

## Case Report

# Discoid Medial Meniscus: An Uncommon Case in an Even More Uncommon Patient Population

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## Keywords

Knee · Meniscus · Discoid meniscus · Arthroscopy

## Abstract

Discoid medial meniscus is an extremely rare anatomical variant; its symptomatic presentation is even more uncommon in adult patients. Surgery is indicated when conservative management fails, symptomatic adults and children are both surgically treated with partial meniscectomy and saucerization while maintaining a stable, peripheral rim. We report excellent results on our 44-year-old patient on 3-year follow-up.

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## Introduction

The first case of lateral discoid meniscus was reported by Young in 1889 [1], it is most commonly seen in the lateral meniscus. While reports of discoid medial meniscus are far and few in between (first reported by Cave and Staples in 1941) [2] and is even more rare to discover in a middle-aged patient [3]. Here, we present a report of a 44-year-old female with discoid medial meniscus that was successfully treated using partial meniscectomy with saucerization.

## Case Report

The patient first presented 10 years ago with a twisted ankle that was treated conservatively with NSAIDs and immobilization, shortly thereafter she complained of left knee pain. Treatment commenced with hyaluronic acid injections and pain killers (celecoxib,

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**Fig. 1.** AP radiograph of the patient's left knee showing increased medial joint space.

120 mg twice a day). Despite that, knee pain and swelling would periodically appear and then cease along the years.

She presented to our office complaining of sudden development of locking and restriction of motion along with persistent knee pain, she decided not to opt for surgical options at the time due to personal issues. She was referred to our hospital in June of 2020 complaining of pain, swelling and intermittent locking, and restriction of motion of the left knee.

On physical examination the range of motion was measured from 30 to 90° with limited extension and flexion, an elevated more prominent joint space was seen on the anteromedial joint line with an associated pop on flexion. McMurray's test was positive. She did not have a varus or valgus deformity.

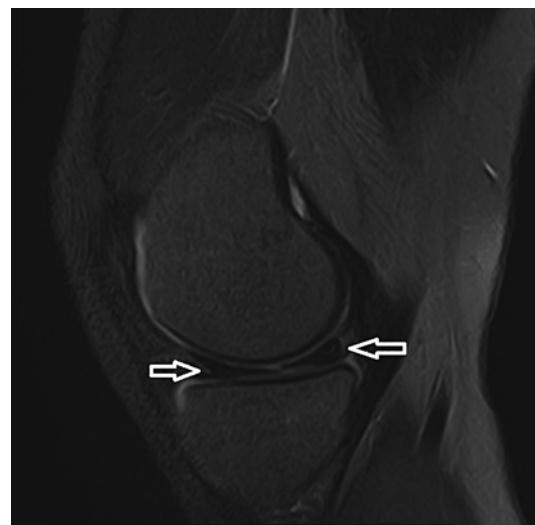
Preoperative radiographs showed widening of the medial joint space of the left knee (Fig. 1, 2) and MRI demonstrated a discoid medial meniscus covering the entire width of the medial portion of the tibial plateau with signal hyperintensity indicating a possible tear (Fig. 3–5).

Before surgery was attempted, conservative management was prescribed: local application of ice, celecoxib 120 mg once a day after meals for 5 days and a limited isometric exercise regimen with rest. However, the patient's symptoms did not resolve, and thus surgery was scheduled.

Arthroscopy was conducted beginning with the classic anterolateral portal and a discoid meniscus completely covering the medial portion of the tibial plateau was discovered. Upon further exploration, a cartilaginous defect on the patellar surface was discovered; all other anatomical knee structures were normal (Fig. 6). An anteromedial portal was created, and with the probe, further inspection revealed a complex tear of the medial meniscus (Fig. 7, 8). Using this two-portal

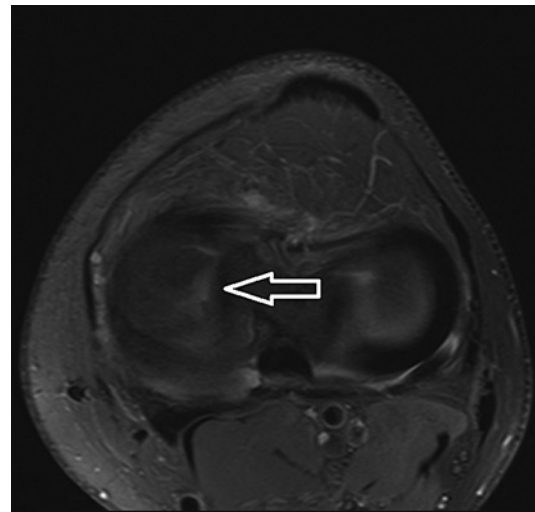


**Fig. 2.** Sagittal radiograph of the patient's left knee showing increased medial joint space.



**Fig. 3.** Sagittal MRI of the patient's left knee. Discoid tissue covering about 90% of the tibial plateau (arrows).

approach, the classical anteromedial and anterolateral portals, meniscectomy was performed, we also debrided the damaged cartilage and used the microfracture technique [4]. With the 4.2 mm shaver, basket punch, and cutter (Fig. 9, 10) we opted to maintain a peripheral rim of approximately 6.5 mm (Fig. 11). With the 4.2 mm shaver, we were able to approximate the width of the remaining edge of menisci and final saucerization was achieved (Fig. 12). Two-week follow-up reported



**Fig. 4.** Axial MRI of the patient's left knee. Discoid tissue covering about 90% of the tibial plateau (arrow).

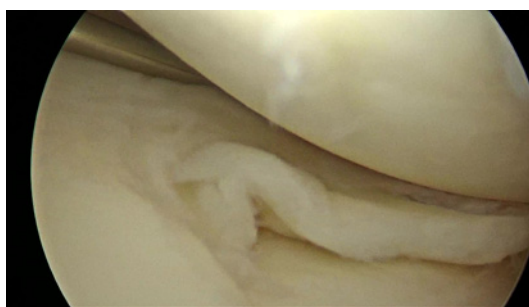


**Fig. 5.** Coronal MRI of the patient's left knee. Discoid tissue covering about 90% of the tibial plateau (arrow).

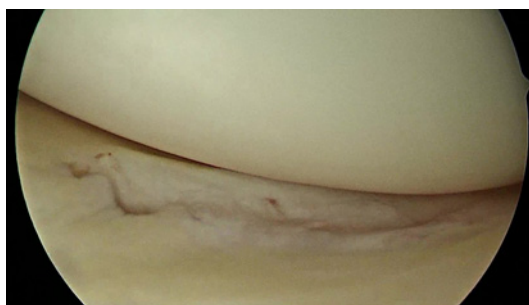


**Fig. 6.** Visualization of the discoid meniscus completely covering the medial portion of the tibial plateau.

excellent results and good range of motion. After 6 months, she reported no pain and has resumed normal activity. She had no complaints and we report excellent results (according to Ikeuchi's classification system) [5] on one- and 2-year follow-ups. On most recent follow-up (3-years), she reported that she has full range of motion of the left knee on both flexion and extension, her KOOS score was 91, and she reported mild weakness (+1) on her left quadriceps muscle.



**Fig. 7.** Probing the tear.



**Fig. 8.** Complex tear of the medial meniscus.



**Fig. 9.** Using a basket punch on the meniscus.



**Fig. 10.** Shaving of the discoid meniscus.

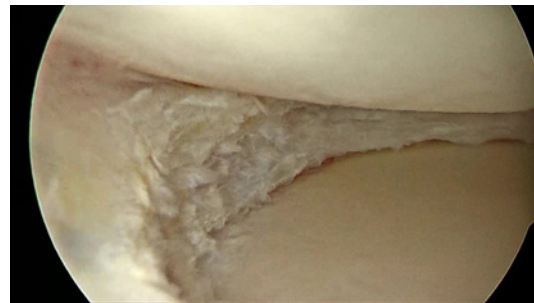
### Discussion

Discoid lateral meniscus is an uncommon abnormal congenital variant [6]; discoid medial meniscus in comparison is exceedingly rare [5, 7–9]. Discoid menisci (both lateral and medial) are mostly asymptomatic and are most often discovered when symptoms arise [3, 7–10]. Discoid menisci are more commonly discovered in early childhood and adolescents (particularly in those

**Fig. 11.** Using the 4.2 mm shaver to approximate a peripheral rim of 6.5 mm.



**Fig. 12.** Medial meniscus after saucerization.



who are physically active) than in adults [3]. In addition, adults tend to fare worse after surgical repair than children [11, 12]. Symptoms include pain, joint effusion, and knee locking, especially during flexion; the pain and effusion can be attributed to associated tears in the discoid medial meniscus where it occurs acutely and is more common in older children [3, 13, 14]. MRI can be used to diagnose the presence of a discoid meniscus demonstrating continuity between the anterior and posterior horn on three 5-mm sagittal sections [10, 15]; diagnosis can be confirmed using coronal slices. Upon diagnosis, an MRI on the contralateral, asymptomatic knee is recommended by certain authors [10]. Unlike with lateral discoid menisci where the Watanabe classification system can be used, there is no agreed upon system to classify medial discoid menisci thus we have used the Watanabe system to classify medial discoid menisci. Three variants of the discoid medial meniscus that are based on the insertion of the anterior horn, can either be normal, incomplete attachment of the anterior horn onto the tibia with continuity of the anterior horn and anterior intermeniscal ligament over the ACL and having the anterior horn be continuous with the ACL [16]. Treatment is reserved for symptomatic knees after failure of a trial of conservative treatment (including rest, local application of ice, and NSAIDs), unless instability due to a potential tear is present [17]. Prior to 1998, most discoid menisci were treated with total meniscectomy; further studies have demonstrated that total meniscectomy was associated with an increased risk of osteoarthritis compared to the unaffected knee [18–20]. Due to the paucity of literature regarding treatment and management of discoid medial meniscus, most cases of discoid medial meniscus have been treated using methods conventional for discoid lateral meniscus. As of now, partial meniscectomy (also known as saucerization) seems to be the treatment of choice, with protecting the fringe edge as much as conceivable to 4–5 mm [19] or 6–8 mm [18] and any tears should be repaired and sutured [18, 19].

### Conclusion

We discuss the management and treatment of a 44-year-old patient with a discoid medial meniscus using partial meniscectomy and saucerization. While most cases are asymptomatic and go undetected, symptoms mostly arise within the first two decades of life, making this case

highly unusual. Surgery is indicated in patients with symptomatic discoid meniscal tears and remains to be the treatment of choice after failed conservative management; particularly partial meniscectomy with saucerization and maintenance of the peripheral rim. The CARE checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000532002>).

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## Statement of Ethics

Written informed consent was obtained from the patient to publish their case along with accompanying images. This study protocol was reviewed and approved by the Ethics Committee at MedclubGeorgia on June 5, 2020.

## Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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The authors have not received any funding from external sources to declare.

## Author Contributions

George Rublev: investigation, writing the original draft, and acquisition of data and visualization. Levan Nachkebia: conceptualization, reviewing, editing, and supervising. Irakli Kartoza: acquisition of data, validation, and reviewing and editing. Irakli Gogua: conceptualization, visualization, acquisition of data, and data analysis. Mohamed Ahmed Mohamed: conceptualization, writing the original draft, and reviewing and editing.

## Data Availability Statement

All data generated or analysed during this study are included in this article and its online supplementary material. Further enquiries can be directed to the corresponding author.

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