

## CASE REPORT

# Intercruciate Anterior Horn of Medial Meniscus with Posterior Tibial Insertion

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## ABSTRACT

Arthroscopy with debridement and/or repair is commonly performed for meniscal tears; the understanding of meniscal anatomy is important for successful treatment of meniscal injuries. This case report focuses on an aberrant insertion site of the medial meniscus (MM) anterior horn, visualized during an arthroscopic procedure to debride an MM tear.

**Keywords:** Anatomy, Anterior cruciate ligament, Arthroscopy, Insertion, Knee, Medial, Meniscal tear, Meniscus, Posterior cruciate ligament, Tibial.

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**Conflict of interest:** None

## INTRODUCTION

The insertion site of the anterior horn of the MM has been previously characterized and categorized into four main types.<sup>1</sup> Type I insertions onto the flat intercondylar region of the tibial plateau (TP) are most common. Type II insertion is on the downward slope, from the medial articular plateau to the intercondylar region. Type III insertion is on the anterior slope of the medial TP. Type IV, the most rare type, has a soft tissue insertion on the peripheral coronary ligament with no firm bony attachment.<sup>1,4</sup> There have also been reports characterizing insertions of the anterior horn directly into the anterior cruciate ligament (ACL) and lateral femoral condyle.<sup>6,7</sup>

The authors here present an anomalous attachment of the anterior horn on the posterior aspect of the TP, after passing between the ACL and posterior cruciate ligament (PCL). This has not been previously described in the literature to our knowledge.

## CLINICAL HISTORY

EJ is a 62-year-old male who presented to the clinic with left knee pain, which began 2 months earlier after

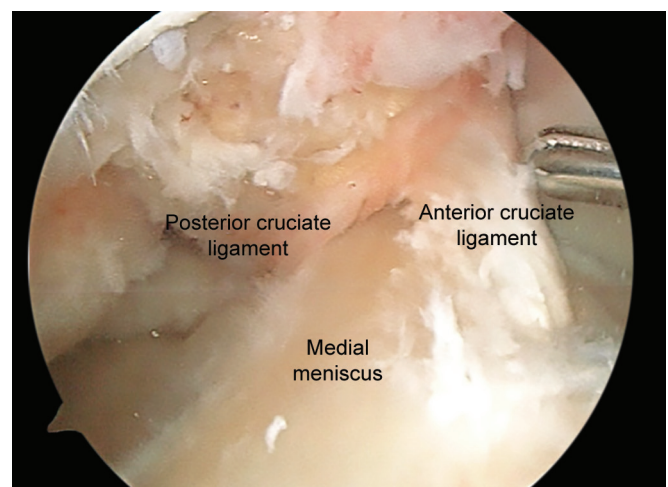
lunging forward to begin a run. He noted a pop in the medial knee at the time of injury. The pain continued after swelling subsided, and it worsened with daily activities and knee flexion. He had medial joint line tenderness on examination. He demonstrated full range of motion, 1A Lachman, was stable on posterior drawer and varus and valgus stress tests, and had a positive McMurray's test.

X-ray of the left knee demonstrated no fractures or dislocations and normal alignment. There were mild degenerative changes. There was a mild effusion with well-preserved medial and lateral joint spaces.

He was diagnosed with a MM tear and treated initially with corticosteroid injection and physical therapy. After corticosteroid injection, patient experienced partial relief for 2 months, but he presented to the clinic again due to continued pain. At this point, he elected for arthroscopy with meniscal debridement.

## SURGICAL TECHNIQUE

The patient was taken to the operating room, and a standard diagnostic arthroscopy was performed. There was a degenerative tear of the MM with a flipped fragment of the posterior horn that extended into the posterior compartment; this was debrided using the suction shaver and the duckbill basket. He was noted to have an aberrant attachment of the anterior horn of the MM that extended through the intercondylar eminence, between the PCL and ACL, and attached on the posterior aspect of the TP (Figs 1 and 2). This attachment was well anchored and

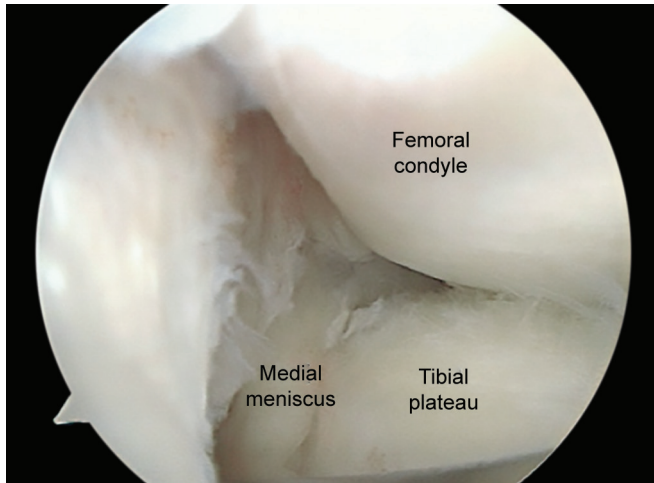


**Fig. 1:** Still image captured by arthroscope. The anterior horn of the MM is visualized passing between the ACL and PCL

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**Fig. 2:** Still image captured by arthroscope. The insertion site on the posterior TP is visualized after the MM passes between the ACL and PCL. Femoral condyle (FC) is also pictured

not impinging on any structures, and therefore, it did not appear to be pathologic.

In the lateral compartment, a large tear of the posterior horn of the lateral meniscus was discovered, which had flipped into the notch. This was debrided using the suction shaver and the duckbill basket. The articular surface in the medial compartment had grade III changes. It was lightly debrided with a chondroplasty.

## 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 1-month follow-up appointment, he reported generalized soreness associated with prolonged standing but was otherwise doing well and progressing as expected. He achieved 130° of knee flexion with 5/5 strength in the quadriceps and hamstrings. He was discharged from formal physiotherapy and will follow-up in clinic as needed.

## DISCUSSION

Several insertions of the anterior horn of the MM have been characterized in the literature.<sup>1-8</sup> The majority of insertion points are on the anterior aspect of the TP with several anomalous insertions on the lateral femoral condyle or ACL. This case report presents an anterior horn insertion on the posterior aspect of the TP, after

passing between the ACL and PCL. This has not been previously described.

In this case, there was no impingement on nearby structures or instability of the insertion, so the aberrant anatomy did not appear to be pathologic. There is no conclusive evidence regarding the association of aberrant insertion sites and pathology, although uncommon anatomy can be mistaken for pathology.<sup>8</sup> It is important to be aware of the variable anatomy of the MM, so that it is not unnecessarily debrided. In this circumstance, unnecessary debridement could risk destabilization of the meniscus or iatrogenic injury to the ACL or PCL.

## SUMMARY

This case report describes anomalous anatomy of the MM, with the anterior horn passing between the ACL and PCL and inserting on the posterior aspect of the TP. This insertion has not been previously described. The anterior horn was well anchored and not impinging upon any structure, so it was not considered to be pathologic. However, it is important to note this anomaly to avoid unnecessary debridement and potential iatrogenic injury when it is present.

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