

Case report

Arthroscopic treatment of synovial chondromatosis at the knee posterior septum using a trans-septal approach: Report of two cases☆☆☆

Bong-Soo Kyung^a, Soon-Hyuck Lee^a, Seung-Beom Han^a, Jong-Hoon Park^a,
Chul-Hwan Kim^b, Dae-Hee Lee^{a,*}

^a Department of Orthopaedic Surgery, Korea University Anam Hospital, Korea University College of Medicine, Seoul, Republic of Korea

^b Department of Pathology, Korea University Anam Hospital, Korea University College of Medicine, Seoul, Republic of Korea

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ABSTRACT

Synovial chondromatosis of the knee joint rarely develops in the posterior septum. Such cases are difficult to treat arthroscopically since the posterior septum is not readily accessible via standard portals. We report two cases of localized synovial chondromatosis in the posterior septum. We used a posterior trans-septal portal to arthroscopically remove the loose bodies and perform a concomitant synovectomy. The two cases were followed-up for 24 and 16 months after surgery, respectively, and the patients were found to be pain-free, have a full range of knee motion and showed no evidence of recurrence. A posterior trans-septal portal may be essential in some cases for treatment of synovial chondromatosis at the posterior septum.

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1. Introduction

Synovial chondromatosis is an uncommon disease that results from proliferative metaplasia of the mesenchymal cells in the synovial membrane of joints. Although synovial chondromatosis can develop in any joint where synovium exists (e.g., hip, knee and shoulder), the knee joint is the most common [1]. Within the knee, the disease predominantly occurs in the anterior compartment such as the suprapatellar pouch, infrapatellar fat pad and anterior interval (between the anterior cruciate ligament and infrapatellar fat pad) [2]. There are few reported cases of posterior compartment (e.g., posterior aspect of the posterior cruciate ligament) occurrence [3–5].

The posterior compartment of the knee, especially the posterior septum which separates the posterior compartment into the posteromedial and posterolateral areas, is not readily accessible via conventional anterior arthroscopic portals [6]. Therefore, for

synovial chondromatosis of the posterior compartment, a posterior or trans-septal portal can be useful for the removal of loose bodies from around the posterior septum [7].

The present report describes two cases of synovial chondromatosis of the posterior septum of the knee. Treatment in each case was arthroscopic excision via a posterior trans-septal portal.

2. Case reports

2.1. Case 1

A 60-year-old man presented with vague left knee pain that had persisted for 10 months. He complained of intermittent pain on flexion. There was no trauma history and no remarkable physical findings. The symmetrical range of knee motion was up to 130°. A simple radiograph indicated multiple oval calcific lesions in the popliteal area that suggested mild arthritic change, but it was difficult to accurately locate loose bodies in the posterior compartment. A magnetic resonance image (MRI) revealed approximately four T2 low loose bodies around the posterior septum (Fig. 1A,B). The MRI also showed a degenerative medial meniscus posterior horn tear and chondral wear of the medial femoral condyle and medial tibial plateau.

An arthroscopic examination was performed using conventional anteromedial and anterolateral portals close to the patellar tendon border to facilitate passage of the arthroscope or instruments through the intercondylar notch when making posteromedial, posterolateral and posterior trans-septal portals. We performed a partial meniscectomy for the degenerative medial meniscus posterior horn tear with a

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* Corresponding author at: Department of Orthopaedic Surgery, Korea University School of Medicine, Anam hospital, 126–1, Anam-dong 5-ga, Seongbuk-gu, Seoul, 136–705, Republic of Korea. Tel.: +82 2 920 5924; fax: +82 2 924 2471.

E-mail address: eoak22@empal.com (D.-H. Lee).

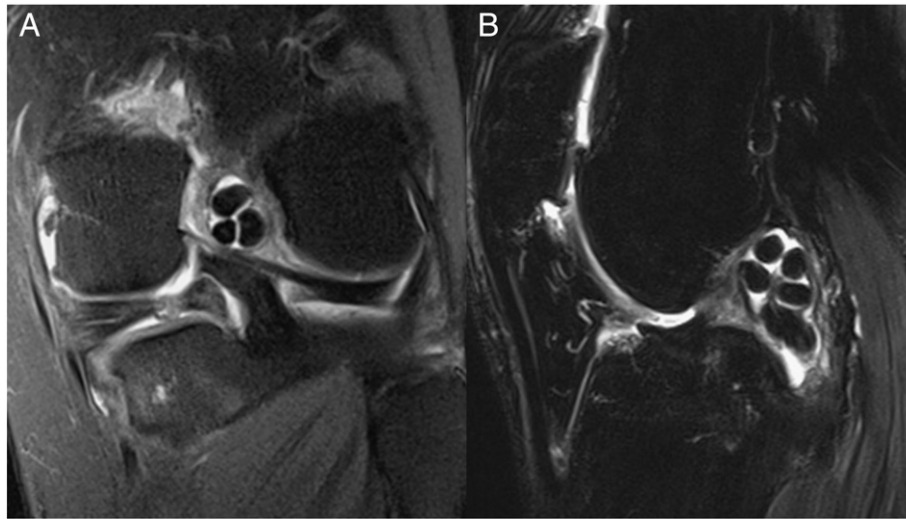


Fig. 1. Magnetic resonance imaging. T2 coronal (A) and sagittal (B) views. Note the multiple loose bodies and increased signal intensity in the synovium.

horizontal and radial component. We then created a posterior trans-septal portal to view and remove loose bodies around the posterior septum. The posteromedial and posterolateral portals were made under the guidance of trans-illumination created by a light source introduced into the anterolateral and anteromedial portals, respectively. Placing the arthroscope through the posteromedial portal allowed vision of the posterior cruciate ligament and posterior septum. However, the loose bodies expected to be observed in the posterior septum were not visible. Therefore, we inserted an arthroscopic shaver through the posterolateral portal and penetrated the posterior septum, after which the loose bodies became immediately visible (Fig. 2). We then created a posterior trans-septal portal. We used the posteromedial portal for visual access and the trans-septal portal for instrument access, and vice versa when necessary. Via the trans-septal portal, 4 chondromatous loose bodies were removed, and a synovectomy was performed for the adjacent synovitis. Histological examination showed that the loose bodies were composed mainly of lobular hyaline cartilage embedded in the connective tissue and joint capsule, which was consistent with a diagnosis of synovial chondromatosis (Fig. 3).

After surgery, a simple radiograph and an MRI indicated complete removal of the posterior septum loose bodies. Rehabilitation for range of motion and ambulation were commenced on postoperative day 1,

and the patient was discharged on postoperative day 3. At the 24-month follow-up, the patient was pain-free, had a full range of knee motion, and showed no evidence of recurrence.

2.2. Case 2

A 44-year-old female presented with right knee discomfort and pain in the popliteal area that had persisted for 5 years. The symptoms were aggravated upon deep flexion. On occasions she could not walk or go up and down stairs due to pain and locking. She could not recall any trauma related to the symptoms. Physical examinations revealed pain on flexion greater than 120°. There were multiple small radio-opaque densities in the popliteal area on a plain radiograph. An MRI showed multiple T2 low signal nodules with high signals surrounding the posterior septum (Fig. 4A,B), a degenerative medial meniscus posterior horn tear and mild osteoarthritis.

After an arthroscopic examination, a partial meniscectomy using a punch and a motorized shaver was performed to treat the posterior horn tear at the medial meniscus. Posteromedial and posterolateral portals were then established. However, no loose bodies could be

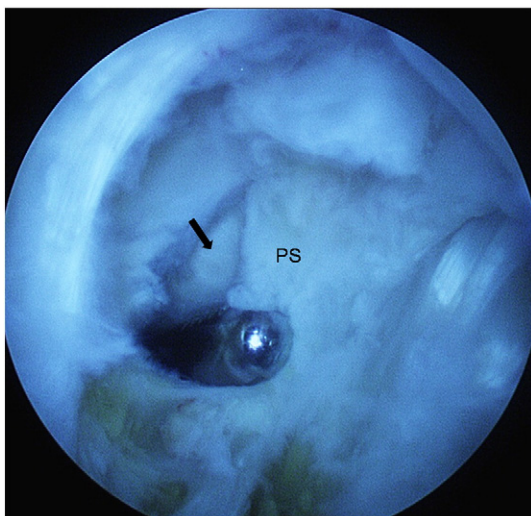


Fig. 2. Arthroscopic view. A loose body (arrow) became visible once the posterior septum (PS) was penetrated.

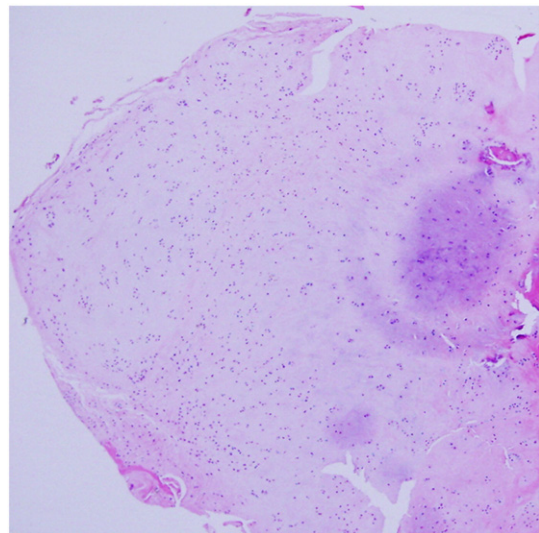


Fig. 3. Histological examination of a retrieved loose body. Note that the body was composed of hyaline cartilage and filled interiorly with chondrocytes (hematoxylin and eosin stain, $\times 40$).

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