CASE REPORT

Unusual presentation of an inferior fracture dislocation of the shoulder in a child following seizure activity: A case report and discussion

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Introduction

The shoulder is the most commonly dislocated joint in the human body. Inferior dislocations are rare forms of shoulder dislocation and classically present with the patient’s arm in the luxatio erecta position. Shoulder dislocations are also well described as a consequence of seizure activity and are characteristically anterior or posterior dislocations.

We present a case where a patient suffered an inferior fracture dislocation of her left shoulder following a seizure who did not present in the luxatio erecta position.

Case history

A 14-year-old insulin-dependant diabetic girl presented to Accident and Emergency with a history of having fallen onto her left shoulder whilst having a tonic-clonic seizure. She had no previous history of seizures but her parents described a 4-min episode of un-coordinated movement of all her limbs associated with tongue-biting and abnormal eye movements.

As she regained full consciousness, she reported pain in her left shoulder and a reduced range of movement about her shoulder joint. On examination, her arm was held in the neutral position. She had no neurovascular deficit in her left arm and no focal areas of tenderness.

Plain radiographs (Figs. 1 and 2) showed an inferior dislocation of her humeral head and an associated greater tuberosity fracture due to impingement on the glenoid. This was treated with closed reduction with gentle traction and counter-traction in the Accident and Emergency Department under sedation (Fig. 3). Post reduction, she had no evidence of any peripheral nerve injury.

Post MUA, a CT-scan showed an avulsion of the greater tuberosity with 6 mm postero-inferior displacement of the fragment. This position was considered acceptable as it was deemed unlikely that it would lead to subacromial impingement (Figs. 4 and 5). She has been treated non-operatively in a polyling for 3 weeks, followed by physiotherapy. She is also being investigated for the cause of her seizure.

Discussion

The shoulder has the largest range of movement of any joint in the body. Bony stability is poor and the
the shoulders rely heavily on static and dynamic soft tissue structures for stability. The glenohumeral joint capsule, the muscles of the rotator cuff, shoulder ligaments and the cartilaginous glenoid labrum are all important stabilizing structures.

Anterior dislocations account for 95% of glenohumeral dislocations with posterior dislocations comprising 4% and inferior dislocations only 0.5%. Inferior dislocations are usually caused by axial force applied to an arm raised overhead or hyper-abduction injuries. In these situations, the patient presents in a characteristic luxatio erecta position. These injuries are commonly associated with fractures of the greater tuberosity and significant soft tissue injury.

Dislocations associated with seizures usually comprise anterior or posterior dislocations. Following severe internal rotation and adduction during a tonic-clonic seizure, the shoulder will dislocate posteriorly whereas abduction, extension and external rotation injuries will lead to anterior dislocations. A recent study showed that anterior and posterior dislocations occurred with equal frequency in patients who had suffered seizures, although no inferior dislocations were reported. Bilateral posterior dislocations are rare and almost always result from seizure activity.

It is important to be certain of the type of dislocation as the methods for reduction differ. In addition to

Figure 1  AP radiograph on arrival. Left shoulder demonstrating inferior impingement of humeral head relative to the glenoid with a large greater tuberosity fracture.

Figure 2  Axial radiograph on arrival. Left shoulder demonstrating no anterior or posterior displacement of the head relative to the glenoid.

Figure 3  AP radiograph following closed reduction under sedation. Greater tuberosity fragment remains visible with relocation of the dislocation.

Figure 4  Axial CT image showing avulsion fracture without any evidence of Hill-Sachs or Bankart lesions.

Figure 5  Coronal reformatted CT image of greater tuberosity fragment.
this, inferior dislocations have a higher association with peripheral nerve injury and vascular compromise. There are various reported manoeuvres to reduce anterior and posterior dislocations whereas reduction of an inferior dislocation requires particular forces to be applied to the joint. Reduction involves gentle axial traction along the line of the arm (upward and outward) whilst providing countertraction across the top of the shoulder towards the opposite shoulder. The arm should then be slowly adducted following reduction.

**Conclusions**

We describe for the first time this case of inferior dislocation illustrating that not all dislocations in patients having suffered a seizure will be anterior or posterior dislocations.

This case report highlights the fact that inferior fracture dislocations of the shoulder can present with the arm in the neutral position and not in the classic luxatio erecta position.

We surmise that in this case the initial fracture-dislocation was caused by the fall and may have been in the luxatio erecta position. However, the following seizure may have caused her arm to be brought into neutral and resulted in the unusual presentation of her inferior dislocation.

The challenges faced by the on call junior doctor or casualty officer are to correctly interpret radiographs and use the correct technique to safely reduce the dislocation.

**References**