

Up in Arms: Bilateral Luxatio Erecta Fracture-Dislocations

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Abstract

Inferior dislocation (luxatio erecta) is the most uncommon form of dislocation of the glenohumeral joint. The chance that a person endures the specific direction of forces to dislocate both shoulders simultaneously makes bilateral luxatio erecta even more uncommon.

In this article, we report the case of a man who sustained bilateral luxatio erecta when he jumped from a falling scaffold and tried grabbing onto another structure.

Unilateral inferior shoulder dislocation (luxatio erecta) is uncommon, accounting for only 0.5% of all shoulder dislocations.¹ Bilateral luxatio erecta is extremely rare, having been de-

scribed fewer than 20 times in the literature. The most common etiology is hyperabduction causing the humerus to lever on the acromion; less common is axial loading onto a fully abducted arm and an extended elbow.² Hyperabduction can occur when a person grabs an object in an attempt to stop a fall, as occurred in the present case. The patient provided written informed consent for print and electronic publication of this case report.

Case Report

A 58-year-old man with a trauma injury presented to our emergency department. For his open right elbow fracture, emergency medical services had given him fentanyl en route, and when he arrived he was less responsive. As the patient reported, he had been on a scaffold 16 feet high when it began to give way. He jumped for another scaffold, 3 to 4 feet away, but came up short and, in an attempt to stop himself from falling, grabbed onto it with arms extended and above his head. His hands and arms were immediately pulled up in full extension. When both shoulders became dislocated, he could not hold on and fell to the ground, landing on a buttock. He did not lose consciousness.

Physical examination revealed both arms abducted at the shoulder, and elbows extended (**Figure 1**). The patient could not actively adduct his arms, and he had pain with unsuccessful attempts at passive adduction. Both humeral heads were palpable in the axilla. He had bilateral decreased sensation to light touch in the axillary nerve distribution on the deltoids and lateral upper arm but no vascular defects (distal pulses were intact). He also had thoracic and lumbar tenderness and an open wound on the right elbow.

Radiographs confirmed the diagnosis and showed bilateral nondisplaced proximal humeral fractures of the greater tuberosity (**Figure 2**). Computed tomography (CT) showed compression

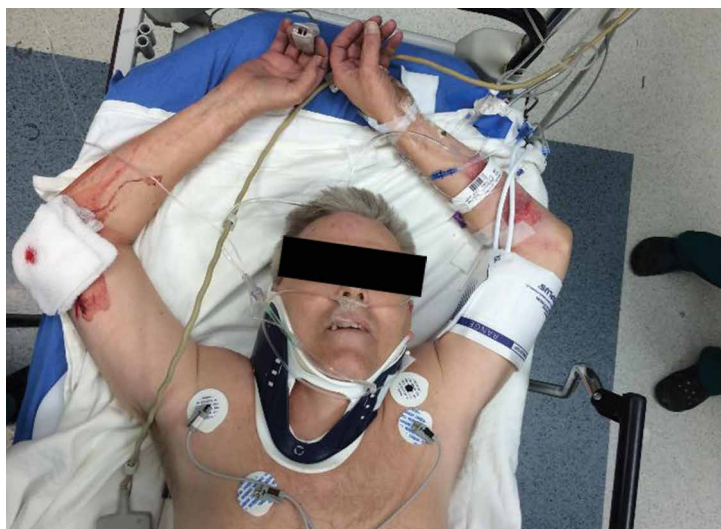


Figure 1. Patient's arms extended in classic luxatio erecta, with chest radiograph providing anatomical comparison.

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fractures of L1 and T6 without canal stenosis, likely sustained from landing on the buttock.

For the shoulder reductions, we administered propofol for conscious sedation and fentanyl for analgesia. Then, a sheet was wrapped supraclavicular and pulled across the torso inferiorly to allow countertraction when pulling the arm superiorly on the axial line. Another countertraction sheet was placed on the opposite side. For each arm, the countertraction was pulled inferiorly when the arm was pulled superiorly, both on the longitudinal plane. The arm was then gently rotated in adduction until reduction was achieved.

The right shoulder reduced relatively easily. The left shoulder reduced into an anterior dislocation—a relatively uncommon outcome in in-line traction attempts.³ (Reduction into anterior dislocation can also be a desired result in a specific technique of 2-step reduction, as described by Nho and colleagues.⁴) The patient's anterior dislocation was then easily reduced into anatomical position with use of the Kocher technique of arm adduction with elbow flexion, followed by external rotation, and then finally into anatomical position with internal rotation.⁵ Both arms were then immobilized in full adduction with bilateral slings. The patient was admitted for further treatment of multiple fractures of the arms and vertebrae.

He was discharged in bilateral shoulder slings to an extended-care facility for physical therapy. One month after discharge, he could not elevate his arms and had minimal use of them. Two weeks later, magnetic resonance imaging showed a “comminuted greater tuberosity fracture with new displacement of fragments involving the attachment of the supraspinatus and infraspinatus; posterior subluxation of the glenohumeral joint with evidence of posterior and anterior labral tears; and large glenohumeral joint effusion.” The patient opted for surgical repair and underwent left shoulder arthroscopy with extensive débridement, open rotator cuff repair, open greater tuberosity reduction and internal fixation, and open biceps tenodesis. He was then discharged back to an extended-care facility to continue rehabilitation. One and a half months after surgery, he started the physical therapy phase of the massive rotator cuff repair protocol. He declined reverse total shoulder arthroplasty (RTSA).

Four and a half months after injury (3 months after surgery), the left shoulder demonstrated 20° of flexion and 70° to 110° of abduction (external rotation not tested), and the right shoulder demon-

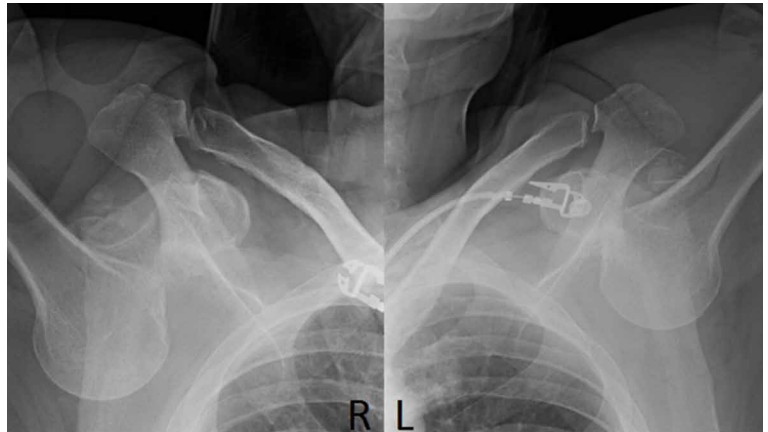


Figure 2. Right and left shoulder radiographs confirm luxatio erecta and show fracture lucency on both humeri.

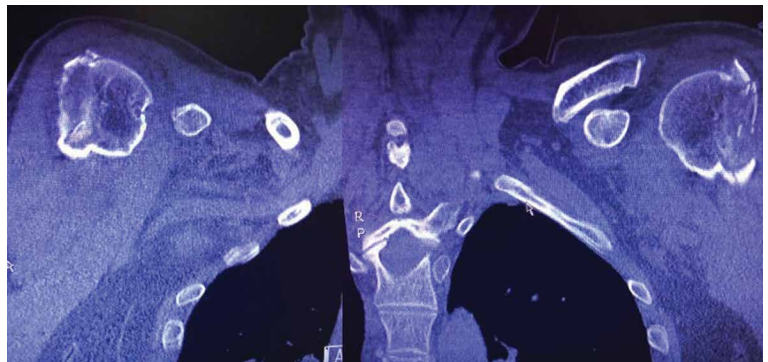


Figure 3. Left shoulder: comminuted greater tuberosity fracture with extension along anterior medial cortex of proximal humerus to diaphyseal level. Right shoulder: comminuted displaced greater tuberosity fracture with extension to level of surgical neck and through bicipital groove.

strated 30° of flexion and 70° to 110° of abduction (external rotation not tested). He had no instability and no lag with good external rotation.

Six months after injury, the patient still could not lift his arms above his head. He likely would not be able to do so without RTSA, which he again declined. He continued physical therapy and clinical follow-ups.

Discussion

Although inferior shoulder dislocations are rare, they carry a higher rate of complications, most of which our patient experienced. Our patient had bilateral humeral head fractures, which occur in 80% of cases.⁶ Postreduction CT showed the degree of his fractures (**Figure 3**).

Our patient also had reduced sensation in the axillary nerve distribution, which occurs in 60% of inferior dislocations.⁶ Axillary nerve injuries produce numbness in the lateral arm or posterior

shoulder and weakness with shoulder flexion, abduction, and external rotation.⁷ In our patient's case, sensation returned after reduction, which is typical (most patients have a positive prognosis).⁸ As the shoulder dislocates inferiorly, the humeral head tears the glenohumeral capsule inferiorly, which can damage the axillary artery. This artery becomes the brachial and eventually the radial and ulnar arteries, which can have decreased or absent pulses with injury.

Inferior dislocations are also associated with abundant soft-tissue injuries, including torn rotator cuff, shoulder capsule avulsion, and disruption of adjacent muscles (supraspinatus, infraspinatus, teres minor, subscapularis, pectoralis major).⁹

Luxatio erecta is relatively easy to diagnose given the unmistakable arm positioning. The key for the physician is first to assess for the many possible complications, then to administer the proper sedation and analgesia for reduction, and finally to reassess for complications.

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