

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME: ANATOMY RELATED TO CARDIAC TECHNOLOGY

UNIT : 1

TOPIC : OESTEOLOGY - UPPER LIMB

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UPPER ARM - HUMEURS



This is the long bone of the arm or brachium. It has an upper end, a lower end, and a shaft.

Upper end: It shows a head, greater and lesser tubercles (tuberosities)

- The head is smooth, forms about one-third of a sphere; directed medially, backward and upward
- It articulates with the shallow glenoid cavity of scapula to form the shoulder joint.
- The head is separated from the rest of the upper end by a groove called anatomical neck.
- The greater tubercle is an elevation that forms the lateral part of upper end. Three muscles, supra-spinatus, infraspinatus and teres minor (SIT), are inserted here.
- The lesser tubercle is an elevation on the anterior aspect of upper end.
- The subscapularis muscle is inserted here.

- The two tubercles are separated by a tubercular sulcus it lodges the tendon of long head of biceps
- The line separating the upper end of the humerus from the shaft is called the surgical neck.
- The Axillary nerve and circumflex humeral vessels are closely related to the surgical neck.

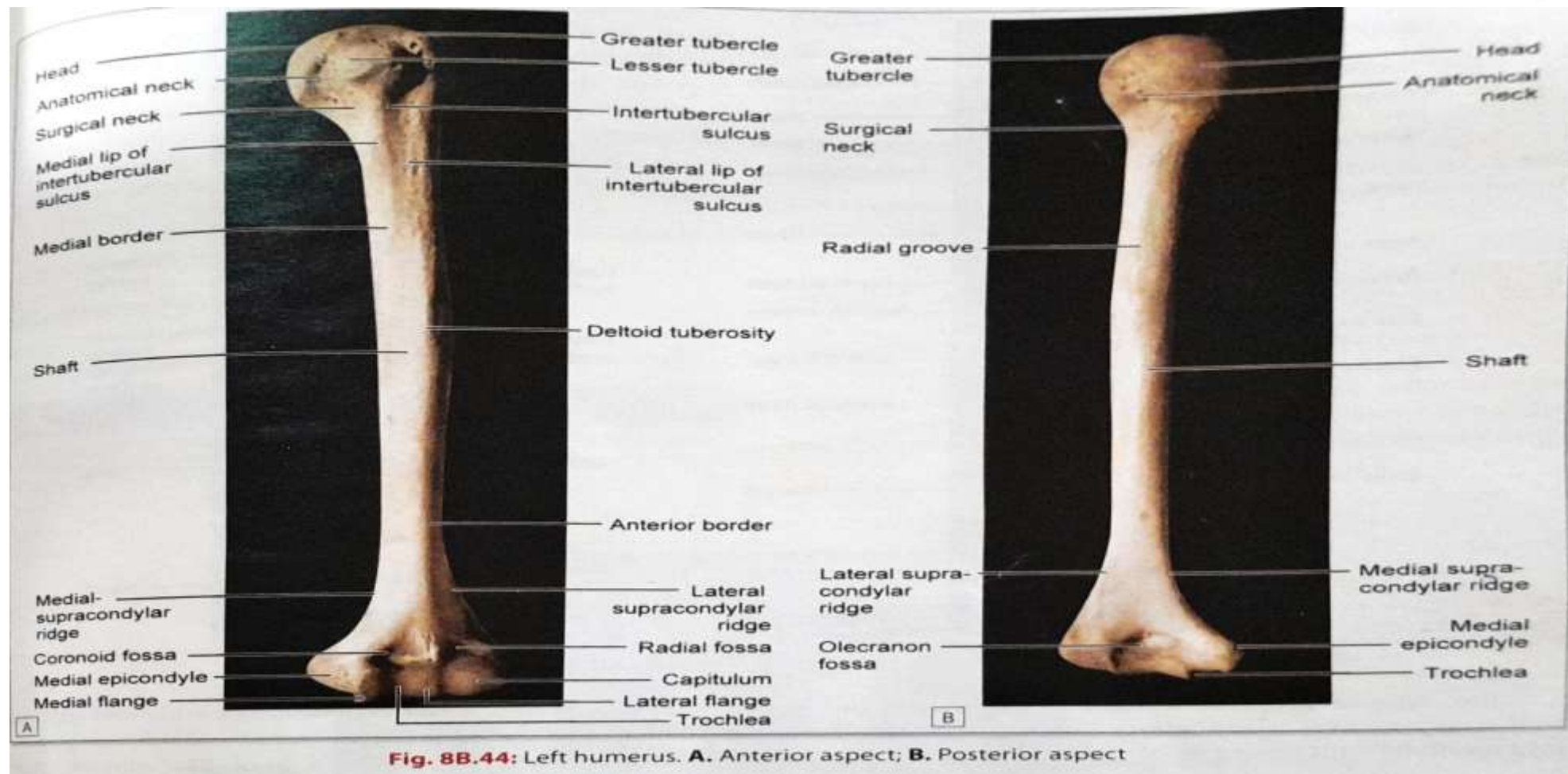
Shaft:

- It is circular in cross-section in the upper part and triangular in cross-section in the lower part.
- A little above the middle, on the lateral surface is a V-shaped deltoid tuberosity.
- Behind this tuberosity is a spiral groove or radial groove, which is closely related to the radial nerve and profunda brachii vessels.

Lower end:

It is expanded from side to side, having articular and non-articular parts. The articular parts are the capitulum and the trochlea.

- The capitulum is a rounded projection which articulates with the head of the radius.
- The trochlea is a pulley-shaped surface; it articulates with the trochlear notch of ulna.
- The non-articular part includes the medial and lateral epicondyles and the medial and lateral supracondylar ridges.
- The medial epicondyle is a prominent bony projection. It is subcutaneous; posteriorly, it is closely related to the ulnar nerve.
- There is a small depression just above the trochlea. It accommodates the coronoid process of ulna when the elbow is flexed.
- The radial fossa(notch) lies just above the capitulum, lodging the head of radius in full flexion.



FOREARM BONES

Two long bones, radius and ulna form the skeleton of forearm.

Radius and ulna

- **Radius**
- Radius is the lateral bone of forearm
- It has an upper end , Shaft and lower end.

Upper end:

- It consists of head, neck and a radial tuberosity.
- The head presents a disc-like concavity on its upper surface, which articulates with the capitulum of humerus and forms the humeroradial part of elbow joint.
- The head articulates medially with the radial notch.
- The neck of radius is a constricted area just distal to the head.
- The brachial artery divides into its two terminal branches at this level.
- The radial tuberosity lies on the medial side of the lower part of neck.
- The biceps brachii is inserted here

- The radial shaft gradually thickens towards the distal end.
- While largely unremarkable, it does feature several notable borders.
- The anterior border of the radius is visible from the bone's anterior side, and the posterior border is visible on its posterior surface.
- The medial side of the radius presents the interosseous border, an attachment site for the interosseous membrane that connects the radius and ulna.
- Several landmarks characterize the distal end of the radius.
- On the medial side, the ulnar notch, a shallow depression that articulates with the head of the ulna.
- On the lateral side, the thick and pointy styloid process of the radius forms the lateral part .

Ulna

Upper end:

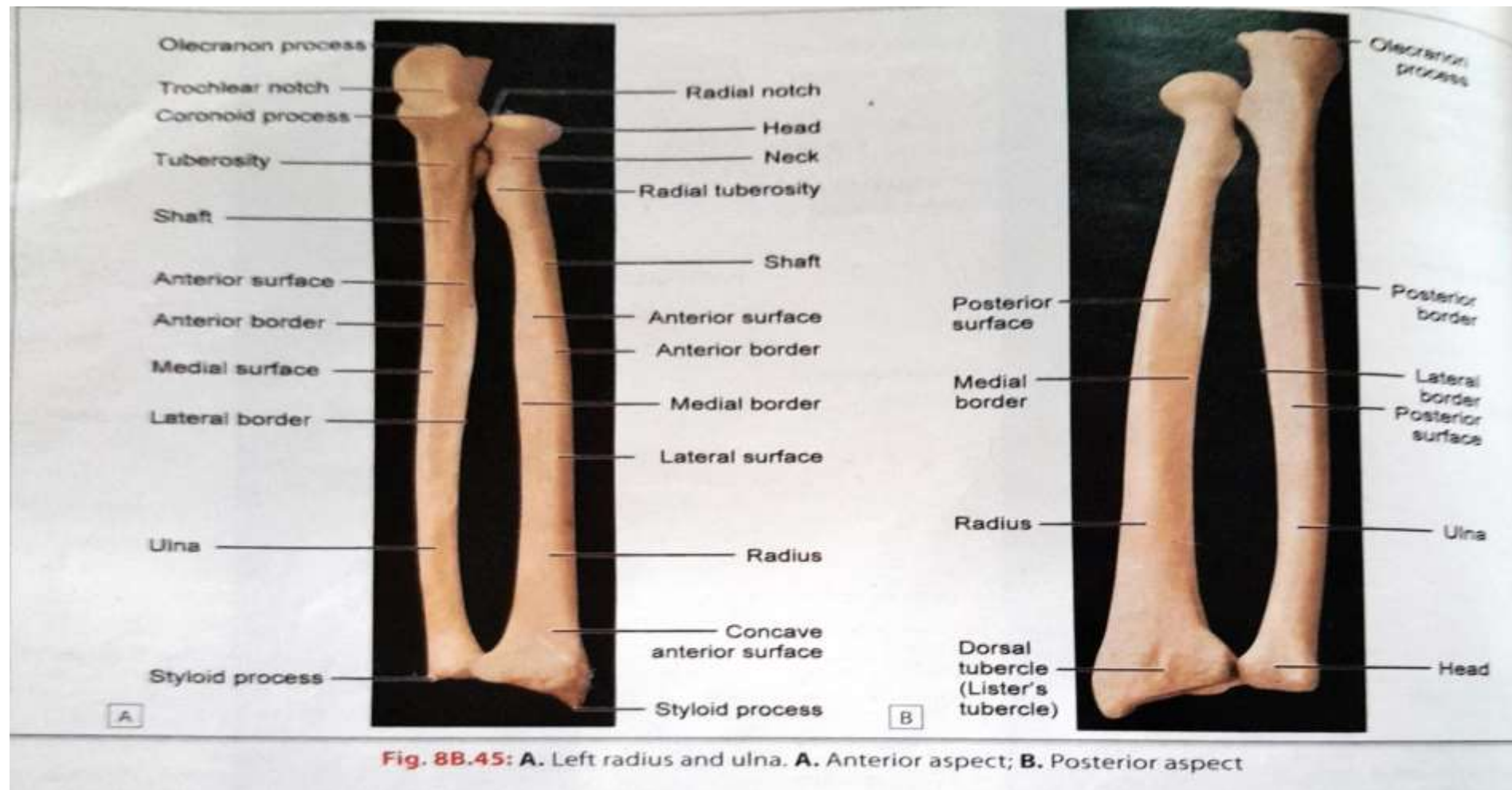
- It presents a hook-like massive part upon the concavity anteriorly.
- The upper end has with processes-olecranon process and a coronoid process; and two articular areas the trochlear and radial notches.
- The olecranon process is a beak-like projection overhanging the trochlear notch.
- The trochlear notch is a C-shaped concavity between the anterior surface of olecranon process and upper surface of coronoid process.
- It articulates with the trochlea of humerus to form the humeroulnar part of elbow joint.
- Laterally, the upper end of ulna presents a concave radial notch for articulation with the head of radius.

Shaft

- diminishes progressively from above downward
- It is gently convex throughout its entire extent has a sharp lateral (Interosseous) border
- The posterior border of the shaft is subcutaneous. The shaft provides attachment to several muscles of forearm.

Lower end:

- It is expanded and presents the head of ulna and a styloid process medially.
- The head is rounded; it fits into the ulnar notch of radius.
- **Side Determination**
- Place the olecranon process above, trochlear notch in front and the sharp interosseous border facing laterally.



SUMMARY TABLE

Bone	Location	Key Features / Landmarks	Articulations	Functions	Clinical Importance
Humerus	Upper arm (between shoulder and elbow)	Head, greater & lesser tubercles, deltoid tuberosity, medial & lateral epicondyles, trochlea, capitulum, olecranon fossa	- Proximally with scapula (at glenoid cavity)- Distally with radius & ulna (at elbow)	Supports arm movement; muscle attachment; forms shoulder & elbow joints	Common site of fractures (especially surgical neck and midshaft); radial nerve injury risk
Radius	Lateral bone of forearm (thumb side)	Head, neck, radial tuberosity, styloid process, ulnar notch	- Proximally with humerus & ulna- Distally with carpal bones & ulna	Allows pronation & supination of forearm; wrist movement	Colles' fracture (distal radius fracture); important for wrist stability
Ulna	Medial bone of forearm (little finger side)	Olecranon process, coronoid process, trochlear notch, styloid process	- Proximally with humerus & radius- Distally with radius	Stabilizes forearm; forms hinge joint at elbow	Olecranon fractures; dislocation of radial head in children (nursemaid's elbow)