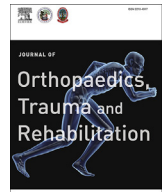




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Case Report

A Rare Intra-articular Pathology of Knee Lipoma Arborescens: A Report of Two Cases Managed by Arthroscopic Synovectomy

膝關節罕見的關節內病變—樹枝狀脂肪瘤：由關節鏡滑膜切除術醫治的兩個病例報告



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ABSTRACT

Lipoma arborescens is a rare intra-articular condition of unknown exact aetiology. Lipoma arborescens is one of the differential diagnoses of diffuse chronic swelling of the knee and its magnetic resonance imaging (MRI) appearance is diagnostic. We present two cases of patients with recurrent knee effusion. MRI showed a frond-like fatty synovial mass and joint effusion that suggested the likelihood of lipoma arborescens. Arthroscopic synovectomy was performed and pathology confirmed the diagnosis. There was no recurrence of symptoms after synovectomy.

中文摘要

樹枝狀脂肪瘤是罕見而未知確切病因的關節內病症。樹枝狀脂肪瘤是造成慢性膝關節腫腿的鑑別診斷之一，從它的磁共振成像已經可以確定診斷。我們報告了兩個出現復發性膝關節積液的病例。當中磁共振成像顯示呈脂肪質滑膜和關節積液，暗示了樹枝狀脂肪瘤的可能性。關節鏡滑膜切除術和其後的病理化驗確定了診斷。滑膜切除術後病人並沒有復發症狀。

Introduction

In this report, we highlight two cases of lipoma arborescens that occurred within the past 7 years in our department.

Case reports

Case 1

The first patient was a 47-year-old woman who presented with swelling of the left knee for 1 year with no history of trauma. She had a history of multinodular goitre and excision of a left breast benign mass had been performed. She also had a history of swelling of the right knee with arthroscopic synovectomy performed 15 years previously. The pathology of her right knee synovium revealed chronic synovitis. There was no recurrence of right knee effusion after synovectomy. A physical examination of her left knee showed effusion without a palpable mass and her knee joint

motion was limited to a 0–40-degree range of motion due to effusion. There was no ligamentous laxity clinically.

Case 2

The second patient was a 60-year-old man who presented with spontaneous onset of right knee effusion. He had no history of trauma and enjoyed good past health. A physical examination revealed a limited right knee motion in the 0–30-degree range of motion due to effusion with increased temperature of the right knee joint. No clinical laxity was demonstrated and no mass was felt on his right knee joint.

Laboratory studies of both patients included complete blood analysis, biochemistry panel, and inflammatory markers such as erythrocyte sedimentation rate and C-reactive protein; all results were normal. Rheumatoid factors and the antinuclear antibodies of both patients were negative. Knee aspirations were performed on both patients for diagnostic and symptomatic relief. Aspirated fluid taken from the 47-year-old patient was clear and yellowish but the amount aspirated was not documented, whereas the synovial fluid withdrawn from the 60-year-old patient showed 75 mL gross

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haemarthrosis. Gram staining of the aspirated fluid revealed no bacteria. Acid-fast bacilli, fungus, and urate crystal results were all negative. Both patients showed recurrence of knee effusion after aspiration but the time lag was not clearly documented.

Radiographs of the patients' knees revealed a soft tissue swelling over the suprapatellar pouch of the patella and mild degenerative changes (Figures 1 and 2). Magnetic resonance imaging (MRI) of both patients showed a fat signal lesion within the suprapatellar recess with a frond-like projection and marked joint effusion (Figures 3, 4, and 5). A thickened synovium with a haemosiderin deposit related to previous haemarthrosis was seen in the 60-year-old patient.

Arthroscopic synovectomies were performed on both patients (Figures 6 and 7). Histological examinations of the specimens showed that the synovial tissue was filled with mature fat cells and a moderate amount of plasma cells and lymphocytes, which was compatible with lipoma arborescens. At the time of writing this report, the 47-year-old woman has been followed up for 6 years and the 60-year-old man has been followed up for 14 months, and no recurrence of the symptoms has been noticed.

Discussion

Lipoma arborescens is a rare intra-articular, benign lesion of the synovium. Coventry et al¹ observed only one lipoma arborescens in a series of 4000 arthrotomies performed for synovial disorders during a 19-year period at the Mayo Clinic, Rochester, MN, USA. The first case was presented in 1957 by Arzimanoglu.² The exact pathogenesis of lipoma arborescens is unknown. Most authors have suggested that it is due to a non-neoplastic villous or polypoid



Figure 2. Lateral knee X-ray of a 60-year-old male who presented with haemarthrosis. The X-ray shows the presence of degenerative changes with suprapatellar soft tissue swelling.

synovial proliferation. Henry L. Jaffe³ was the first to suggest that lipoma arborescens was a different entity to intra-articular lipoma.³ The condition usually affects the knee but it can occur in other synovial joints, such as the shoulder joint, elbow joint, wrist joint, hip joint, and ankle joint.⁴ Lipoma arborescens usually affects the



Figure 1. Anteroposterior knee X-ray of a 60-year-old male who presented with haemarthrosis. The X-ray shows the presence of degenerative changes with suprapatellar soft tissue swelling.

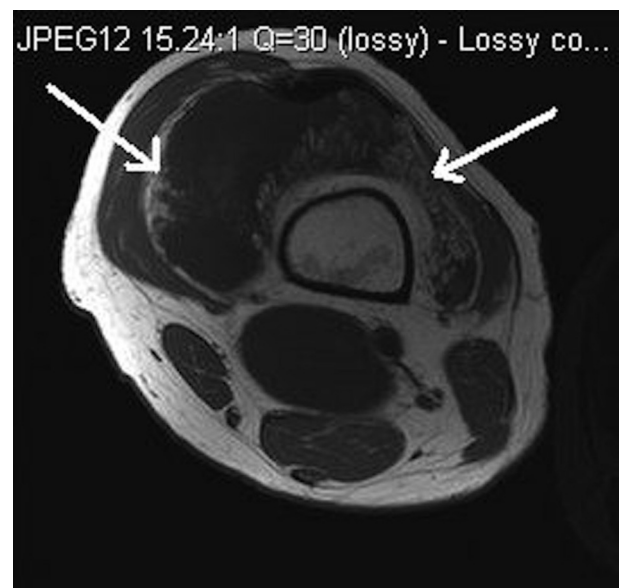


Figure 3. Magnetic resonance imaging of a 60-year-old male. The axial T1-weighted image shows a frond-like synovial mass of fat signal intensity (white arrows), together with large suprapatellar effusion, compatible with lipoma arborescens.



Figure 4. Magnetic resonance imaging of a 60-year-old male. The sagittal T1-weighted image shows a frond-like synovial mass of fat signal intensity (white arrows), together with large suprapatellar effusion, compatible with lipoma arborescens.

knees unilaterally and occasionally bilaterally.² Less than 100 cases have been reported to date.⁵ The lesion equally affects both sexes and has been reported to occur in patients from 9 years to 68 years of age.⁶ Some authors were of the view that lipoma arborescens were secondary to trauma, chronic rheumatoid arthritis, or degenerative joint disease whereas several literatures have documented that such degenerative changes were secondary to lipoma arborescens.⁷

A majority of lipoma arborescens patients presented with painless recurrent joint swelling over several years. The earliest reported onset of symptoms is 1 day, with the longest duration being 30 years. Mechanical symptoms of locking or popping may occur, together with joint line tenderness and crepitus. Pain may present as a result of effusion and range of motion can be restricted.

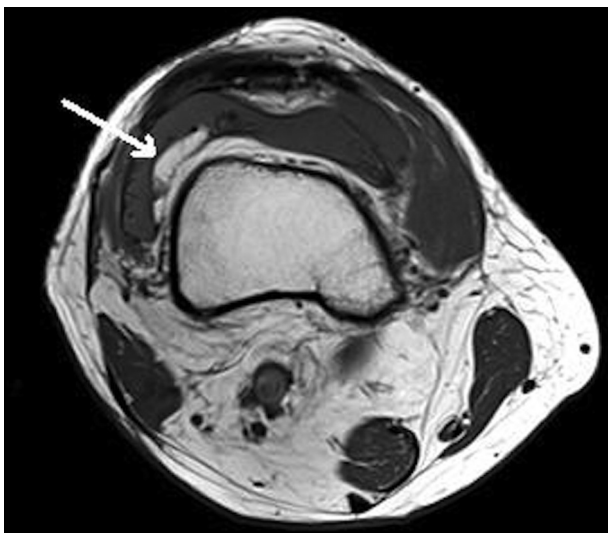


Figure 5. Magnetic resonance imaging of a 47-year-old female. The axial T1-weighted image shows suprapatellar effusion with a synovial lesion of fat signal intensity (white arrow), suggestive of lipoma arborescens.

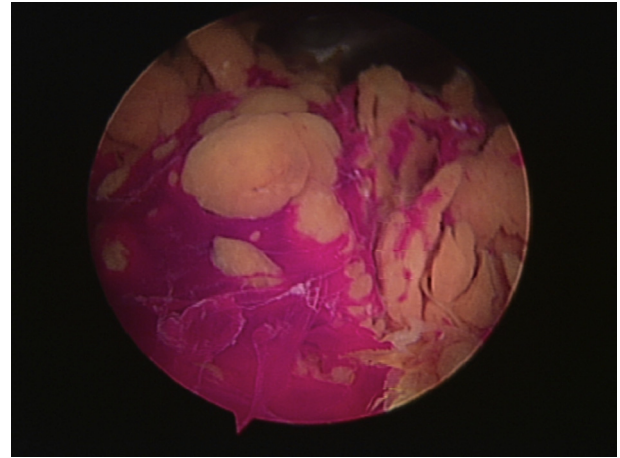


Figure 6. The arthroscopic appearance of lipoma arborescens of a 60-year-old male. It appears as a synovial lesion with numerous fatty-appearing globules and villous projections over the suprapatellar pouch.

A physical examination may show boggy crepitus of the anterior knee, with limitation of flexion. Laboratory tests, including erythrocyte sedimentation rate, C-reactive protein, rheumatoid factors, and other serological tests are usually normal, and we noted no exceptions in our study. Haemarthrosis was noted in one of our cases.⁸ The aspirated fluid of lipoma arborescens is usually clear and yellowish. Only Edamitsu et al⁸ have reported lipoma arborescens with haemarthrosis of the knee previously. They proposed that the haemarthrosis could be due to the impingement of the villonodular proliferative synovium between the patella and the distal femoral condyle. As far as we know, this is the first report of haemarthrosis associated with lipoma arborescens in Hong Kong.

Plain radiographs revealed a variable degree of degenerative joint diseases in most of the cases. Patients with knee involvement presented with increased soft tissue swelling over the suprapatellar region due to the soft tissue mass or effusion.⁹ A provisional diagnosis could be made with high-resolution ultrasonography, based on the presence of frond-like villous projections and joint effusion.¹⁰

The gold standard for diagnosing lipoma arborescens is MRI.^{4,11} The pathognomonic features of lipoma arborescens are: (1) synovial mass with a frond-like architecture; (2) fat signal intensity on all pulse sequences; (3) suppression of signal with fat-selective presaturation; (4) associated joint effusion; (5) potential chemical

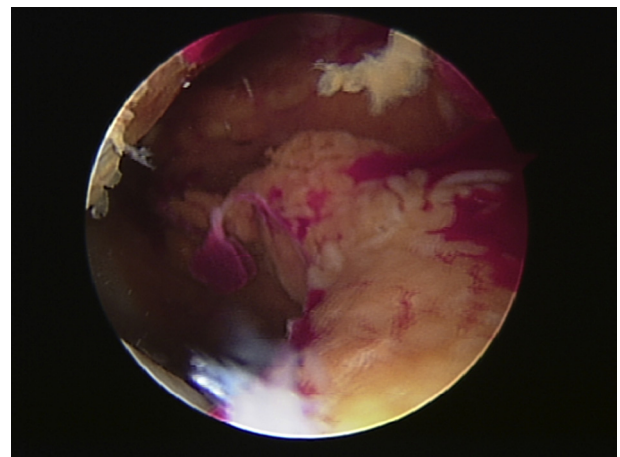


Figure 7. The arthroscopic appearance of lipoma arborescens of a 47-year-old female.

shift artifact; and (6) absence of magnetic susceptibility effects from haemosiderin.⁴ MRI is the investigation of choice to differentiate lipoma arborescens from other causes of recurrent joint effusion and haemarthrosis-like pigmented villonodular synovitis, synovial haemangioma, and synovial chondromatosis.¹⁰

The management of lipoma arborescens is synovectomy, either by arthrotomy or an arthroscopic approach. Arthroscopic synovectomy is preferred because it provides a minimally invasive means to assess and treat the intra-articular lesions. However, if the lesion is so extensive that arthroscopic excision is not possible, open arthrotomy should be considered. Recurrence of lipoma arborescens is rare.¹² Only Coventry et al¹ reported a recurrence, in a 9-year-old with multiple lesions.

In summary, lipoma arborescens is a rare intra-articular lesion. It is one of the differential diagnoses of a patient with recurrent knee effusion. The pathognomonic features of lipoma arborescens in MRI are diagnostic. Synovectomy either by arthroscopic or open surgery is curative.

Conflicts of interest

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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