

Case in Point

Luxatio Erecta

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Inferior glenohumeral dislocations, or luxatio erecta, are an uncommon type of shoulder dislocation. This patient, a 66-year-old woman, presented to the Emergency Department with an inferior glenohumeral dislocation, a tear of the supraspinatus and infraspinatus muscles, and a maceration of the biceps tendon and labrum.

Inferior glenohumeral dislocations, or luxatio erecta, are an uncommon type of the glenohumeral dislocation.¹⁻³ The incidence of inferior dislocation is about 1% to 2% of all traumatic shoulder dislocations. These dislocations occur due to a hyperabduction or a direct axial load on a humerus that is held in an overhead position. Associated bony injuries include fractures of the greater tuberosity, acromion, clavicle, coracoid process, and glenoid rim. Brachial plexus and axillary artery injuries are possible serious complications. Other long-term complications include adhesive capsulitis and recurrent subluxations or dislocations.⁴ This case highlights the most common injury associated with an inferior dislocation and the management of patients with this injury in the Emergency Department (ED).

CASE STUDY

A 66-year-old woman presented

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to the ED with right shoulder pain after falling from a chair. The patient was hanging a plant when the plastic chair she was standing on broke. She fell forward, hitting the wall in front of her, with her hands extended overhead and then rotated and fell to the ground, landing on her right hand and shoulder. The patient presented with her right arm held over her head supported with her left hand, with 10/10 pain when her right arm was moved. The patient reported no paresthesias. The physical examination revealed a 2+ right radial pulse and a 5/5 strength in her right-sided intrinsic hand muscles and wrists. The patient declined strength testing and ranging of elbow and shoulder muscles due to pain. A mass deformation was noted in the right axilla. Sensory testing revealed normal sensation over axillary, brachial, median, radial, and ulnar distributions. Initial x-rays of the right shoulder revealed an inferior glenohumeral dislocation (Figure 1).

In the ED under deep sedation, using intravenous propofol, the traction/counter traction technique was used for the successful reduc-

tion of the shoulder. Postreduction x-rays of the right shoulder revealed proper anatomic alignment of the humeral head in the glenoid fossa (Figure 2). The patient was placed in a sling and observed in the ED until sedation wore off. The patient was educated on the signs and symptoms of neurologic and vascular injury and advised to return if those symptoms manifested. After the observation period, no signs of neurologic or vascular injury were noted on physical examination, and the patient was discharged.

The patient followed up with an orthopedic specialist 2 weeks after her initial ED visit, and a magnetic resonance image (MRI) was obtained. The MRI revealed a complete tear of the distal supraspinatus and infraspinatus muscles and maceration of the biceps tendon and labrum (Figure 3). With physical therapy and rehabilitation, the patient chose nonoperative treatment of her injury. She had a good recovery and was able to perform routine daily activities.

DISCUSSION

With inferior glenohumeral dislo-

cations, the most common mechanism of injury is hyperabduction, where leveraging of the proximal humeral head is created over the acromial process. This mechanism disrupts the inferior portion of the glenohumeral capsule, allowing inferior dislocation to occur. Less commonly, direct axial loading of an outstretched arm can also result in luxatio erecta.⁵ Given the fall history, this patient may have had either or both of these types of injuries.

Musculoskeletal and neurovascular injuries are common associated injuries. Rotator cuff tears and humeral fractures accompany 80% of all inferior dislocation cases.⁵ Fractures can be discussed with the orthopedist on call but can also be evaluated in an outpatient setting. Rotator cuff tears can be evaluated as an outpatient as well. Neurologic injuries, most commonly involving the axillary nerve, occur with 60% of all cases of luxatio erecta, but most resolve after reduction. Motor and sensory function of the involved arm must be tested before and after reduction to assure neurologic function is intact. Vascular injuries, most commonly of the axillary artery, occur in 3.3% of cases.⁶ Suspected vascular injuries should be evaluated with the use of an arteriogram. An ED orthopedic consultation should be obtained if neurovascular injuries continue to be suspected after reduction.

Two techniques have been described for reduction of luxatio erecta. The most common reduction technique is traction/countertraction. With this technique, axial traction is applied in line with the humeral shaft position, then slight increase in abduction, and finally adduction with internal rotation.



Figure 1. Anterior-posterior and axillary view demonstrates the arm is abducted, elevated, and fixed. The humeral head is subcoracoid in position, with a parallel humeral shaft and a parallel scapular spine.

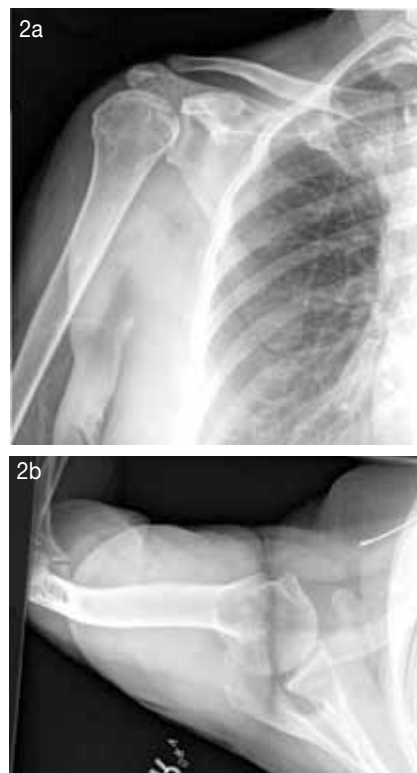


Figure 2. Postreduction x-ray anterior-posterior and axillary views demonstrate alignment of the humeral head in the glenoid fossa.

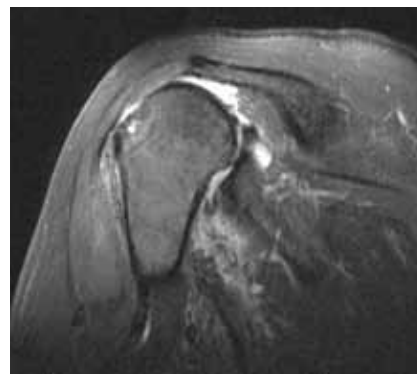


Figure 3. An MRI of the shoulder demonstrates a complete tear of both the distal supraspinatus and infraspinatus tendons and moderate atrophy of both the supraspinatus and infraspinatus muscles.
MRI = magnetic resonance imaging.

Counter traction is achieved with the helper on the opposite side of the dislocation, using a sheet that is placed across the middle of the clavicle around the back with force applied in the opposite direction of the humeral shaft position.⁷ This technique usually requires significant sedation and analgesia. A second technique converts the inferior dislocation to an anterior dislocation. The first step of this method involves one hand on the lateral aspect of the midshaft of the humerus and the other hand on the medial epicondyle. The midshaft hand manipulates the humeral head from an inferior position to an anterior position relative to the glenoid while the hand on the medial epicondyle provides a superior directed force at the distal humerus. The first step is achieved when the humeral head has rotated to the anterior rim of the glenoid, evidenced by a straight contour of the shoulder and prominence of the posterolateral edge of the acromion. The reducer should now be able to adduct the humerus against

the body. The next step requires repositioning of the hand on the medial epicondyle to the forearm. The midshaft hand continues to adduct the humerus against the body, while the hand on the forearm externally rotates the forearm.⁸

Neurovascular and musculoskeletal injuries are common associated injuries, so it is essential to monitor the patient in the ED for signs and symptoms of the neurovascular injuries and to obtain prompt orthopedic follow-up for treatment of potential rotator cuff injury and prevention of adhesive capsulitis. ●

Author disclosures

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