

Module: Musculoskeletal System

Session: 2

L2

1. Osteology and Radiology of Upper limb

2. Brachial plexus and axilla

Module staff:

Dr. Falih Waheed Hashim

Dr. Nawal Mustafa

Dr. Raed Jasim Chasib

Dr. Khalil Ibrahim

Dr. Ahmed Ibrahim Habib

Dr. Waleed Jawad Almahdi

Dr. Rafid Mousa

Dr. Ahmed Khalaf

Dr. Mohammedbaker Abbas

Dr. Ahmed Abdulridha



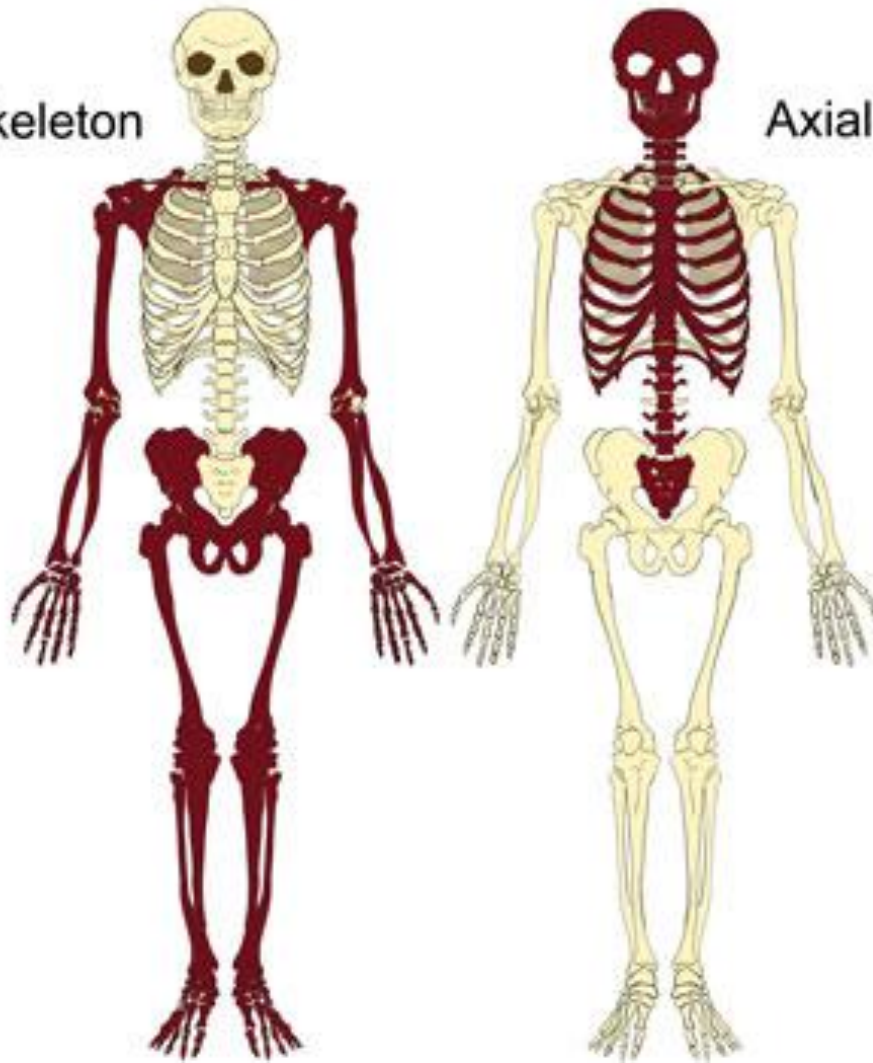
Osteology and Radiology of Upper limb

Module Objectives: 11

- Name and identify the bones of the pectoral girdle and the upper limb on an articulated and disarticulated skeleton.
- Show the above bones on plain x-rays.
- Identify the important surface bony landmarks in the shoulder region and in the upper limb

Appendicular Skeleton

Axial Skeleton

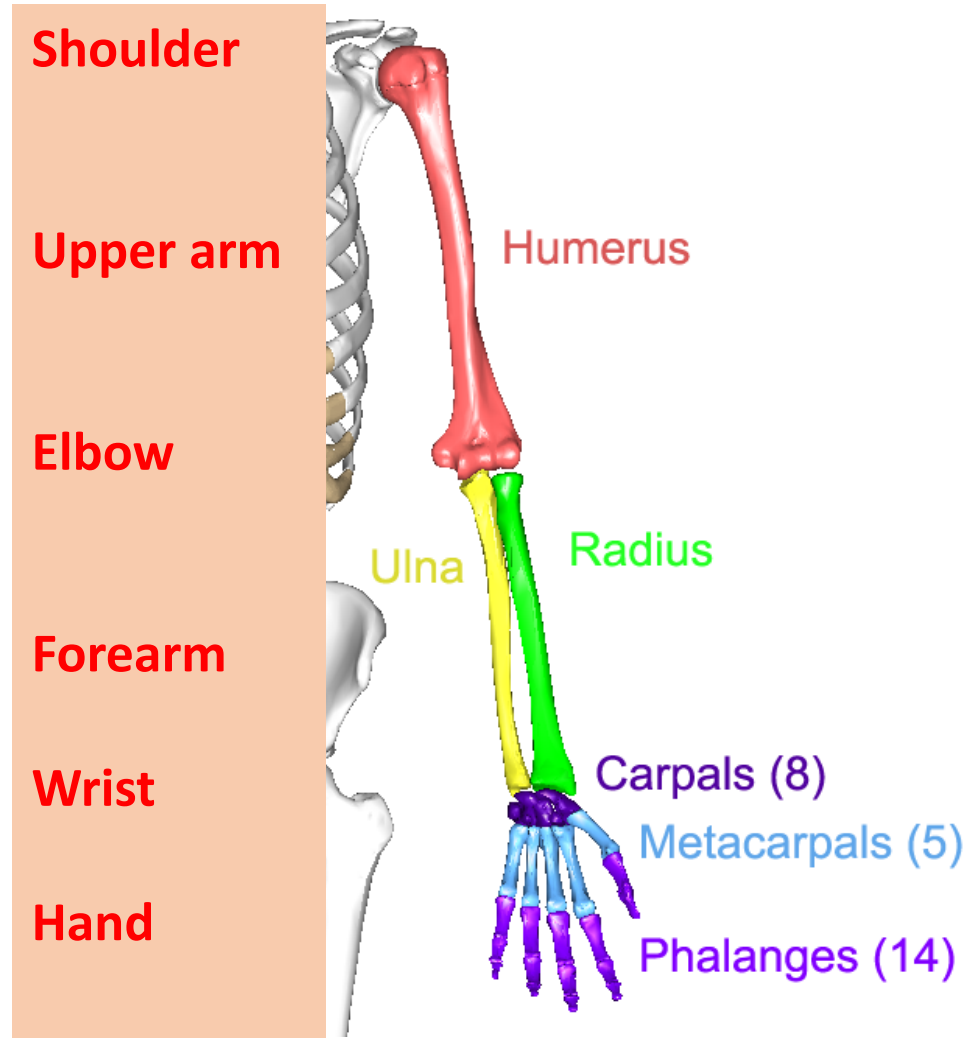


Skeleton:

- 1.Axial
- 2.Appendicular

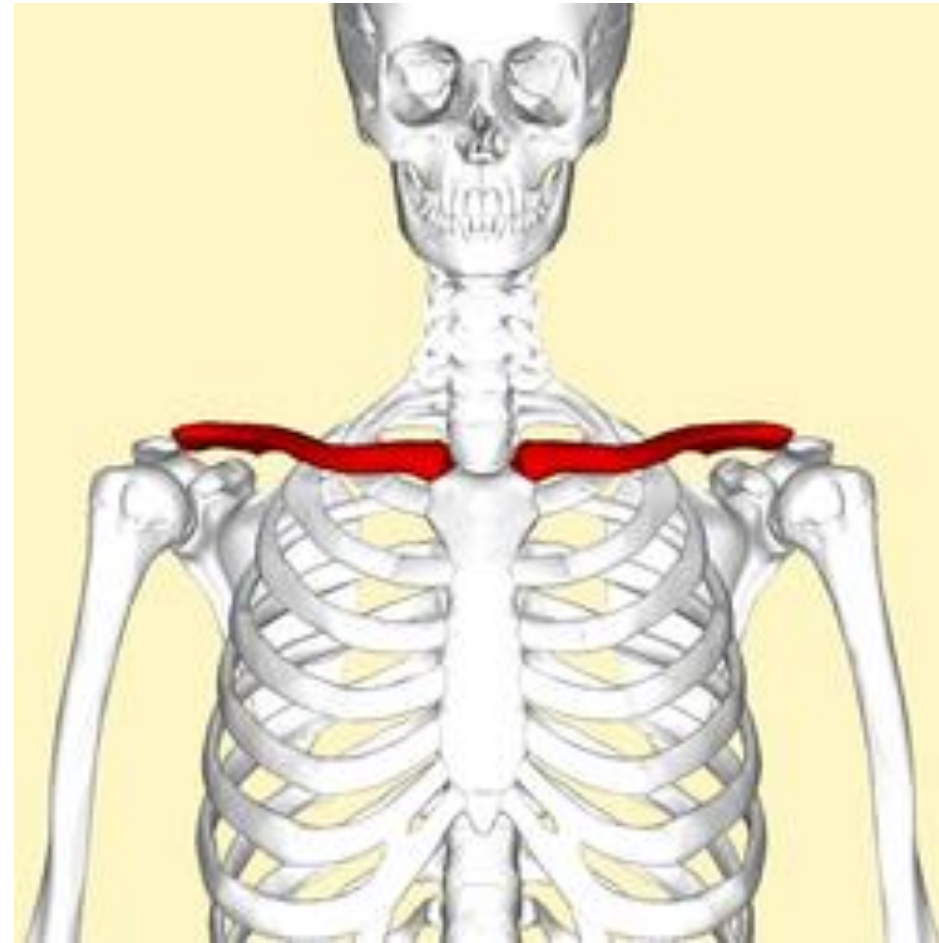
Upper limb segments:

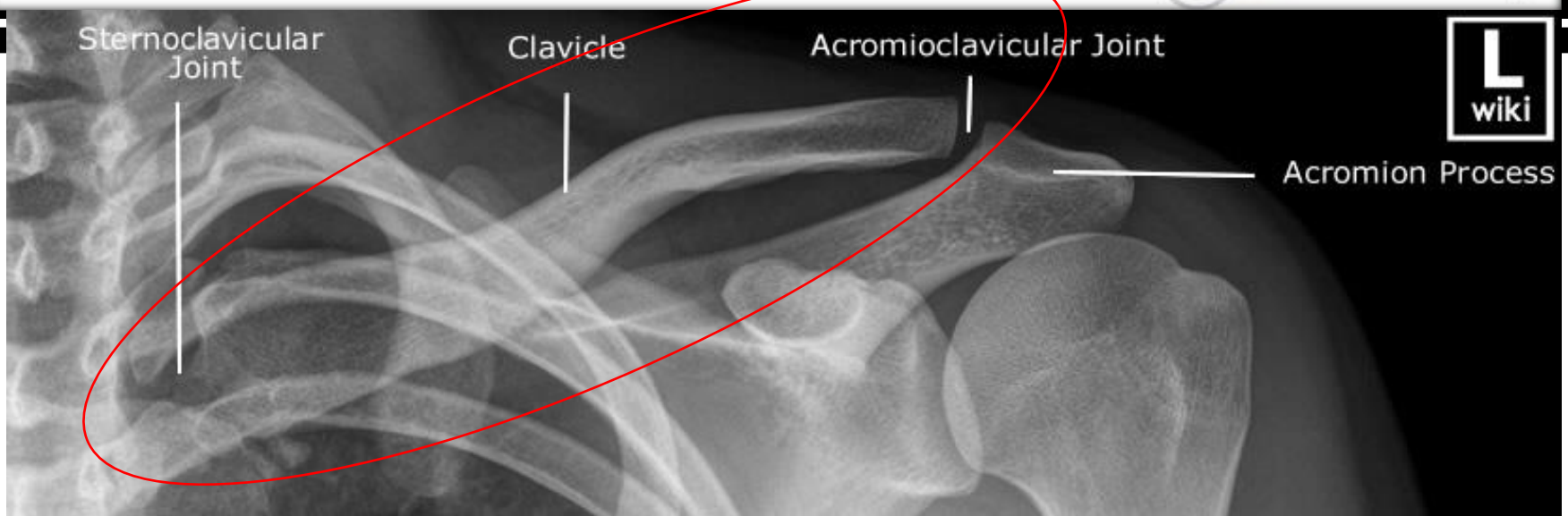
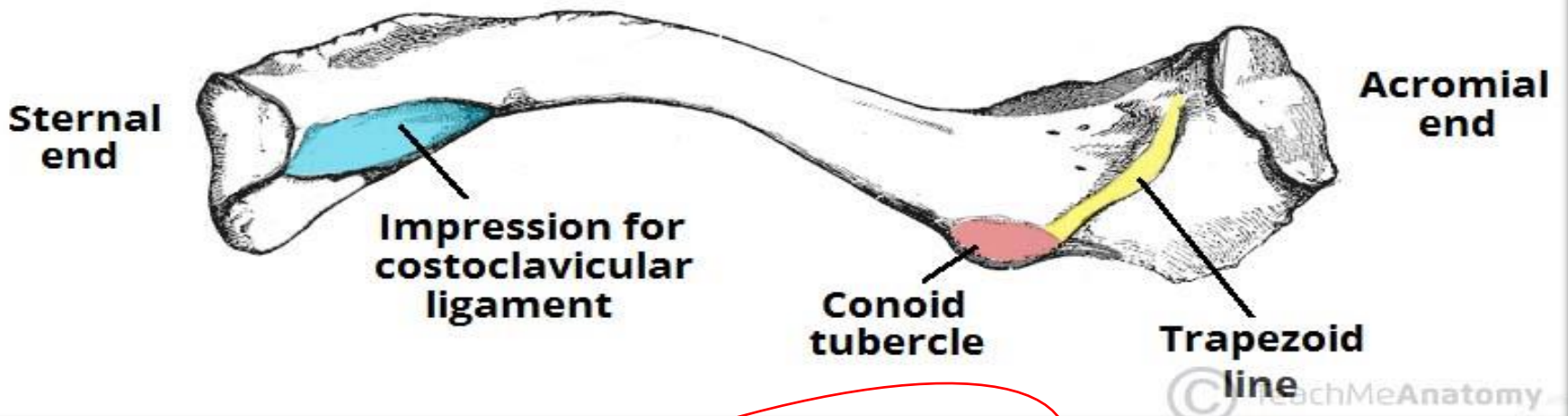
1. Shoulder joint
2. Arm (or upper arm)
3. Elbow joint
4. Forearm
5. Wrist joint
6. Hand (carpals, metacarpals, phalanges)



The Clavicle

- The clavicle is an **S-shaped** long bone, which forms part of the pectoral girdle
- It articulates *proximally* with the sternum (**sternoclavicular** joint) and *distally* with the acromion of scapula (**acromioclavicular** joint)

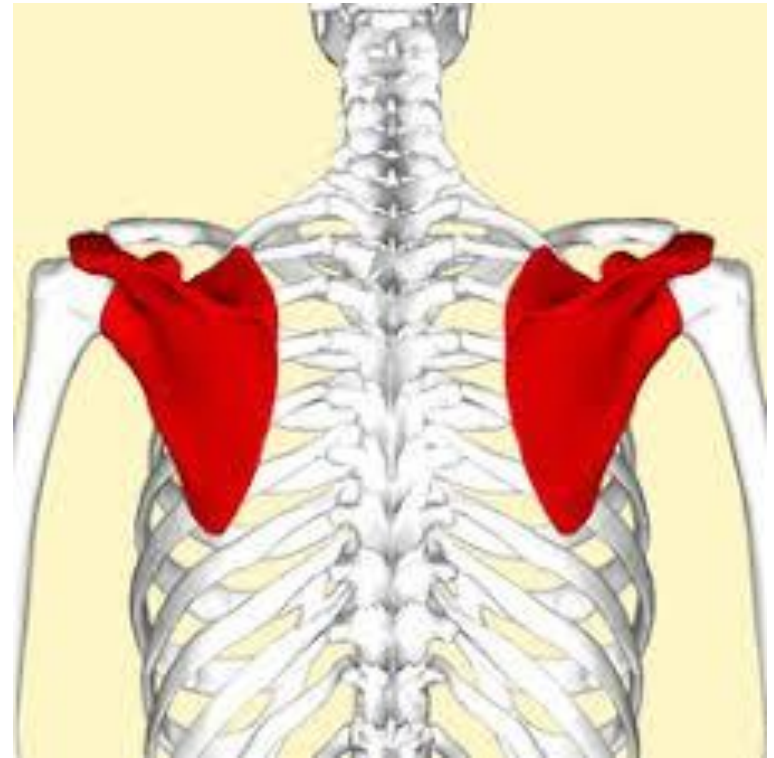




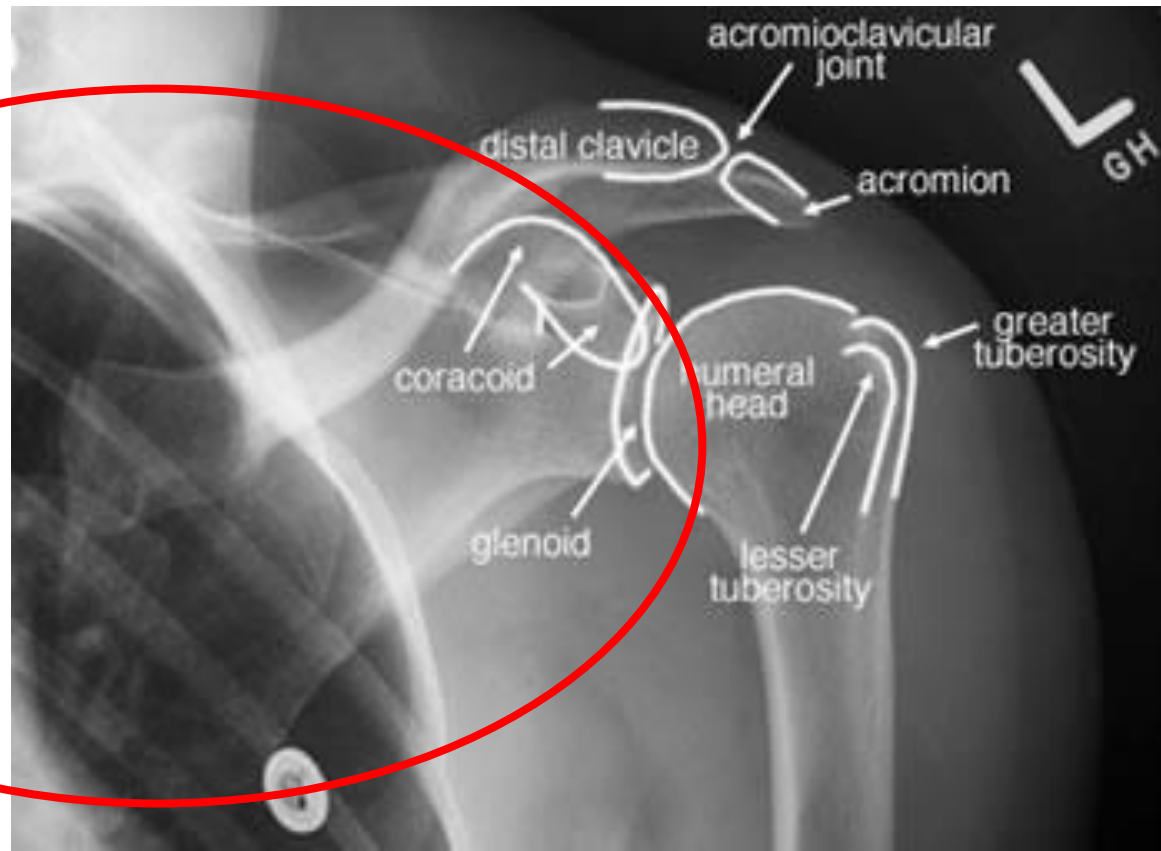
Scapula

- The scapula is a **triangular** flat bone which lies on the posterolateral surface of the thorax
- Proximally, it is curved to move over the chest wall, and *distally* it articulates with the clavicle (at the **acromioclavicular** joint), and with the head of humerus (at the **glenohumeral** joint)

3 angles, 3 borders



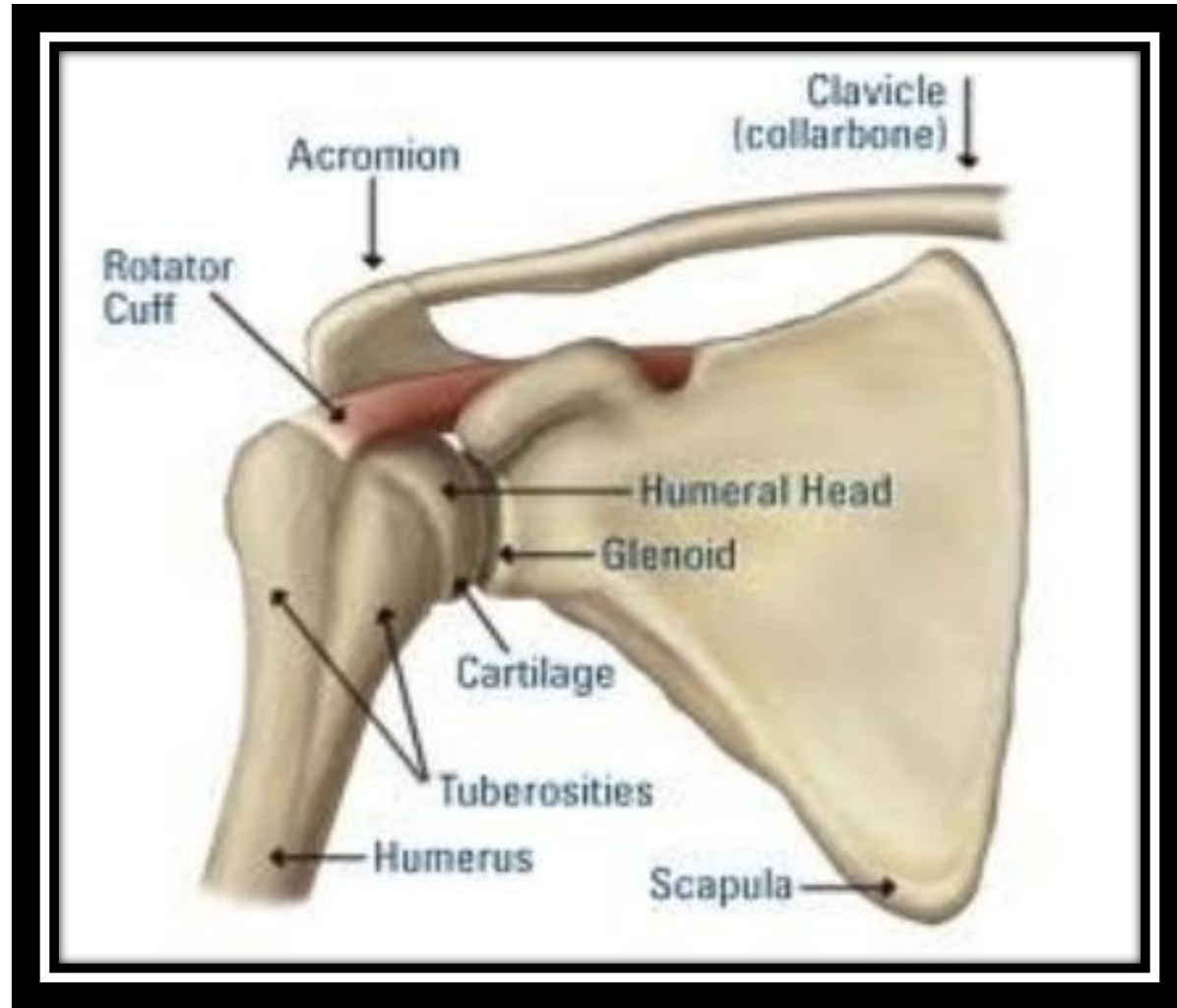
Scapula

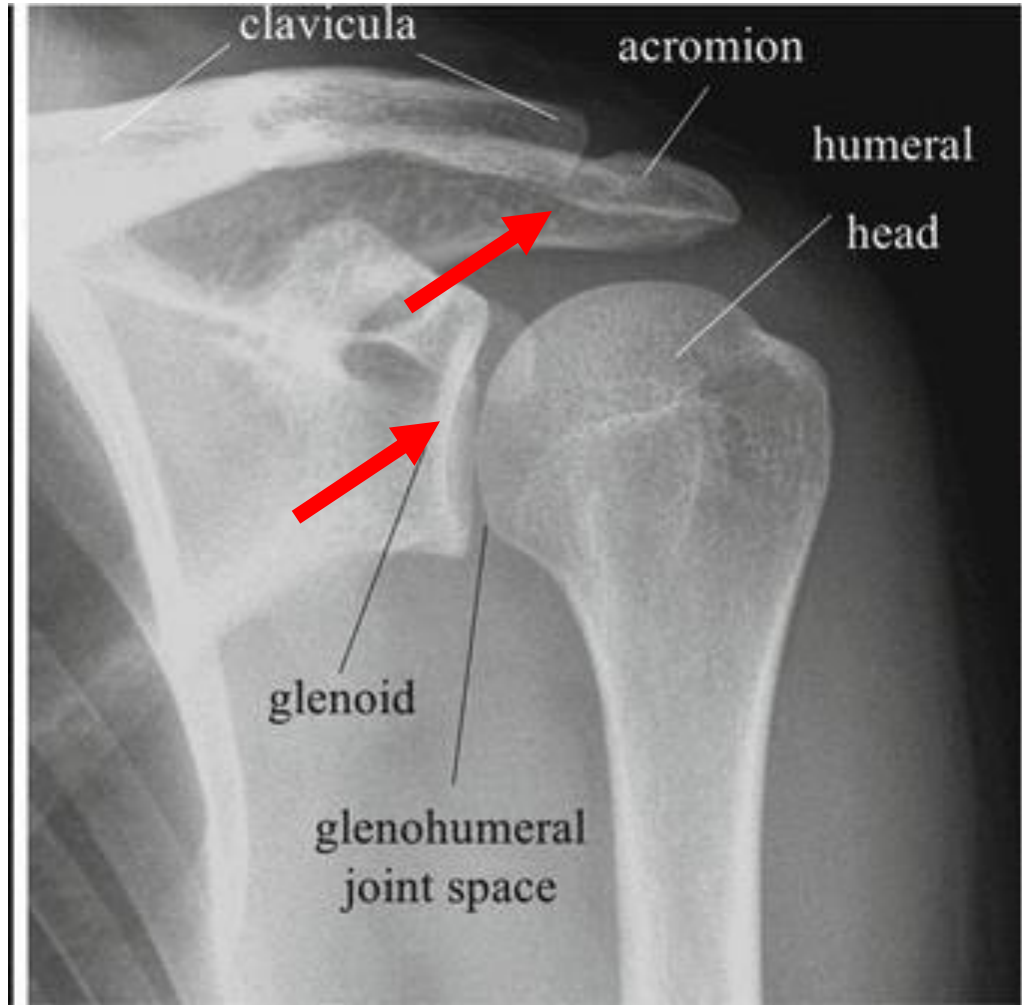


The shoulder joint

1. Glenoid cavity
2. Humeral head

1. Acromion process
2. Acromial end of clavicle





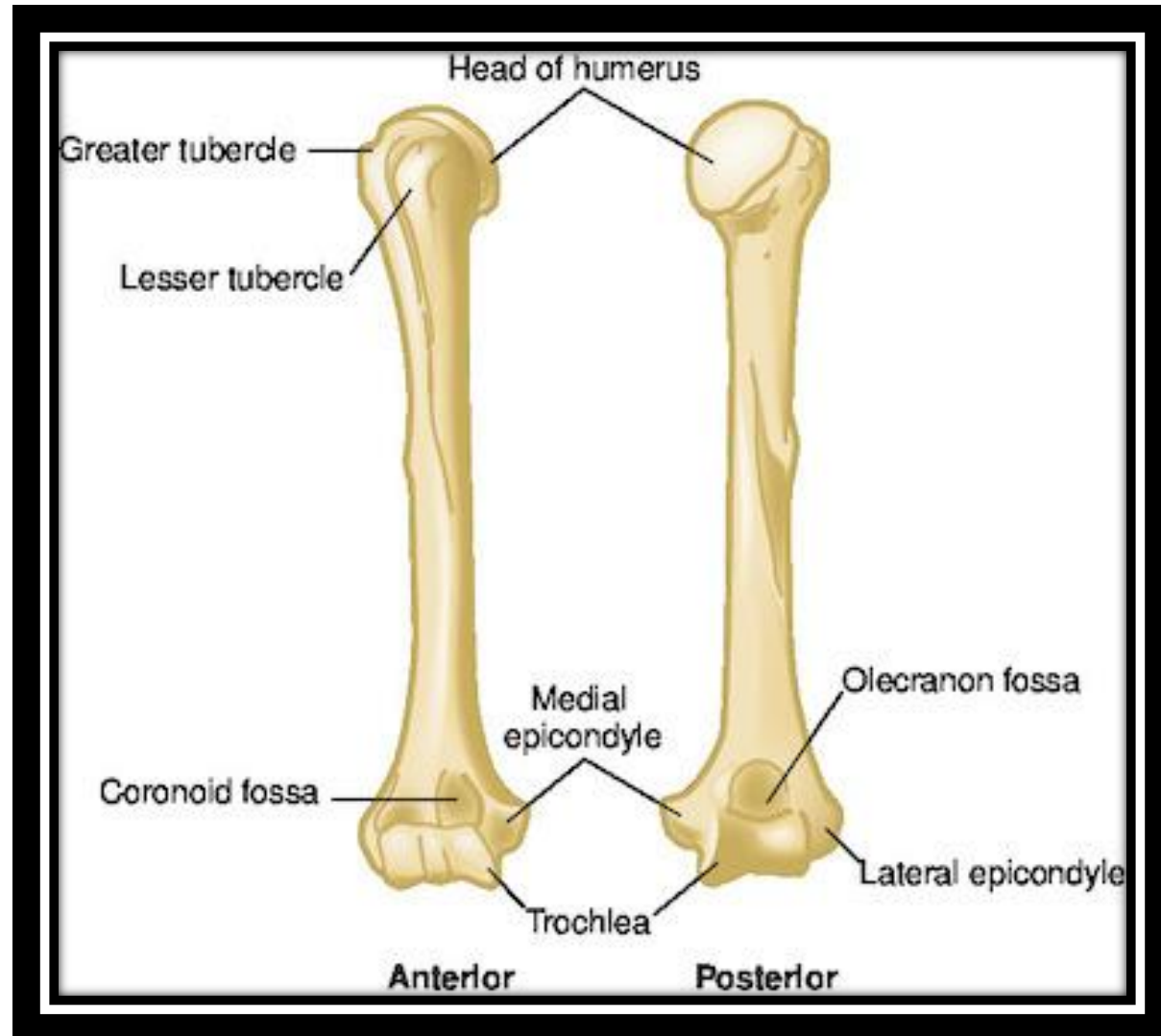
Humerus

- The humerus is a long bone, the largest in the upper limb
- It articulates *proximally* with the scapula at the **glenohumeral** joint
- It articulates *distally* with the ulna at the **elbow** joint



Humerus

- Humeral head
- Anatomical neck
- Greater, lesser tuberosities
- Bicipital groove
- Surgical neck
- Deltoid tuberosity
- Medial, lateral epicondyles
- Trochlea
- Capitulum
- Olecranon fossa
- Coronoid fossa

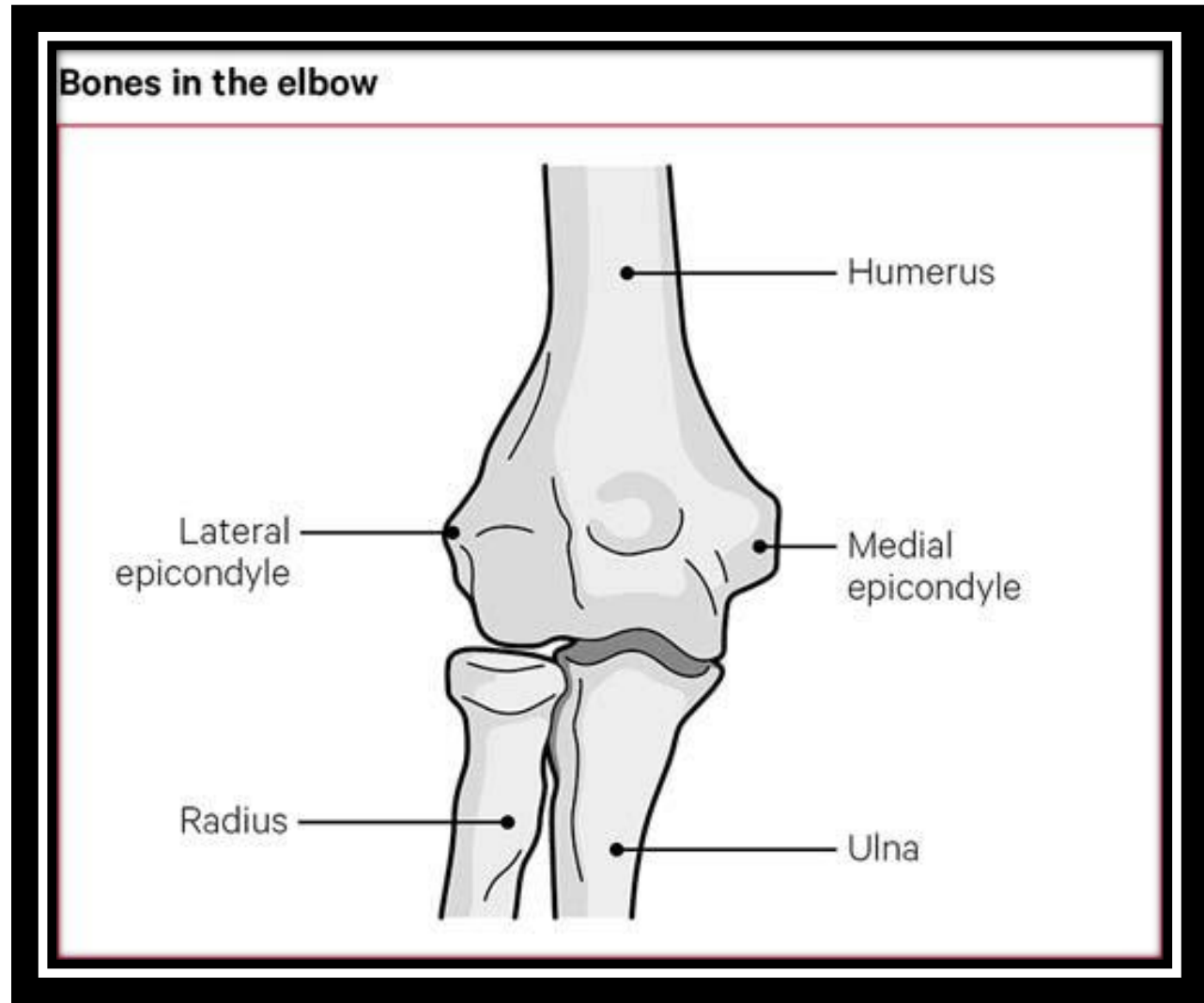


Humerus ,Radiology

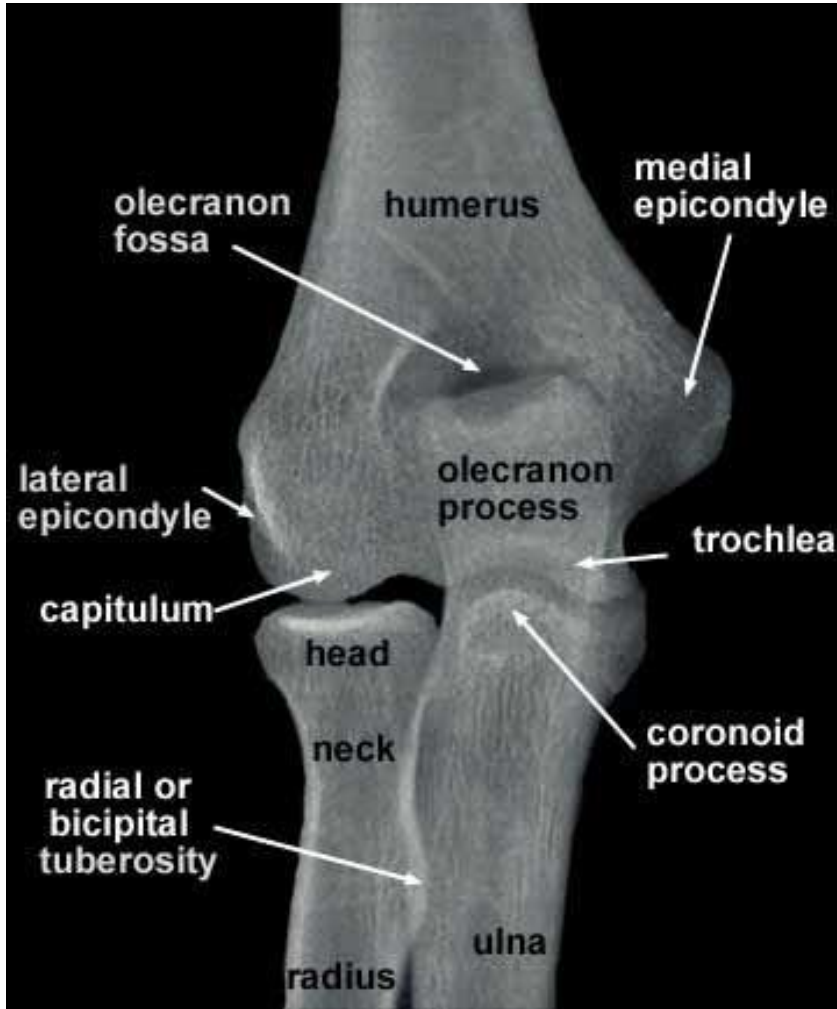


Elbow joint

1. Trochlea of humerus
2. Capitulum of humerus
3. Trochlear notch of ulna
4. Radial head of radius



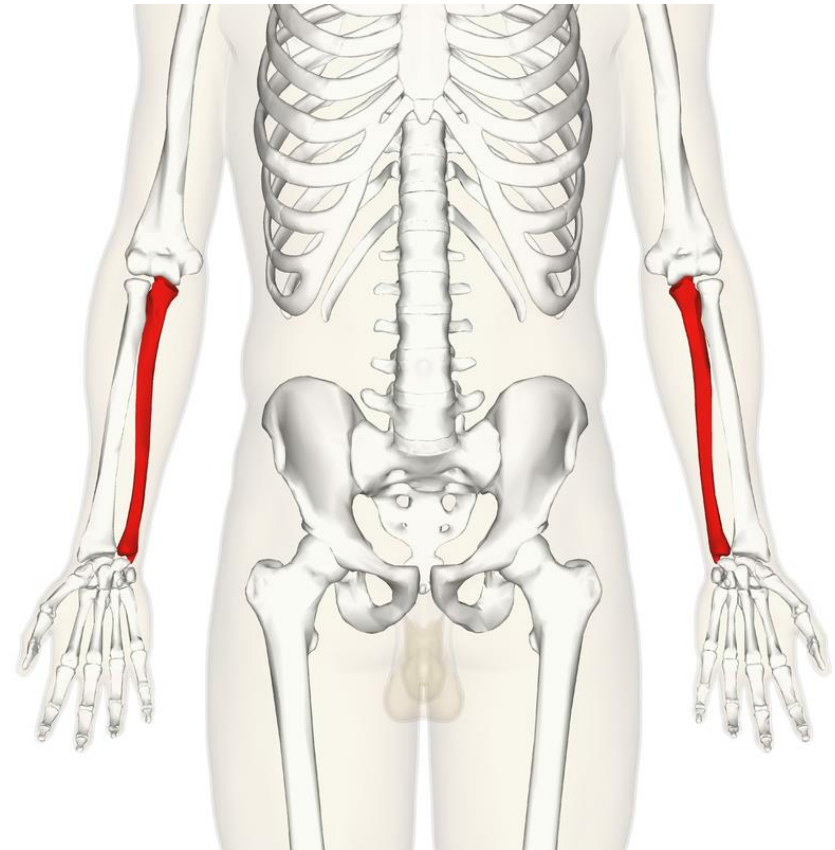
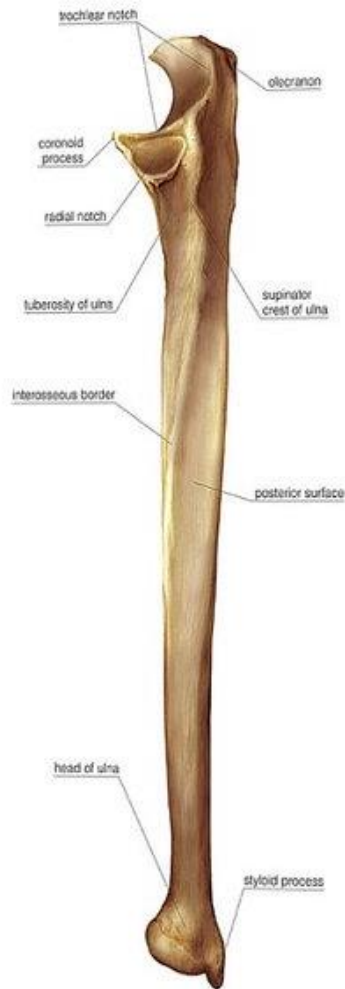
Elbow joint Radiology



Ulna

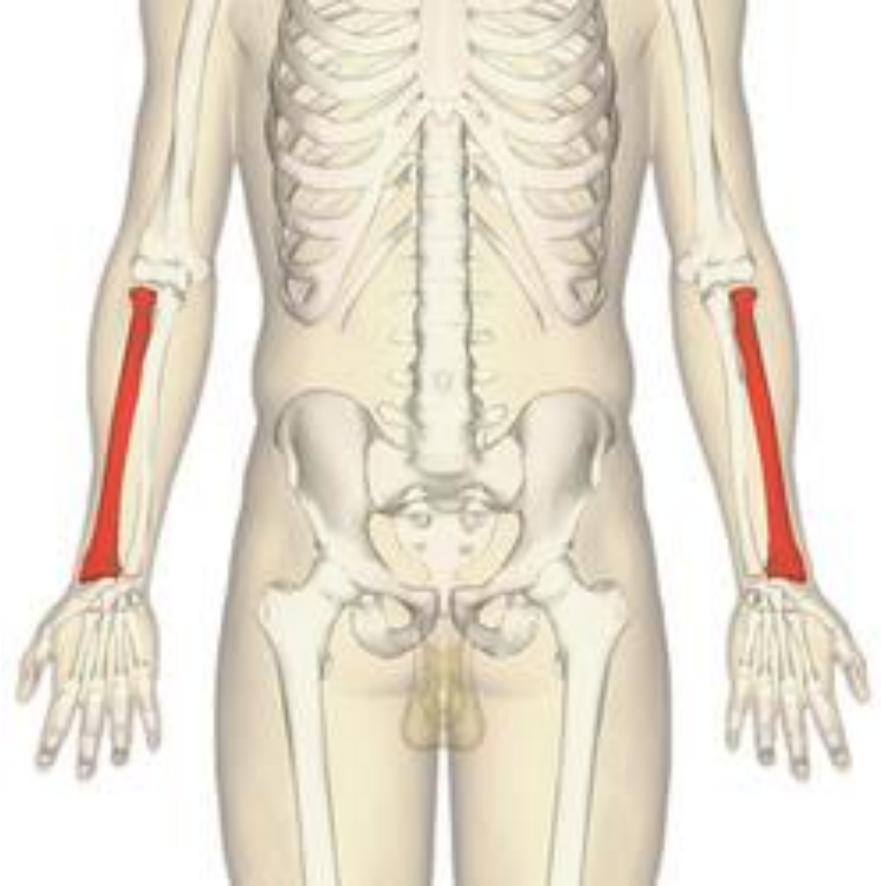
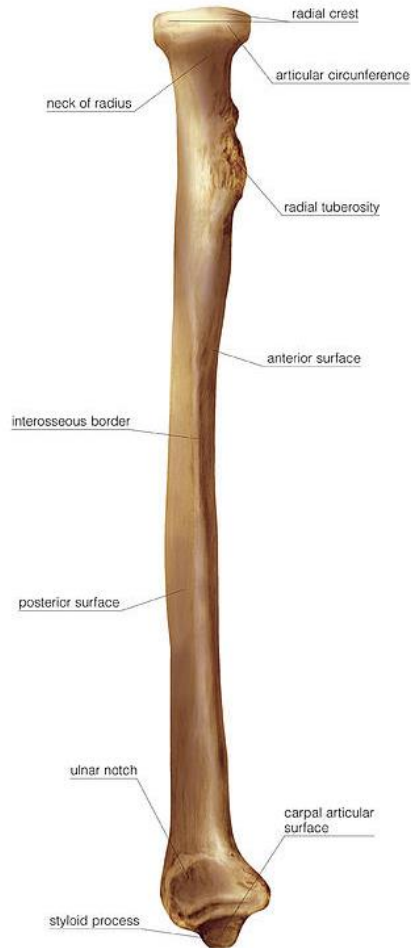
- **Wide** proximally
- **Narrow** distally

- Olecranon process
- Coronoid process
- Trochlear notch
- Ulnar head
- Ulnar styloid process

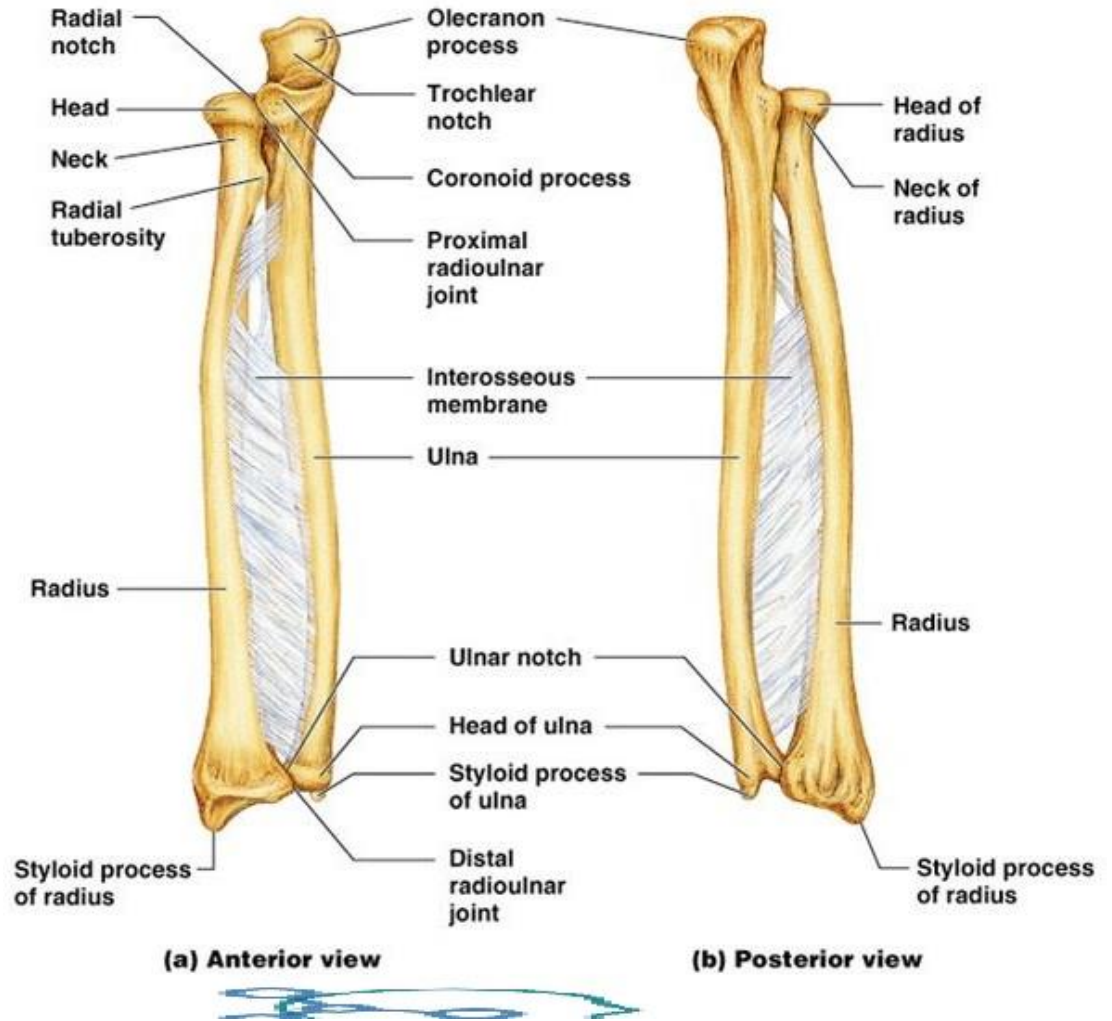


Radius

- **Narrow** proximally
 - **Wide** distally
- Radial head
 - Radial neck
 - Radial tuberosity
 - Radial styloid process



1. Proximal radioulnar joint
2. Distal radioulnar joint
3. Interosseous membrane

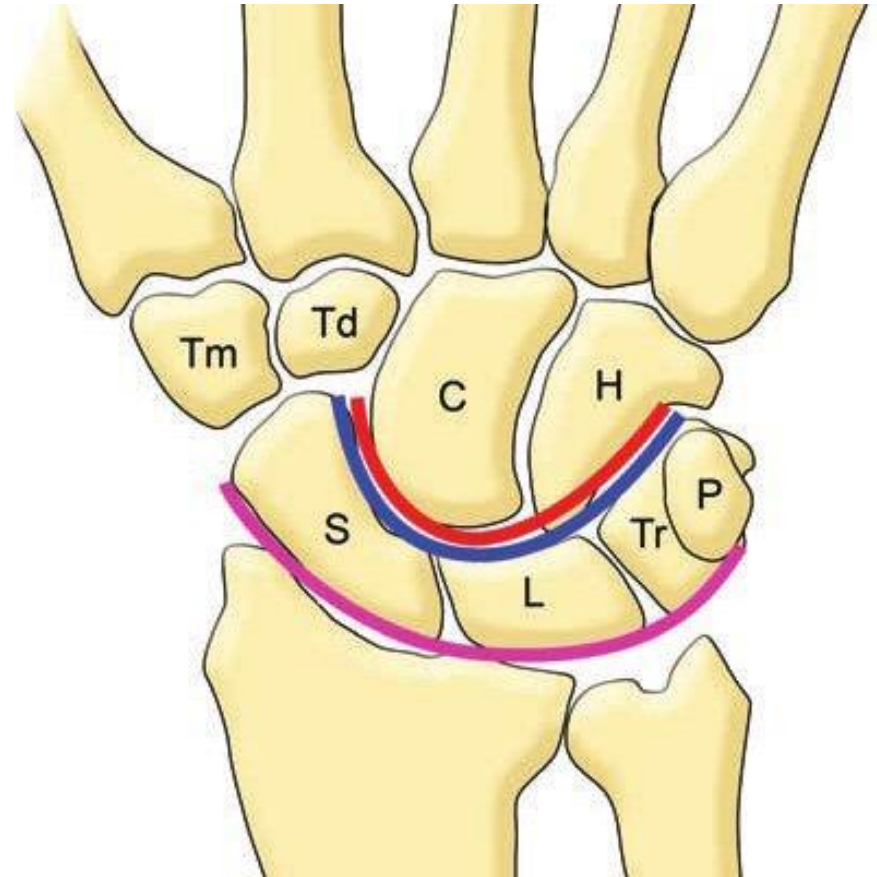


Forearm ,Radiology



Wrist joint

1. Radius
2. Proximal row of carpus



Hand

1. Carpus= 8 bones, 2 rows
2. Metacarpal bones= 5
3. Phalanges= each finger had 3 phalynx, thumb had only 2 phalynx

Carpus:

1. Proximal row: scaphoid, lunate, triquetrum, pisiform
2. Distal row: trapezium, trapezoid, capitate, hamate

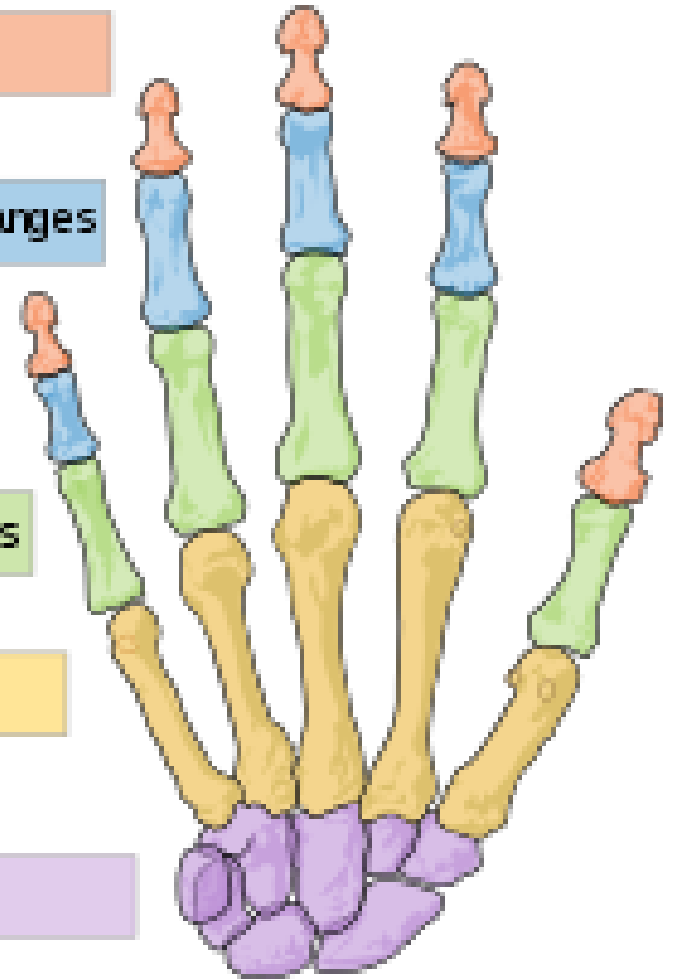
Distal phalanges

Intermediate phalanges

Proximal phalanges

Metacarpals

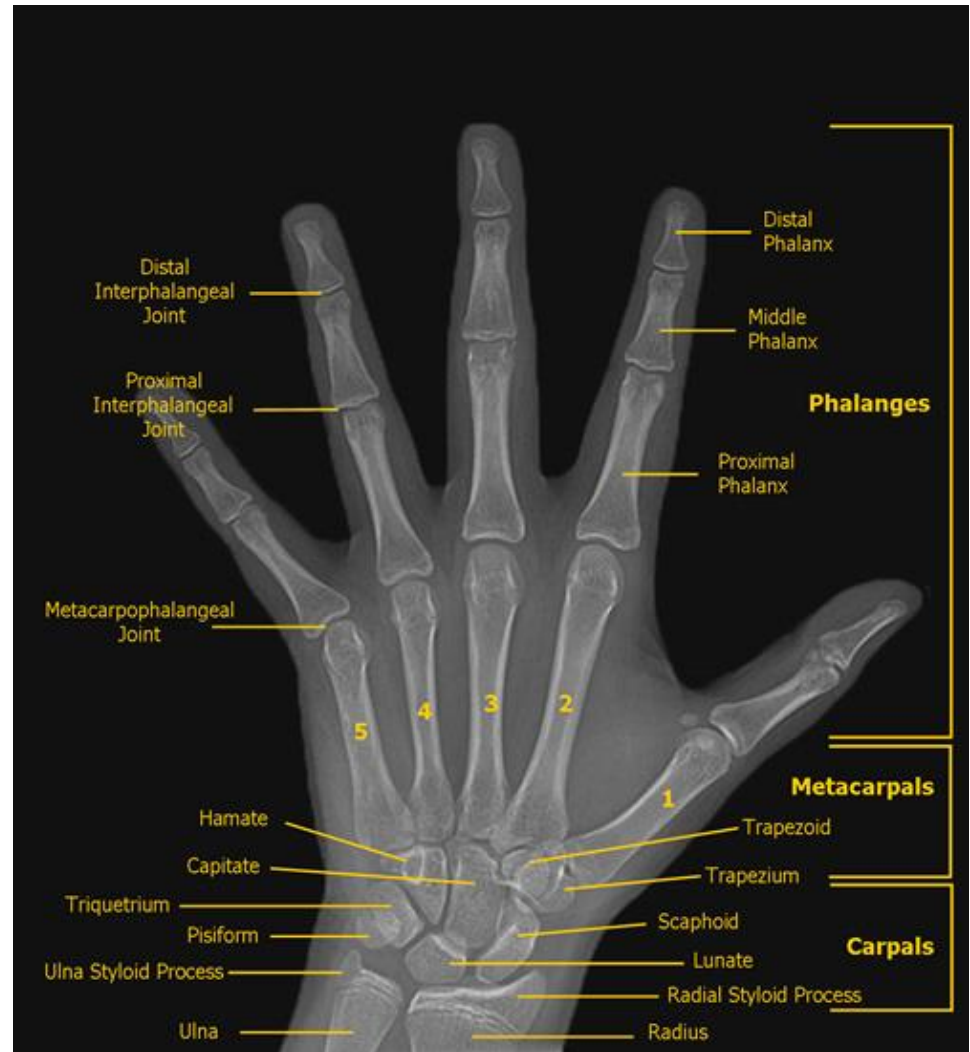
Carpals



Wrist, Radiology

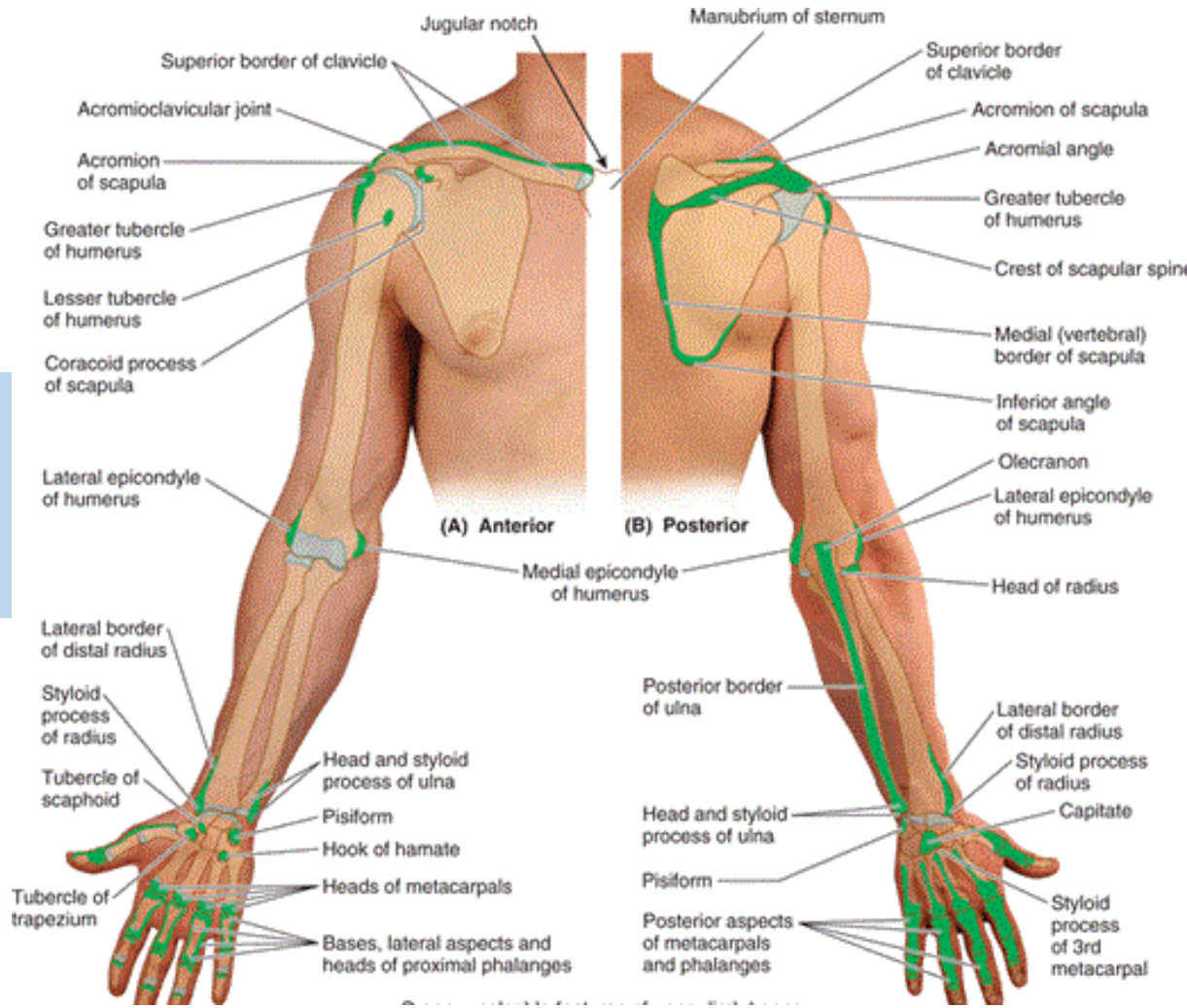


Wrist, Hand Radiology

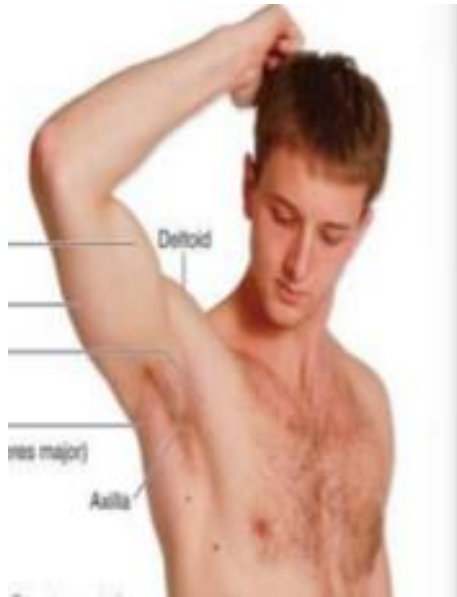


- What is surface anatomy?

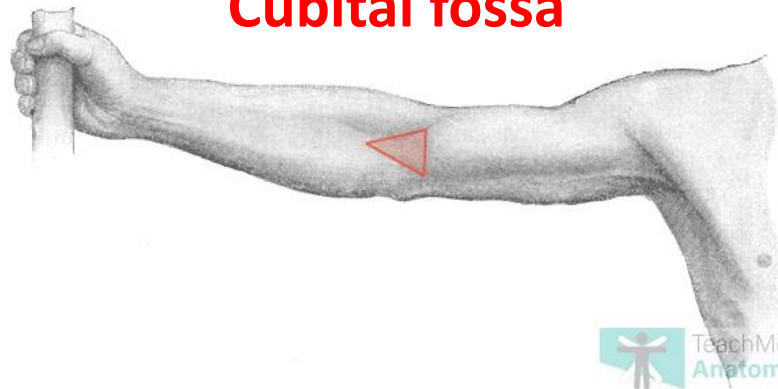
Surface anatomy examines shapes and markings on the surface of the body as they are related to deeper structures.



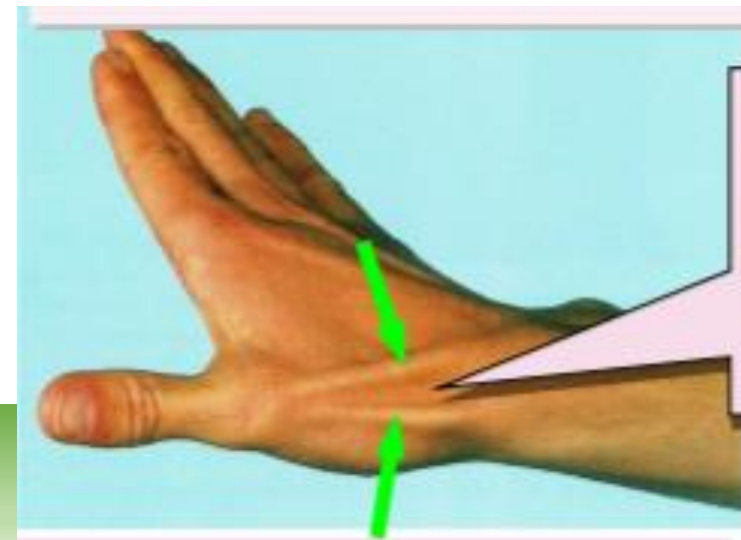
The axilla



Cubital fossa

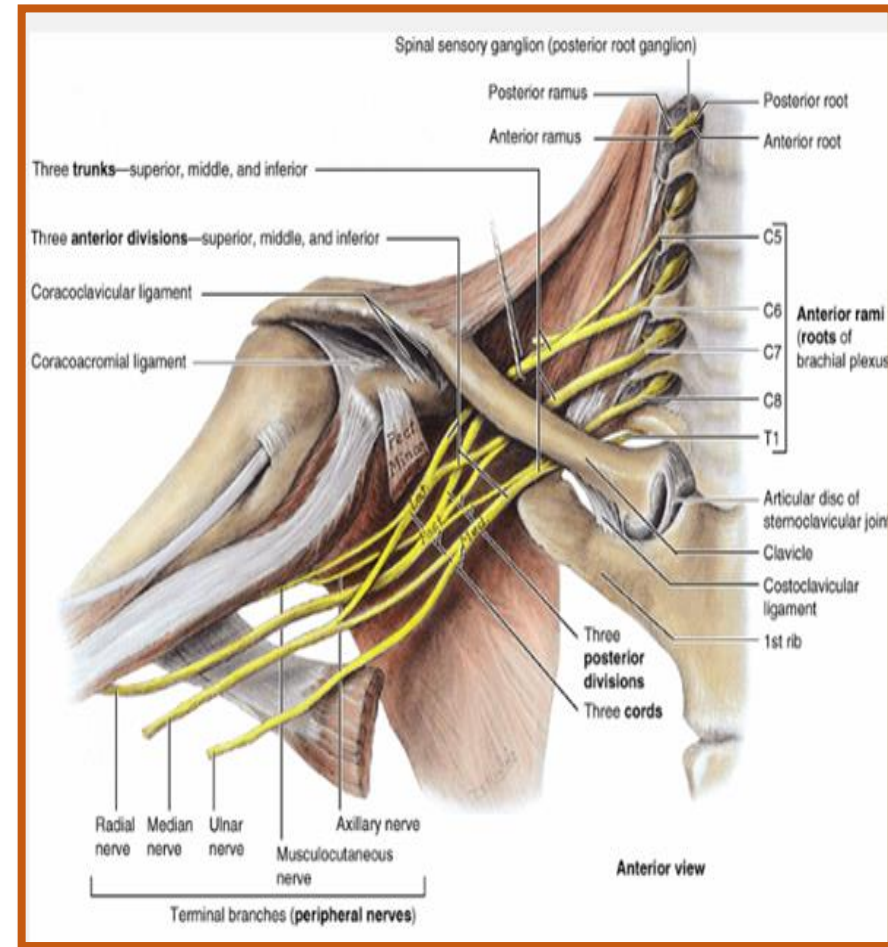


Snuff box



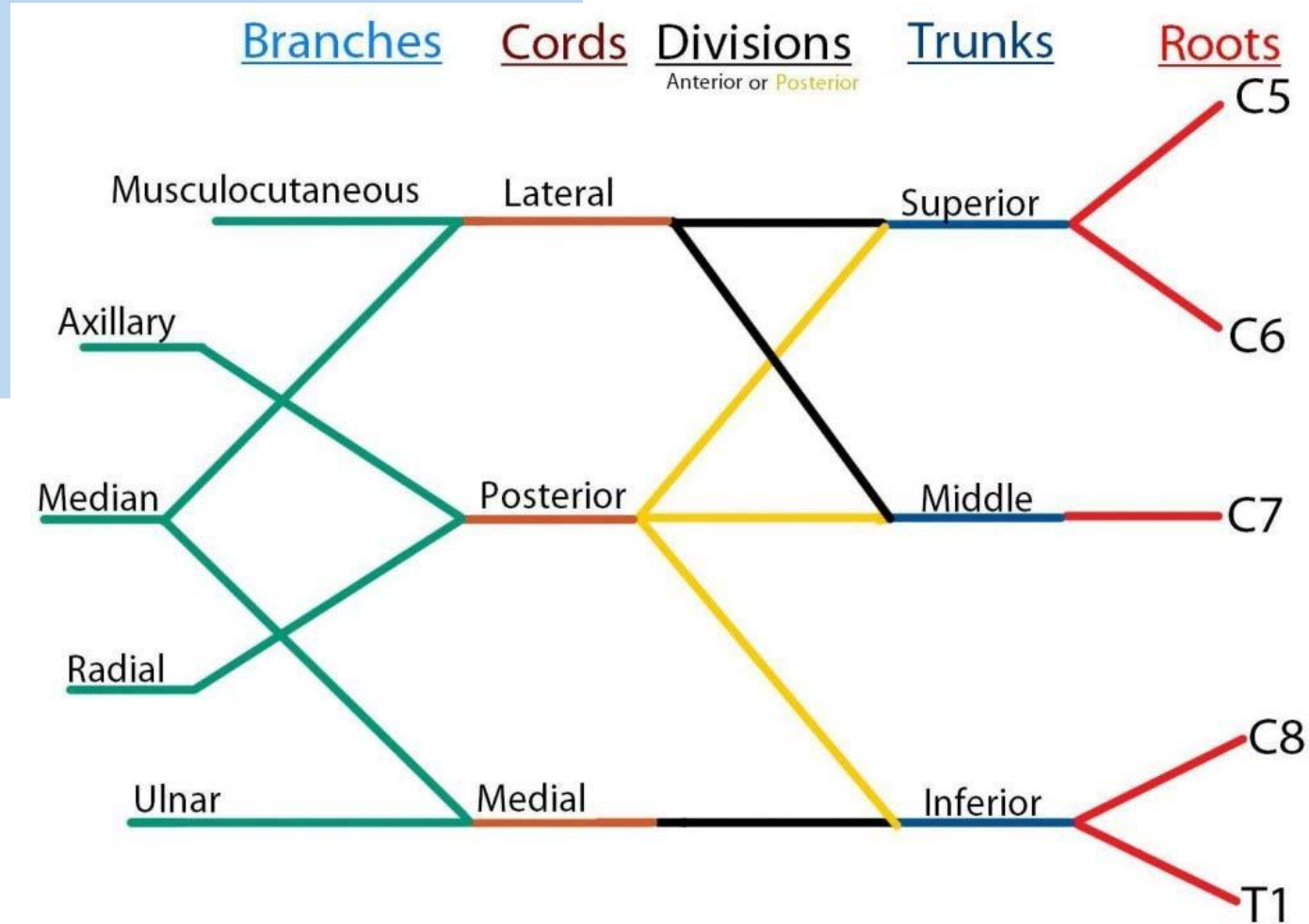
Brachial Plexus

- *A major nerve network begins in the neck extends into the axilla,*
- *Supplying the upper limb with motor, sensory and autonomic innervation.*



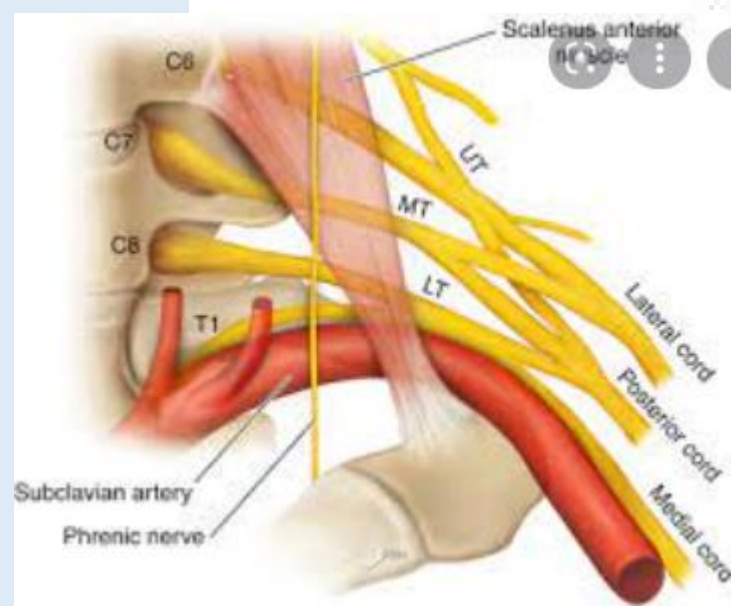
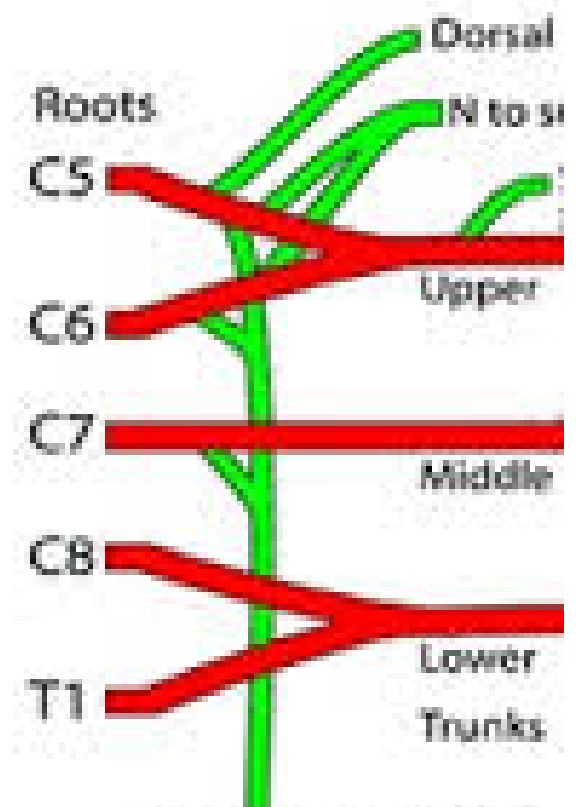
• Brachial plexus Consist Of 5 Parts:

1. Root,
2. Trunk,
3. Division,
4. Cord,
5. Branch



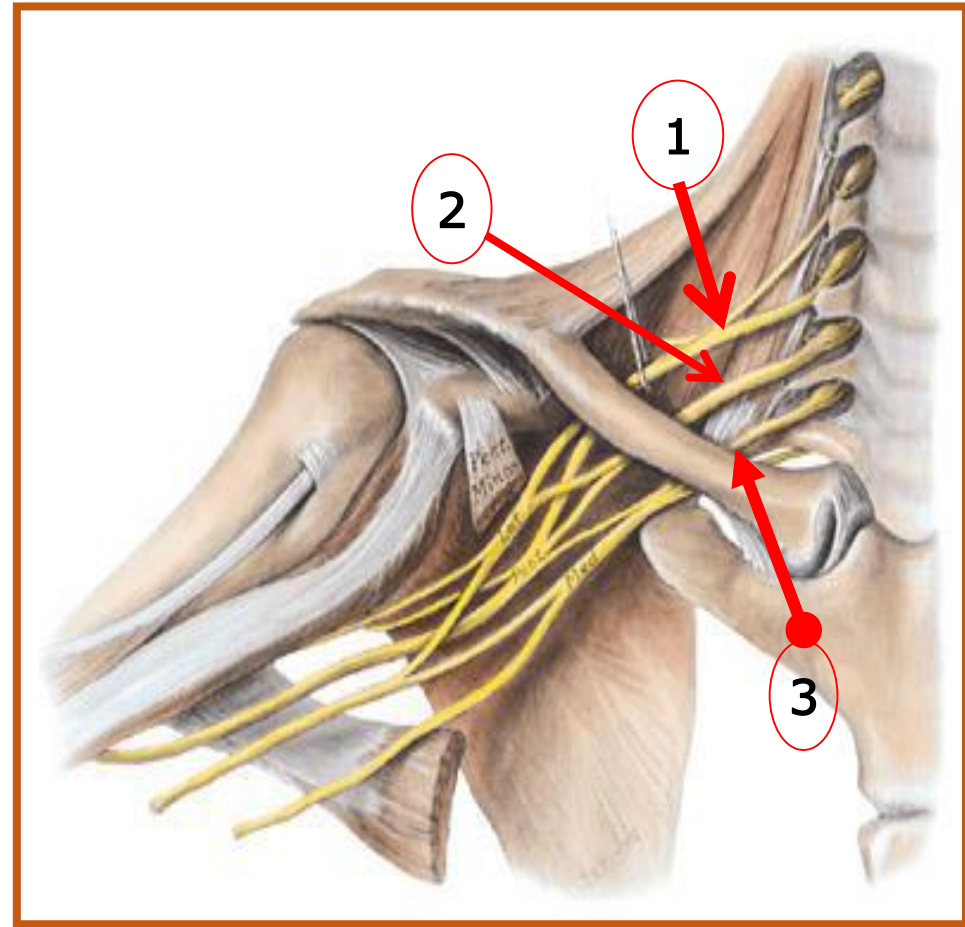
- Brachial plexus is formed by the union of the *anterior rami* of the last four cervical spinal nerves (C5, C6, C7, C8) and the first thoracic spinal nerves (T1) roots. (C5- T1)

- The **roots** usually pass with the **subclavian** artery.



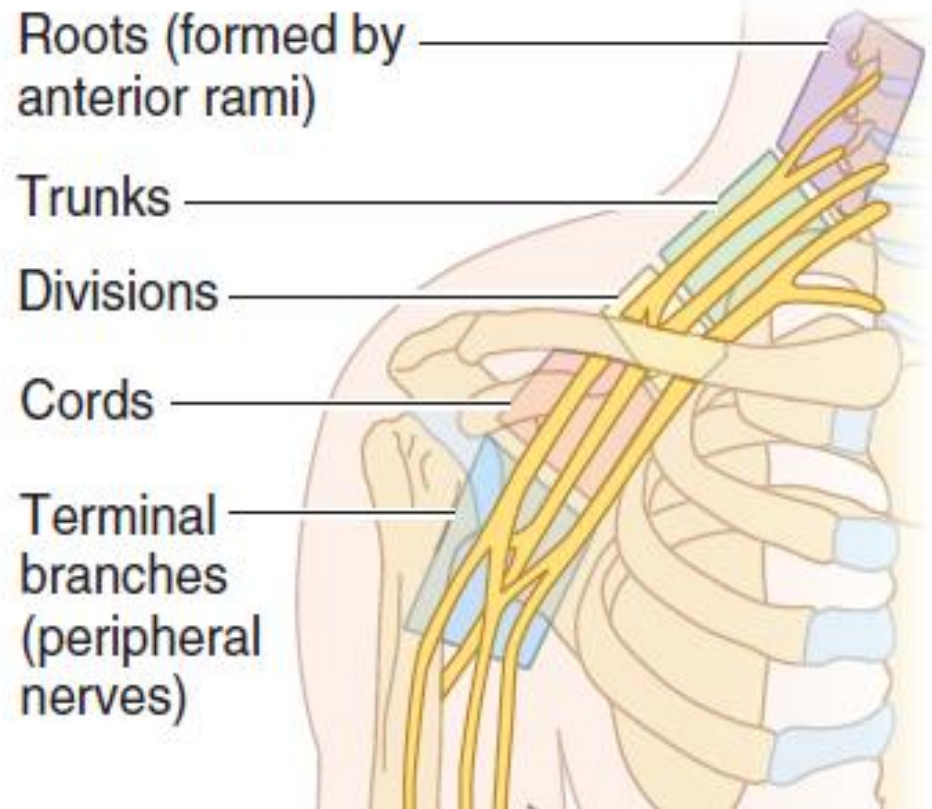
- The roots of the brachial plexus unite to form three **trunks**:

1. **Superior trunk**: from the union of the C5 and C6 roots.
2. **Middle trunk**: which is a continuation of the C7 root.
3. **Inferior trunk**: from the union of the C8 and T1 roots.



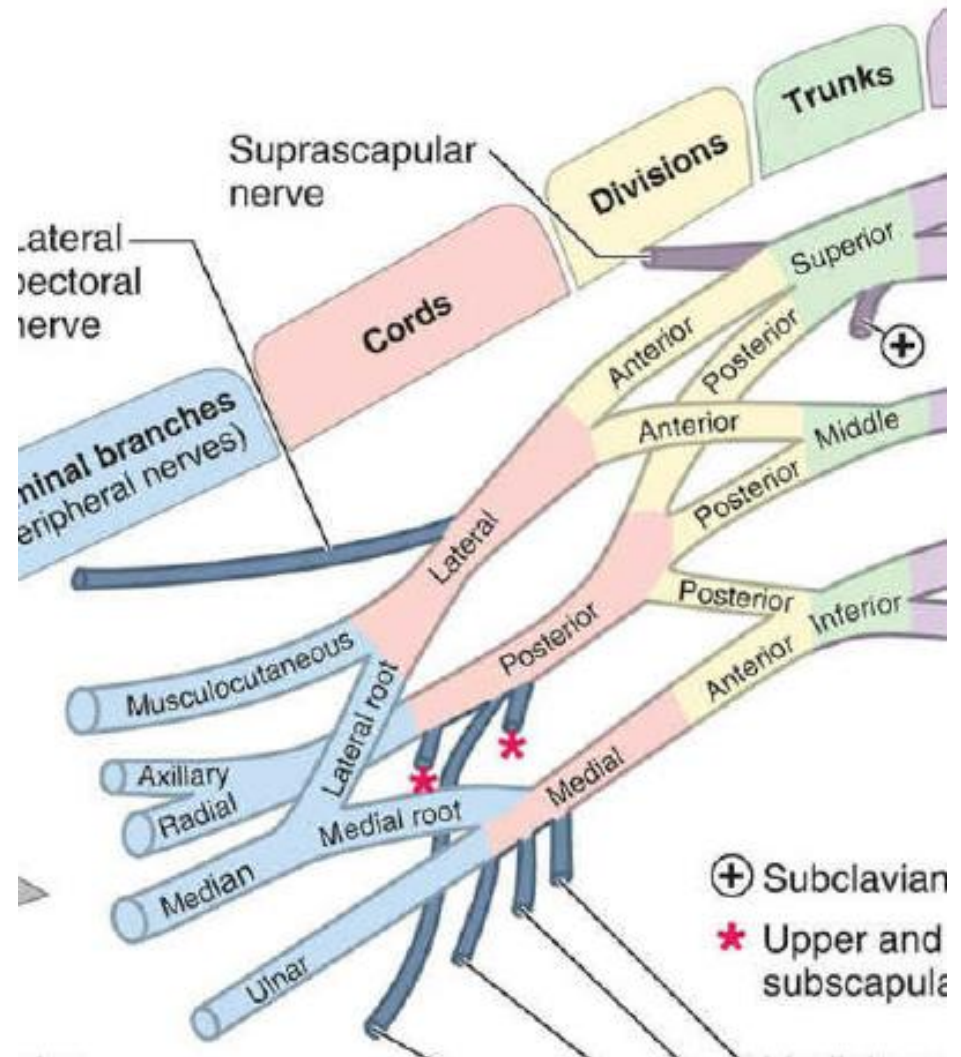
- Each trunk of the brachial plexus divides into **anterior** and **posterior divisions**

- **Divisions located posterior to the clavicle.**

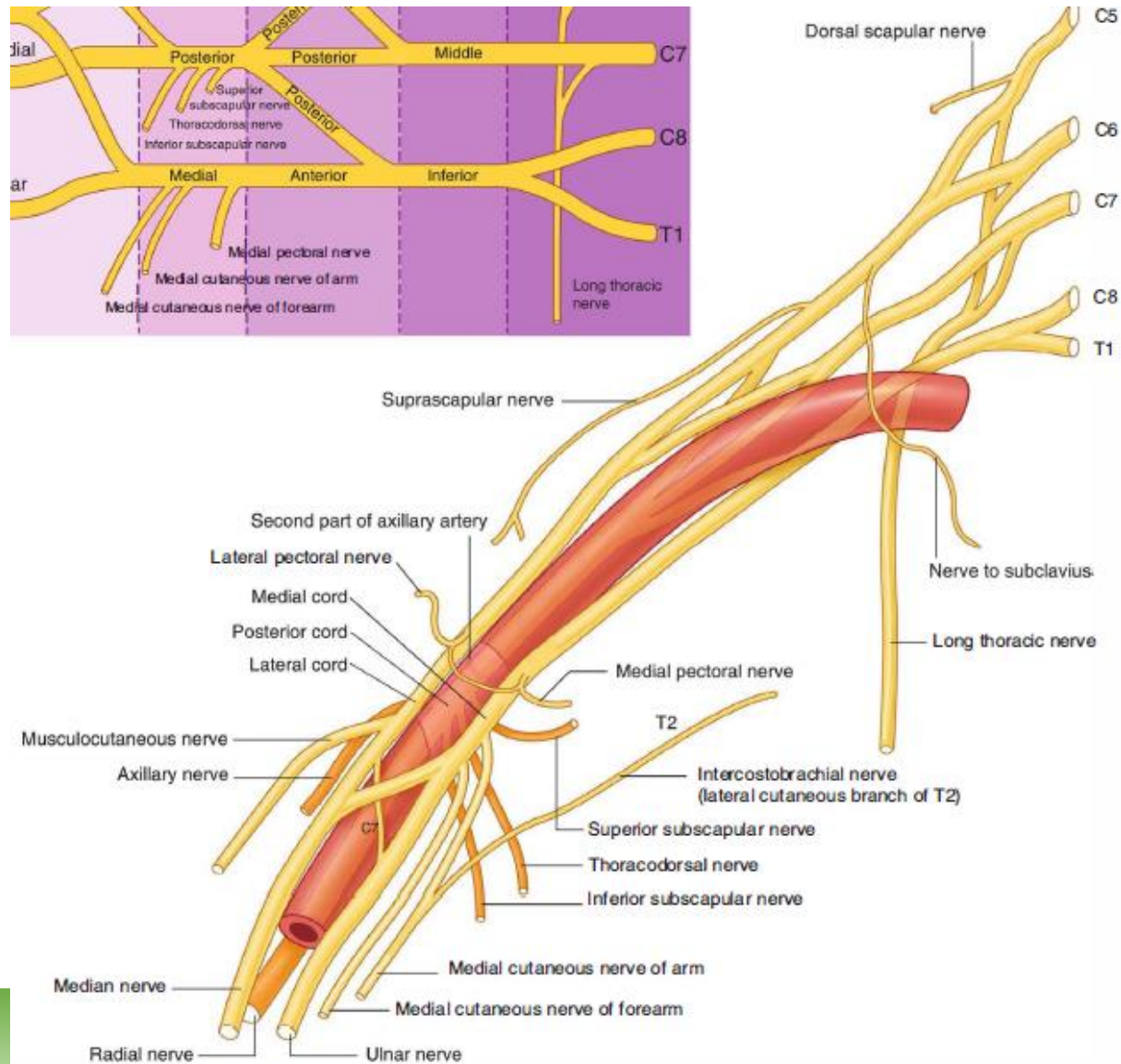


- The divisions of the trunks form three **cords** (located in the axilla) of the brachial plexus:

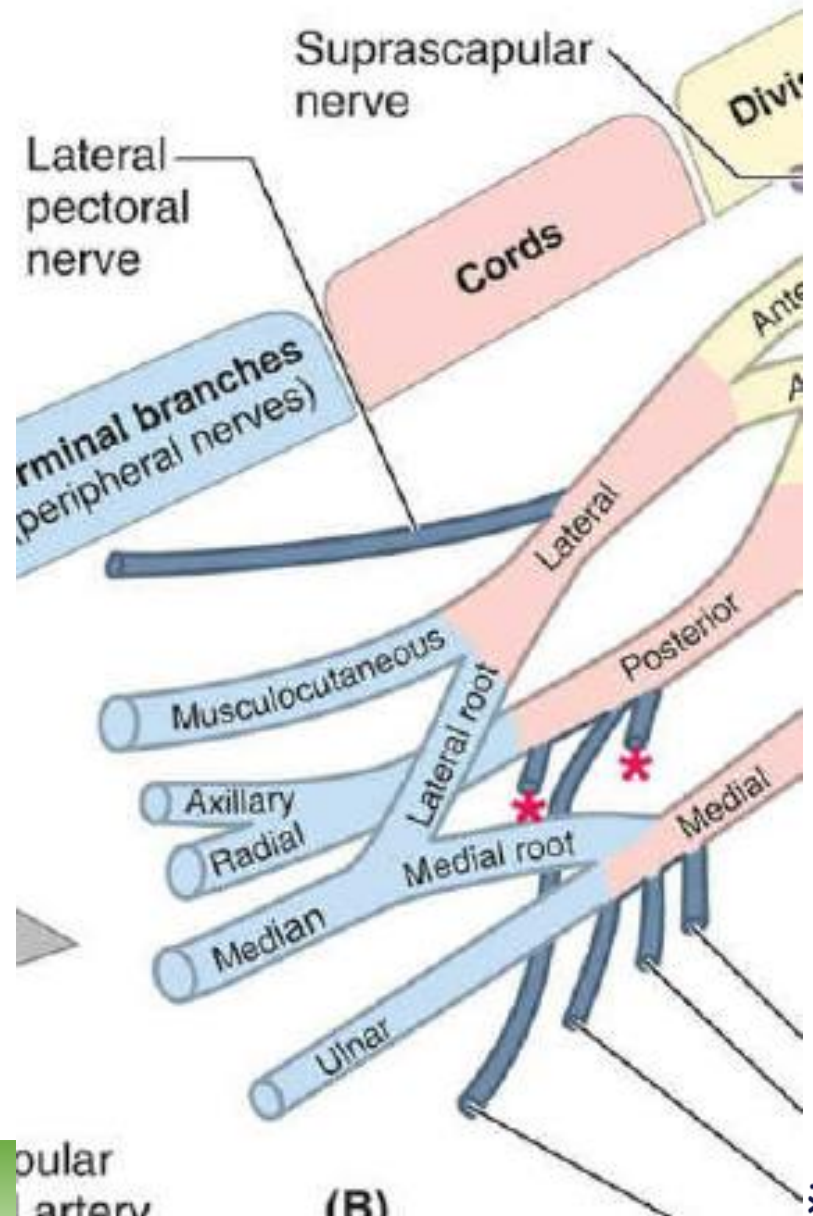
- Anterior divisions** of the **superior** and **middle** trunks unite to form the **lateral cord**.
- Anterior division** of the **inferior** trunk continues as the **medial cord**.
- Posterior divisions** of **all three trunks** unite to form the **posterior cord**.

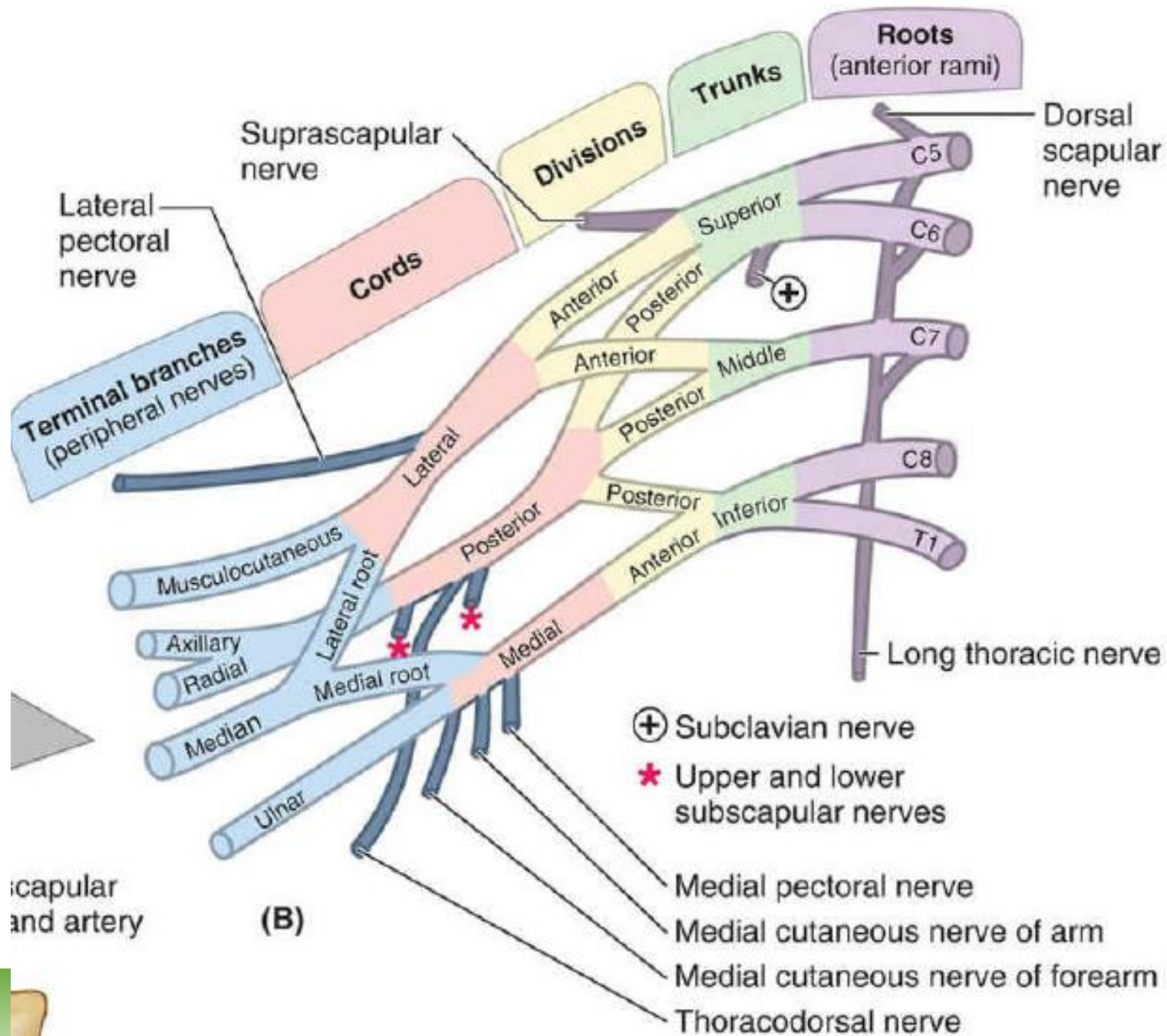


Cords named according to axillary artery



- Each Cord gives branches which are the peripheral nerves of the upper limb
- Branches originates in the axilla and pass to upper limb



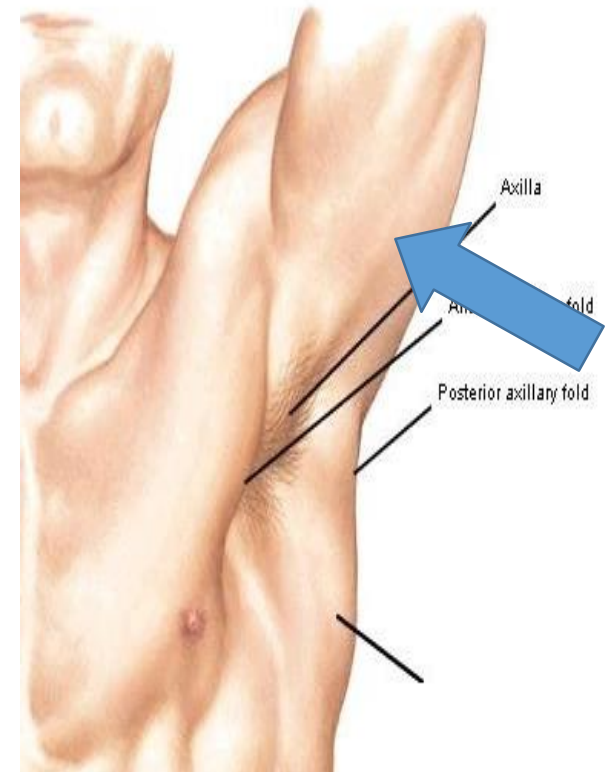


(B)



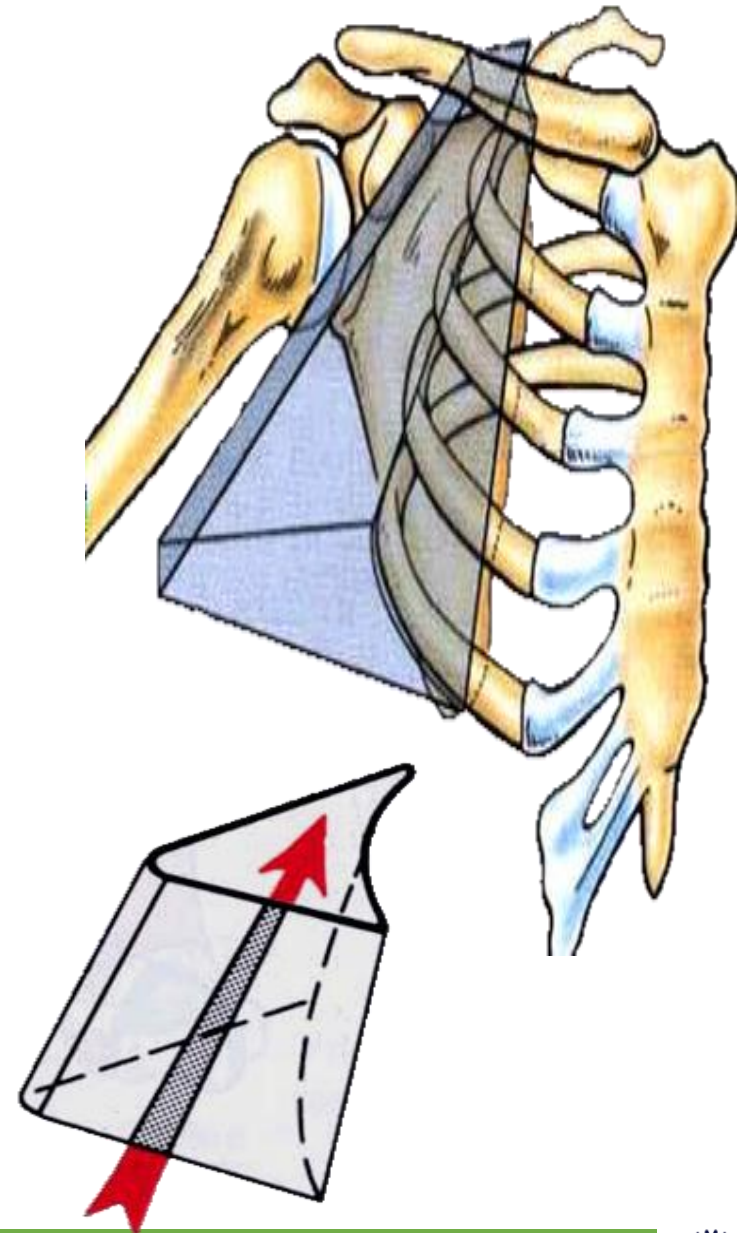
The Axilla

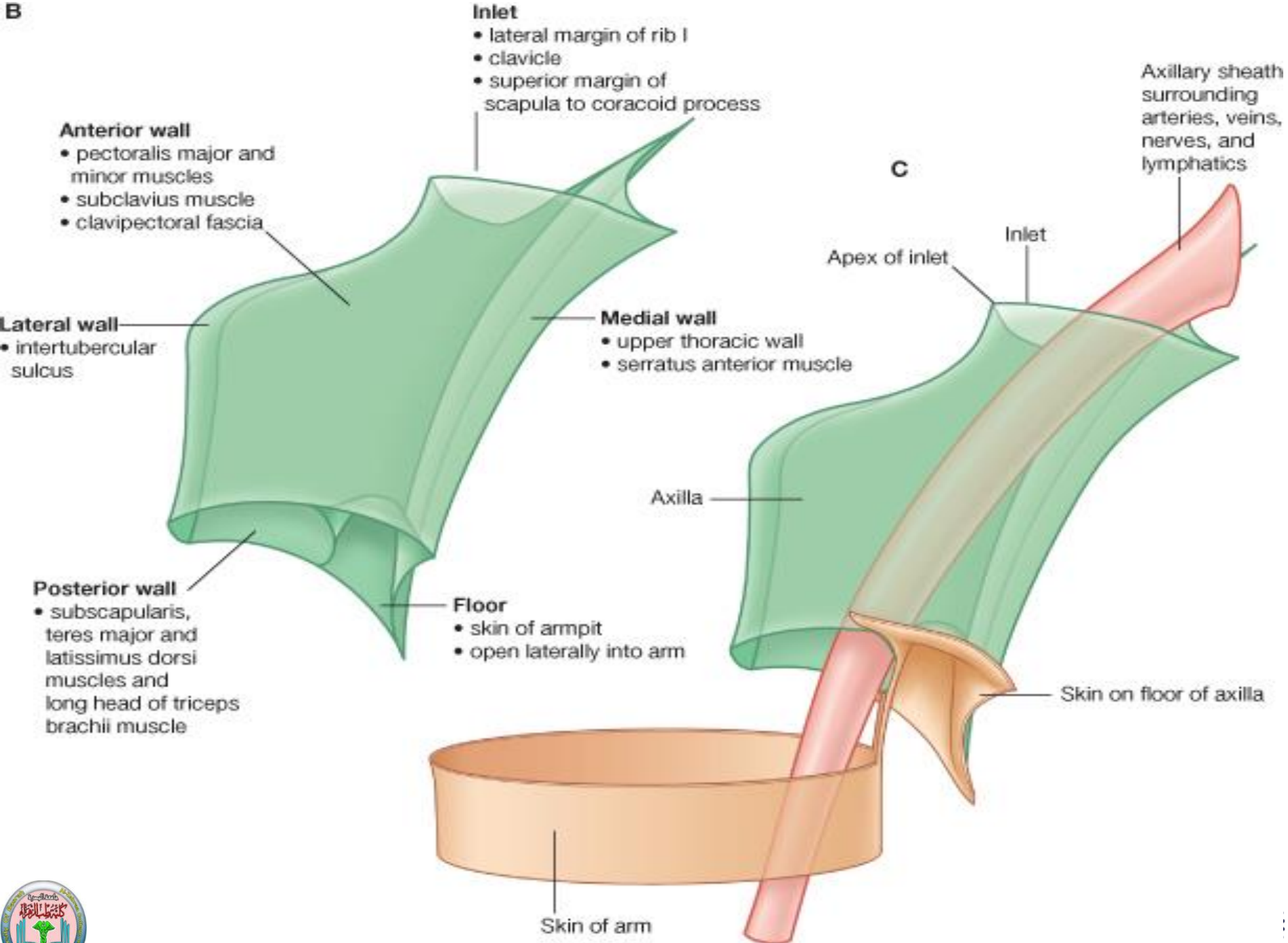
- The axilla pass all the nerves, blood **vessels** and **lymphatics** of the upper limb.
- It is important to know that the axilla also contains groups of lymph **nodes** that drain the whole of the upper limb and the breast.



AXILLA

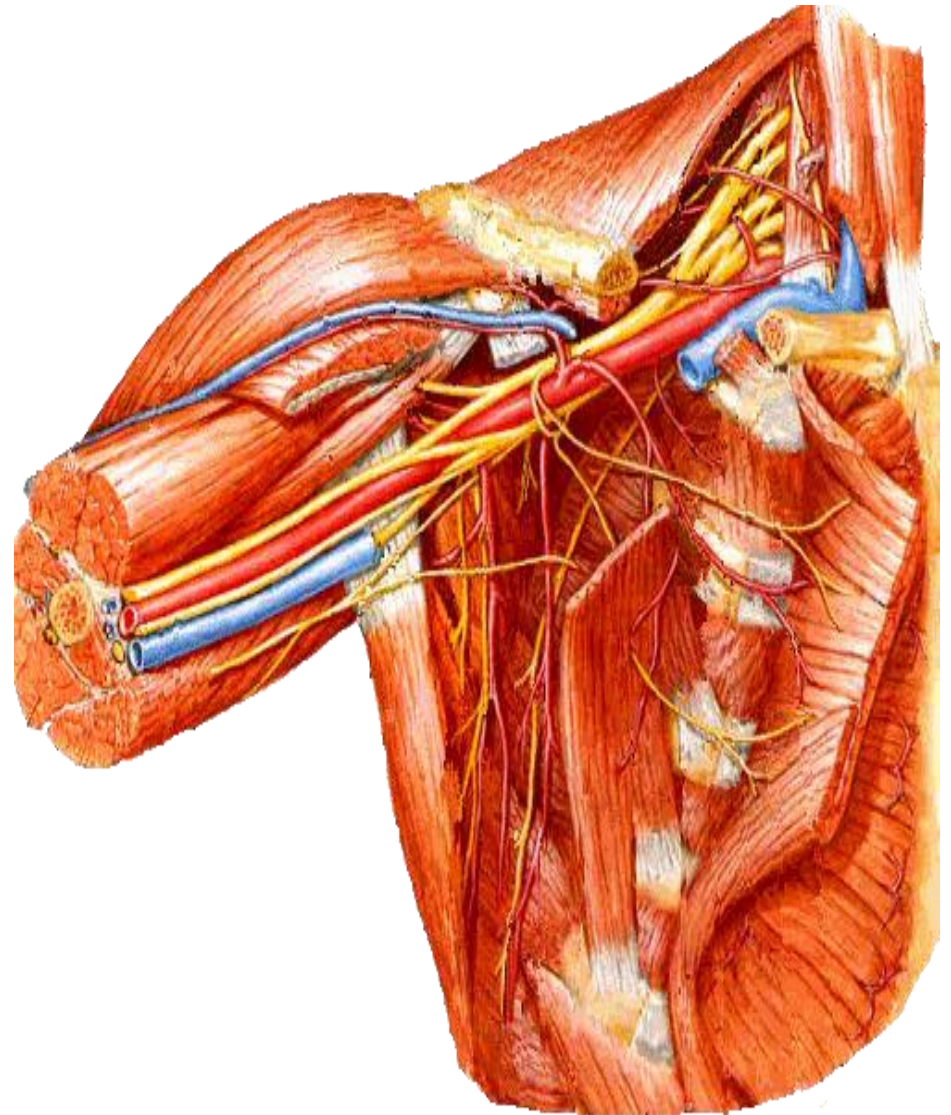
- A **pyramid-shaped** space between the upper part of the arm and the side of the chest
- Axilla has **6 boundaries**:
 1. **Apex** connected to the neck= Inlet
 2. **Base** = Arm pit= Outlet
 3. **Anterior** wall
 4. **Posterior** wall
 5. **Medial** wall
 6. **Lateral** wall



B

Contents of The Axilla

1. Cords and branches of the brachial plexus
2. Axillary artery and its branches.
3. Axillary vein and its tributaries.
4. Axillary lymph nodes and lymphatic vessels
5. Axillary fat.
6. Loose connective tissue.



The neurovascular bundle is enclosed in connective tissue sheath, called '**axillary sheath**'



Axillary vein is outside axillary sheath

Biceps long head in the intertubercu

Pector

Biceps long head in the intertubercular groove

Pectoralis minor m.

Pectoralis major m.

Subscapularis m. attaching to the lesser tuberosity

Serratus anterior m.

Axillary sheath

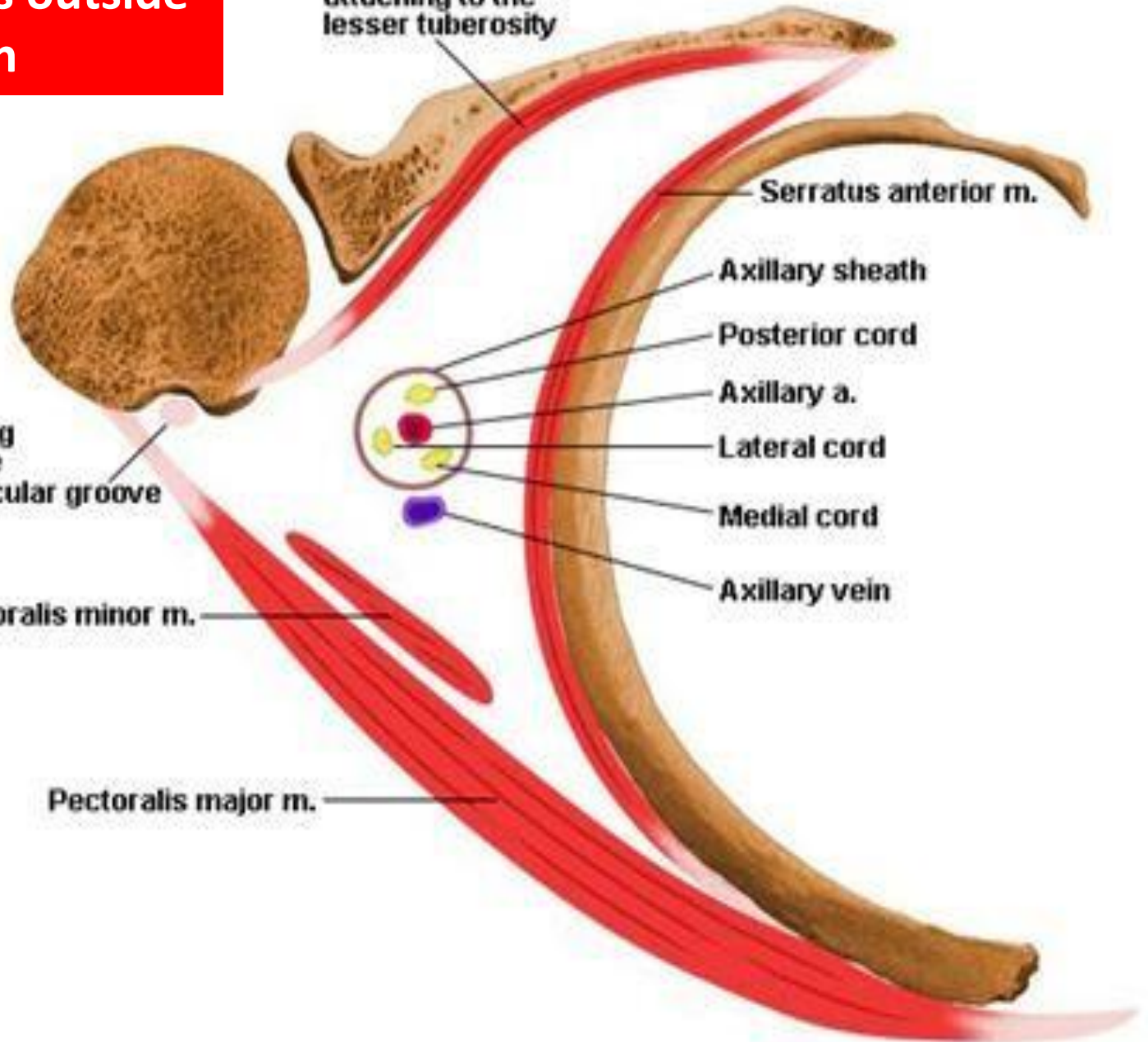
Posterior cord

Axillary a.

Lateral cord

Medial cord

Axillary vein



Thank you

