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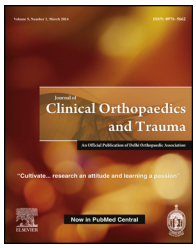

Case Report

Ossification of the discoid meniscus: A case report

Semra Duran [a,*], Mehtap Çavuşoğlu [a], Onur Kocadal [b]

[a] Ankara Numune Education and Research Hospital, Clinic of Radiology, Turkey
[b] Ankara Education and Research Hospital, Clinic of Orthopaedics and Traumatology, Turkey

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ABSTRACT

Meniscal ossification, or bone formation within the substance of the meniscus, is a rare entity. Magnetic resonance imaging allows the unequivocal diagnosis of a meniscal ossification. We aimed to present a case of discoid meniscal ossification, which is quite rare, with the emphasis on imaging findings.

1. Introduction

Meniscal ossification is mature lameller and cancellous bone containing fatty bone marrow surrounded by hyaline cartilage within the substance of meniscus.[1–3] Discoid meniscal ossification is exceedingly rare. Imaging is required to confirm the diagnosis and to assess the meniscal integrity. Standard radiographs and magnetic resonance imaging (MRI) have been reported useful in the diagnosis of meniscal ossification.[4] We aimed to present a case of discoid meniscal ossification with the emphasis on imaging findings.

2. Case report

A 42-year-old women presented with pain in the left knee joint lasting for nine months. The pain was intermitten in nature. There was no history of recent trauma or any other relevant past history. Physical examination showed a moderately painful swollen joint without any restriction of movement. Upon admission, no pathological findings were found at the patellofemoral joint or periarticular ligamentous structures on the physical examination. The plain radiographs obtained a wedge-shaped, like the meniscus, bony fragment at the lateral side of the knee joint (Fig. 1). MR imaging of this knee was performed to evaluate the ossific density. A well-defined lesion which was seen in the discoid lateral meniscus was isointense to the bone marrow on all pulse sequences, with a complete hypointense rim (Fig. 2a–d). The lesion size was 36*30*6.5 mm. This was reported as a meniscal ossification. The articular cartilage was also normal. Mild synovial effusion was detected. In addition, a simple cyst of the proximal fibula was detected.

The patient was treated conservatively with analgesics, anti-inflammatory drugs, activity modification and

* *Corresponding author*. Ankara Numune Eğitim ve Araştırma Hastanesi Talatpaşa Bulvarı/Ankara. Tel.: +90 312 508 48 71, 05327779406; fax: +90 312 310 20 26.
E-mail address: semraduran91@gmail.com (S. Duran).
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Fig. 1 – Anteroposterior view of the left knee showing corticated bone densities projected in the lateral aspect of the knee.

restrictions on weight-bearing for 20 days. After the treatment, the patient was able to return to her sportive activities a month later, and she had no complaint during routine daily activities in the first year after treatment.

3. Discussion

Meniscal ossifications are rare entities of the human knee.[1–3,5] They were first reported in 1931 and later by Burrows,[5] by Watson-Jones and Roberts[6] in 1934. Histologically, ossification demonstrates lameller and cancellous bone with fatty bone marrow surrounded by cortex, which is covered by hyaline cartilage.[1–3,7,8]

Many theories have been postulated regarding the aetiology of ossifications. They may be vestigial structures, as they are common in rodents, and domestic cats. They may present as a degenerative phenomen due to the ossification of mucoid degeneration. A traumatic phenomen suggests metaplasia or degeneration of the meniscus after an isolated knee injury or recurrent trauma results in ossification within the meniscus.[1–3,7–9] With all the controversies over the etiologic theory, post-traumatic degenerative pathogenesis is widely accepted. The repetitive mictotrauma to the less mobile discoid lateral meniscus brings out ossification at its attachment site.[3] In our case, there was no history of trauma. However, it is generally known that the knee joint is often exposed to minor traumas.

Most of the reported cases were in the medial meniscus.[1–13] Discoid meniscal ossification is exceedingly rare.[10,14] All ossifications reported in the literature existed in the posterior or anterior horn of the meniscus and no ossifications were seen in the middle segment.[11] In our case, the ossification was seen in the entire discoid meniscus in contrast to the literature.

Intermitten pain is the most common symptom but swelling and joint effusion can occur. A locking sensation is not usually experienced as would be expected with a free intra-articular body. It is not certain why a patient with a normal meniscus suddenly develops symptoms. One hypothesis is that the ossification continues to increase in size and that the focally enlarging menisci can cause pain by affecting adjacent innervated structures. Other authors have suggested that meniscal ossification can alter the contour of the meniscus, thus increasing the risk of a meniscal tear or degeneration.[6,12]

Menisci have an important role as the shock absorber between the femoral condyle and tibial plateau.[3,13] Once a posterior horn is avulsed or torn, the medial meniscus extrudes medially from the tibial margin. With extrusion, the meniscus is unable to resist hoop stresses and cannot shield the adjacent articular cartilage from excessive axial load. Over time, this can lead to symptomatic knee osteoarthritis.[3,13,15,16] Surgical repair of posterior horn meniscal avulsion prevents or slows down degenerative joint disease.[13,15,16] The chondral lesion can probably result from mechanical erosion by the firm bulging surface of the meniscal ossification due to repetitive microtrauma.[12] Chondral lesion, associated with meniscal ossification in the literature, is reported.[3,12]

Meniscal ossification is usually detected as an incidental finding on imaging, in patients who present with knee pain.[1–4,7] Ossifications are usually reported as loose bodies on plain radiographs.[1–10,14] Detection of a meniscus-like ossification in the knee joint should bring to mind the diagnosis of meniscal ossification, like in our case. MRI is the imaging modality of choice for comprehensive evaluation of the knee

Fig. 2 – (a) Coronal T1-weighted, (b) Sagittal T1-weighted (c) Coronal fat-suppression proton density weighted (d) Sagittal fat-suppression proton density weighted image of the left knee shows ossification in the discoid lateral meniscus with signal intensities equal to bone.

anatomy. A meniscal ossification on MRI has a characteristic appearance with central high signal on T1 – weighted images, due to normal fat bone marrow, surrounded by low signal on both T1 and T2 weighted images related to the cortical rim.[1,2,4,7–9,11] MRI also helps to identify associated abnormalities such as meniscal tears, ligament tears and avulsion, cartilage damage, and synovial effusion.[1,4,9] On the MRI, a simple cyst of the proximal fibula was also detected in our case.

The differential diagnosis that should be considered along with a meniscal ossification include osteochondral loose bodies, chondrocalsinosis, osteochondritis dissecans, and synovial osteochondromatosis.[1,8,12]

There is no concordance regarding treatment of meniscal ossification. However, most authors advise conservative treatment in the first instance, but arthroscopy and meniscectomy may be a choice of treatment for persistent symptoms.[2,4,7,9,12,13] Similar to the literature, the primary approach in our case was conservative. Surgery was not planned in our case due to the absence of persistent pain and decreased range of motion disturbances.

In conclusion, discoid meniscal ossification is a rare entity. MRI is the modality of choice for conclusively diagnosing meniscal ossification and thus avoiding unnecessary diagnostic and therapeutic interventions.

Conflicts of interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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