

# Osteochondroma of Tibia

Patrick Graham

## Introduction

Typically noted as a painless mass near a joint, osteochondroma, also known as osteocartilaginous exostosis, is the most common benign osseous lesion, accounting for 10%–15% of all bone tumors. Presenting in the first two decades of life, in either pedunculated or sessile form, the defining characteristic is continuity of cortical and medullary space thought secondary to outgrowth of physal cartilage during adolescents. These lesions can vary in size and occur on any bone, with most common locations including the knee (femur or tibia), ilium, and scapula. Growth ceases when the patient reaches skeletal maturity. Care should be taken to evaluate for concurrent deformity, leg length discrepancy, or presence of multiple masses such as lesions about the torso or extremities that is more consistent with the autosomal dominant condition of multiple hereditary exostosis (Alabdullrahman & Byerly, 2023; Al-Shahwanii & Al-Shamari, 2021; Mavrogenis et al., 2008; Peabody & Attar, 2014; Tepelenis et al., 2021).

## Case Presentation

A 44-year-old man presented as urgent care follow-up for evaluation of acute left knee injury. He was walking his dog, slipped on loose gravel, and had a valgus-type twisting injury. He did not fall but had an immediate onset of medial knee pain. He “hobbled” home and noted the knee was swollen by the time he got home. He rested and applied ice with frequency through that evening. When the knee was still painful and swollen the next day, he presented to urgent care for evaluation. The urgent care provider obtained knee radiographs, which were significant for an osteochondroma of the medial tibia, without evident acute fracture or dislocation (see Figure 1). Urgent care gave instructions for continued conservative management and referral for orthopaedic evaluation.

On presentation was an alert, oriented, affect-appropriate male in no acute distress. He ambulated with a steady, mildly antalgic, gait without the use of an assistive device. Inspection revealed no gross deformity, mild effusion, and faint ecchymosis of medial knee. There was focal tenderness medial joint line as well as medial aspect of the medial femoral condyle, about the attachment of medial collateral ligament (MCL). He denied any calf tenderness and had a painless proximal squeeze. Knee range of motion was grossly symmetrical at 0–120 with mild crepitus. There was no appreciable laxity with

ligamentous testing, but he did complain of medial knee pain with valgus stress. Strength was 5/5 throughout, and he was distally neurovascularly intact. He had a negative McMurray maneuver and a positive Thessaly maneuver.

## Management

Although incidental, the osteochondroma was not prior known to him and so the patient was referred for magnetic resonance imaging (MRI) to evaluate cartilage cap and surrounding structures (see Figure 2). Although rare, malignant transformation can occur in adulthood. Concerning imaging findings include an irregular cartilage cap with thickness greater than 2 cm, which are highly suspicious for secondary chondrosarcoma. Clinically, this would commonly be preceded with increasing pain and swelling due to sudden growth and mass effect on surrounding structures. Special attention should be given to those with pertinent clinical findings for neurovascular compromise (Alabdullrahman & Byerly, 2023; Al-Shahwanii & Al-Shamari, 2021; Bernard et al., 2010; Mavrogenis et al., 2008; Murphey et al., 2000; Peabody & Attar, 2014; Tepelenis et al., 2021).

Given the described mechanism of injury, without preceding painful mass or swelling noted, and presenting symptoms of continued medial knee pain and swelling, the working diagnosis was for injury to the MCL and possible meniscus pathology. The patient was fitted for a hinged knee brace, instructed on activity modification, rest, and icing, and provided referral to physical therapy. Upon review of the mentioned MRI, findings were confirmatory for MCL sprain (see Figure 3).

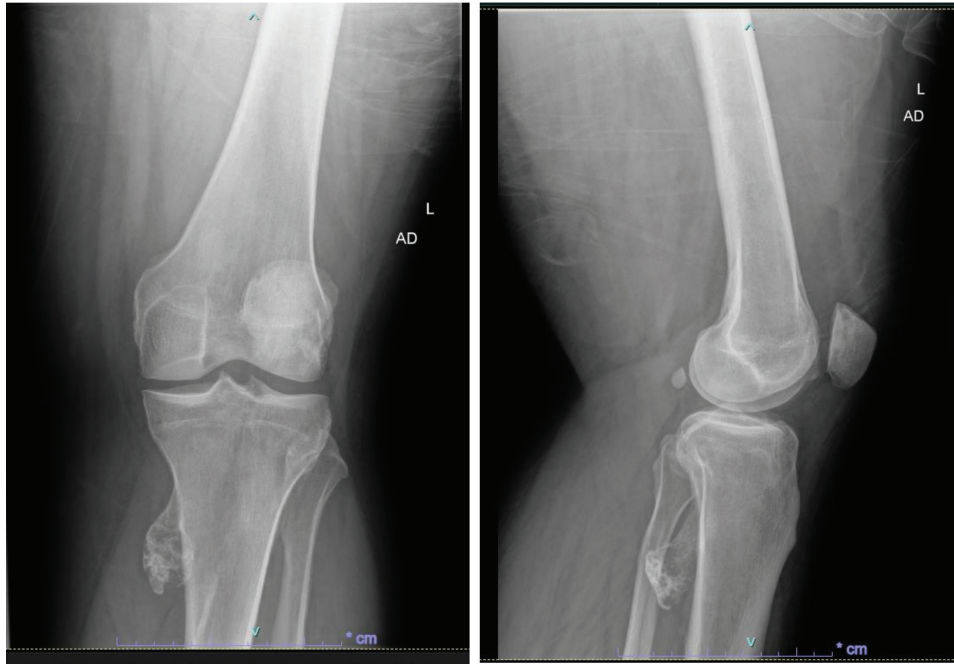
At 1-month follow-up visit, the patient noted reduced pain and swelling and was able to resume work during the same week. He was instructed on continued conservative management including physical therapy with progression of activities, as well as weaning of brace, over the coming weeks. For the osteochondroma, it was recommended for him to monitor the area for any changes including swelling or painful mass.

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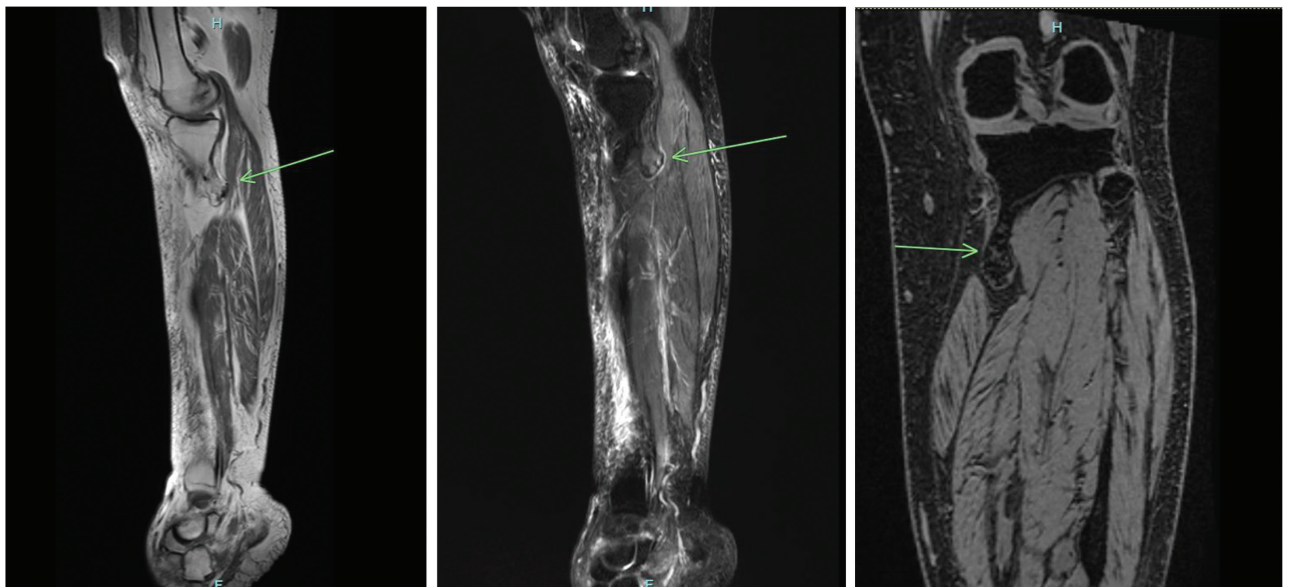


**FIGURE 1.** Anteroposterior and lateral radiographs of the right knee—Note pedunculated osteochondroma extending away from the joint, posterior and medial from the proximal medial tibia. There is no fracture or dislocation.

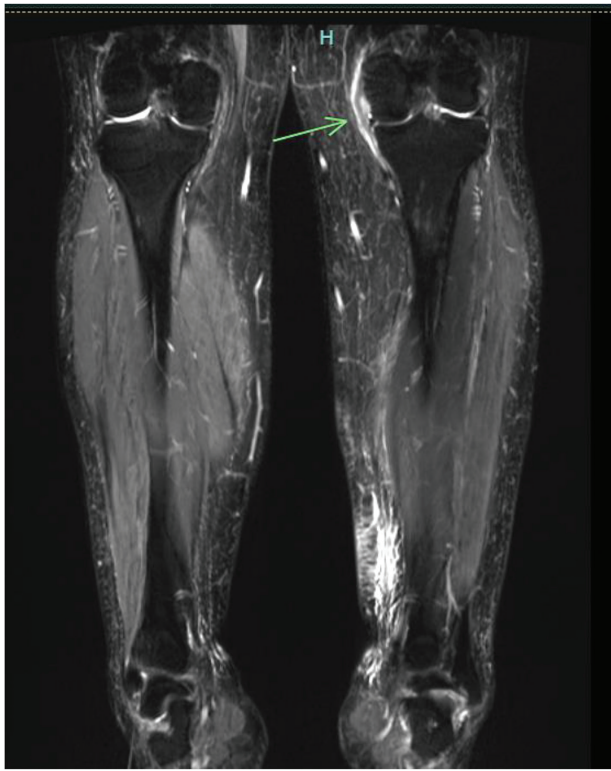
## Discussion

As osteochondromas are the most common of all benign bone tumors, there is a high likelihood of encountering them in orthopaedic practice. When diagnosed in the skeletally immature patient, initial workup including MRI or computed tomography, followed by serial radiographs for surveillance, is appropriate. Symptomatic measures are usually sufficient, but there are times when pain, fracture, functional limitations, or

neurovascular compromise necessitates surgery. It is optimal to wait until the patient is at skeletal maturity, given there should cease to be any further growth of the exostosis, limiting chances for recurrence. If there is concern for continued growth, malignant transformation, or other need for further surgical intervention, it is best to seek consultation with an orthopaedic oncologist (Alabdullrahman & Byerly, 2023; Al-Shahwanii & Al-Shamari, 2021; Bernard et al., 2010; Mavrogenis



**FIGURE 2.** Sagittal T1, Sagittal STIR, and Coronal VIBE: Magnetic resonance imaging—series per window captions—The arrow denotes osteochondroma. There is no significant cartilage cap, abnormal marrow enhancement, or surrounding soft tissue abnormality. Findings are consistent with benign osteochondroma.



**FIGURE 3.** The arrow denotes partial tear with edema about the medial collateral ligament, consistent with Grade 2 sprain.

et al., 2008; Murphey et al., 2000; Peabody & Attar, 2014; Tepelenis et al., 2021).

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