

Medial Discoid Meniscus: A Rare Condition. Case Report and Treatment Considerations

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ABSTRACT

Medial discoid meniscus is an extremely rare condition, with a reported incidence of 0.12-0.3%. It results from early developmental abnormalities that produce a thickened meniscus, compromising function and stability and predisposing to injury. Magnetic resonance imaging (MRI) is the main diagnostic tool, while arthroscopy is considered the gold standard for confirmation. Treatment depends on clinical symptoms and associated injuries, and may be conservative or surgical, with an emphasis on preserving as much meniscal tissue as possible. We report the case of a 14-year-old patient with left knee pain. MRI findings confirmed the diagnosis of medial discoid meniscus. The patient underwent arthroscopic saucerization with a favorable postoperative outcome.

Keywords: Knee; meniscus; arthroscopy.

Level of Evidence: IV

Menisco discoide medial: un cuadro infrecuente. Presentación de un caso y consideraciones sobre el tratamiento

RESUMEN

El menisco discoide medial es un cuadro extremadamente raro, tiene una incidencia del 0,12-0,3%. Se relaciona con trastornos en períodos tempranos del desarrollo, que generan un menisco de mayor grosor que afecta la función y la estabilidad, y predispone a las lesiones. Se puede diagnosticar mediante una resonancia magnética y la artroscopia es el procedimiento quirúrgico de elección. El tratamiento se basa en los signos y síntomas, y las lesiones asociadas, y puede ser conservador o quirúrgico, siempre tratando de preservar la mayor cantidad de menisco. Se presenta el caso de un paciente de 14 años con gonalgia izquierda. Los hallazgos en una resonancia magnética permitieron llegar al diagnóstico. El paciente fue sometido a una saucerización artroscópica y la evolución fue buena.

Palabras clave: Rodilla; menisco; artroscopia.

Nivel de Evidencia: IV

INTRODUCTION

The menisci are two fibrocartilaginous structures located between the medial and lateral femorotibial articular surfaces. Their morphology (C-shaped and semicircular, respectively), together with their viscoelastic properties, contributes to balance and load distribution, energy absorption, and provides stability, lubrication, and proprioception.¹

A discoid meniscus (DM) is a congenital anomaly caused by failure of apoptosis and resorption of central tissue during development.² It is characterized by thickening of the meniscus over the tibial plateau, formation of disorganized hypertrophic tissue, and meniscocapsular alterations. This, combined with poor vascularization, increases mechanical stress and predisposition to injury. The incidence of DM ranges from 0.4% to 17% and is highest in Asian populations.³ In 97-99% of patients, the lateral DM is affected, and up to 25% of cases are bilateral.⁴ Discoid medial meniscus (DMM) is extremely rare, accounting for 0.12%-0.3% of patients with DM.⁵ Its relevance lies in its location within a direct load-bearing zone which, in theory, entails a higher risk of injury and long-term degeneration.²

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Characteristic clinical findings include pain, joint effusion, locking, audible clicking, and limited range of motion during childhood or adolescence.⁶ The onset of symptoms and signs depends on the intrinsic abnormalities of the DM, activity level, or associated trauma. In many cases, it may be asymptomatic and go undiagnosed or only be detected in adulthood.³

Evaluation begins with radiographs, which help narrow the diagnosis and rule out differential diagnoses. Reported findings include increased femorotibial joint space, loss of lateral femoral condyle convexity, tibial plateau concavity, and the condylar cut-off sign (posterior cortical break of the lateral femoral condyle on the sagittal plane).⁴ Magnetic resonance imaging has a sensitivity of 61.7%-78.2% and a specificity of 90.2%-95.5% for confirming the diagnosis.⁶ Described findings include increased meniscal thickness, degenerative morphological alterations on axial images, and the bow-tie sign (three or more consecutive 5-mm sagittal slices showing continuity of both horns).⁴ Arthroscopy is the diagnostic procedure of choice, although it does not allow characterization of certain degenerative or intrasubstance lesions.⁶

Multiple classifications use morphological variables (complete vs incomplete), stability, and type of displacement, and relate these to prognosis and treatment options; however, all were developed for lateral DM, and there are no classifications specific to medial DM. The most widely used systems are those of Watanabe (1969), Klingele (2004), Good et al. (2007), and Ahn (2009).⁷ The latter is a findings-based classification.⁸

Treatment is determined by symptoms and meniscal characteristics. Conservative management is reserved for asymptomatic patients or those with mild symptoms. Surgery is indicated when there are disabling symptoms, functional limitation, locking, and signs of instability. Surgical options include saucerization for stable lesions (partial resection leaving a minimum meniscal remnant of 6-8 mm),⁹ partial meniscectomy for extensive tears or significant degeneration, or meniscal repair if associated tears are present.⁶

The prognosis is favorable, with pain relief and functional improvement; however, degenerative joint deterioration cannot be predicted, so tissue preservation is the most important protective factor during treatment.⁹

The aim of this report is to describe the clinical, radiological, and arthroscopic findings in a patient with a DMM, an extremely rare condition for which current management evidence is limited.

CLINICAL CASE

A 14-year-old male, with asthma and active in sports, presented to the Emergency Department with a two-week history of left knee pain sustained during soccer training. He had persistent pain associated with limping and intermittent locking. After initial evaluation and radiographs (Figure 1), outpatient management was chosen under the suspicion of a sprain. Symptoms decreased slightly, and locking ceased.

He was referred to an orthopedic subspecialist. Physical examination revealed tenderness on palpation of the medial joint line, painful flexion-extension with full range of motion (0-130°), and a positive medial McMurray test; the remainder of the exam was normal. Given these findings, an MRI of the left knee was requested (Figure 2). Imaging showed an enlarged medial meniscus (incomplete) without displacement, with intrameniscal degeneration.

Conservative management was indicated: rest from sports, nonsteroidal anti-inflammatory drugs, and physical therapy (20 sessions). At the end of treatment, the patient still reported pain and had functional limitations preventing competitive sports, so surgery was indicated.

Knee arthroscopy was performed through two portals (anterolateral and anteromedial). An incomplete, stable DMM was confirmed, covering approximately 80% of the medial tibial plateau; no associated lesions were detected (Figure 3). Using a shaver and arthroscopic forceps, saucerization of the central segment was performed, leaving an 8-mm circumferential, stable meniscal remnant. The portals were closed, and the procedure concluded uneventfully.

The patient was discharged with the knee immobilized in full extension for 2 weeks and a range-of-motion progression of 30° every 2 weeks to complete 8 weeks, along with physical therapy.

At subsequent follow-ups, significant improvement was noted, and he was cleared to return to sports 4 months after surgery, with annual follow-up thereafter.



Figure 1. Comparative anteroposterior and lateral knee radiographs. No signs suggestive of a meniscal defect are observed.



Figure 2. MRI of the left knee (T1 and DP sequences). Subtle meniscal thickening in the medial compartment with intrasubstance degeneration; no tears or other associated lesions.

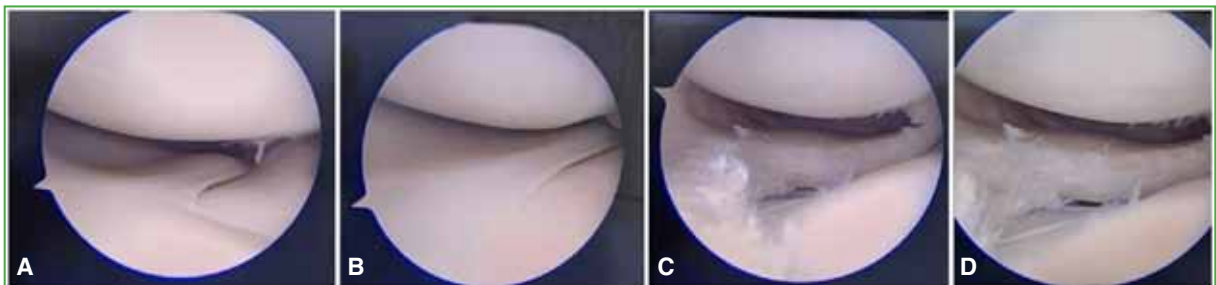


Figure 3. Diagnostic and therapeutic arthroscopy of the left knee. **A, B:** Medial discoid meniscus with partial involvement of the tibial plateau; no associated lesions. **C, D:** Disorganized fibers and saucerization of the medial discoid meniscus with a stable 8-mm remnant.

DISCUSSION

DMM is an extremely rare congenital anomaly. Its uniqueness stems not only from its low incidence but also from the biomechanical complexity of the medial compartment. Currently, there is no clear consensus on management, and evidence from lateral DM often must be extrapolated. However, important differences make management of medial lesions debatable.

In a study by Kim et al., saucerization of symptomatic DMM effectively relieved pain and improved joint function; however, there was a significant risk of progression to joint degeneration due to resection of meniscal tissue in a weight-bearing zone such as the medial compartment.⁸ Similarly, Lee et al. reported favorable short-term functional outcomes with saucerization but cautioned about the risk of long-term complications, including osteoarthritis.⁹ In a comparative study by Yamasaki et al., patients who underwent more extensive resections of DMM progressed more rapidly to osteoarthritis than those treated for lateral DM, underscoring the importance of minimizing resection in these cases.¹⁰

These authors emphasize that meniscal preservation is essential, given the constant exposure of the medial compartment to the load axis, which makes it more susceptible to long-term degenerative changes. Nonetheless, these are observational studies with limited statistical strength and do not yet provide valid recommendations for a definitive cutoff for the meniscal remnant.

Despite limited evidence, prior patient expectations and function must be considered. In the present case, given a stable DMM without associated lesions, conservative treatment was initially offered; however, due to persistent symptoms and functional loss (previous competitive activity), surgery was performed while preserving as much meniscal tissue as possible. Short-term results were favorable, and the patient fully resumed activities. Continuous follow-up is essential to detect potential long-term complications.

CONCLUSIONS

Management of DMM remains an area of uncertainty and debate in orthopedics. The rarity of this condition, coupled with the inherent risks of treating a key structure within a load-bearing compartment, demands careful consideration of therapeutic options. As more case reports are published and appropriate follow-up is carried out, evidence will emerge to guide safe treatment. Until then, management should prioritize preservation of as much meniscal tissue as possible.

Conflicts of interest: The authors declare no conflicts of interest.

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