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Case Report: Giant Extrasynovial Osteochondroma in the Infra-Patellar Fat Pad of Knee

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Abstract

Extraskeletal paraarticular osteochondromas are a rare benign intracapsular tumour. They are caused by osteocartilaginous metaplasia in the paraarticular soft tissue of the joint. Here we present a case of 38-year-old woman attended with a complaint of a enlarged lump on her left knee, along with insidious onset of pain and limited range of motion. Plain x-ray and MRI radiographs showed a partially calcified giant mass in the infra-patellar fat pad. The patient underwent removal of the mass. Histopathology confirmed the diagnosis of extraskeletal paraarticular osteochondroma. Surgical excision can effectively treat this condition with no recurrences. If not addressed, it can progress to patellar tendinopathy and functional impairments.

Keywords: *Osteocartilaginous Metaplasia, Paraarticular Osteochondromas, Patellar Tendinopathy.*

INTRODUCTION

Common osteochondromas are benign tumors that arise prior to maturity and continue to grow away from the joints until the patient attain skeletal maturity. They originate from the metaphyseal region of long bones and feature mature bone with cartilaginous cap and medulla which is continuous with the medullary cavity of long bones (1).

Extraskeletal para-articular osteochondroma, also referred to as intracapsular chondroma, tends to develop around the knee, specifically at the infrapatellar fat pad of Hoffa. It emerges from the capsule /or connective tissue close to the joint capsule without any bony or joint continuity as a result of osteocartilaginous metaplasia (2).

The present study reports a case of large extrasynovial osteochondroma of the knee that was surgically removed. It also addresses the clinical and imaging characteristics, histopathology and differential diagnosis.

CASE REPORT

A- 38 -year-old woman arrived with a complaint of left knee slowly growing mass associated with insidious onset of pain and limited range of motion. Physical examination revealed a palpable hard retropatellar mass associated with patellar tendinopathy in her left knee joint. The flexion / extension arc of motion was significantly decreased with associated local edema and tenderness related to patellar tendon. There was a minor left knee effusion.

Plain x-ray Radiographs showed sharply marginated, partially calcified giant mass in the infra-patellar fat pad (Figure 1). Further non-contrast enhanced Magnetic Resonance Imaging (MRI) was performed which revealed; on T1-weighted MR images, the mass had mostly low signal intensity, but there were central spots with significant signal intensity that corresponded to calcification. The T2-weighted MRI images showed heterogeneous masses with high signal intensity. The menisci and cruciate ligaments were normal. There was no evidence of synovial thickening or hemorrhage, the picture pattern indicated infra-patellar extrasynovial osteochondroma (SOC) distending the infra-patellar bursa with tendinopathy of infra-patellar tendon (Figure 2). Computarized tomography (CT) guided biopsy was done to exclude malignancy and to confirm diagnosis before any surgical procedure was done.

The masses were excised surgically by an open anterior approach with complete removal of the nodules and partial synovectomy (Figure 3). Macroscopic examination revealed a bony hard extrasynovial mass measuring 5 x 4.5 x2 cm and other masses with dimension 5.5 x 4 x1.5 cm sent to pathological examination. Microscopic examination revealed mature bony trabeculae separated by vascularized stroma and covered by cartilaginous cap with no malignancy.

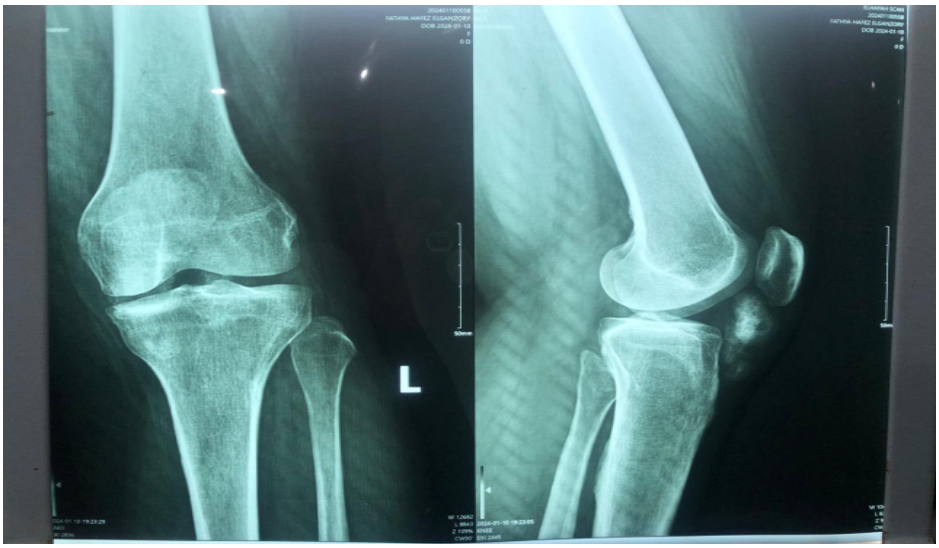

Figure 1. Anteroposterior and lateral x-ray radiographs of a 38-year-old female's left knee reveal a distinct calcified ovoid lesion in the infra patellar fat pad, Bone trabeculae are seen . There is no continuity between the adjacent bones.

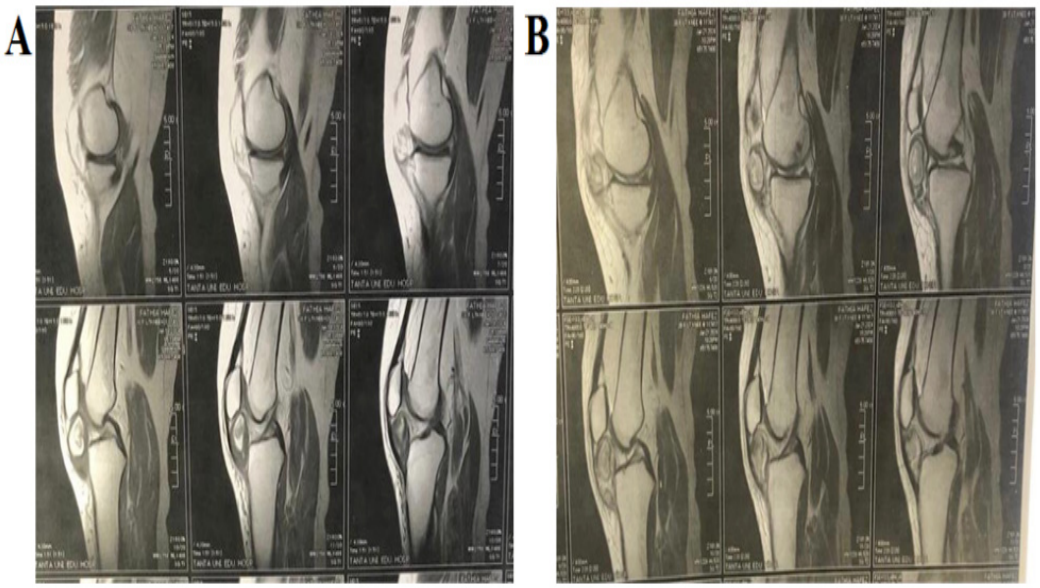

Figure 2. Magnetic resonance imaging of the left knee. A) Heterogeneous mass with high signal intensity in T2. B) Low signal in T1 MRI with evidence of calcification.

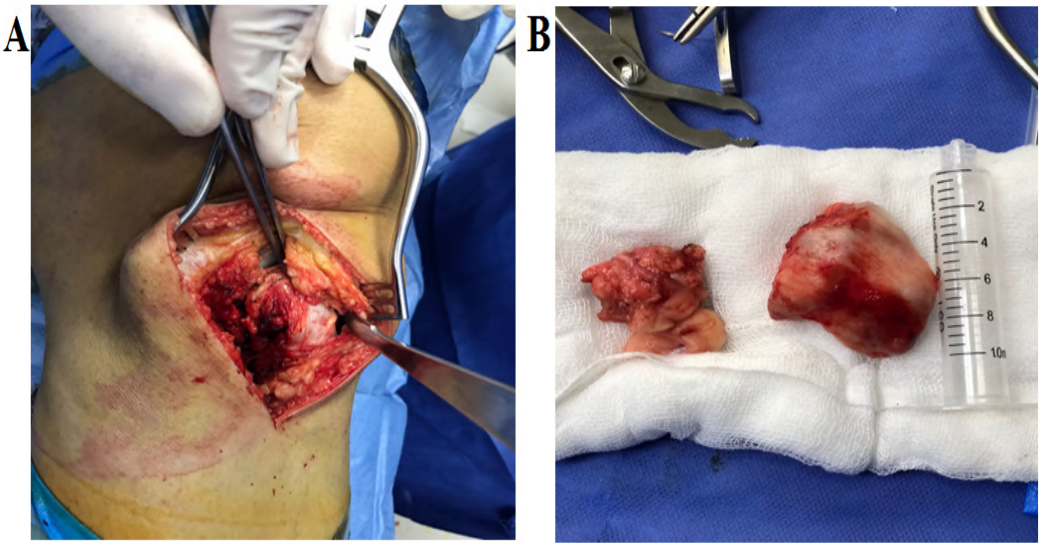

Figure 3. A) left knee joint exposed by open surgery. B) A large loose masses of around 5x4x2 cm isolated from the left knee joint.

DISCUSSION

Osteochondromas are common bone tumors that are considered not being real neoplasms but rather hyperplastic–dysplastic developmental abnormalities of the growth plate. They account for 20 to 50 percent of all benign bone tumors (3). Extraskeletal osteochondromas are infrequent and differ from skeletal osteochondromas. Extra-skeletal chondromas arise from soft-tissue adjacent to the joint and come in three different forms: para-articular chondromas, synovial chondromatosis, and soft tissue chondromas (1). Metaplasia of mesenchymal cells is the most likely pathogenic mechanism. Although they can affect individuals of any age. extra-skeletal chondromas, are most frequently found during fourth to sixth decade of life. The majority of these entities form around the knee, but they can occur in any joint (4).

This case report details the clinical presentation, diagnostic process, and surgical management of a middle aged woman with a slowly growing mass in her left knee, specifically identified as infra-patellar extrasynovial osteochondroma (SOC). Osteochondromas are typically benign bone tumors that are commonly found near the growth plates of long bones. However, the occurrence of an infra-patellar extrasynovial osteochondroma is a rare entity, making this case particularly noteworthy.

The patient presented with a left knee mass associated with insidious pain and a restricted range of motion, typical of mechanical obstruction caused by a space-occupying lesion. Physical examination findings included a palpable retropatellar mass, patellar tendinopathy, local edema, tenderness, and minor effusion, all indicative of a significant pathological process affecting the knee joint's functionality. The decreased flexion/extension are further emphasized the mass's impact on joint movement.

Initial plain radiographs demonstrated a sharply demarcated, partially calcified mass within the infra-patellar fat pad. These radiographic features suggested a benign etiology but warranted further imaging to elucidate the mass's nature and its relationship to surrounding structures. Non-contrast MRI provided additional clarity: T1-weighted images showed mostly low signal intensity with central high-intensity spots corresponding to calcifications, while T2-weighted images revealed heterogeneous high signal intensity. These imaging characteristics, coupled with the absence of meniscal or cruciate ligament abnormalities and lack of synovial thickening or hemorrhage, supported the diagnosis of an extrasynovial osteochondroma.

The differential diagnosis for a calcified mass in the knee includes chondrosarcoma, synovial osteochondromatosis, and other benign lesions such as myositis ossificans. However, the absence of malignancy signs (such as aggressive growth patterns or periosteal reaction) on imaging and the specific MRI features helped narrow the diagnosis. The CT-guided biopsy was crucial in excluding malignancy and confirming the benign nature of the lesion before proceeding with surgical intervention. Surgical excision of the masses was performed through an open anterior approach and the pathological examination confirmed the diagnosis.

Reith et al presented the following criteria for diagnosing a lesion as para-articular osteochondroma: (a) The lesion appears radiographically and grossly as a single, dominating mass. (b) Histopathologically, the mass is composed of both bone and cartilage, and it is organised similarly to normal osteochondromas. (c) lesion is not intra-articular, which means it does not develop within the synovial lining of a joint (2). the phrase 'giant intra-articular extrasynovial osteochondroma' was initially created by Maio et al. (4).

Mulcahy and Hoch reported a case of a 25-year-old female presented with a two-year history of gradually enlarging right knee mass. Clinical examination revealed a nonpainful firm mass, 3 × 5 cm in the anterolateral aspect of the proximal tibia. Radiographs of the right knee showed an ovoid calcified mass in the Hoffa's fat pad. T1-weighted coronal image of MRI showed an ovoid mass in the Hoffa's fat. The mass showed similar signal intensity to the peripheral muscle, and a lobulated central osseous lesion with iso-signal intensity to the bone. A T2-weighted sagittal image showed diffuse, heterogeneous, high-signal intensity, with a central lesion showing a low-signal-intensity rim. The pathological assessment revealed extraskeletal para-articular osteochondroma (5).

The successful excision of the infra-patellar extrasynovial osteochondroma typically results in symptom relief and restoration of joint function. Long-term follow-up is essential to monitor for any recurrence or complications, although recurrence is uncommon with complete resection of benign osteochondromas. The patient's prognosis is generally excellent following surgical management, with the expectation of significant improvement in pain and range of motion (6).

CONCLUSION

This case underscores the importance of a thorough clinical and radiological evaluation in diagnosing infra-patellar extrasynovial osteochondroma. The combination of physical examination, imaging studies, and histopathological confirmation is critical in distinguishing benign lesions from malignant processes and planning appropriate surgical intervention. Given the rarity of this condition, reporting such cases contributes valuable information to the medical literature and aids in enhancing the understanding and management of similar cases in the future.

REFERENCES

1. Helpert C, Davies AM, Evans N, Grimer RJ. Differential diagnosis of tumours and tumour-like lesions of the infrapatellar (Hoffa's) fat pad: pictorial review with an emphasis on MR imaging. Eur Radiol. 2004;14(12):2337-2346.

2. Reith JD, Bauer TW, Joyce MJ. Paraarticular osteochondroma of the knee: report of 2 cases and review of the literature. Clin Orthop Relat Res. 1997;(334):225-232.

3. Murphey MD, Choi JJ, Kransdorf MJ, Flemming DJ, Gannon FH. Imaging of osteochondroma: variants and complications with radiologic-pathologic correlation. Radiographics. 2000;20(5):1407-1434.

4. De Maio F, Bisicchia S, Potenza V, Caterini R, Farsetti P. Giant intra-articular extrasynovial osteochondroma of the knee: a report of two cases. Open Orthop J. 2011;5:368-371.

5. Mulcahy H, Hoch B. An extraskeletal para-articular osteochondroma of Hoffa's fat pad. Radiol Case Rep. 2015;5(4):420.

6. Babu S, Vaish A, Vaishya R. Outcomes of total knee arthroplasty in synovial osteochondromatosis: a comprehensive review. Journal of Arthroscopy and Joint Surgery. 2020; 7(3):111-115.

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