

A rare case of bilateral luxatio erecta with bilateral greater tuberosity fracture following a fall due to seizure

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ABSTRACT

Luxatio erecta is the least common form of shoulder dislocations. Bilateral luxatio erecta with concomitant greater tuberosity fracture is further rare with only couple of cases reported so far in the literature. We present an uncommon and a rare case of post epileptic seizure related bilateral luxatio erecta with greater tuberosity fracture in a young Indian male which is unique in its etiology, method of management and rarity of its type among so far reported cases.

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1. Introduction

Bilateral inferior shoulder dislocations are very rare and constitute only 0.5% of all shoulder dislocations. Bilateral inferior shoulder dislocations with greater tuberosity fracture is an extremely rare condition. To the best of our knowledge only two cases have been reported in literature^{1,2} so far and our case might be the third. Shoulder dislocations are also well described as a sequelae of seizure activity and are characteristically posterior dislocations with few cases of anterior dislocations. Cases of unilateral luxatio erecta with seizure activity³ as etiology were reported, but few in number and bilateral presentation is unreported so far. Herewith, we are reporting a case of bilateral inferior dislocation of shoulder with bilateral greater tuberosity fracture following an epileptic seizure.

2. Case report

A 36 year old male presented at the emergency department with pain and inability to move both shoulders following a fall due to an epileptic convulsion. Physical examination revealed that both shoulders were in hyper abducted position with both elbows flexed, both forearms promoted and by the side of his head (Fig. 1a showing typical attitude of luxatio erecta). Both humeral heads

were palpable in the axilla with restricted range of motions of shoulders due to pain. Radiographs of both shoulders in Antero Posterior view (AP view) showed bilateral inferior dislocation of glenohumeral joints with bilateral greater tuberosity fractures (Fig. 1b showing AP radiograph with bilateral inferior dislocation).

Immediate closed reduction was done under general anesthesia by axial traction and counter traction maneuver with simultaneous pressure on the humeral head superiorly on both sides. Neurovascular status was found to be intact after reduction. Both shoulders were immobilized in a shoulder immobilizer (Fig. 2a showing Post reduction immobilization with shoulder immobilizer). Post reduction radiographs revealed greater tuberosity fractures on both sides (Fig. 2b Post reduction AP radiograph of both shoulder showing greater tuberosity fractures with displacement on right side), but on the right side, it was displaced, Neer's type 4 of 2 part fracture⁴ and 11-A1 of OA/OTA proximal humerus fractures classifications,⁵ which was managed by open reduction and internal fixation with multiple cannulated cancellous screws. Greater tuberosity fracture on the left side was undisplaced and hence managed conservatively (Fig. 3 Post operative AP radiograph of both shoulders showing greater tuberosity fracture fixed with cortical cancellous screws on the right side).

At 3 months follow up both greater tuberosity fractures have united and patient attained a painless full range of movements of both shoulders (Fig. 4 AP radiograph of both shoulders showing the union of greater tuberosity fractures at 3 months) and (Fig. 5 Range of movements of both shoulders at 3 months follow up).

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Fig. 1. A showing the typical attitude of luxatio erecta and 1b showing AP radiograph with bilateral inferior dislocation.

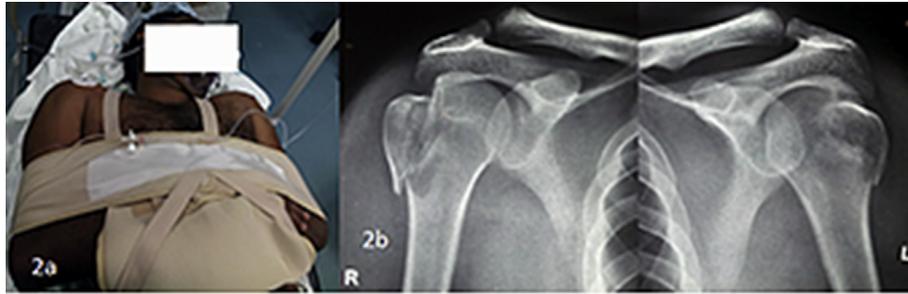


Fig. 2. A showing Post reduction immobilization with shoulder immobilizer and 2b Post reduction AP radiograph of both shoulder showing greater tuberosity fractures with displacement on right side.



Fig. 3. Post operative AP radiograph of both shoulders showing greater tuberosity fracture fixed with cortical cancellous screws on the right side.

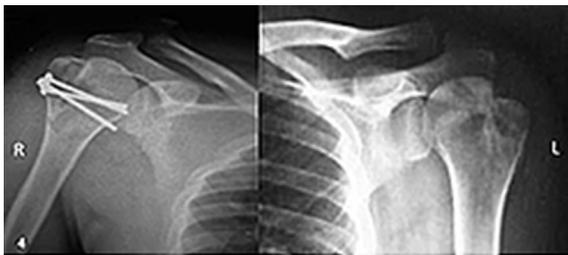


Fig. 4. AP radiograph of both shoulders showing the union of greater tuberosity fractures at 3 months.

3. Discussion

Inferior shoulder dislocations are rare (0.5% of all shoulder dislocations) and bilateral inferior shoulder dislocations are exceptional. Furthermore bilateral inferior dislocations with bilateral greater tuberosity fractures have been reported rarely and only two cases so far in the literature. Epileptic seizure as an etiological factor in symmetrical presentations is unreported yet.

Middeldorff and Scharm first described luxatio erecta in 1859. Bilateral presentation was first reported by Murard in 1920. The complex mechanisms of shoulder dislocation leading to characteristic shoulder position in clinical picture and radiographic presentation of Luxatio erecta was described in 1990 by Davids and Talbott.⁶ One is due to strong abduction force on abducted shoulder forcing leverage of proximal shaft of the humerus over the acromion due to which humeral head pulls out from inferior joint capsule and glenohumeral ligament rupturing supraspinatus and infraspinatus muscles. The other is direct axial thrust on a fully abducted arm leading humeral head to get pulled out from joint capsule fracturing the greater tuberosity or tearing the rotator cuff. In our case the second mechanism has to be taken into consideration.

Dislocations following seizures usually comprise posterior type. Extreme abduction and external rotation with axial thrust on an already abducted upper limb during seizure causes inferior dislocations which were rarely reported, but bilateral inferior dislocations with bilateral greater tuberosity fractures has not been reported so far.

Characteristic clinical presentation and radiographs aids in clinching diagnosis. Associated injuries among which fracture of greater tuberosity or lesions of the rotator cuff is common. It was found that the majority of these types of cases may have a neurological deficit of upper limbs prior reduced which resolves gradually after reduction.

Usually managed by closed reduction under anesthesia. In order to reduce the inferior glenohumeral dislocation, traction and counter traction maneuver in which the abducted limb is pulled by traction with counter traction applied using a cloth superiorly and sometimes superiorly directed thrust over humeral head. After reduction limb should be immobilized for at least 2 weeks. In the present case bilateral inferior dislocations were reduced successfully with traction and counter traction technique.

Regarding management of greater tuberosity fractures of humerus, conservative treatment is adopted for non-displaced and



Fig. 5. Showing range of movements of both shoulders at 3 months follow up.

Table 1
Review of cases reported in the literature with bilateral luxatio erecta with greater tuberosity fracture.

S.No	Author	Case	Cause	Method of reduction	Management of greater tuberosity fracture	Result
1	Vikas Saxena, Journal of clinical orthopaedics and trauma, 2013	19/ M	Fall from a moving train.	Closed reduction	Conservative	Full recovery at 1 year
2	Joong-Bae Seo, J Korean Orthop Assoc, 2009	35/ M	Vehicular trauma.	Closed reduction	Conservative	Full recovery at 7th month.
3	Present case	36/ M	Fall following epileptic seizure.	Closed reduction	Open reduction and fixation with cortico cancellous screws on the right side. Conservative management on left side.	Full recovery in 3 months

minimally displaced fractures. The amount of fragment displacement of isolated greater tuberosity fractures which require surgical intervention was discussed in early 1970. Postero superior displacement of the greater tuberosity of more than 5 mm from the anatomic position can result in malunion and impingement of the shoulder due to an altered biomechanics of the glenohumeral joint.⁷In the current literature it is recommended that surgical fixation be used for fractures with more than 5 mm of displacement in the general population or more than 3 mm of displacement in active patients with frequent overhead activity.⁸In our case as there was significantly displaced greater tuberosity fracture on right side, open reduction of fracture and fixation with cortico cancellous screws was chosen. Two surgical approaches have been described for open reduction and internal fixation of proximal humeral fractures, a deltopectoral and a transdeltoid lateral approach.⁹In our case transdeltoid approach was chosen.

The good favorable prognosis of this injury is the rule and sometimes associated with comorbidities like adhesive capsulitis and instability.¹⁰In our case excellent range of movements were attained without any sequelae.

Review of similar cases reported so far in the literature regarding mode of injury, method of reduction of dislocation, management of greater tuberosity fracture and recovery (Table 1).

To conclude bilateral inferior dislocation with fracture greater tuberosity due to fall following epileptic seizure is an extremely rare condition. Typical attitude and mechanism of injury may aid in clinching diagnosis. Detailed assessment and judiciously selected treatment provides excellent result with minimal complications and sequelae. However the surgeon should be careful for the possibility of neurovascular lesions or injuries to the rotator cuff which would complicate this injury and prognosis.

Conflicts of interest

All authors have no conflict of interests in any form.

Ethical standards

The patient provided his full consent to the publication of this report and his images.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jcot.2018.08.018>.

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