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# Discoid Meniscus: An Uncommon Variant with Common Consequences

**Nourrelhouda Bahlouli*, Fatima Chait, Sfar Kaouthar, Salma Chenouni, Jamal El Feni and Oujdane Zamani**

*Department of Radiology, Mohammed V Military Hospital, Mohammed V University, Rabat, Morocco*

***Corresponding Author:** Nourrelhouda Bahlouli, Department of Radiology, Mohammed V Military Hospital, Mohammed V University, Rabat, Morocco.

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## Abstract

We report the case of a 16-year-old child who presented with a blocked knee. MRI revealed a malformation of the lateral discoid meniscus. Our work illustrates the radiological image of this malformation and describes diagnostic criteria for discoid meniscus.

***Keywords:*** *Discoid Meniscus; MRI; Malformation*

## Case History

A 16-year-old boy, with no significant past medical history, presented with complaints of knee locking. Clinical examination revealed signs consistent with a meniscal syndrome. Magnetic Resonance Imaging (MRI) was subsequently performed (Figure 1A-1C).

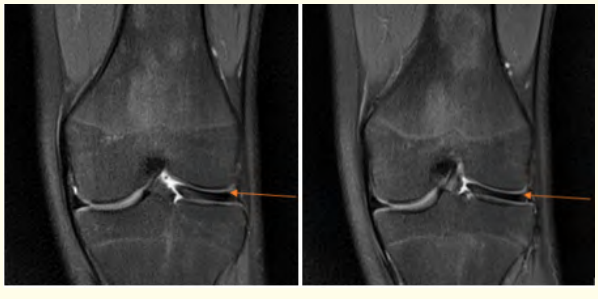

***Figure 1A***

***Figure 1B***

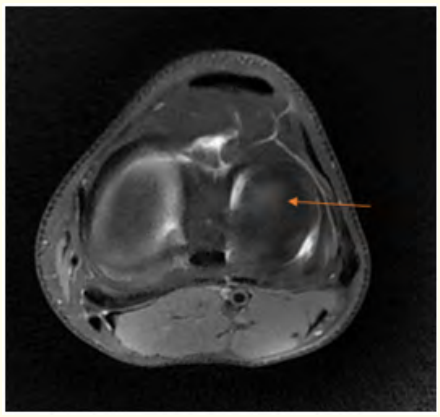

***Figure 1C***

***Figure 1A-1C:*** *MRI images in fat-saturated DP sequence showing the appearance of a complete lateral discoid meniscus, Type I, in:*

- *Coronal acquisition (Figure 1A): The central edge of the meniscus contacts the lateral tibial spine. No associated lesions are described.*
- *In sagittal acquisition (Figure 1B), there is no separation between the anterior and posterior horns of the meniscus. There is no anterior or posterior displacement, indicating the stability of the meniscus.*
- *Axial acquisition (Figure 1C).*

**Diagnostic**: Discoid Meniscus.

## Comments

The discoid meniscus is a congenital malformation, affecting the lateral meniscus in 95% of cases. Instead of the usual crescent shape, the meniscus adopts a "disc" shape. Several forms of discoid meniscus exist [1]. The more severe the anomaly, the earlier the symptoms will manifest. The thicker the meniscus, the higher the risk of injury. The peripheral and anterior areas are the most commonly affected.

Clinically, patients may experience a popping sound or difficulty during flexion and extension movements. Standard radiography has little diagnostic value, and MRI is the imaging modality of choice [2].

The diagnostic criteria include:

- Width in the coronal plane greater than 14 mm.
- The ratio between the minimum meniscal length and the maximum tibial length measured in the coronal plane should be greater than or equal to 20%.
- The ratio between the sum of the anterior and posterior horn thicknesses and the largest meniscal diameter measured in the sagittal plane should be greater than or equal to 75%.
- Three or more slices of at least 5 mm thickness, with continuity between the anterior and posterior horns (butterfly sign).
- Increased height along any part of the lateral meniscus compared to the medial meniscus [3].

Watanabe's classification, described in 1974, defines three types of discoid menisci [4], with a fourth type added by Monllau in 1998:

- Type I: Complete discoid meniscus that fully covers the tibial plateau (most common type). The tibial attachments of the meniscus are preserved.
- Type II: Incomplete discoid meniscus, exposing the tibial plateau. The tibial attachments of the meniscus are preserved.
- Type III: Wrisberg meniscus or hypermobile meniscus, characterized by the loss of attachment via the menisco-tibial ligament.
- Type IV: Ring-shaped discoid meniscus. The tibial attachments of the meniscus are preserved.

Ahn., *et al.* proposed an MRI classification based on the presence or direction of meniscal displacement: no displacement, anterocentral displacement, posterocentral displacement, and central displacement.

Maximal meniscal preservation should be the guiding principle in treatment, with meniscoplasty being the first-line procedure. In the case of associated lesions, management varies between repair and partial meniscectomy [5].

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