

# Loose Body in the Knee Joint: A Case Report

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## Abstract

**Background:** Loose bodies (LBs) within the knee joint are commonly encountered during clinical practice and are frequently observed during knee arthroscopy. The primary treatment involves the removal of loose bodies; however, their complete eradication is often challenging and may not address underlying diseases, leading to persistent symptoms and the risk of new loose body formation. **Aim:** This case report aims to present the findings and surgical management of a 52-year-old male with an unusually large osseous loose body in the knee joint and associated pathologies. **Case Presentation:** The patient, a 52-year-old male, experienced recurrent episodes of severe, sudden, and painful locking of the knee joint, leading to difficulties moving. A plain MRI study was conducted to evaluate the condition of the knee joint, which revealed various degenerative changes and the presence of a loose body. Subsequently, an arthroscopic examination was performed under general anesthesia, uncovering the presence of an abnormally large loose body, as well as other pathologies including chondropathy, meniscal degeneration, and Baker's cyst. **Conclusion:** Loose bodies (LBs) in the knee joint pose significant challenges and may lead to debilitating symptoms. Timely diagnosis and appropriate surgical intervention are crucial for symptom relief and the prevention of further joint damage as arthroscopic excision. Comprehensive imaging has a vital role in guiding treatment decisions and optimizing patient outcomes. In this case, the removal of the loose body improved patient outcomes and helped prevent potential joint complications.

## Keywords

Loose Bodies, Knee Joint, Arthroscopy, MRI, Osseous Loose Body, Surgical Management, Meniscal Degeneration, Baker's Cyst, Bursitis, Osteoarthritic Changes, Comprehensive Treatment

## 1. Introduction

Loose bodies (LBs) are pathological findings in the knee joint, known for its

anatomical complexity and prevalent synovial recesses and bursae [1]. The primary, underlying etiology of loose bodies is still unclear; however, it could be attributed to certain factors like direct trauma to the knee joint causing osteochondral fractures, indirect trauma to the knee joint due to repetitive stress causing the connection between the articular cartilage and bone to deteriorate, leading to loosening of the affected osteochondral area [2]. Moreover, conditions like osteoarthritis, rheumatoid arthritis, and tumor-like lesions could also be a reason behind the formation of loose bodies in the knee joint [1]. These LBs may be found either intra-articularly or localized within various recesses and bursae [1]. In case these LBs exhibit free movement within the joint cavity, the chances of these LBs becoming entrapped between the articular cartilage happen to increase. Consequently, joint locking happens intermittently, ultimately leading to limited motion, pain, and effusion intraarticularly [3] in contrast to the stable fragments that are located within the bursae or synovial recesses, which are typically asymptomatic [4]. When diagnosing loose bodies, radiological findings play a crucial role, as the clinical picture usually lacks specificity. Different imaging modalities assist in confirming the diagnosis, in addition to specifying the number, size, as well as the location of these fragments, allowing for the prevention of secondary degenerative changes by allowing for early surgical intervention [5]. Although the modalities of choice have always been CT arthrography and MR, recent advancements in ultrasonography aided the evaluation of such abnormalities. In such cases of symptomatic loose body, removal is warranted, regardless of the size. Arthroscopy is widely used for operative management, while arthrotomy is reserved for inaccessible or other large bodies [6]. This case report presents a 52-year-old male patient with an exceptionally large osseous loose body in the knee joint, along with associated pathologies. Symptomatic loose bodies, regardless of size, warrant removal. Arthroscopy is commonly used for operative intervention. Arthrotomy may be necessary for inaccessible or exceptionally large bodies [6]. This case report presents the clinical findings, radiological findings, and surgical management of a patient with an unusually large osseous loose body within the knee joint.

## 2. Case Report

The patient, a 52-year-old male, had recurrent episodes of severe, sudden locking in the knee joint, in addition to the sensation of a mobile round hard body inside the knee joint. Aiming to release this intermittent locking, the patient needed to do special maneuvers.

After the physical examination, an MRI was requested for the patient. A plain MRI study of the left knee was performed using multi-axial, multi-echo sequences. Various pathologies were observed in the MRI study. The femorotibial compartments revealed degeneration of the medial and lateral menisci in the posterior horn, with no extension to the articular surface. The hyaline cartilage had a partial loss of thickness of less than 50% in the tibiofemoral region, corresponding to

Grade 2 ICRS (**Figure 1**). A mild deviation of the patella was noted on the lateral side. The anterior and posterior cruciate ligaments were intact and revealed normal shape and density (**Figure 2**). No fractures, subluxations, or other bone marrow edemas were found. A popliteal Baker's cyst was observed. The cyst was located between the semimembranosus tendons and the medial head of the gastrocnemius, with measurements of  $4.5 \times 1.5 \times 1.2$  cm.

The surgery was performed under general anesthesia, and the patient was placed in a supine position, throughout the procedure, a tourniquet with a pressure of 200 mmHg was used. Two arthroscopy standard portals were established using size 11 blades. Each portal was 5 mm, allowing for the insertion of a camera to directly visualize the internal aspects of the knee joint. The examination revealed the presence of an abnormally large osseous loose body within the infrapatellar Hoffa's fat pad of the left knee joint. The normal arthroscopic grasper was insufficiently small to grasp the loose body, so the Allis Grasper was used instead. The second portal was then enlarged to 2 cm promote extraction of the loose body. The Loose body, located in the infra-patellar Hoffa's pad, was successfully extracted, with measurements of  $2.5 \times 1.7$  cm (**Figure 3**). Further examinations were conducted to ensure the knee joint was clear of any remaining loose bodies. Additionally, grade one osteoarthritic changes were observed in the medial femoral condyle. Histopathology was not performed in this case, as no clinical or radiological suspicion warranted further investigation. The investigation and intraoperative findings were consistent with a benign loose body, and no features indicative of malignancy or other pathologies were observed.

Post-operatively, the patient was immediately able to walk. During a follow-up visit, the patient's knee was re-examined physically. Upon sensation, the knee joint had a normal contour, and sensation of a round body disappeared. The knee joint was freely moving upon passive motion, with the absence of any sudden locking. The patient reported full ability to walk and move his knee joint without any locking. The limited range of motion was denied by the patient.



**Figure 1.** T1 lateral view of the MRI reveals the osseous loose body (yellow arrow).



**Figure 2.** T2 MRI sagittal view reveals the presence of a popliteal Baker's cyst.



**Figure 3.** The specimen's size (2.5 × 1.7 cm).

### 3. Discussion

Loose bodies are remnants of bone or cartilage, floating freely in the synovial fluid of the knee joint. Typical loose bodies are unilateral, affecting only one knee at a time [7]. The patient in the presented case report displayed an abnormal, large osseous loose body in the knee joint, requiring arthroscopic intervention. This is similar to the case reported by Yang *et al.*, where a patient was found to have low-density, loose radio-dense bodies in the suprapatellar bursa, analogous to the loose body detected in the case report [7].

The efficacy of the arthroscopic intervention in extracting loose bodies and managing the associated symptoms is supported in the presented case, as the arthroscopic intervention successfully extracted the loose body from the knee joint, and a case of giant intra-articular loose bodies in the knee joint also highlights the successful treatment with knee arthroscopy reported by Sourlas *et al.* [8].

Moreover, the treatment of loose bodies with arthroscopic intervention was also supported by the study of Chai and Lui, where posterior loose bodies were removed using posterior knee arthroscopy [9]. Though the precise location of the loose body in the case presented wasn't specified, the surgical procedure consisted of establishing arthroscopy portals and removing the loose body.

The importance of accurately identifying and pinpointing the location of loose bodies on MRI for the determination of the optimal treatment, and prevention of osteoarthritis development was highlighted by the study of Gursoy [5]. The MRI

findings in the presented case report included the identification of the loose body, degenerative changes in the menisci and hyaline cartilage, and the presence of a Baker's cyst, which aligns with the study's concentration on addressing numerous pathologies linked to loose bodies in the knee joint.

The results drawn from the presented case are in line with the results reported in the studies discussed, providing further evidence to support the effectiveness of arthroscopy in managing loose bodies in the knee joint, and highlighting the importance of accurately identifying and localizing the loose bodies to provide optimal treatment and prevent further complications.

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### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

### References

- [1] Zmerly, H., Moscato, M. and Akkawi, I. (2022) Assessment and Management of Loose Bodies in the Knee Joint and Related Disease: A Narrative Review. *Current Rheumatology Reviews*, **18**, 12-19. <https://doi.org/10.2174/1573397117666211021165807>
- [2] Pandey, P.K., Pawar, I., Gupta, J. and Verma, R.R. (2015) Giant Loose Body of Knee Joint Presenting as Accessory Patella—A Case Report. *Open Journal of Orthopedics*, **5**, 235-239. <https://doi.org/10.4236/ojo.2015.58031>
- [3] Chai, H.L. and Lui, T.H. (2017) Posterior Knee Loose Bodies: Treated by Posterior Knee Arthroscopy. *Journal of Orthopaedic Case Reports*, **7**, 57-61.
- [4] Zhao, B., Yu, Y., Liu, W. and Du, J. (2017) Efficacy of Arthroscopic Loose Body Removal for Knee Osteoarthritis. *Experimental and Therapeutic Medicine*, **15**, 1666-1671. <https://doi.org/10.3892/etm.2017.5564>
- [5] Gursoy, M., Mete, B.D., Dag, F. and Bulut, T. (2019) The Distribution of Loose Bodies Determined on Knee Magnetic Resonance Imaging: Joint Compartments, Recesses and Bursae Including Arthroscopic Blind Spots. *Acta Radiologica*, **60**, 1286-1293. <https://doi.org/10.1177/0284185119856262>
- [6] Krych, A.J., Saris, D.B.F., Stuart, M.J. and Hacken, B. (2020) Cartilage Injury in the Knee: Assessment and Treatment Options. *Journal of the American Academy of Orthopaedic Surgeons*, **28**, 914-922. <https://doi.org/10.5435/jaaos-d-20-00266>
- [7] Yang, Y.P., Wang, J.J. and Li, H.Y. (2018) Atypical Synovial Chondromatosis of the Right Knee: A Case Report. *Experimental and Therapeutic Medicine*, **15**, 4503-4507. <https://doi.org/10.3892/etm.2018.5955>
- [8] Sourlas, I., Brilakis, E.V., Mavrogenis, A.F., Stavropoulos, N.A. and Korres, D.S. (2013) Giant Intra-Articular Synovial Osteochondromata of the Knee. *Hippokratia*, **17**, 281-283. <https://pubmed.ncbi.nlm.nih.gov/24470744>
- [9] Bruns, J., Werner, M. and Habermann, C. (2017) Osteochondritis Dissecans: Etiology, Pathology, and Imaging with a Special Focus on the Knee Joint. *CARTILAGE*, **9**, 346-362. <https://doi.org/10.1177/1947603517715736>