Case Report

Concomitant Anterior Shoulder Dislocation and Ipsilateral Humeral Pallet Fracture in the Athlete: Case Report and Review of the Literature

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Keywords

Shoulder dislocation · Humeral fracture · Athlete · Trauma

Abstract

To the best of our knowledge, the case presented here is among the rare cases of simultaneous shoulder dislocation and ipsilateral pallet humeral fracture, and we discuss its mechanism and best management. We report a case of a 26-year-old male patient with a history of dislocation of the right shoulder 2 months prior to trauma, managed conservatively with a good outcome. The patient fell from a height of 2 m, which caused concomitant shoulder dislocation and ipsilateral humeral fracture, prompting him to undergo surgery. First, the shoulder dislocation was reduced, and second, a V-shaped olecranon osteotomy was performed. The fracture was then fixed using two compressing plates followed by adequate rehabilitation, which led to a good outcome. This rare combination, if it occurs, requires urgent management to save the functional prognosis of the limb.

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Introduction

The glenohumeral joint is the most affected by dislocation, and it is one of the most common injuries presenting to the emergency department [1, 2]. Its association with other injuries is common, such as defects of the humeral head [3] and rotator cuff tears [4]. However, concomitant shoulder dislocation and an ipsilateral humeral fracture is a serious and very uncommon injury [5, 6]. In addition to that, the humeral pallet fracture occurs with a lower incidence, and only a few cases are reported in the literature [7]. This situation may present a real challenge for orthopedic surgeons. Herein, we report a rare case of simultaneous shoulder dislocation with ipsilateral pallet humeral fracture and discuss its mechanism and management.

Case Presentation

A 26-year-old male patient, right-handed, with a history of recent dislocation of the right shoulder 2 months prior to trauma that was managed conservatively with a good outcome, fell from a height of 2 m and landed on his right elbow in flexion, causing total functional impotence of the upper limb. He was transferred to our emergency department. The admission was at 4 h after the accident, and he was conscious and well orientated with normal vital signs. Upon clinical examination, both shoulder and elbow were deformed; their palpation and mobilization were painful with no signs of acute ischemia, no compartment syndrome, and no paralysis.

X-rays confirmed an anterior-medial dislocation of the right shoulder along with a fracture and a major angulation of the distal third of the humeral diaphysis (Fig. 1). Thus, under sedation, while applying traction in the axis of the arm with external rotation, gentle manipulation of the humeral head through the axilla was applied to reposition it in the glenoid. So, the reduction was obtained, which remained stable. The neurovascular examination was normal. Then, a computed tomography scan of the elbow was performed; it showed a complex fracture of the humeral pallet (Fig. 2a), prompting the patient to undergo surgery.

In the operating room, under general anesthesia, in supine position, a V-shaped olecranon osteotomy was performed, and the fracture was fixed using a double compressing plate (Fig. 2b, c). A splint anti-brachial brachial with elbow to the body was performed. Clinical assessment of the patient 1 day after surgery revealed no pain (under oral analgesic), no sign of infection, and the neurovascular examination was normal. At 2 days postoperatively, mobilization of both fingers and the wrist was allowed, and the patient was discharged with a prescription of oral analgesic to be reviewed in 3 weeks. After that, a pendulum movement of the shoulder was authorized, and then full range of motion was established as well as balanced capsular mobility with maximized muscle strength and proprioception. At the 18-month follow-up, the patient presented only a residual light pain at the elbow when carrying heavy load, which was controlled by a simple oral analgesic. The joint mobility of the elbow was 120° of flexion with a full range of motion and strength of the right shoulder compared to the unaffected shoulder, and the patient had resumed his previous activities.

Discussion and Conclusion

Shoulder dislocation predominates in the young (18–25 years), most often due to a sports accident [7]. Winderman [8], in 1940, was the first to describe the combination injury of shoulder dislocation and ipsilateral fracture of the shaft of the humerus. Bone fracture lesions may accompany dislocation of the shoulder, especially in the proximal humerus or the glenoid border [7]. Therefore, we presented a concomitant fracture of the humeral pallet, which is very rarely described. These injuries often occur as a result of high-velocity trauma. In our case, it was a fall from a height of 2 m. The exact mechanism of this rare injury is not clear and still debated. The first theory assumes that the trauma energy is transferred to the shaft of the humerus and into the shoulder, resulting in simultaneous injuries [9, 10]. The second one proposes that the initial dislocation is due to indirect forces, and the bone fracture results from direct forces. Thus, in our case, based on these theories and based on what the patient reported upon examination, we believe that at the time of the fall, the patient might have landed on his elbow in the flexion position while the shoulder was in the abduction position, which causes a direct fracture of the humeral pallet and may lead to the transmission of axial forces along the shaft to the shoulder joint (already weakened by the recent dislocation), causing its dislocation.

For the management of simultaneous shoulder dislocation with humeral bone fracture, many authors recommend first to fix the shaft by a plate or external fixator and then to attempt the closed reduction of the shoulder joint [11, 12]. However, in our case, because of the adequate lever arm of the humeral bone, we were able to reduce first the joint dislocation that remained stable and then, as Elmadag et al. [13] propose, we performed a V-shaped olecranon osteotomy to create a wide exposure of the articular surface of the distal humerus, making the reduction and internal fixation of complex fractures feasible, followed by adequate rehabilitation with good outcomes.

At last, because it is a rare injury, the management of shoulder dislocation complicated by an ipsilateral humeral fracture is not clear and not well defined. This case showed that even with a complex injury, early diagnosis followed by rigorous treatment and adequate physiotherapy may lead to good outcomes, and we hope that this case contributes to the understanding of this uncommon injury pattern.

Statement of Ethics

The consent for publication of the case (including images) was obtained from the patient.

Disclosure Statement

The authors have no conflicts of interest to declare.

Funding Sources

The authors did not receive any funding.

Author Contributions

Naoufal Elghoul: conception and design of the work; acquisition, analysis, interpretation of the data; drafting the work.

Ismail Elantri: design of the work; acquisition and interpretation of the data; drafting the work.

Amine Elghazoui: acquisition and analysis of the data; drafting the work.

Mohammed Benchakroun: analysis and interpretation of the data; critical revision of the manuscript for important intellectual content.

Abdeloihab Jaafar: analysis and interpretation of the data; critical revision of the manuscript for important intellectual content.

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Fig. 1. Radiographs of the right arm showing concomitant anterior-medial dislocation of the shoulder (a) and ipsilateral fracture of the distal humeral diaphysis (b).

Fig. 2. a Tridimensional computed tomography scan showing the complex fracture of the humeral pallet with a third fragment. b, c Intraoperative radiograph of the elbow showing internal fixation of the humeral pallet fracture using a double compression plate via osteotomy of the olecranon.