

## Case Report

# Synovial hemangioma: a pictorial essay of two cases

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### ABSTRACT

Synovial hemangiomas are uncommon benign tumours of vascular origin arising in relation to the synovium of joints or bursae. Usually, a long-standing history of pain and joint swelling is present affecting children and adolescents especially in the knee or elbow joint. We present two cases of knee swelling diagnosed as synovial hemangioma.

**Keywords:** Knee, Swelling, Synovial hemangioma, Vascular

## INTRODUCTION

Synovial hemangioma is a rare cause of joint swelling which can usually be accurately diagnosed by imaging techniques. Two case reports of synovial hemangioma of the knee joint are presented with regards to the role of imaging in their diagnosis and management.

## CASE REPORT

### Case 1

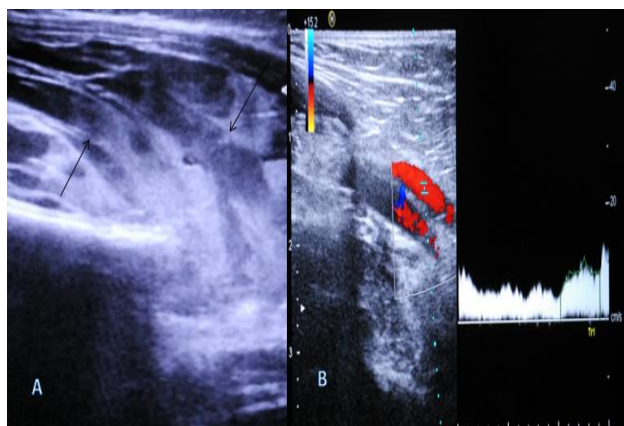
An 8 year old girl presented with a gradually increasing intermittently painful swelling of the left knee for 5 years. On examination, a soft compressible swelling of the left knee involving the suprapatellar region and popliteal fossa was palpable. Flexion of the left knee was limited. The right knee was unremarkable.

Radiographs (Figure 1) showed a radiodense mass with multiple periarticular clustered punctate foci of calcifications suggestive of phleboliths. A high resolution ultrasound (Figure 2) performed with a 10 MHz linear probe revealed a lesion composed of multiple hypoechoic

serpentine tubular structures in the suprapatellar region and popliteal fossa. Mobile internal echoes were noted within the structures which on colour and spectral doppler showed slow venous pattern of flow.

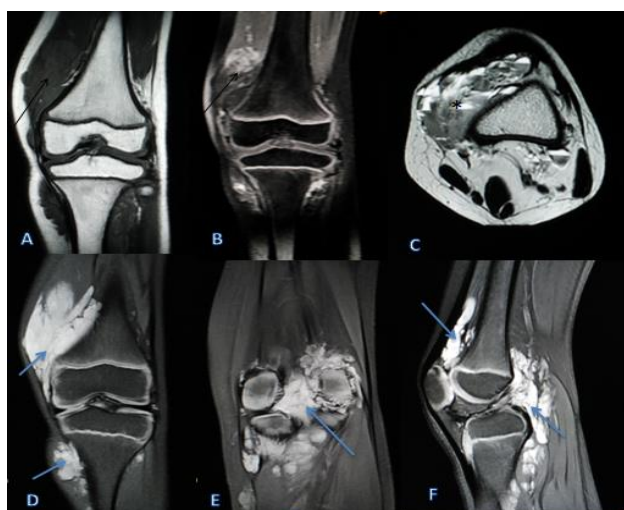


**Figure 1 (A-C): AP, Lateral and coned lateral radiographs of the left knee show a large periarticular lobulated radiodense mass (black arrows) with clustered punctate foci of calcification (blue arrows) suggestive of phleboliths. No bony erosion is seen.**



**Figure 2 (A, B): Gray scale and doppler ultrasound images show multiple serpentine tubular structures with slow venous pattern of flow.**

MRI (Figure 3) showed a large lobulated mass involving the left knee with extension into the periarticular muscles of the adjacent thigh, leg region and subcutaneous fat.



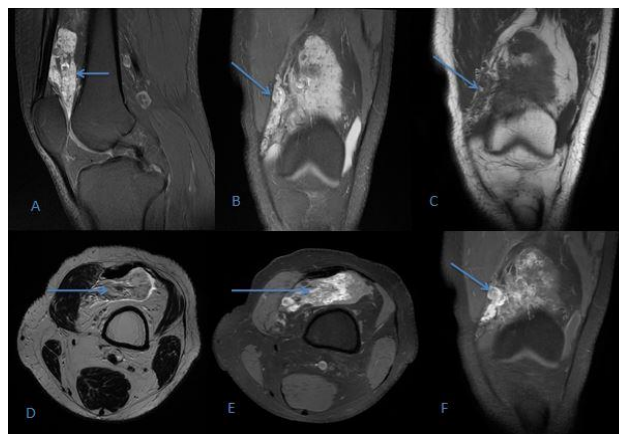
**Figure 3: A) Coronal T1W; B) fat suppressed contrast enhanced T1W images show a heterogeneously enhancing mass of intermediate signal intensity (black arrows). Axial T2W images show multiple tubular structures with fluid-fluid levels (asterisk) within the mass; (D, E) Coronal and (F) sagittal PDFS images show the left knee mass extending to involve the subcutaneous fat as well as the periarticular muscles (blue arrows).**

The mass had intermediate signal intensity on T1W images with heterogenous contrast enhancement. T2W images showed multiple hypointense tubular structures with fluid-fluid levels. Imaging findings were consistent with a diagnosis of synovial hemangioma.

The child's guardians declined surgery and she is on follow up with no further worsening of symptoms for over two years.

### Case 2

A 21-year-old male presented with a painful swelling of the left knee since two years. Examination revealed a soft compressible suprapatellar swelling with limited range of motion. Radiographs demonstrated an ill-defined suprapatellar swelling. MRI (Figure 4) demonstrated an encapsulated suprapatellar mass containing enhancing serpentine tubular structures thought to represent a hemangioma.



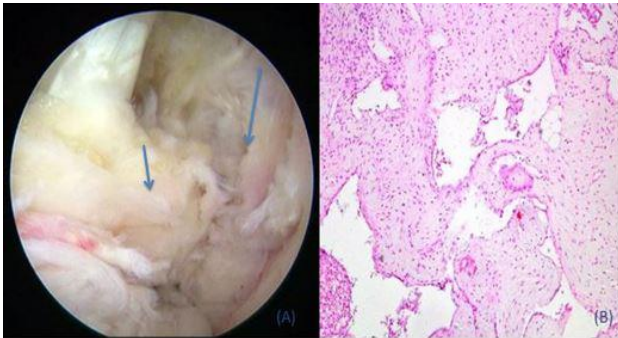
**Figure 4: A) Sagittal; B) coronal PDFS images show a suprapatellar mass containing hyperintense tubular structures. Coronal T1WI; C) demonstrates signal intensity similar to that of muscle; D) Axial T2WI demonstrates an encapsulated hyperintense mass; E) axial; F) coronal contrast enhanced images show intense enhancement of the mass.**

Pre-operative sclerotherapy was attempted to decrease possible operative blood loss. On digital subtraction angiography (Figure 5), a tangle of vessels was noted draining into the popliteal vein. Two weeks after using sodium tetradecyl sulphate as sclerosing agent, doppler ultrasound demonstrated near total thrombosis of the lesion.



**Figure 5: Digital subtraction angiographic image demonstrates a tangle of vessels (arrow) draining into the popliteal vein (\*).**

Further, arthroscopy was performed which revealed a pinkish white mass adherent to the synovium consisting of dilated vessels [Figure 6 (A)]. Histopathology of the resected specimen revealed dilated cavernous vascular channels lined by flattened endothelial cells without atypia consistent with a cavernous hemangioma [Figure 6 (B)]. Excision of the mass resulted in significant loss of pain and improved range of motion of the joint.



**Figure 6: A) Arthroscopy demonstrates a vascular mass adherent to synovium; B) Histopathology consistent with cavernous hemangioma**

### Discussion

Synovial hemangiomas are a rare heterogeneous group of vascular proliferations defined by their anatomic location i.e. synovium of an intraarticular space or bursa. Although benign, these lesions may involve adjacent soft tissue or bone and are best regarded as examples of angiomatosis.<sup>1</sup> Their origin from synovium is only assumed as confinement by synovium is not always apparent.<sup>2</sup>

Synovial hemangiomas show a variable microscopic composition of capillaries, arteries and veins. Hemosiderin deposition is often prominent and secondary changes like intravascular thrombosis, phleboliths, papillary endothelial hyperplasia and partial infarction may be seen.<sup>3</sup>

It typically affects children and adolescents, most commonly the knee and elbow joints.<sup>1</sup> Small hemangiomas are usually asymptomatic. When localized and pedunculated, it may impede joint movements. The child complains of pain as the lesion enlarges and usually at the time of presentation a mass is present. Recurrent hemarthroses may cause joint destruction. The lesion is

rarely diagnosed clinically due to the rarity of the lesion and non-specific nature of the complaints.

Plain radiographs may be normal or demonstrate a periarticular soft tissue density mass and phleboliths. Early maturation of adjacent epiphyses may be present. Ultrasound of the mass reveals the vascular nature of the mass. MRI has the advantage of multiplanar imaging with excellent soft tissue contrast and no radiation exposure. MRI is useful to detect smaller intra-articular masses and define their extent. Multiple enhancing tubular structures with fluid-fluid levels are characteristic.<sup>4</sup>

Smaller lesions are excised arthroscopically to prevent cartilage damage caused by recurrent hemarthroses. Large diffuse lesions, as in our case, may be excised arthroscopically or per arthrotomy with preoperative injection of sclerosant to decrease blood loss. However, this approach is associated with high rates of recurrence, hence a conservative approach may be preferable in select cases.<sup>5,6</sup>

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