

# Bilateral posterior fracture dislocation of the shoulders following seizure

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## ABSTRACT

Bilateral posterior fracture dislocation is a rare injury known to be associated with seizures. Convulsion was found to be the cause of fracture dislocation in 78% of the cases reported. The mechanism of injury was described by Shaw in 1971. The management depends largely on the severity of the injury. In many cases reported, the fracture was a large compression defect in the anteromedial aspect of the articular surface of the humeral head. It has been suggested that for defects that involve less than 20% of the articular surface closed reduction can be attempted. Rush nail or percutaneous K wires can be used to maintain reduction. Open reduction is necessary for defects that are involving 20-40% of the surface. The aim in these cases is to reconstruct the proximal humerus if possible by the use of internal fixation. If reconstruction is not feasible, a modified McLaughlin procedure can be used to prevent chronic instability of the shoulder. This procedure involves re-implanting the subscapularis tendon into the defect. Reconstructing fractures that involve more than 40% of the articular surface or 4-part fracture is not usually successful. These fractures are associated with a high the risk of avascular necrosis. Hemi-arthroplasty or total shoulder replacement is generally regarded as better option as they offer rapid recovery and eliminate the possibility of multiple procedures if fixation fails.

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A 59-year-old male prison officer was brought to accident and emergency with severe bilateral shoulder pain and inability to use both shoulder joints. According to his wife he had an episode of generalized convulsion while watching television. When he regained consciousness he complained of severe bilateral shoulder pain with inability to use his arms. His past medical history revealed that he was under investigation for a similar single episode of generalized convulsion 2 months prior to this admission. He was otherwise fit and healthy with no history of alcohol abuse. Physical examination showed marked bruising over the left shoulder and tenderness over the posterior aspect of both shoulders. Both arms were held in internal rotation and assessment of shoulder movements was restricted due to pain. No distal neurovascular deficit was detected.

Anteroposterior (AP) and axillary views were taken to assess both shoulders (**Figures 1-4**). The right shoulder radiographs showed a posterior dislocation of the shoulder with compression fracture involving the anterior aspect of the humeral head in the region of the greater tuberosity. Similar x-ray views of the left shoulder showed a cortical break within the left humeral neck indicating a fracture. Dislocation could not be ruled out and examination under anesthesia was recommended to exclude the possibility of posterior dislocation of the left shoulder. Under general anesthesia examination under image intensifier demonstrated that both shoulder sustained a posterior fracture dislocation. The axial view on the left confirmed the dislocation and revealed a large antero-medial defect with a fracture line extending across the surgical neck of the humerus (**Figure 2**).

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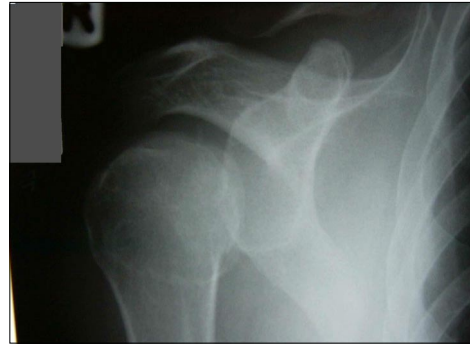
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**Figure 1** - Anteroposterior view of the left shoulder showing a typical bulb appearance of the proximal humerus with a fracture line visible at the level of the surgical neck of the humerus.



**Figure 3** - Anteroposterior view of the right shoulder showing posterior fracture dislocation of the right shoulder joint.



**Figure 2** - Axial view of the left shoulder taken by an image intensifier under general anesthetic. It shows extensive damage of the humeral head and impaction against the posterior aspect of the glenoid.



**Figure 4** - Axial view of the right shoulder, showing the fracture dislocation with a large defect created in the humeral head.

The right shoulder joint was relocated by closed manipulation. The left shoulder dislocation however, was irreducible and open reduction was performed using delto-pectoral approach. The head of humerus was dislocated posteriorly and 75% compression fracture was noted extending into the surgical neck of humerus. The head was reduced and transfixed by percutaneous K wires. Following surgery active mobilization was started and the patient was referred to the neurologist who started Tildiem and Epilim after a negative computed tomography (CT) scan of the brain.

Four weeks follow-up revealed posterior dislocation of the right shoulder. Open reduction using delto pectoral approach was used, and to prevent any further instability, the humeral head was fixed in place using percutaneous guide wires through the glenoid for 6 weeks.

Two years postoperatively, the right shoulder had full and pain free range of movement, but his left shoulder was stiff and painful. Active range of movement was restricted to 90 degrees of abduction

and front elevation. Rotational movement were also restricted. Assessment of radiographs revealed marked resorption of the humeral head with osteoarthritic changes of the gleno-humeral joint. A Left shoulder hemiarthroplasty was performed with satisfactory results.

**Discussion.** Bilateral posterior fracture dislocation is a very rare injury associated with seizure disorder. Seizure was the cause of the injury in 78% of the cases reported.<sup>1,2,5,7-11,13-16,18,20</sup> Shoulder pain following a convulsive seizure should always raise suspicion to posterior shoulder fracture dislocation.

The mechanism of injury was described by Shaw<sup>18</sup> in 1971, who postulated that the typical position of the shoulder during a convulsion is adduction, internal rotation and flexion. In this position, a massive contraction of the shoulder girdle muscles forces the humeral head superiorly and posteriorly against the acromion, and medially

against the glenoid fossa. The infraspinatus and teres minor along with the deltoid, latissimus dorsi, and teres major provide the force necessary to produce dislocation. After the termination of the seizure the humeral head is lodged behind the glenoid rim often with a compression fracture on the humeral head medial to the tuberosity.

Radiological investigation should include AP and axillary views. In a study into posterior dislocation Hawkin's et al,<sup>4</sup> indicated that with standard AP view helped in making the diagnosis in 50% out of the total cases with posterior dislocation. This figure rose to 100% when axillary view was added. However, axillary view can be very difficult to obtain due to pain and CT scan can be used as an alternative to confirm the diagnosis.

The management depends largely on the severity of the injury. In many cases reported, the fracture was a large compression defect in the antero-medial aspect of the articular surface of the humeral head.<sup>1,13,14,20</sup> It has been suggested that for defects that involve less than 20% of the articular surface, closed reduction can be attempted.<sup>12</sup> Rush nail or percutaneous K wires can be used to maintain reduction. Open reduction is necessary for defects that are involving 20-40% of the surface. The aim in these cases is to reconstruct the proximal humerus if possible by the use of internal fixation. If reconstruction is not feasible a modified McLaughlin procedure can be used to prevent chronic instability of the shoulder. This procedure involves re-implanting the subscapularis tendon into the defect.<sup>9,12,13</sup>

Reconstructing fractures that involve more than 40% of the articular surface or 4-part fracture is not usually successful. These fractures are associated with a high risk of avascular necrosis. Hemiarthroplasty or total shoulder replacement is generally regarded as better options as they offer rapid recovery and eliminate the possibility of multiple procedures if fixation fails.<sup>6,12</sup>

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