# Humerus/Radius and Ulna

Dr.Zaid Saad Al-Nasrawi

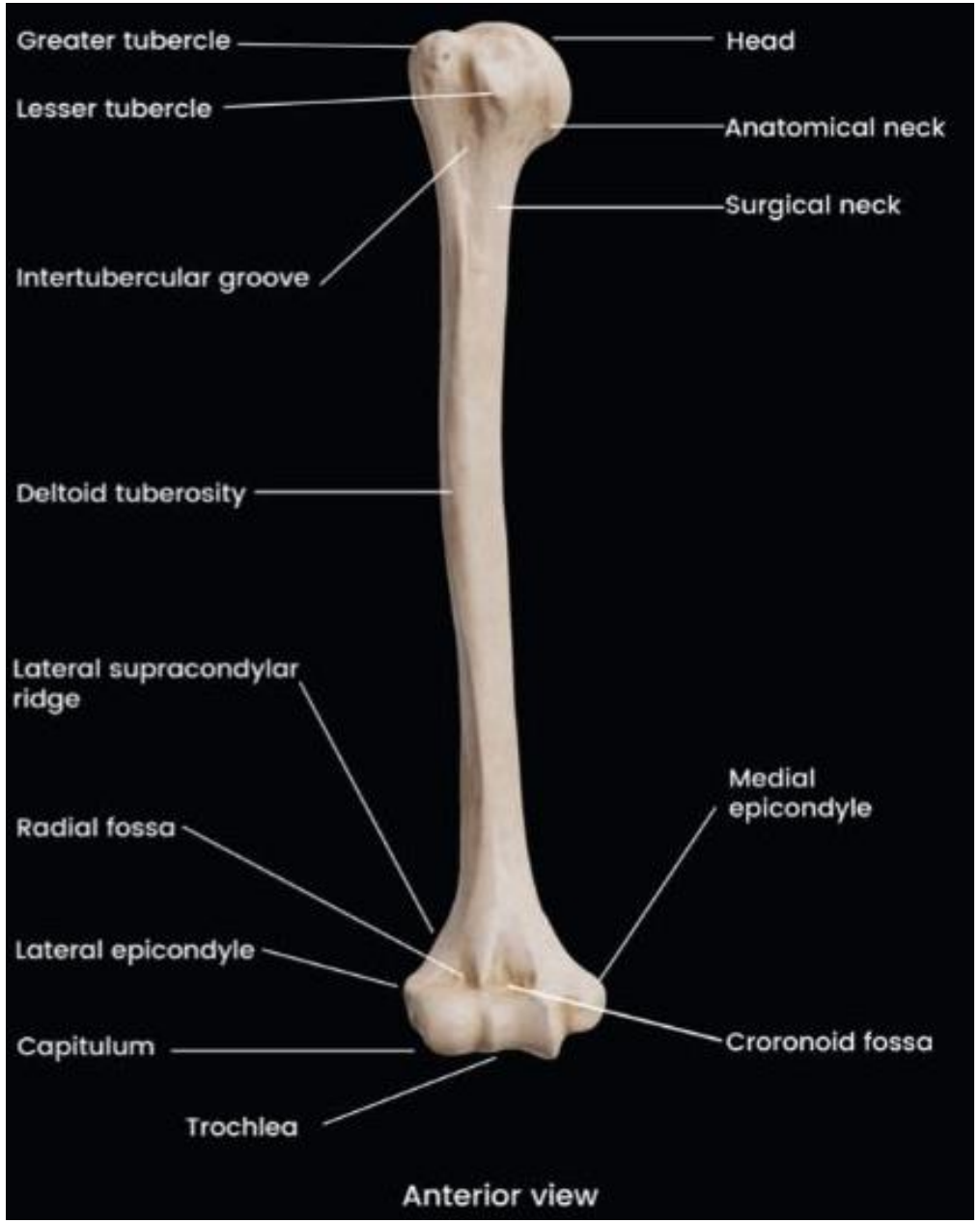
Dr Maythem Ali Alaraji

Specialist Trauma and Orthopedics surgery

# The humerus

- The hemispherical head of the humerus is separated from the greater and lesser tubercles by the **anatomical neck.**
- **Between the tubercles** is the bicipital groove for the long head of the biceps.
- **The shaft just below** the tubercles is narrow and is called the surgical neck of the humerus.
- The shaft is marked by a spiral groove where the **radial nerve and the profunda vessels** run.
- The **deltoid tuberosity** on the lateral aspect of the midshaft is the site of insertion of the deltoid muscle

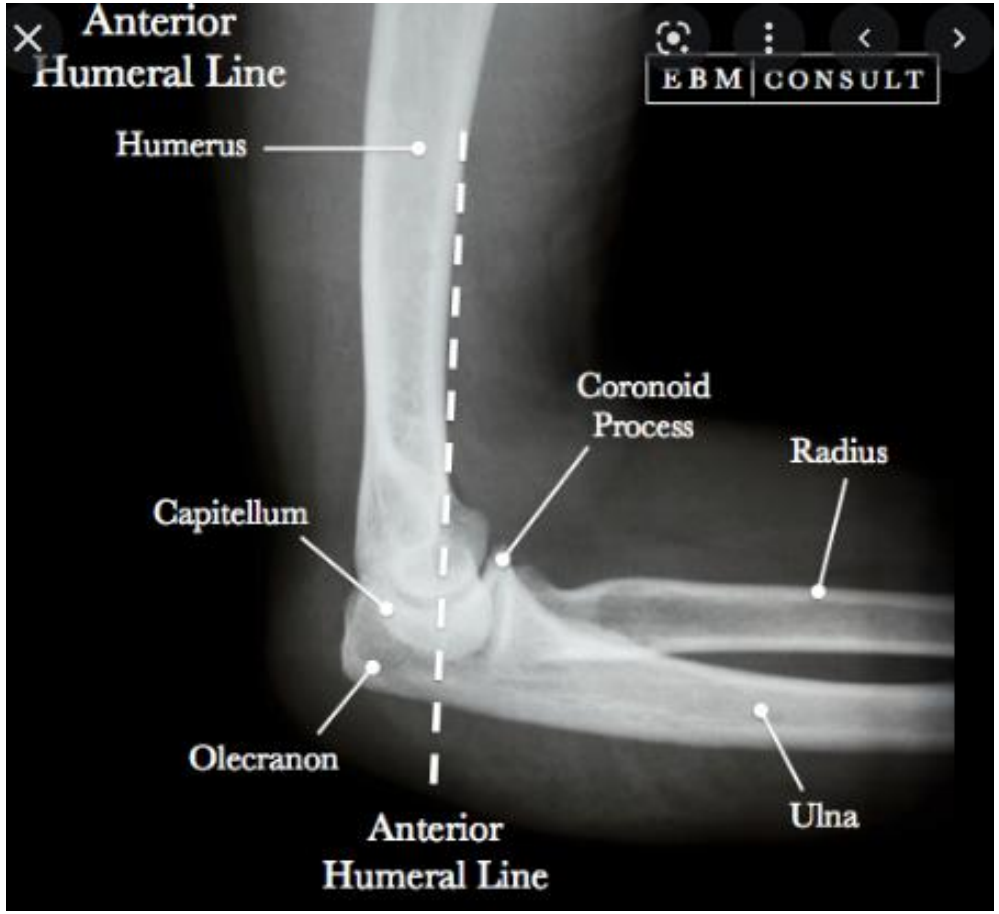
- **The lower end** of the humerus is expanded and has medial and lateral epicondyles.
- The articular surface for the elbow joint has a capitellum for articulation with the radial head and a trochlea for the olecranon fossa of the ulna.
- Above the trochlea are fossae, the coronoid anteriorly and the deeper olecranon fossa posteriorly



# Radiological features of the humerus

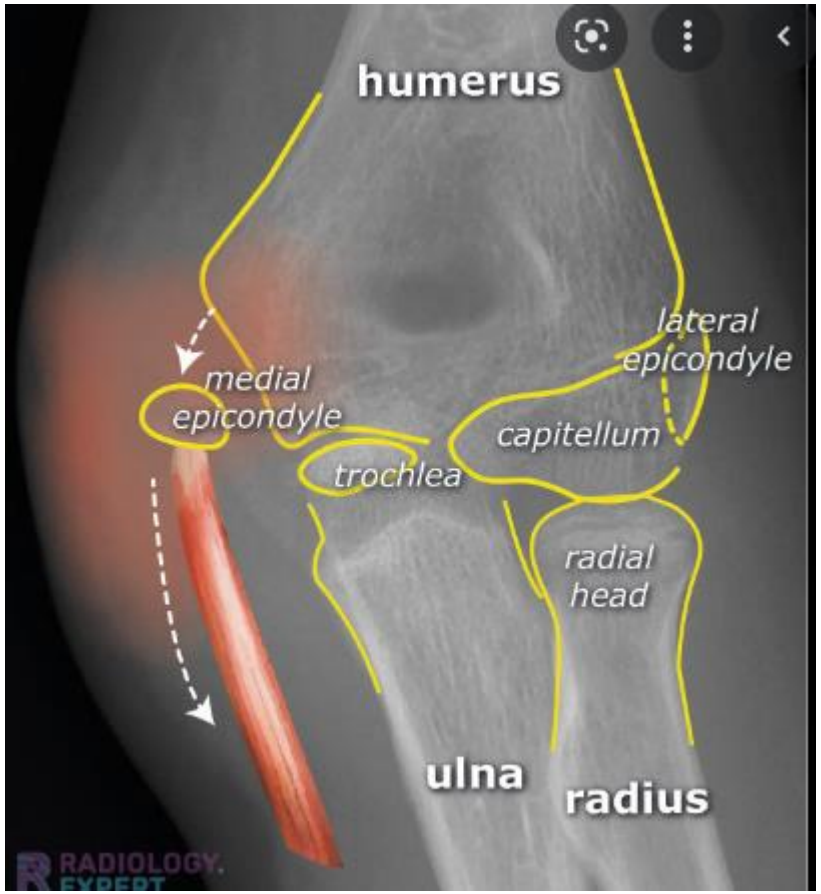
## Plain radiographs

- A vertical line down the front of the shaft on a lateral radiograph – the anterior humeral line – bisects the capitellum



# Avulsion of the medial epicondyle

- The flexor muscles of the forearm arise from the medial epicondyle of the humerus.
- Repeated contractions or a single violent contraction of these muscles in a child can result in avulsion of the apophysis (a secondary ossification centre occurring outside a joint) of the medial epicondyle



# Ossification

- The primary centre for the humerus appears at the eighth week of fetal life.
- Secondary centres appear in the head of the humerus at 1 year, the greater tuberosity at 3 years, and the lesser tuberosity at 5 years of age.

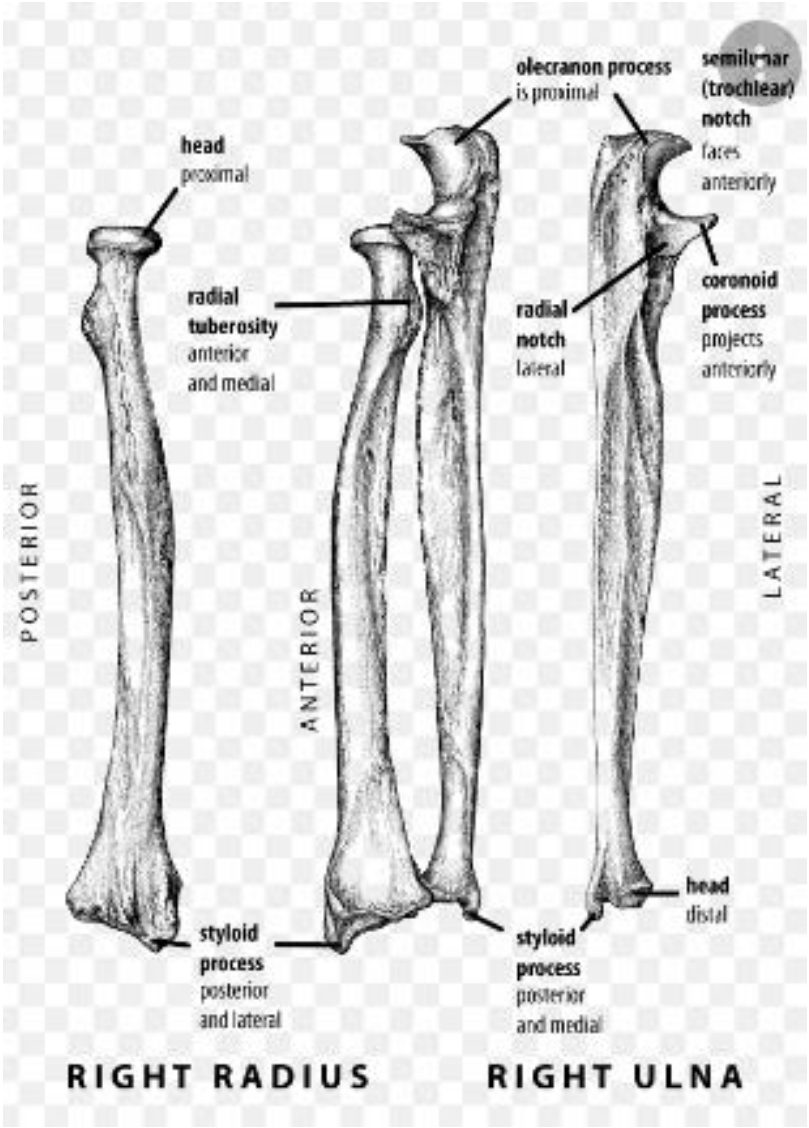
**These** fuse with one another at 6 years and with the shaft at 20 years of age.

- Secondary centres appear in the *c*apitellum at 1 year, the *r*adial head at 5 years, the *i*nternal epicondyle at 5 years, *t* rochlea at 10 years, *o* lecranon at 10 years and *e* xternal epicondyle at 10 years **(CRITOE)**

**These** fuse at 17 – 18 years of age

# The radius and ulna

- The radius has a cylindrical head that is separated from the radial tubercle and the remainder of the shaft by the neck.
- Its lower end is expanded and its most distal part is the radial styloid.
- The radius is connected by the interosseous membrane to the ulna.
- The upper part of the ulna – the olecranon – is hook-shaped, with the concavity of the hook – the trochlear fossa – anteriorly
- A fossa found laterally at the base of the olecranon is for articulation with the radial head
- The shaft of the ulna is narrow. The styloid process at the distal end is narrower and more proximal than that of the radius

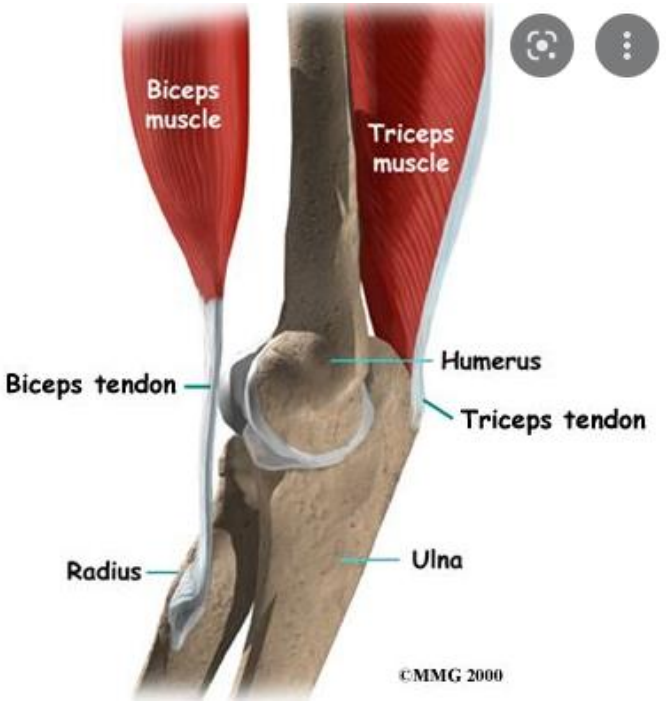


# Radiological features of the radius and ulna

## Plain radiographs

- The head of the radius has a single cortical line on its upper surface and is perpendicular to the neck in the normal radiograph
- Angulation of the head or a double cortical line are signs of fracture of the radial head.
- Recognition of these normal angles is important in reduction of fractures of the wrist

- The triceps muscle is inserted into the tip of the olecranon
- Fracture of the olecranon is therefore associated with proximal displacement by the action of this muscle.

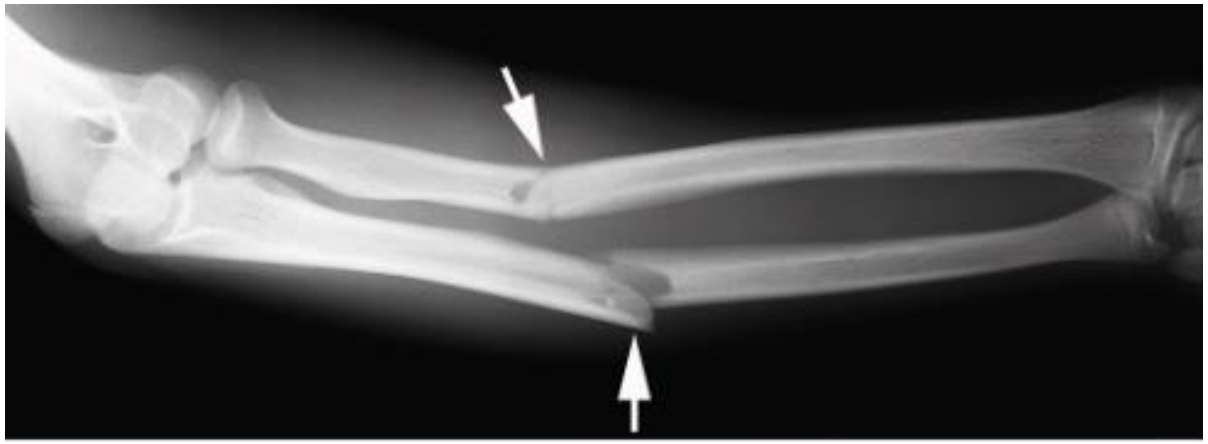


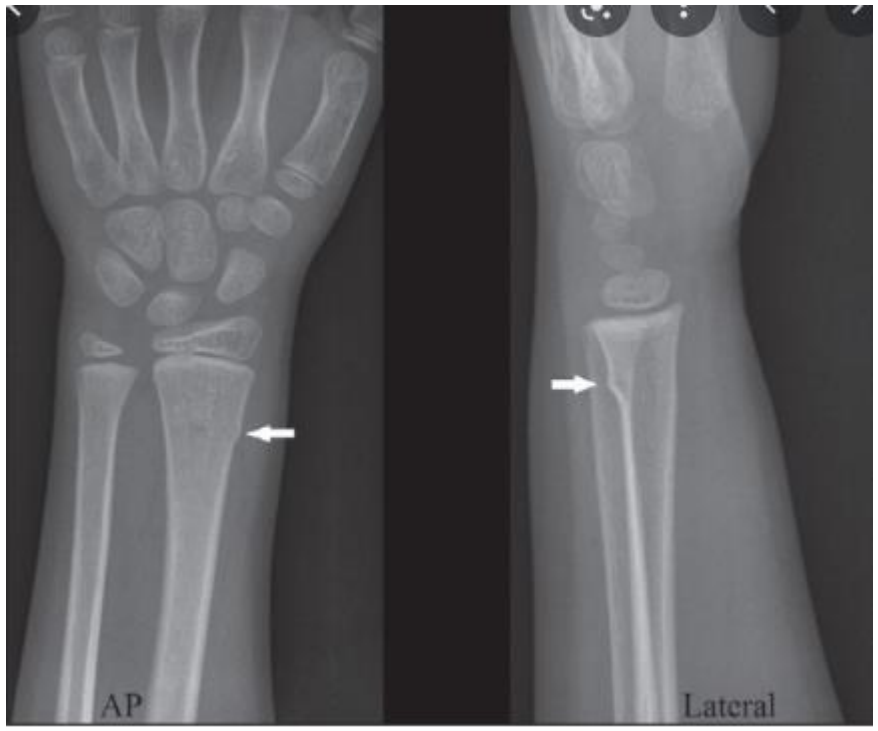

# Ossification of the radius

- The primary ossification centre of the radius appears in the eighth week of fetal life.
- Secondary centres appear distally in the first year and proximally at 5 years of age.
- These fuse at 20 years and 17 years, respectively

# Ossification of the ulna

- The shaft of the ulna ossifies in the eighth week of fetal life
- Secondary centres appear in the distal ulna at 5 years and in the olecranon at 10 years of age.
- These fuse at 20 and 17 years, respectively

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Lateral