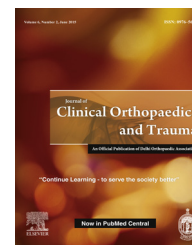


Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/jcot](http://www.elsevier.com/locate/jcot)

## Case Report

# Loose body as an obstacle for posterolateral arthroscopic portal formation in the knee joint



Anshul Dahuja M.S. (Ortho)<sup>a,\*</sup>, Jae Hyuk Yang M.D., Ph.D.<sup>b</sup>,  
Jung-Ro Yoon M.D., Ph.D.<sup>b</sup>, Shiraz Bhatti M.S. (Orthopedics)<sup>c</sup>

<sup>a</sup> Assistant Professor, Gian Sagar Medical College, Banur 140401, Punjab, India

<sup>b</sup> Seoul, South Korea

<sup>c</sup> Associate Professor, GGS Medical College, Faridkot, India

## ARTICLE INFO

## Article history:

Received 20 July 2015

Accepted 14 February 2016

Available online 10 June 2016

## Keywords:

Arthroscopic

Cartilage

Loose body

Posterolateral portal

Posterior trans-septal portal

## ABSTRACT

In this report, we present a case with difficult arthroscopic posterolateral portal formation due to loose body located in posterior compartment. These loose bodies are responsible for pain, decreased range of motion and cartilage damage in the knee joint. By making the posterior trans-septal portal prior, posterolateral portal could be made without difficulty completing the planned arthroscopic procedure.

© 2016 Delhi Orthopedic Association. All rights reserved.

## 1. Introduction

The arthroscopic removal of loose bodies in the knee is relatively a common practice.<sup>1-3</sup> Free loose bodies are predisposed to cause repetitive internal derangement of knee joint, which may result in cartilage damage and development of early osteoarthritis.<sup>4</sup> These loose bodies have the tendency to be placed in posterior compartments due to the gravity effect.

This report presents a case of multiple loose bodies in posterior compartment of knee joint obstructing the formation of arthroscopic posterolateral portal. The posterior trans-septal portal was created to accomplish the remaining

arthroscopic procedures. The patient and the patient's family were informed that the data concerning the case would be submitted for publication and they gave their consent.

## 2. Case presentation

A 58-year-old woman presented with a 10-month history of medial joint line pain and intermittent recurrent effusions of the right knee. Symptoms were exacerbated by deep squatting and during stair walking activity. There was no history of trauma. No other relevant past history was present.

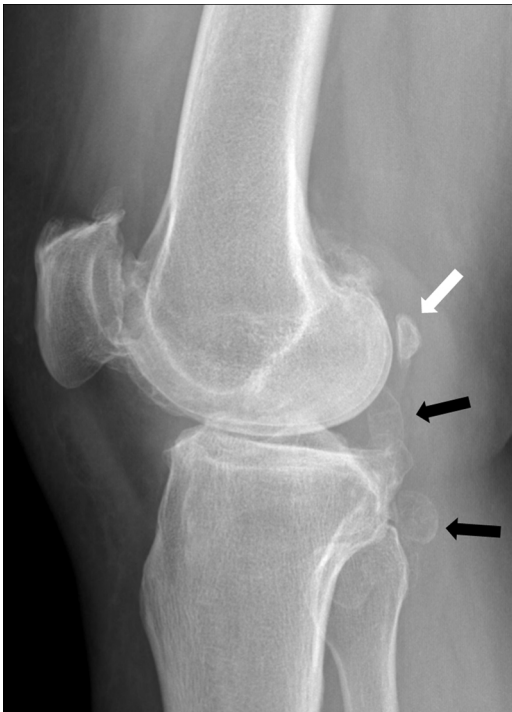
During physical examination, the McMurray's test was positive especially during knee flexion with internal rotational

\* Corresponding author. Tel.: +91 7307420300.

E-mail address: [anshuldahuja@gmail.com](mailto:anshuldahuja@gmail.com) (A. Dahuja).

<http://dx.doi.org/10.1016/j.jcot.2016.02.011>

0976-5662/© 2016 Delhi Orthopedic Association. All rights reserved.

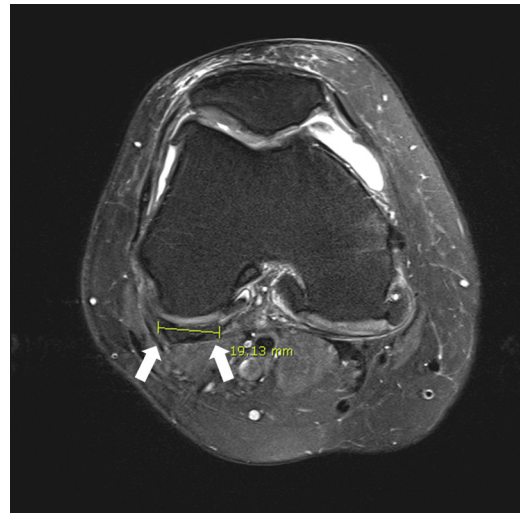


**Fig. 1 – The preoperative radiograph: lateral view with osteochondral loose bodies in posterior compartments (arrows).**

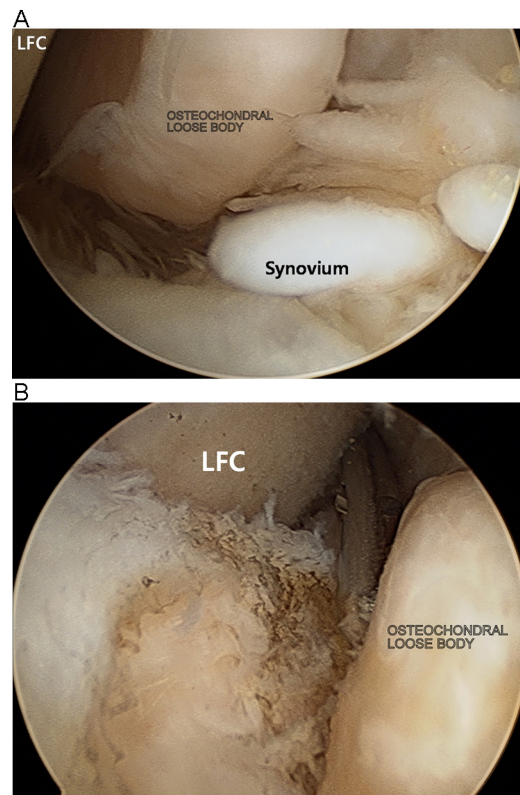
maneuver. Moderate degenerative changes were noted on the radiographs. The lateral view revealed the presence of intra-articular radio-opaque lesion along the joint line (Fig. 1). Magnetic resonance imaging (MRI) study revealed full thickness cartilage defect in medial femoral and tibial condyles with degenerative change in medial meniscus. Axial images revealed the osteochondral loose body in posterolateral compartment sizing up to 19 mm in transverse diameter (Fig. 2). In the view of the patient being young age for arthroplasty procedure, arthroscopic treatment was decided to temporarily relieve the symptoms.

The arthroscopy was performed under spinal anesthesia with the patient in a supine position. A standard anteromedial and anterolateral portals were used for the routine arthroscopic examination of the knee joint. With the knee flexed to 80°, the arthroscope was introduced via the anteromedial portal, bypassing the intercondylar notch into the posterolateral compartment. The posterolateral compartment then was examined with the 30° and 70° scopes. Osteochondral loose bodies were detected (Fig. 3A). Spinal needle was introduced in order to make the posterolateral portal but was not feasible. Arthroscopic trans-illumination technique from the joint was also impossible due to loose bodies. Multiple attempts were done but eventually failed.

To proceed further, posteromedial portal was formed in advance. The osteochondral loose body which was situated at posteromedial compartment was removed via the posteromedial portal. Formation of posterior trans-septal portal<sup>3</sup> was decided to access the posterolateral compartment. The method of posterior trans-septal formation technique was slightly modified from the original technique. The original



**Fig. 2 – Preoperative fat saturation proton density MRI image: axial view demonstrating loose body (transverse diameter of 17 mm) in posterolateral compartment (arrow).**



**Fig. 3 – Arthroscopic findings. (A) Loose body seen from the arthroscope advanced from anteromedial portal via intercondylar notch. Formation of posterolateral portal was not possible. (B) Posterolateral portal formation could be done (arrow indicating the probe through posterolateral portal) with the arthroscope placed through the posterior trans-septal portal. This posterior trans-septal portal was made by so-called “the modified technique”.**

technique<sup>5</sup> forms the portal after making both the posteromedial and posterolateral portals but in this case, portal was formed by the following technique: with the arthroscope placed from the anterolateral portal via the intercondylar notch, a switching stick and motorized shaver was introduced from posteromedial portal to separate the septum behind the PCL in a piecemeal fashion. While excising the septum, the tip of the motorized shaver was touched and resected a small portion of the posterior septum into the lumen of the shaver by negative pressure of the suction system. Forceful manipulation of the motorized shaver was avoided in order to prevent damage to the PCL or the posterior capsule. Reducing the suction power of the shaver greatly decreased the risk of inadvertent damage. The posterior septum was excised in a medial-to-lateral direction to reach the posterolateral compartment. Using the posteromedial portal, the arthroscope then reached the posterolateral compartment. Using this portal as the viewing portal, formation of posterolateral portal was then possible (Fig. 3B). The synovectomy and osteochondral loose body removal were accomplished. After 24 months follow-up period, the patient had been symptom-free from recurrent effusions. Further surgical treatment had not been performed.

### 3. Discussion

The most important finding of this report is that the posterior trans-septal portal may aid in the formation of posterolateral and posteromedial portals. By making the posterior trans-septal portal prior, posterolateral portal could be made without difficulty by completing the planned arthroscopic procedure.

Most loose bodies are associated with osteochondral lesion, osteochondritis dissecans, various kind of arthritis with joint disintegration, and synovial osteochondromatosis.<sup>6</sup> In older patients, they are mostly related to osteoarthritis, and it is necessary at times to remove the loose bodies because they tend to cause recurrent pain, swelling, and locking.<sup>2</sup> One problem with loose bodies in osteoarthritic patients is that they tend to reoccur.<sup>7</sup> However, the recurrence has not been demonstrated in the presented case after 2 years of follow-up period.

The posterior trans-septal portal was previously introduced by Ahn et al.<sup>5,8</sup> to improve visualization of the posterior compartment of the knee. The penetration of the posterior septum provides another window for clear arthroscopic view, which facilitates the manipulation of the instruments inserted to the posterior compartment.<sup>9,10</sup> Mechanoreceptors are also abundant in the proximal septum.<sup>4</sup> Therefore, recommendations regarding limited resection or penetration of the septum indicate that this procedure should be performed at the distal portion, just behind the PCL, rather than at the proximal or femoral side to reduce bleeding while creating the transseptal portal. Besides, the original technique in forming the posterior trans-septal portal,<sup>5</sup> careful shaving of the posterior septum

and meticulous placement of arthroscopic instruments make "modified posterior trans-septal portal" feasible even without the presence of the posterolateral portal.

So, difficult posterior portal formation should be anticipated to surgeons performing arthroscopic surgeries in patients with loose bodies. In such cases, posterior trans-septal portal formation either by original or the modified technique described above may be helpful in visualizing the posterior compartments and to proceed with the arthroscopic procedures.

### 4. Conclusion

An arthroscopic approach via a transseptal portal for posterior lesions of the knee confers several advantages upon patients and operators, including less invasive technique compared to the open surgery for access to the back of the knee. However, the risk of neurovascular injuries should be considered. It is important for operators to understand the anatomy around the posterior portals.

### Conflicts of interest

The authors have none to declare.

### REFERENCES

1. Dandy DJ, O'Carroll PF. The removal of loose bodies from the knee under arthroscopic control. *J Bone Joint Surg Br.* 1982;64:473-474.
2. Kalb RL. Causes and treatment of loose bodies in the knee. *Hosp Pract (1995).* 1997;32:193-195.
3. Ahn JH, Yoo JC, Lee SH. Arthroscopic loose-body removal in posterior compartment of the knee joint: a technical note. *Knee Surg Sports Traumatol Arthrosc.* 2007;15:100-106.
4. Ramos LA, Astur D, Novaretti JV, et al. An anatomic study of the posterior septum of the knee. *Arthroscopy.* 2012;28:100-104.
5. Ahn JH, Ha CW. Posterior trans-septal portal for arthroscopic surgery of the knee joint. *Arthroscopy.* 2000;16:774-779.
6. Bianchi S, Martinoli C. Detection of loose bodies in joints. *Radiol Clin N Am.* 1999;37:679-690.
7. McGinty JB. Arthroscopic removal of loose bodies. *Orthop Clin N Am.* 1982;13:313-328.
8. Ahn JH, Chung YS, Oh I. Arthroscopic posterior cruciate ligament reconstruction using the posterior trans-septal portal. *Arthroscopy.* 2003;19:101-107.
9. Jang KM, Ahn JH, Wang JH. Arthroscopic partial meniscectomy of a posteriorly flipped superior leaflet in a horizontal medial meniscus tear using a posterior transseptal portal. *Orthopedics.* 2012;35:e430-e433.
10. Kim SJ, Song HT, Moon HK, Chun YM, Chang WH. The safe establishment of a transseptal portal in the posterior knee. *Knee Surg Sports Traumatol Arthrosc.* 2011;19:1320-1325.