American Journal of Clinical and Medical Case Reports

ISSN: 2771-4098

Case Report

An Unusual Presentation of Osteochondroma of Proximal Tibia in Popliteal Fossa- A Rare Case Report

Anil Kumar Gupta, Sudhanshu Shekhar, Himanshu Bajpai and Akhand Pratap Singh*

Department of Orthopedics, GSVM Medical College and Hospital, India

Abstract

Background: Osteochondroma is the most common primary bone tumour, which is actually a developmental malformation rather than a true neoplasm. It is a benign protuberance of the metaphysis with cartilage on top. The deformity is hamartomatous. Another name for it is a bone spur. With a 2:1 M: F ratio, it makes up 20% to 50% of all bone tumors and 10% to 15% of benign bone tumours. Osteochondroma appears during the growth period and their growth stops after cessation of growth. The metaphyses of long bones, such as the proximal tibia, proximal humerus, and distal femur, are the most frequent sites.

Methods: After PAC clearance and patient consent for the surgery, the patient was shifted to OT. The patient is positioned prone and a posterior approach was planned. A lazy S-shaped incision was given over the popliteal fossa, the medial head of gastrocnemius along with neurovascular bundle was retracted to the lateral side, popliteal artery and sciatic nerve was identified, bony mass was exposed and en bloc resection of the mass was done and sent for the histopathology examination. Thorough lavage was done, the wound closed in layers and aseptic dressing was done. There was no neurovascular deficit. HPE examination s/o Osteochondroma of the proximal tibia.

Results: After en bloc resection, the patient regained full range of motion at the left knee by 4 weeks and was able to do all daily routine activities by 6 weeks.

Conclusion: Proximal tibia Osteochondroma in the popliteal fossa can lead to mechanical complications like knee pain reduced ROM at the knee, popliteal artery compression, common peroneal nerve compression, etc. Timely diagnosis and surgical excision of the Osteochondroma can save the limb.

Keywords: Osteochondroma; Proximal tibia; En bloc resection

Introduction

Osteochondroma is the most common primary bone tumour, which is a developmental malformation rather than a true neoplasm [1]. It is a benign protuberance of the metaphysis with cartilage on top. The deformity is hamartomatous. Another name for it is a bone spur. With a 2:1 M:F ratio, it makes up 20% to 50% of all bone tumors and 10% to 15% of benign bone tumours. Osteochondroma appears during the growth period and their growth stops after cessation of growth. Though exostosis may involve any bone but it commonly involves long bone. The metaphysis of long bones, such as the proximal tibia, proximal humerus, and distal femur, are the most frequent sites (Figure 1) [2]. Individual's lesion ranges in size from 1 cm to 15 cm [3]. In contrast to true neoplasms, their growth usually parallels that of the patient and usually ceases when skeletal maturity is reached, but calcification and regressive changes may take place later on [4,5]. In the beginning juxta-epiphyseal region is involved but as the child grows the swelling shifts towards the diaphysis. This explains the unusual diaphyseal site of the tumour [5]. Osteochondroma can be pedunculated or sessile, presenting as a solitary lesion in 85% of the cases, while 15% occur as Hereditary Multiple Exostoses (HME). While pedunculated lesions may have a long stalk that grows away from the joint, sessile lesions have a broad base and do not extend far from the cortex [6].

Citation: Gupta AK, Shekhar S, Bajpai H, Singh AP. An Unusual Presentation of Osteochondroma of Proximal Tibia in Popliteal Fossa- A Rare Case Report. Am J Clin Case Rep. 2024;2(2):1013.

Publisher Name: Medtext Publications LLC

Manuscript compiled: May 20th, 2024

***Corresponding author:** Anil Kumar Gupta, Department of Orthopedics, GSVM Medical College and Hospital, Kanpur, 208002, Uttar Pradesh, India

Case Presentation

The patient Sushila, 57 years, female, resident of Farrukhabad, and housewife came to the orthopedic department opd with C/C- Swelling at the back of left knee for 35 years. Pain in left knee for 20 years limitation of movement at left knee for 15 years.

The swelling was at the back of the knee for 35 years, insidious in onset and gradually progress. Initially, it was painless but gradually it became painful and associated with limitation of movement, difficulty in walking, squatting and cross-leg sitting. The pain was around the left knee for 35 years, insidious in onset and gradually progressing. It is vague aching in nature, and moderate in intensity without any radiation of pain. There is no diurnal variation, aggravated on movement, climbing stairs. It is associated with reduced movement at the left knee, difficulty in squatting, and cross-leg sitting. The patient also complains of limitation of movement in the left knee for 30 years. It is insidious in onset and gradually progresses. It is associated with difficulty in squatting, sitting cross-leg, and climbing stairs.

There is no history of vascular claudication, neurogenic, claudication, trauma, fever, night sweats, morning stiffness, weight loss, and no associated family history.

Local Examination

Inspection

The swelling was at the back of the knee, oval shape irregular surface overlying skin had no scar, sinus, erythema, no dilated capillaries.

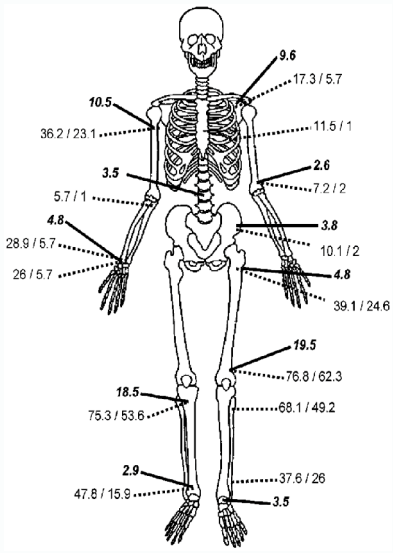

Figure 1: Distribution of osteochondroma in percentage, the bold line represents solitary osteochondroma and the dotted line represents HMO.

Palpation

No local rise of temperature, non-tender 6 cm × 4 cm in size, oval shape, irregular surface, underlying margin cannot be appreciated and overlying skin not attached to the mass. It is attached to the underlying bone. Hard in consistency, non- fluctuant and non-pulsatile.

No distal neurovascular deficit.

No popliteal and inguinal lymph nodes are palpable.

After a thorough examination, proper blood investigation, X-ray (Figure 2), FNAC, and CT-ANGIOGRAM (Figure 3) scan patient was diagnosed to have osteochondroma at the posterior surface of the proximal tibia. MRI of left knee was planned to know the extension of the bony mass to surrounding soft tissues and neurovascular bundle but CT-Angiogram was decided by the radiologist and surgeon for preferred investigation.

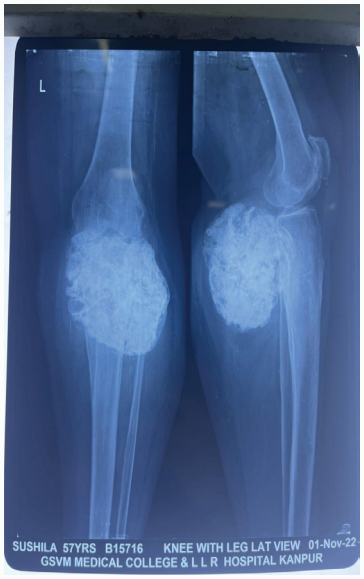

Figure 2: knee x-ray AP and Lat view.

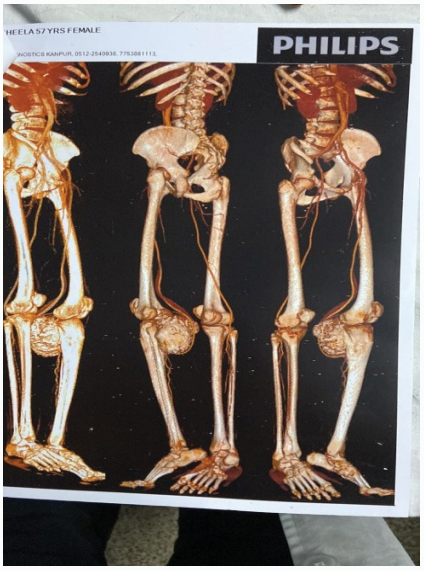

Figure 3: CT-ANGIOGRAM.

FNAC examination shows scanty mucoid material, low cellularity, fibrous stromal tissue with mature, well-differentiated chondroid elements, and no suspicious cells for malignancy s/o benign chondroid lesion (? exostosis).

The patient was diagnosed as osteochondroma of the proximal tibia and was planned for its en-bloc excision. After PAC clearance and patient consent for the surgery, the patient was shifted to OT. The patient is positioned prone and a posterior approach was planned. A lazy S-shaped incision was given over the popliteal fossa, the medial head of gastrocnemius along with neurovascular bundle was retracted to the lateral side, popliteal artery and sciatic nerve was identified, bony mass exposed and embolic excision of the mass was done and sent for the histopathology examination. Thorough lavage was done, the wound closed in layers and aseptic dressing was done. There was no neurovascular deficit. HPE examination s/o osteochondroma of the proximal tibia.

The rehabilitation program progressed from ROM, balance, and neuromuscular control exercises to closed-chain and open-chain exercises within ten days. The suture was removed on POD 14th day the patient regained full ROM at the left knee by 4 weeks and was able to do daily routine activities by 6 weeks.

Discussion

The cell of origin of osteochondroma development remains a point of debate among researchers it may be either proliferating cells of the growth plate or mesenchymal cells of the perichondrium. These lesions are caused by a portion of the epiphyseal growth plate cartilage that separates due to abnormal bone remodeling and then herniates through the periosteal bone cuff (Figure 5) [7-9]. This cartilaginous fragment grows persistently, and as it matures by enchondral ossification, it forms a subperiosteal osseous excrescence that protrudes from the surface of the bone and has a cartilage cap. The Osteochondroma cortex and medullary cavity are in continuity with the parent bone and it grows till skeletal maturity.

Osteochondroma are usually asymptomatic [10,11]. They are found accidentally as painless lump during childhood. Some patients feel pain due to mechanical irritation of surrounding muscle,

ligament, and tendon, due to nerve compression, fracture through the stalk, bursitis, and malignant transformation. Osteochondroma in popliteal fossa rarely may present as vascular complications like pseudoaneurysm of the popliteal artery, thromboembolism, vessel perforation, popliteal entrapment syndrome, etc [12,13].

Asymptomatic Osteochondroma is only observed and the patients are reassured [14]. Indications for surgical excision are symptoms from pressure on adjacent nerves, vessels, tendons, or bones, mechanically blocking joint movement, fracture of the pedicle, bursitis, malignant transformation, and cosmetic purpose. Surgical treatment includes en bloc resection of the Osteochondroma with a rim of normal bone surrounding its base or stalk (Figure 4 A-D). None of the cartilage cap or perichondrium is left otherwise there may be a recurrence [15,16]. Surgical excision of benign Osteochondroma is not without complications and affects 13% of patients. These side effects included fractures, compartment syndrome, neuropraxia, and vascular lacerations [17].

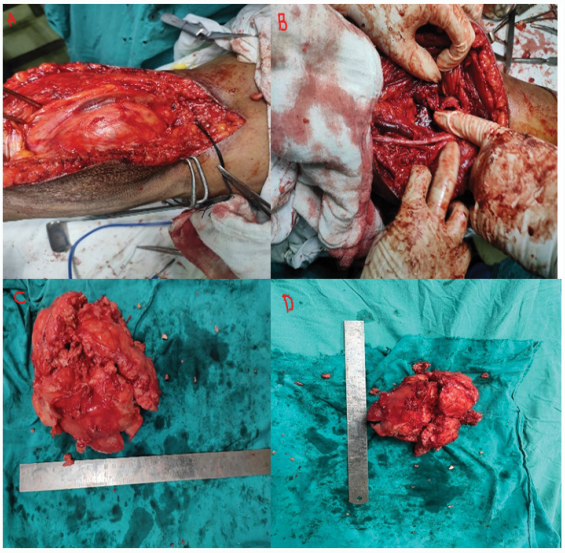

Figure 4: A) Intra-op image showing osteochondroma. B) Intra-op image showing the neurovascular structure.
C) showing the size of excised osteochondroma. D) Showing the size of excised osteochondroma.

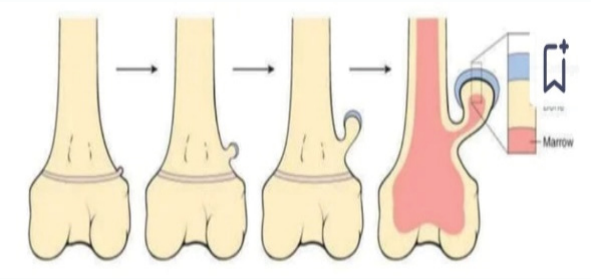

Figure 5: Development of osteochondroma.

Conclusion

Proximal tibia Osteochondroma in the popliteal fossa can lead to mechanical complications like knee pain reduced ROM at the knee, popliteal artery compression, common peroneal nerve compression, etc. Timely diagnosis and surgical excision of the Osteochondroma can save the limb.

References

1. Biermann JS. Common benign lesions of bone in children and adolescents. J Pediatr Orthop. 2002;22(2):268-73.
2. Saglik Y, Altay M, Unal VS, Basarir K, Yildiz Y. Manifestations and management of osteochondromas: a retrospective analysis of 382 patients. Acta Orthop Belg. 2006;72:748-55.
3. Malghem J, Vande Berg B, Noel H, Maldague B. Benign osteochondromas and exostotic chondrosarcomas: evaluation of cartilage cap thickness by ultrasound. Skeletal Radiol. 1992;21:33-7.
4. Kivioja A, Ervasti H, Kinnunen J, I Kaitila, M Wolf, T Böhling. Chondrosarcoma in a family with multiple hereditary exostoses. J Bone Joint Surg Br. 2000;82(2):261-6.
5. Gupta AK, Mishra MP, Singh PK. An unusual presentation of multiple osteocartilaginousexostosis. . 1989;1(4).
6. Alabdullrahman LW, Byerly DW. Osteochondroma. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
7. Mirra JM. Benign cartilaginous exostoses: osteochondroma and osteochondromatosis. In: Mirra JM, editors. Bone tumors: clinical, radiologic, and pathologic correlations. Volume 2. Philadelphia, Pa: Lea & Febiger; 1989.p.1626-59.
8. Resnick D, Kyriakos M, Greenway GD. Osteochondroma. In: Resnick D, editors. Diagnosis of bone and joint disorders. 3rd ed, Vol 5. Philadelphia, Pa: Saunders; 1995.p.3725-46.
9. Milgram JW. The origins of osteochondromas and enchondromas: a histopathologic study. Clin Orthop Relat Res. 1983;174:264-84.
10. Giudici MA, Moser RP Jr, Kransdorf MJ. Cartilaginous bone tumors. Radiol Clin North Am. 1993;31(2):237-59.
11. Scarborough MT, Moreau G. Benign cartilage tumors. Orthop Clin North Am. 1996;27(3):583-9.
12. Garrison RC, Unni KK, McLeod RA, Pritchard DJ, Dahlin DC. Chondrosarcoma arising in osteochondroma. Cancer. 1982;49(9):1890-7.
13. Campanacci M. Bone and soft tissue tumors. Padoa: Springer Science & Business Media; 1999.p.1320.
14. Kitsoulis P, Galani V, Stefanaki K, Paraskevas G, Karatzias G, Agnantis NJ, et al. Osteochondromas: a review of the clinical, radiological and pathological features. In Vivo. 2008;22(5):633-46.
15. Lotfinia I, Vahedi P, Tubbs RS, Ghavame M, Meshkini A. Neurological manifestations, imaging characteristics, and surgical outcome of intraspinal osteochondroma. J Neurosurg Spine. 2010;12(5):474-89.
16. Yakkanti R, Onyekwelu I, Carreon LY, Dimar JR 2nd. Solitary osteochondroma of the spine-a case series: Review of solitary osteochondroma with myelopathic symptoms. Global Spine J. 2018;8(4):323-39.
17. Wirganowicz PZ, Watts HG. Surgical risk for elective excision of benign exostoses. J Pediatr Orthop. 1997;17(4):455-9.