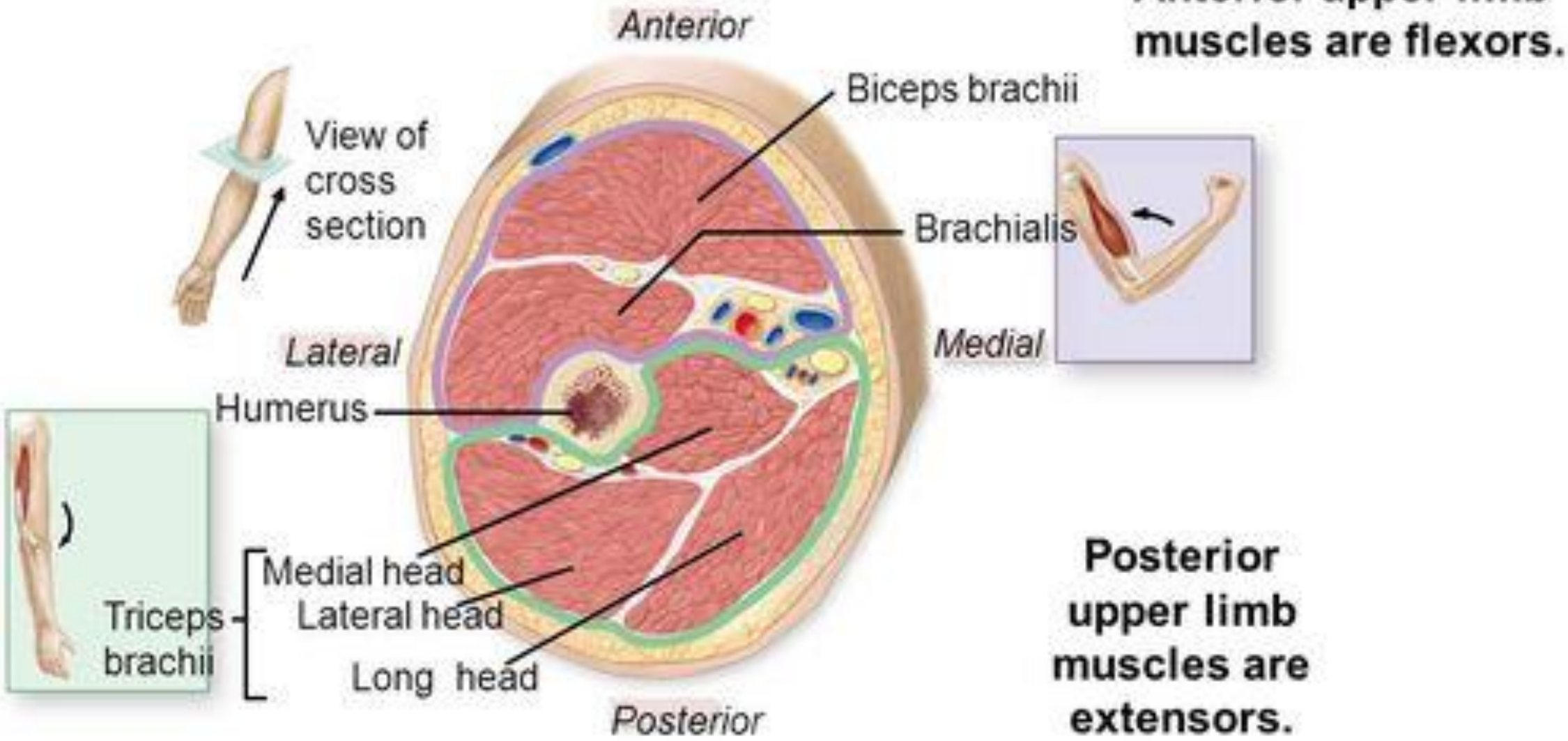
ANATOMY OF THE ARM

DR. DALIA M. BIRAM

Fig. 12.6


Anterior upper limb muscles are flexors.
Anterior
Biceps brachii
View of cross section
Brachialis
Lateral
Medial
Humerus
Triceps brachii
Medial head
Lateral head
Long head
Posterior
Posterior upper limb muscles are extensors.

- **Compartments of the arm:** It is divided into2compartments: anterior and posterior by:
  - The deep fascia of the arm. .The humerus.
  - The lateral and medial intermuscular septa.
- **Medial intermuscular septum**
  - It is a fascial sheet that connects the medial supracondylar ridge of the humerus with the deep fascia of the arm.
  - It is pierced by **ulnar nerve** at the middle of the arm.
- **Lateral intermuscular septum:** It is a fascial sheet that connects the lateral supracondylar ridge of the humerus with the deep fascia of the arm.
- It is pierced by **radial nerve** at the junction between middle and lower thirds of the

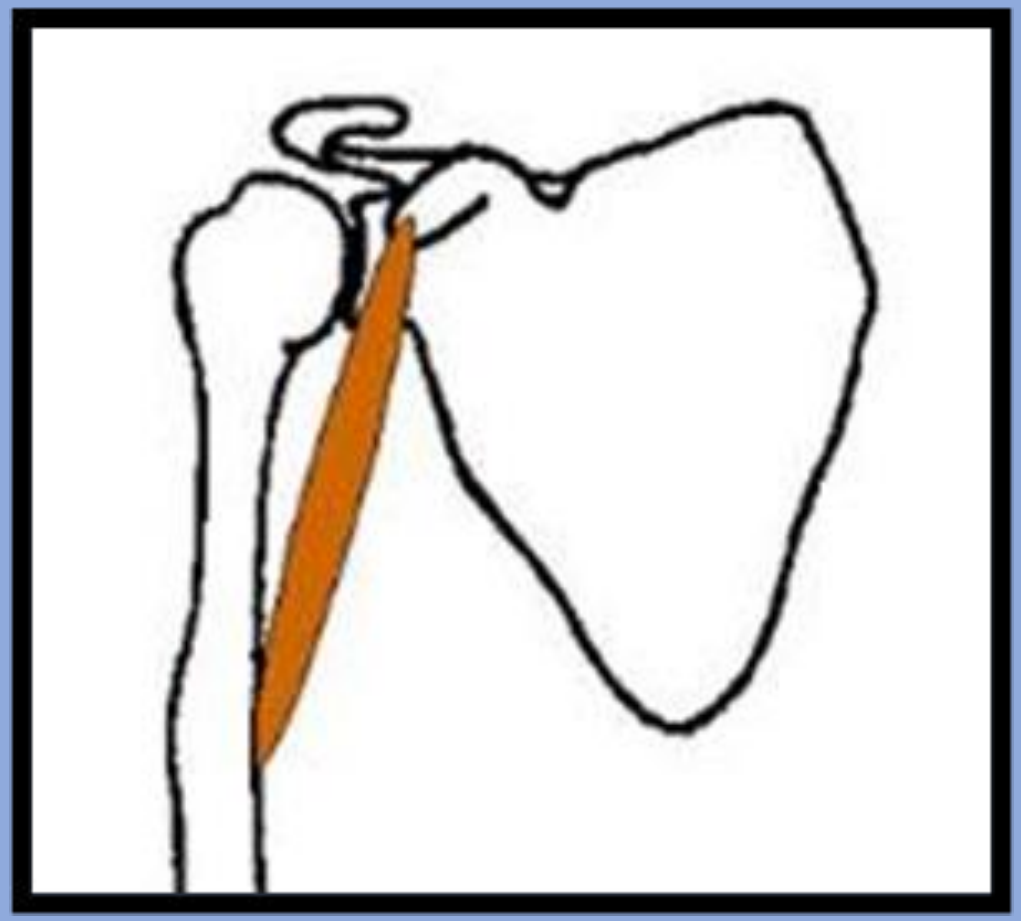
ANTERIOR COMPARTMENT OF THE ARM

- **Contents:**

1. **Flexor muscles; coracobrachialis, brachialis and biceps brachii.**
2. **Brachial artery and its 2 venae comitantes.**
3. **Basilic vein (at the upper half of the arm).**
4. **Median nerve.**
5. **Ulnar nerve (in the upper half of the arm).**
6. **Musculocutaneous nerve.**

1-Coracobrachialis muscle:

- **Origin:**
- **Tip of coracoid process (with short head of biceps brachii).**
- **Insertion:**
- **Middle of medial aspect of the humerus.**
- **Nerve supply:**
- **Musculocutaneous nerve.**
- **Actions:**
- **It helps in flexion and adduction of the arm.**
-



Changes that occur at the level of insertion of coracobrachialis

1. **The ulnar nerve**; pierces the medial intermuscular septum to reach the posterior compartment.
2. **The radial nerve & profunda brachii artery;** descend on the back of humerus through the spiral groove.
3. **The median nerve**, crosses in front of brachial artery from lateral to medial.
4. **The basilic vein;** pierces the deep fascia to ascend medial to brachial artery.
5. **The medial cutaneous nerve of the arm and forearm;** pierces the deep fascia to pass through the superficial fascia.
6. **The nutrient artery of the humerus** enters into the bone.

2- Biceps brachii muscle

- **Origin:**
  - **Short head: from the tip of coracoid process.**
  - **Long head: from the supraglenoid tubercle of the scapula (intracapsular, extrasynovial).**
- **Insertion:**
  - **Posterior part of the radial tuberosity.**
  - **Bicipital aponeurosis into the deep fascia of the cubital fossa.**
- **Nerve supply:**
  - **Musculocutaneous nerve.**
- **Actions:**
  - **Flexor of the elbow.**
  - **Powerful supinator of the flexed forearm.**
  - **Long head helps in stabilization of shoulder joint.**
- **N.B. The bicipital aponeurosis separates the brachial artery from median cubital vein.**

3- Brachialis muscle:

Origin:

- **From the lower half of the front of the shaft of humerus and the front of the 2 intermuscular septa.**

Insertion:

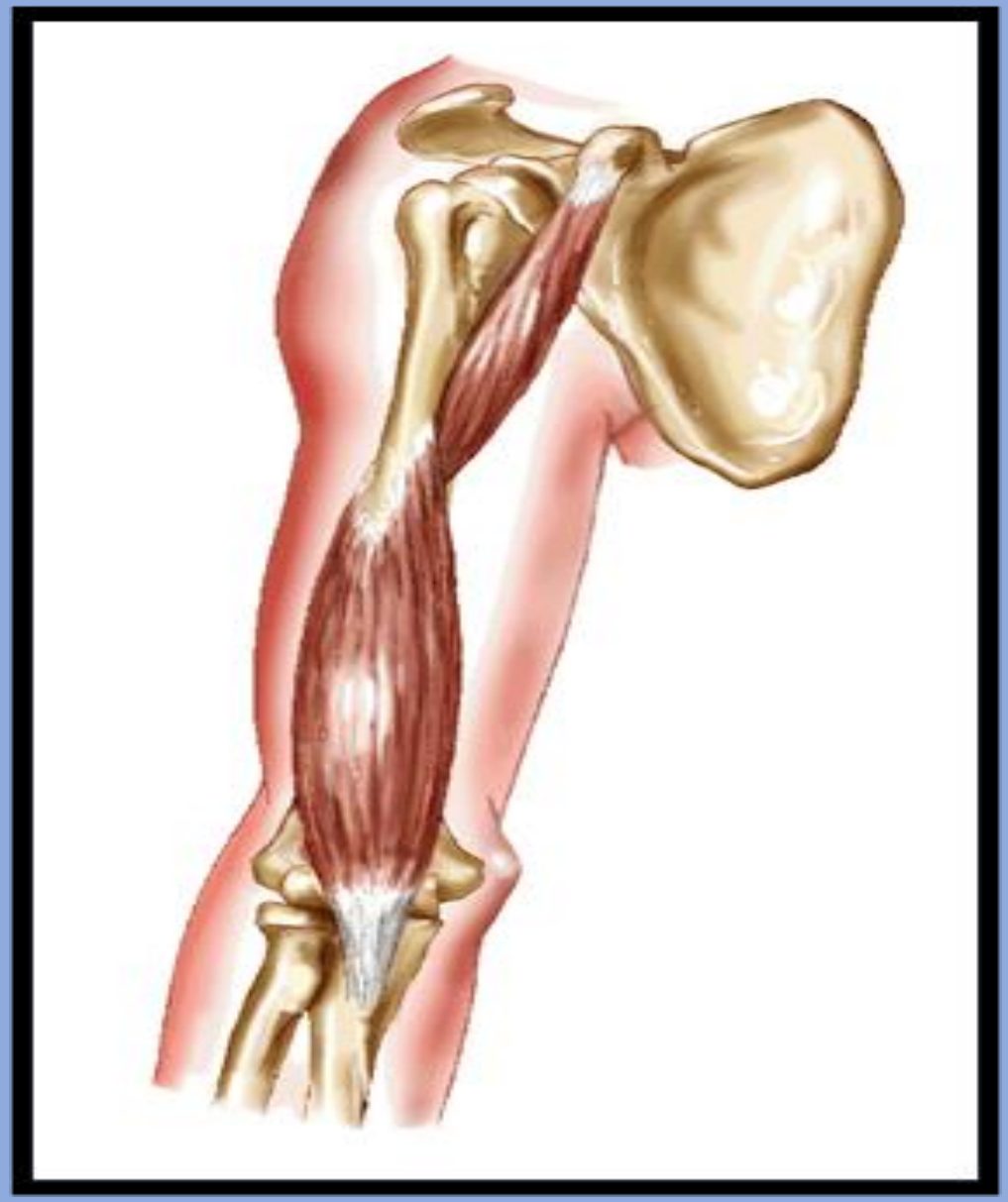
- **Coronoid process of ulna.**

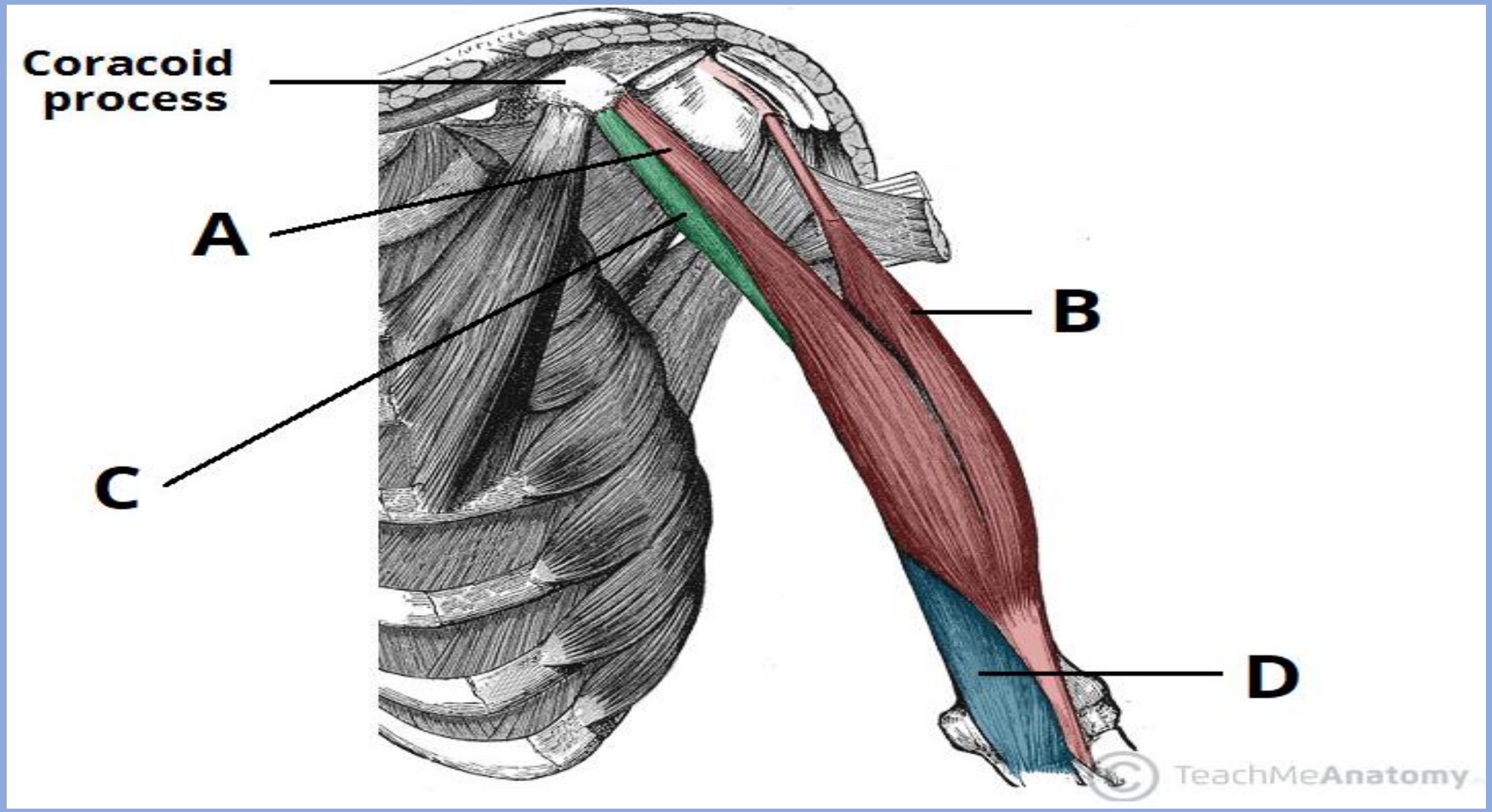
Nerve supply:

- **Musculocutaneous nerve & radial nerve for its lateral part.**

Action:

- **The muscle is the main flexor of elbow joint**

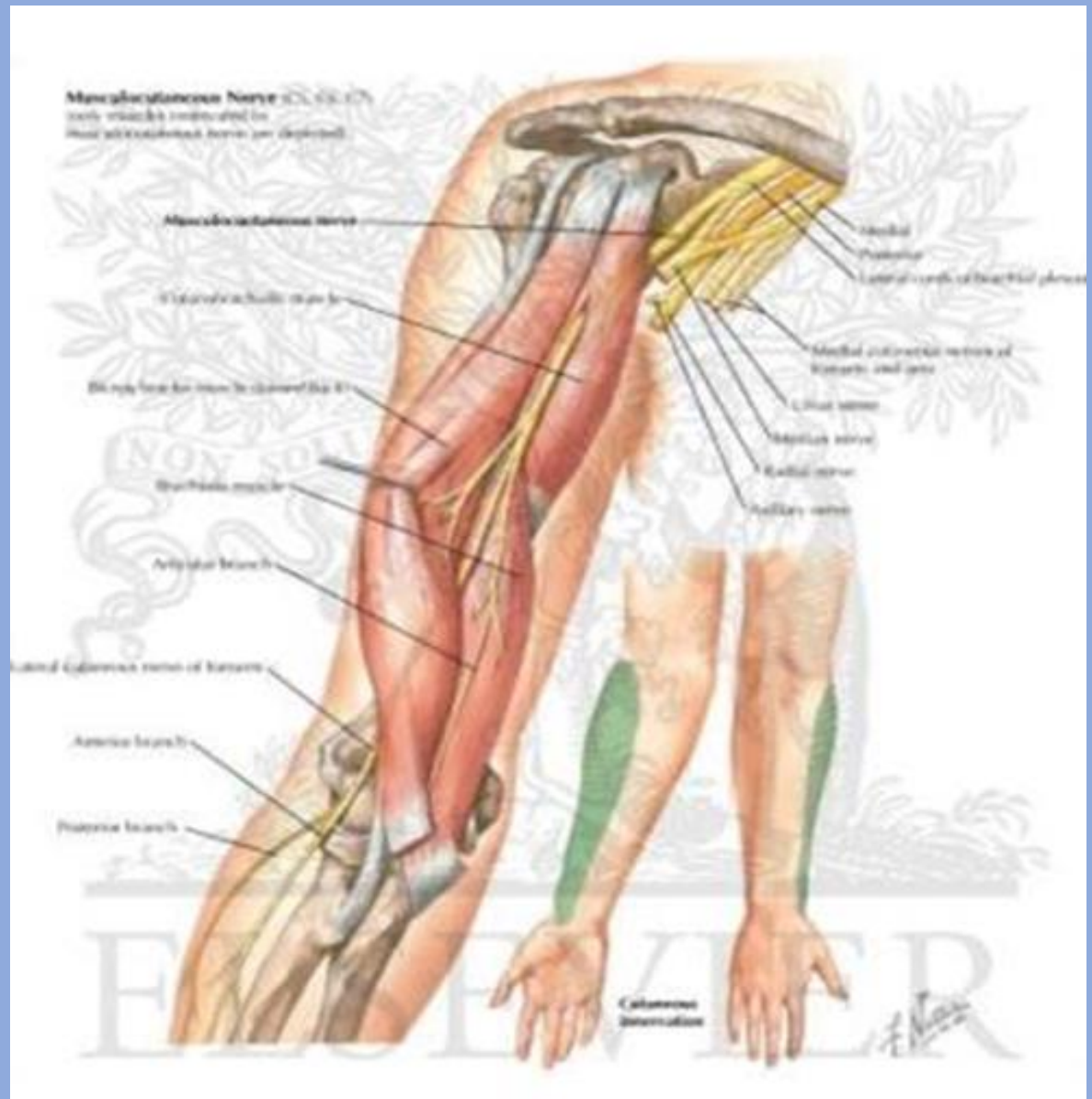



Coracoid process
A
B
C
D
TeachMeAnatomy

-Musculocutaneous nerve (C5, 6, 7)

- **Origin:**
- It is a branch of the lateral cord of brachial plexus
- .
- **Course & relations:**
- The nerve descends lateral to 3rd part of axillary artery. then pierces the coracobrachialis.
- It pass between biceps and brachialis
- Then pierce the deep fascia to be superficial
- **Termination:**
- It terminates by continuing as the lateral cutaneous nerve of the forearm
- **Branches:**
- **Muscular branches to:**

1. 2 heads of biceps brachii.
2. Coracobrachialis.
3. The greater part of brachialis.

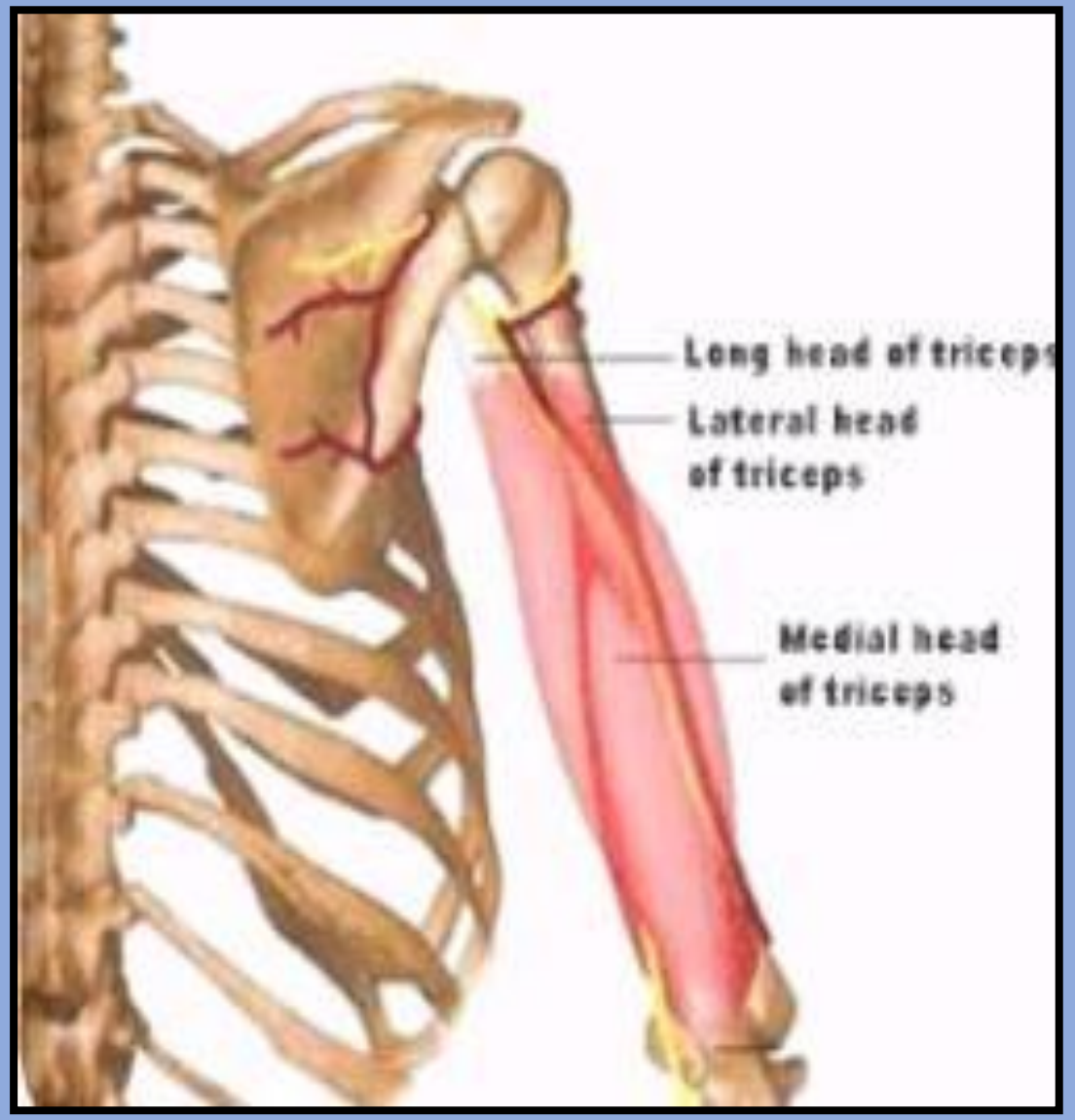


POSTERIOR COMPARTMENT OF THE ARM

- **Contents:**
  - **Triceps muscle.**
  - **Radial nerve.**
  - **Profunda brachii vessels.**
  - **Superior ulnar collateral vessels.**
  - **Posterior branch of inferior ulnar collateral.**

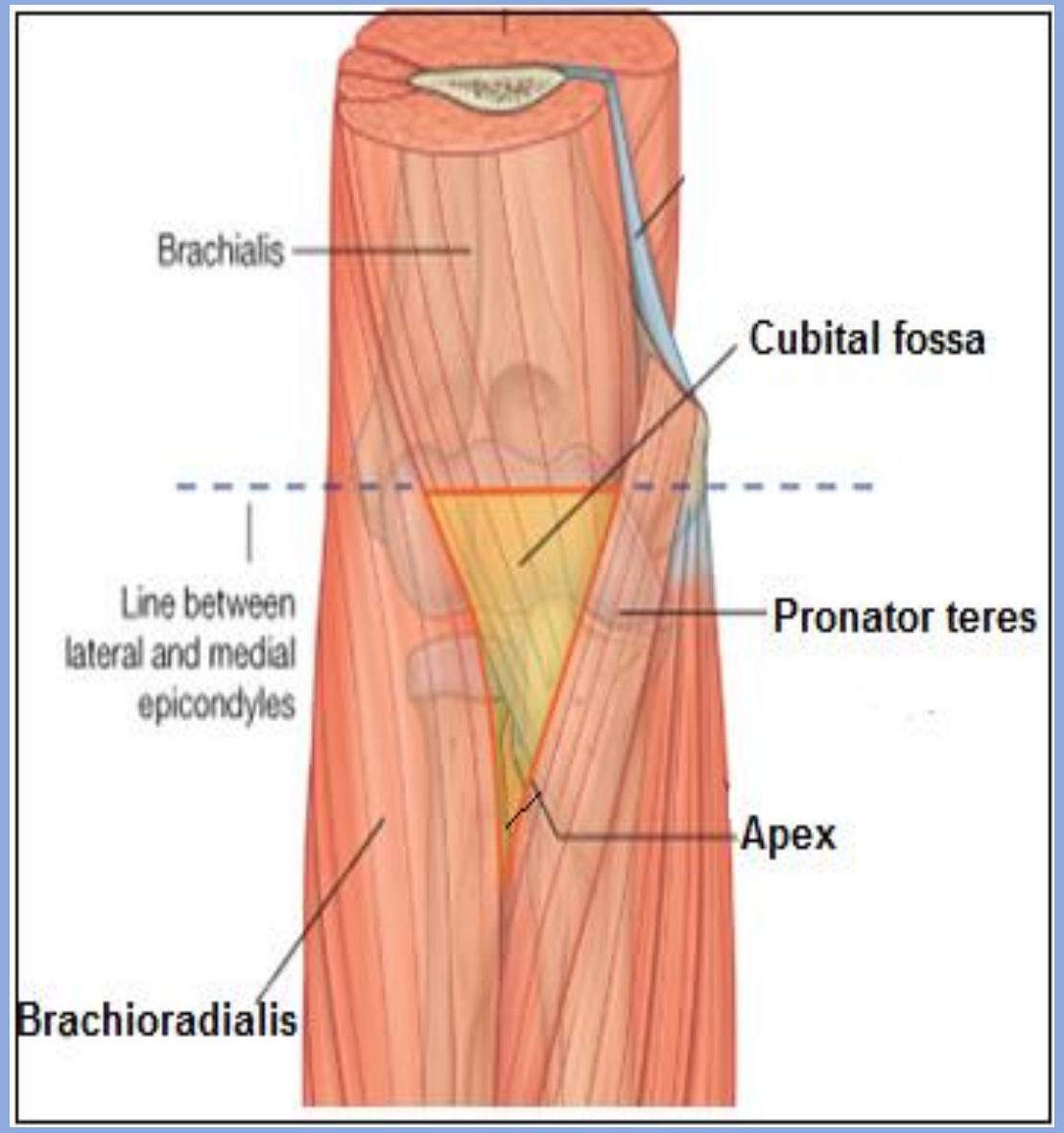
Triceps muscle

- **Origin:**
  - **Long head; from the infraglenoid tubercle.**
  - **Lateral head; from back of humerus above the spiral groove.**
  - **Medial head; from back of humerus below the spiral groove.**
- **Insertion:**
- **Olecranon process of ulna.**
- **Nerve supply:**
- **Radial nerve.**
- **Actions:**
  - **Main extensor of the elbow.**
  - **Long head shares in stability of shoulder.**
  - **The long head helps in adduction of abducted arm.**

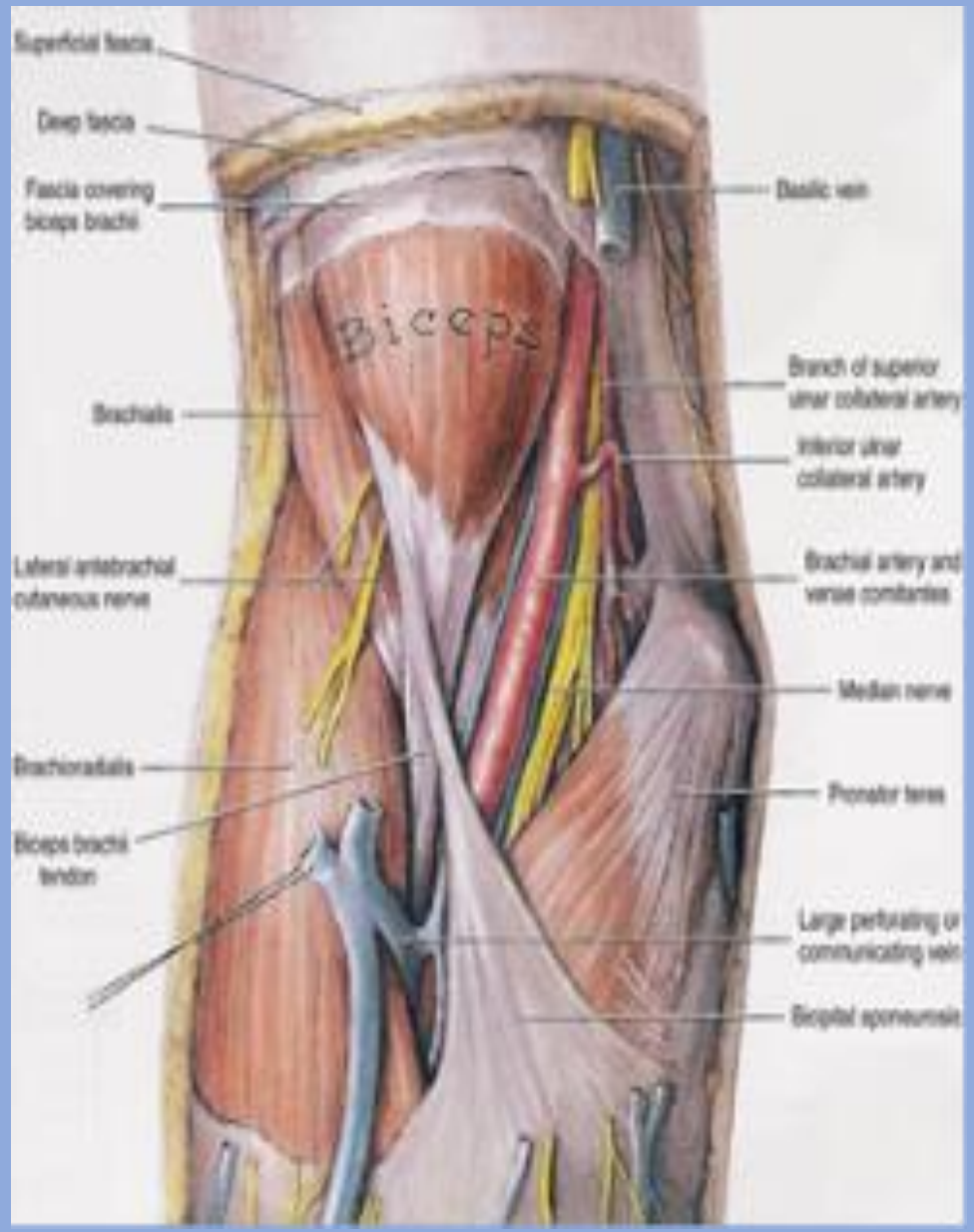


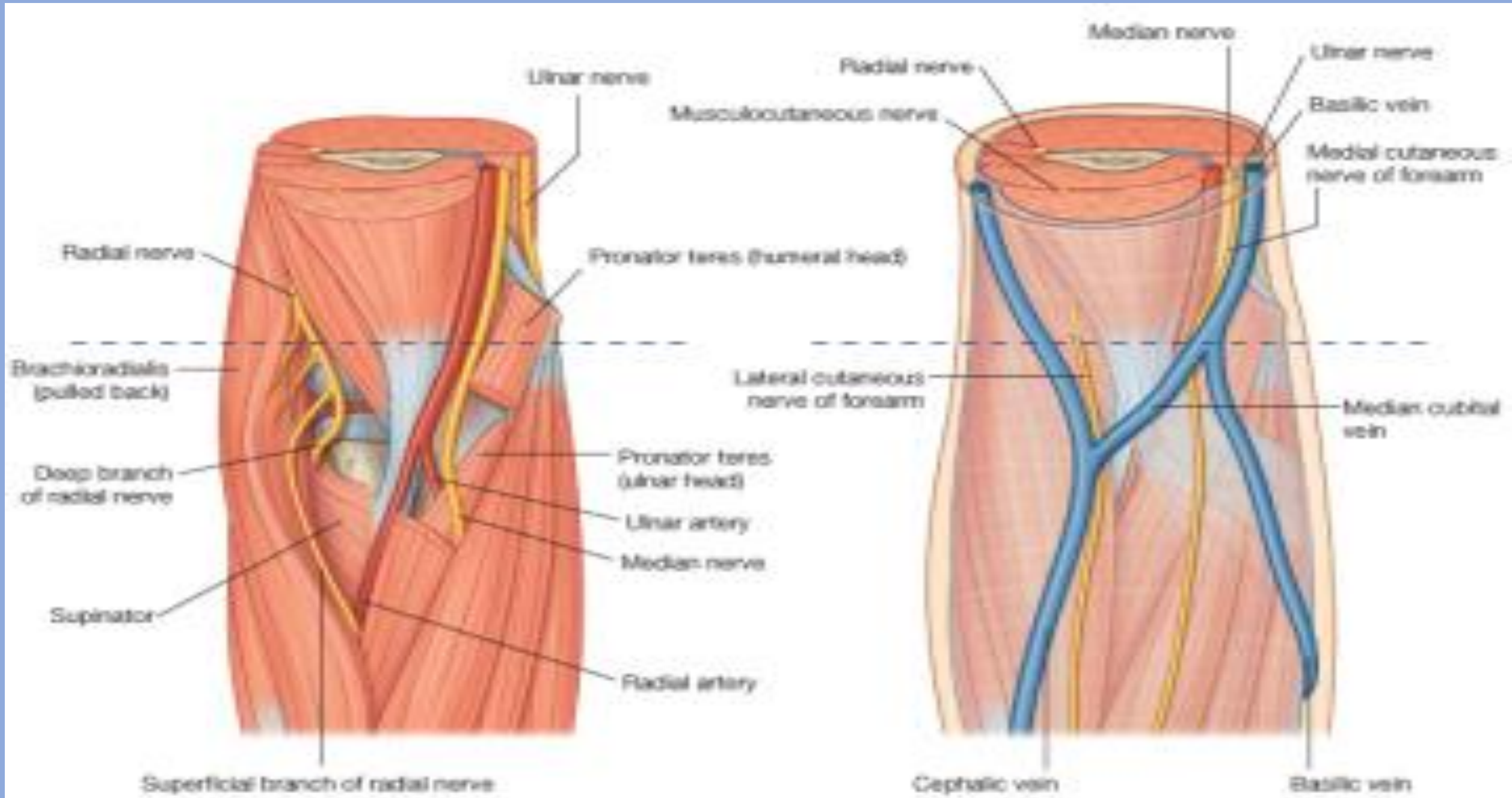
CUBITAL FOSSA

- **The cubital fossa is a triangular depression in the front of the elbow.**
- **Boundaries**
- **Medial boundary; pronator teres muscle.**
  - **Lateral boundary; brachioradialis muscle.**
  - **Base; directed upwards and is formed by an imaginary line connecting the 2 humeral epicondyles.**
- **Apex: Directed downwards and formed by the point of overlap of brachioradialis over pronator teres.**



- **Roof: is formed by:**
  - **Skin.**
  - **Superficial fascia containing median cubital vein, parts of basilic and cephalic veins, medial and lateral cutaneous nerves of forearm.**
  - **Deep fascia.**
  - **Bicepital aponeurosis.**
- **Floor:**
  - **Brachialis muscle (medially) and supinator muscle (laterally**
- **Contents: From lateral to medial**
  - **Biceps tendon.**
  - **Brachial artery.**
  - **Median nerve.**
  - .Radial nerve




Ulnar nerve
Radial nerve
Pronator teres (humeral head)
Brachioradialis (pulled back)
Deep branch of radial nerve
Pronator teres (ulnar head)
Ulnar artery
Median nerve
Supinator
Radial artery
Superficial branch of radial nerve
Median nerve
Radial nerve
Ulnar nerve
Musculocutaneous nerve
Basilic vein
Medial cutaneous nerve of forearm
Lateral cutaneous nerve of forearm
Median cubital vein
Cephalic vein
Basilic vein

Elbow Joint

- **Type of joint:**
- **Synovial., Uniaxial, Hinge.**
- **Articular surfaces**
- **The elbow joint is a composite joint formed of 2 parts:**
- **Humero-ulnar part; the articulation is between the trochlea and trochlear notch of the ulna.**
- **Humero-radial part; articulation is between the capitulum and the upper surface of the head of the radius.**

- **CAPSULE**
- **The capsule is attached to the margins of the articular parts of bones.**
- **The capsule is attached inferiorly to the annular ligament so the elbow joint is continuous with the superior radioulnar joint (the 2 joints together form the cubital articulation).**

- **Synovial membrane**
- **It lines all the structures inside the capsule of the elbow joint EXCEPT the articular cartilage.**
- **Inferiorly, it is continuous with the synovial membrane of superior radioulnar joint.**

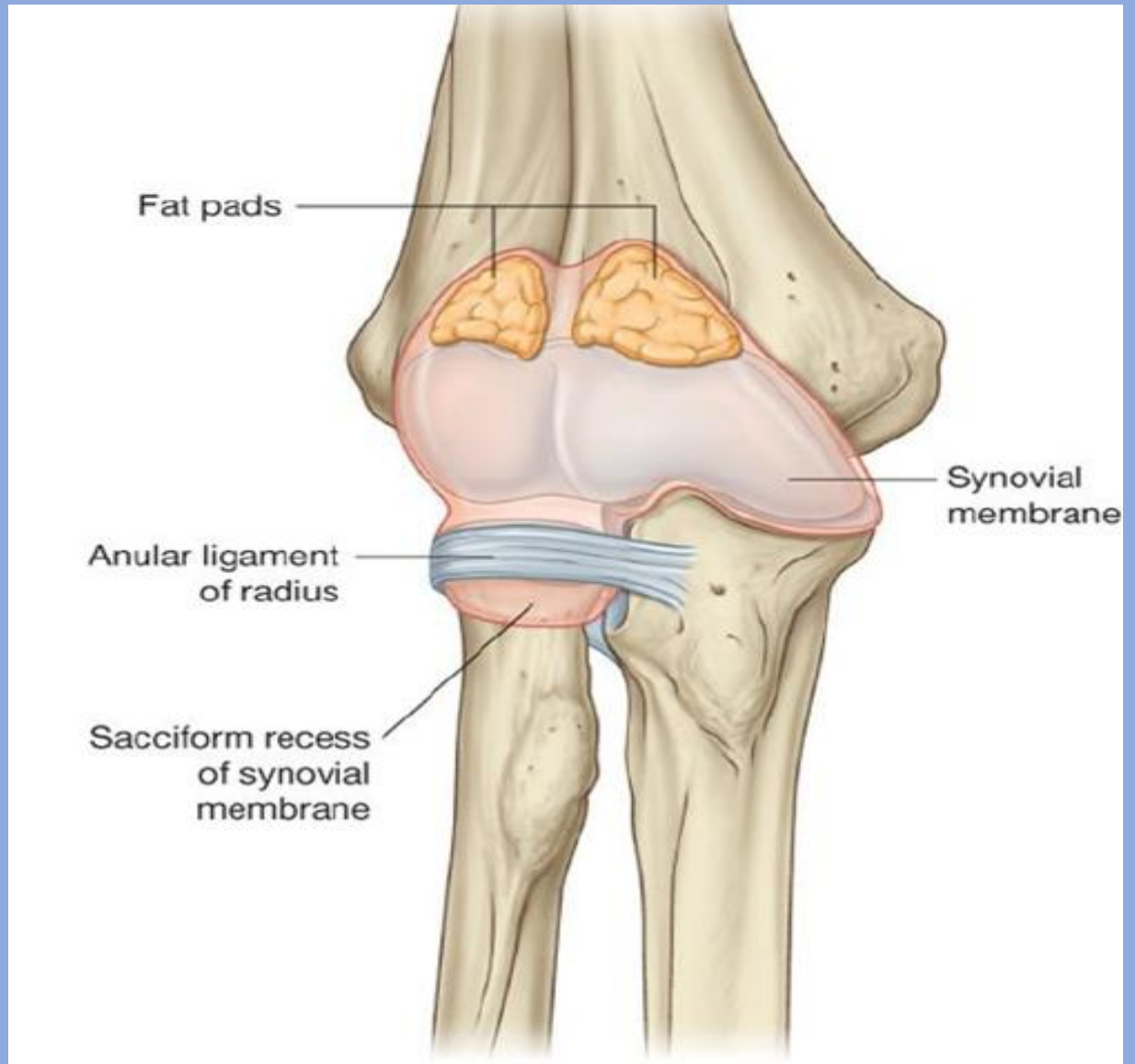


Figure 7.72 Synovial membrane of elbow joint (anterior view).

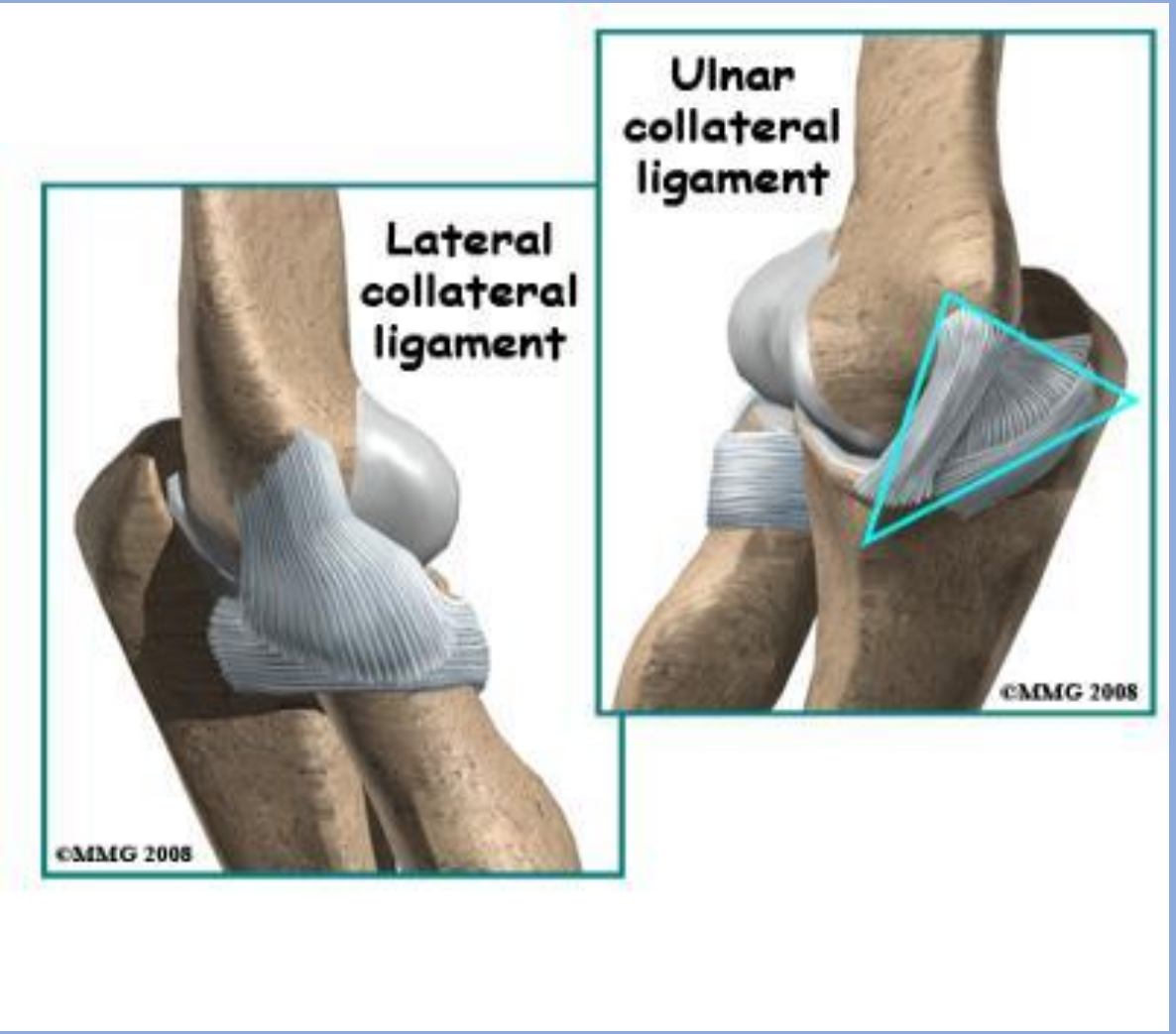
LIGAMENTS RELATED TO ELBOW JOINT

Ulnar collateral (medial) ligament:

it is a thick triangular ligament closely related to ulnar nerve. The ligament is attached to the medial epicondyle superiorly and the medial surface of upper end of ulna.

Radial collateral (lateral) ligament:

it is a triangular ligament that connects the lateral epicondyle to the upper border of annular ligament



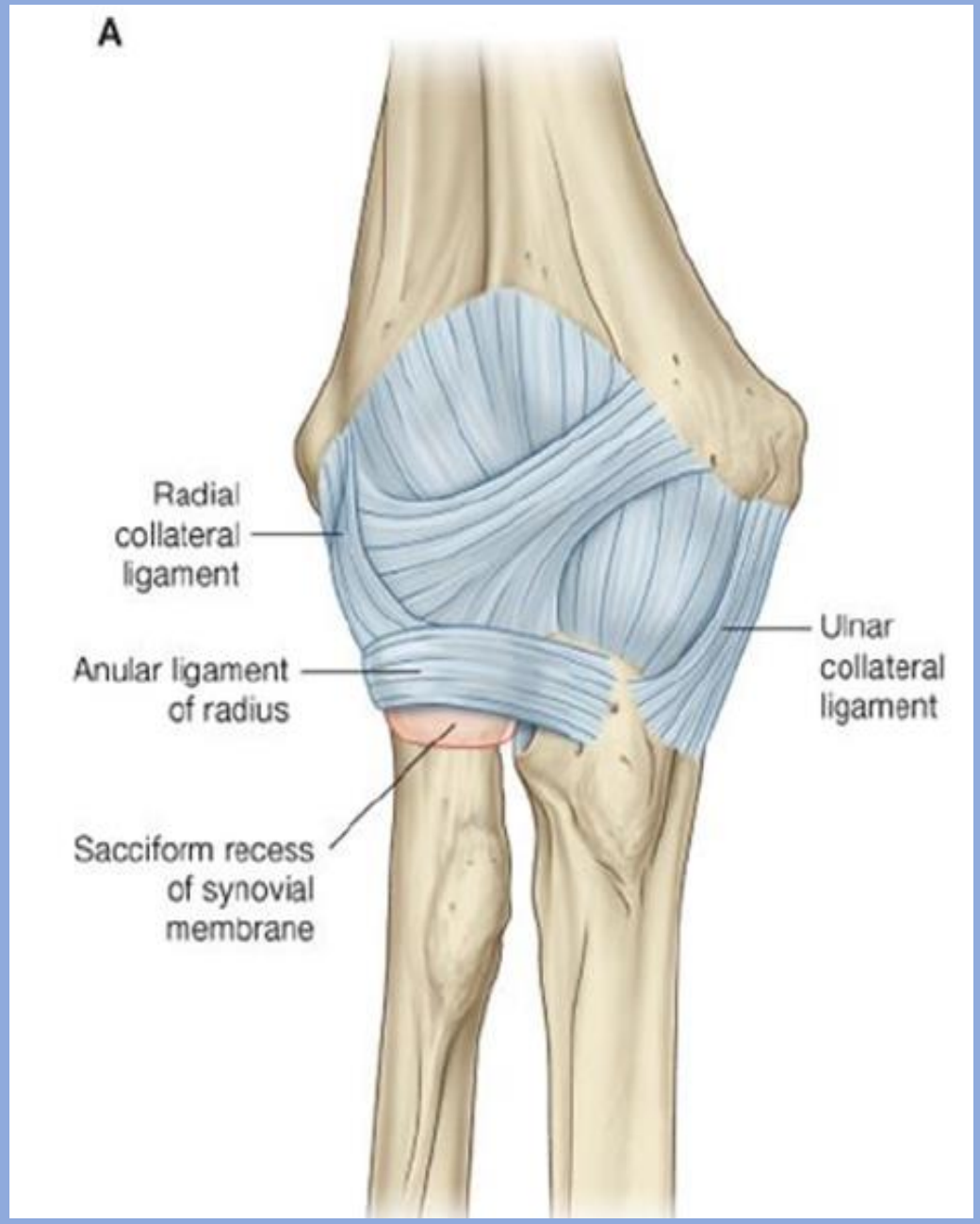
- **Movements of elbow joint:**
- **The joint is uniaxial joint, so it moves around one transverse axis.**

The movements are flexion- extension.

- **During flexion of elbow the head of radius lies inside the radial fossa above the capitulum, and the coronoid process of ulna lies inside the coronoid fossa above the trochlea.**
- **While in extension, the olecranon process lies inside the olecranon fossa.**

Flexion: This movement is done by the brachialis, biceps and brachioradialis.

Extension: This movement is done by the triceps and anconeus.



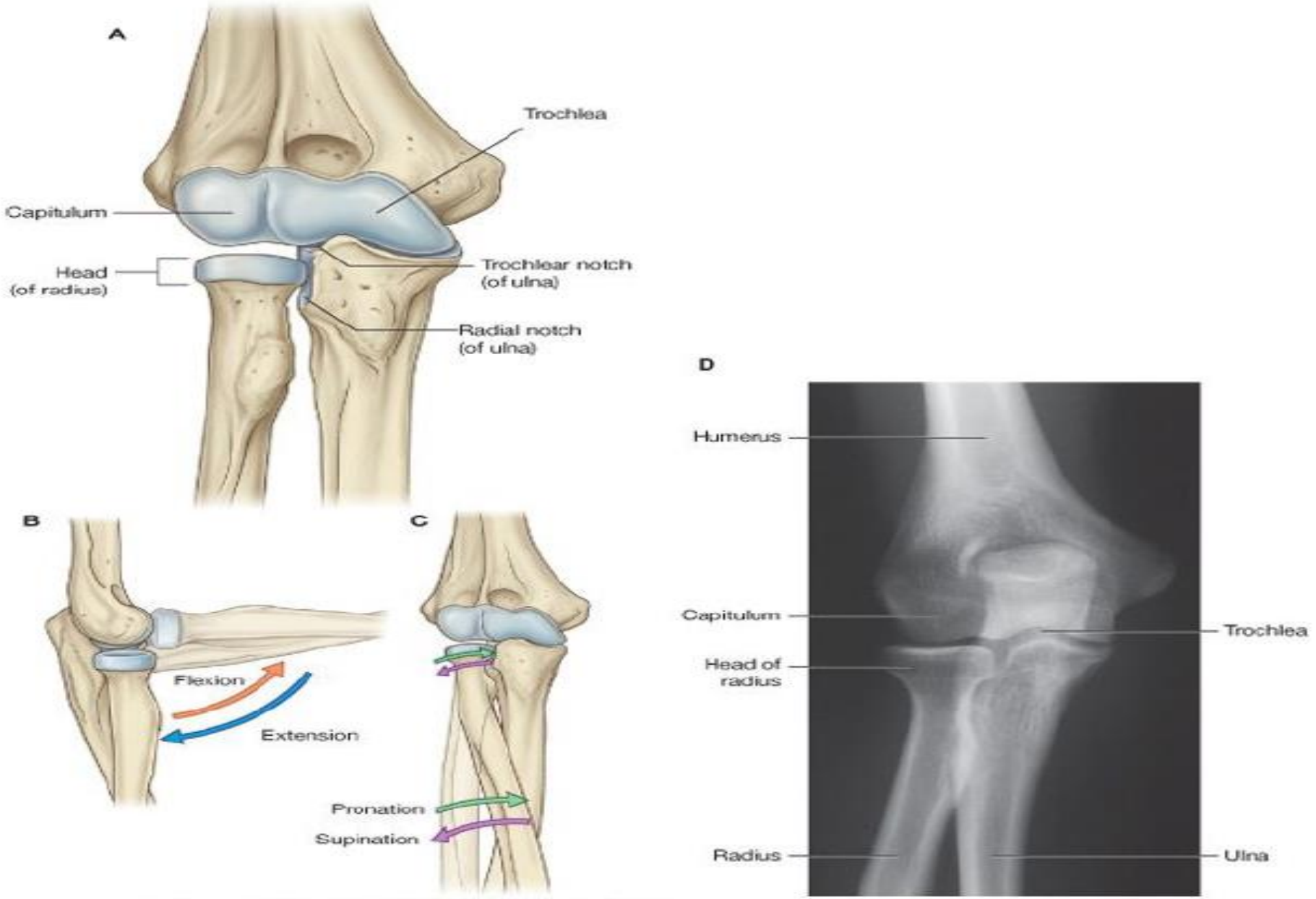


Figure 7.71 Components and movements of the elbow joint. **A.** Bones and joint surfaces. **B.** Flexion and extension. **C.** Pronation and supination. **D.** Radiograph of a normal elbow joint (anterior-

Thank you