

Traumatic bilateral posterior dislocation of the shoulder: a case report

Case Report

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Abstract: Introduction. Bilateral posterior dislocation of the shoulder is a rare injury, accounted for about 2-5% of all shoulder dislocations. Main courses are electrical shock, epilepsy or extreme trauma with uncontrolled muscle forces. We report about a case of bilateral posterior shoulder dislocation without additional fractures but with a concomitant acromioclavicular joint dislocation. Case presentation. A 46-year-old Caucasian motorcyclist presented to our facility after a fall on slippery ground. He claimed pain in both shoulders with limited range of motion. The initial X-rays were inconclusive, clinical examination showed typical findings of a Rockwood injury with an additional limited external rotation so that a posterior shoulder dislocation was suspected. The CT scan confirmed the clinical suspicion. A closed reduction was performed followed by immobilization in a shoulder abduction pillow for 4 weeks and continuous physiotherapy. Upon follow up normal function with full range of motion was observed. Conclusion. A bilateral posterior shoulder dislocation can be caused by trauma and results in a limited range of motion with often additional injuries. Due to the unusually presentation the risk of missing the injury is increased. Therefore it is most important to consider this rare diagnosis and in case of clinical suspicion perform a careful algorithm of diagnostic.

Keywords: *Bilateral posterior shoulder dislocation • Reversed Hill-Sachs lesion • Treatment plan*

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1. Introduction

Bilateral posterior dislocation of the shoulder is a very commonly missed injury and presents only 2-5% of all shoulder dislocations. Usually they are caused by uncontrolled muscle forces during seizure (first described by Sir Astley Cooper in 1939) or accidents with electric shock.

Due to its rarity and concomitant injuries with higher treatment priorities, this injury is often missed or diagnosed in a delayed fashion. One way to help to confirm the diagnosis is the unique trauma mechanism: Traumatic posterior shoulder dislocations follow a specific injury mechanism with adduction and internal rotation in an outstretched anteflexed arm [10]. Dislocation duration and size of the humeral head defect are the major factors in determining the treatment plan [6,8,13,14]. Acute dislocation (less than six weeks of injury) and

small defect up to 25% of the humeral head articular surface can be treated by closed or open reduction [6, 13]. Therapy depends on clinical stability of the glenohumeral joint and associated injuries like the Hill-Sachs or Bankart-lesion. Delayed diagnosis or larger defects should be treated by open reduction and reconstruction in which size determines the treatment options; shoulder arthroplasty should be performed for large defects of more than 50% of the humeral surface.

This report aims to present a diagnostic algorithm, treatment and rehabilitation process.

2. Case presentation

A 46-year-old Caucasian man was evaluated at our facility after he fell off his motorcycle. At the time of accident he was wearing full protection devices (helmet,

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spine protectors and gloves) and was travelling with approximately 30 miles/hour. He described isolated pain in both shoulders with an onset directly after the injury.

Due to the pain, examination of range of motion was hardly possible; neurovascular functions of both sides were normal. A concomitant acromioclavicular joint dislocation (graded Rockwood type IV) was found on the right side with typical clinical findings and confirming X-ray. In physical examination, posterior positions of the humeral heads were not palpable due to the patient's muscular body. Due to the clinically obvious Rockwood injury a dislocation of the shoulder was not immediately suspected. Nevertheless, anteroposterior radiographs and lateral scapular views were obtained, presenting the typical bulb sign (Figure 1) and confirming the bilateral dislocation (Figure 2).

Additionally, a CT scan was performed to evaluate degree of bony structures defects and plan further treatment (Figure 3). It confirmed a bilateral posterior shoulder dislocation with an impression defect of both humeral heads less than 1/3 of articular surface defect.

The patient was consented for surgery with closed reduction and fixation of the AC-joint dislocation using a fibre-wire (Figure 4). Both shoulders were evaluated under general anesthesia and adequate

stability was confirmed, so that we decided for a non-operative treatment.

Immobilization occurred with shoulder abduction pillows, holding the shoulder in 40° abduction and avoiding internal rotation for four weeks. Physiotherapy with allowed full active and passive range of motion was started on day three for six weeks. The recovery period was uneventfully, stability of the joints was confirmed in regularly ambulatory evaluations and the patient regained full range of motion. Our patient had a follow up three month after the initial trauma. He returned to his normal activities without restrictions or neurological lesions.

3. Discussion

Posterior shoulder dislocation is a rare injury due to very strong soft tissues supporting the dorsal aspects of the glenoidal joint.

It is the most commonly missed major joints dislocation [23] with a delayed diagnosis by an average of one year in 80% of cases. Most of these injuries are seen following seizure, but also electrical shock and trauma [1,4]. Simultaneous bilateral dislocation is even rarer

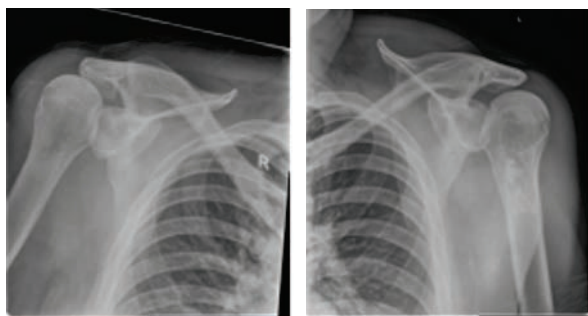


Figure 1. a.p. X - ray right (R) and left (L) on admission showing typical "bulb sign"

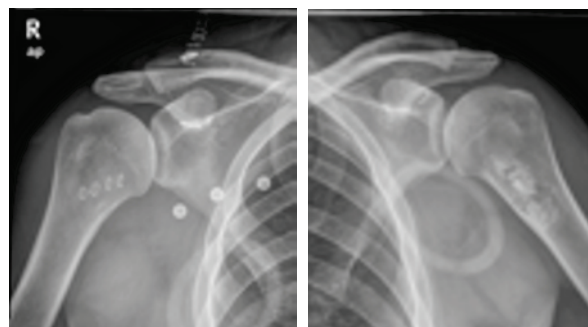


Figure 3. axial CT scan of right and left shoulder showing reverse Hill-Sachs lesions with impression defect of the humeral head - arrows)

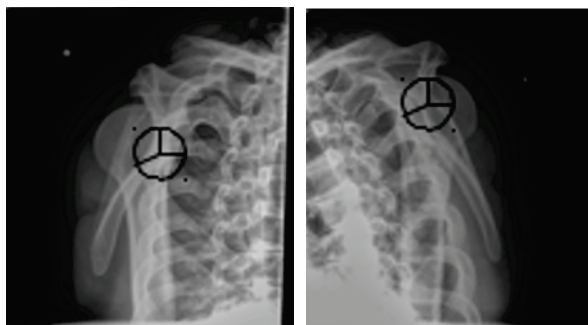


Figure 2. X - ray with outlet-view of right (R) and left (L) patient's shoulder showing an empty glenoidal cavity and a decentered humeral head

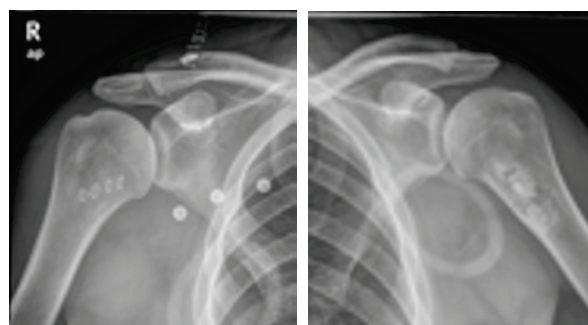


Figure 4. X - ray of both shoulders after closed reduction and fixation of the AC-joint showing physiological joint articulation

and not often described in the actual literature [16,19,22]. Typically the shoulders are symmetrically fixed in internal rotation and have limited or absent active and passive external rotation and abduction [9]. Accurate physical examination and radiological evaluation by lateral scapular view or, if tolerated by the patient, by axillary view, in addition to the standard anteroposterior view, are mandatory to reveal the injury [3,7]. One of the main reasons for a delayed diagnosis is the lack of taking axillary or lateral “Y” scapular views. Moreover, the axillary view is difficult to take due to painful abduction position and findings such as the rim sign, vacant glenoid sign, trough line sign and absence of normal half-moon sign are usually not seen [20]. This underlines the importance of arousing suspicion by a certain trauma or seizure history and the pain or stiffness in the shoulder. However, bilateral affection and severe shoulder pain with typical stiffness make it difficult to have lateral scapular and axillary views. In consequence, CT scan is a useful modality, both for recognizing the posterior dislocation and also for determining the size of articular surface damage and associated injuries [2]. Dislocation is strongly associated with a reverse Hill-Sachs lesion and probably with additional injuries like fractures of the posterior aspect of the glenoid rim or of the greater/lesser tuberosity, lesions of the anterior capsule or the subscapularis tendon [12]. Compared to the ventral shoulder dislocation an affection of the nerve vessel bundles or lesions of the rotator cuff are less common [18].

Posterior shoulder dislocation management depends on the patient's age, duration of dislocation, extent of damage to articular surface and patient demands and level of activity [6,12-14,17]. The time from the dislocation and the reverse Hill-Sachs lesion size are the major factors in determining whether or not close reduction can be used. Literature provides guidelines which management should be used:

In case of a dislocation less than six weeks closed reduction should be attempted if the articular surface defect is small (up to 25% of the humeral head's articular surface). If the joint is stable, especially in adduction and internal rotation the arm is immobilized in internal rotation. If the joint remains unstable an anatomic reconstruction is necessary [24]. Medium size defects of 25% to 40% usually need reconstruction. The treatment

strategy including lesser tuberosity transfer, McLaughlin procedure, anatomic reconstruction etc. depend on the size of the humeral defect as well as the duration of dislocation [5,15,21]. Shoulder arthroplasty can be used for large defects of more than 50% of the articular surface and/or combined with other humeral head fractures [10].

Treatment of patients with delayed diagnosis depends on viability of humeral head, demand of patient, other comorbidities and duration of dislocation. If after six months a head osteonecrosis is seen, shoulder arthroplasty is still recommended (10-12). In patients with medical high risk for surgery, heavy seizure disease or even elderly patients with limited demand nonoperative treatment is accepted as well [6, 17].

In the presented case, bilateral shoulder dislocation was not initially suspected for several reasons:

- concomitant acromioclavicular joint dislocation,
- moderate pain level as well as limited possibility of physical examination due to obesity body.

In our case, the CT scan showed an articular impression of less than 1/3 in both humeral heads. We decided to perform closed reduction, because of a cooperative muscular man. He did strengthening exercises of the shoulder girdle continuously. He did not complain of any limitation of motion at end of the follow-up period.

4. Conclusion

Traumatic bilateral dorsal shoulder dislocations can be caused by trauma. Even in case of obvious injuries a strict diagnostic algorithm is important to exclude dislocation of the shoulder. Nullified passive external rotation and elevation are the main clinical findings; conventional radiographs with additional use of CT scans ensure the early diagnosis. Treatment opportunities depend on the size of damage of articular surface and additional injuries: If, like in our case, accompanying Hill Sachs lesions remain under one third of articular surface, a conservative treatment seems sufficient to restore normal function.

Competing interests

The authors declare that they have no competing interests.

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