

Recurrent Posterior Dislocation of the Hip With a Bankart-Type Lesion

A Case Report

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Recurrent dislocation of the hip joint is a rare complication of posterior hip dislocation.[¶] Most often, recurrent dislocation of the hip is associated with fractures of significant portions of the posterior wall of the acetabulum.^{2,24} Some authors have attempted to correlate the size of acetabular fracture and condition of posterior capsule with stability of the hip.^{2,13,30} The contribution of soft tissue structures to hip stability has not been considered clinically significant, and thus has been given little attention. Although tearing of the acetabular labrum after hip dislocation has been described,^{3,18,23} its effect on hip stability has yet to be clearly defined. However, there is some evidence suggesting that the labrum contributes significantly to hip joint stability.^{5-7,27}

Surgical repair of a “Bankart-type” avulsion of the posterior hip capsule from the posterior acetabular rim is an even less common occurrence. The purpose of this case report is to describe a patient with recurrent posterior instability of the hip who was treated with an open posterior Bankart repair of the hip.

CASE REPORT

A 14-year-old baseball player sustained an acute injury to his left hip while running to first base during drills. At the time, he reported getting his cleat caught on the base,

causing him to fall awkwardly to the ground. He was unable to bear weight. He was transported to a nearby hospital emergency department, where he was noted to be in considerable pain, with his leg foreshortened, adducted, and internally rotated. Anteroposterior and lateral radiographs demonstrated a posterior dislocation of the left hip.

Within 2 hours of the injury, gentle traction and manipulation under intravenous sedation resulted in reduction. The hip was stable throughout the range of motion, although no effort was made to posteriorly translate the femoral head. Plain films and computed tomography scan after manipulation showed concentric reduction, minimal injury to the posterior acetabulum, and only small bony extra-articular fragments.

The patient was placed in Buck traction for 2 weeks, followed by progressive weightbearing until he was fully ambulatory at 6 weeks after injury. At 12 weeks, physical examination showed a full and painless range of motion, normal strength at manual testing, and no apprehension on axial or posterior translation testing. Anteroposterior and lateral radiographs, as well as MRI, showed normal findings, with the exception of a small intra-articular effusion. He was permitted to gradually return to athletic activities starting at 14 weeks after injury, as he was anticipating returning to high school lacrosse as a goalie.

Two weeks subsequent to his clearance, at 16 weeks after his initial injury, he sustained a recurrent injury while playing lacrosse in goal. When coming down from a jump, he landed awkwardly on his left leg and experienced acute pain and a recurrent posterior dislocation of his left hip. He underwent prompt closed reduction under intravenous sedation in the emergency department. While under this sedation, the hip was unstable in 90° of flexion with only slight internal rotation with a posterior-directed force.

Postreduction radiographs revealed a concentric reduction with no significant bony injury. Postreduction MRI demonstrated detachment and displacement of the posterior capsule of the hip from the acetabular rim (Figure 1).

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¶References 1, 4, 8-12, 18, 23, 26, 29, 31.

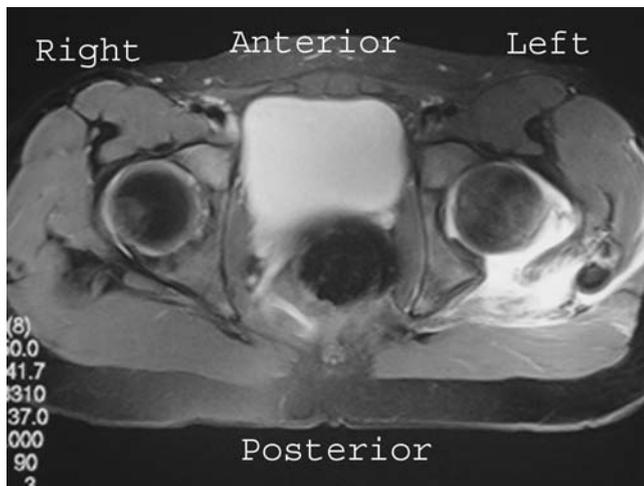


Figure 1. Axial fat-saturated T2-weighted MR image demonstrating detachment and displacement of the posterior capsule of the left hip from the acetabular rim after reduction of a second dislocation at 16 weeks after the initial dislocation.

Other than some subtle blunting of the posterior acetabular bony rim, there was no significant bony defect. The femoral head was normal.

One week after his recurrent dislocation, the patient underwent open surgical repair of the displaced posterior hip capsule. A standard posterior approach in the lateral decubitus position was used, taking down the intact external rotators. The posterior capsule was found to be completely avulsed from the posterior acetabular rim. The labrum was disrupted along with the capsule except for its most proximal 1 cm, where the capsule was torn away from the labrum itself. The capsule was also injured in its mid-portion, with a stellate-type rent in the midcapsule measuring 3 × 3 cm. The acetabular labrum was seen to be detached along the superior quadrant for about 1 cm. There were no chondral injuries to the femoral head.

The acetabular rim at the site of detachment was abraded to generate a healing response. Three bone anchors (Mitek Panalok, DePuy Mitek, Inc, Raynham, Massachusetts) were placed along the acetabular rim at the 3:00-, 4:30-, and 6:00-o'clock positions. Both limbs of each suture anchor were placed in a mattress fashion through the posterior capsulolabral tissues along the course of the detachment. In addition, no. 2 Ethibond suture (Ethicon, Inc, Johnson & Johnson, Somerville, New Jersey) was used to close the stellate rent in the posterior capsule, attempting to imbricate the capsule to eliminate any capsular laxity. The repair was performed with the hip in slight external rotation and abduction to maximally tighten the posterior soft tissues. The external rotators were repaired back to their origins through osseous tunnels tied over a bony bridge. Intraoperative assessment showed good stability with loading after the repair.

Postoperatively, the patient was placed in a custom hip orthosis incorporating the foot and maintaining the hip in neutral flexion/extension and approximately 5° of external rotation. He was permitted touch-down weightbearing

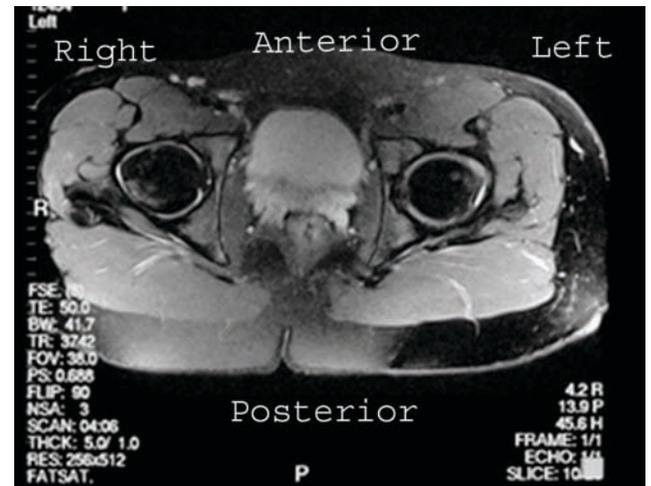


Figure 2. Axial fat-saturated T2-weighted MR image 3 years postoperatively that demonstrates an intact capsulolabral repair.

only until the sixth postoperative week, at which time he began a supervised rehabilitation program, including progressive weightbearing. The brace was removed at 6 weeks, and he underwent progressive active and assistive range of motion exercises. At 4 months postoperatively, an MRI was obtained that demonstrated an intact capsulolabral repair. Evaluation at 6 months postoperatively revealed near-normal range of motion, normal strength at manual muscle testing, and the absence of any apprehension or symptoms on joint loading/translation attempts. Radiographs were normal. At 6 months he was permitted to advance to agility drills and return to baseball.

At a recent follow-up 3 years after surgery, the patient was preparing to enter college. He has been able to successfully return to all athletics, but at a level lower than he played before injury because of mild symptoms. He has experienced no further episodes of instability, but he has noted activity-related symptoms such as a low-level ache and stiffness. Physical examination showed approximately 10° of restriction in both flexion and internal rotation. The MRI findings at this follow-up were normal (Figure 2).

DISCUSSION

Injury occurred at the junction of the posterior acetabular rim and the capsulolabral soft tissue capsule in the patient presented here. This pathophysiology is analogous to that of a Bankart lesion of the shoulder joint.¹⁹ There is some historic precedent for this analogy, with repair of the acetabular labrum to restore hip stability first described by Dameron³ in 1959. Review of the literature yielded 2 case reports of recurrent posterior hip instability; both patients had a Bankart-type lesion after traumatic dislocation. In the first report, an allograft femoral head bone block was used to reinforce the somewhat deficient posterior acetabular bony rim, along with labral repair through bone tunnels and augmentation with capsular plication.¹⁸

The second report describes treating the lesion by reinforcing the acetabulum with an iliac crest bone block without any labral repair.²³ Other reports of surgical treatment for recurrent hip instability are uncommon and do not mention a Bankart-type lesion. The treatment in these cases consisted of either capsulorrhaphy,^{1,8-11,17,18,26,29} bone block augmentation alone,²⁹ or capsulorrhaphy with bone block augmentation.^{4,12,29}

Extrapolating from experience in the shoulder, repair of the Bankart lesion is a logical approach to restore stability. The function of the acetabular labrum is likely analogous to the glenoid labrum in that it serves to deepen the socket of the joint, and thus lend crucial stability to the joint.^{5-7,27} The acetabular labrum also likely serves to create a suction seal around the hip joint,^{14,25} the loss of which further destabilizes the joint and leads to abnormal mechanics. This gives further evidence to support repair of the labrum as opposed to capsulorrhaphy with bone block augmentation. It has also been suggested that in cases of acetabular dysplasia or bony deficiency, the labrum plays a more significant role in stabilizing the hip joint.²¹ The presence of a retroverted acetabulum, an overly anteverted proximal femur, or abnormal sphericity of the femoral head has also been suggested to potentially destabilize the hip joint,^{15,25,28} which would also cause the labrum to play a greater role in hip stability. By repairing the labrum to its anatomic position, the acetabular deepening and sealing effects of the labrum are restored and the stability of the joint should be improved significantly.

In the case presented here, a radiograph of the patient taken 3 years postoperatively demonstrates a high crossover sign of the left hip and abnormal sphericity of both femoral heads (Figure 3). One could argue that the gunstock deformity of the left proximal femur could be the result of the trauma, but because the same anatomy is present on the uninjured side, this is unlikely. The presence of both a retroverted acetabulum and an aspherical femoral head caused this patient's hip to rely more heavily on the labrum for stability, and likely put him at increased risk for hip dislocation.

There are some data to suggest that hip subluxations or dislocations, with minimal to no bony involvement, can be managed successfully by conservative means. Posterior stability testing should be performed under anesthesia at the time of initial reduction; this was not done in this case, and could have potentially altered the management course. In conservative treatment, patients are made non-weightbearing, flexion is limited to less than 90°, and internal rotation is limited to less than 10°.^{20,25} Functional bracing, which would limit these motions, could also be considered as an adjunct treatment. Avascular necrosis occurs in 1% to 17% of hip dislocations²⁵ and up to 25% of subluxations.²⁰ Therefore, an MRI should be obtained between 6 and 12 weeks after injury to evaluate for the presence of avascular necrosis.^{20,25}

Although capsular plication, augmentation with a posterior bone block, or a combination of these has been described, anatomic repair of the avulsed and torn capsulolabrum has received little attention. For most patients who develop recurrent instability, an injury to the bony



Figure 3. An anteroposterior radiograph of the pelvis 3 years postoperatively demonstrates a high crossover sign on the left hip, suggesting a retroverted acetabulum. There is also abnormal sphericity of both femoral heads, as demonstrated by the arrows.

acetabular rim is the cause; therefore, understandably, most focus has been on this structure, which is best evaluated by thin-cut computerized tomography. However, in cases of posterior instability without overt or minimal bony involvement, early MRI is indicated to evaluate the presence of intra-articular injury such as chondral shear injury to the femoral head or the acetabulum.^{16,22} Such a scan would also allow for evaluation of the labrum and capsule, and would possibly identify those patients at risk for recurrent instability who could potentially benefit from early surgical intervention.

This case demonstrates the importance of the posterior labrum and capsule of the hip in contributing to joint stability. Although repair of the acetabular labrum to restore stability after recurrent hip dislocation has been described,^{3,18} this is the first report of an open repair of the capsulolabrum with suture anchors without bone block augmentation to treat recurrent dislocation of the hip.

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