

Luxatio Erecta Complicated By Anterior Shoulder Dislocation During Reduction

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Luxatio erecta humeri is an uncommon form of glenohumeral dislocation, resulting in the inferior displacement of the humeral head. Treatment with traction-counter traction techniques is usually successful in reducing most cases. We describe an unusual complication of this condition where initial reduction attempts of a *luxatio erecta humeri* repositioned the shoulder to an anterior dislocation position. After a thorough search of the literature, we were unable to find a similar case report of this type of complication during the reduction of a *luxatio erecta* shoulder dislocation. [West J Emerg Med. 2010; 11(1):28-30].

INTRODUCTION

Luxatio erecta humeri is a rare type of shoulder dislocation with an estimated incidence of 0.5% of all shoulder dislocations.¹⁻³ This entity is usually treated successfully with traction-counter traction in the majority of cases. We describe an unusual complication that occurred during reduction of this type of shoulder dislocation. The initial attempts to reduce the *luxatio erecta* dislocation resulted in the shoulder being repositioned to an anterior dislocation position. The anterior shoulder dislocation was subsequently reduced without difficulty to its proper anatomic position. This appears to be a rare but potential complication of efforts to reduce the dislocation.

CASE REPORT

A 62-year-old male presented to the emergency department (ED) after falling to the ground from a 12-foot scaffold. He described falling with his right arm extended above his head. He recalled attempting to grip the scaffolding with this arm, jerking his arm upward as he fell. He denied any loss of consciousness or any complaints except for right shoulder pain and inability to lower his right arm. He denied any numbness in this arm. The patient had no prior history of shoulder injury.

Physical examination revealed an age-appropriate male in severe pain. He was awake and oriented. His right upper extremity was abducted at the right shoulder, flexed at the elbow, with his right hand resting against his temple, a

position characteristic for an inferior shoulder dislocation.¹ His humeral head was palpated inferior to the glenoid fossa, abutting the lateral chest wall in the inferior axilla. Capillary refill in that arm was less than two seconds. His radial pulse was easily palpable and normal. Motor and sensory function was intact. Any attempt at movement of the right shoulder elicited extreme pain and apprehension by the patient. Radiographs revealed an inferior glenohumeral dislocation. The shaft of the humerus was parallel to the spine of the scapula. No fractures were noted.

We administered procedural sedation with fentanyl (50 mcg) and midazolam (5 mg), which achieved adequate sedation for approximately 30 minutes. Closed reduction using traction-counter traction was attempted. We pulled the right upper extremity in a cephalad and outward direction in line with the humerus, while a sheet slung around the patient's chest and middle clavicle was used for counter traction. During this process we noted a palpable click, and the arm moved into a position where the humeral head was anteriorly displaced on the thoracic cage, with the arm in external rotation. Repeat shoulder x-rays revealed an anterior dislocation without fracture. The patient's neurovascular exam was reassessed and remained unchanged and intact. We administered additional doses of fentanyl (50 mcg) and midazolam (5 mg), which achieved adequate sedation for an additional 45 minutes. The patient was turned into a prone position with his arm hanging over the side of this stretcher. We performed scapular manipulation, with medial rotation

of the scapular tip and downward traction of the humerus to the ground. Again we noted a palpable click. The patient was rolled back to a supine position. After recovery from procedural sedation he stated that his arm felt “much better.” With the arm now comfortably resting against his chest, a sling and swath shoulder immobilizer was placed. A post-reduction x-ray of the shoulder showed complete reduction of the humerus without fracture. Repeat post-reduction neurovascular evaluation was normal. Orthopedic follow-up was arranged.

DISCUSSION

Luxatio erecta is a rare injury occurring in less than 1% of all shoulder dislocations with no age predilection.¹⁻³ Two mechanisms of injury exist. One is a direct loading force on a fully abducted arm, with elbow extended and forearm pronated. The second and more common mechanism is a sudden, forceful hyperabduction of an abducted extremity, causing inferior displacement of the humeral head, usually producing a rupture of the inferior glenohumeral capsule and disruption of the rotator cuff.⁴⁻⁶

Clinically the patient presents with an abducted extremity which s/he will be unable to lower. The elbow is flexed and the forearm pronated. The hand is often resting on or next to the head. The glenoid fossa is empty and the humeral head is palpable on the lateral chest wall.^{3,7,8} Secondary injuries are usually neurovascular in nature, including impingement of the axillary artery and/or brachial plexus.

Radiologic evaluation reveals a humeral head located inferiorly to the glenoid fossa and a humeral shaft lying parallel to the scapular spine. The exact location of the humeral head is variable, particularly on anterior-posterior radiographs. The humeral head can be found at or beneath the glenoid rim and against the rib cage at the third or fourth intercostal space.

The true distinguishing feature of *luxatio erecta* is the abducted position of the humeral shaft parallel to the spine of the scapula.^{2,6} While the clinical picture is considered pathognomonic, a missed case of *luxatio erecta* has been reported.⁷ An atypical clinical picture, where the arm was not fully abducted over the patient’s head, misled the involved physician, thus emphasizing the importance of full roentgenogram evaluation.

Closed reduction can usually be performed when adequate sedation and analgesia are obtained. This is performed by upward and outward traction in-line with the humerus while counter traction is applied across the acromion. After the humeral head is reduced, the arm should easily adduct in an arc back toward the body.^{3,4,9} Occasionally closed reduction will not be successful secondary to a buttonholing of the humeral head through a defect in the inferior glenohumeral capsule caused by the injury. This “buttonholing” mandates an open reduction.^{3,5,7,8}

Many complications of an inferior glenohumeral dislocation have been noted in the literature, including associated fracture of the clavicle/acromion; coracoid; greater tuberosity and/or humeral head; brachial plexus injuries, considered secondary to stretching; and axillary artery occlusion at its origin at the subscapular branch or distal to the circumflex humeral arteries.^{2,5-7,9-12} Approximately 59% of inferior shoulder dislocations have some nerve injury, and 37% have associated fracture.^{5,13} In addition, due to the strong forces required to produce this injury, there is significant local soft tissue damage, with approximately 50% having associated rotator cuff tears.⁶

In our case presented above, we initially attempted closed reduction utilizing traction-counter traction. During this process the inferior dislocation was converted to an anterior shoulder dislocation. *Luxatio erecta*, although referred to as an inferior shoulder dislocation, is in fact an anterior-inferior displacement of the humeral head. It is foreseeable that a dislocation inferiorly might be prone to convert to an anterior dislocation because of the significant tissue damage. Despite that, our literature search did not identify any case reports of similar complications associated with reduction for *luxatio erecta* shoulder dislocations. However, Nho et al.¹⁴ describes a specific reduction technique for inferior shoulder dislocations that involves converting the inferior to an anterior dislocation before reduction to its proper anatomic position. These authors hypothesize that this two-step reduction process is easier than the traditional one-step traction-counter traction used in most cases.

In conclusion, we present a case of *luxatio erecta* that was complicated by the production of an anterior dislocation during attempted reduction. Although this complication appears to be uncommon, it is important to consider the potential for inferior shoulder dislocations to convert to other dislocation positions during the process of reduction.

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