Case Report | Journal of Orthopaedic Case Reports 2025 May:15(5):Page 25-28

# Patellar Osteoid Osteoma: A Rare Cause for Anterior Knee Pain

Sushruth Jagadish[1], Amaresh Cadapa Prahallad[1], Harshavardhan Bhaktharahalli Ramachandra[1], Nanjunda Kumar[1]

**Learning Point of the Article:**

Patellar Osteoid Osteoma is an important differential diagnosis in patients with chronic non-remitting anterior knee pain.


## Abstract

**Introduction:** Osteoid osteoma is a benign osteoblastic lesion occurring in the diaphysis of the long bones most commonly. Patellar osteoid osteoma is very rare and most commonly associated with anterior knee pain.

**Case Report:** A 21-year-old male presenting with anterior knee pain was diagnosed to have patellar osteoid osteoma after 4 years of onset of symptoms and was treated with radiofrequency ablation. One year following the ablation patient remains pain-free and has a complete range of movements.

**Conclusion:** Atypical location of the tumor makes it difficult to diagnose resulting in delayed management. Hence, it is important to have patellar osteoid osteoma as one of the differential diagnosis in patients having chronic anterior knee pain. Radiofrequency ablation is a novel and minimally invasive procedure for the treatment of Patellar Osteoid Osteoma which can help in resolution of anterior knee pain.


**Keywords:** Patella, anterior knee pain, osteoid osteoma, radiofrequency ablation.

## Introduction

Osteoid osteoma is a benign, bone-forming lesion, seen most commonly in the diaphysis of long bones such as femur and tibia. Most commonly osteoid osteoma is seen in the age group between 10 and 30 years with male predominance [1]. It accounts for 10–14% of all benign and 2–3% of all primary bone tumors [2]. It is not very uncommon to have not diagnosed the condition in spite of having symptoms for a very long time in a young active individual. Nocturnal pain is considered to be the predominant symptom and usually described as dull aching, constant, intense pain which improves by salicylates and non-steroidal anti-inflammatory drugs [2]. Typically, osteoid osteoma consists of radiolucent nidus <2 cm in diameter and a rim of reactive osteosclerosis on radiological investigations [2]. Generally, osteoid osteomas are managed conservatively, failing which surgical treatment is considered. Recently, minimally invasive techniques like radiofrequency ablation, laser ablation, and cryoablation have replaced open en bloc resection due to its potential complications [2]. Occurrence of osteoid osteoma in patella is considered to be very rare with an incidence of 5% of all patellar tumors [3]. Long-standing anterior knee pain is considered to be the most common presenting feature in patients with patellar osteoid osteoma [1]. Due to rarity and atypical presentation of osteoid osteoma in patella, it results in

Access this article online

Website: www.jocr.co.in

DOI: https://doi.org/10.13107/jocr.2025.v15.i05.5542

*Author's Photo Gallery*


Dr. Sushruth Jagadish


Dr. Amaresh Cadapa Prahallad


Dr. Harshavardhan Bhaktharahalli Ramachandra


Dr. Nanjunda Kumar

[1]Department of Orthopaedics, Ramakrishna Superspeciality Hospital, Jayanagar 1st Block, Bangalore, Karnataka, India.

**Address of Correspondence:**
Dr. Amaresh C P,
Department of Orthopaedics Ramakrishna Superspeciality Hospital, Jayanagar 1st block, Bangalore, Karnataka, India.
**E-mail:** amareshprahallad@gmail.com

Submitted: 03/02/2025; Review: 22/03/2025; Accepted: April 2025; Published: May 2025

DOI: https://doi.org/10.13107/jocr.2025.v15.i05.5542

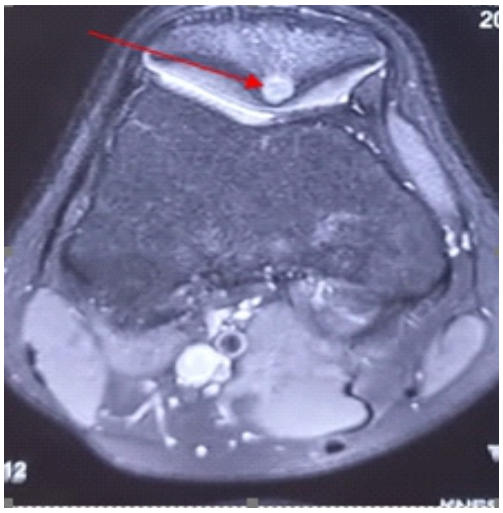

**Figure 1:** MRI showing T2-hyperintense lesion in the subchondral aspect of the patella.

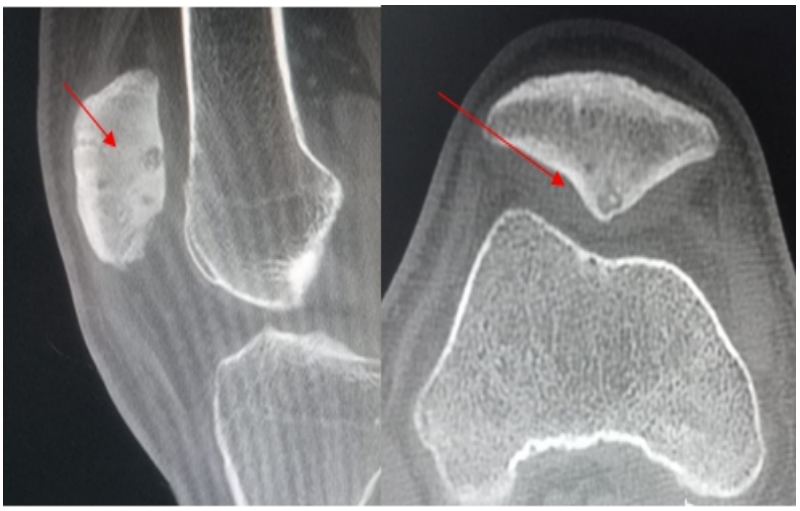

**Figure 2:** CT images showing radiolucent nidus <2 cm in diameter and a rim of reactive osteosclerosis.

misdiagnosis and inappropriate management.

## Case Report

A 21-year-old male presented to our outpatient department with a history of insidious onset of right anterior knee pain for the past 4 years. Intensity of pain increased over a period of time due to which patient had difficulty in participating in sports activities, using public transport, and riding 2 wheeler. Patient experienced pain throughout the day with no significant diurnal variations. There was no history of previous trauma. Since the onset of pain, the patient had numerous consultations and was treated with analgesics. The pain subsided briefly following medications but relapsed after a few weeks. On examination, patient had minimal tenderness over patella, the knee range of movements was full and associated with pain, and quadriceps muscle wasting was noted. On plain radiograph of the right knee joint, no significant findings were seen. Magnetic resonance imaging (MRI) was suggestive of well-defined oval T1-hypointense and T2-hyperintense lesion in the subchondral aspect of the patella with mild surrounding marrow edema-likely osteoid osteoma (Fig. 1). CT scan showed a well-defined lucent lesion measuring 4 × 5 × 5 mm with a sclerotic rim along the subchondral aspect of posterior articular surface, confirming the diagnosis osteoid osteoma (Fig. 2).

**Figure 3:** Percutaneous CT-guided radiofrequency ablation.

Percutaneous CT-guided radiofrequency ablation was planned for the patient. Under general anesthesia lesion was localized on multidetector CT.3.5 mm drill bit was used to create a tract into the lesion from the ventral surface of patella under CT guidance. Care was taken to ensure patellar articular cartilage is not damaged at the time of procedure. Radiofrequency ablation probe with active tip of 9 mm was placed in the lesion (Fig. 3). Ablation was carried out beginning with 2 Watts and increased at the rate of 1 Watt per minute till maximum impedance is achieved. No procedure-related complications were noted. Postoperatively, patient was administered analgesics for 1 week and was made to walk full weight bearing. One year following radiofrequency ablation of the lesion patient is pain-free and having full range of movements.

## Discussion

Osteoid osteoma is a benign, usually solitary bone-forming tumor accounting for 10–14% of all benign- and 2–3% of all primary-bone tumors [2]. About 90% of cases are seen in younger individuals before the age of 25 years with male to female ratio of 2:1 [4]. Clinically osteoid osteoma presents as severe local pain which worsens at night and usually relieved by NSAIDs or aspirin. Radiologically they present as radiolucent nidus sized usually between 1.5 and 2 cm with a reactive sclerotic rim. However, the diagnostic efficacy of the plain

radiography is less, and chances of misdiagnosing increases, more so with the intra-articular lesions. Thin section CT analysis provides a better chance to pick up the lesion and to make a diagnosis. Tc-MDP bone scan also be used as a diagnostic tool with double-density sign presentation [5]. Although MRI can pick up the nidus, reactive marrow edema can obscure the nidus, thereby making diagnosis difficult at times [5]. The average duration of time to diagnose intra-articular osteoid osteoma ranges from 4 to 5 years according to literature [6]. In our case report, the time to diagnosis was 4 years attributed to lack of early clinical suspicion and conservative management with medications considering its rarity.

Spontaneous regression of osteoid osteoma has been noted but it requires strict monitoring and prolonged medications in the form NSAIDs or aspirin. Surgical management of osteoid osteoma is planned when the medical management fails. Open resection was considered to be the choice of management earlier, however, they carry the disadvantages of an extensive surgical approach. Vallianatos et al. reported a complication of Patella Baja in their study after an open surgical excision of patellar osteoid osteoma possibly due to patellar tendon scarring [7]. Bavaneh et al. used mosaicplasty technique following open resection for the cartilage defect with no recurrence after a mean follow-up of 31 months [8]. Chillemi et al. proposed CT-guided drilling of nidus with good results [4] while Franceschi et al. described CT-guided arthroscopic resection of subchondral patellar osteoid osteoma [9]. Our patient was a young and active adult with intractable knee pain, apprehensive of an open surgical procedure and recurrence. Minimally invasive techniques include laser photocoagulation, radiofrequency ablation, percutaneous drilling, and ethanol injection. Interstitial Laser Photocoagulation is a safe and effective procedure having a few advantages like non-necessity of a neutral electrode, no current flow through the patient's body, and no interaction with pacemakers [10]. Percutaneous Drilling and ethanol injection for osteoid osteomas studied by Gerhard Adam et al. was cost-effective but carried the risk of painful necrosis due to extravasation of excess ethanol [11]. Considering all of the above and the availability of a CT-guided radiofrequency ablation at our setup, we decided to go ahead with the same. CT-guided radiofrequency ablation is minimally invasive and performed under local anesthesia giving the benefit of accurate lesion localization, shorter hospital stay, and early rehabilitation. The success rate of Radiofrequency ablation is reported to be as high as 95% [12]. However, there might be a few disadvantages of CT-guided ablation such as high cost, radiation exposure, and risk of articular cartilage damage.

## Conclusion

Occurrence of patellar osteoid osteomas is very rare and its atypical presentation can lead to misdiagnosis and delay in the treatment. Most commonly it is misdiagnosed to be as chondromalacia patella, osteochondritis dissecans, jumper's knee, or patellofemoral dysplasia. A high degree of suspicion is required in patients having chronic anterior knee pain with atypical features such as night pain, rest pain, restricted knee range of movements, and quadriceps wasting to evaluate further for the possibility of patellar osteoid osteoma.

### Clinical Message

Although Patellar Osteoid Osteoma is a rare cause of Chronic Anterior Knee Pain, the possibility of it should be kept in mind during the course of evaluation. In cases with chronic non-remitting anterior knee pain, a high degree of clinical suspicion helps in the accurate diagnosis of Patellar Osteoid Osteoma. Radiofrequency ablation is a novel and minimally invasive procedure for the treatment of Patellar Osteoid Osteoma which can help in resolution of anterior knee pain.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of interest:** Nil **Source of support:** None

## References

1. Ma K, Zhao HT, Niu XH, Zhang Q. Osteoid osteoma of the patella: Report of two cases. Chin Med J (Engl) 2011;124:4096-8.

2. Tepelenis K, Skandalakis GP, Papathanakos G. Osteoid osteoma: An updated review of epidemiology, pathogenesis, clinical presentation, radiological features, and treatment option. In Vivo 2021;35:1929-38.

3. Song M, Zhang Z, Wu Y, Ma K, Lu M. Primary tumors of the patella. World J Surg Oncol 2015;13:163.

4. Chillemi C, Franceschini V, D'Erme M, Ippolito G, Farsetti P. Patellar osteoid osteoma as a cause of anterior knee pain in adolescents: A case report and literature review. Case Rep Med 2013;2013:746472.

5. Sharma S, Rajnish RK, Prakash M, Agarwal S, Dhillon MS. Patellar osteoid osteoma as a cause of intractable anterior knee pain - A case report and systematic review of literature. J Orthop Case Rep 2020;10:29-34.

6. Mehdinasab SA, Sarrafan N, Alvavinejad P. Osteoid osteoma of the patella presenting as chronic anterior knee pain: Case report and review of the literature. Pak J Med Sci 2010;26:490-3.

7. Vallianatos PG, Tilentzoglou AC, Seitaridis SV, Mahera HJ. Osteoid osteoma of the patella: A case report. Knee Surg Sports Traumatol Arthrosc 2006;14:161-4.

8. Bavaneh MK, Kiyak G, Balikci T. A review of literature: Mosaicoplasty as an alternative treatment for resection of patellar osteoid osteoma and cartilage reconstruction. J Orthop 2018;17:768-71.

9. Franceschi F, Longo UG, Ruzzini L, Marinozzi A, Rizzello G, Papalia R, et al. En-bloc retrograde resection of an osteoid osteoma of the patella using computed tomography under arthroscopic control. J Knee Surg 2008;21:136-40.

10. Etienne A, Waynberger É, Druon J. Interstitial laser photocoagulation for the treatment of osteoid osteoma: Retrospective study on 35 cases. Diagn Interv Imaging 2013;94:300-10.

11. Adam G, Neuerburg J, Vorwerk D, Forst J, Gunther RW. Percutaneous treatment of osteoid osteomas: Combonation of drill biopsy and subsequent ethanol injection. Semin Musculoskelet Radiol 1997;1:281-4.

12. Lanza E, Thouvenin Y, Viala P, Sconfienza LM, Poretti D, Cornalba G, et al. Osteoid osteoma treated by percutaneous thermal ablation: When do we fail? A systematic review and guidelines for future reporting. Cardiovasc Intervent Radiol 2014;37:1530-9.

**Conflict of Interest:** Nil
**Source of Support:** Nil

**Consent:** The authors confirm that informed consent was obtained from the patient for publication of this case report

**How to Cite this Article**

Jagadish S, Amaresh CP, Harshavardhan BR, Nanjunda K. Patellar Osteoid Osteoma: A Rare Cause for Anterior Knee Pain. Journal of Orthopaedic Case Reports 2025 May;15(5):25-28.