Modified McLaughlin Procedure with Dual Anchor and Button Fixation for Posterior Locked Shoulder Dislocation and Large Reverse Hill Sachs Defect

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Introduction: Locked posterior dislocation of the shoulder (LPDS) are often associated with a reverse Hill-Sachs Lesion, an impaction fracture on the antero-medial aspect of the humeral head. These injuries are rare and often missed or underdiagnosed. Treatment is challenging and dependent on several factors including duration of dislocation and the size of the humeral head defect. Defects between 25% to 50% of the humeral head are indicated for a modified McLaughlin procedure, wherein the lesser tuberosity is transferred with the subscapularis tendon into the anteromedial articular defect. The purpose of this video is to demonstrate restoration of humeral head articular congruity in the setting of a large reverse Hill-Sachs lesion, and to demonstrate the concomittant modified McLaughlin procedure with suture anchor and button reconstruction.

Methods: The anatomy, diagnosis, and treatment options for locked posterior shoulder dislocations are discussed. This is a video demonstrating a modified McLaughlin procedure in a 35-year-old male with LPDS and a large reverse Hill Sachs defect in the setting of alcohol withdrawal seizures. The procedure started with placing the patient in beach chair position. A deltopectoral incision was made followed by biceps tenotomized at the level of the superior labral complex and tenodesed to the upper part of the pectoralis major tendon. The remainder of the tendon was resected. The lesser tuberosity was isolated and osteotomized off of the humeral head, ensuring that the circumflex vessels are avoided. The medial reverse Hill Sachs lesion was exposed and prepared for transfer. A compression fracture of the medial humeral head was reduced with an osteotome and elevated to be in line with the remainder of the head. Bone graft chips were utilized to fill the depression until tamped solid. The bone bed was then curretted and rasped for placement of 5.5 mm anchors for fixation. Tape sutures were placed in mattress fashion medially to the bone for a lateral row and at the level of the tuberosity for medial row. The sutures were tied down, securing the tuberosity into the humeral head defect. The medial tape sutures were passed into two 4.8 mm lateral anchors, one superiorly and one inferiorly into the native lesser tuberosity osteotomy bed, achieving a double-row repair. A button was used with an independent #5 stitch to hold the fixation into the bicipital groove where a hole was drilled, and the button was flipped inside the cortex. The sutures were subsequently tightened and tied. Finally, the arm was ranged to ensure stability.

Results: During this procedure, the glenohumeral joint was reduced via open reduction, and both biceps tenodesis and the modified McLaughlin procedures were performed. Post-operatively, the patient remained in a sling for 6-weeks. He was distally neuro-vascularly intact and pain was controlled with acetaminophen and gabapentin. Two-week post-op Grashey and Scapular x-rays views demonstrated that the humeral head was centered in the glenoid socket without obvious dislocation or subluxation. In the Grashey view, the defect over the anteromedial aspect of the humerus is covered with lesser tuberosity bone graft and anchors were intact and in place. Patient is progressing appropriately and has started Pendulum exercises, performing good return demonstration in horizontal, vertical, and circulated movements.

Discussion: The present case reinforces many critical points about LPDS from contemporary literature. The rarity of this condition is reflected in the literature; a recent systematic review on LPDS outcomes yielded only nine studies and 97 shoulders. In this review, reverse Hill-Sachs lesions size ranged from 20-50% of the humeral head articular surface, and study-specific time from dislocation to surgery varied widely (from a mean interval of less than three weeks to a mean interval of 23 weeks). Lesser tuberosity fixation was achieved with either suture anchors or cannulated screws, and union of all osteotomies were noted at final follow up. As with our patient, good range of motion, excellent PROMs, and glenohumeral stability were noted in the vast majority of patients. Three complications were noted in this systematic review: one prominent screw which resolved with screw removal 1%) and two episodes of recurrent instability (positive apprehension tests) in epileptic patients (2%).

In contrast to the present case, many LPDS cases are initially missed and undergo surgery months after the injury. Smaller case reports have suggested that patients with chronic neglected LPDS may have inferior outcomes when compared to those of LPDS patients who undergo surgery acutely (Cohen et al). Future studies ought to further define the cutoff between "acute" and "chronic" LPDS based on clinical outcomes. Elucidating the interval of time between injury and surgery after which point Modified McLaughlin clinical outcomes are poor (and the surgeon may consider arthroplasty) would also prove helpful.

In summary, orthopaedists must maintain a high level of suspicion for LPDS. Treatment of this difficult-to-treat entity is largely based off the size of the humeral head defect, and the potential for recurrent instability. In this case, the first of our knowledge to use a combined suture anchor and button construct, we demonstrate a reproducible method for restoring the humeral head articular surface and securing the transferred lesser tuberosity.