RESEARCH PAPER

# A Case Report of Giant Extrasynovial Osteochondroma of the Knee

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**Abstract**

Osteochondroma, though typically a tumor of younger individuals, should not be excluded from the differential diagnosis of knee pain in elderly patients. Symptomatic lesions, even in uncommon locations such as the infrapatellar region, can be effectively managed with surgical excision, leading to significant improvement in function and quality of life. This case report presents an atypical occurrence of an osteochondroma in a 65-year-old female, located in the infrapatellar region of the right knee. The patient experienced progressive knee pain and swelling, alongside mechanical symptoms such as locking and catching, which significantly impaired her mobility. Clinical examination revealed a firm, non-tender mass in the infrapatellar area, accompanied by mild joint effusion and restricted range of motion. Diagnostic imaging, including X-rays, MRI, and CT scans, confirmed an osteochondroma in the infrapatellar region, characterized by a pedunculated bony outgrowth with a 1.5 cm cartilaginous cap, with no signs suggesting malignant transformation. Due to the symptomatic nature and impact on the patient's quality of life, surgical excision was performed via a medial parapatellar approach, achieving complete removal of the lesion. The postoperative course was uneventful, with marked improvement in symptoms and restored knee function. This case highlights the importance of including osteochondroma in the differential diagnosis for knee pain in elderly patients and demonstrates the effectiveness of surgical intervention in managing symptomatic lesions in uncommon anatomical locations.

**Keywords:** Osteochondroma, elderly, infrapatellar, extrasynovial, knee, surgical excision

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## Introduction

Osteochondromas are the most common benign bone tumors, accounting for approximately 20-50% of all benign osseous neoplasms [1]. These cartilage-capped bony projections typically arise from the metaphyseal regions of long bones, most commonly the distal femur, proximal tibia, and proximal humerus [2]. The lesions develop during skeletal growth and are usually diagnosed in patients under 30 years of age, often as incidental findings or during evaluation for painless swelling [3]. Most osteochondromas are solitary and asymptomatic, requiring no clinical intervention unless complications arise.

The occurrence of osteochondromas in older adults is infrequent and poses diagnostic challenges, as symptoms can mimic more common degenerative joint diseases

such as osteoarthritis or meniscal injuries [4]. When these lesions present with pain, swelling, or mechanical symptoms in the elderly, concerns about malignant transformation or other differential diagnoses including synovial chondromatosis, loose bodies, or neoplastic processes must be considered [5].

Extrasynovial osteochondromas arising in the infrapatellar region are particularly rare. The infrapatellar fat pad (Hoffa's fat pad) is an intracapsular, extrasynovial structure that can occasionally harbor such lesions [6]. Symptomatic osteochondromas in this location may interfere with the extensor mechanism of the knee, producing mechanical symptoms that significantly impact mobility and quality of life [7].

This case report describes a rare presentation of a symptomatic giant extrasynovial osteochondroma in the infrapatellar region of a 65-year-old female. The purpose of this report is to highlight the importance of considering osteochondroma in the differential diagnosis of knee pathology in older adults and to demonstrate the role of imaging and surgical intervention in effective management.

**Case Presentation**

A 65-year-old female presented to the orthopedic outpatient department with a chief complaint of right knee pain and swelling that had progressively worsened over the preceding year. The pain was described as a dull ache, exacerbated by activity and partially relieved by rest. Additionally, the patient experienced mechanical symptoms including locking and catching sensations during knee movement, which significantly impacted her mobility and quality of life. She reported no history of trauma to the knee. Her past medical history was unremarkable, and there was no family history of bone tumors or hereditary multiple exostoses.

**Physical Examination:** Inspection revealed visible swelling on the inferior aspect of the right knee. Palpation demonstrated a firm, non-tender, immobile mass in the infrapatellar region. Mild joint effusion was present. Range of motion was limited, particularly in flexion (active flexion reduced to 90 degrees compared to 130 degrees on the contralateral side). The extensor mechanism was intact, and neurovascular status of the limb was normal.

**Imaging Findings:** Initial anteroposterior and lateral knee radiographs showed a well-defined, bony outgrowth arising from the inferior aspect of the patella, consistent with an osteochondroma (Figure 1). The lesion was pedunculated with continuity between the medullary cavity of the lesion and the underlying bone. Magnetic resonance imaging (MRI) provided detailed visualization of the lesion, demonstrating a pedunculated bony projection with a cartilaginous cap measuring approximately 1.5 cm in thickness (Figure 2). There were no signs of malignant transformation such as cap thickness exceeding 2 cm, irregular margins, or surrounding soft tissue edema. Computed tomography (CT) scan confirmed the continuity between the lesion and the underlying bone and demonstrated a soft tissue density lesion in the medial aspect of Hoffa's fat pad with characteristic ring and arc pattern of calcification (Figure 3). Differential considerations included synovial chondromatosis and osteochondroma.

**Diagnosis:** Based on the clinical presentation and imaging findings, a diagnosis of extrasynovial osteochondroma of the infrapatellar region was confirmed.

**Surgical Management:** Given the patient's significant symptoms and the impact on her daily activities, surgical excision was deemed necessary. The procedure was performed under spinal anesthesia. A medial parapatellar approach was utilized to access the lesion, providing excellent exposure of the infrapatellar region (Figure 4). The osteochondroma was identified arising from the posterior aspect of the patella, extending into Hoffa's fat pad. The lesion was excised en bloc, ensuring complete removal of the cartilaginous cap (Figure 5). Intraoperative findings were consistent with preoperative imaging. The wound was irrigated thoroughly, hemostasis was achieved, and the extensor mechanism was carefully preserved. Closure was performed in layers over a drain.

**Postoperative Care:** The patient was placed in a knee immobilizer immediately post-surgery. Pain management was achieved with oral analgesics. Early mobilization with assistance was encouraged to prevent joint stiffness. The drain was removed on the second postoperative day. The patient was discharged on postoperative day three with instructions for routine wound care and follow-up.

**Outcome and Follow-Up:** At the six-week follow-up, the patient reported marked reduction in pain and improved knee function. Physical examination showed no signs of recurrence, and the surgical site was healing well. Range of motion had improved significantly, with flexion returning to 125 degrees. Repeat radiographs confirmed complete excision of the lesion with no evidence of residual mass (Figure 6). At three-month

follow-up, the patient had returned to all activities of daily living without limitation.

**Discussion**

Osteochondromas are the most common benign bone tumors, typically diagnosed in individuals under 30 years of age [8]. These lesions usually arise from the metaphyseal regions of long bones and often remain asymptomatic unless they impinge on surrounding structures [9]. While most cases are discovered in adolescence or early adulthood, osteochondromas can occasionally present later in life, either due to delayed symptom onset or incidental discovery [10]. Such presentations in the elderly are rare and may be misattributed to more common degenerative conditions.

In this case, a 65-year-old female presented with progressive knee pain, swelling, and mechanical symptoms including locking and catching. Imaging revealed a pedunculated osteochondroma in the infrapatellar region—an uncommon location for this tumor, particularly in an elderly patient. The lesion likely developed during earlier skeletal growth but became symptomatic due to gradual enlargement or irritation of adjacent soft tissues, including the patellar tendon and infrapatellar fat pad. This phenomenon has been described previously by Turhan and colleagues, who reported a giant extrasynovial osteochondroma in the infrapatellar fat pad as an end-stage presentation of Hoffa's disease [11].

Extrasynovial osteochondromas in the infrapatellar area are rare but clinically significant, as they may interfere with the extensor mechanism of the knee and limit mobility [12]. The mechanical symptoms observed in this patient—locking and catching—can mimic meniscal injuries or osteoarthritic changes, potentially delaying accurate diagnosis [13]. Panta and colleagues emphasized that para-articular extrasynovial osteochondromas of the infrapatellar fat pad should be considered in patients presenting with anterior knee pain and mechanical symptoms, even in older age groups [14].

Imaging plays a crucial role in the diagnosis and management of osteochondromas. Radiographs typically demonstrate a bony outgrowth with continuity between the medullary cavity of the lesion and the underlying bone [15]. MRI is essential not only for identifying the lesion but also for assessing cartilage cap thickness, which helps rule out malignant transformation [16]. A cap thickness less than 2 cm in adults generally suggests benign pathology, as was the case in our patient [17]. CT scan provides additional detail regarding bony architecture and calcification patterns, as demonstrated by the ring and arc pattern of calcification observed in Hoffa's fat pad in this case [18].

The differential diagnosis of infrapatellar masses includes synovial chondromatosis, primary synovial osteochondromatosis, loose bodies, pigmented villonodular synovitis, and rare neoplasms [19]. Synovial chondromatosis, in particular, may present with similar imaging findings, though typically demonstrates multiple intra-articular loose bodies rather than a solitary pedunculated lesion [20]. The continuity between the lesion and underlying bone observed in this case confirmed the diagnosis of osteochondroma rather than synovial chondromatosis.

Surgical excision remains the treatment of choice for symptomatic osteochondromas [21]. In this case, complete resection via a medial parapatellar approach provided excellent exposure and preserved joint function. This approach allows direct visualization of the infrapatellar region while minimizing disruption to the extensor mechanism [22]. The postoperative outcome was favorable, with resolution of symptoms and restored mobility, consistent with outcomes reported in similar cases [23].

Malignant transformation of osteochondroma to secondary chondrosarcoma is a rare complication, occurring in less than 1% of solitary lesions [24]. Risk factors include large size, location in the axial skeleton, and cartilaginous cap thickness exceeding 2 cm in adults [25]. The absence of these features in our patient, along with the lack of concerning imaging characteristics such as irregular margins or soft tissue invasion, supported the benign nature of the lesion and the appropriateness of simple excision.

This case highlights the importance of considering osteochondroma in the differential diagnosis of persistent knee pain in elderly patients, particularly when mechanical symptoms are present. It also supports surgical excision as a safe and effective intervention for symptomatic lesions, even in atypical anatomical locations. The excellent functional outcome achieved in this patient demonstrates that age alone should not preclude surgical management when indicated.

**Conclusion**

Osteochondromas, although rare in the elderly, should be considered in the differential diagnosis of knee pain and swelling. This case underscores the need for thorough clinical and radiological evaluation to ensure accurate diagnosis and effective treatment. Surgical excision of

symptomatic osteochondromas provides significant relief and restores function, as demonstrated in this elderly patient with a giant extrasynovial lesion in the infrapatellar region. Timely recognition and appropriate surgical intervention can lead to excellent functional recovery and substantial improvement in quality of life, even in atypical anatomical locations and older patient populations.

**Clinical Message:** Osteochondroma, though uncommon in the elderly and rarely located in the infrapatellar region, should be included in the differential diagnosis of persistent knee pain with mechanical symptoms. Timely recognition and surgical excision of symptomatic lesions can lead to excellent functional recovery and substantial improvement in quality of life.

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**Figure Legends**

**Figure 1:** Preoperative anteroposterior and lateral radiographs of the right knee demonstrating a well-defined pedunculated bony outgrowth arising from the inferior aspect of the patella, consistent with an osteochondroma.

**Figure 2:** Magnetic resonance imaging of the right knee. (A) T2-weighted sagittal image showing the osteochondroma with a cartilaginous cap measuring approximately 1.5 cm. (B) T1-weighted sagittal image demonstrating the lesion within Hoffa's fat pad.

**Figure 3:** Computed tomography scan of the right knee showing a soft tissue density lesion in the medial aspect of Hoffa's fat pad with characteristic ring and arc pattern of calcification.

**Figure 4:** Intraoperative photograph showing the medial parapatellar approach with exposure of the osteochondroma arising from the posterior aspect of the patella.

**Figure 5:** Intraoperative photograph of the excised specimen showing the pedunculated osteochondroma with its cartilaginous cap.

**Figure 6:** Postoperative anteroposterior and lateral radiographs at six-week follow-up confirming complete excision of the lesion with no evidence of residual mass. en.wikipedia.org][10])

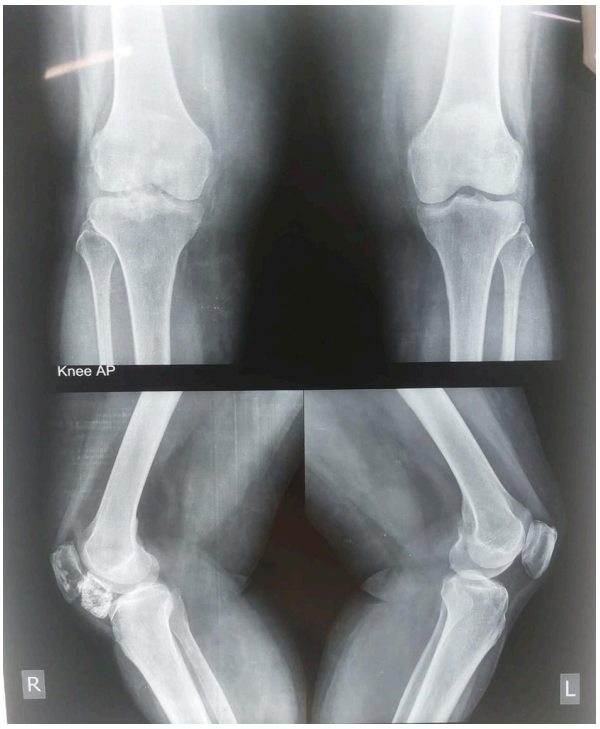

Figure 1: Preop x-ray

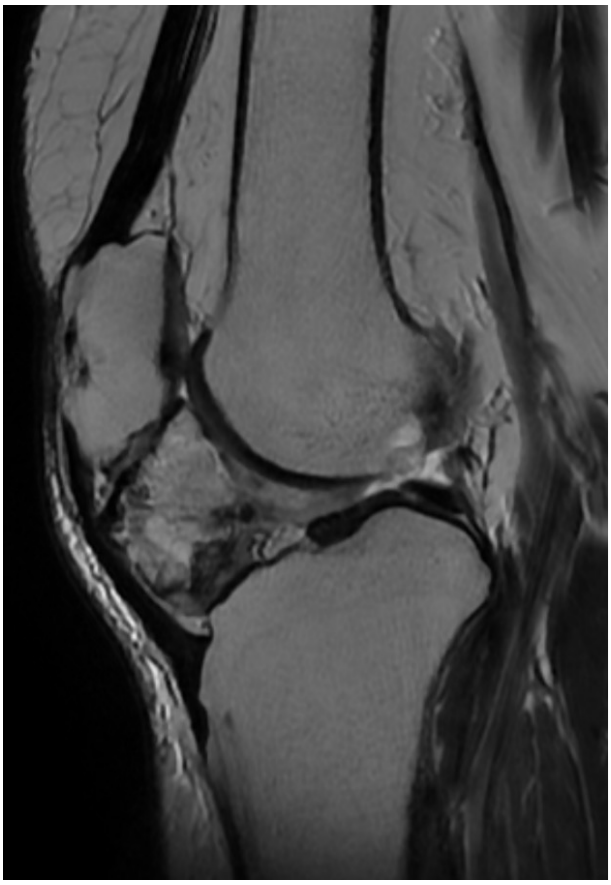
Figure 2: T2 and T1 MRI images

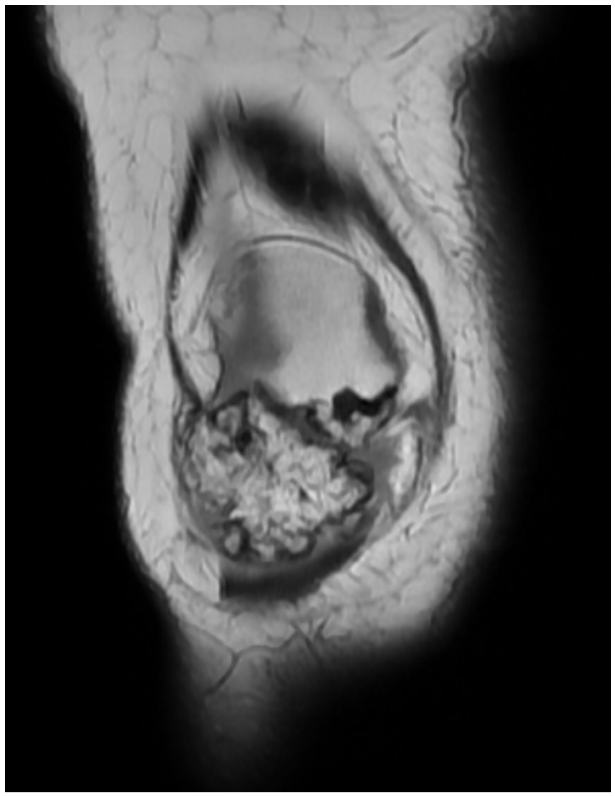

Figure 3: CT image

Figure 4: Intraop figure

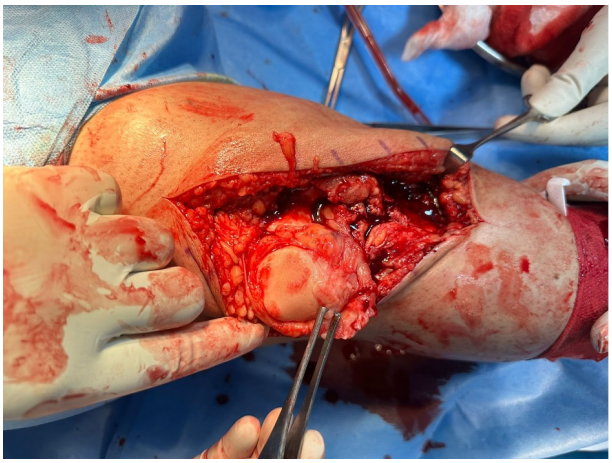

Figure 5: Intraop specimen


Figure 6: postop X-ray