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The Knee



Case Report

Intra-articular osteoid osteoma simulating a painful fabella syndrome

Diego García-Germán^{a,b,*}, Segundo Sánchez-Gutiérrez^c, Ángel Bueno^d, Francisco Carballo^a, Diego López-González^e, Fernando Canillas^a, José Martel^d^a Orthopaedic Surgery Service, Hospital Central de la Cruz Roja San José y Santa Adela, Madrid, Spain^b Orthopaedic and Trauma Surgery Department, Hospital Universitario HM de Madrid-Torrelodones, Universidad San Pablo CEU, Madrid, Spain^c Traumatology and Orthopaedic Surgery Service, Hospital del Sureste, Arganda del Rey, Madrid, Spain^d Radiology Department, Hospital Universitario Fundación Alcorcón, Madrid, Spain^e Orthopaedic Surgery and Trauma Department, Hospital Universitario Fundación Alcorcón, Madrid, Spain

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ABSTRACT

We present a case of an intra-articular osteoid osteoma in the knee that was mistaken for a painful fabella syndrome after unsuccessful knee arthroscopy for the treatment of postero-lateral knee pain. In this case both the initial clinical presentation and the imaging proved to be deceiving. The diagnosis of intra-articular osteoid osteoma was considered only once typical clinical features appeared and a Computerized Tomography scan was performed. We discuss the difficult of diagnosing an intra-articular osteoid osteoma and the imaging of choice.

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1. Introduction

The diagnosis of postero-lateral knee pain can be difficult. Pain can have its origin in any of the multiple anatomical structures found in the region as well as being referred from distant locations. The most common cause is meniscal pathology but alternative diagnoses such as tumor should be considered. We present a case of an intra-articular osteoid osteoma that was mistaken for a painful fabella syndrome after an unsuccessful knee arthroscopy for the treatment of postero-lateral knee pain.

2. Case report

A 23-year-old man presented himself at our institution complaining of a 5-month history of pain in the postero-lateral aspect of the right knee. He had been treated with physiotherapy unsuccessfully. He had been referred to our institution for arthroscopic exploration of the knee.

He complained of mechanical symptoms with occasional catching and effusion. He presented with localized tenderness over the postero-lateral joint line with questionable meniscal clinical signs. The Magnetic Resonance Imaging (MRI) showed no clear pathology in

the lateral meniscus (Fig. 1A, B). There was still a high index of suspicion of intra-articular pathology and the patient proceeded to have an arthroscopic exploration. This revealed no meniscal pathology and a supero-lateral synovial plica was resected.

The symptoms did not improve after surgery. The pain worsened over the next month and became localized more posteriorly over the lateral femoral condyle. Examination now revealed localised tenderness over the fabella. A bone scan was performed which showed intense uptake in the region of the fabella, consistent with fabella syndrome (Fig. 2). The previous MRI had shown no pathology in the fabella.

An injection of the soft tissues around the fabella was performed with 2 ml of 2% of mepivacaine and 1 ml (6 mg) of betametason. The patient experienced immediate relief of his pain but only for a few hours. The injection was considered diagnostic for fabella syndrome. The patient was scheduled for fabellectomy and NSAIDs (ibuprofen 600 mg/8 hours) were prescribed.

The patient had a considerable improvement of pain with NSAIDs. The possibility of an osteoid osteoma was then considered. Previous plain radiographs and MRI were reviewed, no signs of osteoid osteoma were found (Fig. 1A, B). A Computerized Tomography (CT) scan was then performed that clearly showed the presence of an intra-articular osteoid osteoma nidus in the posterior aspect of the lateral femoral condyle, opposite to the fabella (Fig. 3).

CT-guided radiofrequency ablation was performed with immediate resolution of the symptoms. At 12 months follow-up the patient remains symptom-free and is fully satisfied with the treatment.

The patient agreed that data concerning the case could be submitted for publication.

* Corresponding author. Orthopaedic Surgery Service, Hospital Central de la Cruz Roja San José y Santa Adela, Avda. Reina Victoria 22-26, 28003 Madrid, Spain. Tel.: +34 639611629.

E-mail address: diegogerman@gmail.com (D. García-Germán).

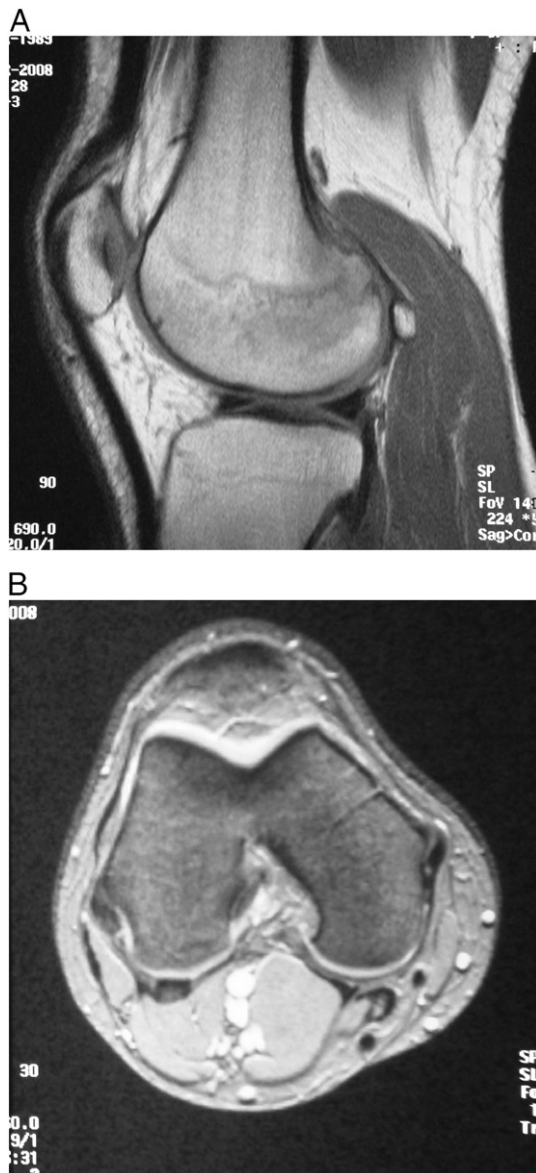


Fig. 1. A: Sagittal T1 MRI showing no signs of osteoid osteoma. (1.0T, Magnetom Expert Plus; Siemens, Erlangen, Germany). B: Sagittal T2 weighted gradient-echo axial MRI showing no signs of osteoid osteoma. (1.0T, Magnetom Expert Plus; Siemens, Erlangen, Germany).

3. Discussion

The diagnosis of postero-lateral knee pain can be difficult. Multiple anatomical structures could be the source of pain including the menisci, postero-lateral corner structures, the ilio-tibial band and the biceps femoris tendon. A painful fabella syndrome should be considered when tenderness is found over the posterior aspect of the lateral femoral condyle.

The fabella is a small sesamoid bone of the lateral head of the gastrocnemius muscle that articulates with the lateral femoral condyle. It is found in 11–13% of the population, being bilateral in 73% [1]. Painful fabella syndrome is described as mechanical postero-lateral knee pain, localised tenderness on compression of the fabella, pain exacerbated with full extension of the knee and immediate relief after fabellectomy [2]. Injection of the fabella can be both diagnostic and therapeutic. In cases in which only temporary relief is obtained, excision of the fabella is advocated [3]. Painful fabella syndrome can mimic other intra-articular conditions.

Thirteen percent of osteoid osteomas arise within a joint, the hip being most commonly involved [4]. The diagnosis of intra-articular osteoid osteoma is challenging because the clinical presentation can be misleading. Unlike a classical osteoid osteoma night pain is not typical [4,5]. Joint tenderness, soft tissue swelling, synovitis and joint effusion are common [6]. The knee is at particular risk of delayed diagnosis because of the high incidence of other intra-articular pathology, particularly meniscal lesions [5]. If the diagnosis is delayed then the presentation can simulate a monoarthritis, further confusing the correct diagnosis [5].

The mean time to diagnosis of an intra-articular osteoid osteoma is 26.6 months compared to 8.5 for extra-articular locations (range from 4 months to 5 years) [7].

Franceschi et al report on 4 patients in whom intra or juxta-articular osteoid osteoma diagnosis was delayed from 1 to 10 years [8].

Georgoulis et al reported that 40% of patients presenting with knee pain from an osteoid osteoma were erroneously subjected to an arthroscopy. The mean time interval between arthroscopy and osteoid osteoma diagnosis was 11.5 months [9]. Not only can misdiagnosis lead to arthroscopy but also infiltration, immobilisation, arthrotomy and patellectomy [5].

Stoffelen et al. stated that clinical symptoms, more specifically response to NSAIDs, could be the most reliable diagnostic factor and could lead to the consideration of osteoid osteoma in atypical knee pain [8,10]. High levels of prostaglandin in the nidus could explain the good response to NSAIDs [6].

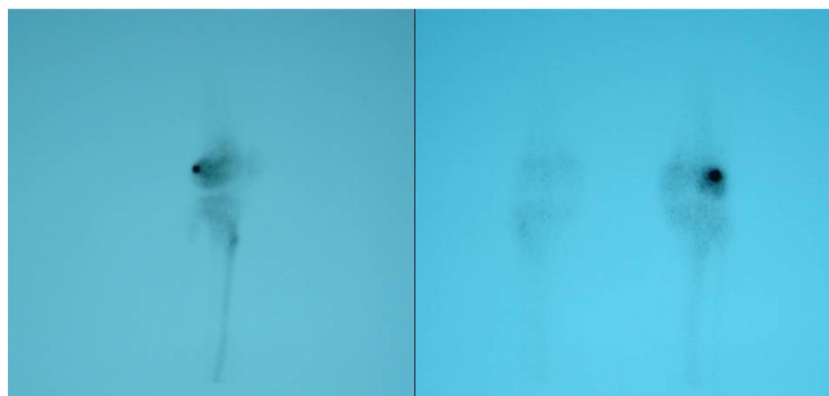


Fig. 2. Bone scan showing increased uptake.

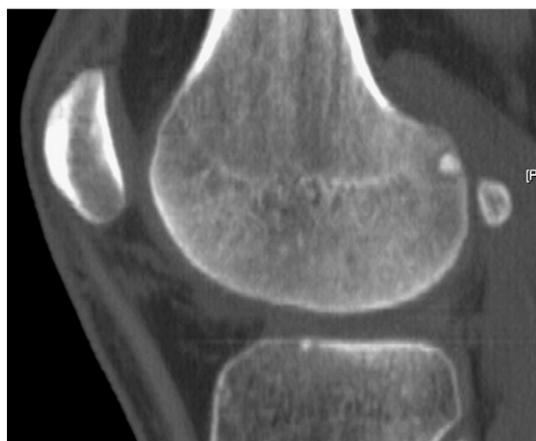


Fig. 3. Sagittal reconstruction CT-scan clearly showing the presence of an osteoid osteoma nidus.

Not only can the clinical presentation of intra-articular osteoid osteoma be difficult to interpret, but the imaging can also be misleading. The difficulties in correctly diagnosing osteoid osteoma in patients presenting with knee pain are illustrated by the fact that plain radiographs may only diagnose correctly 20% of the cases [9].

The widespread use of MRI could lead to underdiagnosing some bone lesions and may result in inappropriate and unnecessary surgery. Unfortunately MRI is often requested as first line imaging when dealing with knee symptoms and radiologists are often unaware of the clinical presentation. Oedema seen on MRI imaging may obscure the nidus [11], and compared to CT, MRI could fail to accurately identify a particularly small nidus in 50% of the cases [1]. The relatively poor accuracy of MRI in identifying the nidus in these cases is well documented [4,12].

The use of contrast enhanced MRI has been shown to be more sensitive in diagnosing osteoid osteoma [13,14] with dynamic gadolinium-enhanced MRI showing increased diagnostic confidence for osteoid osteoma in atypical locations compared to CT scan and non-enhanced MRI in one study [14]. In our case the patient had been referred to our institution for arthroscopic exploration of the knee. The imaging tests had been performed elsewhere. No contrast had been used and only T1 sequences (Fig. 1A) and axial T2 weighted gradient-echo (Fig. 1B) had been obtained, (which are very good anatomically but lack in sensitivity for oedema). The time lapse of 7 months between the MRI and the CT scan, and the progression of the lesion during that time could also explain the imaging discrepancies.

CT scans have been proven to accurately show the location, nidus, and other characteristic features of osteoid osteoma. CT scans correctly diagnose an osteoid osteoma in 67% of the cases compared to MRI which only diagnose 19% [11].

Bone scan can also be confusing. Although a typical double density sign has been observed, this is not always present and, as in our case, can lead to an incorrect diagnosis if different pathology is suspected in the same location [4]. Bone scan could be useful in localizing the

lesions when it is of uncertain location and then CT scan could be used to confirm the diagnosis [11].

Various treatments have been proposed ranging from open excision to arthroscopic assisted resection [15]. CT-guided radiofrequency ablation has been gaining popularity in recently due to the low rate of complications together with a success rate of around 90–98% and up to 100% if the treatment is repeated [16,17].

In conclusion we present a case that clearly shows the difficulty in correctly diagnosing intra-articular osteoid osteoma. In this case both the clinical presentation and the imaging were misleading. Only when typical clinical features appeared, was the possibility of osteoid osteoma considered. We stress the importance of an appropriate clinical history and the need to consider uncommon causes of knee pain when MRI is not conclusive.

4. Conflict of interest statement

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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