



A RARE CASE REPORT: POSTERIOR SHOULDER DISLOCATION

Orthopaedics

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ABSTRACT

Posterior shoulder dislocation is a unique and rare finding in the orthopaedics. Although it is rarely found, this condition is one that must be considered in the presence of acute shoulder pain. Most clinicians often miss this diagnosis on initial examination; therefore, imaging radiographs are often needed to confirm the diagnosis. Unfortunately, insufficient radiographic assessment can be the greatest pitfall in establishing an accurate diagnosis. Multiple radiographic projections, including anteroposterior view, scapular Y view, and the axillary view, are important to achieve an accurate diagnosis. In this study, we present a middle-aged patient with a pain and trauma history on the shoulder. Anteroposterior radiographic examination revealed an atypical finding. Fortunately, additional radiographic projections were successful in establishing the proper diagnosis of posterior shoulder dislocation. This study also presents a comprehensive review of the keys in the recognition and treatment of the injury.

KEYWORDS

Shoulder, posterior dislocation, middle age, rare case.

INTRODUCTION

A posterior shoulder dislocation (PSD) is a rare form of orthopaedic injury, with an estimated incidence of less than 4% of all shoulder dislocations in the emergency department. Most clinicians (60-79%) failed to establish an accurate diagnosis of PSD on initial examination¹. The high incidence of complications from this injury makes early detection important in preventing long-term comorbidities². Posterior shoulder dislocation is classified into the simple type and complex type. A simple dislocation occurs in the presence of a humeral head impression fracture or different degrees of reverse Hill-Sachs lesions. Whereas, in complex type, the fracture line may extend to the humeral neck of the shaft and involve the surrounding tuberosities³. Rouleau et al. reported that diagnosis PSD requires a high level of suspicion and appropriate imaging. Multiple projection radiographs have been shown to minimize the risk of missed diagnosis of PSD⁴.

Here, we present a 42-year-old male patient with a clinical case of PSD and the relevant literature review regarding diagnosis making and management of this rare entity.

PRESENTATION OF CASE

A 42-year-old male visited our emergency department with pain on the right shoulder after falling 1 hour before arrival. Upon inspection, the patient showed posterior shoulder protrusion with a marked loss of the anterior deltoid contour and prominent coracoid process. The arm was locked in an internally rotated position with 90° flexion at the elbow, adducted with limited external rotation and he was unable to do passive external rotation and abduction. The neurovascular examination was intact, including axillary nerve testing. His vital signs were within normal range. Radiographic x-ray imaging with an anteroposterior (AP) view (Fig. 1) was performed on the locked arm position. The result appeared to be normal without any appearance of typical signs, including the light bulb and Trough Line signs.



Fig. 1: Normal appearing Xray

Therefore, we requested an additional scapular Y view (Fig. 2). The results were suggestive of posterior shoulder dislocation. Subsequently, we informed and sought for patient's consent to perform closed reduction.

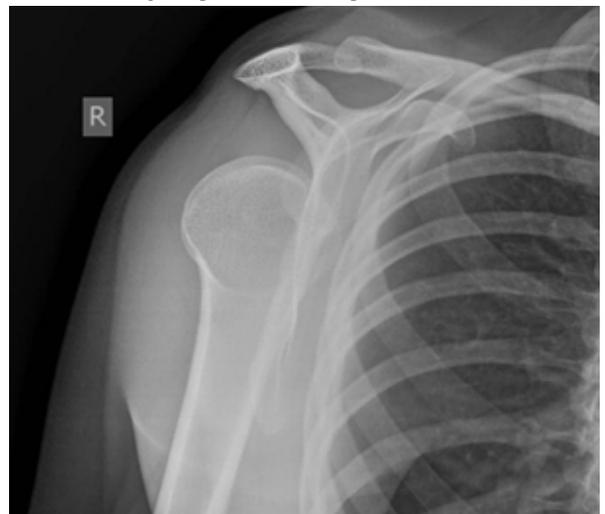


Fig. 2: Scapular Y view was suggestive of posterior shoulder dislocation

Closed reduction was performed with longitudinal and lateral traction on the arm to preserve the humeral head. After closed reduction, the patient was immobilized using 20° external rotation-abduction braces. We also checked post-treatment AP view radiograph (Fig. 3) showing normal results. Further follow-up revealed no complaints and a normal passive range of motion. The patient was discharged and followed the outpatient visit.



Fig. 3: Post reduction Xray

DISCUSSION

The shoulder is the most common dislocated joint in the human body. There are three main types of dislocation regarding the direction of the humeral head displacement, i.e., anterior, inferior, and posterior⁵. Diagnosis of PSD is rare and difficult to establish. It is often missed because of insufficient radiographic findings because of a posteriorly locked humeral head⁶. As found in our case, anteroposterior view x-ray initially showed normal findings. The patient could obtain inadequate treatment if the clinician did not become aware of performing an additional multiple projections x-ray examination.

Figueiredo *et al.* suggested that some signs in AP view radiographs might be unreliable and not be found on the initial assessment. The study recommends performing the axillary view projection because a single AP view alone may lead to a misdiagnosis of the injury⁷. Paparoidamis *et al.* explained that appropriate physical and radiologic examination should be highly focused to confirm the diagnosis, which is frequently missed or delayed in up to 79% of the cases⁷.

It is crucial to identify the first occurrence of the symptoms, the exact location, and the timing of dislocation episodes. The mechanism of injury and the nature of any behavior that aggravates the condition should also be determined. Careful visual inspection of the shoulders is needed to suggest PSD findings, i.e., an internally rotated arm with a prominent coracoid process, posterior fullness in the axilla, and loss of deltoid contour.

Mimura *et al.* emphasized that the internally rotated arm is a particular characteristic to indicate PSD⁸. Specific tests in diagnosing PSD can be considered, such as *Kim's Test*, which shows the sensitivity of 80% and specificity of 90%. The *Jerk Test*, posterior apprehension test, and stress test are also helpful to measure the stability and dislocation tendency⁹.

Although the AP view is sometimes unreliable, it may visualize a light bulb sign⁴. Several signs that indicate PSD on the radiograph results, such as: (1) *Moloney's line* disruption, which is delineated by the inferolateral scapular margin to the medial proximal humeral shaft, and internal rotation of the humerus; (2) light-bulb appearance of the humeral head; (3) vacant glenoid sign of the empty anterior glenoid fossa; (4) rim sign of over 6 mm margin between the anterior glenoid rim and humeral head; and (5) *Trough Line* sign, which indicates impacted humeral head¹⁰. Contrary, the result on the AP view radiograph showed normal findings, which was probably due to the patient's restriction on external rotation movement.

Multiple projections on the radiograph, i.e., the axillary and scapular Y view, were helpful in confirm PSD. Robinson *et al.* also suggested additional Velpeau views to improve the accuracy of the PSD diagnosis in the emergency department¹¹. Scapular Y view is recognized as the most clinically significant view to diagnose PSD. In a normal shoulder, this view shows the humeral head lying at the center of a "Y" shape, formed by the intersection between the coracoid process and acromion superiorly and the scapoid body inferiorly. The posterior displacement of the humeral head to the anatomical "Y" position is seen among individuals with PSD². Axillary view offers a great visualization of the glenoid to evaluate possible fracture from the impaction of the humeral head into its surface¹². On the inconclusive findings, Yasil *et al.* recommended using computed tomography (CT), especially if the patient feels excruciating pain with movement, so axillary view radiographs could not be performed. If there are no pathological findings on the AP view radiograph, then the axillary view alone is sufficient to establish the PSD diagnosis. However, if the patient is unable to perform abduction for the axillary view radiograph, then a Velpeau view radiograph may be used instead^{8,13}. A study by Duralde *et al.* reported a low recovery rate (30%) in patients undergoing closed reduction under general anesthesia with a humeral head defect¹⁴. On the other hand, Guehring *et al.* recommended conservative treatment for defect size less than 25%; retrograde chondral elevation, antegrade cylindrical graft or graft of the iliac bone crest with an open approach for defect size 25-40%; and shoulder prosthesis for defect more than 40%¹⁵.

The prognosis of PSD based on clinical function depends on the duration and the extent of the articular shoulder injury. The greater the duration and extent of injury, the more unsatisfactory the prognosis becomes. Persistent shoulder pain, recurrent instability, non-union, avascular necrosis, stiffness of the joint, and scapulohumeral arthrosis are some complications that can occur among PSD patients¹⁶.

CONCLUSION

Posterior shoulder dislocation is a diagnostic task that requires careful understanding by the treating physicians. A thorough history, physical examination, and multiple projections on radiographic imaging improve the accuracy of the PSD diagnosis and prevent delays in therapy. Closed reduction can be considered an appropriate treatment choice in the absence of articular surface damage. It provides acceptable results for middle-aged patients with low demands activity.

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