SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Surgery

Erecta Dislocation of the Shoulder: A Two Cases Report, One Associated with a Greater Tuberosity Fracture: Case Series

MY Mazouzi[1]*, O Assouab[1], S Bousselmame[1], A Massri[1], M Daghouj[1], MR Fekhaoui[1], O Aguenaou[1], J Mekkaoui[1], M Boufettal[1], RA Bassir[1], M Kharmaz[1], MO Lamrani[1]

[1]Department of Orthopaedic Trauma Surgery, Ibn Sina University Hospital, Rabat, Morocco

DOI: https://doi.org/10.36347/sasjs.2026.v12i08.007 | **Received:** 16.06.2026 | **Accepted:** 10.08.2026 | **Published:** 25.08.2026

***Corresponding author:** MY Mazouzi
Department of Orthopaedic Trauma Surgery, Ibn Sina University Hospital, Rabat, Morocco

Abstract | **Case Series**

Background: Luxatio erecta, or inferior glenohumeral dislocation, is a rare injury with a usually characteristic clinical presentation. Its main severity arises from the frequency of associated osseous, neurological, vascular, and soft-tissue injuries. ***Case presentations:*** We report two cases. The first was a 75-year-old patient with type 2 diabetes who sustained an isolated right luxatio erecta after a motorcycle fall. Urgent closed traction-countertraction reduction, brief immobilization, and rehabilitation resulted at six months in 150° of forward flexion, 130° of abduction, and 70° of internal rotation, without recurrence. The second patient was 29 years old and had been struck by a car. A left luxatio erecta was associated with a displaced greater tuberosity fracture. After urgent reduction, the fracture was fixed the following day with two cancellous screws through a mini-anterolateral approach. Complete union was obtained at three months, with 160° of abduction and 70° of internal rotation. Residual weakness and subjective instability prompted additional muscle strengthening. At eight months, the functional outcome was highly satisfactory. ***Conclusion:*** Management of luxatio erecta should combine prompt reduction, repeated neurovascular assessment, and systematic evaluation for associated injuries. When luxatio erecta is associated with a greater tuberosity fracture, treatment should be individualized according to fracture displacement and post-reduction stability.

Keywords: luxatio erecta; inferior glenohumeral dislocation; greater tuberosity; internal fixation; shoulder.

INTRODUCTION

Luxatio erecta is an inferior dislocation of the glenohumeral joint. It accounts for approximately 0.5% of shoulder dislocations and is the rarest form of glenohumeral dislocation [1,2].

Two main injury mechanisms have been described: indirect forced hyperabduction, in which the humeral neck levers against the acromion and drives the humeral head inferiorly, and a direct axial load applied to an already abducted arm [3,4]. The limb is classically locked in abduction, producing an immediately suggestive deformity. Associated injuries may include greater tuberosity fractures, rotator cuff tears, capsulolabral lesions, brachial plexus injury, and axillary vascular injury [1,3,5].

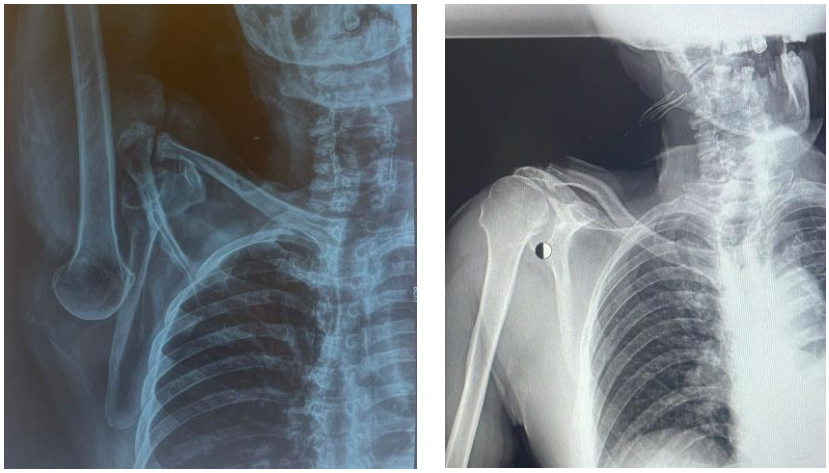
Plain radiographs usually confirm the diagnosis. Computed tomography or magnetic resonance imaging can supplement the post-reduction assessment when a fracture, persistent weakness, or instability raises concern for injuries not visible on standard radiographs [6]. We report two cases of luxatio erecta: an isolated dislocation in an older patient and a dislocation associated with a displaced greater tuberosity fracture in a young patient.

Case 1

A 75-year-old patient with type 2 diabetes mellitus was admitted after a motorcycle fall causing closed trauma to the right upper limb. The patient had severe right shoulder pain and complete functional impairment.

Examination showed the characteristic deformity, with the right upper limb locked in approximately 160° of abduction. There was no skin injury. The brachial, radial, and ulnar pulses were palpable. Sensory and motor examination of the upper limb, including the axillary nerve distribution, was normal.

An anteroposterior shoulder radiograph confirmed an inferior glenohumeral dislocation without a visible associated fracture. Urgent closed reduction was performed in the operating room under sedation using longitudinal traction and countertraction. Post-reduction stability testing was satisfactory, and no secondary neurovascular deficit was detected. The control radiograph confirmed a concentric glenohumeral reduction (Figure 1).



A B

Figure 1: First case. (A) Initial radiograph of the right shoulder showing an inferior glenohumeral dislocation. (B) Post-reduction radiograph showing restoration of glenohumeral congruity.

The patient was discharged the following day with the arm immobilized in a sling against the chest for three weeks and analgesic medication. Rehabilitation began during the fourth week and focused on progressive restoration of motion and strengthening of the rotator cuff and deltoid muscles.

Follow-up at one, three, and six months showed a clinically stable shoulder with no recurrence. At the final six-month assessment, forward flexion was 150°, abduction was 130°, and internal rotation was 70°. The patient was satisfied with the outcome and declined further investigation with MRI or CT arthrography.

Case 2

A 29-year-old patient with no relevant medical history was admitted after being struck by a car as a pedestrian. The injuries involved closed trauma to the left shoulder and right lower limb. There was a history of transient loss of consciousness; on admission, the patient reported nausea and dizziness and was assessed in the resuscitation bay.

The left upper limb was locked in 120° of abduction (Figure 2A). Neurological examination, including assessment of the brachial plexus, was normal. The brachial, radial, and ulnar pulses were present. Examination of the right lower limb was unremarkable.

A B

Figure 2: Second case at admission. (A) Clinical posture of the left upper limb locked in approximately 120° of abduction. (B) Initial radiograph showing an inferior glenohumeral dislocation associated with a greater tuberosity fracture

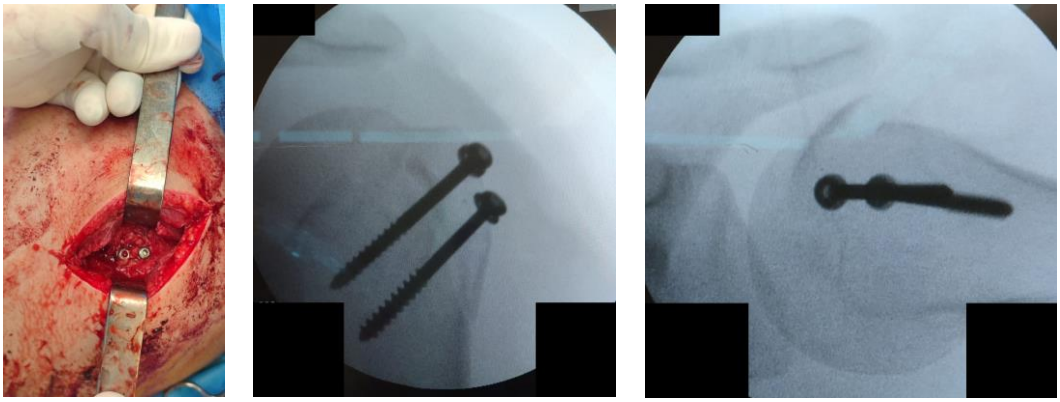
The initial shoulder radiograph demonstrated an inferior glenohumeral dislocation associated with a greater tuberosity fracture (Figure 2B). The diagnosis was left luxatio erecta associated with a greater tuberosity fracture. Whole-body CT confirmed this diagnosis and excluded other traumatic injuries, particularly intracranial injury.

Urgent closed reduction was performed in the operating room under sedation using traction and countertraction, followed by immobilization in a sling. Post-reduction CT of the left shoulder confirmed joint reduction and demonstrated a displaced greater tuberosity fracture (Figure 3).

A B C

Figure 3: Three-dimensional CT reconstructions obtained after reduction in three views, showing a reduced glenohumeral joint and a displaced greater tuberosity fracture

Internal fixation was performed the following day because of operating-room availability constraints. Through a mini-anterolateral approach, the greater tuberosity fragment was reduced and fixed with two cancellous screws. Anteroposterior and lateral fluoroscopic views confirmed satisfactory reduction and implant position, and final stability testing was satisfactory (Figure 4). The immediate postoperative radiograph showed a congruent joint and appropriate fixation (Figure 5).



A B C

Figure 4: Operative treatment in the second case. (A) Mini-anterolateral approach showing the heads of the two screws after fixation. (B, C) Anteroposterior and lateral fluoroscopic views confirming greater tuberosity reduction and implant position

Figure 5: Immediate postoperative radiograph of the left shoulder showing fixation of the greater tuberosity with two cancellous screws and a congruent glenohumeral joint

The patient was discharged on postoperative day 2 with a sling to be worn for 21 days, analgesic treatment, wound care every two days, and planned suture removal on day 15. Rehabilitation was started during the fourth week and combined active and passive mobilization, restoration of range of motion, and strengthening of the rotator cuff and deltoid.

At one month, the wound was clean, radiographs showed ongoing healing, and no recurrent dislocation was reported (Figure 6). At three months, abduction had reached 160° and internal rotation 70°. Radiographs confirmed complete fracture union. The patient nevertheless reported weakness of the left upper limb compared with the contralateral side and a subjective sensation of instability, without documented recurrence. Additional rehabilitation focused on deltoid strengthening was prescribed. At eight months, the functional outcome was highly satisfactory (Figure 7).

Figure 6: One-month radiograph showing maintained reduction and ongoing healing without secondary implant displacement

A **B** **C**

Figure 7: Three-month follow-up. (A) Active abduction to 160°. (B) Internal rotation to 70°. The faces were blurred to preserve anonymity. (C) Radiograph showing complete union of the greater tuberosity fracture with the implants in place

DISCUSSION

These two cases illustrate the clinical spectrum of luxatio erecta: an isolated dislocation treated nonoperatively and luxatio erecta associated with a greater tuberosity fracture requiring internal fixation. In both cases, the irreducible abducted posture allowed rapid diagnostic orientation, which was confirmed radiographically.

Neurovascular status must be documented before and after every reduction attempt. The inferior position of the humeral head and traction on the surrounding soft tissues place the axillary nerve, brachial plexus, and axillary vessels at risk. Although neither patient had a deficit, the possibility of transient or persistent injury justifies repeated clinical assessment [1,5].

Urgent reduction aims to relieve pain, reduce tension on neurovascular structures, and restore joint congruity. Traction-countertraction, used in both of our cases, remains a classic technique. The two-step maneuver described by Nho *et al.,* in which the inferior dislocation is converted to an anterior dislocation before definitive reduction, is an alternative that may require less traction in selected cases [7].

Associated osseous and tendon-labral injuries should then guide treatment. A greater tuberosity fracture may accompany luxatio erecta and can become more apparent after reduction [8]. CT was decisive in our second patient by defining fracture morphology and displacement. When the fragment remains displaced or compromises rotator cuff function, fixation may be indicated. Associated cuff or labral lesions may also account for persistent weakness or subjective instability and may justify MRI, CT arthrography, or arthroscopic assessment depending on the clinical context [6,9].

Functional outcomes are generally favorable when reduction is prompt and associated injuries are appropriately treated. In the series by Groh *et al.,* 83% of shoulders had good or excellent results, and half of the patients required closed reduction as the only definitive treatment [2]. Neither patient had a documented recurrence during follow-up. In the second patient, continued muscle strengthening was prescribed for weakness reported at three months, and the functional outcome was highly satisfactory at eight months.

This series has several limitations: it includes only two cases, validated functional scores were not collected, follow-up durations differed, and MRI was not performed. In the first case, the patient's refusal of advanced imaging prevented formal exclusion of an asymptomatic rotator cuff or labral lesion.

Conclusion

Luxatio erecta is rare, but its clinical posture is often characteristic. Management should be prompt and systematic, including neurovascular examination before and after reduction, post-reduction imaging, and targeted assessment of associated injuries. An isolated dislocation may recover well after closed reduction, short immobilization, and rehabilitation. When luxatio erecta is associated with a displaced greater tuberosity fracture, stable fixation of the fragment can restore anatomy and provide a satisfactory functional outcome.

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