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### **Simultaneous bilateral anterior glenohumeral dislocation: Rare entity with unique mechanism: A case report with review of literature**

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#### **Abstract**

**Background:** Although anterior glenohumeral dislocation are common in EMD but simultaneous dislocation is rare phenomenon to occur.

**Objective:** This article intends to report a case of simultaneous non-sequential anterior glenohumeral dislocation along with reviewing the literature on this rare entity.

**Case report:** we present the case of 44 years old adult male who presented to the orthopedic emergency of our institute after road traffic accident with sudden onset of pain and restriction of movement in both shoulders following trauma. Immediately post trauma he had severe pain and restriction of both shoulders. On examination arms were abducted and externally rotated. Bilateral shoulder movements were painful and restricted. There was loss of round contour of shoulder with increased vertical diameter of axilla anteriorly. Radiological examination revealed anterior fracture dislocation of the shoulder on left side with simple anterior dislocation on right side.

**Conclusion:** Bilateral shoulder dislocations are rare and almost always occur in the posterior direction. Simultaneous bilateral anterior shoulder dislocation is even rarer and only a few cases are stated in the literature. The most interesting part of a bilateral shoulder dislocation is about its injury mechanism as a synchronous and simultaneous force is needed to result in it. All orthopedic surgeons and emergency physicians should be aware of such unusual possibilities to have an early diagnosis and treatment. An early reduction and appropriate rehabilitation can provide satisfactory functional outcome.

**Keywords:** Shoulder dislocation; accidents, traffic, closed reduction

#### **Introduction**

Shoulder dislocation is the most common type of joint dislocation encountered in humans<sup>[1, 2]</sup>. Anterior shoulder dislocation represents 95% of unilateral shoulder dislocations while unilateral posterior dislocation is far less common (4%)<sup>[2, 3]</sup>. Bilateral shoulder dislocations do occur and unlike unilateral dislocations they are most commonly of the posterior type<sup>[2, 4]</sup>. Bilateral anterior shoulder dislocations have rarely been reported in the literature<sup>[5]</sup>. The laxity of fibrous capsule as well as small and shallow glenoid cavity permits greater range of mobility, sacrificing stability of the shoulder joint. There are few reported cases of bilateral anterior shoulder dislocations with different mechanisms of injury: at the start of backstroke swimming competition, bench pressing athlete, fall on elbows, post seizure episode, trying to prevent a backward fall by extending both arms behind the back, in our case road traffic accident with both arms held in extreme external rotation and abduction.

#### **Case report**

A 44 years old adult male was presented to the orthopedic emergency of our institute after road traffic accident. Patient was sitting on rear seat of car when accidentally car hit roadside parapet after sudden application of break, patient was thrown to front of the car through the gap between two front seats, during the accident both the arms held the front seats and were forced into abduction, external rotation. Patient complained of severe pain in both shoulders and restriction of movements. The patient's vital signs were within normal limits. His Glasgow Coma Scale score was 15, pain intensity rating was not obtained. The patient had no history of seizure, epilepsy, alcohol intake, or previous shoulder dislocation. None of his family had any

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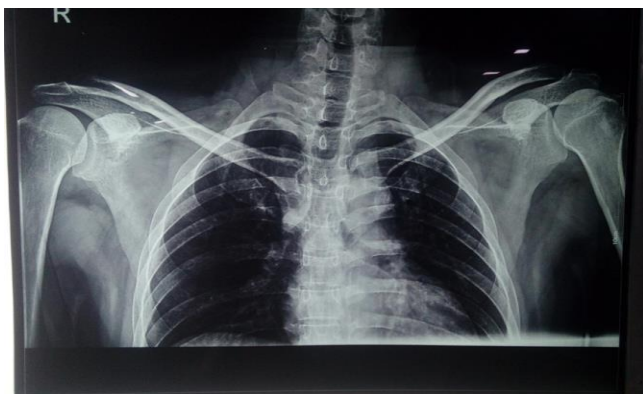
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history of hyper laxity disorders, epilepsy, or convulsions.

Clinical examination showed that arms were in slight abduction and external rotation. There was bilateral anterior flattening of the shoulder contour below the tip of the acromion. There was anterior globular fullness. Bilateral standard tests for the dislocation of shoulder were positive, associated with gross restriction of internal rotation, flexion and adduction. Inspection and palpation revealed bilateral sulcus signs of the shoulders. No signs of distal neurovascular deficit were witnessed. There were no signs of generalized ligamentous laxity. Full clinical examination was supplemented with imaging including a FAST scan and radiographs of shoulder joints, thorax, and pelvis. Radiographs revealed Neer's One-part Sub-Coracoid fracture dislocation on left side with simple anterior Sub-Glenoid dislocation on right side. Immediate reduction was done under anesthesia by Kocher's maneuver, first on the right side followed by left side. Post-reduction radiographs showed concentric reduction on both sides with falling back of avulsion fracture on left side. Post reduction both the arms were immobilized in shoulder immobilizer in adduction and internal rotation which was subsequently replaced by arm pouch sling on both sides by second week, intermittent pendulum movements of shoulders were started by third week along with passive range of motion exercises. Patient regained his full movements on right side by sixth week and slight pain on left side on abduction with no limitation to range of motion which subsequently waned off by eighth week on left side. There no subsequent episode of dislocation with no displacement of avulsion fracture fragment on left side by six months follow up and on one year follow up.



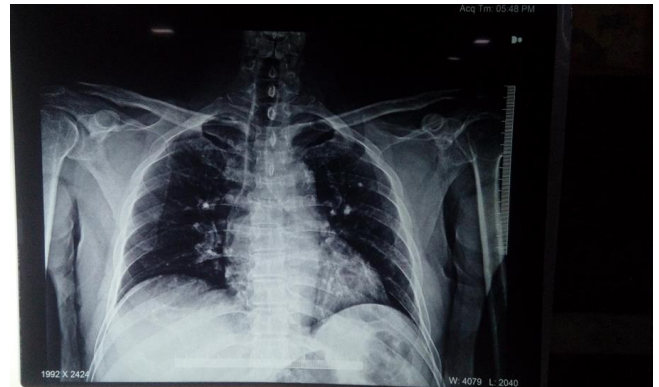
**Fig 1:** Radiographs of both shoulders showing Sub-coracoid fracture dislocation on left side with Sub-glenoid type dislocation on right side.



**Fig 2:** Immediate post reduction radiographs showing concentric reduction of both shoulders.



**Fig 3:** Three weeks follow up radiographs showing concentric reduction and no displacement of avulsion fracture fragment either.



**Fig 4:** Two months follow up radiographs showing well-united avulsion fracture with no restriction of movements.

## Discussion

Bilateral shoulder dislocation was first described by Mynter in 1902 in a patient with camphor overdose [6]. After that many case reports of bilateral shoulder dislocations were published in international literature, with/ without fractures. However most of these dislocations are posterior and very few cases of simultaneous bilateral anterior shoulder dislocation have been reported. The force leading to dislocation occurs at the same time in a similar manner on both the shoulder joints [7]. In the typical posture of extension and abduction of arm, the greater tuberosity comes in contact with the acromion which imparts an anteriorly directed force. The rotator cuff in addition pushes the humeral head downwards and leads to anterior dislocation by the contraction of flexors and external rotators of shoulder joint. In the present report the patient had exactly the same mode of injury, i.e. both the arms got trapped between two front seats in the abducted and extended position, resulting in Neer's type 1 fracture dislocations on left side & simple dislocation on right side. The humerus lever arm imparted the force over the fulcrum (shoulder joint) trying to dislocate it in the opposite direction (Anterior dislocation). Bilateral shoulder fracture-dislocation usually results from high energy trauma such as traffic accidents or falls from height and it is usually associated with craniofacial, thoracic and spinal injuries [8]. The coordination of muscle contractions (Relatively weak external rotators and posterior deltoid fibers being overcome by internal rotators) in seizure or electrocution is responsible for the characteristic posterior dislocation of shoulder. Trauma remains main cause of bilateral anterior shoulder dislocation [9, 10]. 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 [11, 12]. Bilateral anterior shoulder dislocation is managed on the same lines as unilateral dislocation. Closed reduction followed by immobilization for three weeks in bilateral sling is the standard protocol [13]. But bilateral immobilization 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 immobilization others recommend early rehabilitation of the shoulder which is less painful, while continuing immobilization of the more painful one. Even early rehabilitation of both shoulders has been recommended especially in elderly patients [14]. 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 [15]. Siwach *et al.* (2008), in a similar type of literature review, reported only 14 cases of simple bilateral anterior dislocations [16]. Dodds *et al.* (2008) in their review of 1966 reported 24 cases of bilateral anterior shoulder dislocations of which 18 were simple dislocations [17].

After an extensive search of international literature, we found 82 cases of bilateral shoulder dislocation with/without fracture reported and we present the 83<sup>rd</sup> case in the literature.

**Table:** Reported case of bilateral shoulder dislocation.

No.	Etiological Categories	Subcategory	Authors' Description	Predisposing Factors
1	Atraumatic	Muscle fatigue	-	Epilepsy
2	Undetermined	-	-	-
3	Traumatic	Traction	Direct forward traction (motorcycle)	-
4	Muscular contraction	Seizure	Toxic: Electrolyte imbalance	Diabetes
5	Muscular contraction	Seizure	Toxic: Organochlorine insecticide	-
6	Muscular contraction	Seizure	Toxic: Alcohol intoxication	Epilepsy Alcohol abuse
7	Muscular contraction	Seizure	Toxic: Seizure during the night of undetermined cause	PSD
8	Traumatic	Traction	Direct	-
9	Muscular contraction	Seizure	Toxic: Electrolyte imbalance	-
10	Atraumatic	Neuromuscular disease	Scapular and peroneal myopathy	Neuromuscular disease
11	Muscular contraction	Electric shock	-	-
12	Muscular contraction	Seizure	Toxic: Poisonous substance	-
13	Muscular contraction	Electric shock	-	-
14	Muscular contraction	Seizure	Toxic: Drug-induced seizure	Drug abuse
15	Traumatic	Unknown or complex mechanism	She was supine with both arms abducted, elevated and externally rotated, and then had an orgasm followed by a generalized convulsion	-
16	Traumatic	Unknown or complex mechanism	Fall with hands in the front pockets of his trousers	-
17	Traumatic	Push-on	The tractor he was driving overturned upon him	-
18	Muscular contraction	Seizure	Fall on his outstretched hands	-
19	Traumatic	Unknown or complex mechanism	Buried with soil	-
20	Traumatic	Unknown or complex mechanism	Fall with hands in pockets	-
21	Muscular contraction	Seizure	Fall from bus stairs	-
22	Muscular contraction	Seizure	Epilepsy: Tonic-clonic convulsions	Epilepsy
23	Muscular contraction	Seizure	Epilepsy: Tonic-clonic convulsions	Epilepsy
24	Traumatic	Unknown or complex mechanism	Epilepsy: Tonic-clonic convulsions	Epilepsy PSD
25	Traumatic	Lever	Fall off a 12-foot ladder	-
26	Muscular contraction	Seizure	Bench press: the patient lost control of the weight, which fell backwards	-
27	Muscular contraction	Seizure	-	Diabetes
28	Traumatic	Push-on	Epilepsy: Tonic-clonic convulsions	Epilepsy
29	Traumatic	Push-on	Backward	-
30	Traumatic	Lever	Fell and landed on his chest and arms flexed at the elbows	-
31	Traumatic	Traction	Diving into a swimming pool decelerating forces acting on the extending extremities	-
32	Atraumatic	Unknown	The patient sustained the injury while performing the pull-over bench maneuver using free weights	-
33	Traumatic	Push-on	Upward	PSD
34	Traumatic	Unknown or complex mechanism	The patient had fallen and landed on both hands with outstretched arms behind her	-
35	Traumatic	Unknown or complex mechanism	Fall from the first story of the building	-
36	Muscular contraction	Seizure	Fall with both outstretched hands	-
37	Muscular contraction	Seizure	Epilepsy: Tonic-clonic convulsions	Epilepsy
38	Muscular contraction	Seizure	Epilepsy: Tonic-clonic convulsions	Alcohol abuse
39	Atraumatic	Structural abnormalities	Felty's syndrome	Epilepsy
40	Traumatic	Unknown or complex mechanism	-	Rheumatoid arthritis
41	Traumatic	Lever	Fall from a bus landing on both her outstretched arms	PSD
42	Traumatic	Push-on	Bench press: the weight on the bar forced his arms into hyperextension	-
43	Atraumatic	Structural abnormalities	The patient tripped, fell forward and landed on her right shoulder	-
44	Traumatic	Unknown or complex mechanism	-	Rheumatoid arthritis
45	Muscular contraction	Seizure	Hypoglycemia:	Diabetes
46	Traumatic	Lever	While doing seated behind-the-neck military presses, the joint is forced into abduction and external rotation	-
47	Muscular contraction	Electric shock	-	-
48	Muscular contraction	Seizure	Epilepsy: Tonic-clonic convulsions	Epilepsy PSD
49	Traumatic	Traction	Direct	-
50	Traumatic	Unknown or complex mechanism	She lost her balance and fell, trying to grab for a handrail as she fell	-
51	Traumatic	Lever	Direct trauma in one shoulder and lever mechanism in the other	PSD
52	Traumatic	Push-on	One shoulder dislocated first due to trauma, followed by atraumatic dislocation of the other shoulder	-
53	Muscular contraction	Seizure	A heavy object falling over his back while he was leaning forward holding an overhead bar	-
54	Traumatic	Unknown or complex mechanism	Fall on his outstretched hands	-
55	Traumatic	Lever	Hypoglycemia: Nocturnal convulsion	Diabetes PSD (bilateral)
56	Atraumatic	Unknown	-	-
57	Traumatic	Unknown or complex mechanism	He let his arms hang on both sides of the fork of the machine with the rest of his body suspended in air	-
58	Traumatic	Traction	-	PSD
59	Atraumatic	Muscle fatigue	Direct forward traction	-
60	Atraumatic	Muscle fatigue	Traction during a fall from a horse	-
61	Muscular contraction	Seizure	During chin-up exercises, there can be an associated upward pull during lowering phase	-
62	Muscular contraction	Seizure	The patient had been doing push-ups. After 100 repetitions he felt his shoulders give way and collapsed.	-
63	Traumatic	Traction	Toxic: Opiate use or withdrawal	Drug abuse
			Epilepsy: Tonic-clonic convulsions	-
			Direct backward traction	-
			The patient was with his both hands crossed behind his back and he suffered a sudden backward pull from his hands	-

(Continued)



Iasanianos and Mouzopoulos [4]	Cases Journal	2008	Greater tuberosity fracture and Hill-Sachs lesion	Seizure disorder	Violent muscle contraction
Turhan and Demirel [5]	Arch Orthop Trauma Surg	2008	Nil	Nil	Horse riding
Abalo et al. [11]	E. pub	2008	Nil	Nil	Fall
Felderman et al. [6]	Journal of Emergency Medicine	2009	Nil	Nil	Chin-up exercises
Thakur et al. [7]	Journal of Clinical and Diagnostic Research	2010	Nil	Nil	Backward fall by extending both arms behind his back
Mofidi et al. [12]	American Journal of Emergency Medicine	2010	Temporomandibular dislocation	Generalized tonic-clonic seizure	Violent muscle contraction
Silva et al. [13]	Rev Bras Ortop	2011	Nil	Nil	Posterior fall
Dlimi et al. [8]	J Orthop Traumatol	2012	Nil	Nil	Backstroke swimming competition
Yashwantha et al. [9]	Journal of Orthopaedic Case Reports	2013	Nil	Nil	Fall on pointed elbows
Dlimi F (2012) <sup>27</sup>		20 / M	Backstroke swimming		
Ballesteros R (2013) <sup>35</sup>		74 / F	Fall		
Ballesteros R (2013) <sup>35</sup>		17 / M	Forward traction with sudden loss of resistance		

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<sup>[18]</sup>.

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<sup>[19]</sup>. 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). 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<sup>[20, 21, 22]</sup>. In three cases of bilateral simple anterior shoulder dislocation etiology was unknown.

## Conclusion

Final functional outcome of bilateral simple shoulder dislocations is the same as that of unilateral dislocations. Trauma is the most common etiology of simple bilateral anterior shoulder dislocation. Seizure is nearly as common an etiology as is trauma. To conclude, both traumatic and atraumatic causes can attribute to bilateral anterior shoulder dislocation and the etiology causing dislocation should not bias the emergency physicians or orthopedic surgeons regarding the diagnosis. An early reduction and adequate physiotherapy can regain full range of movements.

## References

- Aronson PL, Mistry RD. Intra-articular lidocaine for reduction of shoulder dislocation. *Pediatr Emerg Care*. 2014; 30(5):358-62.
- Galanakos S, Christodoulou E, Panayi C, Papadakis AS, Nicolaides V, Macheras GA. *EEXOT*. 2008; 59(4):252-56.
- Ngim NE, Udorroh EG, Udosen AM. Acute bilateral anterior shoulder dislocation following domestic assault – case report. *West Afr J Med*. 2006; 25(3):256-57.
- Rouhani A, Zonooz KA, Aghdam HA. An unusual cause of bilateral anterior shoulder dislocation. *Pak J Med Sci*. 2010; 26(4):976-77.
- Devalia KL, Peter VK. Bilateral post traumatic anterior shoulder dislocation. *J Postgrad Med*. 2005; 51:72-3.
- Myenter H. Subacromial dislocation from muscular spasm. *Ann Surg*. 1902; 36:117-9.
- Tripathy SK, Sen RK. Simultaneous bilateral anterior shoulder dislocation: report of two cases and review of the literature. *Chinese Journal of Traumatology*. 2011; 14(5):312-315.
- Galanakos S, Christodoulou E, Panayi C *et al*. Bilateral anterior glenohumeral dislocation. A case report and a review of the literature. *EEXOT*. 2008; 59(4):252-256.
- Thakur A, Gupta R, Kotwal V, Arora D. A rare case of bilateral anterior dislocation of the shoulder. *J clin diagn res*. 2010; 4:3567-69.
- Yashavantha KC, Nalini KB, Maini L, Nagaraj P. Bilateral traumatic anterior dislocation of the shoulder - a rare entity. *J Orthop Case Reports*. 2013; 3(1):23-25.
- Sreesobh KV, Chacko B. An unusual case of bilateral anterior dislocation of the shoulder. *J Orthop*. 2005; 2(4):e6.
- Singh S, Kumar S. Bilateral anterior shoulder dislocation: a case report. *Eur J Emerg Med*. 2005; 12(1):33-35.
- Ballesteros R, Benavente P, Bonsfills N, Chacón M, García- Lázaro FJ. Bilateral anterior dislocation of the shoulder: review of seventy cases and proposal of new etiological mechanical classification. *J Emerg Med*. 2013; 44(1):269-79.
- Dunlop CCR. Bilateral anterior shoulder dislocation – a case report and review of the literature. *Acta Orthop Belg*. 2002; 68(2):168-70.
- Dinopoulos HT, Giannoudis PV, Smith RM, Matthews SJ. Bilateral anterior shoulder fracture – dislocation. A case report and review
- Siwach R, Singh R, Rohilla R, Sangwan SS. Bilateral anterior dislocation of the shoulder – A case report and review of the literature. *Injury Extra*. 2008; 39:394-97.
- Dodds SD, Medvecky MJ. Chronic bilateral locked anterior shoulder fracture-dislocations. *Am J Orthop*. 2008; 37(7):364-68.
- Creswell TR, Smith RB. Bilateral anterior shoulder dislocations in bench pressing: an unusual cause. *Br J Sports Med*. 1998; 32:71-72.
- Turhan E, Demirel M. Bilateral anterior glenohumeral dislocation in a horse rider: A case report and a review of the literature. *Arch Orthop Trauma Surg*. 2008; 128(1):79-82.
- De la Fuente FA, Hoyte C, Bryant SM. Push-ups may be hazardous to your health: an atraumatic etiology for bilateral shoulder dislocation. *Am J Emerg Med*. 2008; 26(1):116.e3-4.
- Felderman H, Shih R, Maroun V. Chin-Up-Induced Bilateral Anterior Shoulder Dislocation: A Case Report. *J Emerg Med*. 2009; 37(4):400-402.
- Dlimi F, Rhanim Lahlou A, Kharmaz M, Ouadghiri M, El Bardouni A, Berrada MS *et al*. Bilateral anterior dislocation of the shoulders at the start of a backstroke competition. *J Orthop Traumatol*. 2012; 13:47-49.