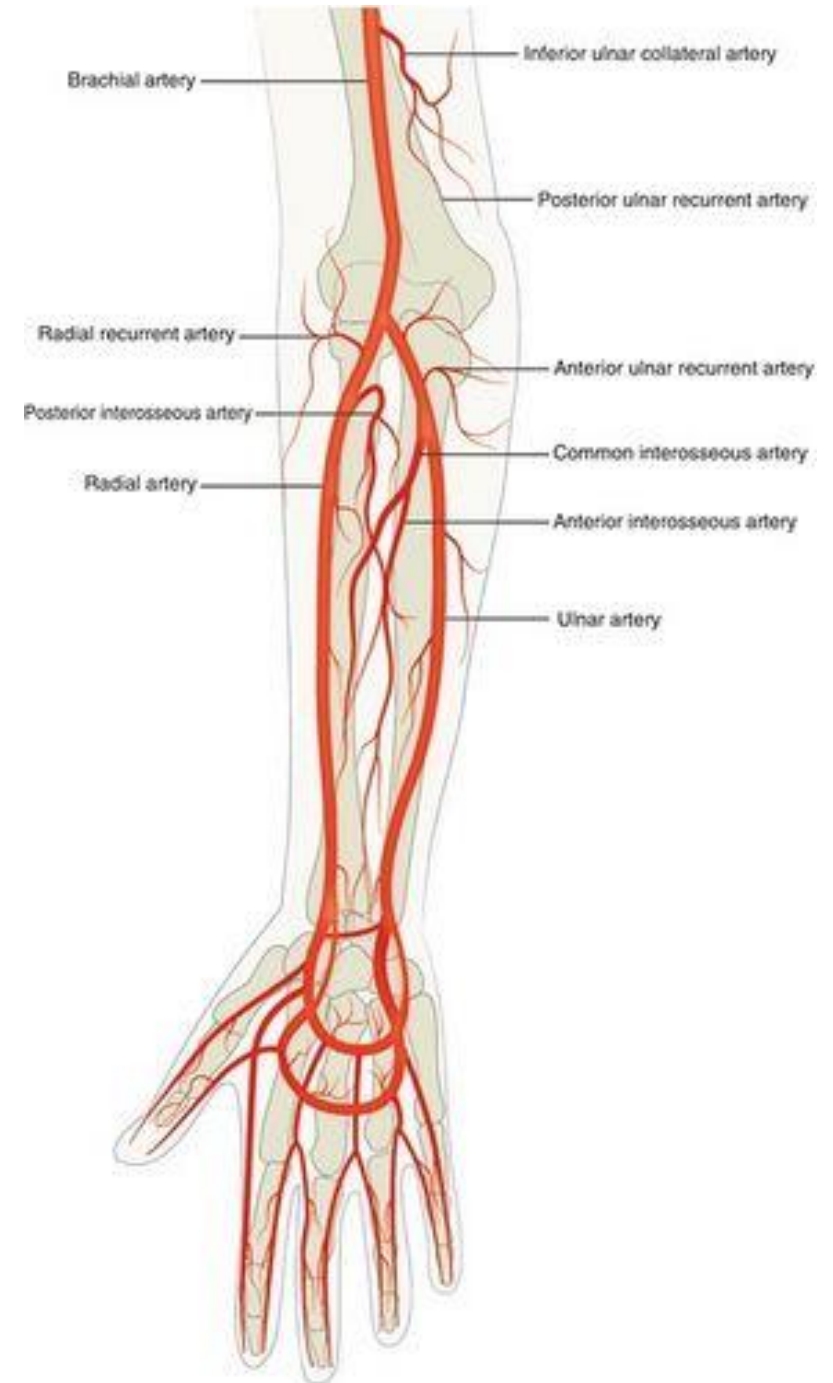
The radial pulse is felt on the wrist, just under the thumb



RADIAL ARTERY COURSE

Origin

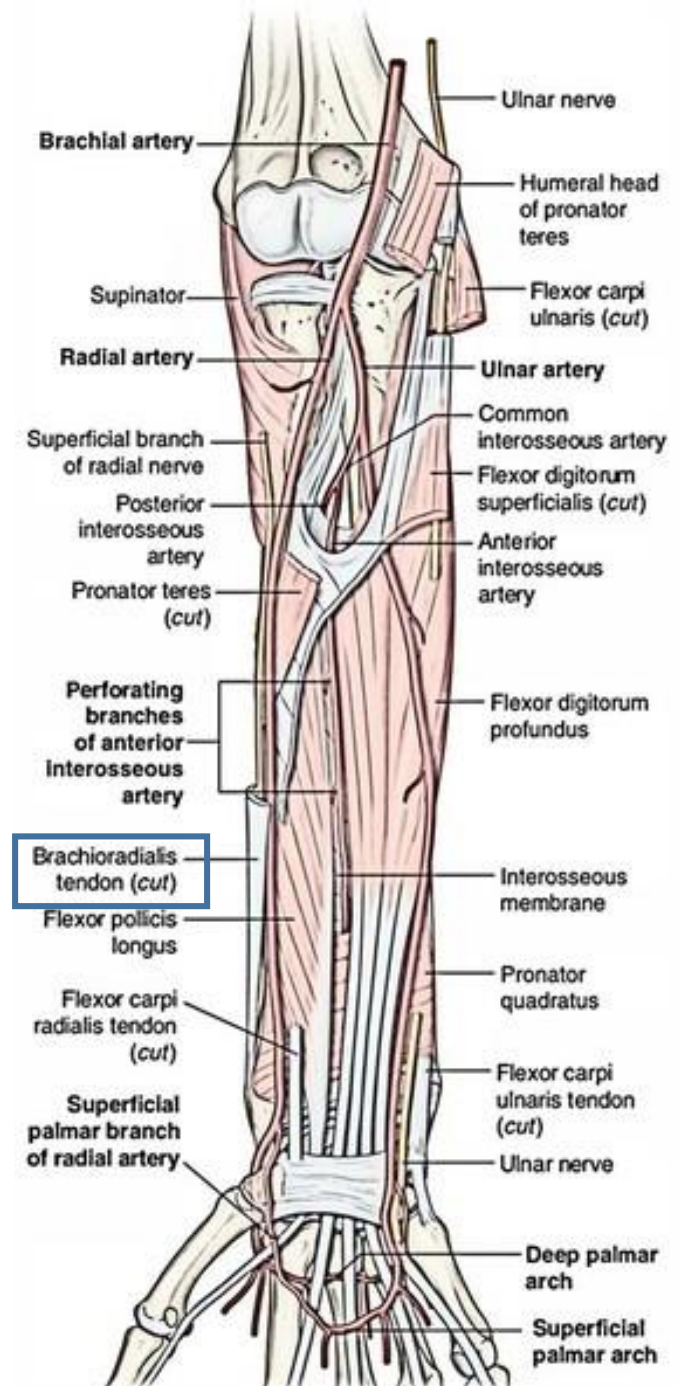
- The radial artery begins at the inferior portion of the cubital fossa after it has bifurcated from the brachial artery, but it appears almost as a direct continuation of the brachial artery.



RADIAL ARTERY COURSE

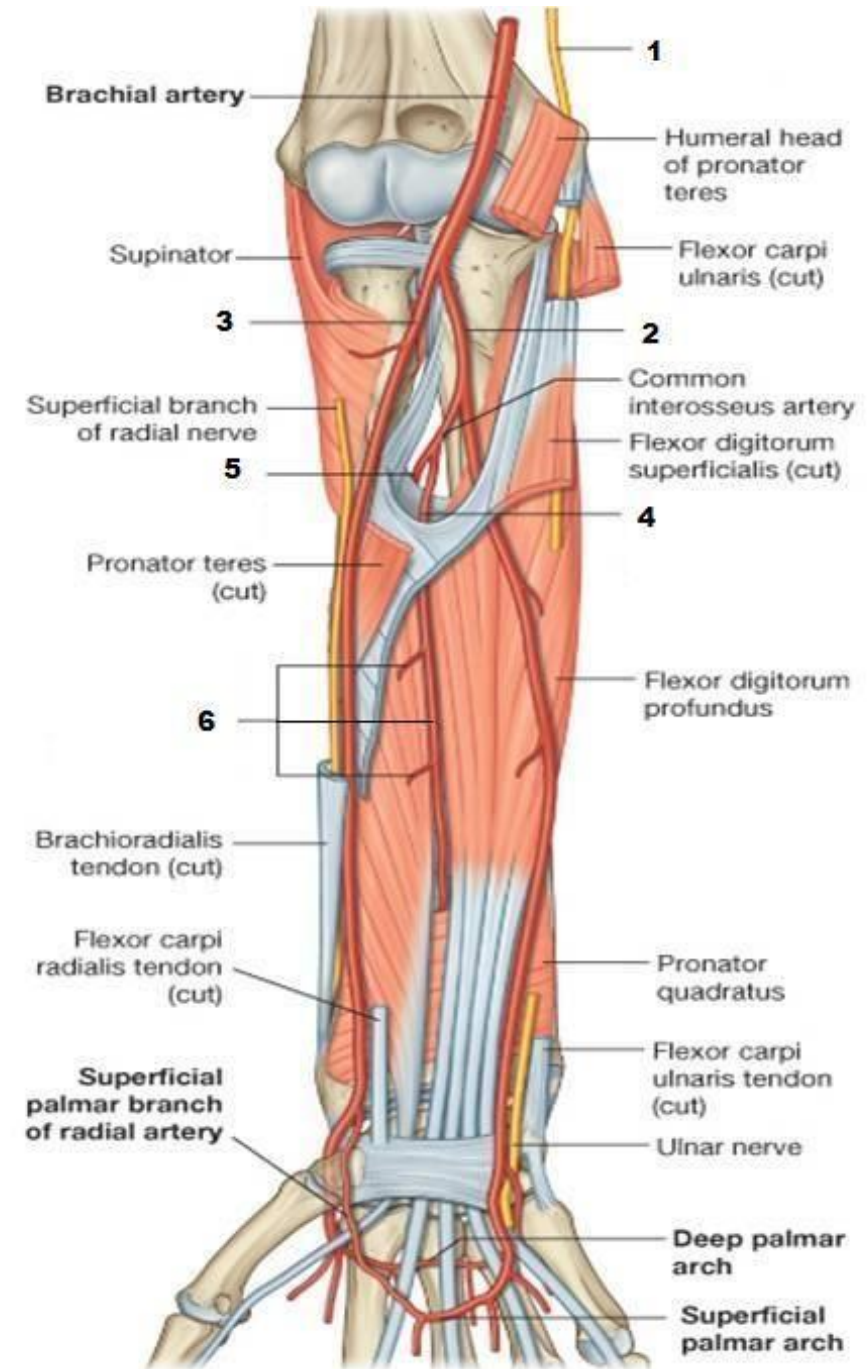
Forearm

- In the forearm, the radial artery travels down from the medial aspect of the neck of the radius to the styloid process of the anterior surface of the radius.
- Proximally, the artery lies deep to the brachioradialis muscle while distally it is only covered by fascia and skin.



RADIAL ARTERY COURSE

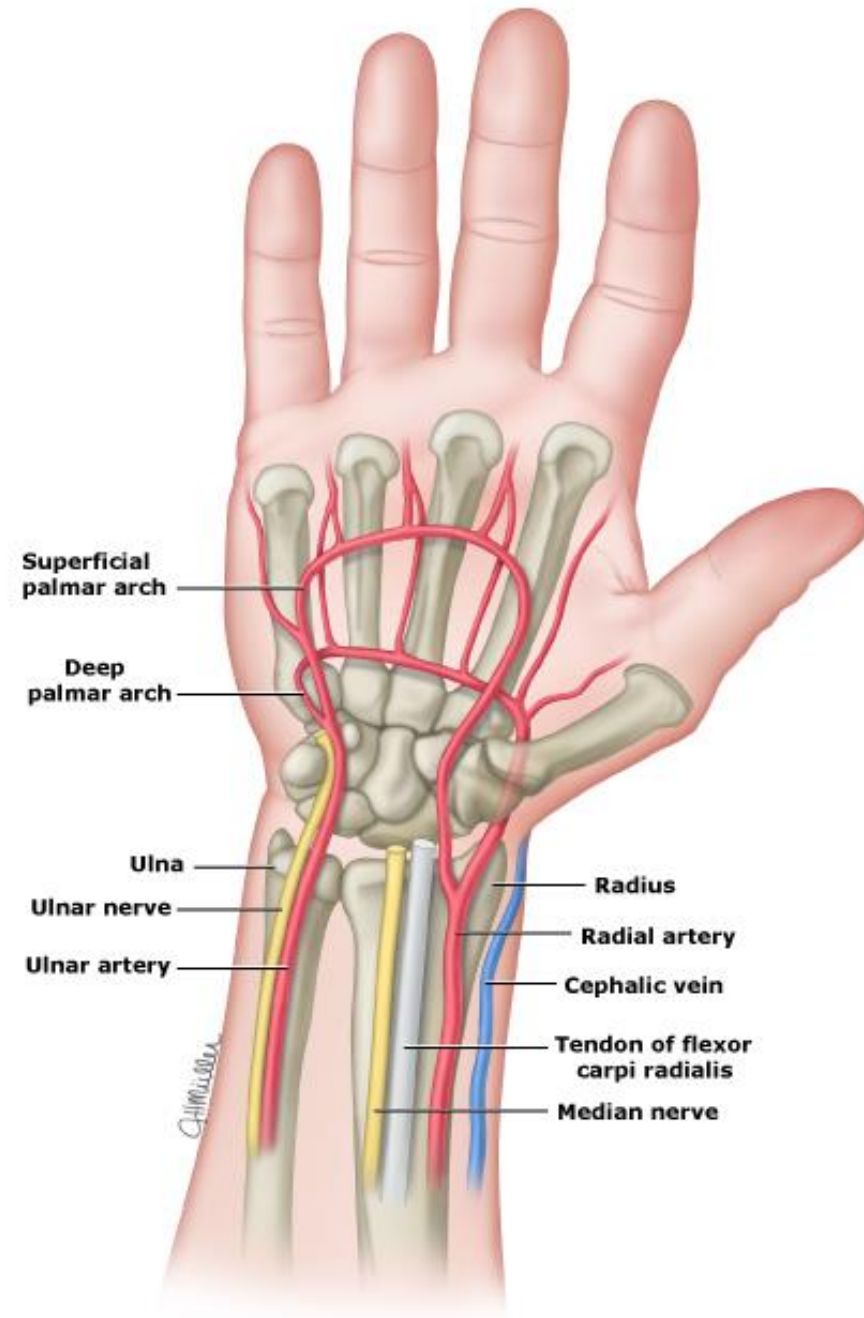
- It lies between the tendon of the brachioradialis and the flexor carpi radialis muscles.
- Lying deep to the radial artery is the common tendon of the biceps brachii, pronator teres, supinator and flexor digitorum superficialis muscles.



RADIAL ARTERY COURSE

Wrist and hand

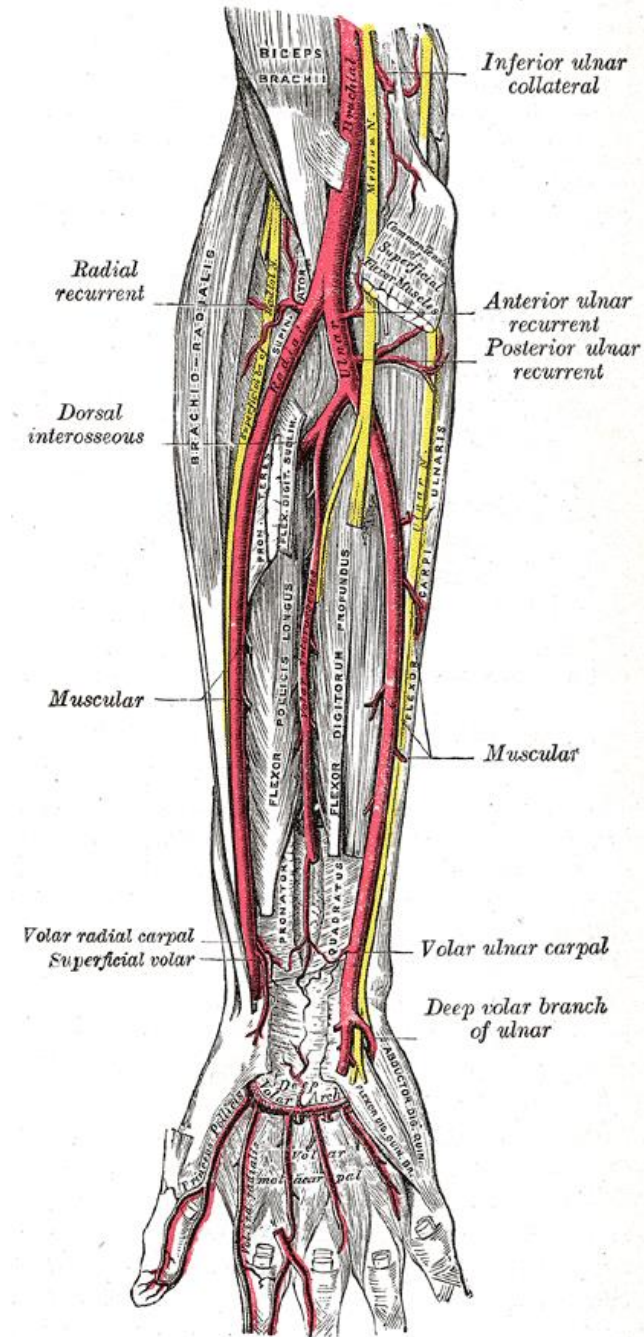
- At the wrist, the radial artery goes around it laterally and then travels across the floor of the anatomical snuffbox to the palm of the hand.



RADIAL ARTERY BRANCHES

Muscular branches

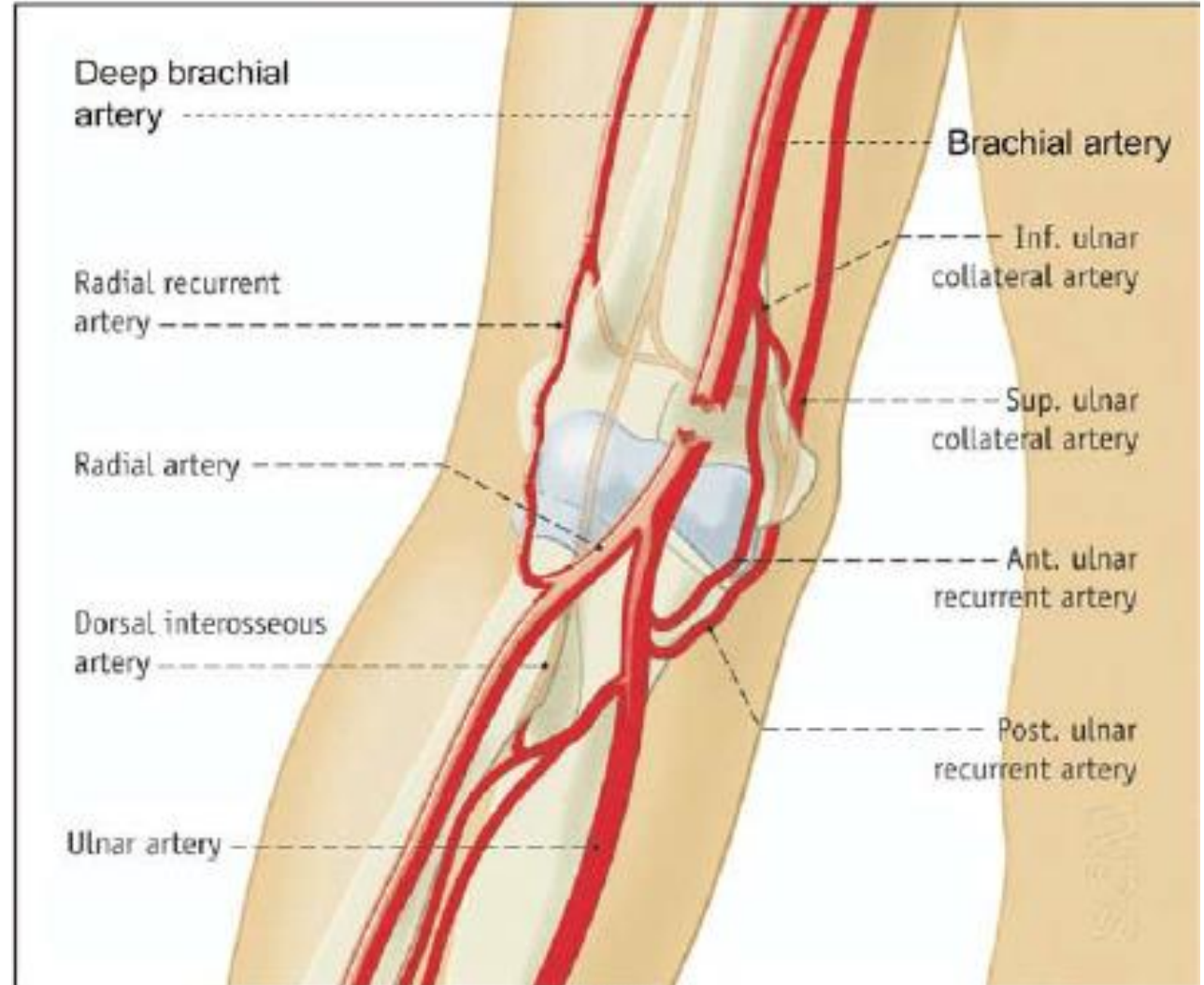
- These small branches supply muscles on the radial aspect of the forearm, in particular the extensor muscles of the posterior compartment of the forearm.



RADIAL ARTERY BRANCHES

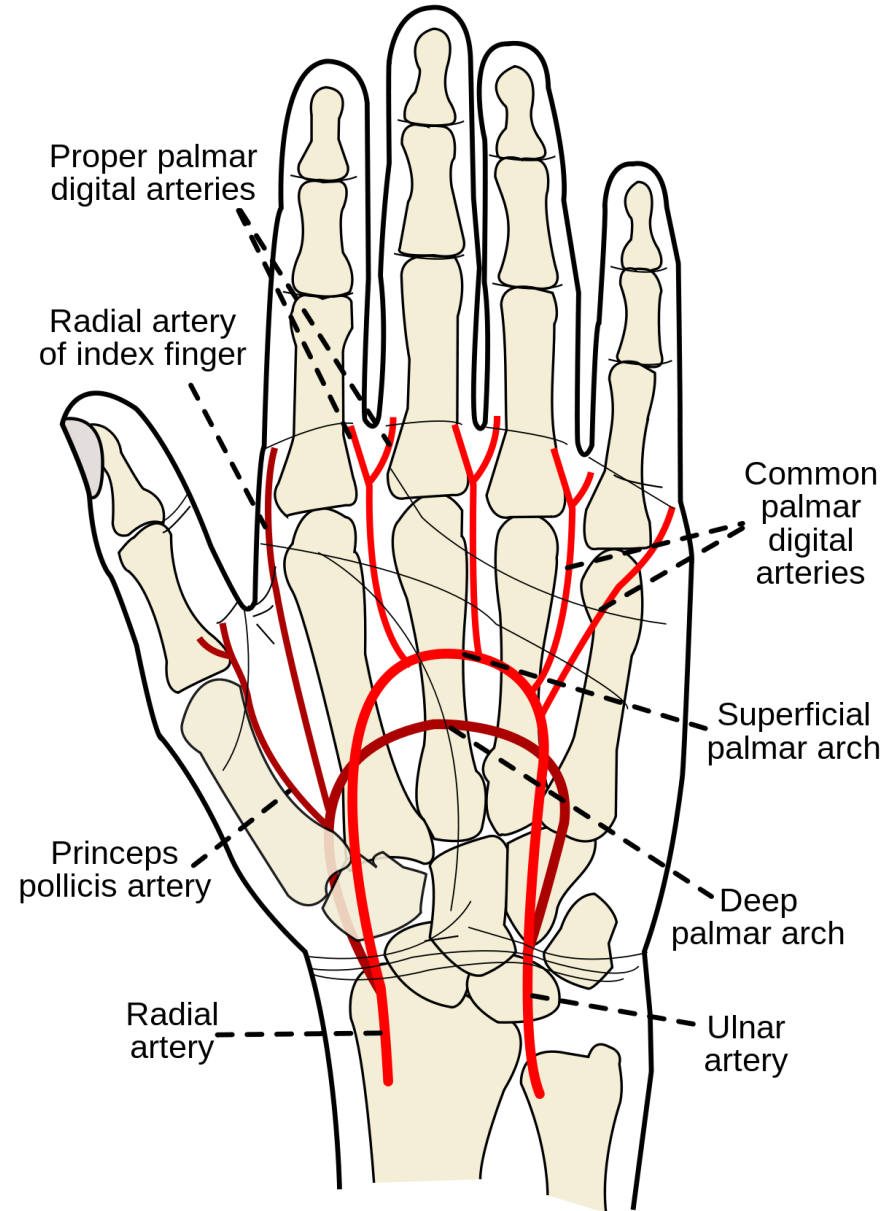
Radial recurrent artery

- This branch is just distal to where the radial artery has bifurcated from the brachial artery.
- It anastomoses with the radial collateral artery (derived from the deep brachial artery) and is an important blood supply to the elbow joint.



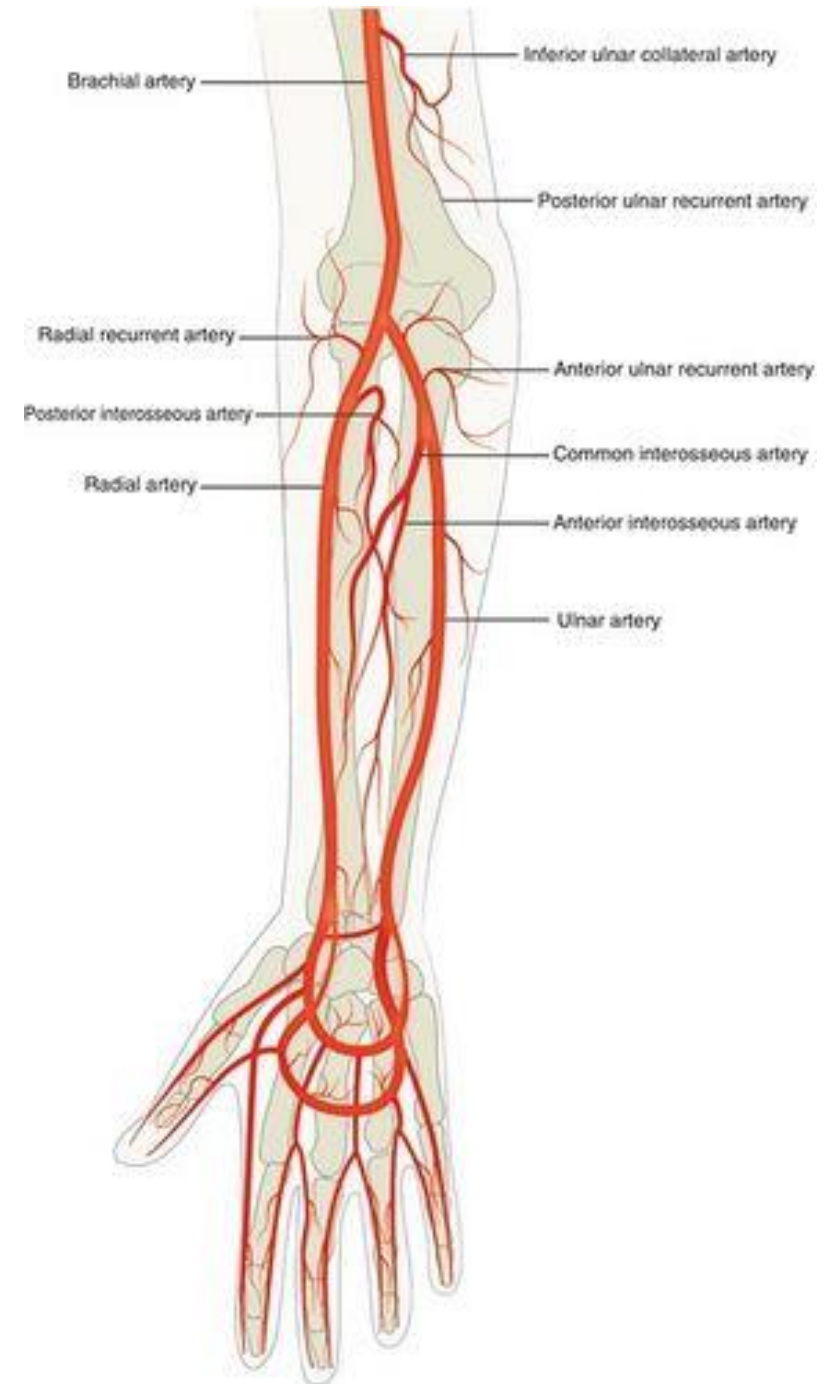
RADIAL ARTERY BRANCHES

- In hand it continues as **deep palmar arch**.
- It also gives branch in hand to complete **lateral part of superficial palmar arch**.



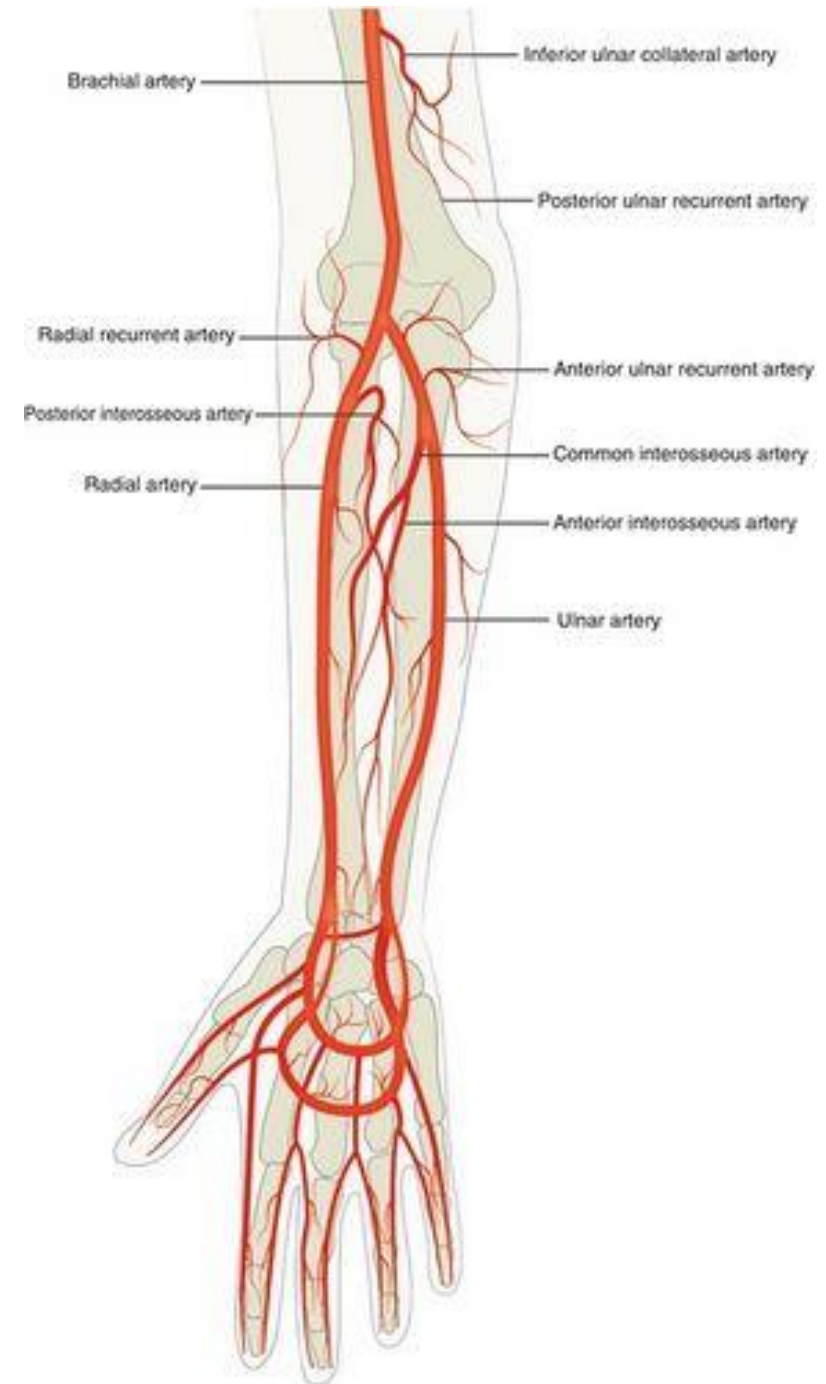
ULNAR ARTERY

- The ulnar artery, along with the radial artery, is responsible for the arterial supply to the forearm and hand.
- The ulnar artery arises in the cubital fossa and traverses through the **medial** (ulnar) side of the forearm and ends within the medial portion of the hand as the **superficial palmar arch**.



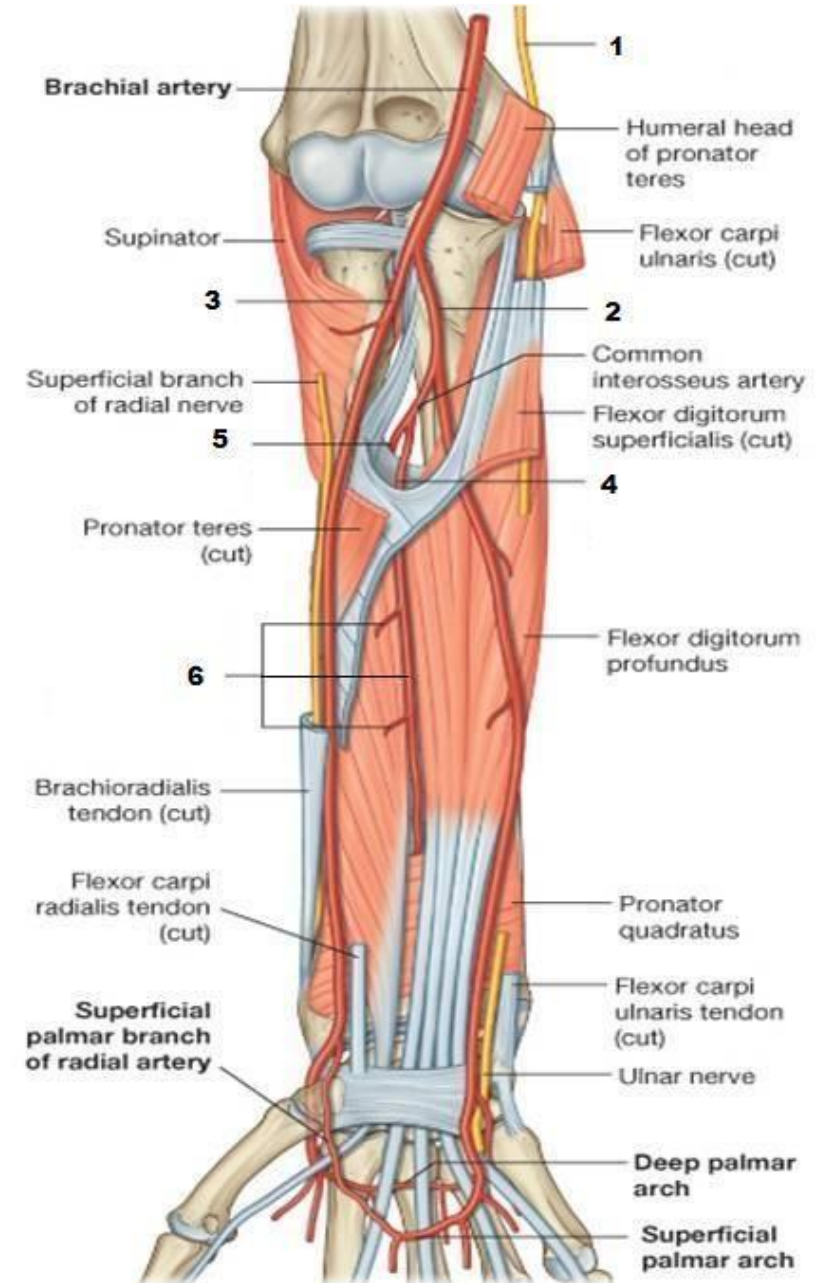
ULNAR ARTERY COURSE & ORIGIN

- Once brachial artery reaches the elbow, divides to give the ulnar and radial artery.
- The ulnar artery is rarely a branch of the axillary artery.
- It descends on the medial side in the fore arm.



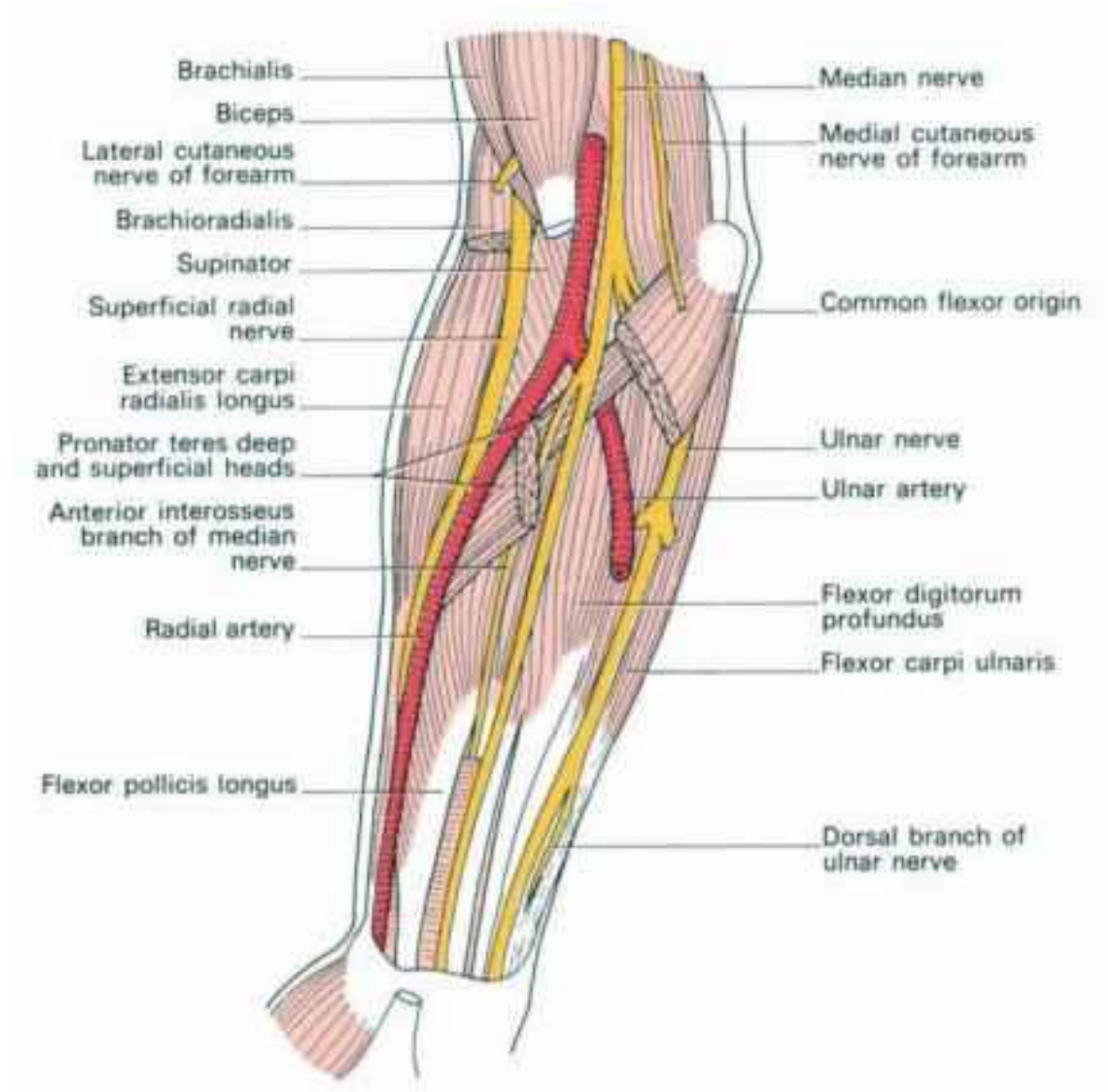
ULNAR ARTERY COURSE & ORIGIN

- In the upper part of its course, the ulnar artery is covered by many muscles, including **flexor digitorum superficialis, pronator teres, and flexor carpi radialis.**
- It lies on top of **brachialis and flexor digitorum profundus.**



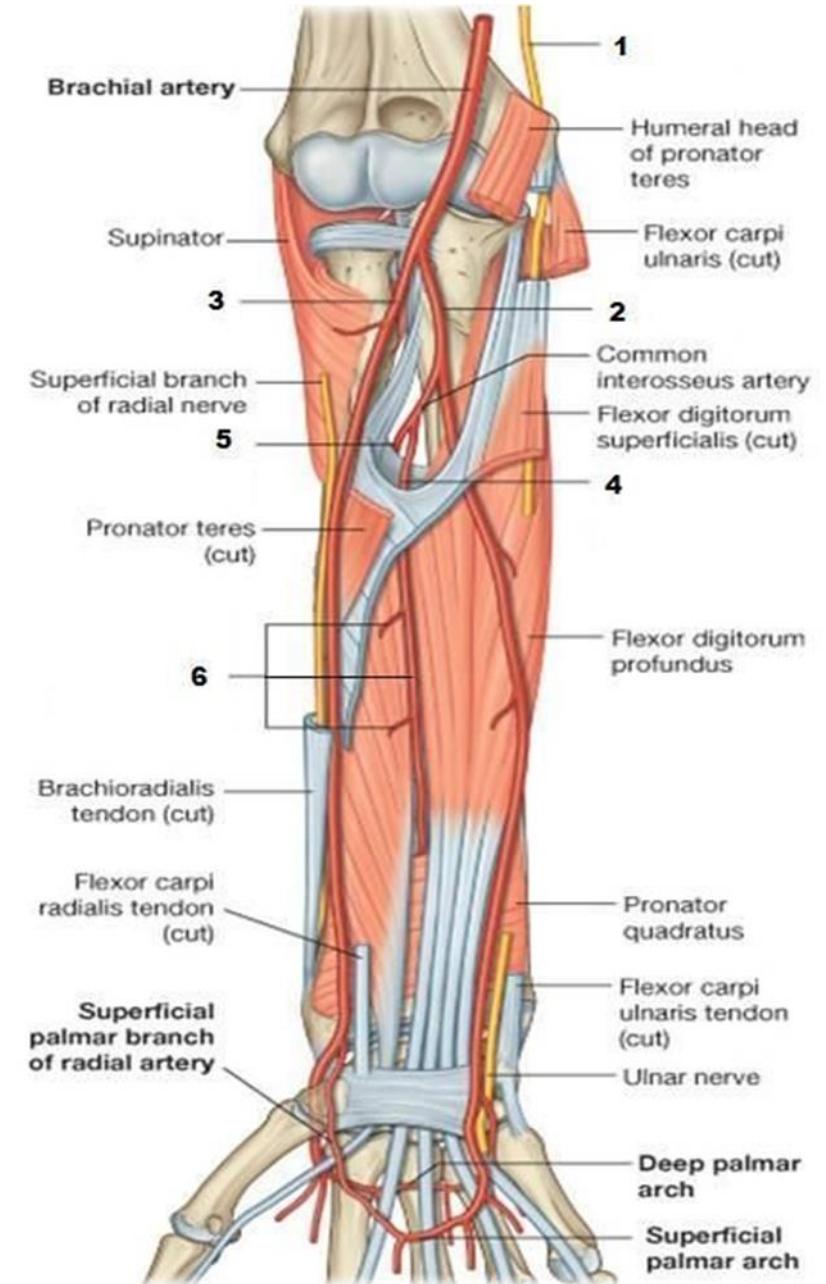
ULNAR ARTERY COURSE & ORIGIN

- The ulnar head of **pronator teres** separates the ulnar artery from the **median nerve** (which passes between the two heads of pronator teres).



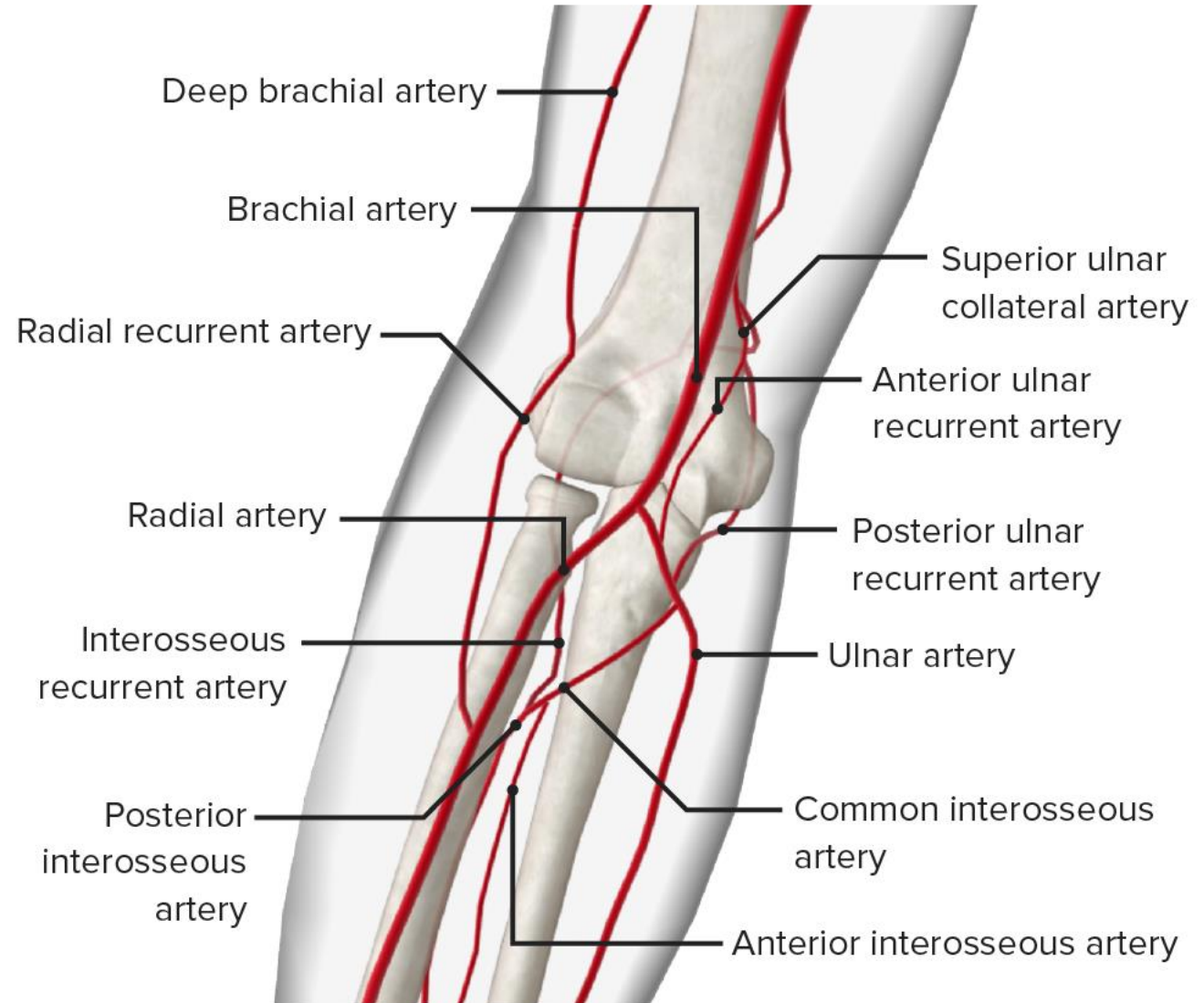
ULNAR ARTERY BRANCHES

- The ulnar artery lies between **flexor digitorum superficialis** and **flexor carpi ulnaris** along most of its length and gives perforating branches to the muscles on the ulnar side of the forearm.



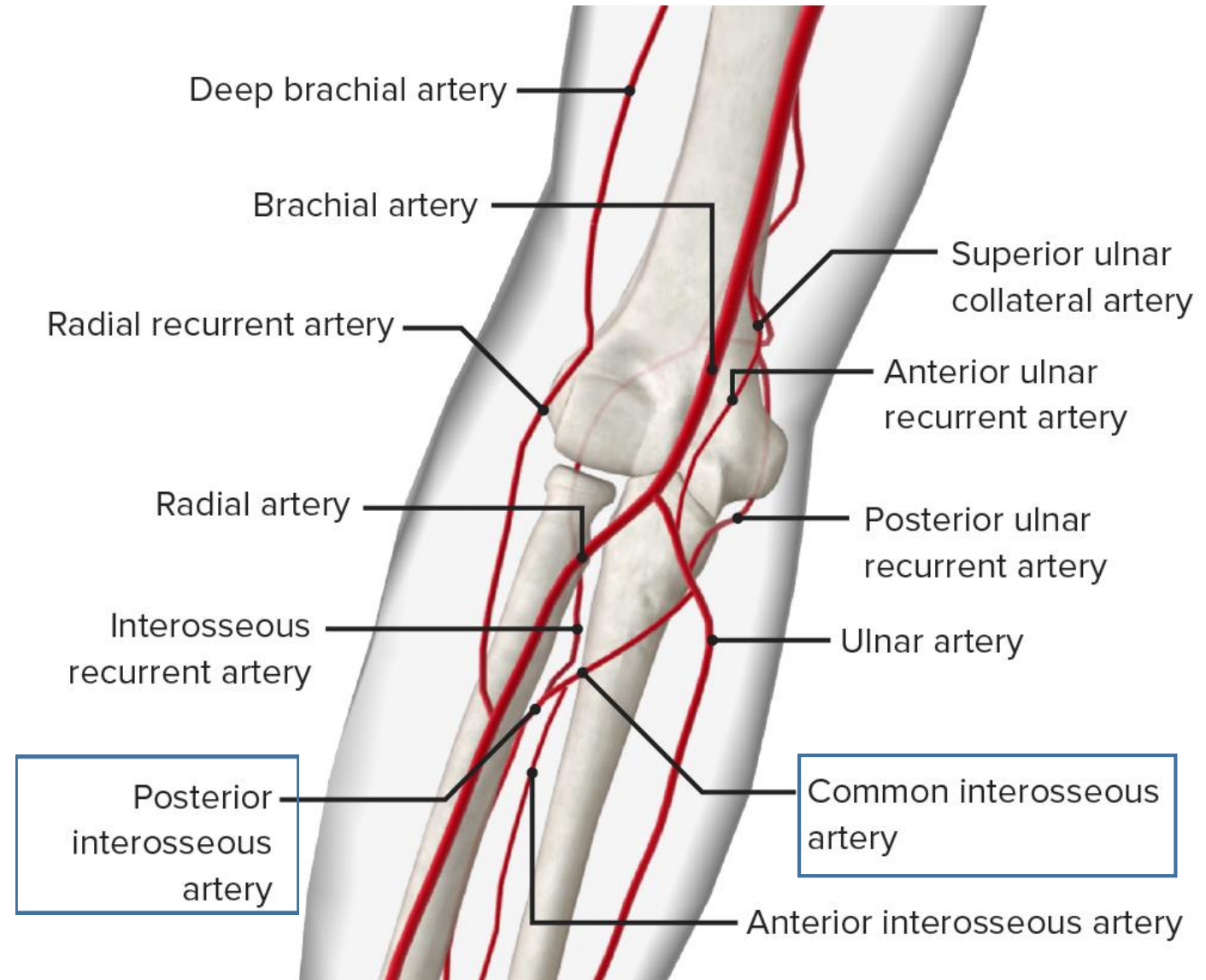
ULNAR ARTERY BRANCHES

- The brachial artery forms a **network of collateral circulation** around the elbow joint via the **superior and inferior ulnar** collaterals that are renamed the **anterior and posterior ulnar recurrent arteries** when they pass anterior and posterior to the medial epicondyle respectively.



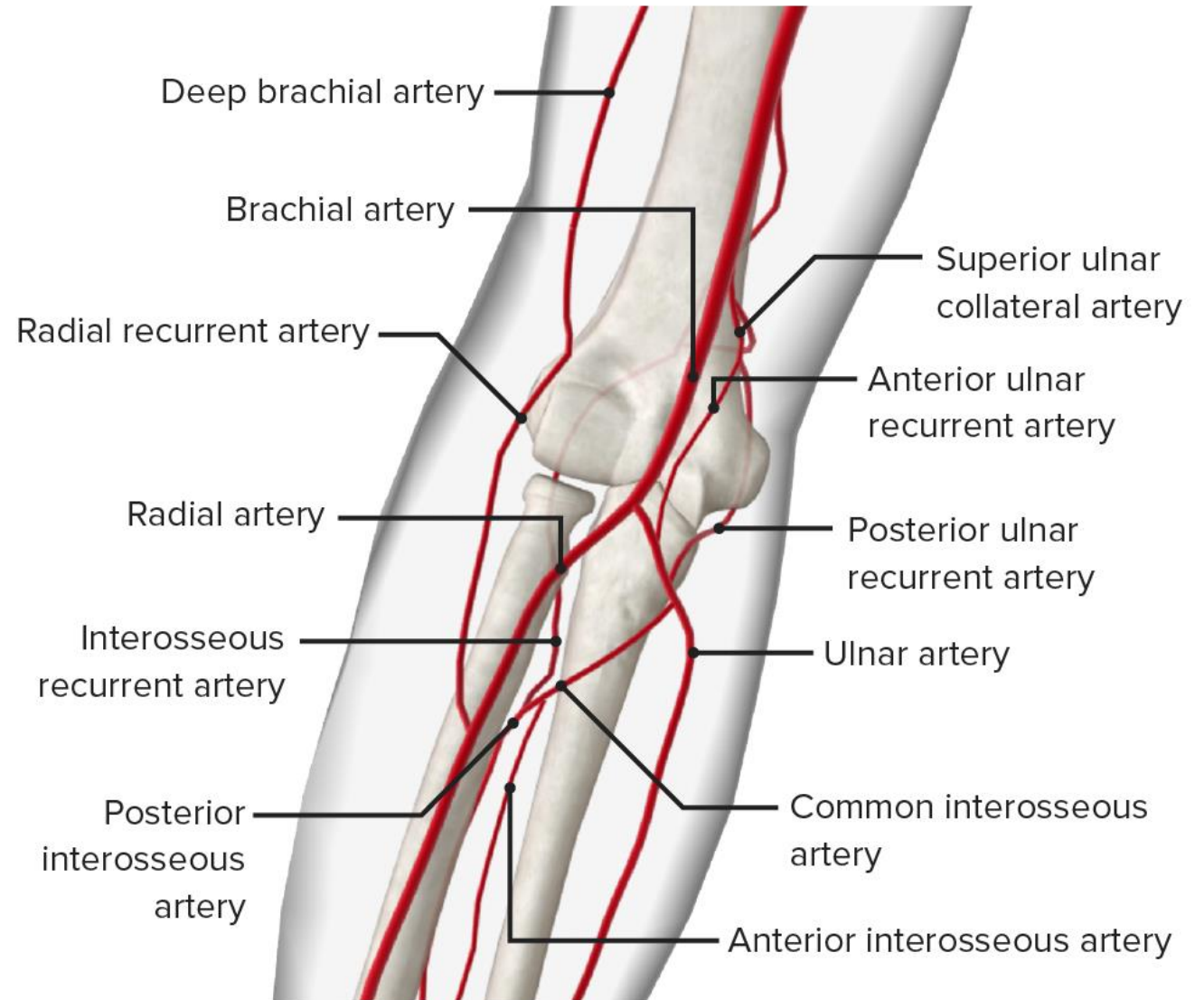
ULNAR ARTERY BRANCHES

- The ulnar artery then gives off the **common interosseus artery** which then divides to give the **anterior and posterior interosseous arteries**.
- These run down the forearm either side of the interosseus membrane that connects both the forearm bones.



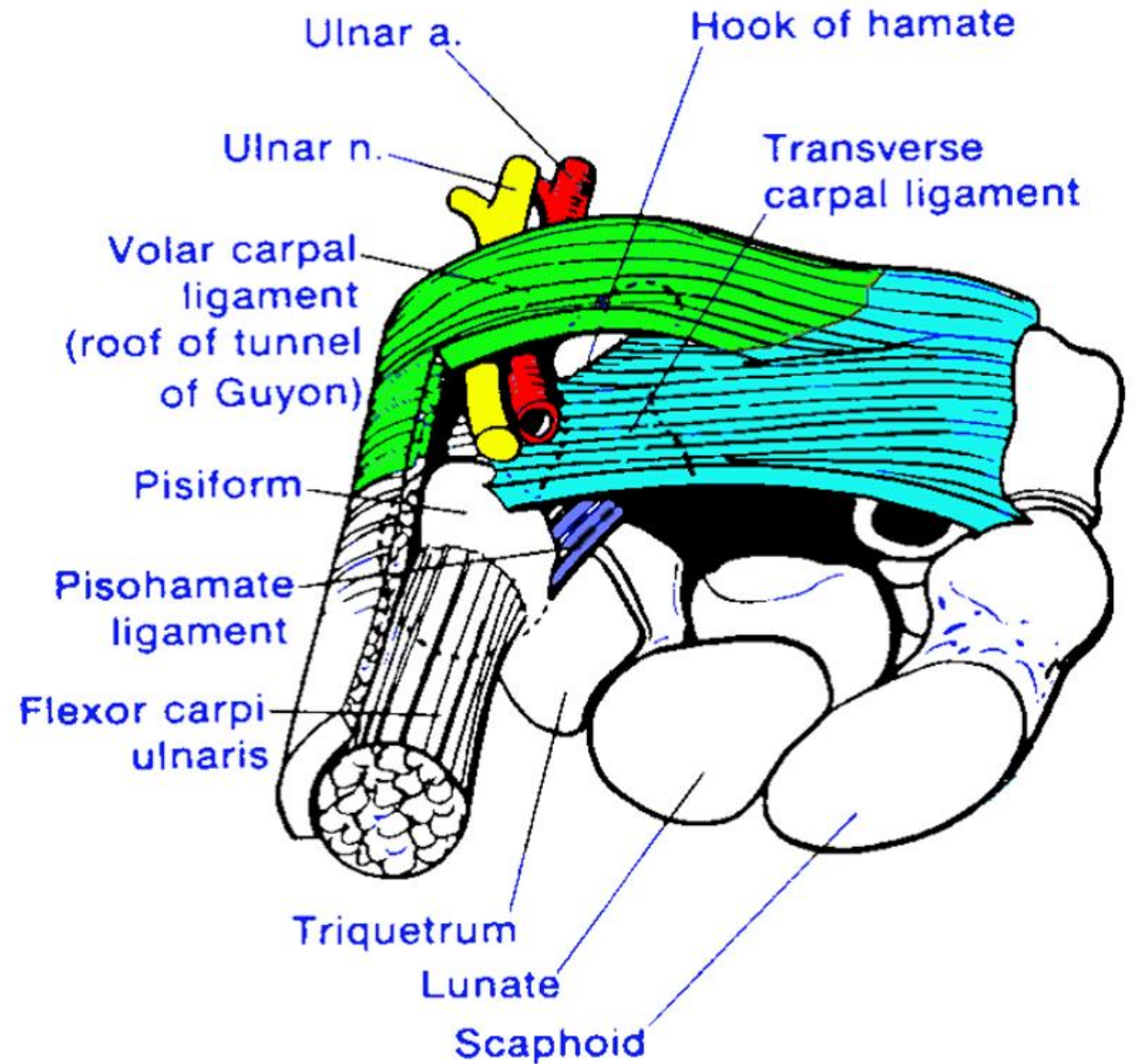
ULNAR ARTERY BRANCHES

- The **posterior interosseous artery** supplies the **extensor muscles** of the forearm, and the **anterior interosseus** supplies the deep muscles of the **flexor compartment** of the forearm.



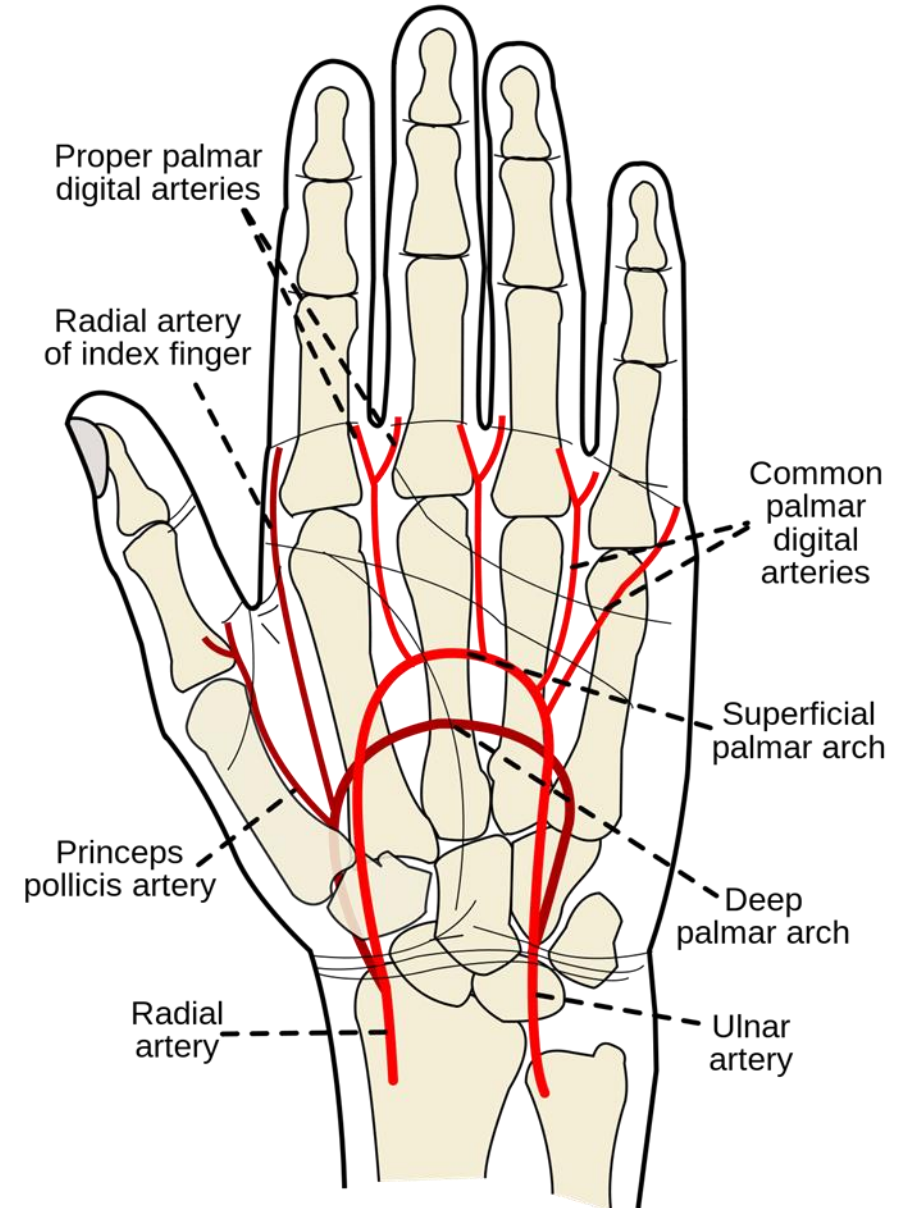
ULNAR ARTERY

- The ulnar artery then continues to descend down the ulnar side of the forearm close to the **ulnar nerve**.
- It passes superficially to the **transverse carpal ligament**, and hence is not one of the contents of the carpal tunnel.
- It does pass in its own tunnel, known as **Guyon's canal**, with the artery passing laterally to the nerve.



ULNAR ARTERY

- ulnar artery continues as **superficial palmar arch** once it enters the hand.



CLINICAL NOTES

Arterial blood gas

- In some clinical situations, usually when the patient is very unwell, an arterial blood gas or ABG is required to determine the exact level of oxygenation of a patient's blood sample.
- For this sample to be accurate, it must be taken from an artery, usually the radial.



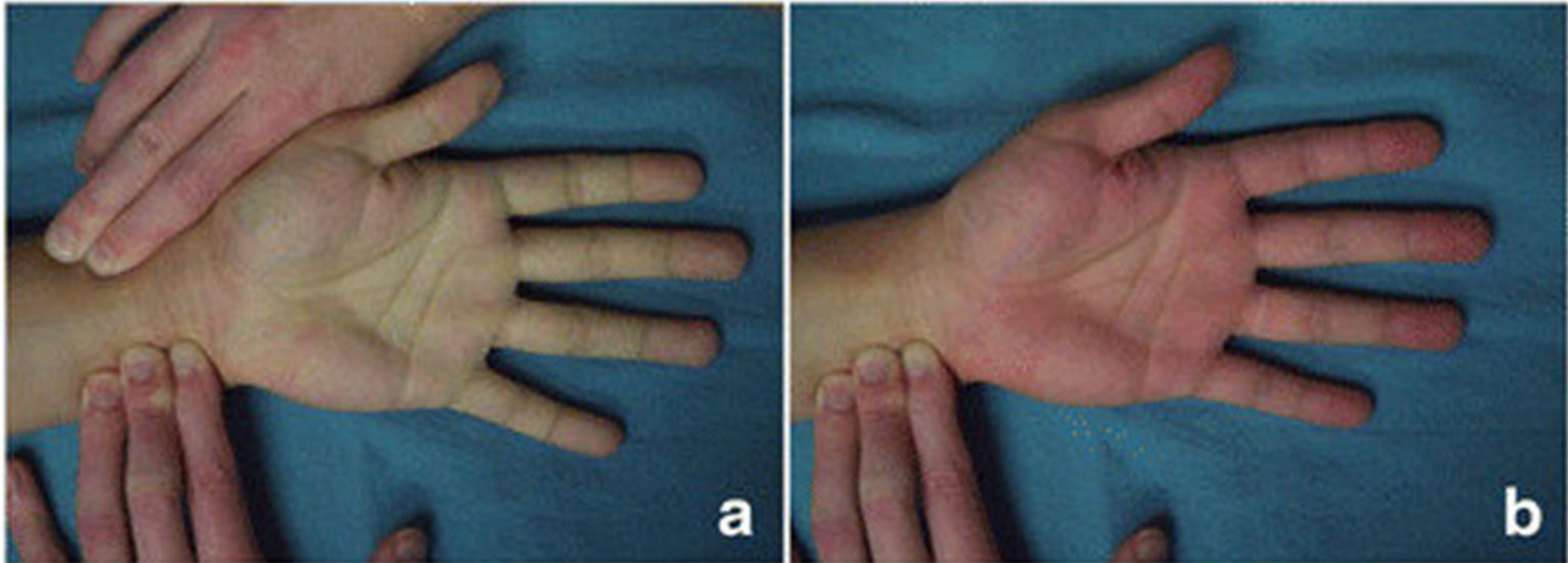
CLINICAL NOTES

- In order to determine if it is safe to take blood, the patient is asked to perform Allen's test. This involves the patient's two arteries (the radial and the ulnar) being blocked off by the doctor, and the patient making a tight fist for 20-30 seconds.
- Once the hand is opened the hand is blanched white, as no blood is flowing into it.



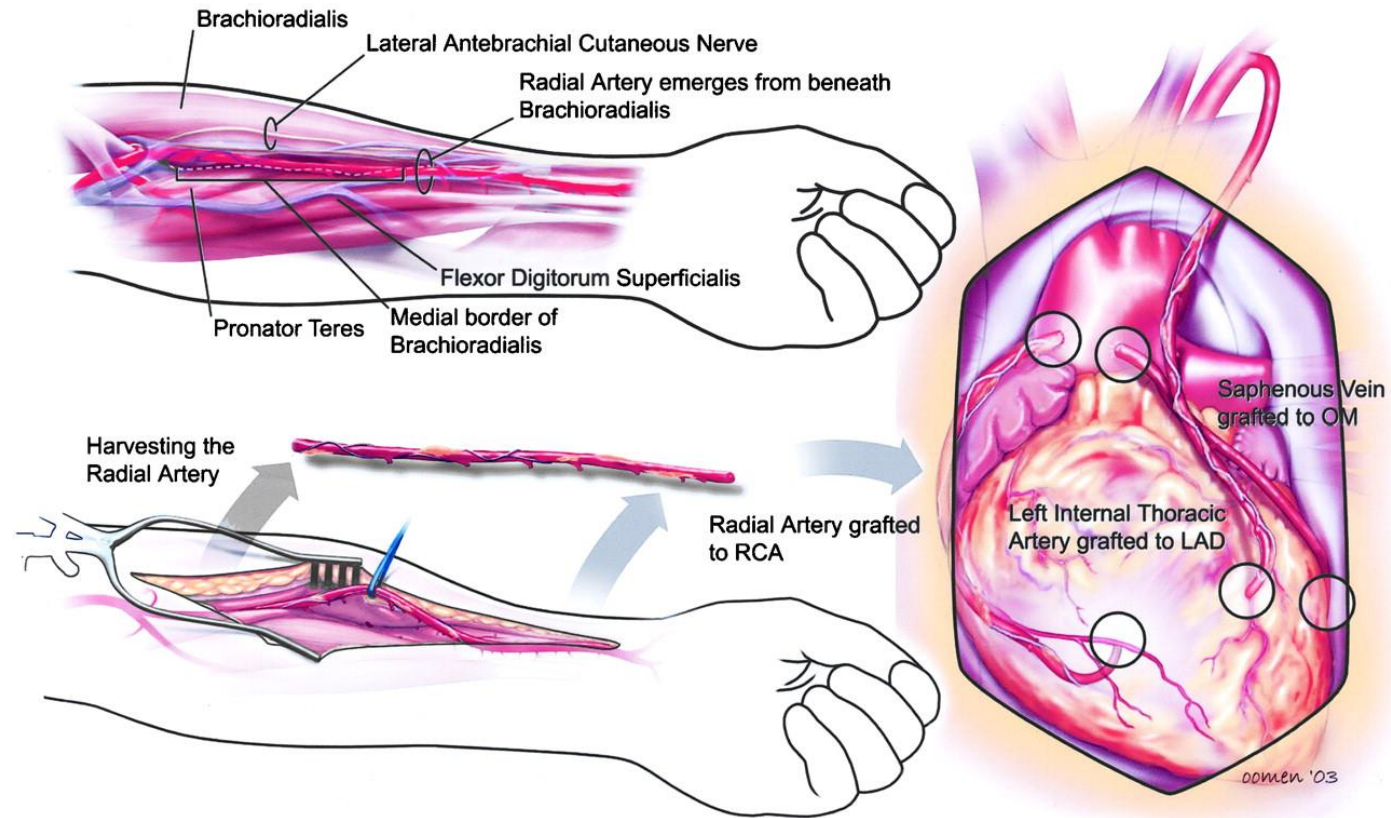
CLINICAL NOTES

- Then the doctor releases the ulnar artery. If the hand fills with blood i.e. turns pink, then the ulnar artery is patent, that the collateral supply via the ulnar artery is intact and it is safe to perform the procedure.
- If the hand stays blanched, then the ulnar artery is not sufficient to revascularise the hand, and the procedure is not performed.



CLINICAL NOTES

- The Allen's test plays an important role as a screening method to assess circulation of the hand before harvesting the radial artery to be used as an arterial conduit for a coronary artery bypass graft.
- The radial artery is an ideal graft candidate due to its diameter, length and ease of harvesting of the blood vessel.



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