

## Discoid Medial Meniscus: A Case Report

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**ABSTRACT** Objectives: Here we present a rare finding of a discoid medial meniscus. Methods: Clinical reports, radiographs, magnetic resonance imaging (MRI) results, and intraoperative arthroscopic images highlight this rare clinical entity. Results: We have demonstrated successful treatment with arthroscopic partial meniscectomy and saucerization of discoid medial meniscus. Conclusions: Discoid medial menisci are a rare cause of medial knee pain and should be considered if classic MRI findings are associated with mechanical symptoms.

### INTRODUCTION

Discoid lateral menisci have been described extensively in the literature. However, discoid medial menisci are rare and the epidemiology and characteristics are still unknown. Cave and Staples<sup>1</sup> first described a true case of discoid medial meniscus in 1941, and fewer than 70 cases have been reported in the English literature.<sup>2</sup>

### CASE REPORT

We present the case of a 16-year-old male with 1-year history of recurrent left medial knee pain, effusion, and locking. The patient noted onset of pain after sustaining a blunt contact injury to the left knee while playing basketball. No other injuries were noted and medical history was otherwise unremarkable. On physical examination, range of motion was measured from 0 to 130°. An elevated, more prominent joint space was noted at the anteromedial joint line and was associated with a palpable pop during knee flexion. Point of maximal tenderness was also located at the medial joint line. McMurray's test was negative and no ligamentous instability was noted. Radiographs revealed widened medial joint space and squaring of the medial femoral condyle (Fig. 1), and subsequent magnetic resonance imaging (MRI) of the knee demonstrated discoid medial meniscus of the left knee (Fig. 2). The patient was taken to operating room for diagnostic arthroscopy with debridement and saucerization of complete discoid medial meniscus (Figs. 3 and 4). A more significant degree of valgus stress was required to access the more confined medial joint space. Standard supine positioning and arthroscopic instrumentation were otherwise utilized. Postoperatively, the patient was made weight bearing as tolerated

with flexion permitted to 90°. The patient was progressed to full range of motion over weeks 1 to 3, subsequently to stairs over weeks 3 to 6, and finally permitted to return to sport and activities as tolerated postoperative week 6. His recovery was otherwise uneventful, and at final 4 years postoperatively, the patient denied continued to deny further symptoms of pain or mechanical locking. Postoperative radiographs at this time also confirmed no change in the mechanical axis of his lower extremities.

### DISCUSSION

Discoid lateral menisci are not uncommon. However, the incidence of discoid medial meniscus is exceedingly rare, with a reported incidence of 0.12 to 0.3%.<sup>3</sup> Discoid menisci are more common in Asians than Caucasians, and most studies show greater preponderance of affected males, especially with bilateral involvement (0.012% incidence). Current literature supports a congenital theory because of evidence of embryological development and hereditary transmission.<sup>4</sup> Symptomatic discoid menisci can occur equally in children, adolescents, and young adults, and trauma has been listed as the inciting cause of symptoms in 38 to 66% of patients.<sup>3</sup> In contrast to lateral involvement, the clinical presentation of discoid medial menisci is usually less specific and more suggestive of a medial meniscal tear. "There is often fullness of the joint line and mechanical symptoms with the McMurray test. Pain may be elicited in the presence of a meniscal tear." MRI is currently the imaging method of choice for diagnosis of discoid meniscus. The presence of three or more consecutive, 5-mm thick, sagittal images that demonstrate contiguity between the anterior and posterior horns of the meniscus is pathognomonic for discoid meniscus. However, confirmation can be obtained by review of coronal images.<sup>5</sup> Additional criteria include a transverse meniscal diameter of more than 15 mm or involvement of greater than 20% of the tibial width.<sup>6</sup> In addition to classic MRI findings consistent with discoid meniscus, several additional radiographic abnormalities may also detected: meniscal cyst formation, anomalous attachment to the anterior cruciate ligament (ACL), proximal mediotibial collapse, squaring of the femoral condyle, widening

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**FIGURE 1.** Preoperative anterior-posterior radiograph of left knee revealing widened medial tibiofemoral joint space and squaring of the medial femoral condyle.

of the medial joint space, and discoid lateral meniscus of the same knee.<sup>1,3,4,7,8</sup>

Watanabe et al<sup>9</sup> originally described a 3-part classification scheme for lateral discoid menisci based on whether the meniscus was complete, incomplete, or lacked a posterior coronary ligament and capsular attachments (Wrisberg variant). There is no accepted classification scheme for the medial discoid meniscus; however, three variants have been described based on anterior horn insertion: normal, deficient insertion of the anterior horn onto the tibia with continuity of the anterior horn and anterior intermeniscal ligament over the ACL, and the anterior horn in continuity with ACL.<sup>10</sup>

The discoid meniscus is an anatomic variant and should not receive prophylactic operative intervention. The incidence of asymptomatic discoid menisci is unknown. Surgical management should be reserved for persistently symptomatic discoid menisci with saucerization to a peripheral rim of 6 to

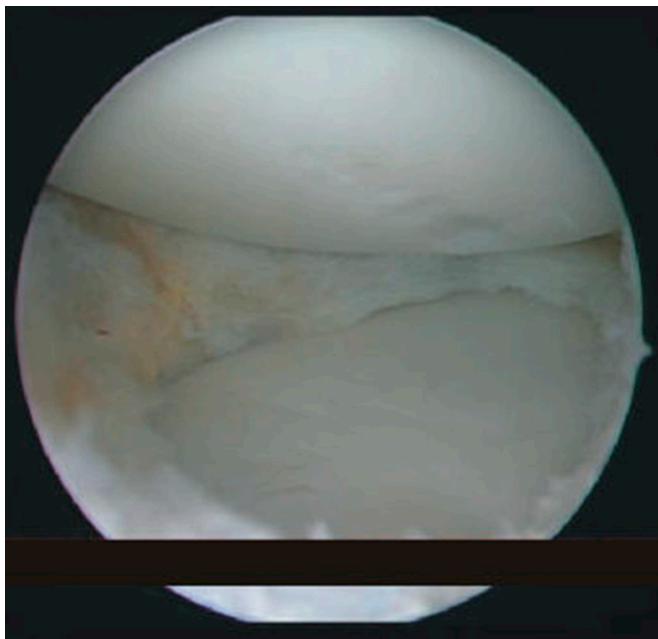


**FIGURE 2.** T2-weighted MRI coronal image confirming discoid medial meniscus.



**FIGURE 3.** Medial knee compartment with complete discoid meniscus and complex fraying of posterior capsular attachment.

8 mm.<sup>6</sup> When present, horizontal cleavage tears are managed with partial meniscectomy and, when possible, meniscal tear repair, especially with peripheral vascular zone involvement. While clinical outcomes after management of discoid medial menisci are still poorly characterized because of its rarity, short- and intermediate-term outcomes reported from limited



**FIGURE 4.** Medial knee compartment after sauerization of discoid medial meniscus.

series have for the most part been favorable.<sup>10</sup> Results of arthroscopic sauerization of lateral discoid menisci are perhaps more well characterized and could be extrapolated to the medial counterpart. Of a retrospective series of 11 patients who underwent arthroscopic sauerization, Ogüt et al<sup>11</sup> found that all 11 patients reported good ( $n = 2$ ) and excellent ( $n = 9$ ) outcomes at 4.5 years postoperatively. In the largest series to date, Ahn et al<sup>12</sup> found that 94% of cases (45 of 48 knees) reported good to excellent results at 10-year follow-up. Radiographic evaluation demonstrated some mild progressive degenerative changes of the lateral compartment in 40% of patients, corresponding to the degree of meniscectomy.

## CONCLUSION

With this case report, we discuss an adolescent with discoid medial meniscus and demonstrate successful treatment with arthroscopic partial meniscectomy and sauerization. Discoid medial menisci are a rare cause of medial knee pain and should be considered if classic MRI findings are associated with symptoms of pain, clicking, or other mechanical symptoms.

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