Simple bilateral anterior shoulder dislocation: A case report and review of the literature

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Abstract

Bilateral shoulder dislocations are usually of the posterior type, which is commonly associated with seizures, electrocution or electroconvulsive therapy. Bilateral anterior shoulder dislocations are very rare and usually result from significant trauma. Simple bilateral anterior shoulder dislocations without associated fracture are much rarer and not many cases have been reported in the literature. We present a traumatic bilateral simple anterior shoulder dislocation in a 24-year-old male without any features of ligamentous laxity, and review the international literature on simple bilateral anterior shoulder dislocations. From the review we conclude that seizures are as important an aetiology of simple bilateral anterior shoulder dislocation as is trauma. Moreover, this injury is not as rare as was considered in the past.

Key words: shoulder, dislocation, bilateral, seizures, glenoid, anterior dislocation

Introduction

Shoulder dislocation is the most common type of joint dislocation encountered in humans.[1,2] Anterior shoulder dislocation represents 95% of unilateral shoulder dislocations while unilateral posterior dislocation is far less common (4%).[2,3] Bilateral shoulder dislocations do occur and unlike unilateral dislocations they are most commonly of the posterior type.[2,4] Bilateral posterior dislocations are usually associated with seizures, electrocution and electroconvulsive therapy while bilateral anterior dislocations result from significant trauma.[2,5,6] Asymmetrical bilateral dislocations with one shoulder dislocated anterior and the other one posterior are extremely rare and have been reported in the literature.[7,8]

Simple bilateral anterior shoulder dislocations without associated fracture are extremely rare. Very few cases have been reported in the literature.[4,9] We present a case of traumatic simple bilateral anterior shoulder dislocation and review the international literature on this rare type of injury.

Case history

A young patient, 24 years of age, presented to our emergency department with complaints of pain and inability to move both his shoulders after he had suffered a backward fall from the edge of his bed. There was no history of alcohol intake, any medication or loss of consciousness.

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There was no history suggestive of diabetes mellitus or seizure activity in the past. On examination the patient was conscious, cooperative and oriented. Vitals were normal. The respiratory and cardiovascular system examination was unremarkable. Both upper extremities were in the attitude of external rotation and abduction. Shoulders were bilaterally symmetrical but appeared squared. Laterally the sulcus sign was present together with the inability to palpate the greater tuberosity below the acromion on both sides. Movements were painful and restricted on both sides. Distally there was no motor, sensory or vascular deficit. There were no signs of generalised ligamentous laxity. Antero-posterior radiographs of both shoulder joints had empty glenoid cavity with the humeral head lying below the coracoid process, without any associated fractures (*Figure 1*). A diagnosis of traumatic simple bilateral anterior shoulder dislocation was made.

After baseline investigations for general anaesthesia, dislocation was reduced by Kocher's manoeuvre, first on one side followed by the other, under sedation. Reduction was secured in adduction and internal rotation by bilateral slings. Post-reduction radiographs had concentric reduction of both shoulder joints (*Figure 2*). The patient was discharged from the hospital with both shoulders immobilised in slings.

Intermittent pendulum movements of the upper extremities were started at two weeks and slings were discarded at four weeks after which full range of movement of shoulder joints was started. At eight weeks the patient gained full range of movement. At final follow-up of six months the patient had painless, full range of movement at the shoulder joints without any sign of shoulder instability (*Figure 3*).

Discussion

Trauma is the most common mode of bilateral anterior shoulder dislocation.[5,6,10] The mechanism is the same as that of unilateral dislocation but the traumatic force should be uniformly distributed between the two shoulder joints to dislocate both.[2,5,11] When a person falls backwards as happened in our case, there is a reflex tendency to take the weight of the body on the hands by extending the elbow joints and abducting, externally rotating and extending the shoulder joints. The shoulder joint in the position of abduction, external rotation and extension will have greater tuberosity impinged on the posterior aspect of the acromion.

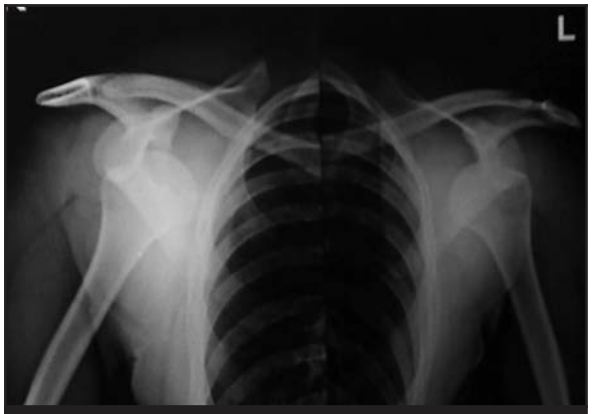

Figure 1. Anterior dislocation of both shoulder joints without associated fracture

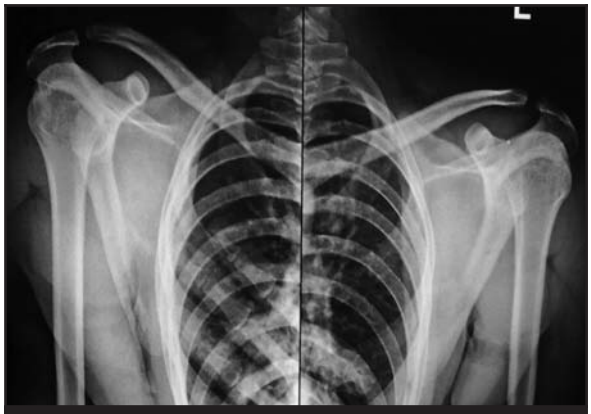

Figure 2. Concentric reduction of both glenohumeral joints

Figure 3. Range of motion of both shoulder joints at final follow-up of six months

Once vertical force is transmitted along the humerus it tends to hyper-extend the shoulder joint, which is prevented by this impingement and rather acts as a lever to deliver the head anterior out of the glenoid.[12]

Bilateral anterior shoulder dislocation is a rare injury and such an injury without an associated fracture is far rarer. Dinopoulos *et al*.(1999) in their review of literature had 28 cases of bilateral anterior shoulder dislocation reported since 1966 out of which only 11 were simple dislocations without any associated fracture.[13] Siwach *et al*. (2008), in a similar type of literature review, reported only 14 cases of simple bilateral anterior dislocations.[14] Dodds *et al*. (2008) in their review of 1966 reported 24 cases of bilateral anterior shoulder dislocations of which 18 were simple dislocations.[15] After an extensive search of international literature we found 41 published papers since 1973 with 46 cases of simple bilateral anterior shoulder dislocation, which is the first of its kind and largest review ever of this rare injury in the orthopaedic literature (*Table I*). Sreesobh *et al*. (2005),[9] Rouhani *et al*. (2010),[4] Bilsel *et al*. (2012)[16] and Yashavantha *et al*. (2013)[10] in their reviews have mentioned, respectively, only two, four, eight and three cases of bilateral simple anterior shoulder dislocation being reported so far. Our literature review refutes this injury being so rare.

In our review of the case presented, fall on hands or elbows was the most common mode of injury (16 cases) followed by seizure activity, including hypoglycaemic seizures (12 cases). In seizures, anterior dislocation occurs by extension, abduction and external rotation of shoulder joint by direct or indirect trauma.[14] Weight-lifting in gymnasiums and during military drill is emerging as aetiology (four cases).

Our literature review refutes this injury being so rare

Table I: Published cases of simple bilateral anterior shoulder dislocation

S. No.	Author (Year)	Age (yr)/Sex	Mode of trauma
1.	Jekic M (1973)[31]	?/?	Fall
2.	McFie J (1976)[20]	31/F	Forward traction by motor bike
3.	Segal D(1979)[21]	60/M	Seizures
4.	Segal D (1979)[21]	19/M	Water skiing (forward traction)
5.	Onabowale BO (1979)[28]	62/M	Unknown (chronic at diagnosis)
6.	Sadhra K (1984)[32]	?/F	Seizure (chronic at diagnosis)
7.	Brown RJ (1984)[33]	60/M	Fall
8.	Brown RJ (1984)[33]	65/M	Fall
9.	Brown RJ (1984)[33]	31/M	Seizure (chronic at diagnosis)
10.	Hartney-Velazco K (1984)[37]	22/F	Cocaine-induced seizure
11.	Sciammarella JC (1986)[17]	30/F	Seizure
12.	Jones M (1987)[38]	24/M	Weight lifting in bench press
13.	Litchfield JC (1988)[39]	21/M	Hypoglycaemia
14.	Mehta MP (1989)[40]	33/M	Fall over elbows
15.	Mathis RD (1990)[23]	23/M	Diving
16.	Maffulli N (1990)[18]	31/M	Pull over bench weight lifting
17.	Costigan PS (1990)[29]	74/F	Unknown (chronic at diagnosis))
18.	Cresswell TR (1998)[11]	31/M	Weight lifting in bench press
19.	Esenkaya I (2000)[19]	?/M	Weight lifting in sitting position
20.	Echarri Sucunza A (2002)[41]	29/M	Seizure
21.	Singh S (2005)[34]	21/M	Trauma (sequential dislocation)
22.	Sreesobh KV (2005)[9]	32/M	Trauma (Sequential dislocation)
23.	Ozcelik A (2006)[42]	20/M	Hypoglycaemia
24.	Ngim NE (2006)[24]	65/F	Domestic assault
25.	O'Connor-Read L (2007)[43]	25/M	Seizure
26.	Bellazzini MA (2007)[30]	20/M	Unknown
27.	de la Fuente FA (2008)[25]	?/?	Push-ups
28.	Turhan E (2008)[22]	?/M	Fall from horse with sudden forward traction
29.	Abalo A (2008)[44]	?/?	Fall
30.	Siwach R (2008)[14]	45/M	Sudden backward animal traction
31.	Galanakos S (2008)[2]	39/F	Fall
32.	Akdur O (2008)[45]	55/F	Road traffic accident with fall
33.	Kalkan T (2009)[6]	65/F	Fall with hanging from a bar
34.	Kalkan T (2009)[6]	64/F	Fall with hanging from a bar
35.	Felderman H (2009)[26]	44/F	Chin up workout
36.	Mofidi M (2010)[46]	?/?	Seizures
37.	Botha AH (2010)[8]	27/M	Backward fall
38.	Rouhani A (2010)[4]	37/M	Seizure (delayed diagnosis by 2 weeks)
39.	Thakur A (2010)[5]	35/M	Backward fall against wall
40.	Silva LP (2011)[12]	82/F	Backward fall
41.	Tripathy SK (2011)[47]	32/M	Seizures
42.	Bilsel K (2012)[16]	66/F	Fall
43.	Dlimi F (2012)[27]	20/M	Backstroke swimming
44.	Ballesteros R (2013)[35]	74/F	Fall
45.	Ballesteros R (2013)[35]	17/M	Forward traction with sudden loss of resistance
46.	Yashavantha KC (2013)[10]	45/F	Fall on pointed elbows
47.	Present case (Ali N)	24/M	Backward fall

M: Male F: Female

Sudden exhaustion of shoulder muscles during work out can make the heavy weight push the shoulder joints in the position of instability and finally dislocation.[11,17-19] Both sudden forward traction to upper extremities in position of flexion, internal rotation and slight abduction (four cases) as well as sudden backward traction in position of extension, internal rotation and adduction (one case) can dislocate the shoulder joints anterior.[14,20-22] Fall with hands catching an overhead bar tends to dislocate the shoulder posteriorly but in the elderly population with age-related ligamentous laxity anterior shoulder dislocation is a possibility (two cases).[6] Diving (one case), backstroke swimming (one case), domestic assault (one case), push-ups (one case) and chin-ups (one case) were the other rare mode of injuries.[23-27] In three cases of bilateral simple anterior shoulder dislocation aetiology was unknown.[28-30]

Shoulder dislocation is said to be chronic when it remains unreduced beyond three weeks.[31] Four cases had chronic bilateral shoulder dislocation at the time of diagnosis among which two cases had seizures as the aetiology and in other two cases the cause was unknown.[28,29,32,33]

Sequential bilateral anterior dislocations with one shoulder dislocating after the other have been reported in the literature and are extremely rare. There have been two cases of sequential simple bilateral anterior dislocation reported to date.[9,34]

Bilateral anterior shoulder dislocation is managed on the same lines as unilateral dislocation.[8] Closed reduction followed by immobilisation for three weeks in bilateral sling is the standard protocol.[12,35] But bilateral immobilisation of the upper extremities makes the patient dependent and his routine suffers. For this reason some authors recommend the use of upper extremities for personal hygiene and feeding purpose only during the period of immobilisation.[8] Others recommend early rehabilitation of the shoulder which is less painful, while continuing immobilisation of the more painful one.[36] Even early rehabilitation of both shoulders has been recommended especially in elderly patients.[35] Surgical intervention is rarely required in simple bilateral anterior dislocations as most of them are reduced closed. Failure of closed reduction, and old missed or neglected dislocation, are indications for open reduction. All the requirements for internal fixation of proximal humerus as well as for shoulder prosthetic replacement should be available and on hand before attempting closed reduction under general anaesthesia as it carries a risk for fracture of the proximal humerus during manipulation, especially in elderly with osteoporosis.[16] Patients with old neglected dislocations can be managed by open reduction but the results are poor. In elderly patients with neglected dislocations who are at high risk during surgical intervention, a benign neglect strategy can be followed.[35]

Conclusion

Final functional outcome of bilateral simple shoulder dislocations is the same as that of unilateral dislocations.

Trauma is the most common aetiology of simple bilateral anterior shoulder dislocation. Seizure is nearly as common an aetiology as is trauma. Dislocations that are chronic at diagnosis are usually associated with seizures. Moreover, bilateral simple anterior shoulder dislocation is not as rare an injury as was previously thought.

We declare that no benefits of any form have been received from a commercial party related directly or indirectly to the subject of this article.

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