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## Case report

### A CASE OF SYNOVIAL LIPOMATOSIS WITH CHRONIC SYNOVITIS PRESENTING AS ACUTE KNEE PAIN

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## ABSTRACT

**Background:** Synovial lipomatosis is a rare, benign, intra-articular lipoma-like lesion characterized by villous proliferation of the synovium, most commonly affecting the knee joint. The usual presentation is long standing progressive swelling of the affected joint, with or without pain and restriction of movements. Histopathology is confirmatory. **Case Report:** We present the case of a 35- year old male patient with long standing history of swelling, short history of pain in the left knee joint. X-Ray and magnetic resonance imaging scans of the left knee showed the characteristic features of synovial lipomatosis with chronic synovitis. The patient underwent diagnostic arthroscopy with lavage of left knee joint. Histopathological study confirmed synovial lipomatosis with chronic synovitis. **Conclusion:** Synovial lipomatosis is a rare, benign, intra-articular lipoma-like lesion. Although rare, clinically it should be considered as an important differential in evaluating neoplastic and non- neoplastic conditions of the knee joint.

**Keywords:** Synovial lipomatosis, chronic synovitis, knee joint.

## INTRODUCTION

Synovial lipomatosis is known by the name, Hoffa's disease after a German surgeon, Albert Hoffa, who described this condition in the year 1904 in infrapatellar fat pad in young athletes.<sup>1</sup> He also called it as lipoma arborescens due to the presence of macroscopic fronds which bear a tree- like resemblance.<sup>2</sup>

Synovial lipomatosis is an infrequent lesion which mimics tumorous lesions like synovial lipoma or hemangioma and inflammatory conditions like osteoarthritis and septic arthritis.<sup>1</sup>

In our study, we have analyzed the histopathological features of this rare condition with an aim to distinguish it from the aforementioned lesions and to know the associated lesions of synovium.

## CASE REPORT

A 35 year old male patient presented to the Orthopedic outpatient department with swelling and pain in the left knee joint since 3 years and acute exacerbation of pain since 3 days. Swelling was insidious in onset and gradually progressive. Pain was intermittent in nature, aggravating on walking and relieved on rest. There was no history of trauma or any chronic diseases.

On examination, a diffuse swelling was present over the left suprapatellar and infrapatellar regions with tenderness in the medial and lateral aspects of the left knee joint with local rise of temperature and restriction of movements.

The patient was admitted to the Orthopedic ward for thorough work- up and detailed investigations. During his stay in the hospital for a duration of three days, the following tests were carried out.

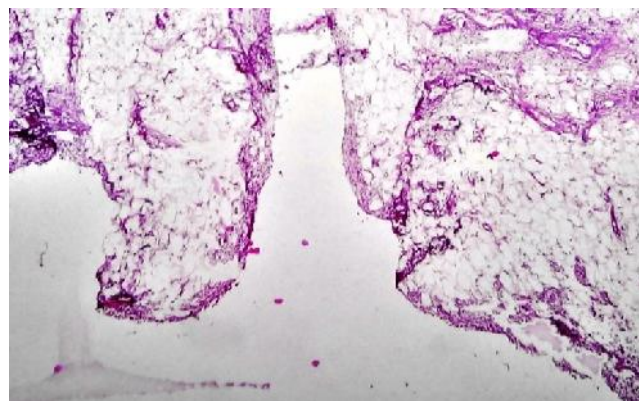
Routine hematological investigations were normal. Qualitative study of Anti- Streptolysin O (ASLO) was negative and C-Reactive protein (CRP) showed positive results. Plain radiograph of the joint showed no radiological abnormality. Ultrasound scan revealed supra and infrapatellar effusion. Subsequently, synovial fluid was aspirated and sent for culture and sensitivity, which showed plenty of pus cells with no organism. Magnetic resonance imaging scan showed multiple, frond- like synovial proliferations. The patient underwent diagnostic arthroscopy with lavage and the post-procedure period was uneventful. The sample received by the department of Pathology was subjected to histopathological examination.

On gross examination, the specimen consisted of multiple, papillomatous, fatty tissue bits, which were soft in consistency (Fig.1).

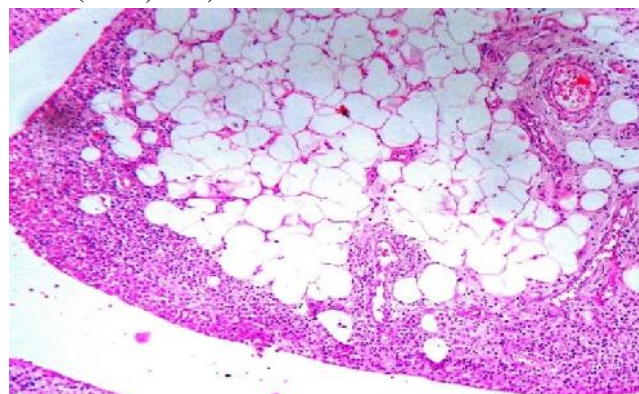
Microscopically, the H&E stained sections showed villous/ frond- like architecture of synovial tissue lined by hyperplastic synovial lining infiltrated by dense mononuclear cell infiltrates (Figs.2&3). Sub synovial tissue showed diffuse infiltration of adipose tissue infiltrated by moderate amount of mononuclear cell infiltrates and there were areas of fibrosis seen which were characteristic of synovial lipomatosis with chronic synovitis (Fig.4).



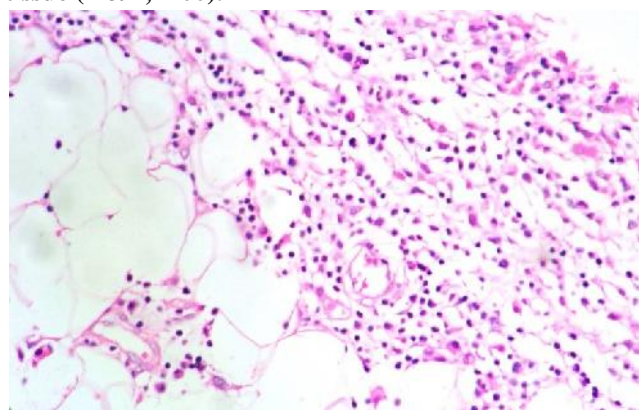
**Fig 1: Gross specimen- Multiple, papillomatous, yellowish fatty tissue bits**



**Fig 2: Villous or frond- like architecture of synovial tissue (H&E,×100)**



**Figure 3: Hyperplastic synovial lining with dense mononuclear cell infiltration and sub- synovial adipose tissue (H&E,×400).**



**Fig 4: Dense mononuclear cell infiltration (H&E,×400)**

## DISCUSSION

Synovial lipomatosis is a rare, benign, intra-articular lipoma-like lesion, commonly affecting the knee joint, particularly the suprapatellar pouch and accounts for less than 1% of the lipomatous lesions.<sup>1,2</sup> It rarely affects glenohumeral joint, sub-deltoid bursa, hip, wrist and elbow.<sup>3</sup> It may be mono, bi or polyarticular. Men are affected more commonly than women. It most commonly occurs in the elderly age group(50-70 years) but can also affect young adults, the mean age group being 45.6 years.<sup>4</sup>

Clinically, the typical presentation consists of insidious swelling of the knee joint with intermittent effusions followed by progressive pain and debilitation.<sup>3</sup> It can also present with symptoms of secondary degeneration, restriction of movements and crepitus. Extensive involvement may cause a pressure effect in the joint space.<sup>1</sup> A rare variant termed as giant lipoma arborescens, presents with bloody and purulent effusions.<sup>2</sup>

Plain X- ray, ultrasonography, computed tomography and joint aspiration are the routine modes of investigations, though none is diagnostic of synovial lipomatosis. Tissue density may be noted in the affected joint on radiography.<sup>5</sup> In majority of the cases clear, yellow synovial fluid will be aspirated with no significant findings on microscopy and culture. Extent of the lesion can be accurately determined by ultrasonography. Computed tomography scan is non-specific.<sup>6</sup> Magnetic resonance imaging reveals a synovial mass with frond- like architecture with images clearest on fat suppressed sequence. Arthroscopically, the affected area shows multiple, globular and villous projections covered by the synovium. Magnetic resonance imaging and arthroscopic findings are diagnostic of synovial lipomatosis though histopathology is the gold standard for confirmation of the disease.<sup>4,5</sup>

The excised mass on gross examination consists of the synovium with marked papillary, yellow and fatty appearance.<sup>7</sup> Microscopically, there are villus or frond- like projections lined by hyperplastic and reactive synovial cells. Individual cells have an enlarged nucleus, prominent nucleoli and abundant eosinophilic cytoplasm. Sub- synovial tissue shows hyperplastic, mature adipocytes which are infiltrated by chronic inflammatory cells.<sup>1,3</sup>

Synovial lipomatosis has been documented to be associated with other disease processes like joint trauma, meniscal lesions, chronic synovitis, diabetes mellitus, septic arthritis, psoriatic arthritis, osteoarthritis, rheumatoid arthritis.<sup>1, 2, 3</sup> In the present case there was an associated chronic synovitis with synovial lipomatosis.

The exact etiology of synovial lipomatosis is unclear. One of the proposed hypothesis is that, the mesenchymal stem cells in the synovium differentiate into adipocytes.<sup>6</sup> It is a stepwise phenomenon starting with adipocyte metaplasia and inflammation. Fibrosis occurs at a later stage.<sup>1</sup> A positive co-relation has

been established between abnormal fat metabolism and occurrence of synovial lipomatosis, as evidenced by increased incidence of the same in obesity, protein energy malnutrition and short bowel syndrome.<sup>1</sup>

Synovectomy is the treatment of choice and it is curative upon complete excision. However recurrences have been reported.<sup>4</sup> Erselcan et al., have attempted treatment with non-surgical alternatives such as yttrium- 90- radiosynovectomy and chemical synovectomy using osmic acid. No recurrences were reported for a year following this treatment.<sup>8</sup>

The prognosis is good with complete recovery if there are no associated risk factors causing exacerbation of the disease.<sup>1</sup>

Although rare, it is important to distinguish this entity from other conditions since it mimics a number of neoplastic and non- neoplastic conditions for which the prognosis and treatment varies. The most common conditions which need to be distinguished clinically, radiographically and histologically are synovial lipoma, synovial chondromatosis, pigmented villonodular synovitis, synovial hemangioma, degenerative conditions like rheumatoid arthritis and osteoarthritis.

## CONCLUSION

Although rare, synovial lipomatosis should be considered while evaluating lesions around the knee joint with acute or chronic presentation to distinguish it from other neoplastic and non- neoplastic lesions in order to determine the appropriate management and prognosis.

**Conflict of interest: Nil**

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