

# Post-traumatic Medial Meniscal Cyst in young: A case report

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## What to Learn from this Article?

Usually lateral meniscus cyst is common and mostly congenital but in our case patient had history of trauma and pain on medial meniscus. So while evaluating patient traumatic history should always be ruled out.

## Abstract

**Introduction:** Meniscal cysts are rare, in that cysts of lateral meniscus are 3 times to 10 times more common than those of medial meniscus. Etiology of meniscal cysts includes trauma which results in contusion and haemorrhage within the substance of meniscus leading to mucoid degeneration. Degeneration with age results in local necrosis and mucoid degeneration into a cyst, developmental inclusion of synovial cells within the substance of the meniscus and often are a result of extrusion of synovial fluid through a tear of the meniscus, resulting in a one-way valve effect of the tear. Arthroscopic partial meniscectomy followed by cyst decompression is currently recommended for treatment of a meniscal cyst.

**Case Presentation:** We present a case of 18-year-old female with c/o pain and swelling in right knee had h/o trauma 3 yrs back. On examination, swelling 1x2 cm on medial tibial condyle, firm in consistency fixed to bone. MRI suggests grade 3 horizontal tear in posterior horn of medial meniscus and parameniscal cyst adjacent to medial meniscus. In this report, medial parameniscal cyst was resected using an arthroscopic posterior trans-septal approach. There have been no recurrences to date, and patient returned to her previous level of activity.

**Conclusion:** A posterior trans-septal approach is useful for resection of a meniscal cyst arising from the posterior horn of the medial meniscus.

**Keywords:** meniscal cyst, parameniscal cyst, meniscectomy, arthroscopic meniscectomy, trans-septal approach

## Introduction

Meniscal cysts are rare. Cyst of lateral meniscus is 3 times to 10 times more common than cyst of medial meniscus. Etiology of meniscal cysts includes trauma which results in contusion and haemorrhage within the substance of meniscus leading to mucoid degeneration, degeneration with age which results in local necrosis and mucoid degeneration into a cyst, developmental inclusion of synovial cells within the substance of the meniscus and often are a result of extrusion of synovial fluid through a tear of the meniscus, resulting in a one-way valve effect of the tear. Arthroscopic partial meniscectomy followed by cyst decompression is currently recommended for treatment of a meniscal cyst.

## Case Presentation

We present a case of 18-year-old female with complains of pain and swelling in right knee and had a history of trauma 3 years back. Pain was insidious in onset,

and mild in intensity. Swelling was not present initially, but developed 1 1/2 year back. The patient experienced locking of knee while walking. On examination, there was a swelling 1x2 cm on medial tibial condyle, firm in consistency. It was fixed to bone. Plain X-ray of knee in the antero-posterior and lateral view didn't show any abnormality. Magnetic resonance imaging showed grade 3 horizontal tear in posterior horn of medial meniscus and parameniscal cyst adjacent to medial meniscus. Patient was posted for medial parameniscal cyst resection using an arthroscopic posterior trans-septal approach. Arthroscopic surgery was performed under spinal anesthesia without a pneumatic tourniquet. The knee was flexed at more than 90 degrees on the operating table using a foot stopper. Anterior cruciate ligament, posterior cruciate ligament and both lateral and medial meniscus was intact under arthroscopic examination. The posteromedial compartment was examined from the anterolateral portal through the intercondylar space. The surface of the posterior horn of the medial meniscus

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## Author's Photo Gallery



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Figure 1: Magnetic resonance imaging photo.

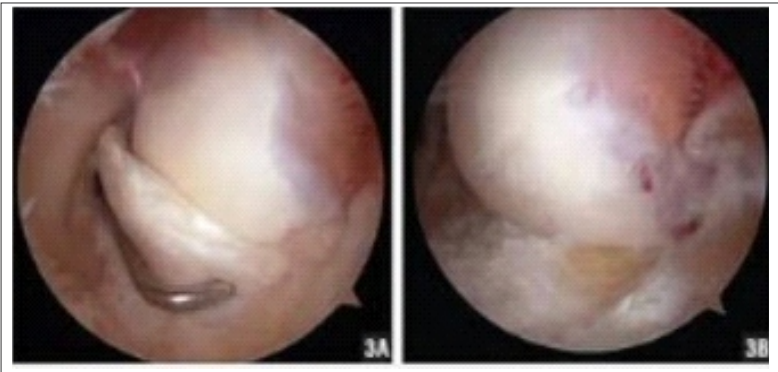


Figure 2: Intra-operative photo.

was intact and cyst-like lesion was found on the edge of the posterior segment of the medial meniscus. While starting of the procedure for making a trans-septal portal, the posteromedial and posterolateral portals was created according to the approach reported by Ahn *et al.* After making a posterolateral portal, a rod with a sheath was inserted through the posterolateral portal to the septum. Pushing the sheath into the septum, the arthroscope was then inserted into the posteromedial portal. While maintaining the view of the medial side of a septum, a 3.0 mm Kirschner wire was pushed into the septum through the sheath from the posterolateral portal and then the septum was perforated. The Kirschner wire was pushed 2 or 3 times into the septum to enlarge the initial hole so that the switching rod could easily pass through the septum. Then, the switching rod was inserted from the posterolateral portal to the posteromedial portal via the trans-septal portal. Once the trans-septal portal was created, the arthroscope and instruments are easily interchangeable through the two posterior portals according to the posterior “back and forth” approach presented by Louisia *et al.* Viewing from the posteromedial portal, proliferated synovial tissues expanding from the posterior horn of the medial meniscus to the posterior septum was found. The cyst and posterior septum was resected by a punch and a motorized shaver inserted from the posterolateral portal while viewing from the posteromedial portal. When the cyst ruptured, a clear mucinous fluid seeped from the cyst cavity. A meniscal tear was not found although the posterior edge of the medial meniscus was carefully examined by a probe after cyst resection. The patient’s pain disappeared completely during the 10-month follow-up period and there is no recurrences till date.

### Discussion

Medial parameniscal cysts of the knee are typically 0.3 to 9mm in diameter [1]. Previously, 4 cases have been documented for medial meniscal cyst. Furthermore, in all 4 cases, the meniscal cysts were openly excised. Open excisions of meniscal cysts pose greater risks of infection, inadvertent damage to the meniscus and surrounding structures during surgery, and longer time to recovery and return to mobility for the patient. This case highlights the management of a posterior horn of medial meniscus and parameniscal cyst adjacent to medial meniscus that was managed arthroscopically with good post-operative recovery.

Resection of a meniscal cyst involving the septum is difficult by the intercondylar approach from two anterior portals even with a posteromedial portal in addition for managing the procedure. Although the use of a 70-degree arthroscope can help the visualization of the posterior compartment, the whole area of the septum cannot be visualized since the camera head of an arthroscope is too close to the septum from an anterior intercondylar approach. Although the septum can be viewed clearly from the posteromedial portal, it is cumbersome to manage the instruments to excise the cyst from anterior portals or from an additional high posteromedial portal. In our case, a posterior trans-septal approach was employed for the resection of the meniscal cyst as this approach allows an operator to identify the posterior edge of the medial meniscus, the septum and PCL and to treat the lesions involving those

structures easily. A trans-septal approach was initially reported by Kim *et al.* in 1996 [2]. This technique is quite useful for accessing the posterior compartment of the knee, however the operator should bear in mind the risk of popliteal neurovascular injury when making a trans-septal portal. Hence, the use of pneumatic tourniquet should be avoided. Almost all meniscal cysts are accompanied by some meniscal tear, including grade 3 lesions judged by MRI, although it is not obvious on the surface of the meniscus. In such case as ours, an open cystectomy is recommended according to the therapeutic options for meniscal cysts [3]. However, substantial damages in the surrounding soft tissue, especially damage to the posterior capsule, at the popliteal fossa could be unavoidable by an open procedure since the lesion is deep under the skin. Recently, all arthroscopic procedures for selective meniscectomy with cyst decompression or cyst drainage with suture of the torn meniscus were reported to preserve or restore a meniscal function [4, 5, 6]. Howe *et al.* demonstrated excellent results for a long follow-up period by creating a small channel at the capsule adjacent to the cyst for decompression of the cyst into the joint without causing harm to the healthy meniscus [7].

Small parameniscal cysts are rarely symptomatic, larger cysts located posteriorly may present with pain and persistent swelling due to pressure on surrounding structures. Our patient experienced pain, swelling and locking over a period of 3 yrs. A voluminous posterior medial meniscal cyst could present in the popliteal fossa, and coupled with its size, may be misdiagnosed as a Baker’s cyst. Distinguishing a meniscal cyst from a Baker’s cyst is important as Baker’s cysts are usually associated with osteoarthritis of the knee. They may often resolve spontaneously and hence should be treated conservatively [8]. However, arthroscopic repair or debridement of a meniscal tear with the aim of preventing recurrence is the usual treatment for a meniscal cyst [9]. MRI and arthroscopy are useful in distinguishing a parameniscal cyst from a Baker’s cyst in such a scenario. Most meniscal cysts (91%) occur immediately adjacent to the meniscal tear (98% horizontal cleavage tears, 49% anterolateral), with the tear communicating directly with the cysts, and produce a homogenous signal on MRI [10, 11]. Furthermore, demonstration of the origin of a Baker’s cyst between the muscles of the medial gastrocnemius and semi membranous allows for differentiation from a meniscal cyst.

### Conclusion

A posterior trans-septal approach is useful for resection of a meniscal cyst arising from the posterior horn of the medial meniscus, especially in the case where the lesion involves the posterior septum. This is only a case report further cases are awaited.

### Clinical Message

Post traumatic knee pain should not be neglected even though all clinical signs are negative. Rare causes like meniscal cyst can also cause pain.

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