Case Report

Unusual Cause of Bilateral Posterior Shoulder Fracture Dislocation: A Case Report

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Abstract

A 34-year-old man presented 2 weeks after sustaining posterior fracture dislocation of both shoulders due to a fall from a bicycle while riding downhill. Posterior fracture dislocation of both shoulders is typically caused due to seizures or electrocution. In our patient, the injury was caused by trauma, which is exceedingly rare. Owing to the late presentation, management of such injuries usually entails joint replacement; however, due to his young age, both shoulders were treated with open reduction and internal fixation. Bilateral posterior shoulder fracture dislocation is rarely encountered in clinical practice.

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Introduction

Shoulder joint dislocation is the most common type of joint dislocation in the human body. A vast majority of shoulder joint dislocations are anterior dislocations, while posterior shoulder dislocation accounts for only 1.5–4.3% of all cases [1, 2]. Furthermore, bilateral posterior fracture dislocation is even less commonly encountered and is typically caused by seizures or electrocution. Bilateral posterior shoulder dislocation caused by trauma is exceedingly rare [1–4].

Proximal humerus fractures account for 4–5% of upper extremity fractures and are the second most common fractures of the upper extremity [4]. However, only 20% of proximal

humerus fractures require surgical intervention [5]. The prognosis is largely affected by the age of the patient; the younger the patient, the better is the prognosis [6, 7]. Due to the previously mentioned facts, posterior shoulder dislocation is liable to be missed diagnosis specially in the setting of emergency and history of trauma [8, 9]. Shoulder joint dislocation is attributed to the shallow glenoid cavity, relatively large humerus head, and less robust natural joint stability.

Case Report/Case Presentation

In this case report, we report a patient with bilateral posterior shoulder fracture dislocation due to trauma. Bilateral shoulder dislocation is most commonly associated with the posterior type, which is usually caused by seizures and electrocution; however, in our patient, the injury was caused by trauma and was associated with a rare mechanism.

The patient was a 34-year-old man who was previously healthy with no significant past medical or surgical history and no history of intake of alcohol or drugs. There was no past history of shoulder trauma or dislocation and no history of seizures or any neuromuscular disorders. He presented to the emergency department of a tertiary Orthopedic hospital on April 16, 2017, with complaints of bilateral shoulder pain, deformity, and inability to move both shoulders. Two weeks before admission, the patient sustained a fall while riding his cycle downhill in a foreign country. He refused any surgical intervention abroad; on returning back to Kuwait, he was admitted to the Al-Razi Orthopedic hospital.

At admission, the patient was alert, conscious, and well-oriented. He was afebrile and had normal vital parameters (pulse 82/min; blood pressure 130/80).

Systemic examination was normal. His Glasgow coma scale (GCS) score was 15/15. Both upper extremities were in neutral position and supported by an arm sling. Shoulders were bilaterally symmetrical; there were skin bruises on the anterior aspect of the shoulder joint in addition to swelling and flattening of the normal shoulder contour. Both shoulders had tender movement; both active and passive movements of the bilateral shoulder joints were painful and restricted. Moreover, there were no signs of generalized ligamentous laxity. No other associated injuries were observed on examination such as nerve injuries, head injuries, or any other systems of the body. Anteroposterior and lateral X-rays showed bilateral comminuted fractures associated with posterior dislocation of both humeral heads. CT scan confirmed the diagnosis (Fig. 1, 2).

The patient was admitted to the ward on the same day and prepared for surgery. On April 18, 2017, he was operated under general anesthesia starting with the right shoulder. The patient was placed in a beach chair position; the surgical site was prepared and draped under aseptic measures. Surgery was performed via the deltopectoral approach. Intraoperative examination revealed complete rupture of the tendons and ligaments of the rotator cuff; however, there was no significant labrum tear.

Seven fragments of the proximal humerus were extracted from the triceps muscle fibers blindly by hand through the fracture after releasing the adhesions and reconstructed on the side table due to the late presentation. Reduction of all fracture fragments in the surgical field was not feasible, especially because the humeral head was deformed due to the trauma.

With the use of k-wires and 3 lag screws, the reduction was maintained and the proximal humerus was put back in place and fixed with a 4-hole PHILOS plate. Synthetic bone graft was used to facilitate healing and to fill the bone defect. Most of the ruptured tendons were beyond repair and could not be sutured back due to massive adhesions and damage. Intraoperative examination revealed almost complete range of motion. All motions were normal

Fig. 1. X-rays and 3D-CT scan showing bilateral posterior fracture shoulder dislocation.

passively including, abduction, adduction, flexion, and extension internal and external rotation. But actively the patient had an abduction of 95° only which was the only motion that is restricted.

The wound was washed with 9 L of 0.9% saline and negative pressure drain was inserted. The subcutaneous tissue was sutured with 2/0 vicryl; skin closure was achieved with surgical staples.

After 8 days (on April 26, 2017), the left shoulder was operated via the deltopectoral approach using the same operative technique and fixation method as the right side. Intraoperative examination revealed 7 parts fracture of the proximal humerus; the fracture fragments were extracted mainly from the triceps muscle and reconstructed on the side table with k-wires then put back in place.

Five-hole PHILOS plate was utilized with 5 locking screws and 3 cortical screws for the shaft in addition to the use of synthetic bone graft to fill the void and enhance healing. Check image in the OT showed acceptable fixation. Range of motion was almost full intraoperatively. The wound was washed with 0.9% normal saline and a surgical drain inserted followed by closure of subcutaneous tissues and skin.

On the fifth postoperative day, wound oozing was noticed in the distal part of the right wound. Culture and antibiotic sensitivity test revealed *Enterococcus faecalis* sensitive to ampicillin, gentamicin, tetracycline, and vancomycin until secondary wound closure which was after 2 weeks. Wound debridement was performed on May 9, 2017. The wound was left

Fig. 2. Showing X-rays of bilateral shoulders postoperative with locked plate and screws fixation.

Fig. 3. Showing bilateral reversed shoulder replacements which was performed due to AVN.

open followed by secondary wound closure on May 23, 2017. Postoperatively, antibiotics were continued with daily silvercell dressings. The infection was superficial no reaching beyond the subcutaneous tissues, and it was completely eradicated within 2 weeks of diagnosing it.

Both shoulders were immobilized until subsidence of pain. Physical therapy was started for both shoulders on April 24, 2017; however, it was stopped for the right side upon detection of wound infection. Physical therapy was reinitiated on the right side after eradication of infection.

Discussion/Conclusion

Mynter first described the posterior fracture dislocation of shoulder joint in the early 1900s. This was followed by Neers case series of 1,500 patients with shoulder dislocation; only 0.9% patients in this series had posterior glenohumeral fracture-dislocation injuries [10, 11]. When this entity was well described in the literature, its mechanism was attributed to seizures or electrical shock [1, 3, 8, 12]. As described by Neer in his classification of proximal humerus fractures, 4-part fracture has high rate of AVN due to the nature of the high energy that caused it and that is why arthroplasty is the recommended choice of treatment [12, 13]. Our patient presented with bilateral posterior comminuted shoulder fracture dislocation, which is rarely encountered. Only a few cases with bilateral posterior shoulder dislocation are documented in the literature; however, these were mainly caused by seizures and electrocution and not trauma. Our patient was young and had sustained high-energy trauma causing comminuted fracture and bilateral posterior dislocation; the fracture was not reduced for 2 weeks. In addition, there was complete rotator cuff tear that can cause long-term disability and functional impairment. We tried to repair as much as possible of the rotator cuff tendons, as the late presentation caused the tendons to retract in addition to the fibrosis and adhesions which made it difficult to obtain optimal repair. All these factors made the treatment decision-making challenging. In particular, the choice between open reduction and internal fixation or arthroplasty was not straightforward. After reviewing all aspects of the case and after discussing the options with the patient, we opted for open reduction and internal fixation. Postoperative, the patient started rehabilitation as soon as he was pain free. Range of motion and muscle strengthening exercises progressed for 6 months achieving abduction up to 90° for the right shoulder and 80° for the left shoulder. Patient follow-up continued up to 10 months with rehabilitation and functional physical therapy. Unfortunately, nonunion occurred in both shoulders leaving us with no choice but to offer the patient shoulder arthroplasty which was performed in another hospital Figure 3.

The key learning points of this case report are that bilateral posterior shoulder dislocation can be caused by trauma in addition to seizures and electrical shock. Planning such a case treatment in a young patient is challenging. Owing to its rarity, bilateral posterior dislocation of shoulder is liable to be missed in the setting of major trauma and emergency, if not well investigated, especially in unconscious patients. The treating physician should look for the light bulb sign and obtain proper imaging such as CT scan if in doubt.

Statement of Ethics

Ethical approval for publication of this case report was obtained. Name of Ethical Committee: Ministry of Health in Kuwait, research, and publication office. Committee reference number: 0096524622226, 00965 24622230. Written informed consent of the patient was obtained for publication of this case report.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

All 4 authors were part of the surgical team for both surgeries. The case report was written and reviewed by all the 4 authors equally.

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