Lateral Capsular Meniscal Tear in a Cross-country Runner

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abstract

Tears of the meniscal capsular junction present unique diagnostic and treatment challenges for practitioners because they are rich in blood supply yet often not visualized on magnetic resonance imaging. The authors report the case of a young man with a meniscal capsular junction tear, difficulties related to his diagnosis, and his short-term outcomes following surgical treatment. An 18-year-old male cross-country runner presented to the authors for nonradiating lateral right knee pain after a failed course of physical therapy. This tear was only definitively diagnosed after inconclusive magnetic resonance imaging, an ultrasound-guided cortisone injection, and a direct arthroscopic visualization. He underwent an uncomplicated repair of his meniscal capsular junction tear with injection into the repair of bone marrow aspirate concentration taken from his iliac crest. At his 6-month follow-up visit, he had returned to cross-country running, achieved satisfactory Knee Outcome Scores, and reported minimal pain per the visual analog scale. This case is unique in that meniscal capsular junction tears often occur at the posteromedial portion. Given the rarity of these injuries, future studies should focus on longer-term outcomes following surgical repair of meniscal capsular junction tears and which techniques may portend to superior outcomes. [Orthopedics. 2016; 39(6):e1201-e1204.]

With approximately 700,000 meniscal surgeries performed annually,1,2 arthroscopic surgery for meniscal tears is one of the most common orthopedic procedures in the United States. Additionally, these injuries may occur in conjunction with anterior cruciate ligament (ACL) tears.3 Among these injuries, tears at the meniscal capsular junction (MCJ) represent unique challenges for diagnosis and treatment. This area of the menisci has a rich blood supply and is thus amenable to healing following repair. However, it often is not well visualized on magnetic resonance imaging (MRI), the gold standard for diagnosis of meniscal tears. These tears are prevalent in those requiring ACL reconstructions, having been reported in approximately 12% of primary ACL tears and 24% of those requiring a revision.4 However, false-negative rates of 19% to 25% have been reported in the confirmation of MCJ tears, even with arthroscopic diagnosis using standard anterior portals.5,6

The authors report the case of a young man with an MCJ tear, difficulties related to his diagnosis, and his short-term outcomes following surgical treatment.

CASE REPORT

Clinical History

An 18-year-old male cross-country runner presented with nonradiating lateral right knee pain. He was running an average of 20 miles per week. The patient was...
initially seen by his primary care physician, who prescribed physical therapy, rest, ice, and naproxen and ordered MRI. The MRI showed a trace knee effusion, but yielded otherwise negative findings. After completing physical therapy with no relief, the patient was referred to a sports medicine orthopedic surgeon, who diagnosed him as having iliotibial band friction syndrome and continued physical therapy with relative rest. The patient’s condition did not improve. A landmark-based cortisone injection into his lateral retinaculum provided no relief.

By the time of his visit to the authors’ institution, the pain had progressively worsened during 10 months and he could no longer run. He had no pain at rest or while walking, and no locking, clicking, snapping, or buckling. His knee did swell mildly the last time he ran. The patient reported no back or hip pain. There was no inciting or traumatic event at the onset. On physical examination, the right knee showed normal alignment and gait and no effusion. He had moderate lateral joint line tenderness. Positive results were found for Noble’s and McMurray tests. Quadriceps and hamstring strength was 4/5 with 10° loss of flexion.

Magnetic resonance imaging showed a subtle signal abnormality between the iliotibial band and the lateral femoral condyle, raising the possibility of a small friction (Figure 1). The posterolateral corner structures were normal. Minimal linear signal abnormality of indeterminate significance was appreciated posterior of the lateral meniscus junction with the distal strut in the popliteus hiatus. He was diagnosed as having iliotibial band syndrome. An ultrasound-guided cortisone injection into the distal iliotibial band insertion and running directly afterward produced no symptom relief and no running at the 1-week mark (Figure 2). Intra-articular lidocaine injection and running directly afterward produced complete resolution of symptoms. The authors then excluded iliotibial band syndrome as the cause of his pain and believed the source was intra-articular, most likely due to a meniscal capsular disruption. They had a long conversation with the patient regarding the risks, benefits, and alternatives of both surgery and nonoperative treatments. Because of his long-standing pain and desire to return to cross-country running, the decision was made to proceed with an arthroscopic meniscal capsular repair.

**Surgical Technique**

The patient’s right knee was marked in the preoperative holding area. On entering the operating room, general anesthesia was induced and the patient was prepped and draped in sterile fashion. He received 2 g of cefazolin for infection prophylaxis 30 minutes prior to initial incision. Standard anteromedial and anterolateral portals were made. The anterior portions of the menisci were thoroughly inspected, and a hypermobile lateral meniscus, most likely secondary to an absent inferior meniscal capsular strut, was noted during the procedure (Figure 3). A hypermobile lateral meniscus, most likely secondary to an absent inferior meniscal capsular strut, was noted during the procedure (Figure 4).

Next, an all-inside repair of the lateral MCJ was performed using a Fast Fix meniscal repair device (Smith & Nephew, London, United Kingdom) (Figure 5). The lateral meniscus was then stabilized using horizontal mattress sutures (Figure 6).
After reduction of the tear with a vertical mattress stitch, the arthroscopic fluid was drained from that knee. On completion, autologous bone marrow aspirate concentrate was injected into the area of the repair in the hope of augmenting healing (Figure 7).

Postoperative Course

The patient was discharged the same day as surgery and had no medical or surgical complications. He completed an outpatient course of physical therapy. At his 6-month follow-up appointment, he reported minimal pain (2 points on the visual analog scale) and had returned to long distance running. He achieved 140° of knee flexion and a Knee Outcome Score (Sports Subscale) of 96 points. The patient continues to perform his physical therapy strengthening exercises, has been released to return to his regular sports activities, and will follow up annually regarding his progress.

Discussion

Tears at the MCJ represent unique diagnostic and management challenges for practitioners. Although they are amenable to healing due to the rich vascular supply at the capsule, many imaging studies may fail to appropriately visualize these injuries. The authors have presented the case of a lateral MCJ tear that was missed on initial MRI and detected during diagnostic arthroscopy. This patient had excellent short-term outcomes and a quick return to sport following arthroscopic surgery using standard portals to identify and repair the tear.

Although these injuries are commonly found posteromedially and have been associated with ACL tears, this case is unique in that this was an isolated lateral tear at the capsule. Although little literature exists regarding the presentation, diagnosis, and treatment of these injuries, a recent small case series (13 knees; 12 patients) of hypermobile lateral menisci found that the majority of the cohort (11 of 12) presented with mechanical symptoms. Furthermore, the majority of the patients (8 of 12) reported no history of trauma.

In addition, one small study showed that similar injury patterns are amenable to repair. Anderson et al retrospectively evaluated 22 patients who had a repair of
a radial tear of their lateral menisci that extended to the capsule. After a mean follow-up of 59 months (range, 26-168 months), only 8% of the repairs failed. In addition, the cohort achieved mean Lysholm and Tegner scores of 86 and 6.5 points, respectively. Similar to the current authors, Anderson et al found that repair of these injuries that compromise the capsule can result in satisfactory outcomes in terms of function and activity level.

**Conclusion**

The authors have presented a rare case of an isolated tear to the lateral MCJ that was successfully repaired after not being recognized on multiple imaging studies. This patient achieved excellent short-term outcomes following its repair after direct arthroscopic visualization. Given the rarity of these injuries, future studies should focus on longer-term outcomes following surgical repair of MCJ tears and which techniques may portend to superior outcomes.

**References**