

# Synovial Hemangioma of the Knee Management and Excellent Outcome 2 Years after Arthroscopic Synovectomy in a 25-year-old Male with a 20-year History

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## What to Learn from this Article?

Long-standing synovial hemangiomas which are localized with spared articular cartilage have a good prognosis with arthroscopic synovectomy.

## Abstract

**Introduction:** Synovial hemangioma is a rare condition with <200 published case reports in world literature and is frequently misdiagnosed, leading to diagnostic delay of many years. This delay is even more significant if the patient comes from a rural background with a dearth of medical facilities in the area. This case had a lag of nearly 20 years from the time of onset of symptoms and the required management which is the maximum reported for any synovial hemangioma since most of them have been found and treated in adolescents.

**Case Report:** We present a case of an atypical synovial hemangioma in a 25-year-old Indian male from a poor socioeconomic background with a delay of 20 years who had both recurrent knee effusions and long-standing knee pain but kept ignoring his symptoms. It was managed by arthroscopic synovectomy. The patient reported to us after 2 years after the surgery with a painless knee and full range of movement.

**Conclusion:** Synovial hemangioma mostly affects the knee joint, showing recurrent bloody effusions without a history of trauma. If there are no intermittent effusions, the diagnosis will be even more difficult. In cases of non-specific symptoms and long-standing knee pain of many years, the diagnosis of a synovial hemangioma should also be considered. In this particular case, magnetic resonance imaging was used to evaluate the patient after the plain radiographs and showed characteristic lace-like or linear patterns. Diagnostic arthroscopy and surgical excision were done in the same sitting, and biopsy was sent to the histopathology laboratory which confirmed our diagnosis. Although this patient had the disease since 20 years and presented late, he had little degeneration of cartilage at the time of arthroscopy. The functional outcome at 2-year follow-up was excellent, and he had no disability, effusion and was pain free.

**Keywords:** Synovial hemangioma, presentation in adult, arthroscopic synovectomy.

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## Author's Photo Gallery



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## Introduction

Hemangiomas of bone constitute 1% of all primary bone tumors. The soft tissue types are even less common and often arise in the skin and subcutaneous tissue. Muscle and synovial linings are less frequent sites of origin. Since the first case was described by Bouchut in 1856, fewer than 200 cases have been reported. Most cases have been the intra-articular and intermediate type of hemangiohamartoma, another form of vascular tumor of the leg representing an arteriovenous malformation which involves the synovia and causes intra-articular bleeding. Only a few of these have been true synovial hemangioma [1, 2]. Usually, the patient presents with a history of recurrent atraumatic bloody effusions [2, 3, 4]. Non-specific presentations are also common and may lead to a diagnostic delay of many years [5]. We present the case of an atypical synovial hemangioma of the knee joint, having no single bloody effusion. Treatment methods have varied in the past. Angiography can help to find some feeder vessels, and embolization can be done in the same session. In the absence of specific vessels to embolize, surgical excision, either done per arthroscopy or per arthrotomy, is the treatment of choice.

## Case Report

A 25-year-old Indian male presented with a history of pain and swelling in his right knee joint for 20 years for which he had received previous treatment in the form of simple analgesics only and had never reported to an Orthopedician. His physical examination revealed a soft, non-tender, palpable 3 cm × 3 cm mass on the lateral aspect of his right knee. In full flexion, the mass appeared more pronounced. It was compressible and filled back when the pressure was released. He denied any history of trauma, but there was a history of recurrent effusion in his knee. The patient had a near normal range of motion and no signs of instability. McMurray and Apley's tests were negative. There was no difference in leg length, and there were no cutaneous lesions. Laboratory tests, including a complete coagulation profile, were all within normal range, and his medical, developmental, and family histories were unremarkable. Plain radiographs and magnetic resonance imaging (MRI) scans were obtained (Fig. 1, 2, and 3). The plain radiographs showed no abnormality, but the MRI was suggestive of a vascular synovial tumor and the differentials kept were synovial hemangioma and synovial sarcoma. Diagnostic arthroscopy and incisional biopsy were done in the same sitting.

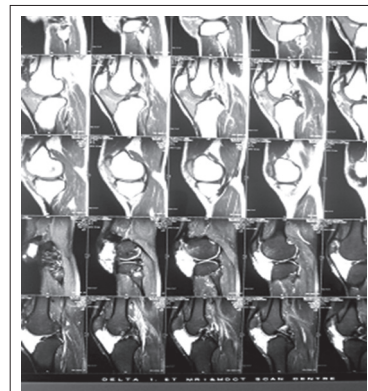


**Figure 1:** Pre-operative X-ray of the patient. The X-rays are anteroposterior and lateral views of the knee joint taken in standing position. The soft tissue swelling is apparent on the lateral view. There is no periosteal reaction or phleboliths.

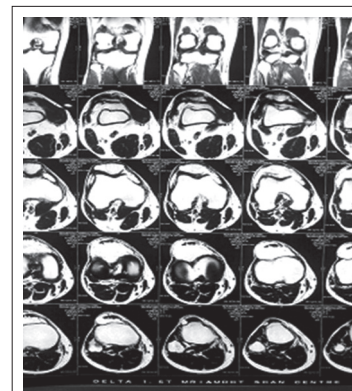
The mass was excised completely, and synovectomy around the medial patella-femoral compartment was done in the same sitting (Fig. 4, 5). Some surrounding tissue showing bluish discoloration/inflammation was cauterized to prevent post-operative hemorrhage. The biopsy specimen was 4 cm in diameter, measuring synovial tissue. An intraoperative frozen section showed a hemangioma with huge, cavernous spaces but also containing capillary vessels. The final histological evaluation confirmed a cavernous synovial hemangioma (Fig. 6, 7, and 8). Post-operative period was uneventful with no recurrent effusion.

## Discussion

Synovial hemangiomas are rare intra-articular tumors of the knee in children and young adults which are often diagnosed late [6]. There is usually a history of recurrent atraumatic painless bloody effusions as was the case in our patient. Plain films are often of poor diagnostic value because they are normal in over half of patients, and in other cases, they show soft tissue density, suggesting joint effusion or a mass.



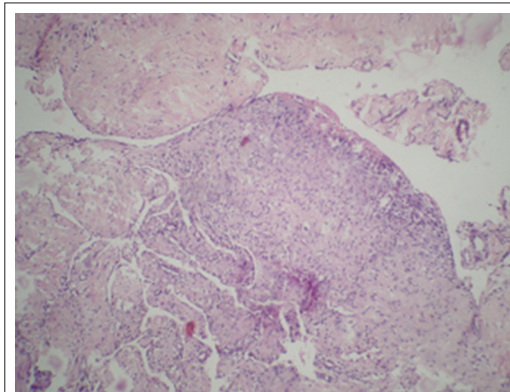
**Figure 2:** Sagittal sections of magnetic resonance imaging clearly showing the vascular nature of the tumor T2-weighted sections (last ten) showing hyperintense lesion inferior to the patella.



**Figure 3:** Axial section of the magnetic resonance imaging. The lesion is seen underneath the patella and is hyperintense as compared to the surrounding musculature on T1-weighted axial section.



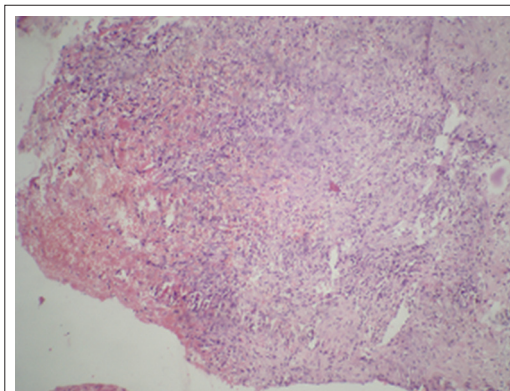
**Figure 4:** Full range of motion 2 years after synovectomy.



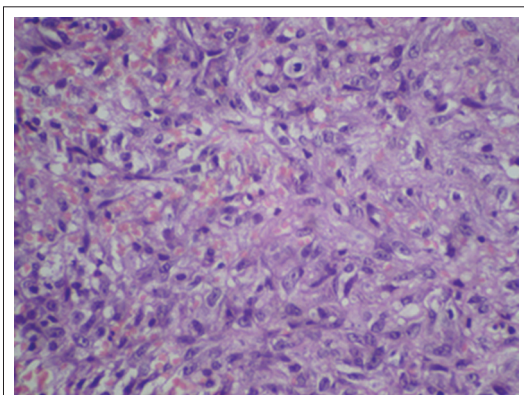
**Figure 7:** Hematoxylin and eosin stained section showing thin-walled cavernous spaces.



**Figure 5:** No recurrence 2 years after arthroscopic synovectomy.



**Figure 8:** Photomicrograph showing proliferation of thin- and thick-walled vascular channels ( $\times 40$ ).



**Figure 6:** Slide showing synovial tissue with hyalinization of stroma. Focally, there are proliferating vascular channels surrounded by spindle-shaped cells ( $\times 400$ ).

They may contain phleboliths or amorphous calcifications; this is thought to be pathognomonic. In <5% of patients, they show periosteal reaction, cortical destruction, osteoporosis, advanced maturation of the epiphyses, and a discrepancy in leg length or even arthropathy simulating hemophilia. MRI offers superior tissue contrast and is more accurate than computed tomography in defining the size and extent of a soft tissue lesion as well as the presence of any chondral degeneration [7]. It has become the main diagnostic method for the diagnosis and treatment

planning of synovial lesions [8, 9]. The differential diagnosis should include mainly - pigmented villonodular synovitis (PVNS) and synovial sarcoma, other arthropathies (rheumatoid arthritis, juvenile chronic arthritis, hemophilic arthropathy, synovial osteochondromatosis, or lipoma arborescens) usually being distinguished clinically or after MRI interpretation [10, 11, 12]. Ideally, the synovial hemangiomas should be treated early because of their tendency to cause recurrent effusions leading to chondral damage and secondary degeneration. Bennet and Cobey classified synovial hemangiomas as either localized, which had a good prognosis, less chances of recurrence and relatively spared articular cartilage, and diffuse type which are difficult to resect arthroscopically and had greater chances of recurrence.

### Conclusions

The average age at onset is 10.9 years for girls and 12.5 years for boys, and intra-articular hemangioma of the knee is very rare before adolescence [13]. The differential diagnosis should include mainly PVNS, synovial sarcoma, and arthropathies (rheumatoid arthritis, hemophilic arthropathy, synovial osteochondromatosis, or lipoma arborescens) [14-17]. As misdiagnosis is common, intra-articular hemangioma should be considered in skeletally immature patients who present with recurrent effusion and pain in the knee. Orthopedicians must exercise a high index of suspicion, as prompt diagnosis and treatment can prevent progressive secondary degeneration



of the joint. Pre-operative consultation of a vascular surgeon to consider embolization may be necessary in the diffuse variety of hemangioma [18]. The anteromedial portion of the knee is typically involved in the localized type which is manageable with arthroscopic excision and have spared articular cartilage. Open excision is necessary in large lesions which have infiltration into surrounding muscles [19].

### Clinical Message

Long-standing synovial hemangiomas which are localized with spared articular cartilage have a good prognosis with arthroscopic synovectomy.

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