

## **Atypical young presentation of lipoma arborescens of knee with USG and MRI correlation**

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### **Abstract**

Lipoma arborescens of the knee joint is a rare entity and only a few cases have been documented in literature. It is described as an idiopathic rare joint disease in which benign fatty deposits replace and distend the synovium. Incidence rate of 0.12-0.25% has been evaluated by Vilanova *et al* with slight male preponderance and mean age of presentation 45.6 years. Clinically patient may present with diffuse painless gradually progressive swelling of the knee joint. MRI and High Resolution Ultrasonography are the diagnostic imaging modalities. Here, we present a case report of an atypical lipoma arborescens in a young adult.

**Keywords:** lipoma, arborescens, atypical, rare, swelling.

### **1.Introduction**

Lipoma arborescens of the knee joint is a rare entity and only a few cases have been documented in literature. This is a slow growing lesion and usually involves the knee, shoulder, hip and elbow joints. It usually has a slight male preponderance with mean age of presentation being 45.6 years. MRI usually shows a frond-like villous projection in the joint involved. Treatment of choice is arthroscopic total or sub-total synovectomy. Here, we report an atypical case of lipoma arborescens in a young adult which is extremely rare.

### **2. Case Report**

#### **2.1 History**

A 17 years male residing in Mumbai (India) came to the Orthopaedic OPD with swelling over right knee since 3 years.

#### **2.2 Negative history**

No history of trauma/fall, morning stiffness or Koch's contact.

#### **2.3 Clinical Examination**

Local examination revealed a diffuse swelling of right knee joint with supra-patellar

fullness. Fluctuation test and patellar tap test were positive.

#### **2.4 Investigations**

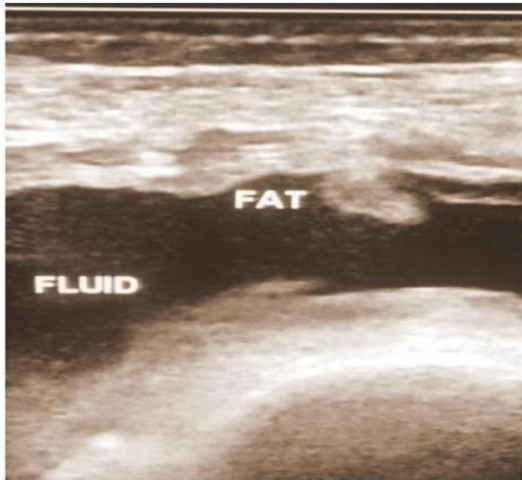
Antero-posterior (AP) and lateral view knee radiographs revealed soft tissue fullness of supra-patellar pouch with shift of fat planes. No evidence of destructive lesion noted.

High resolution ultrasonography revealed joint effusion with anechoic fluid contents and frond like villous projections of the synovial tissue associated with no demonstrable flow on colour doppler study. [Fig 1, 2]

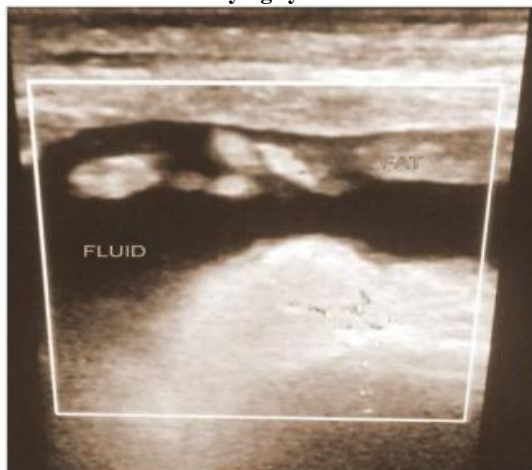
MRI Knee showed gross right sided knee joint and suprapatellar bursal effusion with frond like villous projections of the synovium following fat signal intensity on all pulse sequences projecting intra-articularly. Coronal T1W MRI showed high signal intensity frond-like villous projection in suprapatellar bursal region of fat intensity with joint effusion. Sagittal Fat Sat MRI revealed complete suppression of villous projection in suprapatellar bursal region with hyperintense joint effusion. Axial Fat Sat images shows complete suppression of villous projection in suprapatellar bursal region [Fig 3, 4, 5]

Based on classical MRI findings, a diagnosis of lipoma arborescens was made.

**Figure 1: High resolution ultrasonography of the knee joint revealed joint effusion with frond like villous projections of the synovium.**



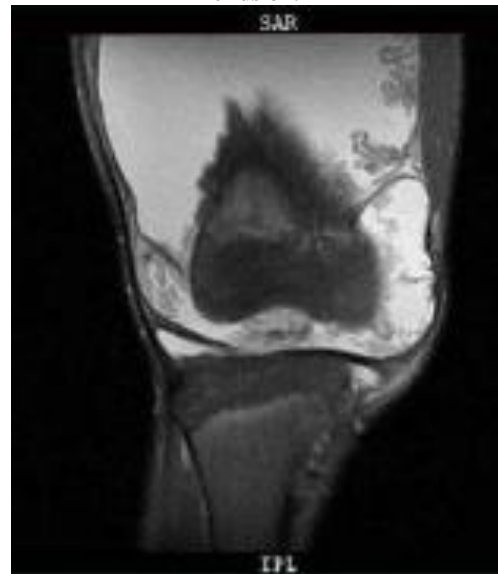
**Figure 2: Colour doppler study of the knee joint reveals no demonstrable flow in the villous proliferation or the underlying synovium**



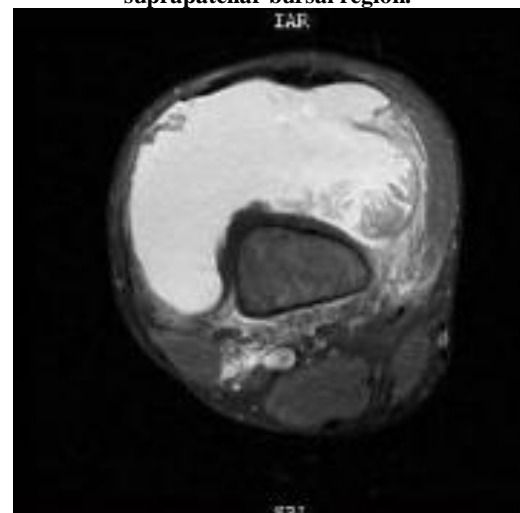
**Figure 3: Coronal T1W MRI of the knee joint showed frond-like fat intensity villous projection in suprapatellar bursal region with joint effusion.**



**Figure 4: Sagittal Fat SATMRI of the knee joint revealed complete suppression of villous projection in suprapatellar bursal region with hyperintense joint effusion.**



**Figure 5: Axial Fat SAT images of the knee joint shows complete suppression of villous projection in suprapatellar bursal region.**



### 3. Discussion

Lipoma arborescens is described as an idiopathic rare joint disease in which benign fatty deposits replace and distend the synovium. First described by Hoffa, the resultant frond-like appearance was thought to resemble a tree; hence, the Latin term arbor (“tree-forming” or “treelike”). This condition is also seen in the gleno-humeral joint, hip joint, elbow joint and subdeltoid bursa. The exact cause is not known. One explanation is that the synovial hyper-proliferation occurs in response to trauma and inflammation.[1]

Incidence rate of 0.12-0.25% has been evaluated by Vilanova *et al* with slight male preponderance and mean age of presentation 45.6 years.[2]

Clinically patient may present with diffuse painless gradually progressive swelling of the knee

joint. Synovial fluid routine and culture shows no growth after 48 hours. (In our case serum uric acid level was normal and rheumatoid factor was negative). Microscopic section-study of biopsied tissue shows synovial lined, polypoidal tissue bits comprising of mature adipocytes separated from fibro-vascular septae.[5] Chronic inflammatory cell infiltrate can sometimes be seen probably secondary to diagnostic tapping of synovial fluid. No evidence of granuloma/ caseation is usually noted.

High resolution ultrasonography will show anechoic joint effusion with frond like villous projections from the synovial tissue associated with no demonstrable flow on colour doppler study- ruling out malignancy or infective etiology.

MRI features include- Gross knee joint and suprapatellar bursal effusion with frond like villous projection of the synovium projecting intra-articularly following fat signal intensity on all pulse sequences.[3, 4] T1W and T2W MRI show high signal intensity frond-like villous projection in suprapatellar bursal region of fat intensity with joint effusion. No cortical erosions are seen. Fat Saturated MRI sequences reveal complete suppression of villous projection in suprapatellar bursal region with hyperintense joint effusion. Post gadolinium scans show no enhancement of the synovial proliferation.

Arthroscopic sub-total or total synovectomy is the treatment of choice for lipoma arborescens.[5] Diagnostic and therapeutic arthroscopy and tissue histopathological examination can help in confirming the diagnosis in atypical young age presentations like in our case.

However, frond-like villous projection of the synovium following fat signal intensity on all pulse sequences projecting intra-articularly are the characteristic feature to be kept in mind for diagnosing lipoma arborescens even with atypical clinical scenario but ultrasonography and colour doppler are cost effective modalities to rule out other lesions mimicking lipoma arborescens in young age group.

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