

Emergency Department Evaluation and Treatment of the Shoulder and Humerus



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KEYWORDS

• Shoulder trauma • Humerus fracture • Dislocated shoulder • Shoulder injury

KEY POINTS

- Always assess neurologic function and vascular status in the upper extremity when examining the shoulder, as many injuries have the potential to harm these systems.
- Open or displaced fractures, or compromise to either the neurologic or vascular systems, require orthopedic consult.
- Fractures to the body of the scapula necessitate a thorough evaluation for other occult injury.
- Emergency department physicians should be comfortable with several of the standard shoulder reduction techniques for optimum success.

BACKGROUND

Injuries to the shoulder are a common emergency department (ED) complaint. The intrinsic anatomy and function of the shoulder subject it to injury from repetitive stress, exertion, and trauma. Injuries range from fracture of the bones, dislocation of joints, or injury to the ligaments and tendons.

EPIDEMIOLOGY

The prevalence of chronic shoulder injury has been difficult to estimate for a variety of reasons; however, among Western populations, it appears to range from 6% to 26% and represents more than 2% of all yearly primary care visits.^{1–3} Shoulder pain is the third most common musculoskeletal complaint, third only to low back and neck pain.⁴ The epidemiology of specific injuries is variably understood.

Disclosures: None.

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Emerg Med Clin N Am 33 (2015) 297–310
<http://dx.doi.org/10.1016/j.emc.2014.12.004>

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- The estimated incidence rate of shoulder dislocations in the United States is 23.9 per 100,000 persons; male individuals are more than 2.5 times as likely to present with dislocation than female individuals.⁵
- Clavicle fractures are common and represent 1 in 20 of all adult fractures.⁶
- Proximal humerus fractures are most common in the elderly, and among US EDs have an annual incidence of 60 per 100,000, with more than 75% of those occurring in patients older than 65 years.⁷⁻⁹
- Full-thickness rotator cuff tears are present in 5% to 30% of people older than 40.^{10,11}

IMAGING

The American College of Radiology (ACR) has published guidelines on appropriate imaging for acute shoulder pain, and these recommendations set the baseline for ED imaging.¹² Three views are required for the evaluation of acute shoulder pain, 2 of which are to be orthogonal.

1. Anteroposterior (AP) projection
2. Axillary view
3. Scapular Y view

Anteroposterior Projection

In a straight AP projection, the patient is perpendicular to the beam; however, ACR recommends a “Grashey view,” which is a slight variant of the AP.¹² In the Grashey view, or “true” AP, the patient is angled 45° away (obliquely) from the x-ray beam. This view allows for better visualization of the glenohumeral joint. The straight AP can be done with either internal or external rotation, allowing for either better visualization of the lesser tuberosity (internal rotation) or greater tuberosity (external rotation).

Axillary View

The axillary view is taken with the patient’s arm ideally abducted to 90°. The cassette is placed superior to the shoulder and the beam projected on a plane perpendicular to the cassette through the axilla. The axillary view is often difficult to obtain secondary to patient pain with positioning. This has led to modifications of the axillary view, which are still able to pick up the injuries most commonly seen with this view, notably posterior shoulder dislocation and the Hill-Sachs deformity.¹³

Y View

The Y view is a lateral projection. The x-ray beam hits the scapula in profile, as it is “floating” on the posterior thoracic wall. The coracoid and the acromion form a “Y” with the body of the scapula. It has been noted that for diagnosis of suspected shoulder dislocation, the Y view has higher sensitivity than the axillary view and is less painful.¹⁴

PROXIMAL HUMERUS FRACTURES

On examination, the patient with a proximal humerus fracture will typically hold the affected arm in an adducted position. A step-off may be appreciated but is often obscured by surrounding musculature or subcutaneous tissue. A radiograph of the proximal humerus is indicated for diagnosis and classification of the fracture. An axillary view is most helpful in determining the degree of angulation and displacement of fracture parts.

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