PROCEDURES I – Outline –Elbow, and Humerus Radiography

I. Elbow
A. AP
B. Medial (internal) oblique
C. Lateral (external) oblique
D. Lateral
E. Radial head views
F. AP - partial flexion
G. AP - acute flexion
H. Coyle method - axial trauma

II. Humerus
A. AP non-trauma - recumbent and upright
B. Lateral non-trauma - recumbent and upright
C. Transthoracic lateral trauma
D. Lateral - mid and distal trauma

PROCEDURES I - Study Questions - Elbow, and Humerus Radiography

1. For the AP projection of the elbow, the hand is in the ____________ position. The patient should lean laterally to place the anterior surface of the elbow and the humeral epicondyles ____________ to the image receptor. The medial and lateral humeral __________________ are well demonstrated in this projection.

2. When the patient is unable to fully extend the elbow, two AP projections may be obtained with the elbow in partial ____________.

3. The lateral (or external) oblique projection of the elbow best demonstrates the radial _________________. The Schmidt Method is a modification of the lateral oblique projection obtained by placing the elbow in the AP position and angling the central ray ______ degrees to enter the medial aspect and exiting the lateral aspect of the elbow in an oblique direction.

4. For the medial (internal) oblique projection of the elbow, the hand should be __________ and the elbow joint rotated _______ degrees to the image receptor. The ____________ process of the ulna is well demonstrated in this projection.

5. The elbow should be flexed _____ degrees for the lateral projection for routine studies for fractures. For soft tissue structures of this joint, the elbow should only be flexed about ______ degrees. For the lateral projection of the elbow the hand should be in the _______________ position and the humeral epicondyles should be _______________ (superimposed) in relation to the image receptor.
6. The _________ projection of the elbow best demonstrates the entire olecranon process and trochlear (semilunar) notch of the ulna.

7. The AP projections of the elbow in acute flexion are obtained to demonstrate the ____________ process of the ulna. The acute flexion method is known as the ____________ Method.

8. The trauma axial lateral projection of the elbow is called the ____________ Method. For the radial head the elbow is flexed ________ degrees with the hand ____________ and the CR angled 45° ____________ the shoulder. For the coronoid process the elbow is flexed ________ degrees with the hand ____________ and the CR angled 45° ____________ the shoulder.

9. The 4 views to show the entire circumference (360 degree rotation) of the radial head are obtained with the elbow in the ____________ projection. This projection of the elbow is obtained each time the hand is rotated to a new position from extreme eversion (supination) to extreme inversion. The 4 hand positions are ____________, ____________, ____________, and ____________.

10. For the AP projection of the humerus, the hand should be in the ____________ position and the humeral epicondyles should be ____________ to the image receptor. The humeral ____________ will be in profile medially and the ____________ tubercle will be in profile laterally.

11. For the lateral projection of the humerus, the patient’s arm is rotated to the lateral position until the humeral epicondyles are ____________ (superimposed) in relation to the image receptor. The ____________ tubercle of the humerus will be demonstrated in profile on the medial aspect.

12. For trauma, the projections obtained to demonstrate fractures or dislocation of the proximal humerus are: AP in ________ rotation and ________ ________.

13. **Situation:** An AP radiograph of the elbow demonstrates the radius directly superimposed over the ulna and the coronoid process in profile. **Solution:** This indicates that the ________ projection of the elbow has been performed.

14. **Situation:** A radiograph of an AP oblique elbow with medial rotation reveals that the radial head is superimposed over part of the coronoid process. **Solution:** This indicates that the elbow is has excessive ________ rotation.

15. **Situation:** A radiograph of an AP projection of the elbow reveals that there is complete separation of the proximal radius and ulna. What positioning error has been committed? Solution: The elbow is in excessive ________ rotation (humeral epicondyles not parallel to IR).

16. **Situation:** A patient enters the ER in severe pain with a possible dislocation of the
elbow. The patient has the elbow flexed more than 90°. **Solution:** The projections to be performed to confirm the diagnosis are ___________________________ and limited _______________________.

17. **Situation:** A patient enters the ER with an elbow injury. The partially flexed AP and lateral positions reveal a possible fracture of the coronoid process. The patient’s elbow is partially flexed and he refuses to extend it further. **Solution:** The ____________ method should be performed to confirm the coronoid process fracture. The elbow is flexed _______ degrees and the CR is angled 45 ° ______________________ the shoulder.

18. **Situation:** A young child comes to radiology with an elbow injury. The basic elbow projections demonstrate a possible nondisplaced fracture of the radial head. The patient’s elbow is partially flexed and he is unable to extend it. **Solution:** The ____________ method should be performed to confirm the radial head fracture. The elbow is flexed _______ degrees and the CR is angled 45 ° ______________________ the shoulder.

19. **Situation:** A radiograph of a transthoracic lateral projection reveals that it is difficult to visualize the proximal humerus due to the ribs and lung markings. The exposure was made on suspended respiration. **Solution:** Using a ____________ technique would improve the quality of the image.

20. **Situation:** A radiograph for an AP projection with external rotation of the proximal humerus reveals that the greater tubercle is profiled laterally. Is a repeat exposure necessary? **Solution:** ____________

21. **Situation:** A patient enters the ER with a midshaft humeral fracture. The AP projection taken on the stretcher demonstrates another fracture near the surgical neck of the humerus. The patient is unable to stand or rotate the humerus due to the extent of the trauma. What other projection should be taken for this patient? **Solution:** A ________________ lateral projection of the humerus with a horizontal beam should be taken on this patient.

AP projection of elbow
AP Oblique projection of elbow in lateral (external) rotation (Lateral oblique elbow)

AP Oblique projection of elbow in medial (internal) rotation (Medial oblique elbow)

Lateral projection of elbow

AP projection of elbow in acute flexion (Jones Method)

AP projection of humerus

Lateral projection of humerus