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## Case Report

## Osteolipoma of the knee

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## ABSTRACT

A case of a right knee intra-articular osteolipoma in a 64-year-old man is reported. The patient presented for evaluation of a 1-year history of nontraumatic, mechanically-exacerbated, medial-sided right knee pain. Radiographs demonstrated a partially calcified 3.0 cm mass anterior to the distal medial femur at the suprapatellar fossa. Magnetic resonance imaging examination confirmed a 4.0 × 3.6 cm well-circumscribed mass deep to the medial patellofemoral ligament, with predominantly fat characteristics on T1-weighted and T2-weighted sequences. The mass had irregular ossification superiorly with surrounding heterogeneous enhancement. Histologic examination of an excisional biopsy showed the lesion to be an osteolipoma. Osteolipoma is a rare histologic variant of lipoma with osseous metaplasia, but should be considered in the differential of a fat-containing neoplasm with ossification.

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## Case report

A 64-year-old Caucasian man was referred to our orthopedic outpatient center for a second opinion regarding a proximal right knee mass. The patient reported pain along the medial aspect of the knee for the past year, with recent notice of a palpable mass. The mechanical effects of the mass were increasingly interfering with his daily activities. The pain was described as a constant, moderate throbbing, exacerbated by activity. Conservative treatments, including physical therapy and various over-the-counter medications had failed to provide symptomatic relief.

Initial outside hospital radiographs revealed a calcified mass anterior to the distal right medial femur in the region of the suprapatellar fossa (Fig. 1). Provided initial differential included parosteal osteosarcoma, chondrosarcoma, and myositis ossificans, prompting an orthopedic oncology consult and subsequent referral to our outpatient orthopedic clinic.

Magnetic resonance (MR) imaging was performed to further evaluate the mass, which demonstrated a 3.8 × 3.4 × 1.5 cm, well-circumscribed mass deep to the medial patellofemoral ligament, at the margin of the prefemoral fat pad (Fig. 2). The mass abutted the anteromedial femur and medial

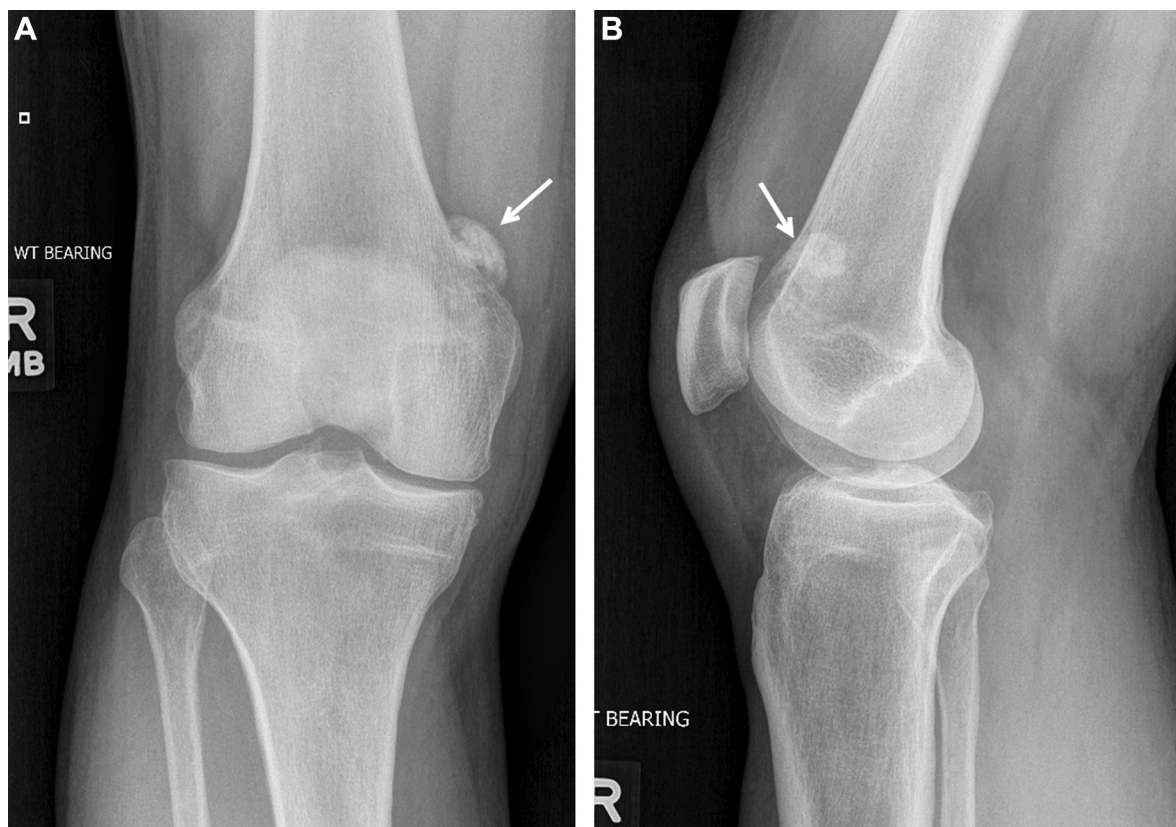
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**Fig. 1 – (A) Frontal and (B) lateral knee radiographs demonstrate an area of ossification (arrows) anteromedial to the medial femoral condyle. No underlying osseous involvement is identified.**

patellar facet without evidence of osseous involvement. The mass had predominantly fat-signal characteristics on both T1-weighted and T2-weighted fat suppression sequences. At the superior margin of the mass, there was an irregular region of T1-weighted and T2-weighted hypointense rim with central T1 hyperintensity that demonstrated signal suppression, consistent with ossification. Following gadolinium administration, the mass heterogeneously enhanced, greatest around the region of ossification. Based on imaging appearance, an intra-articular lipoma with dystrophic ossification was atop the differential diagnosis. The patient was offered conservative management with anti-inflammatory medications and observation vs surgical excision of the mass. He elected to proceed with surgical excision.

A limited median parapatellar arthrotomy was performed, extending from the inferior border of the patella proximally into the quadriceps tendon, sparing the quadriceps muscle fibers. The mass was encountered immediately beneath the tendon and found to be nonadherent to the surrounding tissues. Dissection was carried down circumferentially around the tumor, including a wide margin of surrounding tissue. Once it had been completely freed, the specimen was removed, tagged, and sent to pathology for permanent analysis. The arthrotomy and skin were closed in the standard fashion, and the patient tolerated the procedure well.

Gross examination of the resected specimen demonstrated an  $8.1 \times 3.7 \times 1.1$  cm mass. The mass was tan-brown, firm, ovoid, and surrounded by fibrofatty soft tissue. Histologic

examination revealed mature adipose tissue in which a large fragment of cortical-type bone was embedded. In addition, isolated fragments of hyaline cartilage, some undergoing ossification were present (Fig. 3). The pattern was consistent with an osteolipoma.

## Discussion

Lipomas are the most frequent soft tissue tumors and can include a variety of other mesenchymal elements. Based on the presence of variable amounts of other mesenchymal components that form an intrinsic part of the lipoma, the World Health Organization classification of human soft tissue and bone tumors describes 14 types of benign tumors comprising mature adipose tissue, including lipoma, myxolipoma, fibrolipoma, angiolipoma, and chondroid lipoma [1,2]. Ossifying lipoma (osteolipoma) is the rarest subtype of lipoma, with the first case being reported in 1959 [3].

An osteolipoma is defined as a lesion with mature adipose tissue and randomly distributed trabeculae of laminated bone [4–6]. They have been found at various sites, with the highest frequency in the head and neck regions [7–9]. However, our review of the English-language literature using the keywords “osteolipoma” and “ossifying lipoma” revealed only 5 other reported cases of osteolipomas within the distal femur and/or knee region (Table 1). Two cases involved the distal femur

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