

Bilateral Anterior Shoulder Dislocations: A Rare Case Following Electrical Trauma and Management Considerations

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Abstract

Bilateral anterior dislocations of the glenohumeral joint are rare occurrences, often caused by trauma or convulsive seizures. We present a clinical case of a 43-year-old male who suffered bilateral anterior shoulder dislocation following an electrical accident. The patient underwent reduction using the Kocher technique, followed by surgical intervention to fixate the displaced greater tuberosity. Immobilization and rehabilitation were initiated, resulting in satisfactory range of motion and stability. Bilateral anterior shoulder dislocations require early diagnosis and appropriate management to prevent complications. The Spaso technique is recommended for reduction due to its advantages over the Kocher method. Immobilization and rehabilitation play crucial roles in recovery.

Keywords

Bilateral anterior shoulder dislocation, glenohumeral joint, rare occurrence, electrical trauma, reduction techniques, Kocher technique, Spaso technique, immobilization, rehabilitation, early diagnosis, favorable outcomes.

Introduction

Anterior dislocations of the glenohumeral joint are rare occurrences, but their severity as a medical emergency should not be underestimated. On the other hand, bilateral dislocations of this joint are extremely unusual [1,2]. Generally, bilateral dislocations of the glenohumeral joint are posterior and often occur as a result of convulsive seizures. Anterior dislocations are even rarer, with less than thirty reported cases to date [1,2,3]. In this context, we present a new case of bilateral anterior dislocation of the glenohumeral joints, emphasizing a thorough analysis of the mechanisms and treatments associated with this condition.

Case report

We present a clinical case of a 43-year-old male, an electrician by profession, who presented to the surgical emergency department of CHU Avicenne in Rabat following a closed trauma. He suffered an electric shock while working, resulting in a fall from a height of 3 meters, landing on his outstretched arms in an extended, abducted, and externally rotated position. This case is noteworthy due to the rarity of bilateral anterior shoulder dislocations and its association with electrical trauma.

The patient had no history of previous shoulder dislocations, trauma, or other known health issues. Clinical examination revealed obvious signs of bilateral anterior shoulder dislocation, with no sensory or circulatory deficits in the upper limbs. Standard shoulder radiographs confirmed the diagnosis of bilateral subcoracoid anterior dislocation (**figure 1**). On the right side, the dislocation was associated with a partial fracture of the greater tuberosity, while on the left side, the dislocation was pure.



Figure 1: Anterior-posterior radiograph of the shoulders demonstrating bilateral antero-internal dislocation in its subcoracoid variety with a fracture of the greater tuberosity on the right.

Under general anesthesia, both dislocations were reduced using an external maneuver following the Kocher technique. Despite satisfactory reduction of the dislocations, persistent

displacement of the greater tuberosity was observed on follow-up radiographs (**figure 2**).

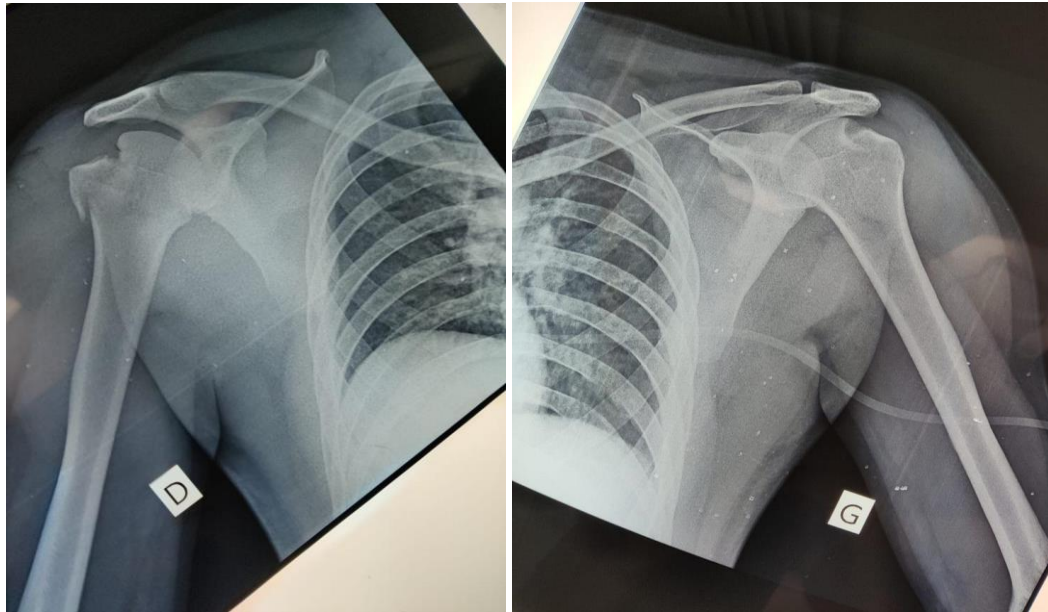


Figure 2: Anterior-posterior radiograph of the shoulders after reduction, showing both humeral heads in place with persistence of the displacement of the greater tuberosity on the right.

Consequently, the patient underwent surgical intervention in the operating room, where fixation of the greater tuberosity was achieved through screw fixation (**figure 3**).

The postoperative period was uneventful without any complications.

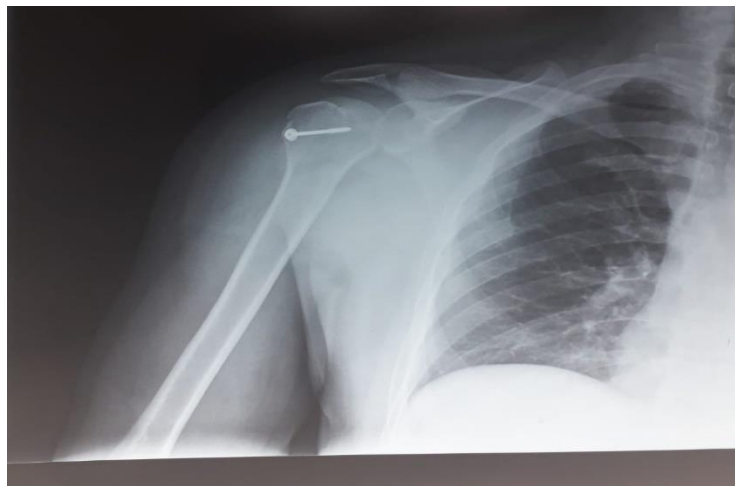


Figure 3: Front shoulder radiography showing screw osteosynthesis of the major tubercle.

At three weeks post-accident, both shoulders remained reduced, and immobilization was discontinued to initiate rehabilitation. Rehabilitation sessions started with pendulum exercises, and a sling was utilized on the right side between sessions. At ten weeks post-accident, the range of motion in both shoulders was satisfactory, with appropriate abduction and rotation. Clinical examination revealed no signs of instability or recurrence. During the last follow-up at 11 months post-trauma, the shoulders remained stable, and the patient had resumed work without any restrictions.

Discussion

Bilateral shoulder dislocation was first described in 1902, resulting from excessive muscle contractions induced by an overdose of camphor [4]. Despite this, there are few publications dedicated to this subject [5,6,7]. Bilateral anterior dislocations are less common, with only about thirty cases documented in the literature. The majority of these cases are caused by trauma or are secondary to convulsive seizures of electrical or epileptic origin [8].

It is crucial to consider this possibility in the presence of bilateral shoulder pain following a trauma, as well as one of the causes of intense muscle contractions, even if the shoulders appear symmetrical, as it can be misleading.

Neglecting this can have serious consequences [12,13]. Fractures associated with the shoulder region are observed in 47% of cases reported in the literature, and neurological injuries occur in 21% of cases [12].

The circumstances and mechanisms leading to the bilateral anterior shoulder dislocation in our patient were due to a work-related accident. It occurred as a result of falling from a ladder approximately two meters high after being electrocuted, with the patient landing on both hands and the upper limbs in extension, abduction, and external rotation.

While reviewing the literature, Singh and Kumar [7,9] described a case where the dislocations of both shoulders occurred through different mechanisms. The dislocation of the left shoulder resulted from a motorcycle fall with impact on the shoulder, whereas the dislocation of the right shoulder occurred when the rescuers were assisting the patient to get into the car, holding him by the right upper limb.

In their study, Abalo et al. [10] describe the case of a 37-year-old patient who was involved in a road accident (collision between a car and the rear of a motorcycle). Following this accident, the patient fell and landed on both hands with the shoulder in abduction and retro-pulsion, and the elbow in extension.

Bilateral anterior dislocations following a seizure are rare but represent the most common cause of bilateral anterior glenohumeral dislocation, accounting for approximately one-third of all reported cases [14]. Underlying factors include epilepsy (9 cases), toxic factors, hypoglycemia, and hypoxia [14]. According to Ozcelik, all cases of shoulder dislocation, whether unilateral or bilateral, associated with hypoglycemic seizures in diabetic patients, are anterior dislocations [16]. When a systemic trauma such as a seizure results in bilateral dislocations of the glenohumeral joint, the diagnosis of musculoskeletal injury can be delayed as the treatment of the underlying condition takes precedence [15]. In the case of an electric shock, a position with the arms in abduction and external rotation is necessary for the primary force to cause an anterior dislocation, as described in the case of Yuen.

Multiple reduction techniques are available, but we opted for the Kocher technique due to its familiarity in our department. The Kocher technique involves the following steps: flexion of the elbow to a right angle, traction along the line of the humerus, external rotation of the arm to bring the head of the humerus forward, pulling the elbow across the body to adduct the humerus and disengage the humeral head, and internal rotation of the arm to allow the humeral head to fall back into the glenoid. However, the Spaso technique is more recommended [17,18]. In the Spaso technique, the dislocated arm is grasped around the wrist, and while maintaining vertical traction, the shoulder is slightly externally rotated. This technique facilitates reduction with less force compared to the Kocher method, resulting in less pain for the patient. It also helps avoid

severe muscle spasms caused by pain, which could hinder reduction using the Kocher technique.

When dislocations are recent, reduction is generally easy using gentle and progressive maneuvers. Immobilization should last for three weeks to prevent recurrences and instability, and rehabilitation plays a crucial role in recovering joint mobility and muscle strength.

Conclusion

we have presented a rare case of bilateral anterior post-traumatic shoulder dislocations following an electrical accident. Bilateral anterior dislocations of the glenohumeral joint are uncommon, with only a few reported cases in the literature. It is essential to consider this possibility in cases of bilateral shoulder pain following trauma, as it can be easily overlooked. Fractures and neurological injuries are potential complications associated with these dislocations. The treatment involves reduction techniques, with the Spaso technique being recommended due to its advantages over the Kocher method. Immobilization and rehabilitation are crucial for preventing recurrence, restoring joint mobility, and regaining muscle strength. Early diagnosis, appropriate management, and follow-up are essential for achieving favorable outcomes in patients with bilateral anterior shoulder dislocations.

Ethics approval and consent to participate

Ethical approval was not sought. Written consent was obtained from the patients.

Availability of data and materials

The datasets used and analysed during the study are available from the corresponding author.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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Authors contributions

All authors Have read and approved the final manuscript.

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