

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Humerus

| | |
|--------------------------------|--|
| Routine: | AP Neutral Trauma and Scapular Y Trauma (Lateral “Y”) |
| Position/Projection: | Erect (AP Neutral Trauma) |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| Technique: | 75 kVp $\overset{\circ}{\circ}$ \bullet ; non AEC 2.8 mAs (Bucky) |
| SID: | 40” SID |
| Collimation: | 14 X 17 Portrait (Lengthwise), collimated side to side |
| Patient Position: | The patient can be erect or supine (do erect if possible). Place the posterior surface of the humerus against the image receptor. Place image receptor 1 ½ inches above the humerus. The scapula should be parallel with the image receptor. The patient’s arm should be placed with the epicondyles parallel to the image receptor. *Unless contradicted by the patient condition. Never forcibly rotate the patient’s arm in cases of trauma. If the patient is unable to turn arm, image humerus in neutral position. |
| Central Ray: | Central ray perpendicular to the midportion of the humerus and the center of the image receptor. |
| Marker Placement: | Place the appropriate right or left marker on the lateral aspect of the patient. |
| Shielding: | Gonadal shielding not required at RH |
| Breathing Instructions: | Suspended Respiration |
| Purpose/Structures: | Shows the entire length of the humerus. The accuracy of the position is shown by the epicondyles |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Evaluation Criteria:

- 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 the patient can tolerate)
- Outline of the lesser tubercle, located between the humeral head and the greater tubercle (**if the patient can tolerate)
- Bony trabecular detail and surrounding soft tissues

Additional Notes:

- May need to perform a separate AP elbow if a good AP elbow is not demonstrated on the Humerus External rotation or if this anatomy is not included. This should be done by sitting the patient at the horizontal image receptor.

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Humerus

| | |
|-----------------------------|--|
| Routine: | AP Neutral Trauma and Scapular Y Trauma (Lateral “Y”) |
| Position/Projection: | RAO or LAO (PA Oblique—Lateral “Y”) Erect RPO or LPO (AP Oblique – Lateral “Y”) Supine |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| Technique: | 75 kVp $\textcircled{\bullet}$ $\textcircled{\bullet}$; non AEC 2.8 mAs (Bucky) |
| SID: | 40” SID |
| Collimation: | 14 X 17 Portrait (Lengthwise), collimated side to side |
| Patient Position: | <p>The patient should be in the erect/upright or recumbent position: the erect position is preferred. For the erect position, place the anterior surface of the affected shoulder against the upright image receptor. Rotate the patient so the mid-coronal plane forms an angle of 45- 60 degrees to the image receptor. The position of the arm should remain in a neutral position. Palpate the scapula and place the flat surface perpendicular to the image receptor. Place the image receptor 1 1/2 inches above the top of the shoulder.</p> <p>If the patient is supine/recumbent, you have the patient rotate away from the affected side. Mid coronal plane 45- 60 degrees from the image receptor. Make sure the flat surface of the scapula is perpendicular to the image receptor. Place the image receptor 1 1/2 inches above the top of the shoulder.</p> |
| Central Ray: | Central ray perpendicular to the center of the image receptor. |
| Marker Placement: | Place the appropriate right or left marker on the lateral aspect of the patient. |
| Shielding: | Gonadal shielding not required at RH |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Breathing Instructions: Suspended Respiration

Purpose/Structures: The lateral Y position demonstrates an oblique view of the shoulder. In the normal shoulder, the humeral head should be superimposed over the junction of the Y. In anterior (subcoracoid) dislocations, the humeral head is beneath the coracoid process. In posterior (subacromial) dislocations, it is beneath the acromion.

Evaluation Criteria:

- 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

Additional Notes:

**Shoulder to elbow included

- A separate lateral elbow ***is required***. This should be done by sitting the patient at the horizontal image receptor when possible.
- If “PA” option is available on the Diagnost for “Y” view, there is no need to mirror the image.

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Non- Trauma Humerus

| | |
|--------------------------------|---|
| Routine: | AP and Lateral (External and Internal) |
| Position/Projection: | Erect External Rotation (AP) |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt. |
| Technique: | 75 kVp  ; non AEC 2.8 mAs (Bucky) |
| SID: | 40" SID |
| Collimation: | 14 X 17 Portrait (Lengthwise), collimated side to side |
| Patient Position: | The patient can be erect or supine (do erect if possible). Place the posterior surface against the image receptor. Place image receptor 1 ½ inches above the humerus. The scapula should be parallel with the image receptor. The patient's arm should be placed with the epicondyles parallel to the image receptor. |
| Central Ray: | Central ray perpendicular to the midportion of the humerus and the center of the image receptor. |
| Marker Placement: | Place the appropriate right or left marker on the lateral aspect of the patient. |
| Shielding: | Gonadal shielding not required at RH |
| Breathing Instructions: | Suspended Respiration |
| Purpose/Structures: | Demonstrates entire length of the humerus. The accuracy of the position is shown by the epicondyles. |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Evaluation Criteria:

- 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

Additional Notes:

- May need to perform a separate AP elbow if a good AP elbow is not demonstrated on the Humerus External rotation **OR** if this anatomy is not included.
 - This should be performed with the patient in a seated position

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Non- Trauma Humerus

| | |
|--------------------------------|--|
| Routine: | AP and Lateral (External and Internal) |
| Position/Projection: | Lateromedial, Erect –Internal Rotation (Lateral) |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt. |
| Technique: | 75 kVp ; non AEC 2.8 mAs (Bucky) |
| SID: | 40” SID |
| Collimation: | 14 X 17 Portrait (Lengthwise), collimated side to side |
| Patient Position: | The patient can be erect or supine (do erect if possible). Place the posterior surface against the image receptor. Place image receptor 1 ½ inches above the level of the humeral head. Internally rotate the arm, flex the elbow and place the patient’s posterior hand on the hip. This places the humerus into a lateral position with the epicondyles perpendicular to the image receptor. (<i>Merrill’s places the anterior hand on the hip</i>). Both joints must be included. |
| Central Ray: | Central ray to the mid portion of the humerus and the center of the image receptor. |
| Shielding: | Gonadal shielding not required at RH |
| Breathing Instructions: | Suspended Respiration |
| Marker Placement: | Place the appropriate right or left marker on the lateral aspect of the patient |
| Purpose/Structures: | Demonstrates entire length of the humerus. A true lateral image is confirmed by superimposed epicondyles. |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Evaluation Criteria:

- 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

Additional Notes:

- May need to perform a separate lateral elbow if a good lateral elbow is not demonstrated on the Humerus Internal rotation.
 - This should be performed with the patient in a seated position

Humerus-Special View

*14th edition Merrill's Volume I, pages 236-237

- Position/Projection:** Erect or Supine (Transthoracic Lateral Trauma – Lawrence Method)
- Patient Prep:** Remove everything from waist up *if possible*. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt.
- SID:** 40" SID
- Collimation:** 14 X 17 Portrait (Lengthwise)/Landscape (Crosswise) depending if the patient is erect or supine (collimate if possible)
- Patient Position:** The patient may be erect or in the supine position.
- *Erect positioning* - The patient is in a lateral position next to the vertical IR. The anatomy of interest is against the IR.
 - *Supine/Recumbent positioning* – The IR would be placed next to the anatomy of interest to obtain a cross table lateral image (imaging medial to lateral)
- Have the patient raise the non-injured arm, rest the forearm on the head, and elevate the shoulder as much as possible. Elevation of the non-injured shoulder drops the injured side, separating the shoulders to prevent superimposition. Ensure that the mid-coronal plane is perpendicular to the IR. No attempt should be made to rotate or move the injured arm. Place image receptor 1 ½ inches above the level of the humeral head.
- If the patient cannot elevate the unaffected shoulder, angle the CR 10-15 degrees cephalad to obtain a comparable radiograph.
- Central Ray:** Central ray to the mid portion of the humerus and the center of the image receptor.

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Marker Placement: Place appropriate right or left marker on the image.

Shielding: Gonadal shielding not required at RH

Breathing Instructions: Suspended Inspiration or Breathing technique

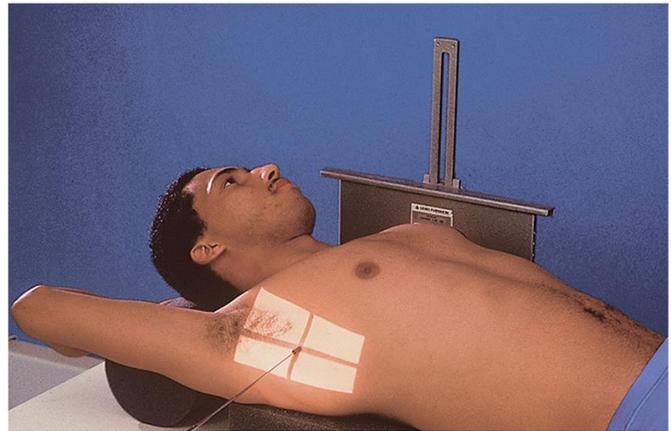
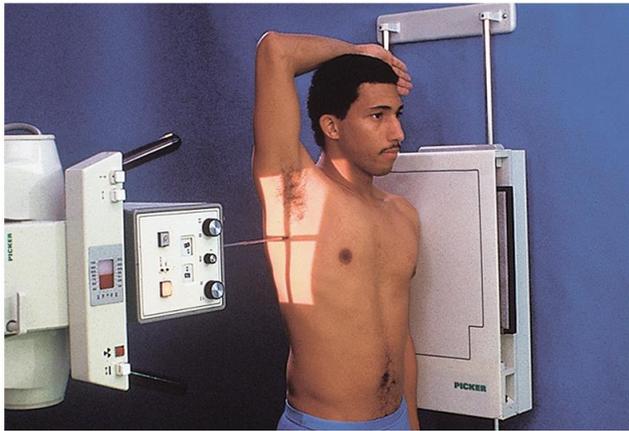
Purpose/Structures: A lateral image of the shoulder and proximal humerus is projected through the thorax

Evaluation Criteria:

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest.
- Scapula, clavicle, and proximal humerus seen through the lung field.
- Scapula superimposed over the thoracic spine.
- Unaffected clavicle and humerus projected above the shoulder closest to the IR.

Additional Notes:

- May need to perform a separate lateral elbow if a good lateral elbow is not demonstrated.



Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Non-Trauma Shoulder

- Routine:** AP Internal & AP External
- Position/Projection:** **Internal Rotation (AP Internal)**
- Patient Prep:** Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt
- Technique:** **85 kVp $\text{\textcircled{O}}$ $\text{\textcircled{O}}$ \bullet ; non AEC 4.5 mAs (Bucky)**
- SID:** 40" SID
- Collimation:** 12 X 10 Landscape (Crosswise)
- Patient Position:** Patient erect whenever possible. Place affected shoulder against the image receptor- rotate affected arm internally to place the back of the hand on the hip. Adjust the arm to place the humeral epicondyles perpendicular to the plane of the image receptor. Top of image receptor should be *approximately* 1 ½ inches above the top of the shoulder.
- Central Ray:** Center one inch inferior to the coracoid process.
- Marker Placement:** Place the appropriate left or right marker on the lateral aspect of the patient, as well as placement of the "INT" marker or annotation of "INT" or "Internal."
- Shielding:** Gonadal shielding not required at RH
- Breathing Instructions:** Suspended Respiration
- Purpose/Structures:** Proximal humerus is seen in a true lateral position.
- Evaluation Criteria:**
- 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

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

- Bony trabecular detail and surrounding soft tissue
- Lesser tubercle in profile and pointing medially
- Outline of greater tubercle superimposing the humeral head
- Greater amount of humeral overlap of the glenoid cavity than in the external and neutral positions

****Merrill's:**

- 12 x 10 Crosswise to include ENTIRE Clavicle
- 10 x 12 Lengthwise to include MORE Humerus (will only see lateral half of clavicle)

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Non-Trauma Shoulder

| | |
|--------------------------------|--|
| Routine: | AP Internal & AP External |
| Position/Projection: | External Rotation (AP External) |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| Technique: | 85 kVp $\text{O} \text{O}$ \bullet; non AEC 4.5 mAs (Bucky) |
| SID: | 40" SID |
| Collimation: | 12 X 10 Landscape (Crosswise) |
| Patient Position: | Patient erect if possible. Place affected shoulder against the image receptor. Rotate arm externally until epicondyles of humerus are parallel with the plane of the IR. Top of image receptor should be <i>approximately</i> 1 ½ inches above the shoulder |
| Central Ray: | Center 1-inch inferior to the coracoid process. |
| Shielding: | Gonadal shielding not required at RH |
| Breathing Instructions: | Suspended Respiration |
| Marker Placement: | Place the appropriate left or right marker on the lateral/superior aspect of the patient, as well as placement of the "EXT" marker or annotation of the image being "EXT" or "External." |
| Purpose/Structures: | The greater tubercle of the humerus and the site of insertion of the supraspinatus tendon visualized. |
| Evaluation Criteria: | <ul style="list-style-type: none">• Evidence of proper collimation and presence of side marker placed clear of anatomy of interest• Superior scapula, clavicle, and proximal humerus |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

- 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 the 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

****Merrill's:**

- 12 x 10 Crosswise to include ENTIRE Clavicle
- 10 x 12 Lengthwise to include MORE Humerus (will only see lateral half of clavicle)

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Shoulder Imaging Protocol

| Adult | Pediatric (Under 18) |
|--------------|-----------------------------|
| | |
| AP, Y, Axial | 8 years and younger: AP, Y |
| | >8 years old: AP, Y, Axial |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Shoulder

- Routine:** AP (Neutral Trauma), Scapular Y (Lateral--Erect if possible), Inferosuperior Axial (Lawrence) OR Superoinferior Axial if no obvious fracture or dislocation is identified on AP and if the patient is >8 years
- Position/Projection:** **Erect/Supine (AP--External Rotation of Humerus/Neutral)**
- Patient Prep:** Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt
- Technique:** **85 kVp $\overset{\circ}{\bullet}$; non AEC 4.5 mAs (Bucky)**
- SID:** 40" SID
- Collimation:** 12 X 10 Landscape (Crosswise)
- Patient Position:** Patient in upright or supine position. Position the patient so the shoulder is against the image receptor. With the patient's arm down by their side, ask the patient if they are able to supinate their hand, unless contraindicated. Abduct the arm slightly and rotate it so that the epicondyles are parallel with the plane of the IR.
(*Never forcibly rotate the patient's arm in case of trauma. If the patient is unable to turn the arm, image in the neutral position).
- Place top of image receptor approximately 1 ½ inches above the shoulder.
- Central Ray:** Central ray perpendicular to the image receptor Central ray is one inch inferior to the coracoid process.
- Marker Placement:** Place the appropriate left or right marker on the lateral/superior aspect of the patient.
- Shielding:** Gonadal shielding not required at RH
- Breathing Instructions:** Suspended Respiration

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Purpose/Structures: *External:* The greater tubercle of the humerus and the site of insertion of supraspinatus tendon are visualized

Neutral: The posterior part of the supraspinatus insertion, which sometimes profiles small calcific deposits not otherwise visualized.

Evaluation Criteria:

- 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 the 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

****Merrill's:**

- 12 X 10 Crosswise to include ENTIRE Clavicle
 - The IR should be 1 ½ inches above the shoulder and 1 inch beyond the lateral aspect of the shoulder
- 10 X 12 Lengthwise to include MORE Humerus (will only see lateral half of clavicle)

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Shoulder

- Routine:** AP (Neutral Trauma), Scapular Y (Lateral--Erect if possible), Inferosuperior Axial (Lawrence) OR Superoinferior Axial if no obvious fracture or dislocation is identified on AP and if the patient is >8 years
- Position/Projection:** **RAO or LAO (PA Oblique - Scapular "Y") Erect**
RPO or LPO (AP Oblique - Scapular "Y") Supine
- Patient Prep:** Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt
- Technique:** **85 kVp $\overset{\circ}{\bullet}$; non AEC 10 mAs (Bucky)**
- SID:** 40" SID
- Collimation:** 10 X 12 Portrait (Lengthwise)
- Patient Position:** The patient should be in the erect/upright or recumbent position: the erect position is preferred. For the erect position, place the anterior surface of affected shoulder against the upright image receptor. Rotate patient so the mid-coronal plane forms an angle of 45-60 degrees to the image receptor. Palpate the scapula and place its flat surface perpendicular to the image receptor. Place the image receptor 1 ½ inches above the top of the shoulder.
- If the patient is supine/recumbent, you have the patient rotate away from the affected side. Mid coronal plane 45-60 degrees from the image receptor. Make sure the flat surface of the scapula is perpendicular to the image receptor. Place the image receptor 1 ½ inches above the top of the shoulder.
- Central Ray:** Central ray perpendicular to the center of the image receptor.
- Marker Placement:** Place the appropriate left or right marker on the lateral/superior aspect of the patient.

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Shielding: Gonadal shielding not required at RH

Breathing Instructions: Suspended Respiration

Purpose Structures: In a normal shoulder, the humeral head is directly superimposed over the junction of the Y. In anterior (subcoracoid) dislocations, the humeral head is beneath the coracoid process. In posterior (subacromial) dislocations, it is beneath the acromion.

Evaluation Criteria:

- 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 scapular body over 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.

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Shoulder

- Routine:** AP (Neutral Trauma), Scapular Y (Lateral--Erect if possible), Inferosuperior Axial (Lawrence) OR Superoinferior Axial if no obvious fracture or dislocation is identified on AP and if the patient is >8 years
- Position/Projection:** **Erect –in a seated position (Superoinferior Axial)**
- Patient Prep:** Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt
- Technique:** **Non AEC 75 kVp 4 mAs (Free Detector)**
- SID:** 40” SID if possible
- Collimation:** 10 X 12 Portrait (Lengthwise) (Non grid)
 - However, 10 inches width and then 1 inch beyond the anterior/posterior shadows of the shoulder
- Patient Position:** Seat the patient at the end of the table on a stool or chair high enough to enable extension of the shoulder under examination well over the image receptor. Have the patient lean laterally over the image receptor until the shoulder joint is over the midpoint of the image receptor. Bring the elbow to rest on the table. Flex the patient’s elbow 90 degrees and place the hand in the prone position. Have the patient tilt the head toward the unaffected shoulder. To obtain direct lateral positioning of the head of the humerus, adjust any anterior or posterior leaning of the body to place the humeral epicondyles in vertical position.
- Central Ray:** Central ray angled 5-15 degrees through the shoulder joint towards the elbow.
 - The less the patient can extend the greater the angle.
- Shielding:** Gonadal shielding not required at RH
- Breathing Instructions:** Suspended Respiration

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Marker Placement: Place the appropriate left or right marker on the anterior side of the patient.

Purpose/Structures: A superoinferior axial image shows the joint relationship of the proximal end of the humerus and the glenoid cavity. The acromioclavicular articulation, the outer portion of the coracoid process and the points of insertion of the subscapularis muscle (at body of scapula) and teres minor muscle (at inferior axillary border) are shown.

Evaluation Criteria:

- 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

Contraindications:

- This view is not to be obtained if the patient has an obvious fracture or dislocation

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Trauma Shoulder

| | |
|-----------------------------|--|
| Routine: | AP (Neutral Trauma), Scapular Y (Lateral--Erect if possible), Inferosuperior Axial (Lawrence) OR Superoinferior Axial if no obvious fracture or dislocation is identified on AP and if the patient is >8 years |
| Position/Projection: | Supine (Inferosuperior Axial--Lawrence) |
| Patient Prep: | Remove everything from waist up. Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| Technique: | Non AEC 75 kVp 4 mAs (Free Detector) |
| SID: | 40" SID (*if possible) |
| Collimation: | 12 X 10 Landscape (Crosswise) (RH: **Non-grid) **Merrills recommends 12 X 10 Landscape (Crosswise) gridded |
| Patient Position: | The patient is in supine position. Elevate the head, shoulder and elbow approximately 3 inches on a radiolucent sponge. Abduct the affected arm as much as possible at a right angle to long axis of the body. Keep the humerus in external rotation and adjust the forearm and hand in a comfortable position that is vertically supported. Have the patient turn their head towards unaffected side and place image receptor securely against the neck. Use a sandbag or image receptor holder to support the image receptor. <ul style="list-style-type: none">• The degree of the medial angulation of the central ray depends on the degree of abduction of the arm. The degree of medial angulation is often between 15-30 degrees. The greater the abduction of the arm, the greater the angle. |
| Central Ray: | Direct the central ray horizontally through the axilla to the region of the acromioclavicular articulation. |
| Marker Placement: | Place the appropriate left or right marker on the anterior side of the patient. |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Shielding: Gonadal shielding not required at RH

Breathing Instructions: Suspended respiration

Purpose/Structures: An inferosuperior axial image shows the proximal humerus, scapulohumeral joint and the lateral portion of the coracoid process, and the acromioclavicular articulation.

Evaluation Criteria:

- 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 the clavicle projected through the humeral head
- Bony trabecular detail and surrounding soft tissues

Contraindications:

- This view is not to be obtained if the patient has an obvious fracture or dislocation

Shoulder-Special View

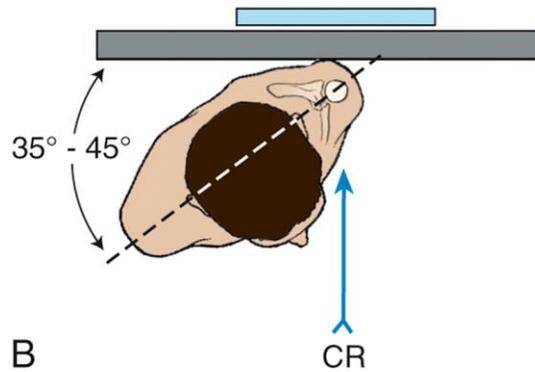
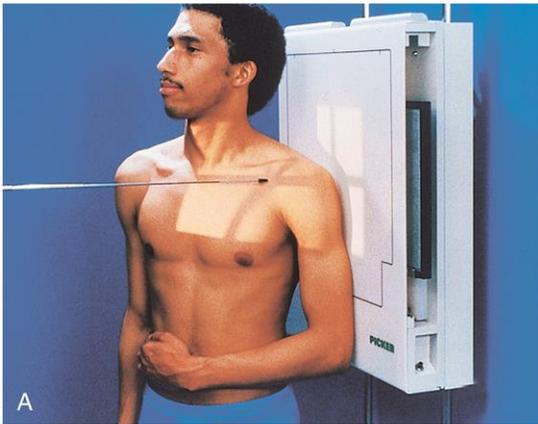
*14th edition Merrill's Volume I, pages 232-233

| | |
|--------------------------------|---|
| Position/Projection: | RPO or LPO (AP Oblique – Grashey) |
| Patient Prep: | Remove everything from waist up <i>if possible</i> . Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| SID: | 40" SID |
| Collimation: | 12 X 10 Landscape (Crosswise) – to include entire clavicle 10 X 12 Portrait (Lengthwise) – to include more humerus |
| Patient Position: | <p>The patient should be in the erect/upright or recumbent position: the upright position is preferred. If the patient is erect, place the posterior surface of affected shoulder against the upright image receptor. Rotate patient approximately 35-45 degrees towards the affected side so the scapula is parallel with the IR (The head of the humerus will be in contact with the IR). Abduct the arm slightly in internal rotation and place the palm of the hand on the abdomen.</p> <ul style="list-style-type: none">• If the patient is in the recumbent position, the body may need to be rotated more than 45 degrees (up to 60 degrees) to place the scapula parallel with the IR. |
| Central Ray: | Central ray perpendicular to the scapulohumeral joint. The joint is 2 inches medial and 2 inches inferior to the superolateral border of the shoulder. |
| Marker Placement: | Place appropriate right or left marker on the image. |
| Shielding: | Gonadal shielding not required at RH |
| Breathing Instructions: | Suspended respiration |
| Purpose/Structures: | The joint space between the humeral head and the glenoid cavity (scapulohumeral or glenohumeral joint) |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

Evaluation Criteria:

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest.
- Open joint space between the humeral head and glenoid cavity.
- Glenoid cavity in profile.
- Bony trabecular detail and surrounding soft tissues.



Shoulder-Special View

*14th edition Merrill's Volume I, pages 236-237

| | |
|-----------------------------|--|
| Position/Projection: | Erect or Supine (Transthoracic Lateral Trauma – Lawrence Method) |
| Patient Prep: | Remove everything from waist up <i>if possible</i> . Provide gown with the opening in the back (Be aware of snapped gowns*). Check for jewelry or bras that were not removed. If the patient is wearing a plain shirt with no embroidery or decals you may image through the shirt |
| SID: | 40" SID |
| Collimation: | 10 X 12 Portrait (Lengthwise) <u>OR</u> 12 X 10 Landscape (Crosswise) depending if the patient is erect or supine |
| Patient Position: | <p>The patient may be erect or in the supine position.</p> <ul style="list-style-type: none">○ <i>Erect positioning</i> - The patient is in a lateral position next to the vertical IR. The anatomy of interest is against the IR.○ <i>Supine/Recumbent positioning</i> – The IR would be placed next to the anatomy of interest to obtain a cross table lateral image (imaging medial to lateral) <p>Have the patient raise the non-injured arm, rest the forearm on the head, and elevate the shoulder as much as possible. Elevation of the non-injured shoulder drops the injured side, separating the shoulders to prevent superimposition. Ensure that the mid-coronal plane is perpendicular to the IR. No attempt should be made to rotate or move the injured arm. Place image receptor 1 ½ inches above the level of the humeral head.</p> <p>If the patient cannot elevate the unaffected shoulder, angle the CR 10-15 degrees cephalad to obtain a comparable radiograph.</p> |
| Central Ray: | Central ray perpendicular to the center of the image receptor. |
| Marker Placement: | Place appropriate right or left marker on the image. |

Reading Hospital School of Health Sciences
Medical Imaging Program
MI238: Clinical Seminar III
2022

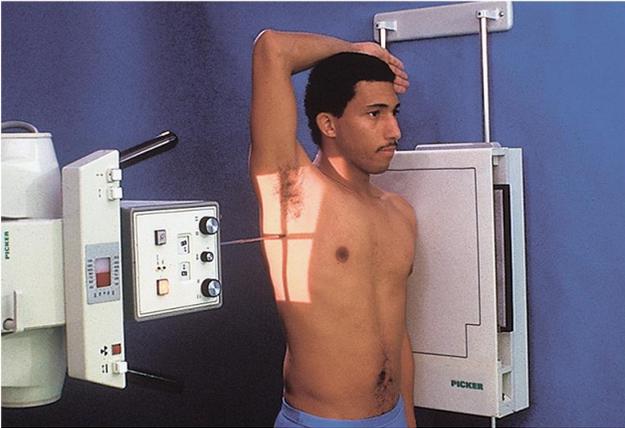
Shielding: Gonadal shielding not required at RH

Breathing Instructions: Suspended Inspiration or Breathing technique

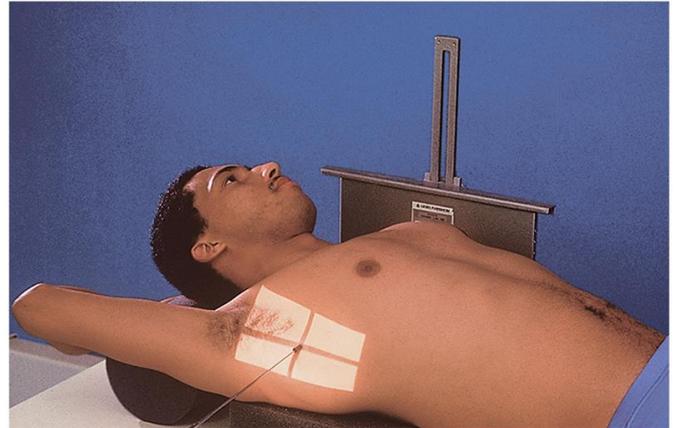
Purpose/Structures: A lateral image of the shoulder and proximal humerus is projected through the thorax

Evaluation Criteria:

- Evidence of proper collimation and presence of side marker placed clear of anatomy of interest.
- Scapula, clavicle, and proximal humerus seen through the lung field.
- Scapula superimposed over the thoracic spine.
- Unaffected clavicle and humerus projected above the shoulder closest to the IR.



Copyright © 2019 by Elsevier Inc. All rights reserved.



Copyright © 2019 by Elsevier Inc. All rights reserved.