Journal of Orthopedic Oncology
ISSN: 2472-016X

Zyman and Gellman et al., J Orthop Oncol 2017, 3:3
DOI: 10.4172/2472-016X.1000121

Case Report Open Access

Patellar Capillary Hemangioma in a Child – Is Patellectomy Necessary?

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Abstract

Patellar capillary hemangioma is a very rare tumor with only a few reported cases in the medical literature. Previously, this tumor was treated by means of partial patellectomy. We treated a skeletally immature 13 years old boy with a painful capillary hemangioma by curettage, bone grafting and internal stabilization. Clinical and radiographic healing was noted with full recovery and return to normal activity. In two years follow-up the patient was pain-free, regained full motion, and participated in daily and physical demanding activities. No radiographic recurrence was noted, Curettage, bone grafting and internal stabilization may provide adequate solution and enable return to normal, pain free activity, obviating the need for patellectomy in cases of a patellar hemangioma.

Introduction

Tumors of the patella are very rare in the general population, comprising 0.1% of all skeletal tumors [1], and even more so in the pediatric age group. Within this population, benign tumors of the patella are more frequent than malignant tumors (73% of all tumors). The most common benign neoplasms are giant cell tumor and chondroblastoma [2,3].

Hemangioma of the patella is an extremely rare condition. The literature has described only ten histopathologically pediatric confirmed cases [2] which were treated mainly by patellectomy or hemi-patellectomy, which might change knee function including mal tracking and quadriceps weakness [4]. We deemed this procedure as unacceptable in the pediatric patients. Therefore, we present our encounter with patellar capillary hemangioma and treatment by resection and local bone grafting.

Case Report

A 13 year old boy presented to the orthopedic outpatient clinic with left knee pain for several months. The patient's personal medical history was unremarkable. Although he was active in kickboxing, there was no history of a specific injury, fever, local swelling or erythema of the knee.

On physical examination the patient exhibited normal gait, full knee range of motion, intact extensor mechanism, adequate stability of the knee and normal patellar tracking. There was tenderness to palpation over the patellar superior pole anteriorly.

Laboratory results including complete blood count, erythrocyte sedimentation rate and C-reactive protein were within normal range.

X-rays of the knee revealed a radiolucent lesion of the patella with well-defined borders, just superior to the middle of the patella occupying almost its entire sagittal diameter (Figure 1). Further imaging, including CT, MRI and Ultrasound, showed a transverse lesion with sclerotic borders and no soft tissue mass (Figures 2 and 3).

Although the patient, as instructed, refrained from any strenuous activity, including kickboxing, the pain continued with no relief.

In light of the unrelenting pain curettage and bone grafting of the lesion through a direct anterior approach was performed. Intra operative frozen section showed connective and granulation tissue consistent with a reactive lesion. Bone graft was taken from the anterior tibia and packed into the void; the patella was then stabilized with Kirschner wires and a tension band (Figure 4).

The histological examination revealed fragments of slightly degenerated cartilage infiltrated by multiple capillary-sized vessels with focal venulization consistent with capillary hemangioma. No cellular atypia or endothelial multi layering, neither solid growth pattern was observed (Figure 5).

The hardware was removed uneventfully 6 months after the initial surgery (Figure 6). In a two year follow up the patient was doing well.

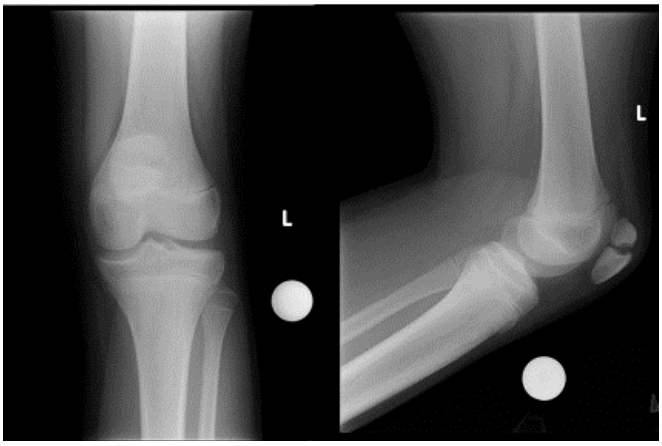

Figure 1: Images before surgery. X-ray findings on Anteroposterior (a) and Lateral (b) views. X-ray showing a radiolucent lesion of the patella with well-defined borders, just superior to the middle of the patella.

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Received August 21, 2017; **Accepted** August 28, 2017; **Published** September 02, 2017

Citation: Zyman J, Gellman YN, Doviner V, Goldman V, Pansky A, et al. (2017) Patellar Capillary Hemangioma in a Child – Is Patellectomy Necessary? J Orthop Oncol 3: 121. doi: 10.4172/2472-016X.1000121

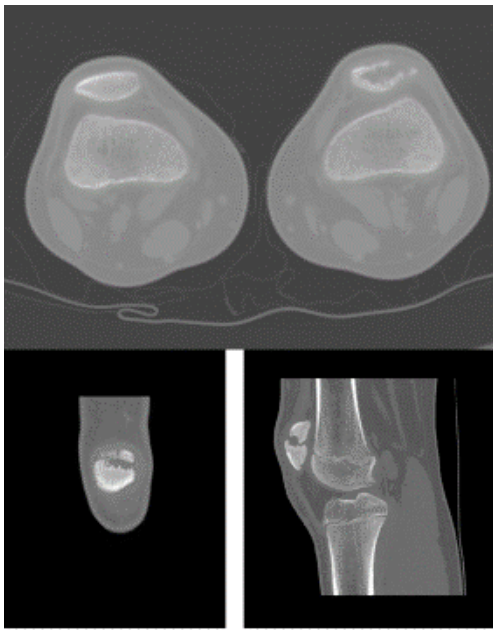

Figure 2: Images before surgery. CT findings on Axial (a), Coronal (b) and Sagittal (b) views.

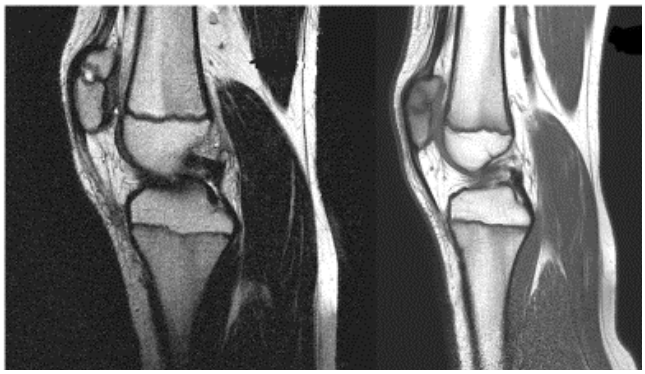

Figure 3: Images before surgery. MRI findings, T1 weighted sagittal view (a) and T2 weighted sagittal view (b).

He regained full knee range of motion and is pain free. Complete radiographic healing of the lesion with incorporation of the bone graft was noted.

Discussion

Anterior knee pain is a common complaint in adolescents with a broad differential diagnosis. Acute pain may follow an injury resulting in fractures, dislocations or injury to ligaments, tendons or menisci. Chronic, long standing anterior knee pain may develop due to limb mal alignment, patellar mal tracking, overuse injuries and Osgood-Schlatter apophysitis [5]. Other causes include bipartite patella, which occurs in approximately 2% to 3% of the population, and is a developmental variation of ossification. This condition is usually asymptomatic but in young active patients may also cause anterior knee pain, usually following trauma, overuse or strenuous athletic activity [6]. Other pathologies, such as idiopathic chondromalacia and osteochondritis of the patella, might cause anterior knee pain in the adolescent population. Hip pathologies, such as Perthes disease or Slipped capital femoral epiphysis, must be excluded as they can present as anterior referred knee pain.

Tumors of the patella are very rare in the pediatric population, with hemangioma of the patella being an extremely rare condition. Literature search revealed only ten histopathologically confirmed cases [2] with minimal data regarding treatment and follow up (Table 1) [7,8]. Linscheid et al. [9] were the first to report of an adult suffering from a hemangioma of the patella which was treated by hemi patellectomy. Later on, Bansal et al. [10] reported two adult patients that underwent total patellectomy and whose pathology reports showed patellar hemangioma with multiple cysts. Kransdorf et al. [11] were the first

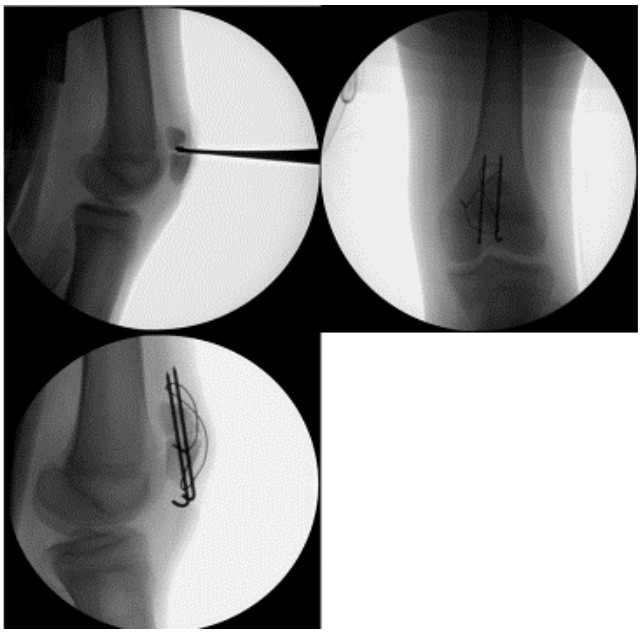

Figure 4: Intra-operative radiographs showing local curettage of the lesion (a), and AP (b) and lateral (c) final radiographs

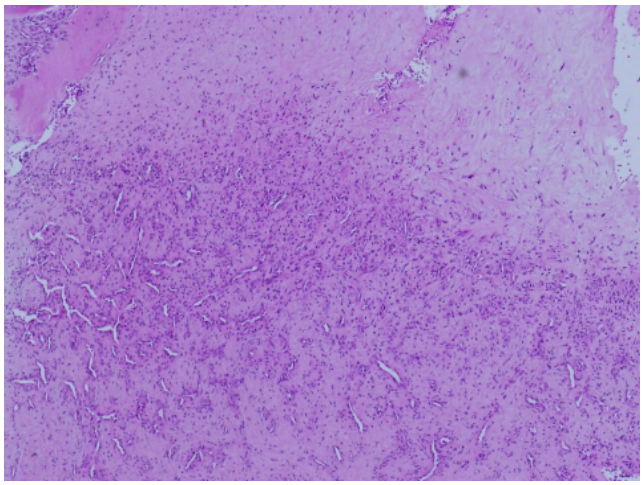

Figure 5: Histopathology of the tumor. Multiple, well to poorly formed vascular channels situated within patellar cartilage (hematoxylin and eosin satin, original magnification x40).

to report of three pediatric hemangiomas of the patella, but no clinical descriptions or outcome were noted.

To the best of our knowledge this is the first report of a skeletally immature patient with a single cystic lesion, occupying a relatively large part of the patella. Non-surgical treatment was attempted but in light of persistence of pain and concerns regarding destabilization and possible pathologic fracture surgical intervention was favored. Due to the patient's age, location of the lesion, lack of intra operative confirmed diagnosis and the intact articular cartilage, a decision was made to avoid patellectomy. The hemangioma responded well to curettage, bone grafting and temporary internal stabilization. Contrary to previous reports of hemangiomas in adults no patellectomy was necessary and the child regained full activity without pain.

Conflict of Interest

The authors declare that they have no conflict of interest.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

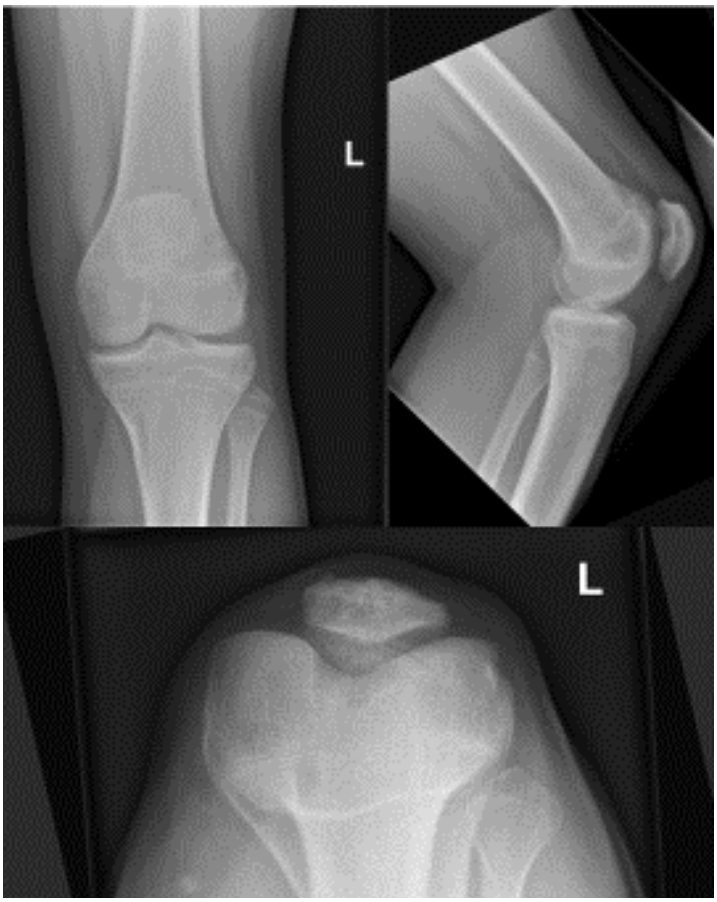

Figure 6: Recent radiograph demonstrating complete healing on AP (a), Lateral (b) and skyline (c) views.

	Publication Year	Initial Presentation	Age Gender	Imaging site	Size	Treatment	FU	Outcome
Linscheid et al.	1966	Pain for years	28 F	X-ray Upper pole	7 mm	Hemi-patellectomy	9 years	Mild discomfort
Bansal et al.	1974	Pain for 4 years	30 F	X-ray Medullary	20*15 mm	Patellectomy	2 years	Full movement
	1974	Post-fracture	32 M	X-ray Medullary	20*15 mm	Patellectomy	1 year	Full movement
Pandey et al.	1981	Post-fracture	30 F	NA Middle anterior cortex	NA	Patellectomy	NA	NA
Kransdorf et al.	1989	NA	15 M	X-ray NA	NA	NA	NA	NA
	1989	NA	15 M	X-ray NA	NA	NA	NA	NA
	1989	NA	15 F	X-ray NA	NA	NA	NA	NA
Navarro et al.	2002	Pain	NA NA	NA Upper pole	NA	Resection	3 years	painless return to sport
Casadei et al.	2013	NA	18 M	X-ray, CT Middle anterior cortex	NA	NA	NA	NA

Table 1: Literature review of published of patellar hemangiomas.

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