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# ROTATOR CUFF TEAR

Tear in the cuff of muscle around the shoulder: subscapularis, supraspinatus, infraspinatus and teres minor

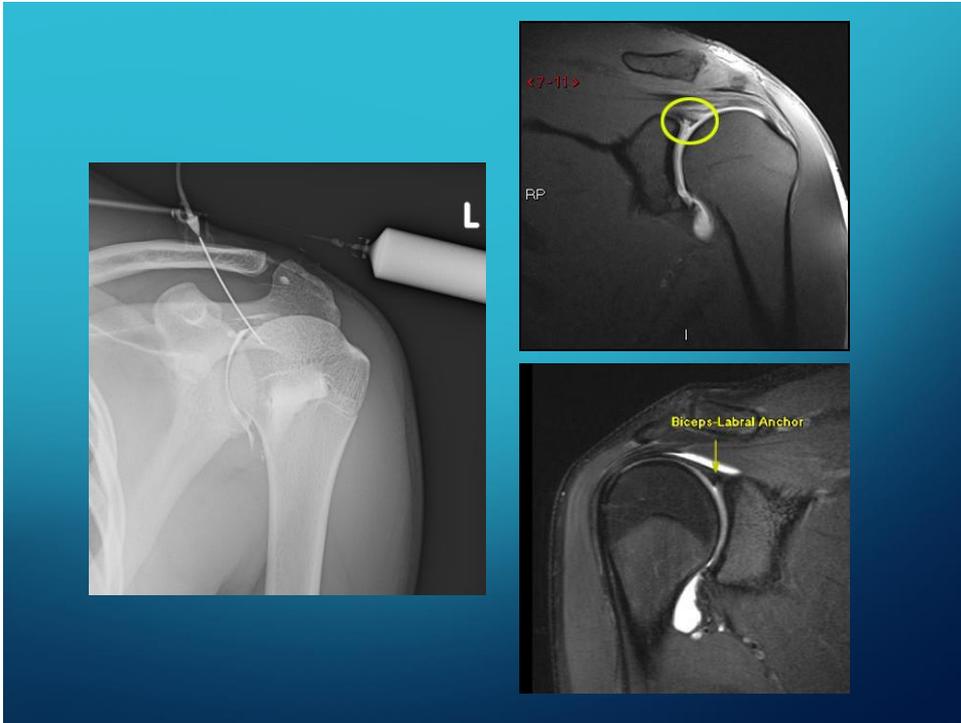
- **Cause:** Normal wear/tear, poor posture, falling, lifting/pulling, repetitive stress
- **Complications:** Poor shoulder range of motion, pain
- **Radiographic Appearance:** Leaking contrast from shoulder joint
- **Technical:** No manual exposure factor change; Arthrogram (Fluoroscopy), MRI, CT
- **Prognosis:** Dependent on size of tear
  - Small – 40-90% normal functioning with conservative treatment
  - Large – some residual permanent weakness. Therefore, heavy/very heavy lifting may no longer be possible.

Some information obtained from:  
<http://www.mayoclinic.com>

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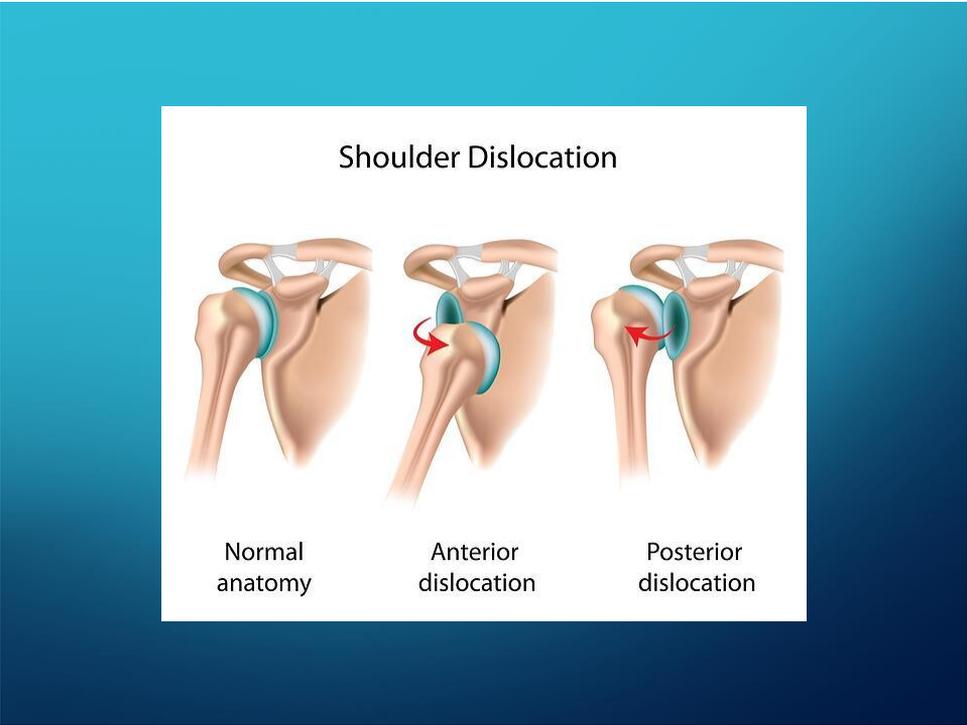
## SHOULDER DISLOCATION

*Injury in which the humerus pops out of the glenohumeral joint*

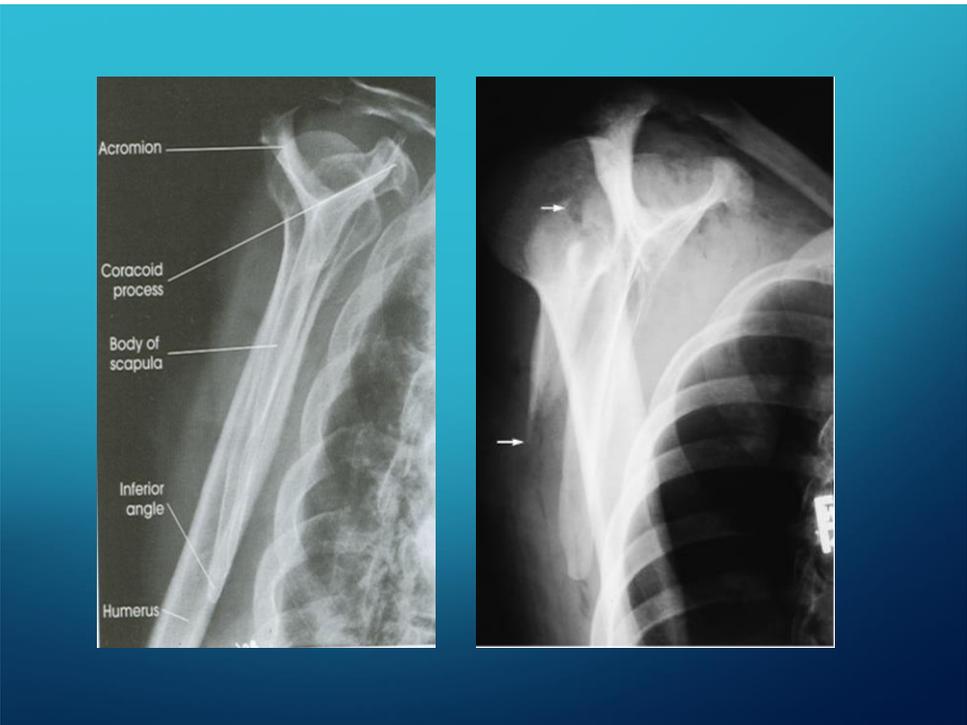
- **Cause:** Injury (sports related or non-sports related), falls
- **Complications:** Tearing of muscles, ligaments and tendons; nerve/vessel damage, susceptibility of re-injury
- **Radiographic Appearance:**
  - Anterior Dislocation – humeral head beneath coracoid process
  - Posterior Dislocation – humeral head beneath the acromion process
- **Technical:** No manual exposure factor change
- **Prognosis:** Most regain full shoulder function but may be prone to repeat dislocations and instability

Some information obtained from:  
<http://www.mayoclinic.com>

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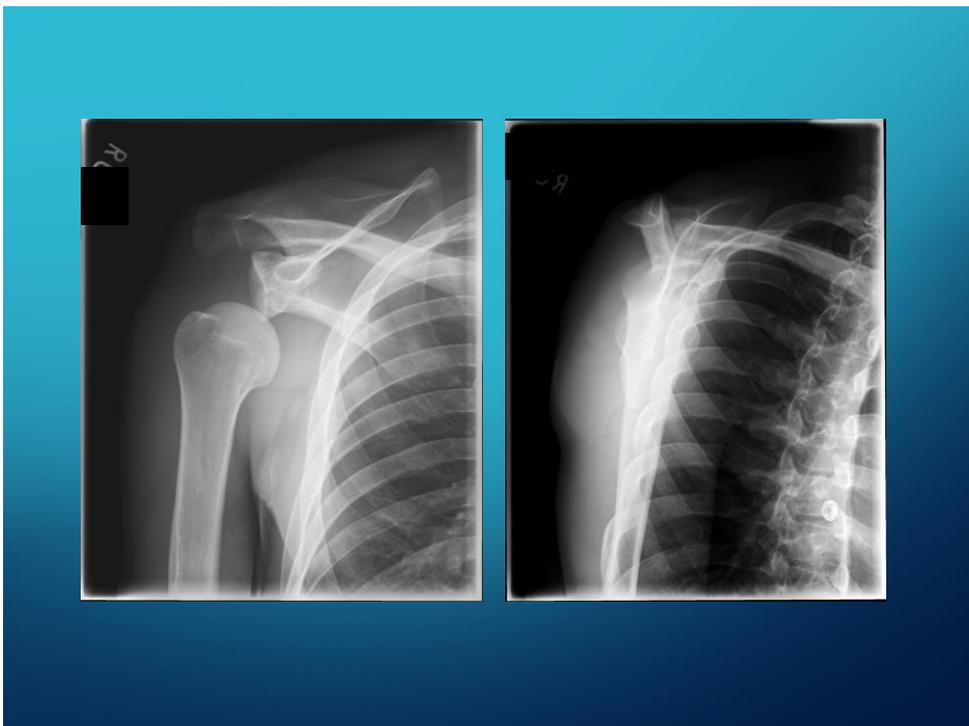
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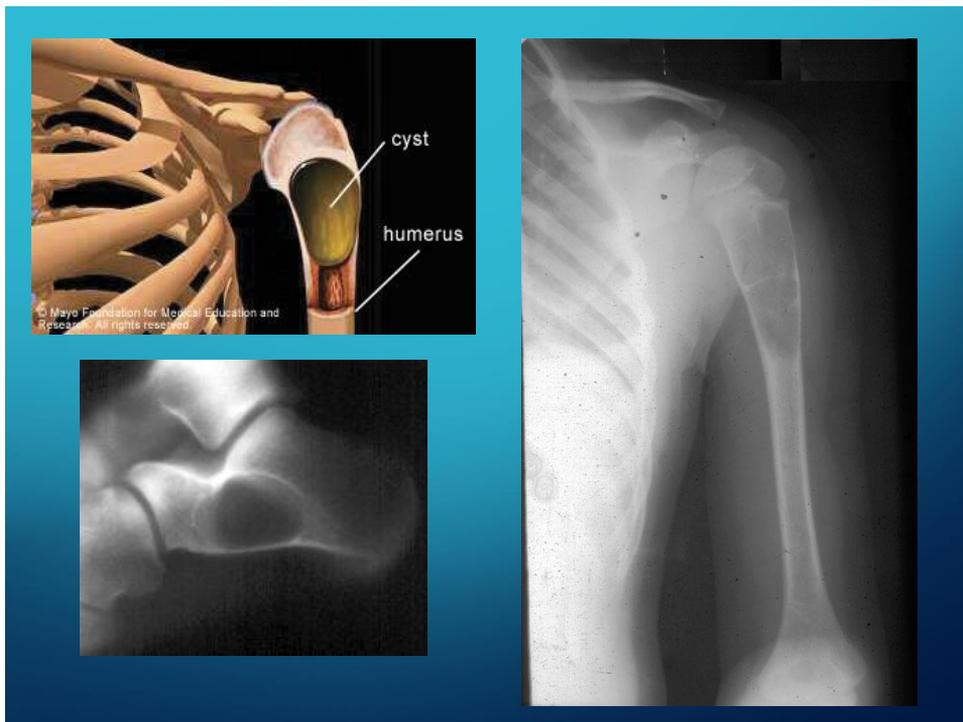
## SIMPLE BONE CYST

Cyst filled with fluid will typically grow adjacent to a growth plate and may fill most of the metaphysis mainly affecting long bones.

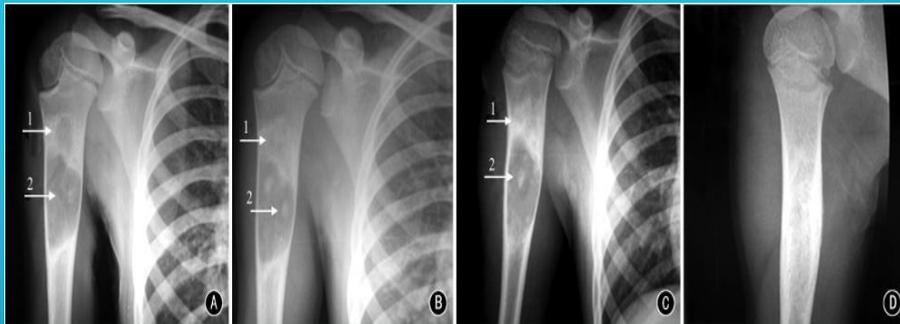
- **Cause:** Unknown (idiopathic)
- **Complications:** Fracture in the bone where the cyst is located, pain, swelling
- **Radiographic Appearance:** Central and symmetric, radiolucent defect in metaphysis
- **Technical:** Subtractive if a large cyst; otherwise, No manual exposure factor change
- **Prognosis:** Most patients will need continued observation
  - Curettage/bone grafting, steroid injection, bone marrow injection

Some information obtained from:  
<http://www.mayoclinic.com>

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- A. Two cysts (left arrows) were found in the proximal end of right humerus of a 10-year-old boy who had complained ache of the right upper arm for three months.
- B. Two months after the first injection, the both cysts have begun to be vague.
- C. Two months after the second injection, the first cyst has been opaque and the second cyst became more vague and smaller than before.
- D. Total three times of injections were performed and one year after the first injection, the both cysts disappeared on radiography

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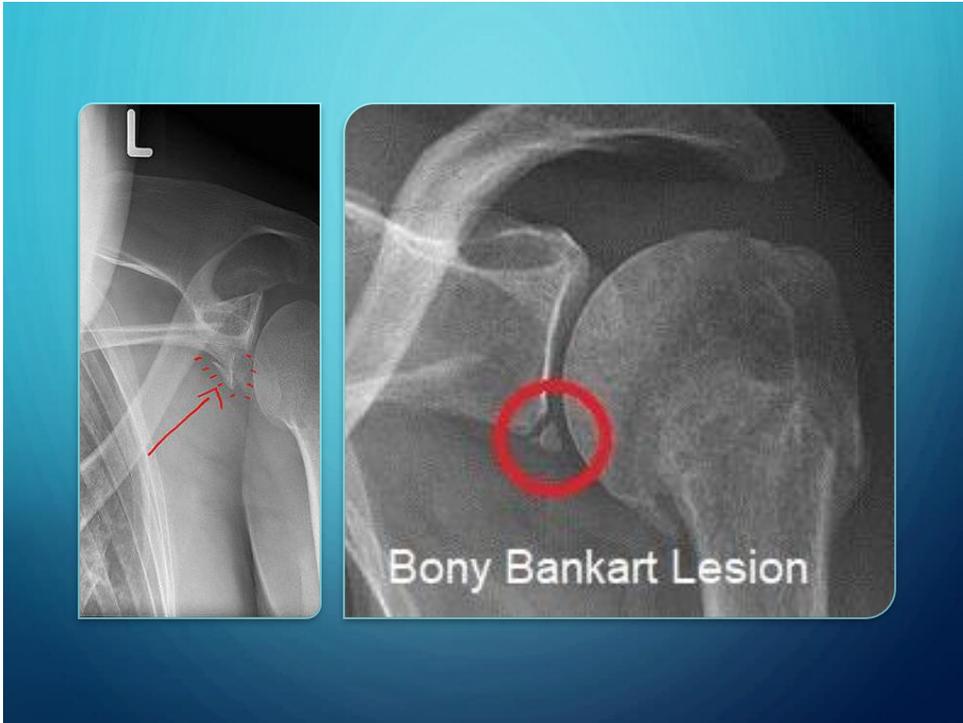
## BANKART LESION

*Anterior dislocation of the proximal humerus with resulting avulsion fracture of the anterior inferior region of the glenoid rim.*

- **Cause:** Injury (Collisions, accidents, sports injuries –acute or overuse); loose ligaments (double-jointed)
- **Complications:** Pain, instability, weakness, limited range of motion
- **Radiographic Appearance:** Fracture involving the glenoid rim
- **Technical:** No manual exposure factor change
- **Prognosis:** Most patients do heal, therefore surgical intervention is usually not required. If surgery is required the labrum will be sutured with anchors back to the glenoid rim.

Some information obtained from:  
<http://www.mayoclinic.com>

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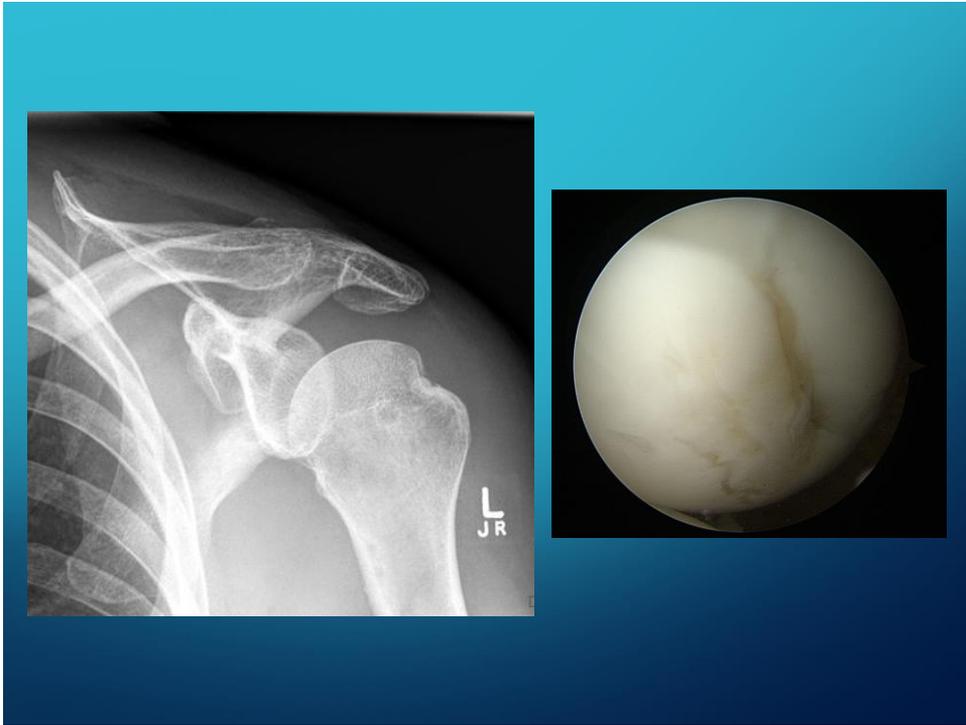
## HILL-SACH SYNDROME

*A compression fracture of the articular surface of the posterolateral aspect of the humeral head associated with anterior dislocation of the humeral head*

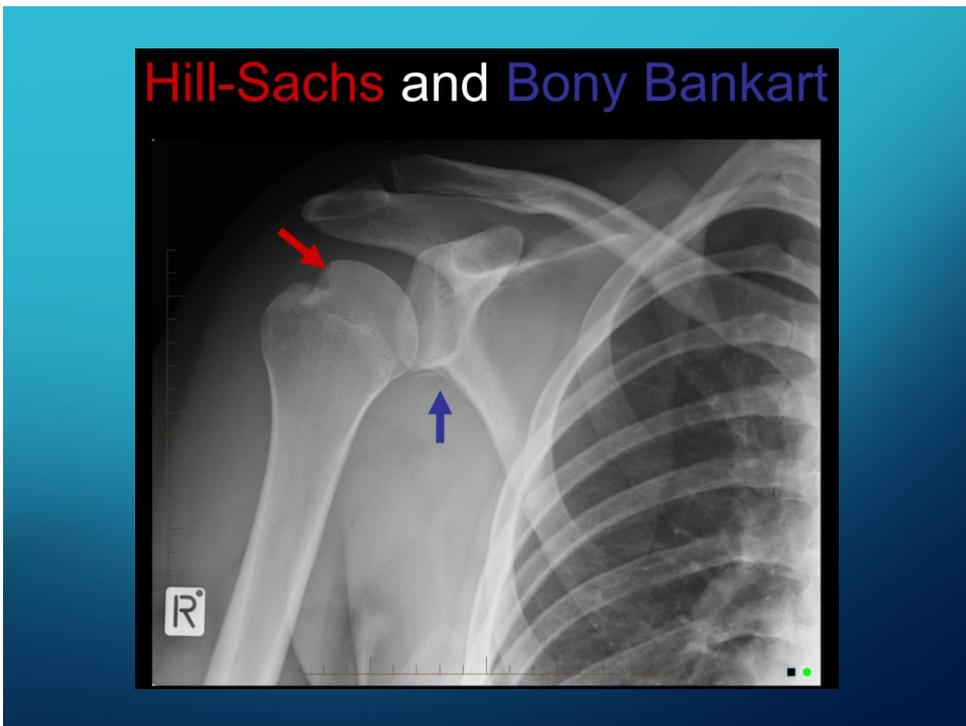
- **Cause:** Injury Sports injuries, falls, collision (MVC), repetitive work (heavy lifting/pushing/pulling above shoulder height)
- **Complications:** Bankart lesions are often in patients with a Hill-Sachs lesion; intense pain, difficulty moving the joint, visible deformation of the shoulder, swelling or bruising, weakness, muscle spasms
- **Radiographic Appearance:** compression fracture and possible anterior dislocation of humeral head
- **Technical:** No manual exposure factor change
- **Prognosis:** Treatment is dependent on severity of fracture and associated stability.
  - Surgery – Arthroscopic or Open Surgery
  - Physical Therapy – to strengthen muscles around the joint
  - Recurrence of dislocation is possible; arthritis

Some information obtained from:  
<http://www.mayoclinic.com>  
 Healthline.com

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## Humerus AP Neutral Trauma

(\*if patient can tolerate-rotate arm\*)

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Elbow and shoulder joints visible but slightly distorted due to beam divergence
- Humeral epicondyles without rotation
- Humeral head and greater tubercle in profile (\*if patient can tolerate rotation)
- Outline of the lesser tubercle, located between the humeral head and the greater tubercle (\*if patient can tolerate rotation)
- Bony trabecular detail and surrounding soft tissues



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**1. Trauma Humerus**  
**AP Neutral Trauma**

(\*if patient can tolerate-rotate arm\*)

**EI: 285**



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**2. Trauma Humerus**  
**AP Neutral Trauma**

(\*if patient can tolerate-rotate arm\*)

**EI: 155**

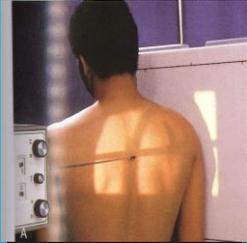


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## Humerus Scapular Y Trauma (Lateral)

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Humeral head and glenoid cavity superimposed
- Humeral shaft and scapular body superimposed
- No superimposition of the scapular body over the bony thorax
- Acromion projected laterally and free of superimposition
- Coracoid possibly superimposed or projected below the clavicle
- Scapula in lateral profile with lateral and vertebral borders superimposed
- Bony trabecular detail and surrounding soft tissues

**\*\*Separate lateral elbow REQUIRED**



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## 3. Trauma Humerus Scapular Y Trauma (Lateral)

EI: 170



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## 4. Trauma Humerus Scapular Y Trauma (Lateral)

El: 220



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## Humerus Non-Trauma AP (\*External View)

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Elbow and shoulder joints visible but slightly distorted due to beam divergence
- Humeral epicondyles without rotation
- Humeral head and greater tubercle in profile
- Outline of the lesser tubercle, located between the humeral head and the greater tubercle
- Bony trabecular detail and surrounding soft tissues

*\*\*Separate AP elbow could be needed for better or to include entire distal humerus*



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## 5. Non-Trauma AP Humerus (\*External)

EI: 300



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## 6. Non-Trauma AP Humerus (\*External)

EI: 285



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## Humerus Non-Trauma Lateral (\*Internal View)

- Evidence of proper collimation and the presence of side marker placed clear of anatomy of interest
- Elbow and shoulder joints visible but slightly distorted due to beam divergence
- Superimposed humeral epicondyles
- Lesser tubercle in profile on medial aspect
- Greater tubercle superimposed over the humeral head
- Bony trabecular detail and surrounding soft tissues

*\*\*Separate Lateral elbow could be needed for better positioning or to include entire distal humerus*



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## 7. Non-Trauma AP Humerus (\*Internal)

EI: 260



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## 8. Non-Trauma AP Humerus (\*Internal)

EI: 255



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## Shoulder Non-Trauma Internal

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Superior scapula, clavicle, and proximal humerus
  - Merrill's recommends entire clavicle if IR is crosswise, lateral half of clavicle if IR is lengthwise
- Bony trabecular detail and surrounding soft tissue
- Lesser tubercle in profile and pointing medially
- Outline of the greater tubercle superimposing the humeral head
- Greater amount of humeral overlap of the glenoid cavity than in the external and neutral positions



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## 9. Non-Trauma Shoulder

(\*Internal)

EI: 375



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## 10. Non-Trauma Shoulder

(\*Internal)

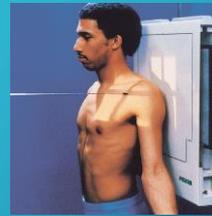
EI: 185



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## Shoulder Non-Trauma External

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Superior scapula, clavicle, and proximal humerus
  - Merrill's recommends entire clavicle if IR is crosswise, lateral half of clavicle if IR is lengthwise
- Bony trabecular detail and surrounding soft tissues
- Humeral head in profile
- Greater tubercle in profile on lateral aspect of the humerus
- Scapulohumeral joint visualized with slight overlap of humeral head on glenoid cavity
- Outline of lesser tubercle between the humeral head and greater tubercle



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## 11. Non-Trauma Shoulder (\*External)

EI: 120



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## 12. Non-Trauma Shoulder

(\*External)

EI: 185



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## Shoulder Trauma AP External

\*Neutral rotation if patient cannot tolerate

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Superior scapula, clavicle, and proximal humerus
  - Merrill's recommends entire clavicle if IR is crosswise, lateral half of clavicle if IR is lengthwise
- Bony trabecular detail and surrounding soft tissues
- Humeral head in partial profile
- Greater tubercle in profile on the lateral aspect of the humerus (\*if patient can tolerate rotation)
- Scapulohumeral joint visualized with slight overlap of humeral head on glenoid cavity
- Outline of lesser tubercle between the humeral head and the greater tubercle (\*if patient can tolerate rotation)



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### 13. Trauma Shoulder AP External (\*Neutral rotation if patient cannot tolerate)

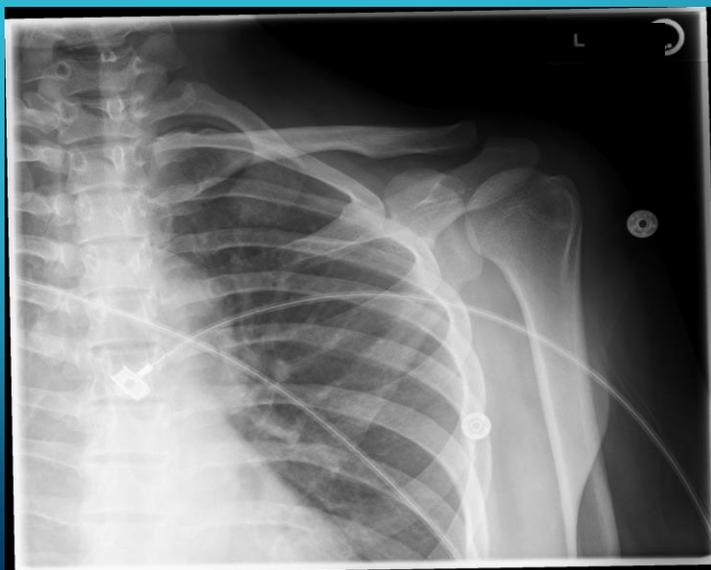
EI: 125



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### 14. Trauma Shoulder AP External (\*Neutral rotation if patient cannot tolerate)

EI: 195



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## Shoulder Trauma Scapular Y

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Humeral head and glenoid cavity superimposed
- Humeral shaft and scapular body superimposed
- No superimposition of the scapular body over the bony thorax
- Acromion projected laterally and free of superimposition
- Coracoid possibly superimposed or projected below the clavicle
- Scapula in lateral profile with lateral and vertebral borders superimposed
- Bony trabecular detail and surrounding soft tissues



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## 15. Trauma Shoulder Scapular Y

EI: 215



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## 16. Trauma Shoulder Scapular Y

EI: 275

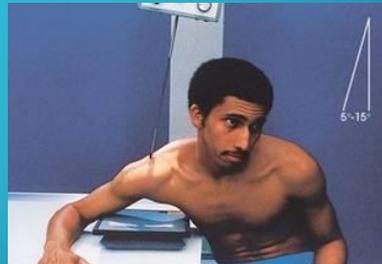


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## Shoulder Trauma (Axillary Shoulder) Superoinferior Axial

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Scapulohumeral joint (not open on patients with limited flexibility)
- Coracoid process projected above the clavicle
- Lesser tubercle in profile
- Acromioclavicular joint through the humeral head
- Bony trabecular detail and surrounding soft tissues

**\*\*Performed on patients >8 years of age**  
**\*\*The less the patient can extend the greater the angle**



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**19. Trauma Shoulder (Axillary)**  
*Superoinferior Axial*

El: 215



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**20. Trauma Shoulder (Axillary)**  
*Superoinferior Axial*

El: 415



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## 21. Trauma Shoulder (Axillary) Superoinferior Axial

EI: 110



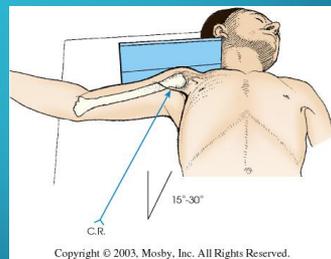
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## Shoulder Trauma (Axillary Shoulder) Inferosuperior Axial

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest
- Scapulohumeral joint with slight overlap
- Coracoid process, pointing anteriorly
- Lesser tubercle in profile and directed anteriorly
- AC joint, acromion, and acromial end of clavicle projected through the humeral head
- Bony trabecular detail and surrounding soft tissues

**\*\*Performed on patients >8 years of age**

**\*\*The greater the abduction the greater the angle**



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From Rafer JA et al: Axillary shoulder with exaggerated rotation: the Hill-Sachs defect. *Radio Technol* 62(1):18, 1990.

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**17. Trauma Shoulder (Axillary)**  
**Inferosuperior Axial**

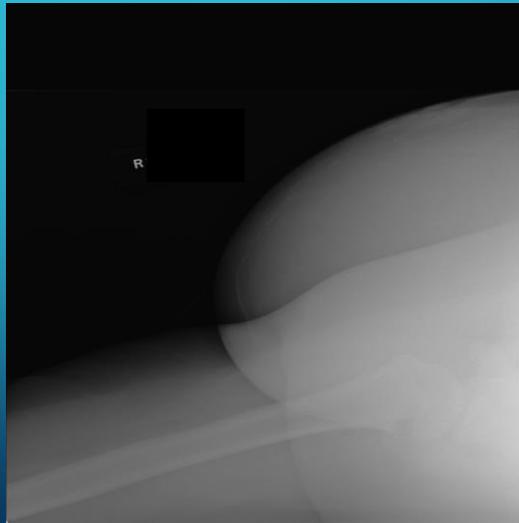
El: 405



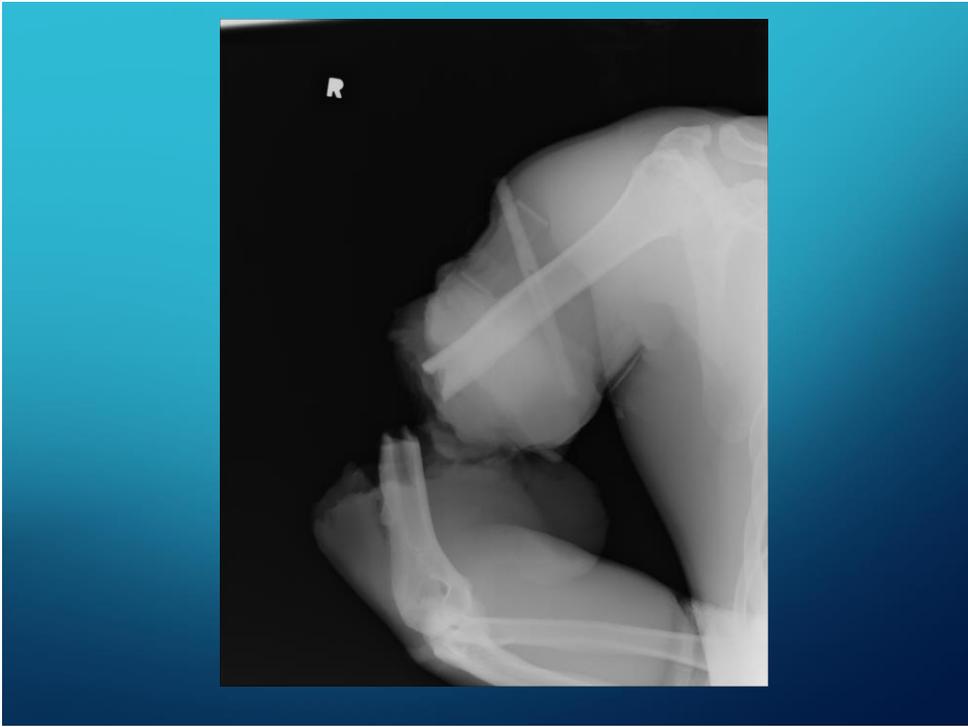
49

**18. Trauma Shoulder (Axillary)**  
**Inferosuperior Axial**

El: 40



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