



OUTLINE

- | | |
|--------------------|--------------------------|
| I. Shoulder Series | V. Hand and Wrist Series |
| II. Humerus Series | VI. Bone age |
| III. Elbow Series | |
| IV. Forearm Series | |

LEGENDS

Must know	Lecturer	Book	Presentation	Old Trans
!				

SHOULDER SERIES

- Connection between the upper arm and the thorax
- Common investigation in the ER
 - Shoulder dislocation – most common
- Shoulder Joint = Glenohumeral Joint

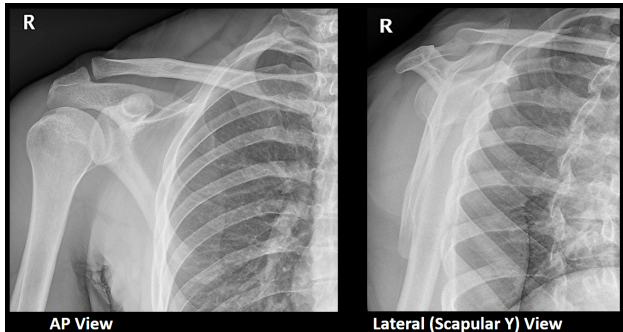


Figure 1. Shoulder series views

A. SHOULDER (AP VIEW)

- General overview of the shoulder
- Allows for adequate radiographic examination of the
 - Entire clavicle
 - Scapula
 - Glenohumeral joint
 - Acromioclavicular joint
 - Sternoclavicular joint

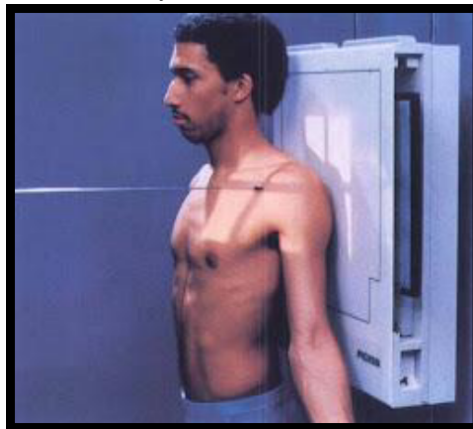


Figure 2. Shoulder AP view position of patient

- Demonstrates the shoulder in its natural anatomical position.

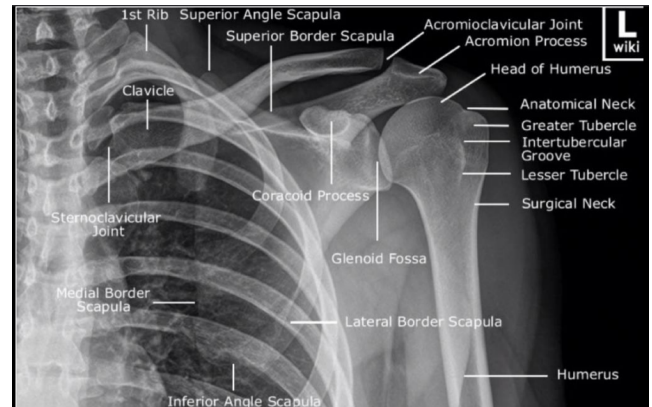


Figure 3. Shoulder AP view with label

B. SHOULDER (LATERAL SCAPULAR VIEW)

- Scapular Y view
- This view is a pertinent projection to assess suspected dislocations, scapula fractures, and degenerative changes.
- It is also useful in seeing both the coracoid and acromion process in profile.

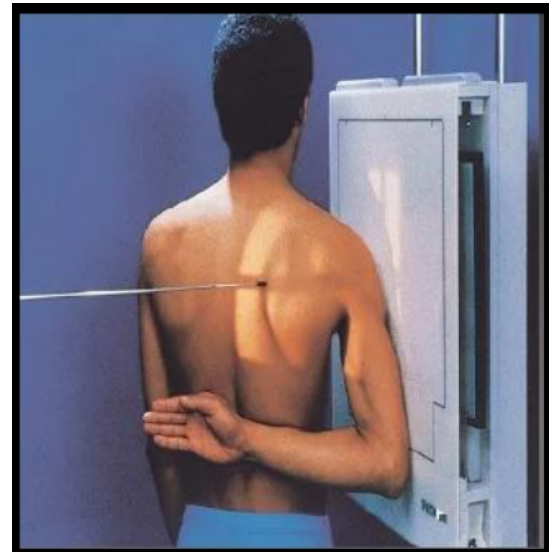


Figure 4. Shoulder Lateral Scapular view position of patient

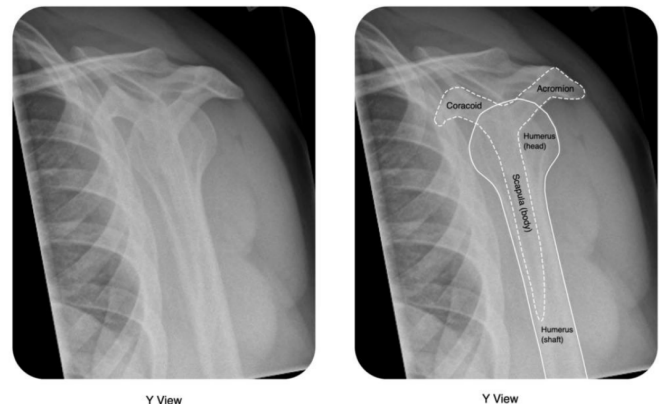


Figure 5. Lateral Profile Appearance of "Y"



Figure 6. Anterior Shoulder Dislocation

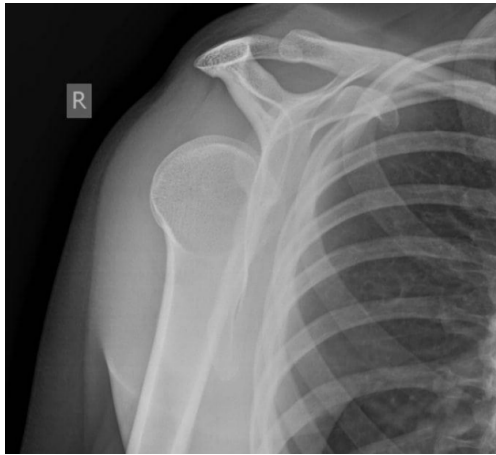


Figure 7. Posterior Shoulder Dislocation

Shoulder MRI

- MR is the best imaging modality to examine patients with shoulder pain and instability.
- Provides high-resolution images of soft tissues not visible on X-ray or CT.

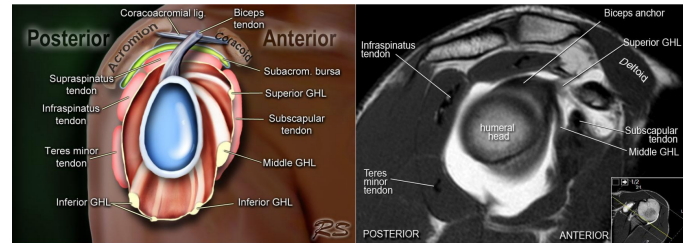
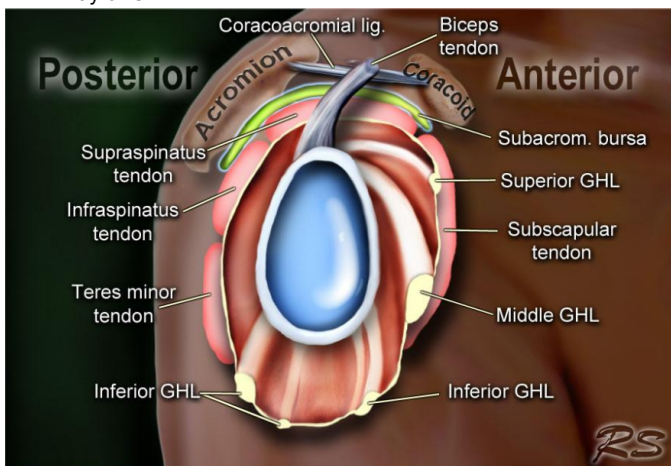


Figure 8. Sagittal Shoulder MRI

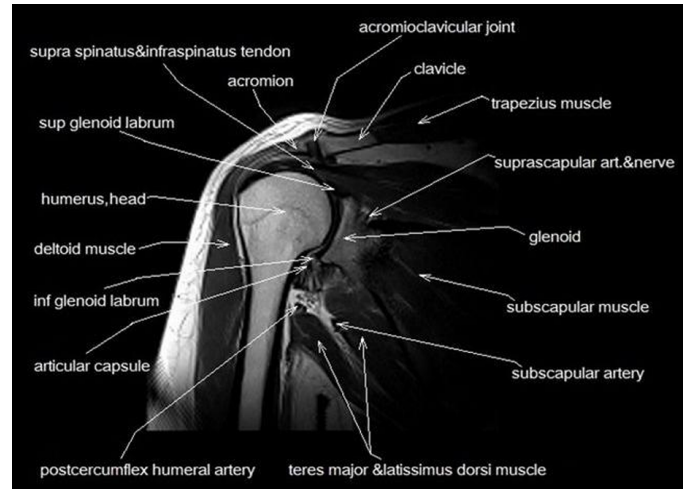


Figure 9. coronal shoulder MRI

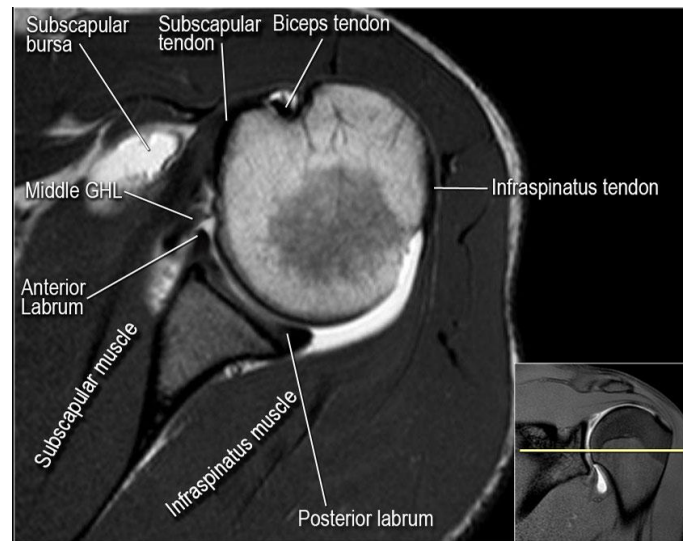


Figure 10. Axial shoulder MRI

HUMERUS SERIES

- A humerus series (or humerus x-ray) is a set of two x-rays performed of the entire humerus.
- It is performed to look for evidence of injury (or pathology) affecting the humerus.
- It may be performed as a second test after a shoulder or elbow x-ray has demonstrated a humeral fracture.
- Exclude large humeral shaft fractures or suspected symptomatic metastatic lesions

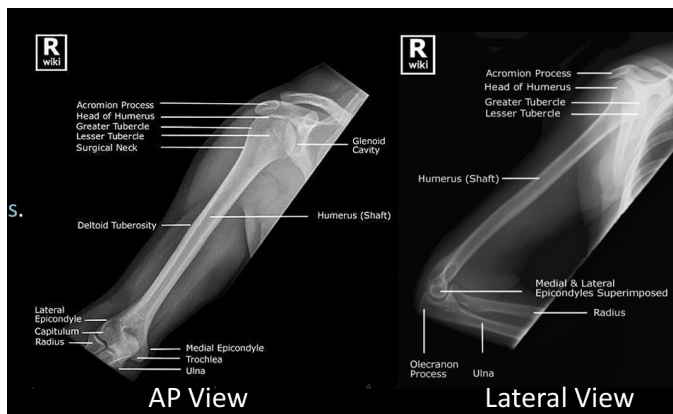


Figure 11. AP and Lateral view of Humerus

Humerus (AP View)

- Usually taken in a standing position.
- However, it can also be obtained in a supine position.
- Demonstrates the humerus in its natural anatomical position allowing

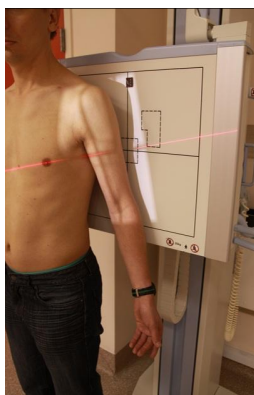


Figure 12. Humerus AP view of patient

- Image technical evaluation
 - Medial and lateral epicondyles seen in profile.
 - Greater tuberosity being seen on the lateral aspect of the humerus.
 - The shaft is abducted away from the patient's body, minimizing superimposition

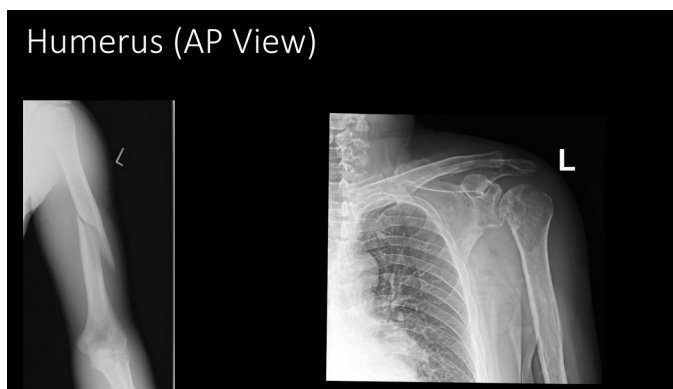


Figure 13. AP view of humerus with fractures

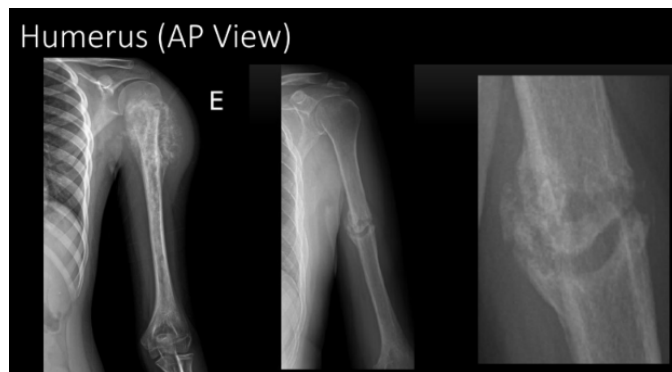


Figure 14. AP and Lateral view of Humerus

Humerus (Lateral View)

- Part of the humerus series and is usually taken in a standing position. However, it can also be taken in the supine position in the acute, trauma setting.
- The projection demonstrates the humerus in the lateral position allowing for adequate radiographic examination of the entire humerus and its respected articulations.

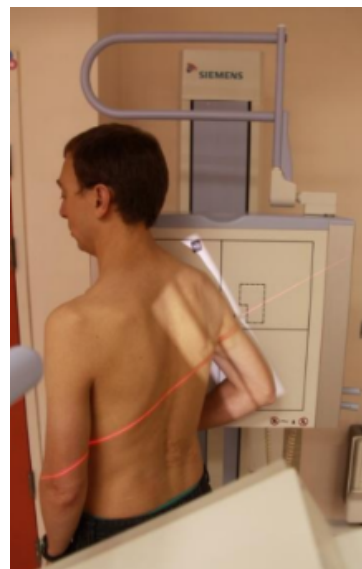


Figure 15. Lateral view of Humerus

- Image technical evaluation
 - Medial and lateral epicondyles superimposed and scapula in lateral (Y-Shaped) position
 - Humerus is positioned away from the patient's body, minimizing superimposition



Figure 16. Lateral view of Humerus

- It usually comprises an AP and lateral projection, although other non-standard, modified projections are utilized for specific indications.



Figure 19. Elbow highlight

- The fully extended arm and forearm, in a supinated position, are kept in contact with the table by lowering the shoulder joint to the level of the table; they all must be in the same plane as the detector.
- The detector is placed below the elbow joint

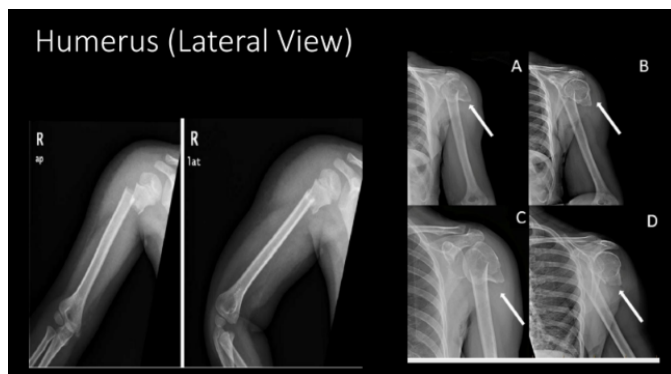


Figure 17. Lateral view of Humerus

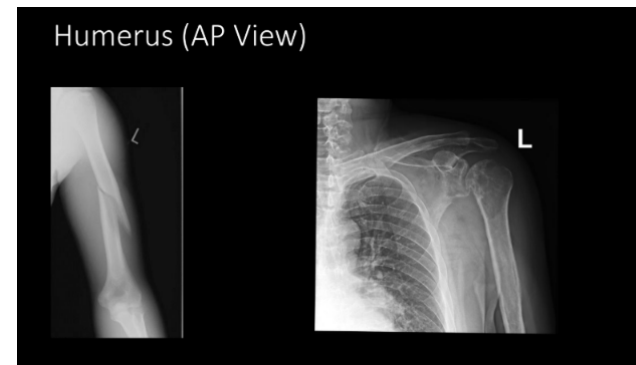


Figure 20. AP and Lateral view of Humerus

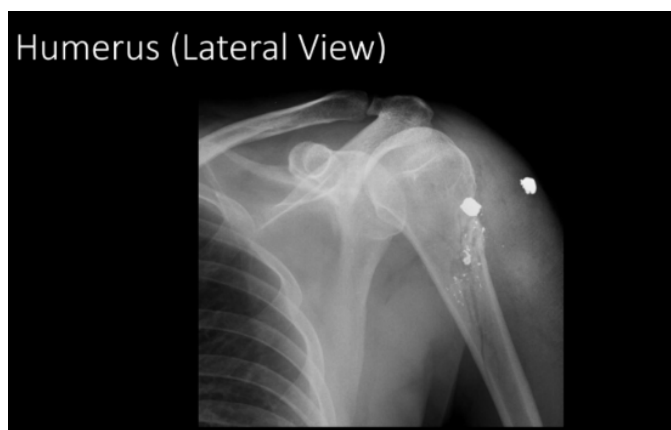


Figure 18. Lateral view of Humerus



Figure 21. Elbow AP view

- Patient's arm should be rotated externally to ensure that the trochlea and capitulum are seen in profile.
- It is the preferred projection to assess the medial and lateral epicondyles of the humerus for avulsion-type fractures

ELBOW SERIES

A. ELBOW (AP VIEW)

- Standard series of radiographs that are performed when looking for evidence of fracture, dislocation or elbow joint effusion following trauma

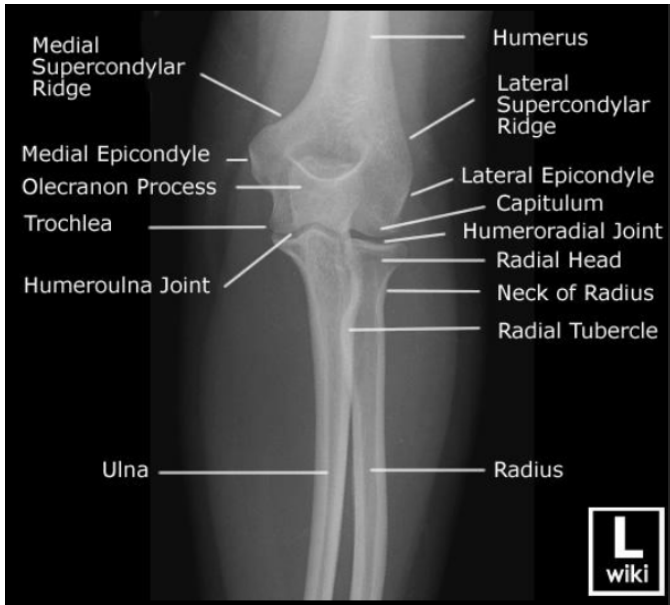


Figure 22. RA of the Elbow AP view with label

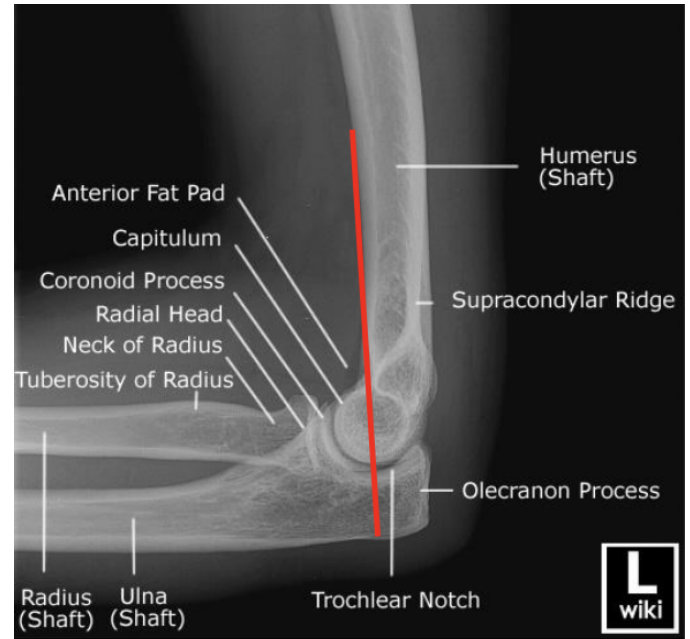


Figure 24. RA of the Elbow Lateral view with label

B. ELBOW (LATERAL VIEW)

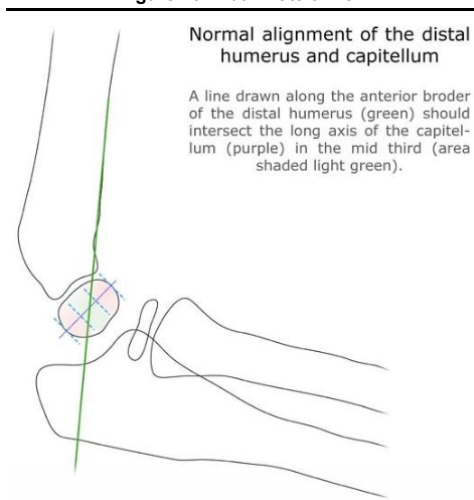
- Best demonstrates the ulna-trochlear joint, coronoid process, and the olecranon process
- Used to assess both the anterior humeral line and the radiocapitellar line



Figure 23. Elbow Lateral view



Figure 25. Anterior humeral Line



Anterior Humeral Line

- The anterior humeral line was assessed and identified as not intersecting the middle third of the capitulum ossification center.
- In children older than 4 years of age, this finding is suggestive of distal humeral fractures, mostly supracondylar fractures.



Figure 26. Anterior Humeral Line

Radiocapitellar Line

- The radiocapitellar line is one of the key lines used to assess alignment on the elbow radiograph. It is particularly useful in the pediatric setting.
- A line drawn down the neck of the radius should intersect the capitellum.
- It is important to ensure that you draw the line down the radial neck and not along the shaft because of the slight angulation at the neck of the radius.

Normal lateral elbow in the skeletally immature patient

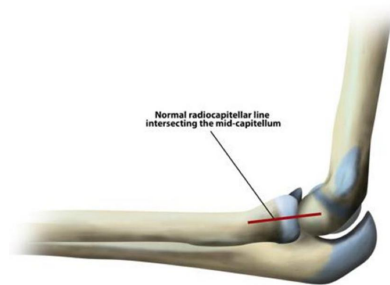


Figure 27. Normal Lateral Elbow



Figure 28. Radiocapitellar Line

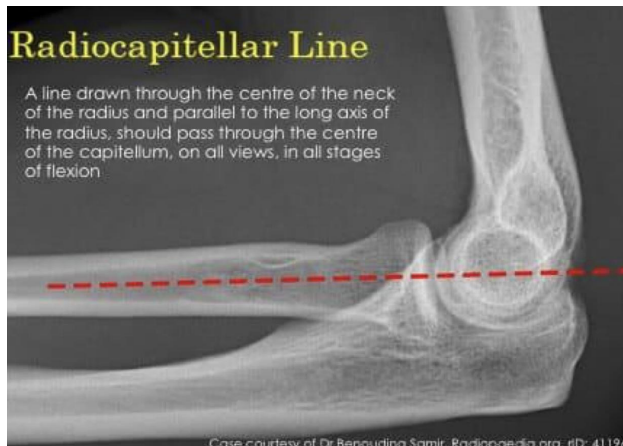


Figure 29. Radiocapitellar Line

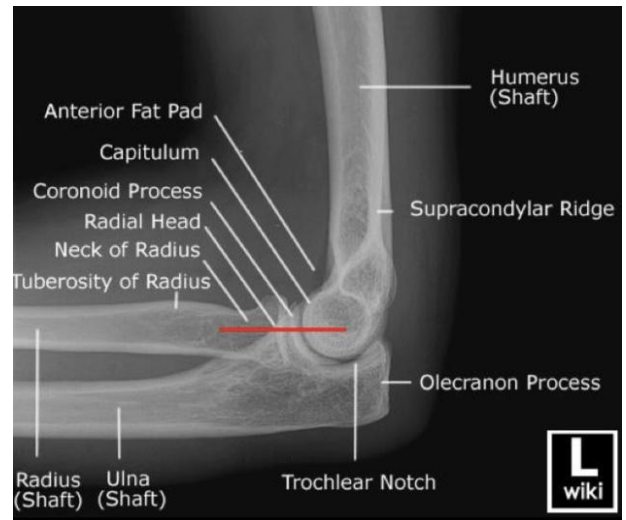


Figure 30. Radiocapitellar Line

- The radiocapitellar line was assessed and identified as not intersecting the capitellum, which indicates a radial head dislocation.



Figure 31. Radiocapitellar Line

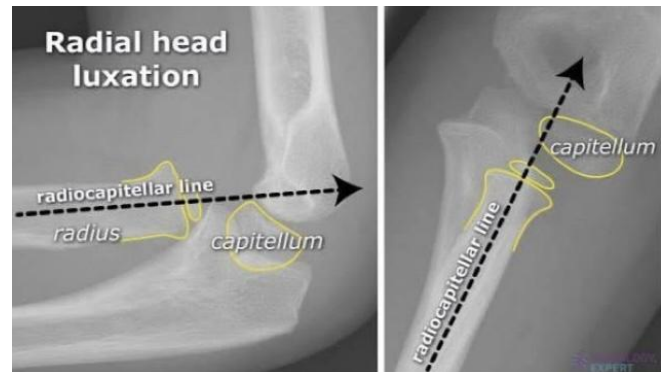


Figure 32. Radial Head Luxation

FOREARM SERIES



Figure 33. Forearm AP and Lateral View

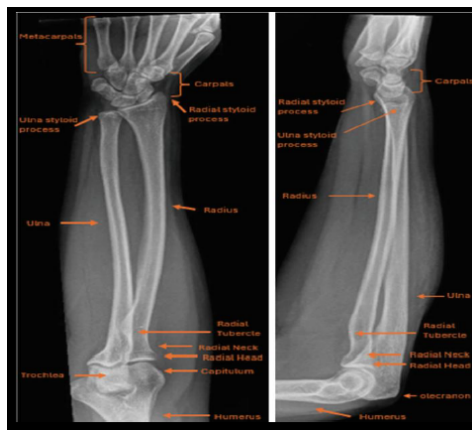


Figure 34. AP and Lateral Views of the Forearm

Indications:

- Trauma
- Bony tenderness
- Suspected fracture
- Obvious deformity
- Non-traumatic pain
- Suspected foreign body

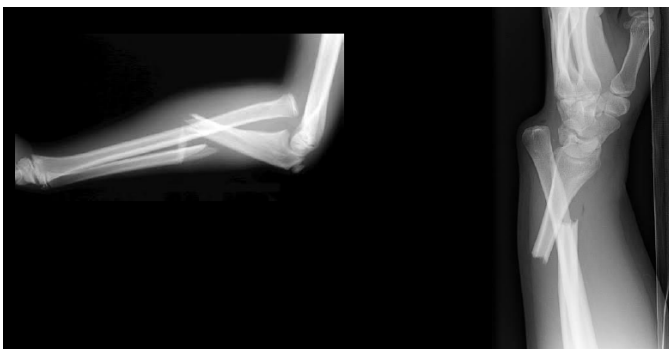


Figure 35. Displaced distal radius and ulna fractures.



Figure 36. AP and lateral views of Colles (left) and Smith (right) fractures.



Figure 37. Colles (outward) and Smith (inward) fractures.

HAND & WRIST SERIES

- Comprised of three projections: Posteroanterior, Oblique, and Lateral

Posteroanterior (PA) View

- Demonstrates the phalanges, metacarpals, radius, and ulna in the natural anatomical position
- The best view to inspect the joint spaces of the carpal bones and the distal radio-ulnar joint

Oblique View

- External oblique projection of the wrist

Lateral View

- Projection 90 degrees to the PA view
- Demonstrates multiple carpal bones overlapping
- The essential view to assessing the alignment of the radius, lunate, and capitate in the setting of a suspected dislocation

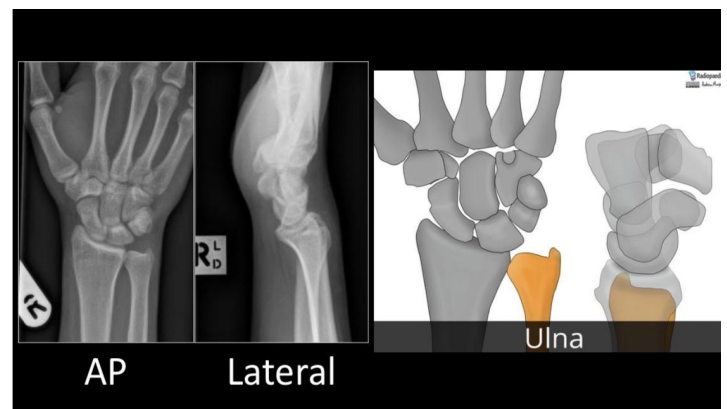


Figure 38. AP and Lateral View of Ulna

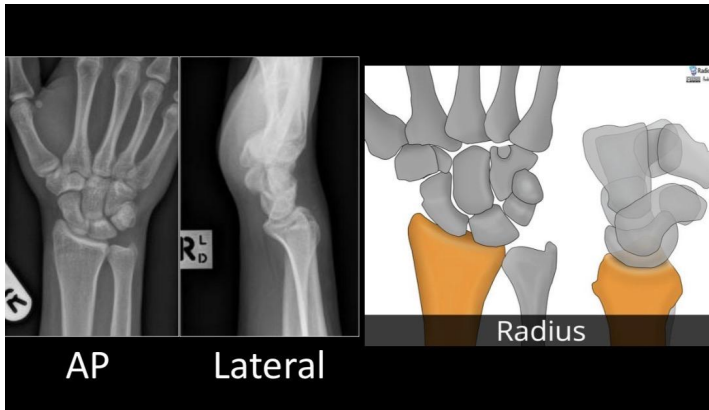


Figure 39. AP and Lateral View of Radius

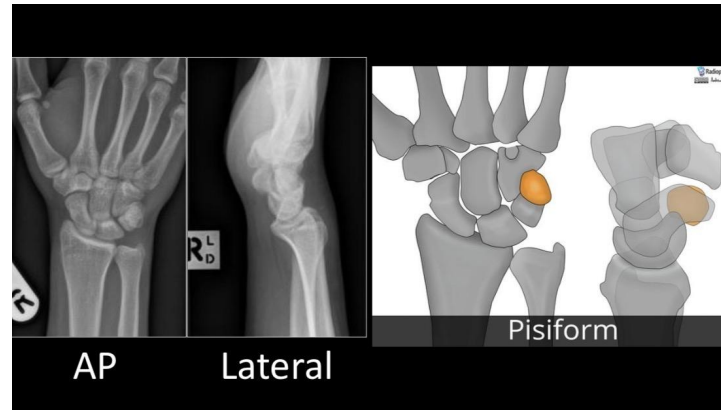


Figure 43. AP and Lateral View of Pisiform

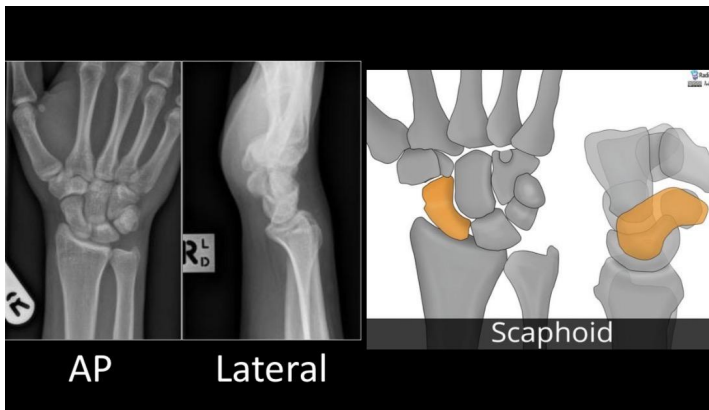


Figure 40. AP and Lateral View of Scaphoid

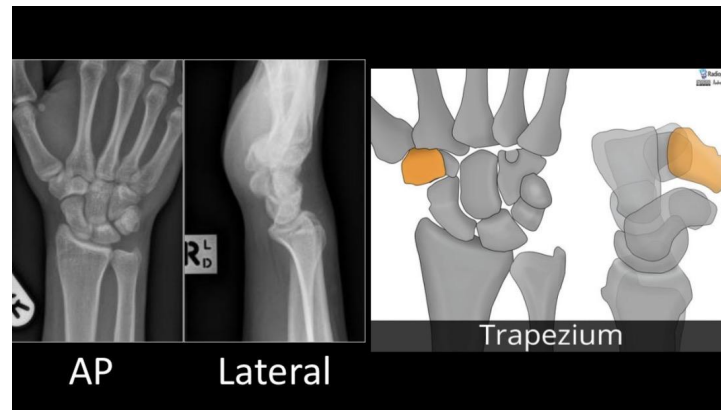


Figure 44. AP and Lateral View of Trapezium

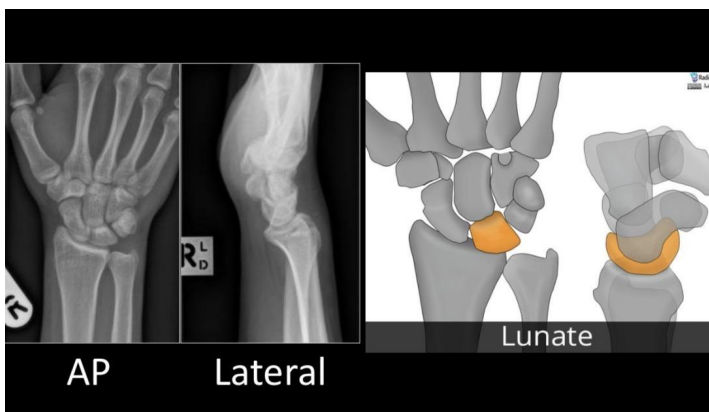


Figure 41. AP and Lateral View of Lunate

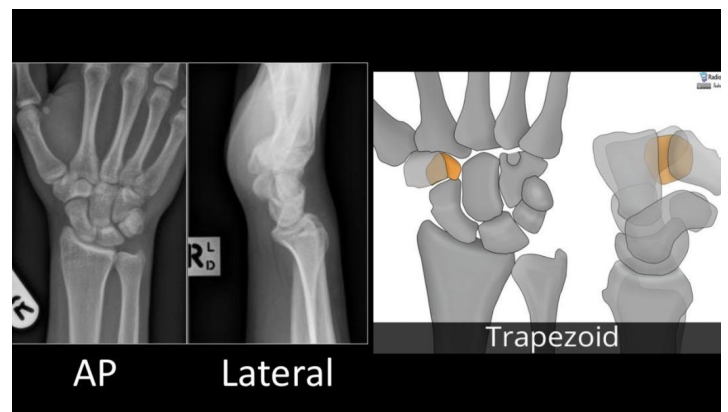


Figure 45. AP and Lateral View of Trapezoid

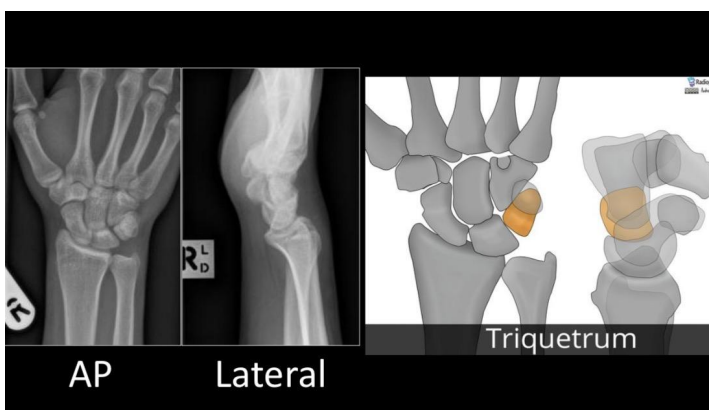


Figure 42. AP and Lateral View of Triquetrum

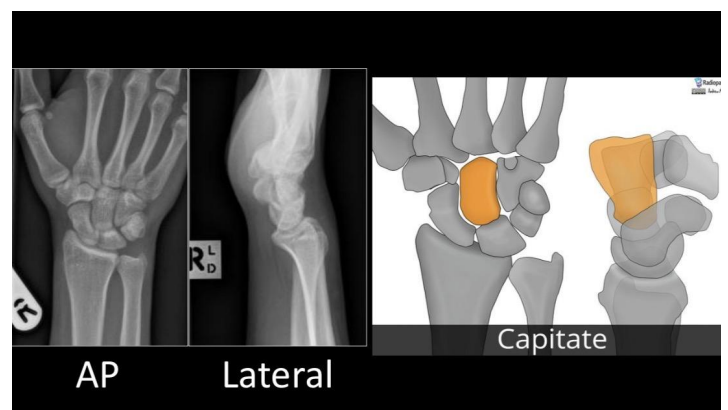


Figure 46. AP and Lateral View of Capitate

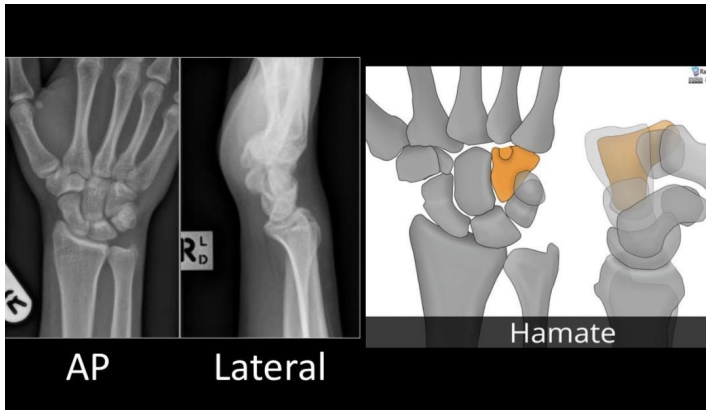
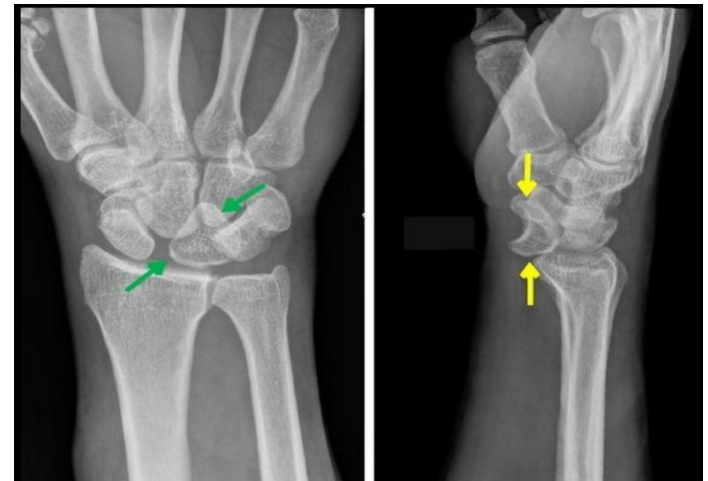
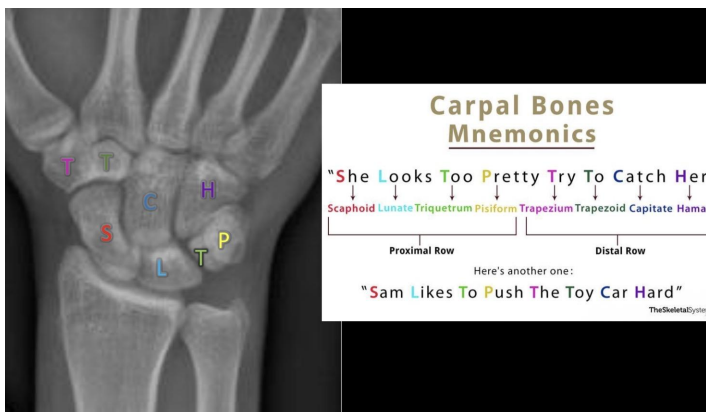


Figure 47. AP and Lateral View of Hamate

! MNEMONIC FOR CARPAL BONES

**SHE LOOKS TOO PRETTY
TRY TO CATCH HER**

- Proximal Row - Scaphoid, Lunate, Triquetrum, Pisiform
 - SHE LOOKS TOO PRETTY**
- Distal Row - Trapezium, Trapezoid, Capitate, Hamate
 - TRY TO CATCH HER**

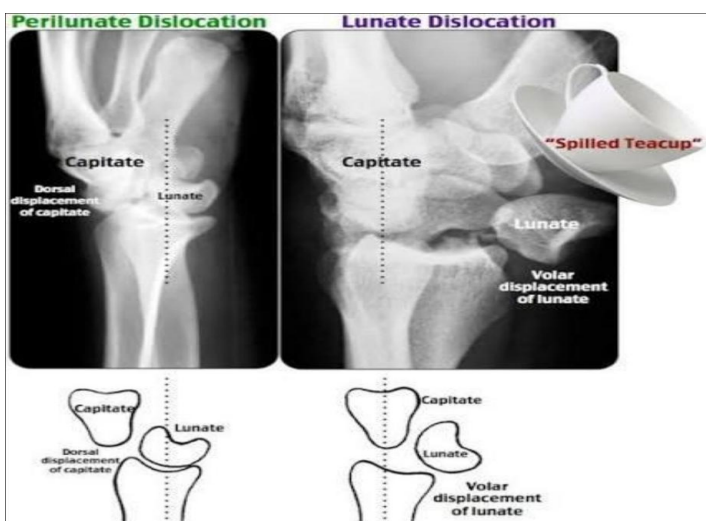


Bone age (radiograph)

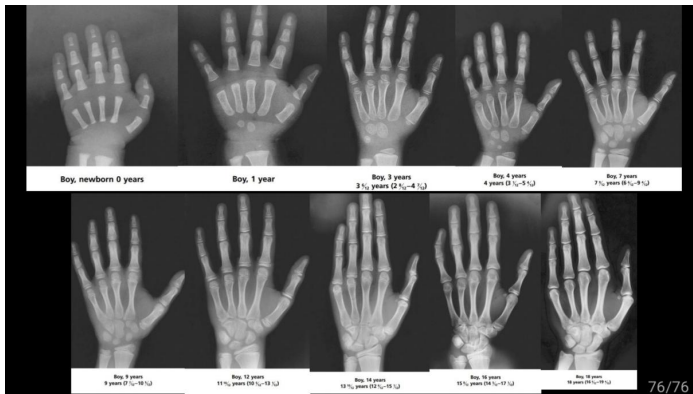
- The bone age radiograph of the hand and wrist is a commonly performed examination to determine the **radiographic age** of the patient via the assessment of growth centers.

Indications for Bone age (radiograph)

- Bone age radiographs may be indicated for both clinical and nonclinical purposes:
- For the investigation of:
 - short stature / poor growth
 - tall stature
 - early or late puberty
 - congenital adrenal hyperplasia
- Assessment is performed with a radiograph of the non-dominant hand (or left hand) with a single PA view that includes the distal radius and ulna and all the fingers.
- Appearances of the carpal bones, metacarpal, phalanges, radius and ulna are traditionally compared to standardized versions in atlases:
 - Greulich & Pyle atlas:** presents a single standardized image for a range of ages of each gender
 - Tanner-Whitehouse:** method involves the scoring of each carpal bone, the radius and ulna leading to a total score, from which age can be estimated



- **Gilsanz & Ratib atlas:** a newer digital atlas which includes synthetic images



REFERENCES

1. Dr. Reyes (2026), RA of the Upper Arm PPT