

# Intra-articular Lipoma in Posterior Compartment of Knee Joint: A Case Report

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## ABSTRACT

Lipomas are the most common benign soft tissue tumors, occurring in almost any part of the body and prevalent in 2% of the population. The occurrence of intra-articular lipoma is rare and mostly documented in the anterior compartment of the knee joint, like the Hoffman pad of fat and suprapatellar region. The incidence of intra-articular lipoma in the posterior compartment of the knee joint is very rare. Herein, the authors presented a case report of a 21-year-old female with a history of chronic intermittent left knee joint pain for the last two years. Magnetic Resonance Imaging (MRI) revealed a well-defined, encapsulated lesion that was hyperintense on T1/T2 images and hypointense on, located in the intercondylar notch, anterior to the proximal half of the posterior cruciate ligament, and closely abutting the ligament. Computed Tomography (CT) showed a fat density lesion (-82 to -93 HU), indicating a lipomatous lesion. The patient underwent laparoscopic removal of this lesion, and histopathology confirmed the fatty nature of the lesion.

**Keywords:** Chronic knee pain, Magnetic resonance imaging of knee joint, Soft tissue tumors

## CASE REPORT

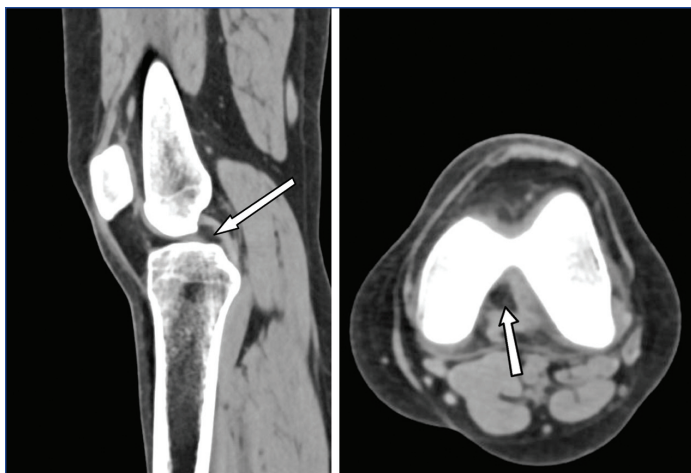
A 21-year-old female with chronic intermittent left knee joint pain for the last two to three years presented for an MRI of the knee joint. There was no history of trauma, and no movement restriction or aggravation of pain during movement was reported. Physical examination showed no focal swelling, palpable mass, tenderness, or warmth in the knee joint. The results of the anterior and posterior drawer tests, as well as the McMurray and Lachman tests, were negative. The MRI showed a small, well-defined, encapsulated, rounded mass that was hyperintense on T1/T2 images, measuring 1.2 cm Anteroposterior (AP) × 0.6 cm Craniocaudal (CC) × 0.6 cm Transverse (TR), located in the intercondylar notch and closely abutting the posterior cruciate ligament posterior-superiorly [Table/Fig-1,2]. The lesion exhibited signal suppression in fat saturation images of Gradient Recalled Echo (GRE) and Portable Document Format (PDF) [Table/Fig-2,3]. No other abnormalities were noted in the MRI study. CT of the knee joint revealed fat density lesions (-82 HU to -93 HU), correlated with lipomatous lesions [Table/Fig-4,5]. The lesion was removed through laparoscopic surgery, and histopathological examination confirmed the presence of adipose tissue within the lesion, surrounded by synovium. The patient was scheduled for a follow-up after six months.

## DISCUSSION

Lipomas are the most common benign soft tissue tumors, occurring in 2% of the population. These lesions are typically solitary, although 5% to 15% of cases involve multiple lipomas, and approximately 33% of lipomas are associated with a familial condition [1]. Lipomas are common benign neoplasms that can occur in almost any part of the body, but intra-articular lipomas are rare. These lipomas are typically found in the Hoffman fat pad and the suprapatellar bursal region. Many cases of intra-articular lipoma in the anterior compartment, specifically in the knee, have been reported in the literature. A review by Kheok SW and Ong KO reported a total of 27 cases of intra-articular lipoma, with 19 cases occurring in the knee's anterior compartment [2]. However, occurrences of lipomas in the posterior aspect of the knee joint are very rare. Through the literature search, authors found two such cases [3,4]. True intra-articular lipomas are solitary, round-to-oval masses of mature adipose tissue surrounded by a thin fibrous capsule, similar to their soft tissue counterparts. They may be covered by synovium and may have a vascular pedicle. Intra-articular lipomas can occur spontaneously, unrelated to trauma and more commonly observed in the knee joint, have also been reported in the hip joint, lumbar spine, and tarsometatarsal joint [5,6]. These lesions can be asymptomatic or



**[Table/Fig-1]:** (PDFS); **[Table/Fig-2]:** (T2); and **[Table/Fig-3]:** (T1) shows well defined round mass lesion in the intercondylar notch and closely abutting the inferior surface of posterior cruciate ligament. (Images from left to right)



**[Table/Fig-4]:** (CT sagittal section) and **[Table/Fig-5]:** (CT axial section) shows the fat density nature (-82 to 93 HU) of the intercondylar notch mass lesion. (Images from left to right)

cause movement restriction, like locking of the knee joint. In some cases, they may present with sudden joint pain when the lesion becomes impinged or strangulated during knee joint movement [7].

The MRI is a preferred imaging modality for detecting intra-articular lesions and determining their fatty nature. Although CT is also useful in identifying these lesions, MRI provides better soft-tissue definition. Intra-articular lipomas typically appear hyperintense on T1 and T2 weighted images and show signal suppression on T1 fat saturation images. MRI can also visualise the thin capsule surrounding the lesion and thin septations within it [8]. On CT, lipomas generally appear as well-defined, homogeneous, low-attenuating lesions, with attenuation measurements ranging between -65 and -120 HU [8]. Direct comparison with the attenuation of surrounding normal fat is often helpful [8]. In the index patient, mass measured within the range of fat density (-83 to 93 HU), consistent with a lipomatous lesion. Plain radiographs have limited utility in evaluating lipomas, although they may reveal a low-density, soft tissue mass [9]. In some cases, hyperostosis/periosteal reaction and adjacent bone erosion may also be caused by the lesion [10].

Lipoma arborescens is a common differential diagnosis and has a higher incidence than intra-articular lipoma. This condition typically occurs in the suprapatellar bursa of the knee joint and leads to painless progressive swelling of the knee joint. Lipoma arborescens is often associated with osteoarthritis, traumatic lesions (meniscal

tears, cartilage lesions), chronic inflammatory diseases (such as rheumatoid arthritis), or diabetes mellitus [11, 12]. Treatment involves synovectomy with a low recurrence rate. Unlike Lipoma arborescens, no joint or other diseases have been reported in the literature to be associated with or predispose to intra-articular synovial lipoma [12]. Small intra-articular lipomas are typically resected using arthroscopic surgery, while larger ones may require open surgical removal [13].

## CONCLUSION(S)

The diagnosis can be established through histology or the use of MRI. Smaller lesions can be excised arthroscopically, while larger and more extensive lesions may require an open surgical technique. Intra-articular synovial lipoma should be considered as a potential diagnosis when evaluating a patient with sudden or chronic knee pain, as well as symptoms of a catching or locking knee.

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### AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

### PLAGIARISM CHECKING METHODS:

- Plagiarism X-checker: Jul 10, 2023
- Manual Googling: Aug 31, 2023
- iThenticate Software: Sep 15, 2023 (16%)

### ETYMOLOGY: Author Origin

EMENDATIONS: 5

Date of Submission: Jul 06, 2023  
Date of Peer Review: Aug 29, 2023  
Date of Acceptance: Sep 18, 2023  
Date of Publishing: Nov 01, 2023