Arthroscopic Decompression for a Giant Meniscal Cyst

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Abstract

The authors report the case of a giant medial meniscal cyst in an osteoarthritic knee of an 82-year-old woman that was successfully treated with only arthroscopic cyst decompression. The patient noticed a painful mass on the medial side of the right knee that had been gradually growing for 5 years. Magnetic resonance imaging showed an encapsulated large medial cystic mass measuring 80×65×40 mm that was adjacent to the medial meniscus. An accompanying horizontal tear was also detected in the middle and posterior segments of the meniscus. The medial meniscus was resected up to the capsular attachment to create bidirectional flow between the joint and the cyst with arthroscopic surgery. Magnetic resonance imaging performed 14 months postoperatively showed that the cyst had completely disappeared, and no recurrence was observed during a 2-year follow-up period. An excellent result could be obtained by performing limited meniscectomy to create a channel leading to the meniscal cyst, even though the cyst was large. Among previously reported cases of meniscal cysts, this case is the largest to be treated arthroscopically without open excision. [Orthopedics. 2016; 39(1):e166-e168.]

Meniscal cysts are often asymptomatic; however, when they increase in size, they present as palpable masses with pain or persistent swelling over the joint line of the knee. Few cases of giant meniscal cysts (maximum diameter >5 cm) have been reported in the English literature. This report describes a patient diagnosed with a giant medial meniscal cyst (80×65×40 mm) that was successfully treated with arthroscopic cyst decompression without open excision. To the authors’ knowledge, this is the largest parameniscal cyst to be treated only with arthroscopic cyst decompression.

Case Report

An 82-year-old woman presented to the authors’ hospital with an 8-year history of right knee pain. Before presentation, she had noticed a painful mass on the medial side of the right knee that had been gradually growing for 5 years. The patient did not recall trauma to the knee. She had undergone total knee arthroplasty of the opposite knee 11 years earlier to treat osteoarthritis. On presentation, the patient was ambulating with a crutch. Physical examination showed a large, palpable cystic mass (10×10 cm) on the medial aspect of the right knee (Figure 1). The mass was tender and tense, but not reddish or warm. A marked varus deformity was present. Because of contracture, range of motion was -10° extension and 110° flexion. No anteroposterior or lateral instability was observed, and patellar ballottement was not present. Blood and urine test results were unremarkable. Anteroposterior standing plain radiograph of the right knee showed grade IV tricompartmental osteoarthritis with medial soft tissue expansion. Magnetic resonance imaging (MRI) showed an encapsulated large medial cyst, measuring...
80×65×40 mm, with hypointensity on T1-weighted images and hyperintensity on T2-weighted images (Figure 2). An accompanying horizontal tear was detected in the middle and posterior segments of the medial meniscus. Puncture of the cyst yielded large amounts of viscous, yellowish fluid. A giant parameniscal cyst with osteoarthritis of the knee was diagnosed. Arthroscopic cyst decompression was performed through 2 standard anterior portals, with spinal anesthesia. Arthroscopic examination showed that the subchondral bone was exposed on both the femoral and tibial surfaces of the medial compartment. A large horizontal tear was found in the middle and posterior segments of the degenerative medial meniscus (Figure 3A). Meniscal resection of the torn meniscus was performed up to the meniscocapsular attachment. Viscous, yellowish fluid was noted at the site, just anterior to the semimembranosus tendon (Figure 3B). The connection between the joint and the cyst was further enlarged by resecting the capsule and synovia (Figure 3C). When an arthroscope was advanced into the cyst, the inner wall was found to be smooth and without synovitis (Figure 3D). The cyst was drained by pressing on it from the outside. Histologic examination of the inner wall of the cyst showed connective tissue consisting of fibroblasts without synovial lining cells, consistent with a ganglion cyst. The patient was permitted postoperative range of motion and weight-bearing gait on the first day after surgery. The cyst gradually diminished in size and was not palpable at a follow-up visit 3 months after surgery. At follow-up 14 months postoperatively, MRI showed complete disappearance of the cyst (Figure 4), and the patient ambulated with a crutch. Despite persistent osteoarthritic degeneration, the patient was satisfied that the mass had disappeared without recurrence during a 2-year follow-up period.

**DISCUSSION**

Meniscal cysts are often asymptomatic and are usually found on MRI when assessing other types of intra-articular pathologies, such as meniscal tears and chondral damage. In a study of 2572 MRI reports, 4% of meniscal cysts of the knee were identified.\(^7\) Of these, 66% were located in the medial compartment, with a mean cyst size of 1.91 cm. Giant meniscal cysts are rare; to the best of the authors’ knowledge, only 6 cases have been reported in the English literature, including 1 infected cyst.\(^1\)\(^–\)\(^6\) Patients are more likely to detect meniscal cysts located in the lateral compartment early because soft tissue around the lateral aspect of the knee is thinner than that in the medial compartment. However, because the medial capsule of the knee is covered by thick soft tissue, including muscle and fat, cysts that form in this area are not recognized until they are larger. Thus, meniscal cysts that form in the medial compartment tend to grow larger than those that form in the lateral compartment.

Choi et al.\(^4\) reported a giant medial meniscal cyst in a patient with severe osteoarthritis of the knee. The current patient also had grade IV osteoarthritis concomitant with a large cyst. In a varus knee, the medial collateral ligament and the semimembranosus tendon are contracted and tight. When a horizontal meniscal tear progresses to the meniscocapsular attachment, joint fluid can extrude through the torn capsule between the medial collateral ligament and the semimembranosus tendon, which already may be qualitatively fragile as a result of aging. Once fluid extrudes outside the joint, a 1-way valvular mechanism is created and results in a large, palpable cyst.\(^8\)\(^–\)\(^11\) In patients with osteoarthritis, large osteophytes in the medial compartment may mask the cyst and allow growth of a large mass.

Arthroscopic selective meniscectomy with cyst decompression (with or without open resection) and meniscal repair with cyst decompression have excellent long-term results in treating meniscal cysts that occur with meniscal tears.\(^8\)\(^–\)\(^11\) According to an algorithm established for the treatment of meniscal cysts, arthroscopic partial meniscectomy and cyst decompression...
are indicated if arthroscopic examination shows a meniscal tear. If a tear is not observed, open cyst excision with resection or repair of the torn menisci should be performed. However, previous studies reported a variety of therapeutic options for giant meniscal cysts (maximum diameter >5 cm). These include open excision, open excision with arthroscopic meniscal repair, and limited meniscectomy (with or without debridement) inside the cyst through an additional cystic portal. In the current case, the authors achieved an excellent result by performing limited meniscectomy to create a channel leading to the cyst. The algorithm presented by Pedowitz et al can be applied even to patients with a giant parameniscal cyst. The cyst in the current case is the largest parameniscal cyst known to be treated only with arthroscopic cyst decompression, without open excision.

**References**


Figure 3: Intraoperative arthroscopic views. Degenerated horizontal tear of the medial meniscus is confirmed by a probe (A). Viscous, yellowish fluid is seen being explored by meniscectomy up to the meniscocapsular junction (B). A connection hole seen between the joint and the cyst was enlarged by resection of the capsule and synovia. (Abbreviation: SM, semimembranosus tendon.) (C). The smooth inner wall of the cyst without synovitis is visible when the arthroscope is advanced into the cyst (D).

Figure 4: Magnetic resonance T2-weighted coronal (A) and axial (B) images taken 14 months postoperatively showing no parameniscal cyst.