Bilateral Anterior Shoulder Dislocation Occurring Separately from the Same Injury: A Case Report

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Abstract

Bilateral anterior shoulder dislocation is a relatively rare condition. In a patient presenting with bilateral shoulder pain, a posteroanterior radiograph of the shoulders easily reveals the diagnosis. A 76-year-old woman presented to our emergency room with complaints of bilateral shoulder pain. She had fallen forward with both elbows hitting the ground and also hit her right shoulder. A posteroanterior radiograph revealed a right anterior shoulder dislocation with no remarkable changes noted on the left shoulder. The right shoulder dislocation was resolved, and she was sent home. Six hours later, she was brought back to our emergency room with left shoulder pain. A repeat posteroanterior radiograph of the left shoulder revealed left shoulder dislocation. Bilateral anterior shoulder dislocation occurring after 6 hours is an extremely rare condition. We report this case with a review of the literature.

Key words
Bilateral anterior shoulder dislocation, trauma, fall on both hands

1. Introduction

Shoulder dislocation associated with trauma is a common injury that is often encountered by orthopedic surgeons and also in emergency settings. However, bilateral traumatic shoulder dislocations are rare. We encountered a case of bilateral anterior shoulder dislocation separated by about 6 hours that was caused by the same traumatic event.

2. Case Presentation

A 76-year-old woman was brought to our hospital after falling forward and hitting both elbows and also her right shoulder. She complained of pain in both shoulders. She had a medical history of hypertension and thalamic hemorrhage (without motor and sensory deficit) but had never experienced a shoulder dislocation. There were no abnormalities of her vital signs at the visit. The pain in both shoulders was severe, and she found it difficult to elevate both upper limbs. There were no sensory deficits in either arm. On physical examination, her right shoulder joint was clearly deformed, and the humeral head was misplaced. No apparent humeral head malposition was noted in the left shoulder joint. There was no tenderness in either collarbone. No abnormalities were found on examination of the neurological system and the peripheral circulation of both upper limbs. The range of motion of her elbows, knees, wrists, and fingers was normal. A radiograph of both shoulders revealed a right anterior shoulder dislocation but showed an intact left shoulder (Figure 1a, b).

Reduction could not be achieved with scapular manipulation or external rotation, but the dislocation...
was successfully reduced with axial traction and countertraction. The forearm was placed in a sling that spanned the reduced right shoulder, and she was referred to the orthopedic clinic. The left shoulder was neither immobilized nor was an arm sling used.

Six hours later on the same day, she returned to our emergency room complaining of pain in her left shoulder. She experienced pain when she stretched her left arm forward to pull a pillow without any external force or hyperflexion of the left shoulder. A radiograph of her left shoulder revealed an anterior dislocation (Figure 2a). The dislocation was reduced

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**Figure 1.** Radiographs of the a) right shoulder and b) left shoulder obtained at first visit.

**Figure 2.** Radiographs obtained at second visit showing a) dislocation of the left shoulder and b) following successful reduction.
via the external rotation technique and confirmed on a radiograph (Figure 2b). Thus, both arms were immobilized with a sling, and she was discharged.

3. Discussion

The humeral head is located in the shallow glenoid fossa and has a wide range of motion. Thus, the joint articulating surface is limited. The glenoid is composed of fibrous cartilage with the labrum surrounding and forming the joint capsule. When external force is applied, the head of the humerus causes cracks to appear in the front of the joint capsule, peeling of the joint lips, and damage to the rotator cuff, leading to dislocation.

Bilateral anterior shoulder dislocation due to trauma is rare. According to Ballesteros et al., only 35 cases had been reported up to 2013. For bilateral anterior shoulder dislocation to occur, the same external force must be applied to both shoulder joints simultaneously, and hence, it is thought that the incidence is rare. Most reports of non-traumatic bilateral dislocation are those of posterior dislocations associated with seizures. In the present case, we encountered bilateral anterior dislocation of the shoulder joint caused by the same traumatic event that presented first on the right side and then 6 hours later on the left side. To the best of our knowledge, this is a rare case report of bilateral anterior shoulder dislocation.

Ballesteros et al. classified the mechanisms underlying anterior shoulder dislocation as traumatic, muscle contraction, and atraumatic, and subcategories of the traumatic type as the lever mechanism, direct or indirect traction, push-on mechanism, and mixed or unknown mechanism. In the backward push-on mechanism, the patient would fall forward.

In our patient, both elbows were bruised by falling forward, and an external force was applied to the shoulder joint above the humerus. This is considered to be an example of the traumatic push-on mechanism. At the initial medical examination, the patient had also complained of pain in the left shoulder, but the posteroanterior view on the radiograph revealed intact bone and it was treated as a bruise.

From 2013 to 2018, 11 cases of traumatic bilateral anterior shoulder dislocation were reported. The push-on mechanism is the most common cause of anterior shoulder dislocation following trauma. Of the reports so far, 14 cases of push-on mechanism including ours have been reported (Table 1). In 11 of these cases, bilateral impact was applied simultaneously to both upper limbs, and in the case reported by Kumar et al., dislocation occurred from trauma to the elbow, similar to our case.

An injury to the elbow affects the structure of the shoulder joint and can cause dislocation. Bilateral shoulder dislocation is rare because the mechanism necessary to produce such injury is unusual. However, we often encounter trauma resulting from falling forward onto both elbows. In the present case, in addition to the anterior dislocation of the right shoulder at the time of injury, the left shoulder joint was also damaged, and it is probable that subsequent slight exertion led to its dislocation. Because of the patient’s pain, it was difficult to evaluate the left shoulder joint at the first visit. Even so, the risk of rotator cuff injury or joint instability should have been predicted.

4. Conclusion

Although bilateral anterior shoulder dislocation is rare, close attention should be paid to patients who have fallen on both hands or both elbows with an external force applied simultaneously to both upper limbs. If there are symptoms of limited range of motion or joint instability in both shoulders, it is necessary to immobilize both joints or repair them in advance even if abnormalities are not detected in one of the two shoulders on radiography.

Consent

Verbal consent for the publication of this case

Table 1. Reported Cases of Bilateral Anterior Shoulder Dislocation Due to Push-On Mechanism

| Author (year) | Patient’s age (years) | Sex | Direction of force | Posture | Bilateral impact |
|---------------|-----------------------|-----|--------------------|---------|-----------------|
| Brown (1984)  | 65                    | M   | Backward           | Fall on outstretched forward | Unknown |
| Mathis (1990) | 23                    | M   | Divergent          | Diving outstretched | Unknown |
| Velkes et al. (1991) | 37                | F   | Upward             | Fall on outstretched behind | Unknown |
| Devalia et al. (2005) | 23               | M   | Backward           | Fall on outstretched forward | Unknown |
| Patil (2013)  | 5                     | M   | Backward           | Fall back extension, abduction, external rotation | Unknown |
| Ballesteros et al. (2013) | 2                | Unknown | Fall forwards | Unknown |
| enemy (2013)  | 23                    | M   | Backward           | Fall on outstretched forward | Unknown |
| Kumar et al. (2013) | 23                | Unknown | Fall on outstretched behind | Unknown |
| Kumar et al. (2013) | 7                  | M   | Upward             | Fall on outstretched behind | Unknown |
| Kumar et al. (2013) | 7                  | M   | Backward           | Fall on outstretched forward | Unknown |
| Kumar et al. (2013) | 7                  | M   | Backward           | Fall on elbows | Unknown |
| Tennessee et al. (2017) | 23              | M   | Backward           | Fall on both arms extended | Unknown |
| The present case (2019) | 76               | F   | Backward           | Fall on elbows | Unknown |
report was obtained from the patient.

**Conflicts of Interest**

The authors declare that there are no conflicts of interest regarding the publication of this article.

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