

Case report

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

Abstract

Intra-articular 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 lipoma of the knee joint causing restriction of range of motion. MRI showed an intra-articular lipoma arising from Hoffa's fat pad and suggestive of lipoma. The mass was surgically excised with no recurrence. MRI remains the diagnostic modality of choice.

Introduction

Intra-articular synovial lipoma is a rare entity and till date only a handful of cases have been reported in English literature [1-25]. For this rare entity, the 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 arborescens (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 extra-articular swelling combined with pain and locking.

Case report

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 had no history of trauma to the knee in the past.

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 extending antero-laterally, lateral to patellar tendon and inferior to lateral retinaculum into subcutaneous plane, measuring 6.3x5.0x7.9cm.

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] considers 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 for provide case reports(2,4,18,19,10). There have been 2 provide Case reports redness swelling manifested in 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). Lipoma arborescence 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 two on clinical grounds however lipomas are usually small polyp-like lesions wider larger frond like mass is usually lipoma arborescence(2-4,27-30).

Prior to surgery Magnetic resonance imaging(MRI) remains the diagnostic modality of choice for intra-articular lesions of knee including lipomas and lipomatous proliferation. For the patient with symptomatic intra-articular mass 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.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

References

1. Bernstein AD, Jazrawi LM, Rose DJ (2001) Arthroscopic treatment of an intra-articular lipoma of the knee joint. *Arthroscopy* 17(5):539–541
2. Hill JA, Martin WD, Milgram JW (1993) Unusual arthroscopic knee lesions: case report of an intra-articular lipoma. *J Natl Med Assoc* 85:697–699
3. Husson JL, Chales G, Lancien G, Pawlotsky Y, Masse A (1987) True intra-articular lipoma of the lumbar spine. *Spine* 12:820–822
4. Jaffe HL (1958) Lipoma and fibroma of articular capsules, in tumors and tumorous conditions of the bones and joints. Lea and Febiger, Philadelphia, pp 574–575
5. Margheritini F, Villar RN, Rees D (1998) Intra-articular lipoma of the hip. A case report. *Int Orthop* 22:328–329
6. Marui T, Yamamoto T, Kimura T, Akisue T, Nagira K, Nakatani T, Hitora T, Kurosaka M (2002) A true intra-articular lipoma of the knee in a girl. *Arthroscopy* 18(5):E24
7. Matsumoto K, Okabe H, Ishizawa M, Hiraoka S (2001) Intra-articular lipoma of the knee joint. A case report. *J Bone Joint Surg Am* 83-A(1):101–105
8. Pudlowski RM, Gilula LA, Kyriakos M (1979) Intraarticular lipoma with osseous metaplasia: radiographic-pathologic correlation. *Am J Roentgenol* 132(3):471-3.

9. Lee F, Keel SB, Gebhardt MC, Rosenthal DI. Intra-articular lipoma with osteochondroid metaplasia in the knee joint. *Skeletal Radiol* 2001; 30: 230–3
10. Kidwai AS, Klassen C, Hemphill S, Griffiths HJ. Radiologic case study. Intraarticular synovial lipoma. *Orthopedics* 2005; 28: 611–13.
11. Poorteman L, Declercq H, Natens P, Wetzels K, Vanhoenacker F. Intra-articular synovial lipoma of the knee joint. *BJR Case Rep* 2015;1:20150061
12. Yilmaz E, Karakurt L, Akpolat N, Ozdemir Hüseyin, Belhan O, Incesu M. Intra-articular lipoma of the knee joint in a girl. *Arthroscopy* 2005; 21: 98–102.
13. Bennani L, Amine B, Aktaou S, HajjajHassouni N. True intra-articular lipoma in a rheumatoid knee. *Presse Med* 2008; 37: 610–13
14. Tudisco C, Farsetti P, Febo A. Solitary intraarticular lipoma locking the knee in a young boy. *J Pediatr Orthop B* 2008.
15. Min KD, Yoo JH, Song HS, Lee BI. A case of intra-articular synovial lipoma of the knee joint causing patellar dislocation. *Knee Surg Sports Traumatol Arthrosc* 2010; 18: 1094–7.
16. Zhu W, Wang W, Chen Y, Xiao T. Synovial lipoma in intra-patellar fat pad of the knee joint. *Pak J Med Sci* 2012; 28: 228–30
17. Hsu J-H, Wu F-Z. Orthopaedic case of the month: a painless right knee mass in a 55- year-old woman. diagnosis: intraarticular lipoma. *Clin Orthop Relat Res* 2013; 471: 1100–4
18. Smillie IS (1974) *Diseases of the knee joint*. Churchill Livingstone, Edinburgh, pp 411
19. Yamaguchi S, Yamamoto T, Matsushima S, Yoshiya S, Matsubara N, Matsumoto T (2003) Solitary intraarticular lipoma causing sudden locking of the knee: a case report and review of the literature. *Am J Sports Med* 31(2):297-299 .
20. Yeomans NP, Robertson A, Calder SJ (2003) Torsion of an intra-articular lipoma as a cause of pseudo locking of the knee. *Arthroscopy* 19(3):E27
21. S Amarjit K, Budhiraja S, Chandramouleeswari K, Anita S. Knee Locking in Osteoarthritis due to Synovial Lipoma: A Case Report. *J Clin Diagn Res*. 2013 Aug;7(8):1708-9.
22. Mostis E, Vasiliadis HS, Xenakis TA. Intraarticular synovial lipoma of the knee located in the intercondylar notch, between ACL and PCL: a case report and review of the literature. *Knee Surg Sports Traumatol Arthrosc* 2005
23. Ishida N. Intra-articular Lipoma of the Knee Joint Located in the Lateral Recess: A Case Report. *Journal of Orthopedic Case Reports* 2021 August;11(8): 55-58
24. Hirano K, Deguchi M, Kanamoto T. Intra-articular synovial lipoma of the knee joint (located in the lateral recess): A case report and review of the literature. *Knee* 2007; 14:63-7.
25. Pavithra P, Arundhathi S, Kodandaswamy CR. Intra articular synovial lipoma of the right tarsometatarsal joint—a rare case report. *J Clin Diagn Res* 2004; 8: FD03–FD04.

- 26..Shuman R, Anderson WAD. Mesenchymal tumors of soft tissues. In: Anderson WAD, Kissane JM, editors. Pathology. 7th ed. St. Louis: Mosby; 1977. p. 1874–904.
- 27.CohenAS,CanosoJJ.Tumorsofjointsandrelatedstructures.In:McCarty DI, editor. Arthritis and allied conditions. A textbook of rheumatology. 11th ed. Philadelphia: Lea and Febiger; 1989. p. 1492–508
- 28.Das Gupta TK. Tumors of the adipose tissue. Tumors of the soft tissues. Norwalk, CT: Appleton-Century-Crofts; 1983. p. 355–95.
- 29.Hubscher O, Costanza E, Elsner B. Chronic monoarthritis due to lipoma arborescence. J Rheumatol 1990;17:861–2.
- 30.Hoffa A. The influence of the adipose tissue with regard to the pathology of the knee joint. JAMA 1904;42:795–6.

Figure 1

UNDER PEER REVIEW

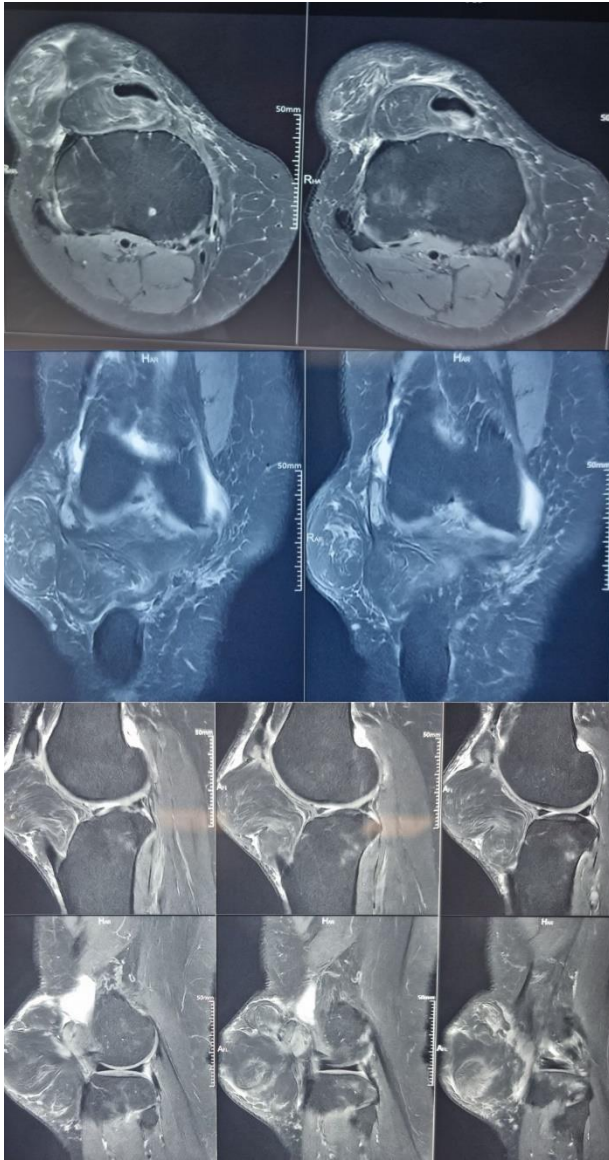


Figure 1-Axial, Sagittal and Coronal images of knee showing lobulated lesion arising from Hoffa's fat extending antero-laterally, lateral to patellar tendon and inferior to lateral retinaculum into subcutaneous plane, measuring 6.3x5.0x7.9cm

Figure 2-



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-

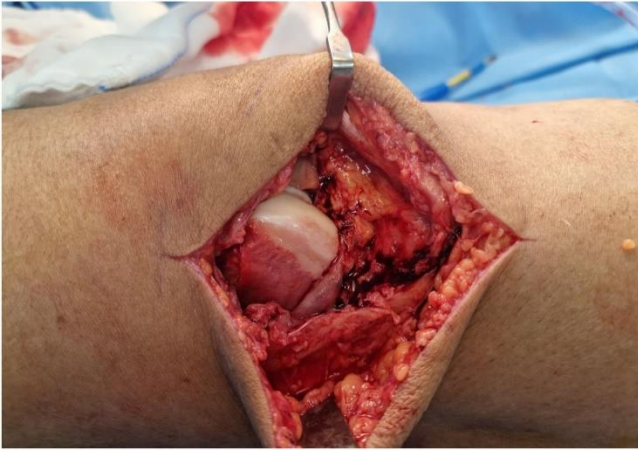


Figure 3-

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