

Asymptomatic Meniscal Tear in Professional Soccer Player

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Abstract

Background: Athlete was a 22 year-old (188cm and 83kg) male professional soccer player. Athlete has no previous history of knee injuries. Athlete was evaluated by head athletic trainer immediately following on-field injury. Athlete stated both feet were planted on the ground when he was hit from both the medial and lateral sides of the leg and experienced further contact to his ankle. Initial evaluation revealed no obvious deformities, no swelling of the left knee and moderate swelling over left anterolateral ankle. Athlete was point tender over distal medial collateral ligament (MCL) insertion, medial knee joint line, anterior talofibular ligament (ATF) and deltoid ligaments. Limited knee extension due to pain. Orthopedic clinical examination further included: (+) Valgus test for pain and soft end feel, (-) Varus test, (-) Lachman's, (-) Anterior Drawer, (-) McMurray's test. Ankle special test could not be performed due to pain. **Differential Diagnosis:** Grade I MCL sprain, Proximal tibia contusion, Meniscus tear, Syndesmotom ankle sprain, Lateral ankle sprain, Fibular fracture. **Treatment:** As part of the facility's standard of care the athlete was referred to the team physician who ordered images of the injury. Three-view x-rays of left knee revealed no apparent fracture and a well-maintained joint space. Three-view x-ray of left ankle showed a fibular avulsion fracture. Due to the comorbid distal fibular avulsion fracture, athlete began conservative treatment with the athletic training staff for grade I MCL sprain without weight-bearing. After 2 weeks, athlete had no knee pain and no strength deficits of quadriceps or hamstrings. As the rehabilitation for the ankle fracture progressed to weight-bearing, in Week 3, the athlete's knee had minimal to moderate swelling, but athlete complained of no pain. After 6 weeks of ankle rehabilitation, including cutting, lateral movements and jumps, the knee still had full knee range of motion, no pain, but moderate swelling. Athlete was sent back to team physician for final images and to be cleared for training. MRI images revealed a medial meniscus bucket handle tear. At the time of the MRI, the total damage of the meniscus was unknown. It was decided that the athlete would undergo surgery, however, it was unclear whether or not the athlete needed a meniscus repair or a meniscectomy. During surgery, it was revealed that the damage of the meniscus was beyond repair and required a partial meniscectomy. After 4 weeks of rehabilitation with the head athletic trainer, the athlete regained full range of motion and the ability to perform lateral and linear movements. The athlete was cleared by the team physician for functional return to play. **Uniqueness:** Meniscus tears are a common occurring knee injury. Usually, a bucket handle tear presents mechanical symptoms. Commonly, bucket handle tears prevent the knee from going through full range of motion. Patients often describe a locking of the knee. In this case, the placement of the torn meniscus in the intercondylar notch enabled the athlete to still complete full range of motion. This case was unique because the athlete had no presentation of meniscal tear symptoms. The only indication of pathology was knee swelling. Without any range of motion deficits or complaints of pain, it was hard to diagnose a meniscus tear. Furthermore, the initial x-ray did not reveal the pathology. **Conclusion:** This case highlighted the diagnosis of a bucket handle tears with no symptoms using MRI imagining. More importantly, this case demonstrates the significance of recognizing swelling as a sign of pathology to the body's tissues, especially in musculoskeletal injuries such as meniscus tears

Introduction

The athlete was originally diagnosed with a grade I medial collateral ligament (MCL) sprain after being involved in a tackle during practice. Two weeks passed and the athlete's pain subsided, however in week 3 the pain returned. This pain was disassociated with a knee pathology, and associated with aberrant compensatory biomechanics due to a comorbid ankle avulsion fracture. In efforts to reduce swelling, massage, Game Ready, compression and several other modality techniques were facilitated. After a few days without decreased swelling, the athlete was referred back to the team physician for further evaluation. The physician obtained an image of inside the knee that led to the right diagnosis. A Magnetic Resonance Imaging confirm the presence of a medial bucket-handle tear. This case highlights the importance prioritizing swelling as a sign of pathology and using MRI as a diagnostic tool in finding meniscus tears.

Patient Demographic

- ❖ Male
- ❖ Professional soccer player
- ❖ 22 years old
- ❖ 187.96 cm
- ❖ 83.01 kg
- ❖ Comorbid ankle avulsion fracture

Diagnoses

- ❖ Initial Evaluation
 - ❑ Grade I MCL Sprain
 - Initially the athlete was diagnosed with a grade I MCL sprain.
 - Signs and symptoms consistent with MCL: Tender to palpation over medial joint line and femoral attachment, pain and soft end-feel with valgus stress, range of motion: 15-120 degrees.
 - Special test: (+) Valgus test for pain and soft end feel, (-) Varus test, (-) Lachman's, (-) Anterior Drawer, (-) McMurray's test.
 - Three-view x-rays of left knee revealed: no apparent fracture, well maintained joint spaces.

Diagnoses cont.

- ❖ Re-evaluation
 - ❑ Medial Meniscus Tear
 - After weeks with residual swelling and increasing pain that originally subsided, the athlete returned to sports medicine physician and was diagnosed with bucket-handle meniscus tear.
 - Signs and Symptoms: residual swelling, range of motion: 5-130 degrees
 - MRI confirmed medial bucket handle tear.

Surgical Findings

Before surgery, the extent of the damage to the meniscus was unclear. After the athlete was briefed about a partial and total meniscectomy, it was decided that surgery would proceed based on the margins of the lesion. While the athlete was under anesthesia, it was noted that his range of motion was 5 to 130 degrees and stable during valgus stressing at 0 and 30 degrees. Upon visualization it was clear that the meniscus was flayed with a horizontal component as well as involving the white-white zone. Given that the meniscus did not appear to good footprint with good red-white zone, there was low likelihood for healing. With this realization, a portion of the medial meniscus was removed. After the partial meniscectomy, there was 50% of meniscus remaining in the posterior horn, 25% to 33% of meniscus remaining within the posterior horn to body junction, 50 % meniscus remaining in the anterior aspect of the body and central part of the body, and 100% of meniscus remaining within the anterior horn.

Treatment and Rehabilitation

Post-surgery the athlete was treated conservatively after a partial meniscectomy. In the first phase of rehabilitation, the focus was to reduce swelling and increase range of motion. Seamlessly, rehabilitation progressed to strengthening of hamstrings and quadriceps, while maintaining cardiovascular endurance. After eight weeks, the athlete regained full range of motion and returned to normal daily living.

Implications

Smith et al., indicated "McMurray's will diagnose 61% of people presenting with a meniscal tear, Thessaly better at 75% and [joint line tenderness] best at 83%. False-positive findings are likely to be approximately 20% for all three tests. However, these results should be used with caution, due to the low number of included studies, poor quality of the studies and high levels of heterogeneity" (p. 93) None of the above mentioned diagnostic tools had a 100% sensitivity or specificity value. This means that there is still the probability that the use of a single test could produce a false-positive or a false-negative. In this specific case, none of these tests led to the correct diagnosis.

Conclusions

Athletic trainers are equipped with several different techniques to access musculoskeletal injuries. Along with a complete history, a physical examination is an excellent way to diagnose injuries. As a common injury in sport, and even more so, a frequent knee injury, it is imperative to diagnose meniscal lesions correctly. Usually, cases present with specific sign and symptoms that are often associated with meniscus tears. Usually meniscus tears present with joint line tenderness, audible clicking or popping, and positive special tests (McMurray's, Thessaly's.) In this case, the only symptom was swelling. Moreover, conservative rehabilitation of a MCL sprain seemed to have been helpful; the athlete began to show improvements. After weeks of rehab, the athlete showed strength and range of motion gains. Nonetheless, swelling is the most basic sign of pathology. Without swelling, the pathology would not have been noticed. And in the end, without an MRI the pathology would not have been confirmed. This imaging technology provide a conservative approach to visualizing inside the joint non-operatively.

References

- ❖ Smith, B. E., Thacker, D., Crewesmith, A., & Hall, M. (2015). Special tests for assessing meniscal tears within the knee: A systematic review and meta-analysis. Evidence Based Medicine, 20(3), 88-97. doi:10.1136/ebmed-2014-110160