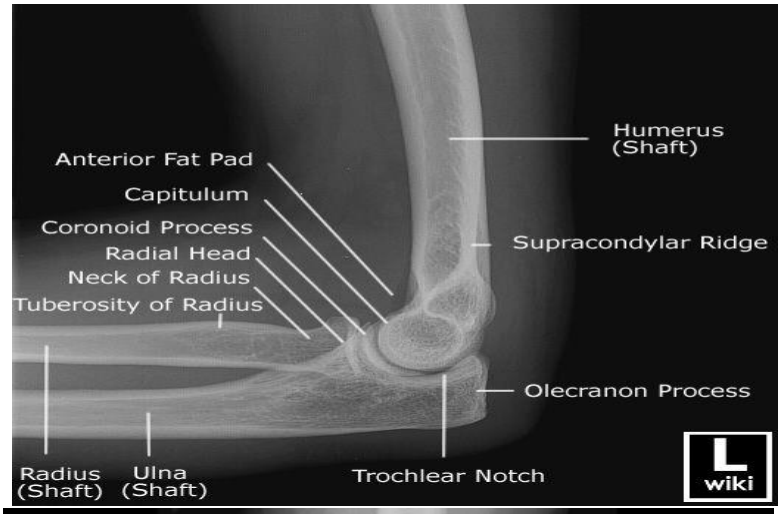
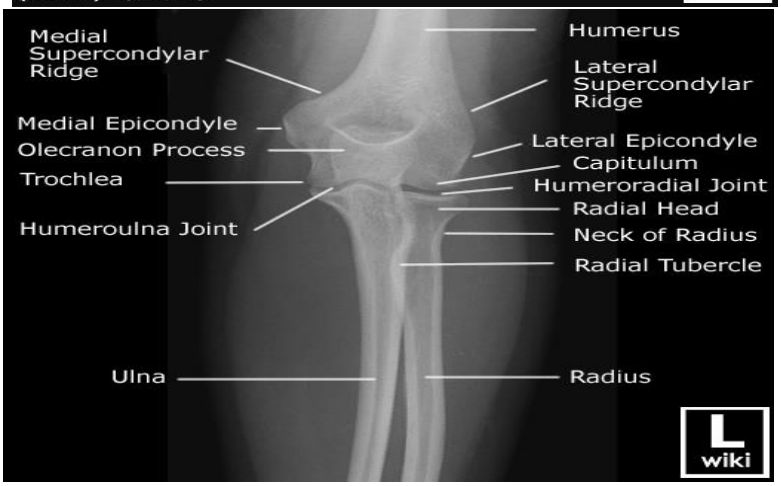
Radiological features of the elbow joint

- **Plain radiological**

The capsule of the elbow joint is anteriorly and posteriorly so that effusion within the joint causes distension of the capsule anteriorly and posteriorly Fat pads anterior and posterior to the joint are displaced away from the joint by an effusion and become visible that are separated by soft- tissue densities from the bones on lateral radiography.





- **Arthrography**

Arthrography of the elbow joint is achieved by injection of contrast medium between the radial head and the capitellum The synovial cavity of the joint is outlined and seen to extend proximal to the articular surfaces on the humerus, with a con- figuration on AP views that has been likened to rabbit ears and called the 'Bugs Bunny' sign On lateral views, a coronoid recess is seen anterior to the lower humerus and an olecranon recess posteriorly

Distally the synovial cavity is seen to extend anterior to the radius as the preradial recess This is indented where the anular ligament of the radius surrounds it Air arthrography involves intra-articular injection of up to 10 cc of air prior to multislice CT imaging This is the optimum method of detecting intra-articular loose bodies

- **Magnetic resonance imaging** (Fig 7 17)

Relevant anatomy

The ulnar collateral ligament. The ulnar collateral ligament is responsible for medial elbow joint stability and resistance to valgus strain It is composed of three discrete tendon bundles:

- the anterior bundle;
- the posterior bundle; and
- the transverse bundle

Despite anatomic complexity, the anterior bundle is the most important contributor to stability and is therefore most frequently injured Fortuitously, the anterior bundle (the A-UCL) is taut in the extended elbow position and is therefore readily visualized on direct coronal images running from the undersurface of the medial epicondyle, just deep to the common flexor tendon origin, distally to its attachment to the medial aspect of the ulnar coronoid process The anterior bundle blends with the fibres of the overlying flexor digitorum superficial is muscle The posterior and transverse bundles may be identified in the axial plane forming the floor of the cubital tunnel

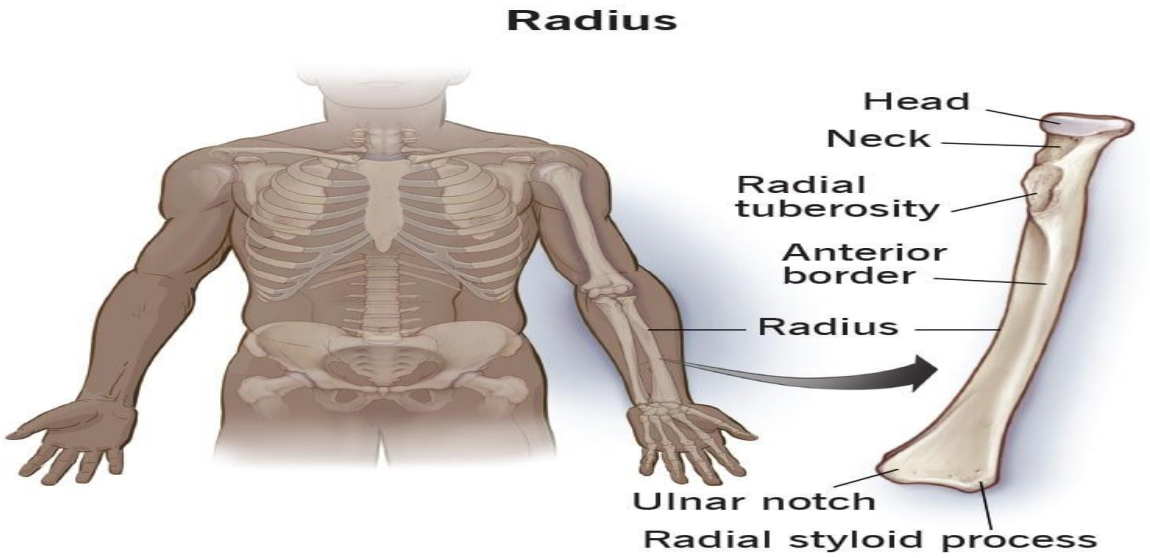
At MRI, similar to other tendons with an organized structure, the ulnar collateral ligament is hypointense on all sequences

Radius & ulna

The radius is the **lateral bone** of the forearm .it is **homolgous** with the tibia of the lower limb. it has an **upper end**, a **lower end** and a **shaft.**

The upper end

- ✓ **The head** is disc shaped & is covered with hyaline cartilage Head of radius fits into a socket formed by radial notch of ulna and annular ligament, thus forming superior radioulnar joint.
- ✓ **The Neck** is enclosed by narrow lowerof anriular Ident.
- ✓ The tubersity lies just below the medial part of the neck.
- ✓ Alt has a rough posterior part and a smooth anterior part.



The shaft

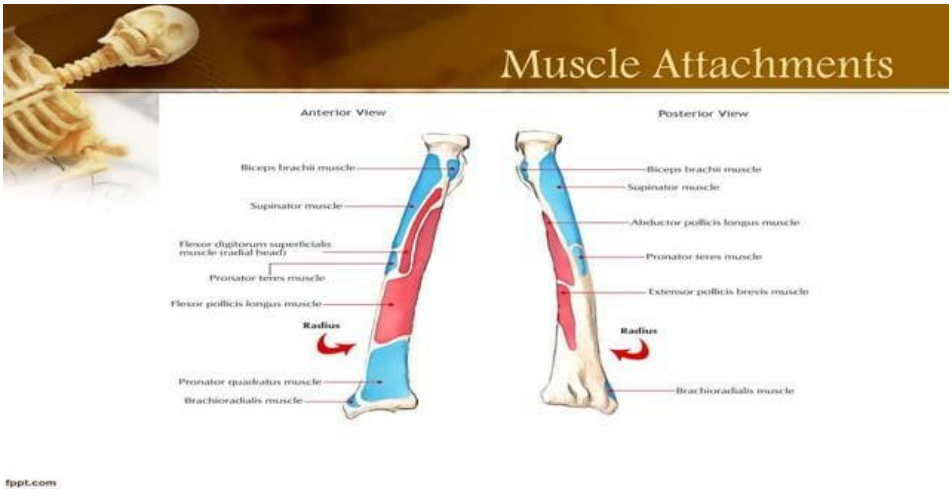
The shaft it has **three borders** and **three surfaces**.

- ✓ The Anterior Border
- ✓ The Posterior Border(mirror image of the anterior border)
- ✓ The Medial or Interosseous Border(sharpest border).

The surface.

- ✓ The anterior surfacc lies between anterior and interosseous border The anterior surface (The radial artery palpated against this.
- ✓ The posterior surface lies between the posterior and interosseous borders PThe posterior surface(Presents 4 grooves for extensors tendons) The medial surface(occupied by the ulnar notch for the head of ulna)

  .
- ✓ The lateral surface lies between the anterior posterior borders JThc lateral surface (prolonged downwards to from styloid process) The inferior surface(bears a triangular area for Use scaplioid bone.



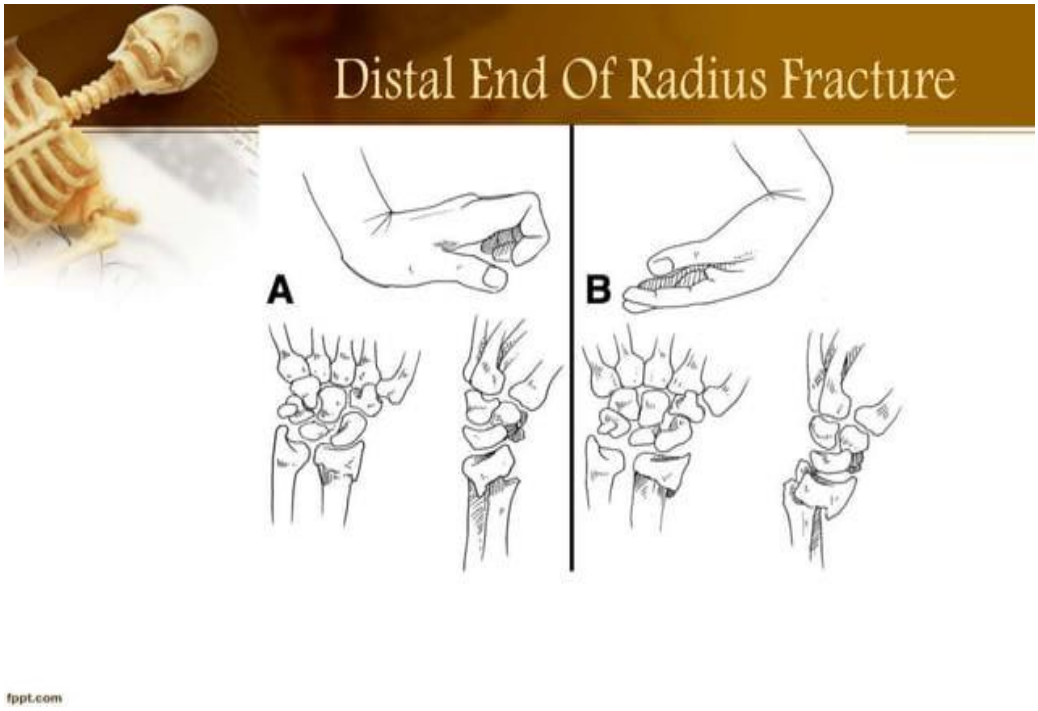
Articulations:

1. Elbow joint .
2. Wrist joint.

Clinically anatomy

radius commonly gets fractttred about 2 cm above its lower end

Mechanism of injury.
Fall on outstretched hand(foosh)
Distal fragments is displaced upwards and backwards.
Reverse of the coffee's i'racturn Smith fracture
Distal fragments being palinar flexed rather than dorsiflexion.





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Congenital absence of the radius is rare anomaly.
Resulting gross radial deviation of the hand and the thumb is often Absent.
RadiouInar synostosis is also rare condition in which radius and ulna are fused together.

Ulna.

The ulna is the medialbone of forearm. Alt is homologous with fibula of lower limb. Alt has a upper end, shaft, lower end.
The ulna ts a long bone larger proximally than distally.

Upper end:

- ✓ **Olecranon process** projects upwards from the shaft.

Alt has superior, anterior, posterior, redial, lateral surfaces

- ✓ **Coronoid process** projects forwards from the shaft just below the olecranon process.

At has four surfaces; superior, anterior, posterior. medial, lateral surfaces.

- The trochlear notch forms an articular surface.
- The radial notch articulate with the head of radius

The shaft:

It has a 3 Border and 3 surfaces.

- ✓ interosseous border/Lateral border(sharpes)

- ✓ Anterior border(thick und rounded)
- ✓ Posterior border(subcutaneous).

Surfaces

- ✓ Anterior surface
- ✓ Medial surface
- ✓ Posterior surface.

Lower end:

head of the ulna:

The lateral, distal end of the ulna is the head of the ulna.
articulates with the ulnar notch on the radius and with the triangular articular disc in the Wrist Joint,

styloid process:

the projects downwards from the posteroinedial side of lower end of the ulna.

Ligament attachment:

Capsular ligament ,Annular ligament ,Ulna co1latcral ligament

Articulations : Elbow joint ,Radio-ulna joint.

Ligament attachments

Capsular ligament
Annular ligament
Ulna co1latcral ligament.

Clinical anatomy

- ✓ Shaft of ulna may fracture either alone or along with that of the radius.
- ✓ Fracture of olecranon is common caused by FOOSH
- ✓ Dislocation of elbow is produced by FOOSH
- ✓ Madelung's defonuity is dorsal subluxation of lower end of ulna.


Clinical Anatomy


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Elbow Dislocation
Normal
Dislocated