

# A rare case report of Patellar Osteochondroma

Abhinav S. Bhatnagar<sup>1</sup>, Kaushal Malhan<sup>1</sup>, Sonu Mehta<sup>1</sup>

## What to Learn from this Article?

Tumours have varied presentations. Patellar tumours although rare should be considered as a differential diagnosis in patellar pathologies presenting with knee pain

## Abstract

**Introduction:** Osteochondroma (OC) is the most common benign tumor of the skeleton. However, patellar OC is very rare. Only five case reports have been published yet and only 1 after the year 1972. OCs grow during childhood through adolescence, but usually growing ends when the epiphyseal plates close. In an adult, the growth of an OC suggests the diagnosis of malignant transformation to a chondrosarcoma. However, enlargement of a patellar OC reported as benign after skeletal maturity is present in literature.

**Case Report:** We report the clinical and radiologic findings of a patellar OC in a 50-year-old female, with a 3-year progression of swelling, not painful, well-defined margins, normal skin, and no neurovascular deficits or functional impairment. The tumor was surgically resected, and histopathological examination did not show malignancy. After 2 years of follow-up, the patient has no complaints and no signs of recurrence.

**Conclusion:** Patellar OCs are extremely rare with only a few reports published. It should be kept in mind that benign OCs can show symptomatic growth in skeletally mature patients without malignant transformation.

**Keywords:** Patella, osteochondroma, benign

## Introduction

Osteochondroma (OC) is the most common bone tumor, which constitutes 20-50% of all benign bone tumors [1]. WHO 2002 defined OC as a cartilage capped bony projection arising from the external surface of bone containing a marrow cavity that is continuous with that of the underlying bone [2]. Malignant transformation of OCs can occur later in adulthood but rarely metastasize. Primary tumors of the patella account for <0.06% of bone tumors [3]. Patellar OC is a very rare entity. Only five case reports have been published yet and only 1 after the year 1972. The purpose of our study was to report a rare case of patellar OC, its course of progression, and management.

## Case report

The patient was a 50-year-old female. She reported that around 5

years earlier, she had noted a painless swelling in her left knee that gradually progressed from approximate size of 2 cm × 2 cm to the current size in a span of 3 years, when she first reported to our hospital. On physical examination, it was a non-tender bony swelling with well-defined margins, lobulated surface, measuring 15 cm × 8 cm × 10 cm (Fig. 1), adhered to the patella. It moved together with the patella when flexion-extension knee movements were made. There was no neurovascular deficit, and the range of motion of the knee was not impaired.

In the radiological evaluation, tumor with bone density in the lower center of the patella of the left knee was shown. The tumor appears to be continuous with the patella. Flecks of calcification were seen in the tumor. Computed tomography (CT) scan confirmed the continuity of the mass with patella and magnetic resonance imaging (MRI) was helpful in confirming its benign nature (Figs. 2

## Author's Photo Gallery



Dr. Abhinav Bhatnagar



Dr. Kaushal Malhan



Dr. Sonu Mehta

<sup>1</sup>Department of Orthopaedics, Fortis Hospital, Mumbai, Maharashtra, India

### Address of Correspondence

Dr. Abhinav S. Bhatnagar,  
C/O Fortis Hospital, Mulund (w), Mumbai-78, Maharashtra, India.  
E-mail: b\_abhinav@hotmail.com

Access this article online

Website:  
www.jocr.co.in

DOI:  
2250-0685.314

Copyright © 2015 by Journal of Orthopaedic Case Reports

Journal of Orthopaedic Case Reports | pISSN 2250-0685 | eISSN 2321-3817 | Available on www.jocr.co.in | doi:10.13107/jocr.2250-0685.314

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.



Figure 1: (a and b) Clinical picture at the time of presentation

and 3).

The diagnosis of patellar OC was made, and surgical resection was planned because of the tumor growth. During the operation, we observed that there was a bone lesion arising from the patella, surrounded by a cartilaginous coating, and simple resection of the tumor was performed (Figs. 4 and 5).

The tumor mass was sent for histopathological examination, and the diagnosis of patellar OC without signs of malignant transformation was confirmed (Figs. 6).

Over the course of the 2-year follow-up since surgery, the patient did not present with any symptoms and signs of recurrence.

### Discussion

Skeletal OCs or osteocartilaginous exostoses constitute 10-15% of

the most common complaints [9,10], which were similar to the complaints our patient reported with.

In adults, growth or imaging alterations of an OC suggest the rare diagnosis of malignant transformation; however, extensive growth of OCs without histological evidence of malignancy has been reported [11,12]. In our case too, although there was the extensive growth of tumor clinically, radiologically, and histologically, the benign nature of the tumor was confirmed.

Although radiography is often diagnostic alone, other imaging modalities may be necessary for surgical planning and to exclude sarcomatous degeneration. The areas of osseous continuity between parent bone and OC may be broad (sessile OC) or narrow (pedunculated OC). Pedunculated lesions usually point away from the nearest joint owing to the forces of the overlying tendons and ligaments forming the stalactites and stalagmites [13]. CT scanning using three-dimensional imaging reformation allows optimal depiction of the pathognomonic cortical and marrow continuity of the lesion and parent bone, especially for OCs in complex areas of the anatomy [14,15].

MRI is the best imaging modality for evaluating cortical and medullary continuity between OC and parent bone. MRI may be the optimal method for evaluating the cartilaginous cap and identify lesions suspicious for malignant transformation [16]. CT and MRI both were done for our case to confirm the diagnosis.

Malignant transformation is seen in <0.4-2.2% of patients of solitary



Figure 2: (a and b) Computed tomography scan (sagittal and axial views) showing the mass arising from the patella

all bone tumors [1]. OCs are solitary or multiple, pedunculated or sessile exophytic outgrowths from the bone surface that are composed of cortical and medullary bone with an overlying hyaline cartilage cap. Marrow and cortical continuity with the underlying parent bone defines the lesion [4,5]. OC arise in any bone that develops from endochondral ossification [4,5]. However, patella develops through membranous ossification, and an OS arising from patella as in our case is a rare occurrence.

Solitary skeletal OCs are usually located in the metaphyses of the long bones, extending away from the adjacent joint, forming the typical pattern of stalactites and stalagmites. The long bones of the lower extremities are most frequently involved [4,6-8]; the knee (40%) [6,7] followed by the humerus (10-20%) [6,8] are more frequently involved. Other more unusual locations include the small bones of the hands and feet (10%), scapula (4%), pelvis (5%), and cranial base and jaw [6]; the spine is affected in 1.3-4.1% of cases. However, patellar OC, as reported in our study, is a very rare entity with only five reported cases yet.

The vast majority of solitary OCs are asymptomatic and diagnosed incidentally [7,8]. Clinical symptoms may be related to mechanical effects, cosmetic deformity, neurovascular impingement, pseudoaneurysm formation, fracture, overlying bursa formation, or malignant transformation. Painless swelling and cosmetic deformities related to the slowly enlarging mass are

OC and up to 27% of patients with multiple hereditary exostoses. Clinical features suspicious for malignant transformation comprise new onset of pain in a previously stable lesion, rapid or new growth, growth after skeletal maturity, and/or large lesions [17-19]. There were no signs of malignant transformation of the tumor in our patient, and the duration of 3 years that the tumor took to reach the size presented was also indicative of its benign nature that was further confirmed on histopathological findings.

Surgery to resect the tumor is not essential in all cases. Its main indications are when the exostosis is interfering with the growth of the extremity, which leads to functional and mechanical alterations; in the presence of malignant transformation, which is characterized by a thick coating of more than 2 cm in adults; and in the presence of bone erosion, vascular compression and/or nerve compression with



Figure 3: Magnetic resonance imaging showing tumor mass and the cartilaginous cap

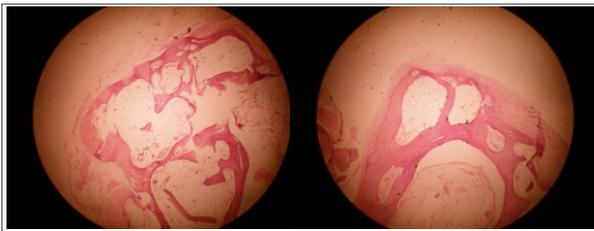




**Figure 4:** Gross tumor after resection. The base of the tumor is composed of bony tissue, and the outermost cap is cartilaginous



**Figure 5:** Post-operative X-ray lateral view of knee joint. The tumor is completely excised



**Figure 6:** Histopathological slides showing chondroid tumor composed of chondrocytes within lacunae. No nuclear atypia

symptoms and joint locking promoted by the OC. The relative indications are esthetic complications, which often give rise to post-operative skin scarring that is worse than the esthetic deformity itself; and pain, which may occur because of bursitis or after fracturing, depending on the patient's symptoms [19]. In our patient, since patient only had an esthetic problem and tumor being of benign nature, we only resected the tumor, with no complications and recurrence in 2 years of follow-up.

**Conclusion**  
Ocs although arise in bones developing through endochondral ossification, its growth on the patella (membranous ossification) makes it a rare occurrence. Furthermore, the growth of the tumor in spite of its benign nature after skeletal maturity differs from its usual presentation.

**Clinical Message**

This case report is yet another example to show that tumors can present with varied presentations and locations. Patellar tumors, though rare should always be considered in differential diagnosis of patellar pathology.

**Reference**

- Karras SC, Wolford LM, Cottrell DA. Concurrent osteochondroma of the mandibular condyle and ipsilateral cranial base resulting in temporomandibular joint ankylosis: Report of a case and review of the literature. *J Oral Maxillofac Surg* 1996;54(5):640-646.
- Khurana J, Abdul-Karim F, Bove e JV. Osteochondroma. In: Fletcher CD, Unni KK, Mertens F, editors. *World Health Organization Classification of Tumours. Pathology and Genetics of Tumours of Soft Tissue and Bone*. Lyon: IARC Press; 2002. p. 234-236.
- Dahlin DC, Unii KK. *Bone Tumours: General Aspects and Data on 8542 Cases*. 4th ed. Springfield: Charles C Thomas; 1986. p. 3-17.
- Murphey MD, Choi JJ, Kransdorf MJ, Flemming DJ, Gannon FH. Imaging of osteochondroma: Variants and complications with radiologic-pathologic correlation. *Radiographics* 2000;20(5):1407-1434.
- Robbin MR, Murphey MD. Benign chondroid neoplasms of bone. *Semin Musculoskelet Radiol* 2000;4(1):45-58.
- Resnick D, Kyriakos M, Greenway GD. Osteochondroma. In: Resnick D, editor. *Diagnosis of Bone and Joint Disorders*. 3rd ed., Vol. 5. Philadelphia, PA: W.B. Saunders; 1995. p. 3725-3746.
- Giudici MA, Moser RP Jr, Kransdorf MJ. Cartilaginous bone tumors. *Radiol Clin North Am* 1993;31(2):237-259.
- Scarborough MT, Moreau G. Benign cartilage tumors. *Orthop Clin North Am* 1996;27(3):583-589.
- Karasick D, Schweitzer ME, Eschelman DJ. Symptomatic osteochondromas: Imaging features. *AJR Am J Roentgenol* 1997;168(6):1507-1512.
- Gamanagatti S, Gugalani B, Singh N. Large bursa associated with osteochondroma of ventral surface of scapula. *Eur J Radiol Extra* 2004;51(3):103-105.
- Krieg JC, Buckwalter JA, Peterson KK, el-Khoury GY, Robinson RA. Extensive growth of an osteochondroma in a skeletally mature patient. A case report. *J Bone Joint Surg Am* 1995;77(2):269-273.
- Nogier A, De Pinieux G, Hottya G, Anract P. Case reports: Enlargement of a calcaneal osteochondroma after skeletal maturity. *Clin Orthop Relat Res* 2006;447:260-266.
- Mavrogenis AF, Papagelopoulos PJ, Soucacos PN. Skeletal osteochondromas revisited. *Orthopedics* 2008;31:1018 Kobayashi H, Kotoura Y, Hosono M, Sakahara H, Hosono M, Yao ZS, et al. Diagnostic value of Tc-99m (V) DMSA for chondrogenic tumors with positive Tc-99m HMDP uptake on bone scintigraphy. *Clin Nucl Med* 1995;20:361-364.
- Lange RH, Lange TA, Rao BK. Correlative radiographic, scintigraphic, and histological evaluation of exostoses. *J Bone Joint Surg Am* 1984;66(9):1454-1459.
- De Beuckeleer LH, De Schepper AM, Ramon F. Magnetic resonance imaging of cartilaginous tumors: Is it useful or necessary? *Skeletal Radiol* 1996;25(2):137-141.
- Park YK, Yang MH, Ryu KN, Chung DW. Dedifferentiated chondrosarcoma arising in an osteochondroma. *Skeletal Radiol* 1995;24(8):617-619.
- Wuisman PI, Jutte PC, Ozaki T. Secondary chondrosarcoma in osteochondromas. Medullary extension in 15 of 45 cases. *Acta Orthop Scand* 1997;68(4):396-400.
- de Moraes F, Demello MC, Rocha AV, Dos Santos MR. Patellar osteochondroma: A case report. *Rev Bras Ortop* 2014;9(2):206-209.

**Conflict of Interest: Nil**  
**Source of Support: None**

**How to Cite this Article**

Bhatnagar AS, Malhan K, Mehta S. A rare case report of Patellar Osteochondroma. *Journal of Orthopaedic Case Reports* 2015 July - Sep;5(3):72-74

