

A Woman With Unilateral Knee Pain in the Absence of Arthritis or Trauma

Stephen S. Shinault, DO, and Paul D. Clifford, MD

This case is presented to illustrate the imaging and clinical findings of a condition of interest to orthopedic surgeons. The initial findings are noted below, along with diagnostic considerations and differential diagnoses. The correct diagnosis is discussed on the next page.

CASE PRESENTATION

A woman in her mid-30s with no history of trauma or arthritis presented with left knee pain. Knee plain films and T₁-weighted magnetic resonance (MR) images were obtained.

Radiographic Interpretation

The knee plain films showed a well-circumscribed ossific density at the posteromedial joint without apparent donor site (Figure 1). Differential diagnoses were a loose intra-articular osteochondral fragment and a meniscal ossicle. The T₁-weighted MR images confirmed the well-circumscribed bright focus of bone-marrow signal intensity within the substance of a mildly attenuated posterior horn medial meniscus (Figure 2).

WHAT IS THE DIAGNOSIS?

Dr. Shinault is Fellow, Musculoskeletal Imaging, Applebaum Outpatient Center, University of Miami, Miami, Florida.

Dr. Clifford is Assistant Professor of Clinical Radiology, Department of Radiology, University of Miami Miller School of Medicine, Miami, Florida.

Requests for reprints: Paul D. Clifford, MD, Department of Radiology, Applebaum Outpatient Center, University of Miami, 1115 NW 14th St, Miami, FL 33136-2106 (tel, 305-243-5449; fax, 305-243-8422; e-mail, pclifford@med.miami.edu).

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Figure 1. Knee plain films show a well-circumscribed ossific density at the posteromedial joint without apparent donor site (arrows).



Figure 2. T₁-weighted magnetic resonance images confirm the well-circumscribed bright focus of bone-marrow signal intensity within the substance of a mildly attenuated posterior horn medial meniscus (arrows).

CORRECT DIAGNOSIS, TREATMENT, AND DISCUSSION

Meniscal ossicle is the correct diagnosis.

The meniscal ossicle, an uncommon entity with a prevalence of 0.15%,¹ has a characteristic location, almost exclusively within the posterior horn of the medial meniscus. Histologic analysis has shown these ossicles to be composed of cancellous bone with an immature peripheral hyaline cartilage matrix.²

The origin of the meniscal ossicle is somewhat controversial. Meniscal ossicles have been noted in animal populations, fostering the theory that they may represent an embryologic remnant that persists in humans. A post-traumatic etiology has also been suggested secondary either to chronic microtrauma or abrupt avulsion injury.

Other Conditions in the Differential Diagnosis

Arthrography and cross-sectional imaging modalities such as MR and computed tomography can be used to differentiate a loose osteochondral fragment from a meniscal ossicle by localizing the ossicle within the meniscus rather than free within the synovial space.

Treatments and Outcomes for Meniscal Ossicle

Limited arthroscopic débridement of the meniscal ossicle is favored for symptomatic lesions. Repairing the avulsed ossific fragment when a clear tibial donor site is identified has recently been proposed as a means of restoring the normal anatomy and function of the meniscus.³

“Arthrography and cross-sectional imaging modalities such as MR and computed tomography can be used to differentiate a loose osteochondral fragment from a meniscal ossicle.”

Theories offered in the case of repetitive microtrauma suggest that damage and tearing of the meniscal substance leads to metaplasia and hyalinization of the fibrocartilage of the meniscus. Ultimately, cartilaginous ossification results in formation of the mature meniscal ossicle. An avulsion injury of the tibia near the insertion of the posterior horn medial meniscus with implantation of the avulsed osteochondral nidus into the meniscus has recently been suggested as a possible etiology for a meniscal ossicle in a small series of arthroscopically confirmed cases.³

Most meniscal ossicles are asymptomatic. The symptomatic meniscal ossicle most commonly presents with knee pain.⁴ Pain may be associated with meniscal tear or altered meniscal contour. Patients may at times experience a locking sensation.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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