



Bilateral Glenohumeral Luxatio Erecta: Case Report

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Abstract

Introduction: Bilateral luxatio erecta (inferior shoulder dislocation) is an exceptionally rare orthopedic emergency. While individual cases exist, bilateral presentations with associated glenoid fractures present unique management challenges. Case Presentation: We report the case of a 69-year-old female who sustained bilateral inferior shoulder dislocations following a fall from height. Imaging revealed bilateral dislocations and a right glenoid rim fracture. Closed reduction was successfully performed under general anesthesia. Follow-up MRI revealed bilateral rotator cuff tears. Conservative management with physical therapy yielded functional recovery. Discussion: This case highlights the importance of recognizing associated neurovascular and bony injuries in luxatio erecta. Despite bilateral rotator cuff pathology and a glenoid fracture, non-operative management resulted in satisfactory outcomes. Conclusion: Prompt reduction and careful screening for associated injuries are paramount in managing this rare condition.

Keywords: Luxatio Erecta; Bilateral Shoulder Dislocation; Inferior Dislocation; Glenoid Fracture; Rotator Cuff Tear

Abbreviations

MRI: Magnetic Resonance Imaging; ROM: Range of Motion; SLAP: Superior Labrum Anterior to Posterior.

Introduction

Dislocation is the loss of congruence between articular surfaces, typically resulting from trauma, and constitutes an orthopedic emergency requiring prompt management. Glenohumeral joint dislocations are among the most prevalent, accounting for approximately 40-45% of all joint dislocations.

These dislocations are classified by direction. Inferior dislocations, known as luxatio erecta, are exceptionally rare, comprising approximately 0.5% of all shoulder dislocations [1]. The rarity of luxatio erecta may be underreported, as some cases might spontaneously shift to anterior or posterior positions or fail

to stabilize, although this hypothesis lacks substantial evidence [1-3].

First described by Middeldorpf and Scharm in 1859, luxatio erecta remains sparsely documented, with most literature consisting of case reports. Bilateral luxatio erecta is even rarer, first reported by Murrad in 1920, with fewer than 30 cases described as of 2021 [1,4,5]. This condition exhibits a bimodal age distribution, commonly affecting individuals aged 15-30 years following high-energy trauma and those aged 50-70 years from low-to-moderate energy trauma, with no observed predilection for race or gender [1]. The primary mechanism involves violent abduction, where the humeral diaphysis or neck leverages against the inferior acromial edge, leading to inferior displacement. This can occur, for example, when attempting to break a fall by grasping an overhead object. Less commonly, a direct axial load with an inferior force on the

upper limb can cause this dislocation [3]. The humeral head then translates into the axillary recess, losing rotator cuff coverage and locking against the inferior glenoid rim [1,3].

Due to its low incidence, no definitive classification system exists for inferior dislocations. However, Wolf and Elkhalm proposed a sequence of events involving three stages: (1) the humeral head remains covered by the rotator cuff; (2) the humeral head exits the cuff; and (3) a valgus-impacted fracture occurs. Each stage is further subdivided by soft tissue interposition and reducibility [3].

Clinically, luxatio erecta presents with the upper limb in an exaggerated "wave" position: abducted beyond 120°, elbow flexed at 30-50°, and hand positioned above the head (Figure 1) [1,3]. Associated injuries are common, including nerve injuries (particularly to the axillary nerve), rotator cuff tears, and vascular injuries, necessitating careful evaluation and management [6,7]. Radiographs typically show the humeral head below the inferior glenoid rim, with the humeral shaft parallel to the scapular spine [8-10].



Figure 1: Photograph of the patient upon arrival at the emergency department. Displays the characteristic "salute" position with shoulder hyper-abduction and elbow flexion.

Case Presentation

Written informed consent was obtained from the patient for publication of this case report and accompanying images. We report the case of a 69-year-old female with a history of bilateral rotator cuff pathology that had not previously caused significant limitations, weakness, or interference with daily activities. The patient sustained a fall from a height of 2 meters on stairs, attempting to prevent the fall by hyper-abducting her upper limbs to approximately 130-150°, with elbows in semiflexion. This resulted in a frontal laceration due to contusion.

Upon arrival at the emergency department, the patient exhibited the classic arm position associated with luxatio erecta, functional impairment, tenderness in both shoulders, restricted mobility, and paresthesia in the sensory territory of the bilateral axillary nerve. No compromise of the axillary arteries was detected.

Radiographs and Computed Tomography (CT) imaging of the shoulders, cranial area, cervical spine, and thorax were obtained (Figure 2). Imaging confirmed joint incongruity with inferior displacement of the humeral heads. Thoracic CT revealed a right glenoid comminuted fracture at the inferoanterior rim that corresponds to less than 20% of glenoid circumference (Figure 3).



Figure 2: AP and bilateral Outlet shoulder X-rays. Inferior dislocation of the humeral head can be noticed.

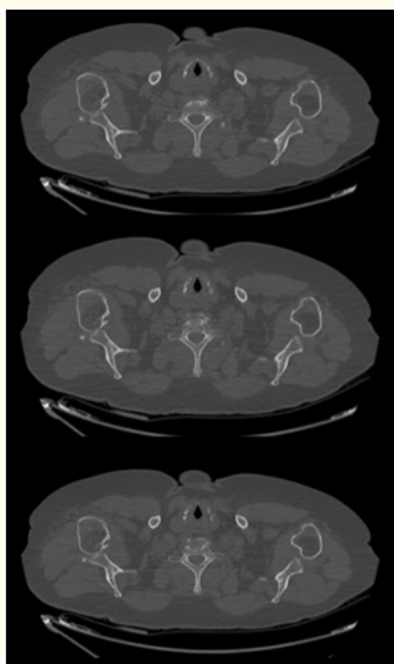


Figure 3: CT SCAN at the ED, Showing and gleno-humeral dislocation an gleonid rim fracture.

Closed reduction was performed under general anesthesia using axial traction-countertraction, successfully restoring articular congruence confirmed intraoperatively by fluoroscopic images, without complications. The glenoid fracture was left for orthopaedic management due to the size and conminution.

Post-reduction radiographs confirmed successful alignment, and neurovascular assessment revealed no abnormalities (Figure 4). No axillary view was obtained due to discomfort and risk over the manipulation of shoulder immobilizers.

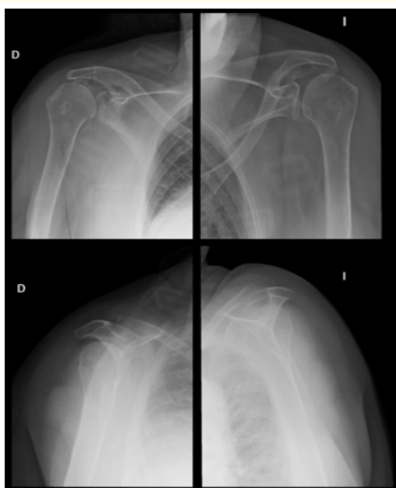


Figure 4: Post Reduction X-rays.

Bilateral velpeau style shoulder immobilizers were applied, and Magnetic Resonance Imaging (MRI) with outpatient follow-up was scheduled (Figures 5 and 6).

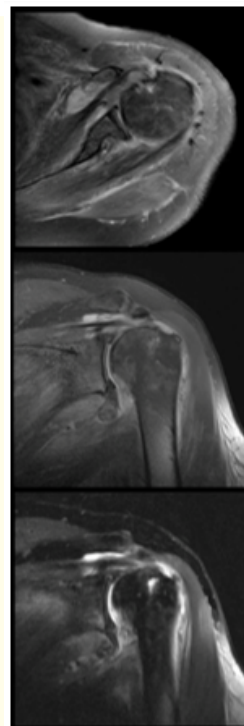


Figure 5: Left Shoulder MRI after 1 month, showing articular effusion, supraspinatus tear, subscapularis tear and capsule distension. Suitable articular congruency.

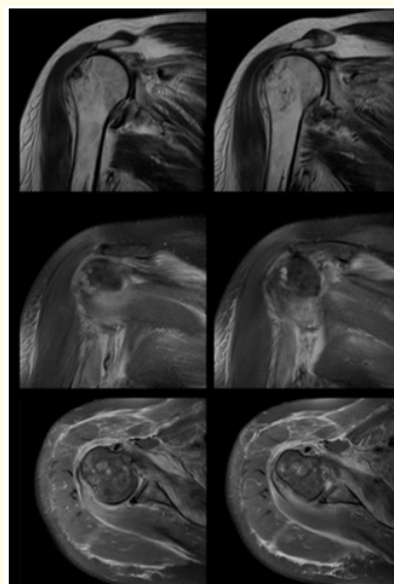


Figure 6: Right Shoulder MRI after 1 month, showing articular effusion, supraspinatus tear, subtle biceps subluxation and synovitis. Suitable articular congruency.

At a five-day follow-up, kinesiotherapy was initiated, and shoulder immobilizers were removed in order to prevent stiffness. Overall pain was low even in presence of glenoid fracture.

Four months post-injury, the patient had completed 20 kinesiotherapy sessions. She exhibited functional shoulder mobility. Specific Range of Motion (ROM) was recorded as follows: Forward flexion 140°, abduction 90°, external rotation 60°, and internal rotation reaching L1 level. Strength testing revealed M5 at abduction, elbow flexion and wrist extension, despite the known cuff tears. Passive range of motion was preserved, and no recurrent episodes of glenohumeral instability were noted. The patient reported no limitations in daily activities (Figure 7).



Figure 7: a, b, c and d. Evaluation after 20 physical therapy sessions. Good articular range with mild external rotation and abduction limitation, without associated instability.

Results and Discussion

The rarity of luxatio erecta underscores the importance of a comprehensive understanding of its associated risks, injuries, and management strategies to ensure effective patient care. The case presented here adds to the limited literature on bilateral presentations, particularly regarding the decision-making process for non-operative management in the presence of concomitant glenoid fractures and rotator cuff tears.

Associated injuries are prevalent and include fractures, soft tissue damage, and neurovascular compromise. A 2018 review

by Nambiar, *et al.* of 199 cases, including 29 bilateral cases, reported proximal humerus fractures in 39% of patients, with 75% involving the greater tuberosity, and scapular fractures in 8% [11]. Our patient presented with a glenoid rim fracture, which poses a risk for recurrent instability. However, stability was achieved conservatively. The glenoid fracture was deemed small enough not to compromise critical bone stock, allowing for conservative treatment.

Soft tissue injuries frequently affect the inferior glenohumeral ligament (HAGL), inferior subscapularis, lower labral tears, and SLAP lesions [9,10]. Rotator cuff injuries are reported in up to 80% of cases, with varying severity [11]. In this case, MRI confirmed bilateral cuff tears, likely acute-on-chronic given the patient's age, yet functional recovery was satisfactory without surgical repair.

Neurovascular injuries are a significant concern. Nerve injuries are reported in up to 59% of inferior dislocations, primarily affecting the brachial plexus or its branches, with the axillary nerve most commonly involved, often resulting in neuropraxia that resolves spontaneously [1,12]. Vascular injuries, though less frequent, occur in approximately 1% of glenohumeral dislocations, typically involving the axillary artery, with a higher incidence in older adults due to decreased arterial wall compliance. For inferior dislocations, the incidence of vascular injury may be as high as 4%. Rare complications reported include damage to the circumflex humeral artery or axillary vein thrombosis [1,5].

Irreducible dislocations, though uncommon, have been documented, with radiographic signs including a subluxated shoulder, widened joint space, and slight cephalic lateral displacement of the humeral head [3]. Reduction techniques include Nho's method, which converts an inferior dislocation to an anterior one using traction and gentle external rotation, followed by standard anterior reduction techniques. DePalma's method involves axial traction combined with countertraction of the torso, followed by thoracic adduction. Both approaches require adequate anesthesia [13,14].

Conclusion

In conclusion, luxatio erecta is an exceptionally rare pathology, particularly when bilateral. Its incidence is likely underreported, making it an essential topic for clinicians. The condition often arises from a lever mechanism involving the proximal humerus

and acromion. Accurate recognition of its clinical presentation and imaging findings is crucial. During the initial evaluation, special attention must be given to the neurovascular status, particularly of the axillary nerve and artery. Management should prioritize emergent reduction. In older patients, surgical intervention is rarely necessary if acute massive rotator cuff injuries, recurrent instability, and neurovascular injuries are excluded. As demonstrated in this case, non-surgical management focusing on kinesiotherapy can restore range of motion and function even in the presence of associated fractures and cuff pathology.

Conflict of Interest

The authors declare no conflict of interest.

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