Bilateral Neglected Posterior Fracture–Dislocation of the Shoulders

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abstract

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Posterior dislocation of the shoulder is an uncommon injury. Diagnosis is difficult and often missed. Once diagnosed, management must be individualized depending on the amount of the defect of the humeral head and the time from injury. This article presents a case of a 40-year-old man with a 4-month history of bilateral locked posterior fracture–dislocation of the shoulders after a grand mal seizure. Imaging showed loss of the glenohumeral joint lines congruency, reverse Hill-Sachs lesions, and articular defects of 35% and 40% of the humeral heads. A modified McLaughlin technique was performed in both shoulders in a single stage. Through the standard deltopectoral approach, the lesser tuberosity was osteotomized with the subscapularis and capsule attached and elevated to expose the humeral head and glenoid. The shape of the humeral head was restored by packing the defect with morselized bone allograft. Before packing the allograft into the defect, 2 absorbable suture anchors were inserted at the bottom of the defect; the lesser tuberosity was transferred into the defect, and fixed with 2 transosseous horizontal mattress sutures. Stable fixation was evaluated intraoperatively, and the wound was closed in layers. Postoperatively, both shoulders were immobilized with external rotation braces for 6 weeks, followed by passive, active-assisted, and progressively active range of shoulder motion and rotator cuff strengthening exercises for the next 6 weeks. At 12 weeks postoperatively, full range of motion was accomplished, and full activity was allowed. At 22-month follow-up, the patient was satisfied with his level of function; both shoulder joints were painless and stable without apprehension or recurrence of instability. Radiographs showed congruent joints and complete incorporation of the allograft into the defect with restoration of the shape of the humeral head.
Posterior dislocation of the glenohumeral joint is a rare injury, accounting for less than 2% of all shoulder dislocations. Most posterior shoulder dislocations have been attributed to high-energy trauma, seizures, electrocution, or electroconvulsive therapy. Posterior dislocation may occur when an axial force is applied to the arm with the shoulder in internal rotation, forward elevation, and adduction; during a seizure with the arm by the side, a sustained contraction of internal rotators (subscapularis, latissimus dorsi, pectoralis major, and teres major) overcomes the weak external rotators, resulting in a posterior dislocation.

Posterior dislocation of the shoulder is a diagnostic trap. Misdiagnosis of this injury may occur in 50% to 79% of patients, most commonly due to lack of clear clinical signs and inappropriate radiographic evaluation. Bilateral posterior shoulder dislocation should be suspected in patients with a fixed internal rotation deformity, a palpable prominence of the coracoid, an increased palpable prominence of the humeral head in the posterior aspect of the shoulder, and a marked complete loss of external rotation. Computed tomography can quantify the involvement of the articular surface of the humeral head and identify fractures of the tuberosity, surgical neck, and glenoid. Magnetic resonance imaging has been used to reveal posterior cuff tears and posterior avulsion lesions.

Management of neglected posterior dislocation of the shoulder is challenging. Several techniques have been described, ranging from disimpaction with elevation and bone grafting of the defect, transposition of the subscapularis tendon or the lesser tuberosity into the defect, rotational osteotomy of the proximal humerus, and total shoulder arthroplasty or hemiarthroplasty for large defects and neglected dislocations. However, the articular deficit combined with the chronicity of the posterior dislocation do not fit neatly into the algorithm for surgical intervention. The treatment decision is further complicated because the patients are often young and the arthroplasty options would lead to likely revision surgery in the future.

This article presents a case of successful treatment of a patient with bilateral neglected posterior dislocation of the shoulders with a single-stage modified McLaughlin technique using absorbable suture anchors.

**Case Report**

A 40-year-old man presented with a 4-month history of bilateral shoulder pain and severe restriction of motion after a grand mal seizure while sleeping. At the initial neurological episode and shoulder injury, he received treatment for the neurological disease; clinical and radiographic examination of the shoulders showed no pathology. The diagnosis of bilateral shoulder sprain was suggested, and the patient was treated with analgesics and bilateral shoulder immobilization in a sling. Because of persistence of shoulder pain and limited range of motion (ROM), he underwent a second orthopedic examination, but again the shoulder injury was misdiagnosed, and nonsteroid anti-inflammatory drugs and a physical therapy protocol were recommended.

At presentation, physical examination showed a muscular man with both arms fixed in adduction and internal rotation; external rotation was impossible. The normal contour of both shoulders was lost, and an increased anterior prominence of the coracoid was visible. Neurovascular examination of both arms was normal; he had complete motor function in both hands and wrists, but due to pain he cooperated poorly with motor testing of the more proximal muscles. He reported no history of shoulder trauma or surgery. Anteroposterior radiographs of the shoulders showed loss of the glumohumeral joint line parallelism; both shoulders were fixed in internal rotation with a reverse Hill-Sachs lesion of the humeral head, slightly larger on the right side (Figure 1). An axillary view could not be obtained because of pain. Computed tomography scan showed approximately 35% involvement of the articular surface of the left humeral head and 40% of the right; a bone buttress was apparent at the posterior glenoid rim in both sides (Figure 2). Surgical

**Figure 1:** Anteroposterior radiographs of the right (A) and left (B) shoulders showing posterior dislocation of the glenohumeral joints.

**Figure 2:** Axial computed tomography of the right (A) and left (B) shoulders showing impaction fracture of the anteromedial area of the humeral head and bony buttress at the posterior glenoid rim at which the humeral head is locked.
Once diagnosed, management of this uncommon injury is difficult and often missed because of its rarity. Diagnosis is difficult and often missed because of its rarity. Once diagnosed, management of this injury is critical. The patient was extremely satisfied with his level of function with no restrictions in his activities of daily living; the Constant score was 86% for the right shoulder and 88% for the left shoulder. Radiographs showed congruent glenohumeral joints and restoration of the shape of the humeral head with complete incorporation of the allograft into the defect (Figure 5). Magnetic resonance imaging showed good joint congruence and no signs of fat tissue infiltration of the subscapularis muscle (Figure 6).

**DISCUSSION**

Posterior dislocation of the shoulder is an uncommon injury. Diagnosis is difficult and often missed because of its rarity. Once diagnosed, management of this injury is critical.
injury must be individualized depending on the amount of the defect of the humeral head and the time from injury. Defects of the articular surface of the humeral head up to 25% in patients with dislocations fewer than 3 weeks old can be treated by closed reduction and immobilization in external rotation; however, for chronic dislocations (older than 3 weeks), closed reduction is highly unsuccessful.\(^\text{12}\) Defects of more than 50% of the articular surface should be treated with shoulder arthroplasty.\(^\text{13,14}\)

The management of defects between 25% and 50% of the articular surface are even more challenging.\(^\text{15}\)

McLaughlin\(^\text{5}\) recommended a subscapularis tendon transfer into the defect. Hawkins et al\(^\text{4}\) recommended the transfer of the lesser tuberosity with the attached subscapularis tendon more secure fixation of the tendon into the defect, whereas other studies described other modifications of McLaughlin’s\(^\text{5}\) technique involving plication of the subscapularis tendon into the humeral head defect using suture anchors rather than detachment and reattachment of the tendon into the defect.\(^\text{16}\) However, these techniques do not restore the anatomy and shape of the humeral head\(^\text{17-22}\) and may lead to limitation of internal rotation of the shoulder joint.\(^\text{17}\) Therefore, other reports describe anatomical reconstruction of the glenohumeral joint using autologous iliac crest bone graft impacted into the humeral head defect,\(^\text{18}\) reattachment of the subscapularis tendon with suture anchors,\(^\text{19}\) combined reconstruction of the shape of the humeral head with autologous iliac crest bone graft and the posterior capsulolabral complex,\(^\text{20}\) or allograft reconstruction of the humeral head and rotational osteotomy of the proximal humerus.\(^\text{21,22}\)

The current article describes a modified McLaughlin technique using absorbable suture anchors instead of the standard screw fixation for a patient with bilateral neglected, locked posterior dislocation of the shoulders due to epileptic seizures. This technique may allow a solution to the rare problem of neglected posterior glenohumeral dislocation that has articular deficits of more than 25% and less than 50%. As in the current patient, this technique can be performed in the same surgical session, if allowed by the health status of the patient, and provides for excellent satisfaction of the patient and improved ROM of the shoulders with no complications. Despite the 4-month delay in diagnosis and treatment, no head collapse or arthritis was observed in the current patient at last follow-up; the grafts healed completely, and no recurrent instability existed in either shoulder.

**REFERENCES**


**Figure 5:** Anteroposterior radiographs of the right (A) and left (B) shoulders at 22-month follow-up showing normal humeral head shape and excellent joint congruency.

**Figure 6:** Magnetic resonance imaging of the right (A) and left (B) shoulders at 22-month follow-up showing normal joint congruency with no signs of subscapularis fat tissue infiltration.


