CASE REPORT

Traumatic bilateral posterior dislocation of the shoulder: a case report

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Abstract

Introduction: Traumatic posterior dislocation of the shoulder is a rare injury. Bilateral dislocation is even less frequent and is associated with seizures or electrical shock.

Case presentation: A 25-year-old man was treated at the Emergency Department of a secondary care hospital in Popayán (Colombia) after crashing his motorcycle into a car. Based on his clinical signs and X-ray and computed tomography findings, the diagnosis of bilateral posterior dislocation of the shoulder was confirmed, and a closed reduction was performed. Rehabilitation began three weeks after the procedure and shoulder function was monitored monthly using the abbreviated Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire. Recovery was satisfactory and no functional limitation or X-ray changes suggestive of osteoarthritis or bone necrosis were observed at 1-year follow-up.

Conclusion: Traumatic posterior dislocation of the shoulder is a rare and usually overlooked condition, so it should be considered as a differential diagnosis in patients with shoulder trauma, in order to provide timely treatment and avoid severe functional sequelae.

Keywords: Shoulder Dislocation; Closed Fracture Reduction; Case Report (MeSH).

Resumen

Introducción. La luxación traumática posterior de hombro es una lesión rara; además, su ocurrencia bilateral es aún menos frecuente y se asocia a convulsiones o electrochoques.

Presentación del caso. Hombre de 25 años que fue atendido en el Servicio de Urgencias de un hospital de segundo nivel de atención de Popayán (Colombia) luego de chocar en una motocicleta contra un automóvil. Con base en los signos clínicos y los hallazgos en las radiografías y la tomografía axial computarizada, se confirmó el diagnóstico de luxación posterior de hombro bilateral, por lo que se realizó reducción cerrada. La rehabilitación se inició a la tercera semana del procedimiento y se realizó seguimiento mensual de la funcionalidad de los hombros utilizando la escala Disabilidades del Hombro (DASH) abreviada. La recuperación fue satisfactoria y, al año de seguimiento, no presentó ninguna limitación funcional ni cambios radiográficos sugestivos de artrosis o necrosis ósea.

Conclusión. La luxación posterior traumática de hombro es una condición poco frecuente y usualmente pasada por alto, por lo que debe tenerse en cuenta como diagnóstico diferencial en pacientes con trauma de hombro, con el fin de realizar un tratamiento oportuno y evitar secuelas funcionales graves.

Palabras clave: Luxación del hombro; Reducción cerrada; Informes de caso (DeCS).
Introduction

The shoulder joint is a ball-and-socket joint, comprising the humeral head and the glenoid socket of the scapula, which has a great complexity and a wide range of mobility. The stability of this joint is mainly related to the muscle and ligament structures that surround it. These characteristics make dislocations of the shoulder joint a common injury, with anterior dislocation being the most common. Posterior shoulder dislocation is much less frequent than anterior dislocation, with a prevalence between 2% and 5% of shoulder dislocations. It is usually secondary to fractures or impaction of the humeral head against the glenoid, and its clinical and radiographic diagnosis is difficult to establish, making this injury go often unnoticed and resulting in severe functional consequences. Bilateral posterior shoulder dislocation is even less common, and while unilateral posterior shoulder dislocation can occur from direct trauma, the mechanisms of production of bilateral injury are often associated with seizures or electroshocks.

This article describes the case of a young man who presented bilateral posterior dislocation of the shoulder as a result of a traffic accident, who underwent closed reduction surgery.

Case presentation

A 25-year-old man with no relevant medical history was admitted to the emergency room of the Hospital Susana López de Valencia (secondary care level) in Popayán (Colombia) after being involved in a motorcycle accident when he collided with a car. On admission, he was conscious, had normal vital signs, reported pain in both shoulders (which were symmetrical), and was unable to move them; no neurovascular alterations were observed (Figure 1). Although the X-ray findings on admission were considered normal, these images were reevaluated by professionals from the orthopedics service, who indicated that the results suggested the presence of posterior shoulder dislocation (Figure 2). For this reason, a computed axial tomography (CAT) scan was performed, which confirmed the presence of bilateral posterior shoulder dislocation and showed impaction of the humeral head against the posterior edge of the glenoid, especially on the left side (Figure 3). For this reason, it was decided to perform a closed reduction surgery.

Figure 1. Clinical appearance of the patient on admission to the emergency room. Source: Images obtained while conducting the study.
Once admitted to hospital, the patient was taken for closed reduction of both shoulders under bilateral brachial plexus block with ultrasound-guided supraclavicular block (15mL of 0.35% bupivacaine) for the left shoulder and ultrasound-guided interscalene block (20mL of 0.25% bupivacaine) for the right shoulder. The reduction maneuver consisted of traction, adduction, and internal rotation in order to disengage the humeral head from the posterior glenoid rim, and subsequently push the humeral head from the posterior to the anterior position by performing external rotation. The reduction was not traumatic and there were no complications during the surgical procedure. Postoperative X-rays and CT scans showed adequate reduction of both dislocations (Figure 4).
Figure 4. Imaging tests performed after closed reduction. A. X-ray of the left shoulder. B. X-ray of the right shoulder. C. Computed axial tomography.
Source: Images obtained while conducting the study.

The patient was discharged the day after the surgery. The shoulders were kept immobilized with a sling for 3 weeks and, from that moment on, the physical rehabilitation process began with the objectives of improving mobility and strengthening the muscles of the shoulder girdle.

Outpatient follow-up appointments were scheduled on a monthly basis by the orthopedics service for 12 months, during which shoulder functionality was assessed with the abbreviated Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire. In this regard, a progressive recovery of functionality was observed (Table 1) and, after four months, the patient showed an adaptation to his regular life with minimal restrictions and without pain or significant functional limitations (Figure 5). From the sixth month and until completing one year of follow-up, there were no significant changes in the DASH score and the patient had no symptoms of joint instability or relaxations.

Table 1. Score on the abbreviated Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire at follow-up.

<table>
<thead>
<tr>
<th>Follow-up month</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviated DASH scores</td>
<td>72.2</td>
<td>59.0</td>
<td>31.8</td>
<td>13.6</td>
<td>6.8</td>
<td>4.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Source: Own elaboration.
Figure 5. Functionality of the patient’s shoulders at the fourth follow-up month. 
Source: Image obtained while conducting the study.

Discussion

Posterior dislocation of the shoulder is a rare condition with an incidence rate of 1.1 cases in 100 000 individuals per year. Bilateral posterior dislocation of the shoulder is a much less common injury, and direct trauma has been reported to be an unusual cause in these cases. In fact, the literature is generally limited to secondary case reports in which this condition is often related to seizures or electroshocks. In this case report, the patient presented with indirect trauma when falling from a motorcycle with his arms outstretched, with the force of the impact being transferred from the hands to the shoulders.

The diagnosis of posterior shoulder dislocation is frequently overlooked due to its subtle radiographic findings and, the lack of knowledge about this injury by health care personnel in emergency rooms due to its low incidence. This makes it impossible to initiate adequate treatment, resulting in functional alterations and chronic pain. In this regard, Xu et al. in a systematic literature review published in 2015, reported that up to 80% of patients with posterior shoulder dislocation receive a wrong diagnosis, thus highlighting the importance of having a high index of clinical suspicion in the presence of shoulder pain in adduction and/or internal rotation, and limitation for external rotation and abduction. Likewise, its diagnosis requires multiple imaging tests such as anteroposterior X-ray, lateral scapula and axillary X-ray, and CT scan.

Accordingly, Huizing & Monteban emphasize the relevance of CT in these cases due to the technical difficulties in obtaining X-ray projections in patients with bilateral posterior shoulder dislocation. In our patient, X-rays clearly showed the presence of posterior dislocation with the “light bulb” sign, which is an oval representation of the
humeral head due to its internal rotation and its similarity to the shape of this object.\textsuperscript{3} In spite of these findings, a CT scan was performed to confirm the diagnosis (Figure 3), which not only corroborated the presence of the lesion, but also revealed the impaction caused by the posterior border of the glenoid (reverse Hill-Sachs lesion or McLaughlin lesion) in both humeral heads.

The treatment of posterior shoulder dislocation depends on factors such as age, time of dislocation progression, associated injuries (especially articular cartilage injuries), bone loss, shoulder instability, among others.\textsuperscript{12} This treatment can range from orthopedic management with closed reduction to shoulder arthroplasty, soft tissue procedures, and bone reconstruction.\textsuperscript{12} In the case of dislocations of less than 6 weeks of progression, a closed reduction can be performed and the prognosis is considered to be good if the size of the reverse Hill-Sachs lesion does not exceed 25\% of the articular surface of the humeral head.\textsuperscript{12} In the present case, an adequate closed reduction was achieved by means of the maneuvers described by Duralde \& Fogle\textsuperscript{13} and, taking into account the CT scan performed after surgery, we considered that the joint damage to the humeral head did not require surgical treatment.

Several different surgical techniques, such as open reduction, humeral head disengagement, bone grafting, and tendon transfers have been described in the biomedical literature for the treatment of reverse Hill-Sachs lesions that exceed 25\% of the articular surface of the humeral head and are associated with shoulder instability or recurrence.\textsuperscript{14} On the other hand, arthroplasty is an option for the management of Hill-Sachs lesions that cause recurrent instability, particularly lesions involving more than 40\% of the articular surface; however, it should be noted that there is no consensus on when this procedure is indicated.\textsuperscript{15}

Avascular necrosis of the humeral head is a possible complication in patients with fractures and dislocations.\textsuperscript{16} However, its incidence after shoulder dislocation has not been established, possibly because it can occur at any time during the course of the injury, making it difficult to diagnose. In fact, based on our literature search on the subject, we identified case reports of avascular necrosis as a complication of anterior shoulder dislocation,\textsuperscript{16,17} but not of posterior dislocation. Considering that the follow-up time of the patient in this case report was short, we still cannot rule out the possibility of the occurrence of such a complication.

**Conclusion**

Posterior shoulder dislocation is a rare injury that can be overlooked, especially when healthcare personnel have no experience with this type of injury. Therefore, emergency care providers should be aware of the clinical and imaging characteristics of posterior shoulder dislocation and have a high index of clinical suspicion at the time of diagnosis, in order to provide timely and appropriate treatment and to avoid severe functional sequelae.

**Informed consent**

The patient signed an informed consent form authorizing the use of his clinical data for the preparation and publication of this case report.

**Conflicts of interest**

None stated by the authors.
**Funding**

None stated by the authors.

**Acknowledgments**

The authors would like to thank Dr. Andrés Benavides, coordinator of the scientific and academic committee of SOESO S.A.S., for his contributions in the preparation of the manuscript.

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