Meniscal Ossicle in the Lateral Meniscus: An Unusual Variant of a Rare Entity

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Abbreviations: MRI, magnetic resonance imaging

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Abstract

Meniscal ossicles are rare entities of the knee usually involving the medial meniscus. Lateral meniscal ossicles are exceedingly rare. We present a case of a lateral meniscal ossicle found incidentally after trauma. The etiology and characteristic findings on imaging are discussed.

Introduction

Meniscal ossicles are rare entities of the knee usually involving the medial meniscus. Lateral meniscal ossicles are exceedingly rare. We present a case of a lateral meniscal ossicle found incidentally after trauma.

Case Report

A 76-year-old man presented to his primary physician after a fall where he landed on his right knee. Although there was a negative Lachman’s anterior drawer sign on exam, a ligamentous injury was suspected.

Radiographs of the right knee were initially obtained which showed a large suprapatellar joint effusion and a subtle ossified structure projecting in the medial aspect of the lateral compartment of the knee (Fig 1).

An MRI of the knee demonstrated a nondisplaced fracture of the lateral patella (not shown). A 6 mm x 3 mm structure with fat signal intensity surrounded by a hypointense rim was identified within the anterior root of the lateral meniscus. Signal characteristics were that of bone, consistent with a meniscal ossicle (Figs. 2 and 3).

Figure 1. 79-year-old man with meniscal ossicle shown on AP and Lateral radiographs. The meniscal ossicle is visible
anteriorly on the lateral projection (black arrow). The ossicle is equivocal on the frontal view.
Figure 2. 79-year-old man with meniscal ossicle. A-E, serial MRI from anterior horn of lateral meniscus(a) toward meniscal root (c) and ACL (f). Note the meniscal ossicle (arrow, c).

Figure 3. 79-year-old man with meniscal ossicle. Coronal proton density MRI through root of anterior horn lateral meniscus again showing the meniscal ossicle (arrow).

Discussion

Meniscal ossicles are rare entities within the human knee. They were first described in 1931 by Burrows in a 25 year old male presenting with pain and swelling who was found to have an ossicle in the medial meniscus [1]. Histologically, the ossicles demonstrate cancellous bone with fatty bone marrow surrounded by cortex which is covered by hyaline cartilage [2]. Most are detected as an incidental finding as in this case. The most common presenting symptom is pain and less frequently a sensation of joint locking.

The true etiology of meniscal ossicles is under debate with three separate hypothesis which attempt to explain the origin. It is suspected to be a developmental structure as it can be a normal finding in animals such as rodents [2], cats [3], and dogs [4]. Another thought is that it arises from heterotopic ossification or an avulsion as a result of trauma to the meniscus. The third hypothesis is that mucoid degeneration leads to a focus of ossification.

A review of the literature by Prabhudesai [5] in 2003 found 53 reported cases, of which 28 had a history of trauma. In this study only three of the 53 cases were found to be in the lateral meniscus, and two of those three were in patients with multiple meniscal ossicles.
The differential diagnosis that should be considered along with a meniscal ossicle include osteochondral loose bodies, chondrocalcinosis, meniscal root avulsion, osteochondritis dissecans, and synovial osteochondromatosis [6]. A meniscal ossicle can be differentiated by its MRI characteristics which include an intrameniscal location, internal signal intensity of marrow, and a surrounding rim of low signal intensity corresponding to cortex [7]. Perhaps the most important reason to diagnose this accurately is to differentiate meniscal ossicles from loose bodies as it can allow the patient to avoid an arthroscopic procedure in which there may be a prolonged search for a loose body [8].

In conclusion, the meniscal ossicle is a rare entity, and is quite uncommon on the lateral side. By showing the typical signal characteristics and intrameniscal location, MRI can be helpful in distinguishing this from other more clinically significant abnormalities.

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