

## Synovial Cavernous Hemangioma of the Knee Joint: A Case Report

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**Abstract:** Synovial Hemangiomas are benign tumours of vascular origin and isa rare cause of knee swelling.A 25 year old gentleman presented with knee pain & swelling in the outer aspect of right knee joint for over17 years.On examination ,patient had a well-defined swelling on the superoanterolateral aspect of right knee.X ray and blood parameters were normal.MRIscan showed heterogeneously enhancing reticulated T1hypointense,T2 iso-hyperintense lesion lateral to the distal shaft of femur in relation to the synovium of the knee joint with T2 hypointense rim and septae.Surgical excision was performed and histopathologic examination confirmed synovial cavernoushemangioma.Post-operative recovery was uneventful and atfollow up after 3 months of the procedure , patient remained asymptomatic with full range of knee movements.

**Key Word:** Hemangioma,MRI,synovium.

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### I. Introduction

Intra-articular hemangioma is one of the rare cause of knee swelling.<sup>[1]</sup>Usual presentation is insidious onset , painful swelling of knee, mostly without any history of trauma.<sup>[2]</sup>Two common types are the capillary hemangiomas, composed of an endothelial component forming many small blood vessels, and the cavernous hemangiomas, characterized by large blood-filled spaces lined with a thin endothelium and lacking the cellularity noted in the former type. Of the two, cavernous variety is the most frequent type found in the knee joint. <sup>[3]</sup> Both these types can cause a chronic haemorrhagic synovitis that tend to remain undiagnosed for long periodsleading to joint degeneration.<sup>[1]</sup>

Magnetic resonance imaging (MRI) is the main imaging modality in diagnosing this lesion, which allows a precise diagnosis and help to specify the extension of the hemangioma. Angiography may be helpful to find feeder vessels, and embolization of the same can be done at the same setting . In the absence of specific vessels to embolize, surgical excision, either done arthroscopically or per arthrotomy, is the treatment of choice.<sup>[4]</sup>.

### II. Case Report

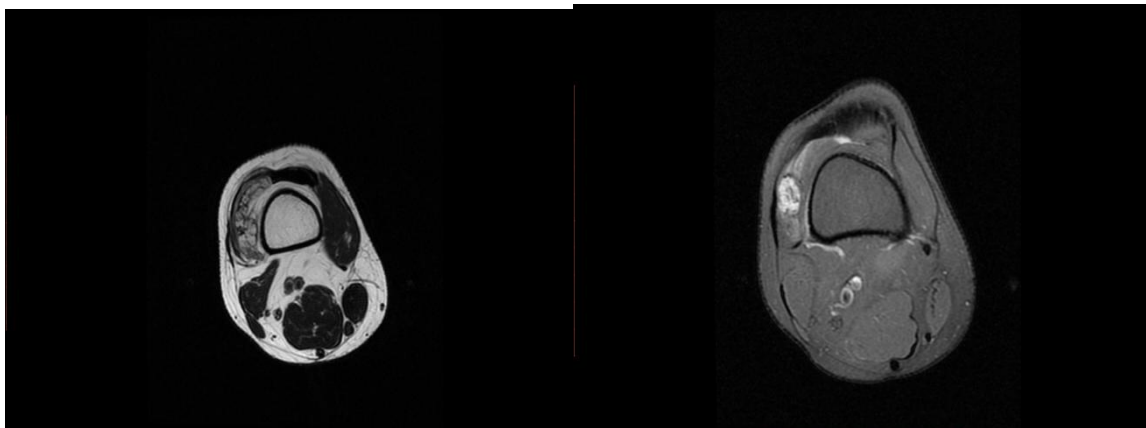
A 25-year-old gentleman presented to our orthopedic Outpatient Department with complaints of gradually increasing pain and swellingin the outer aspect of his right knee joint and thinning of thigh muscles for over 17 years .There was no history of trauma to the joint or history of similar swellings elsewhere in the body. The size of the swelling increased on standing. The pain was aggravated by activity and relieved by rest and analgesics. He had never been assessed by an Orthopedician prior to this.On examination patient had a well-defined swelling on the superior antero-lateral -aspect of right knee which was moreprominent with the knee flexed . The swelling measured 8 x 6 x 4 cm.It was mildly tender, soft in consistency and not attached to the skin or deeper structures. The knee had a near full range of movement,except last 15 degrees of flexion was limited due to pain and extension was unaffected . There was no demonstrable kneeinstabilityor knee effusion.(Figure 1).There was a wasting of 6cms in the thigh segment. No other swellings similar nature noted elsewhere on the patients body.



**Figure 1** Preoperative photograph showing the anterolateral knee swelling. (Rt knee)

Investigations

X-rays, blood counts and coagulation parameters were normal. An MRI of the right knee showed a heterogeneously enhancing reticulated T1 hypointense, T2 iso-hyperintense lesion lateral to the distal shaft of femur in relation to the synovium of the knee joint with T2 hypointense rim and septae (Figures 2 to 7). The findings were suggestive of synovial cavernous hemangioma with possible differential diagnosis of focal Pigmented villonodular synovitis



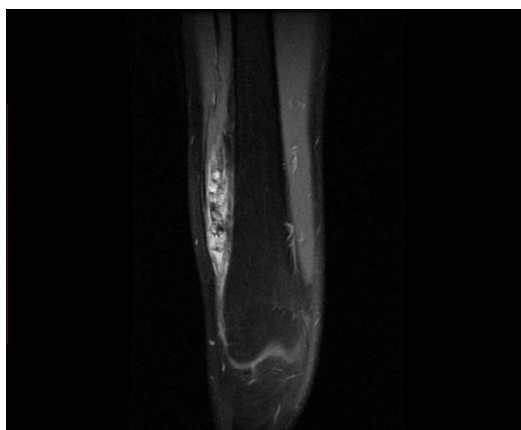
**Figure 2.** Axial T2 image showing well defined hyperintense lesion with internal septations in the lateral suprapatellar region  
**Figure 3.** Axial fat saturated PD image showing well defined hyperintense lesion the lateral suprapatellar region



**Figure 4.** Coronal fat saturated PD image showing well defined hyperintense lesion



**Figure 5.** Coronal pre contrast fat saturated T1 image showing well defined intermediate signal lesion

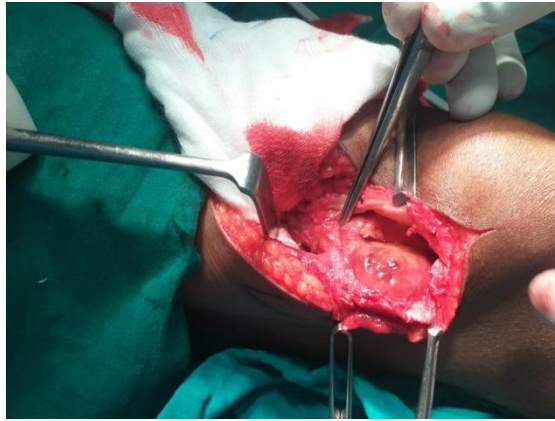


**Figure 6.** Coronal post contrast fat saturated T1 image showing well defined heterogeneously enhancing with internal septations



**Figure 7.** Saggital post contrast fat saturated T1 image showing well defined heterogeneously enhancing with internal septations

An excision of the lesion was performed under spinal anesthesia and tourniquet support. Through an antero-lateral arthrotomy of the knee, the swelling was identified closely related to synovium(Figures 8).and complete surgical excision was done using electrocautery and meticulous haemostasis at all stages. The lesion appeared as a reddish-brown lobulated mass with pigmentation. (Figures 9).

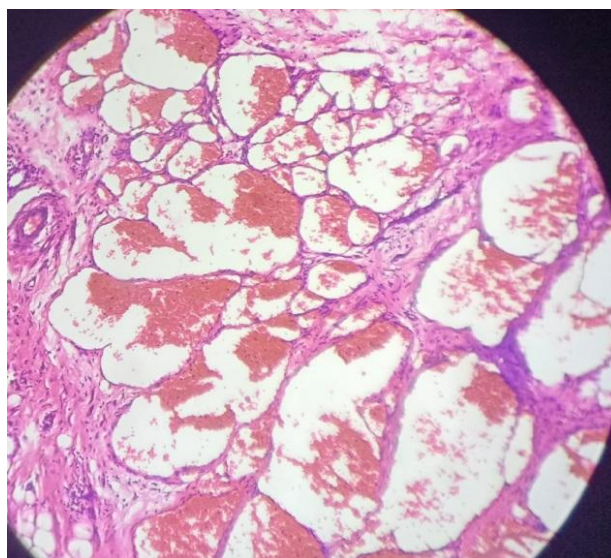


**Figure 8.** Intraoperative picture showing synovial localisation



**Figure 9.** Excised specimen

Wound was closed in layers followed by a compression bandage. The specimen sent for histopathological examination, later confirmed the diagnosis of a cavernous synovial haemangioma(Figure 10).



**Figure 10.** Closely packed varying sized thin walled dilated vascular channels, some showing valves

Patient made a good and uneventful recovery. Quadriceps exercises were initiated on the first post-operative day and range of motion exercises from the second day onwards. At three months post-operative follow up, the patient remained asymptomatic with pain free near normal range of knee movements. Further follow up is planned in 6 months time unless warranted by any new symptoms .

### **III. Discussion**

Cavernous hemangiomas are rare, benign, non-infiltrative swellings commonly seen in children before 16 years. Based on the location, they can be juxta articular; when it is localized out of the articular capsule, synovial; when it is intra capsular, or intermediate when it is present on both sides of synovium. Synovial localization is rare, accounting for less than 1% of all hemangiomas.<sup>[5]</sup> Synovial hemangiomas in children and young adults and are often diagnosed late.<sup>[6]</sup> They usually present as a non-traumatic joint swelling associated with recurrent haemorrhagic effusions in early childhood. The symptoms generally present for several years before the time of diagnosis. Typical presentation of a spongy compressible mass which can be palpated over the joint, that decreases in size upon elevation of the limb.<sup>[2]</sup>

History of recurrent non-traumatic haemarthrosis in a patient with a normal coagulation profile should raise a suspicion of synovial haemangioma. Earlier X-rays may be essentially normal in most of these cases or may show just a soft tissue shadow. At times calcification or phleboliths may be noted on the X-rays. Less than 5% of patients show periosteal reaction, cortical destruction, osteoporosis, advanced maturation of the epiphyses and a discrepancy in leg length or even arthropathy simulating haemophilia. MRI is the preferred diagnostic modality, which not only helps with diagnoses but also delineates the lesion. Angiography is an important investigative tool and may also provide the opportunity for therapeutic embolisation of a major feeder vessel, but it may fail to show the haemangioma if the vessels are thrombosed. But none of these modalities are definitive until the final confirmation is made by histopathological examination of the sample confirming it.<sup>[7]</sup> The clinical and radiological differential diagnosis being - pigmented villonodular synovitis (PVNS) and synovial sarcoma, other arthropathies (rheumatoid arthritis, juvenile chronic arthritis, hemophilic arthropathy, synovial osteochondromatosis, or lipoma arborescens).<sup>[4]</sup>

The synovial hemangiomas should be ideally treated early in view of their tendency to cause recurrent effusions leading to chondral damage and secondary degeneration.<sup>[4]</sup> In the literature, several treatment methods have been advocated for synovial haemangioma like radiotherapy, surgical excision (open or arthroscopic), and arthroscopic laser ablation. Pedunculated or focal lesions of small sizes may be amenable by arthroscopic excision. For larger lesions, the results of open excision are better and is the treatment of choice.<sup>[1]</sup>

### **IV. Conclusion**

Intra-articular synovial cavernous hemangioma is a rare benign tumour, most commonly affecting the knee joint. Recurrent episodes of non-traumatic haemarthrosis in a skeletally immature patient with normal coagulation parameters is the most common presentation, but progressive pain and dysfunction of the joint without haemarthrosis should also raise the suspicion of synovial haemangioma. The differential diagnosis that should be considered includes PVNS, synovial sarcoma, and other arthropathies. X-rays are of limited help and MRI is the preferred investigation for confirming the diagnosis. Angiography is of diagnostic and therapeutic value if vessels are not thrombosed. Once the diagnosis is reached, early excision should be performed.

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