Large intra-articular synovial lipoma of the knee: A case report

Abstract

Intra-articular synovial lipomas are a rare entity and have been reported in the knee, hip, spine, elbow, and wrist. Here we present the case of a 63-year-old female with a large intra-articular synovial lipoma of the knee joint causing restriction of range of motion. MRI showed an intra-articular lipoma arising from Hoffa's fat pad . The mass was surgically excised with no recurrence. Magnetic resonance imaging(MRI) remains the diagnostic modality of choice.

Keywords: Intra-articular, Knee joint, Dull aching pain, Lipomatous lesion

Introduction

Intra-articular synovial lipoma is rare entity and only handful of cases have been reported in English Literature (1-25). Knee(1-4,6-15,17-24) happens to be the commonest site with isolated cases also being reported in hip(5) and spine(3) and tarsometatarsal joint(25). Within the knee joint the lipoma can arise from the fat pad area(2,19,20),Suprapatellar pouch(2,7,18,19,22), medial meniscus(19,20,22), lateral recess(21-22) or the retinaculum(1). The location dictates the specific symptomatology. It is imperative that the intra-articular synovial lipoma does not be confused with two other kinds of swellings which might have a similar clinical presentation. These include lipoma arborescence(2-4,22,27-30) and Hoffa's fat pad disease(30). We describe a case of a large intra-articular lipoma present in the antero-lateral aspect of the knee joint which was manifesting as a prominent extraarticular swelling combined with pain and locking.

Case Presentation

A 63-year-old female presented to our outpatient department with complaints of swelling in the right knee joint line. She also complained of constant dull aching pain and restricted flexion of the knee joint for the past 6 months. There was no history of locking or instability of the knee joint. The patient denied any past trauma to the knee.

Physical examination revealed an 8cm by 6cm globular firm solitary mass over the antero-lateral aspect of the knee. The mass was mobile and non-tender. Patient had no fixed flexion deformity and a range of motion from 0 deg to 90 degrees (active and passive). Radiological examination of the knee joint was carried out. X rays showed no abnormality. MRI of the knee joint showed a lobulated lesion arising from Hoffa's fat and was extending antero-lateral to patellar tendon and inferior to lateral retinaculum into subcutaneous plane, and measured 6.3x5.0x7.9cm on the MRI.

Considering the size and extra articular presentation Patient was counselled for open excision of the mass. Routine preoperative blood investigations were within normal limits.

Patient was placed supine on the OT table following spinal anesthesia. Under tourniquet control, an antero-lateral incision was marked centered over the swelling. The superficial part of the swelling was identified in the sub-cutaneous plane. Planes were created proximally and distally up to the extensor retinaculum. The defect in the retinaculum was extended and arthrotomy completed. The swelling was excised in-toto. Joint was inspected, no intraarticular abnormality noted. The thinned-out extensor retinaculum was repaired with number 2 fibrewire. Subcutaneous tissue and skin were closed in layers over a drain.

Histopathological examination of the mass revealed a well encapsulated benign tumor composed of mature adipocytes arranged in lobules and separated by delicate fibrovascular septae.

Post-operatively patient was placed in a bulky dressing and a knee immobilizer for 2 weeks. Following which rehabilitation was initiated under the guidance of a trained therapist. The post-op course was uneventful. Range of motion improved from pre-operative levels, but terminal 20 degrees of flexion was restricted. No recurrence noted $1^{1/2}$ years after surgery.

Discussion

Although lipomas are the most common benign soft tissue tumor, intra-articular lipomas are extremely rare(26,27). A thorough review of written English literature that a total of 22 cases of intra-articular synovial lipoma have been reported out of which 19 have been reported in the knee joint(1-4,6-15,17-24) and includes the case being currently presented. The remaining 3 sites include the hip joint(5), spine(16) and Tarsometatarsal joint(25). Within the knee joint the lipoma can arise from the fat pad area(2,19,20),Suprapatellar pouch(2,7,18,19,22), medial meniscus(19,20,22), lateral recess(21-22) or the retinaculum(1). In the current case the lipoma had stretched the lateral capsule of the knee joint and was presenting in the extra-articular fashion which has previously not been reported in literature. Proposed etiologies of the origin of the lipoma include fat ingrowth from intra-articular synovial membrane (28). Another theory suggests sub synovial fat to be the site of origin(29).

Symptoms are dictated by the intra-articular location of the lipoma. Pudlowski et al. (8) has attributed the symptoms of the IASL to 2 possible etiologies which includes possible interposition between the articular surfaces and secondly the strangulation of the lesion as it branches out from the stalk of the lesion. Strangulation as cause of pain was also reported by Amarjit et al(21). Patients can present with pain with or without effusion(2). They might present with restricted range of motion(6,20). Locking has been reported in in previous case reports(2,4,18,19,10). There have been two previous case reports of swelling manifesting in an extra-articular fashion(1,6). Our patient presented with complaints of swelling, restricted flexion and a prominent extraarticular swelling. Similar findings have been reported by Amarjit et al(21).

The differential diagnosis for an intra-articular lipoma is Hoffa disease(30) and lipoma arborescence (2-4,27-30). Hoffa's disease or infrapatellar fat pad syndrome is a condition predominantly seen in women and is result of repetitive trauma resulting in enlargement of the fat pad and impingement in the tibiofemoral or patellofemoral joints. If the lesion becomes chronic and because of hemorrhage, fat necrosis and fibrosis this can mimic like a tumor(30).

Second differential is Lipoma arborescence which is a benign lesion of unknown etiology and is characterized by villous proliferation of the synovial membrane which is replaced by adipose tissue. It is difficult to distinguish the lipoma from Lipoma arborescence on clinical grounds however lipomas are usually small polyp-like lesions while a wider larger frond like mass is usually lipoma arborescence(2-4,27-30).

Prior to surgery MRI remains the diagnostic modality of choice for intra-articular lesions of knee including lipomas and lipomatous proliferation(31). For the patient with symptomatic intra-articular moss complete resection either via arthroscopic surgery/open surgery provides symptomatic relief and the recurrence rate is low(12).

Conclusion

Intra-articular lipomas are a rare and detailed clinical examination is key to management of this lesion. MRI is the gold standard radiological investigation for preoperative planning. Arthroscopic or Open excision is the treatment of choice with a low probability of recurrence.

Consent

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

Disclaimer (Artificial intelligence)

Option 1: Option 1

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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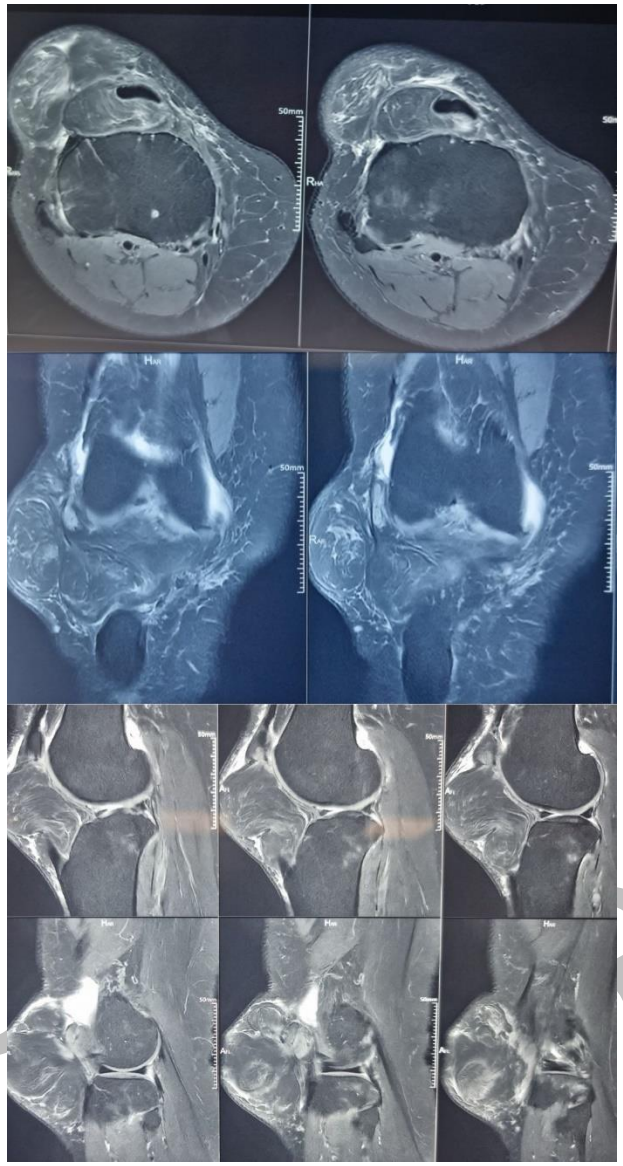

Figure 1-Axial, Sagittal and Coronal images of knee showing lobulated lesion arising from Hoffa's fat extending antero-laterally, lateral to patellar tendon and inferior to lateral retinaculum into subcutaneous plane, measuring 6.3x5.0x7.9cm

Fig 2 : Pre-operative images of the knee showing a swelling over the antero-lateral aspect of the knee and marking for skin incision

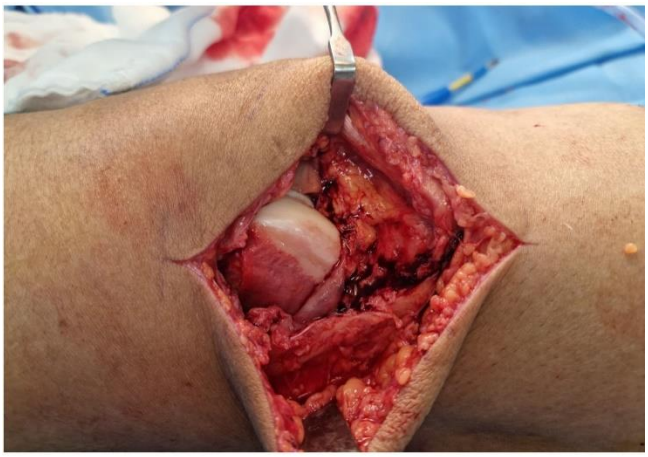

Figure 3-

Intra-operative images showing the extent of the swelling arising from Hoffa's fat and the excised, well-encapsulated mass.