

Isolated congenital hypoplasia of the lateral meniscus: A rare case report without associated knee abnormalities

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Abstract

Congenital meniscal anomalies are uncommon, with most reported cases involving discoid morphology or abnormal horn attachments. Hypoplasia or agenesis of the meniscus is exceedingly rare and typically associated with other knee anomalies. We describe a rare case of isolated hypoplasia of the lateral meniscus in a young woman with no history of trauma or previous knee surgery. Clinical evaluation and imaging excluded other intra-articular pathologies. A conservative treatment plan was adopted, and surgical intervention was deferred due to the absence of mechanical symptoms or associated osteochondral lesions.

Keywords: Meniscus; Hypoplasia; Knee; MRI; Arthroscopy

1. Introduction

Meniscal abnormalities of congenital origin are infrequently encountered in orthopedic practice. Among these, discoid menisci and anomalous attachments of the meniscal horns are the most commonly reported variations [1]. Congenital hypoplasia or complete agenesis of the meniscus is particularly rare and, when present, is often found in conjunction with other structural anomalies of the knee joint [2]. These cases typically involve both the meniscus and adjacent structures such as the cruciate ligaments or femoral condyles, complicating diagnosis and treatment.

This report presents a unique case of isolated lateral meniscal hypoplasia in a young adult female with no previous trauma or surgical history, and no additional knee abnormalities. The diagnosis was made based on Magnetic resonance imaging (MRI) findings and clinical exclusion of other causes, and the decision was made to manage the case non-surgically.

2. Case presentation

A 28-year-old woman presented with persistent, non-traumatic left knee pain that had developed gradually over several months. She denied any history of injury, locking, instability, or mechanical symptoms such as clicking or catching. Her medical and surgical histories were unremarkable.

On clinical examination, the left knee showed full range of motion with no swelling, ligamentous laxity, or joint line tenderness. There were no signs of effusion, deformity, or malalignment. Special tests for meniscal and ligamentous injuries were negative.

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MRI of the left knee revealed a markedly small but anatomically shaped lateral meniscus with no evidence of tears, extrusion, or degeneration (Figure below). The cruciate and collateral ligaments were intact, and no bone marrow edema or chondral injury was detected. The medial meniscus appeared entirely normal.

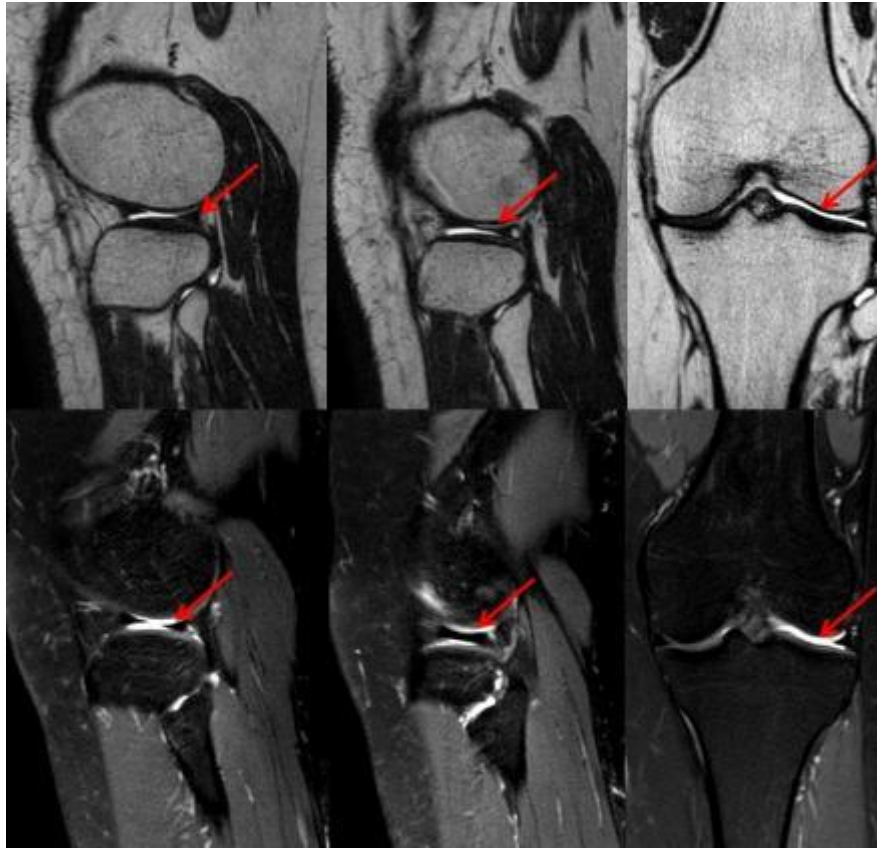


Figure 1 MRI of the left knee revealed a markedly small but anatomically shaped lateral meniscus with no evidence of tears, extrusion, or degeneration

Given the patient's age, the absence of trauma, surgery, or other identifiable pathology, a diagnosis of congenital hypoplasia of the lateral meniscus was established. Importantly, no osteochondral defects or ligament abnormalities were found. In light of the lack of mechanical symptoms or progressive findings, and considering the non-disruptive nature of the hypoplasia, we decided against immediate arthroscopy. Instead, a conservative management plan focusing on physiotherapy and activity modification was recommended.

3. Discussion

Congenital meniscal abnormalities, though rare, have been documented in various forms. Hypoplasia and agenesis are among the least common presentations and are often associated with other anomalies of the knee joint [2].

The characteristic shapes of the menisci are observed from the earliest stages of prenatal development and mature concurrently with the capsule and the coronary and cruciate ligaments. No abrupt developmental changes occur after birth. Instead, gradual changes take place, including a decrease in vascularization, progressing from the center to the periphery; an increase in size; and modifications in the meniscal configuration. The association of other knee anomalies with hypoplastic menisci may be due to the common mesenchymal origin of these structures [3,4,5].

Pfeil was among the first to describe meniscal hypoplasia in 1967, highlighting its rarity [6]. Most documented cases involve the lateral meniscus, and many are discovered incidentally or during evaluation for unrelated knee conditions [7,8, 9].

The most frequent congenital meniscal anomaly is the discoid meniscus, which is more common in the lateral than the medial meniscus. Other anomalies have been reported, including abnormal meniscal insertions, hypoplasia, and partial

deficiency. These anomalies were all diagnosed incidentally in patients with symptoms associated with trauma or other congenital anomalies. Thus, their exact incidence is unknown [8].

Several previously published reports detail hypoplastic menisci found during arthroscopy for ACL tears, after knee trauma, or in association with osteochondritis dissecans [9]. A few bilateral cases have been described, including one by Ohana et al., in which both lateral menisci were hypoplastic and discovered following sequential traumatic injuries [10, 11].

The role of the meniscus in shock absorption, load distribution, and joint stability is well-established, and its absence or deficiency may predispose to early degenerative changes. However, in the absence of cartilage damage or instability, and with no evidence of mechanical symptoms, surgical intervention may not be necessary. Our case reinforces the importance of individualized patient management and avoiding unnecessary procedures when congenital anomalies are asymptomatic or minimally symptomatic.

4. Conclusion

Congenital hypoplasia of the meniscus is a rare diagnosis, particularly when it occurs in isolation. This case demonstrates the importance of careful clinical and radiological assessment to distinguish congenital anomalies from post-traumatic or degenerative changes. In asymptomatic or mildly symptomatic cases with no associated intra-articular pathology, conservative treatment may be appropriate, and invasive procedures such as arthroscopy can be safely deferred.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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