



## “No, I’m not waving at you!”



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### Don's Case

Don is a healthy 20-year-old male who presented to the ED complaining of right shoulder pain following a fall on an outstretched hand. He reported that he could not adduct his right arm. His past medical history was significant for a right shoulder anterior dislocation approximately one year prior to presentation.

On physical examination the patient was sitting upright in apparent discomfort. His right arm was locked in abduction (Figure 1). Range of motion was limited in all planes. His distal pulse was strong and capillary refill was normal. No neurological deficits were present.

[Read on for more on Don.](#)



Figure 1 : Patient's arm in locked position

### Questions and Answers

#### 1. How should we approach Don?

Don's shoulder pain occurred as a result of an injury. His past history and physical exam suggested a recurrence of shoulder dislocation. It is nonetheless important to consider the other causes of shoulder pain shown in Table 1. Routine plain films of the joint should be obtained for patients presenting with an age greater than 40 years, first-time dislocation, or traumatic mechanism of injury.<sup>1</sup>

#### 2. What is the diagnosis?

The glenohumeral joint is inherently unstable due to a wide range of motion at the site where the humeral head articulates with the glenoid. The rotator cuff muscles and inferior glenohumeral ligament provide the primary means of support. Anterior dislocation of the shoulder is most common type of dislocation and occurs in 95% to 97% of cases. The injury usually results from a trauma that forces the shoulder into abduction and external rotation with a force that exceeds the maximum counterbalancing strength of the inferior glenohumeral ligament. On presentation, an anteriorly dislocated shoulder normally appears abducted and externally rotated. The roundness of the shoulder is lost and the acromion is prominent. Posterior dislocations represent 2% to 4% of shoulder dislocations and are caused by axial loading of an adducted and internally rotated shoulder or violent muscle contractions secondary to seizures or electrocution.

Table 1

## Age related causes and clinical characteristics of intrinsic shoulder pain

Age	Disorder	Clinical characteristics
Adolescents and Young Adults	Overuse injuries	Pain and loss of function usually associated with a specific athletic activity
	Acromioclavicular Spain	Focal pain over acromioclavicular joint; history of trauma
	Shoulder instability	Minor trauma; high risk of recurrence
Middle-aged and pain older individuals	Rotator cuff tendinitis impingement syndrome	Pain, difficulty with active abduction and external rotation; at night; crepitus with lifting arm beyond 60° in impingement syndrome
	Rotator cuff tears	Pain and inability to actively abduct the arm; passive abduction is preserved
	Subacromial bursitis or inflammatory synovitis	Features resemble rotator cuff tendinitis; may be seen with rheumatoid arthritis, polymyalgia rheumatica, and crystal-induced arthritis
	Adhesive capsulitis (Frozen Shoulder)	Pain, stiffness, and marked loss of shoulder motion; risk factors include diabetes mellitus, and prolonged immobilization
	Bicipital tendinitis	Pain and tenderness anteriorly within the bicipital groove
	Osteoarthritis	Associated with damage to the rotator cuff, rheumatoid arthritis, and chondrocalcinosis
	Myofascial pain	Diffuse soft tissue tenderness in the shoulder region and over the chest wall

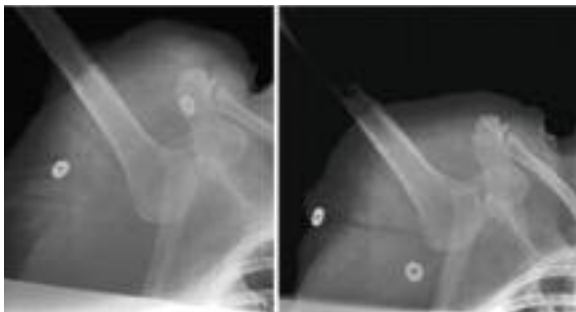


Figure 2. Humeral head laying inferior to the glenoid, with the full arm abduction


Examination normally reveals the arm held in adduction and internal rotation with a prominent coracoid process and posterior shoulder. There is flattening anteriorly.

Luxatio erecta, or inferior glenohumeral dislocation, is rare, representing approximately 0.5% of shoulder dislocation. This injury is usually caused by hyperabduction or a direct axial force to a fully abducted arm. The most common mechanism of this injury is falling and grasping onto an object about the head, resulting in hyperabduction. Physical exam reveals an inability to adduct the arm. The patient often holds the

injured arm above the head with the forearm pronated and resting on top of the head. Radiographic films show the humeral head beneath the coracoid or glenoid (Figure 2).

Rotator cuff tears and greater tuberosity fractures are associated injuries in 80% of cases.<sup>2</sup> Other less common potential fractures include those of the acromion, scapula, and humeral head. In approximately 60% of cases the patient will present with some degree of neurologic dysfunction, most often involving the axillary nerve, which normally spontaneously resolves following reduction.<sup>3</sup> Arterial injury occurs in 3% of cases, the highest incidence of any shoulder dislocation, and usually presents as an absent distal pulse.<sup>4</sup> Long-term complications include recurrent dislocations and adhesive capsulitis.

### 3. What is the treatment of luxatio erecta?

The treatment of luxatio erecta is reduction via traction-countertraction in line with the abducted humerus, gradually adducting the arm. Closed reduction is successful in the majority of cases, with surgical reduction usually only necessary if a “buttonhole” deformity (humeral head trapped in an inferior capsule tear) is present.<sup>5</sup> Complications of reduction are uncommon but include rotator cuff injuries and fractures of the humerus, glenoid, or coracoid process. Axillary artery and nerve injury are extremely rare complications of reduction. There are no absolute contraindications to reducing a dislocated shoulder. 

#### Don's case cont'd

Don was given oxygen, adequate procedural sedation and was monitored closely. His right luxatio erecta was reduced as described. Upon waking his pain had resolved and post-reduction films confirmed successful reduction. His right arm was immobilized and he was given an appointment to follow up with orthopaedics within one week.

#### References:

1. Emond, M, Le Sage, N, Lavoie, A, Rochette, L. Clinical factors predicting fractures associated with an anterior shoulder dislocation. *Acad Emerg Med* 2004; 11:853.
2. Yamamoto, T, Yoshiya, S, Kurosaka, M, et al. Luxatio erecta (inferior dislocation of the shoulder): a report of 5 cases and a review of the literature. *Am J Orthop* 2003; 32:601.
3. Ameh, V, Crane, S. Nerve injury following shoulder dislocation: the emergency physician's perspective. *Eur J Emerg Med* 2006; 13:233.
4. Mallon, WJ, Bassett FH, 3rd, Goldner, RD. Luxatio erecta: the inferior glenohumeral dislocation. *J Orthop Trauma* 1990; 4:19.
5. Grate, I Jr. Luxatio erecta: a rarely seen, but often missed shoulder dislocation. *Am J Emerg Med* 2000; 18:317.

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