

Suprapatellar Pouch Ganglion Cyst Managed With Arthroscopic Excision: A Case Report

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Abstract

This report highlights the first known case of an intra-articular ganglion cyst of the suprapatellar pouch. The patient presented with insidious-onset medial knee pain, swelling, and progressive dysfunction. Initial imaging was negative for pathology. More extensive thigh imaging led to the diagnosis. The patient was treated successfully with arthroscopic excision and was symptom-free at final follow-up.

Intra-articular ganglia of the knee are rare. They typically are found incidentally on magnetic resonance imaging (MRI) or during routine arthroscopy.¹⁻⁷ Krudwig and colleagues⁷ reported 1.1% overall incidence of these cysts at time of arthroscopy from a pool of 8000 cases. Of these cysts, only 9% were symptomatic; the rest were incidental findings at time of arthroscopy. Ganglion cysts of the knee, first described in 1924 by Caan,⁸ typically are located near the anterior cruciate ligament,^{3-5,7-11} where they often are anterior to the ligament and may cause pain in terminal extension or extreme flexion of the knee. These cysts may also commonly arise by the menisci (parameniscal cysts), the popliteus, and the alar folds and may also present as subchondral cysts in degenerative arthritis.⁷ In rare instances, they have been reported in the infrapatellar fat pad as well.¹²

The majority of patients with symptomatic ganglion cysts of the knee report chronic knee pain, effusion, or mechanical symptoms, including a block to normal motion.⁷ Typically, there is no history of previous trauma

and no signs of instability. Patients may or may not present with findings suspicious for other pathology, such as joint-line tenderness (meniscal tear) or anterior knee pain (chondromalacia patella). Plain radiographs are usually normal and MRI shows a cystic-fluid-filled sac that is dark on T₁-weighted sequences and bright on T₂-weighted sequences.

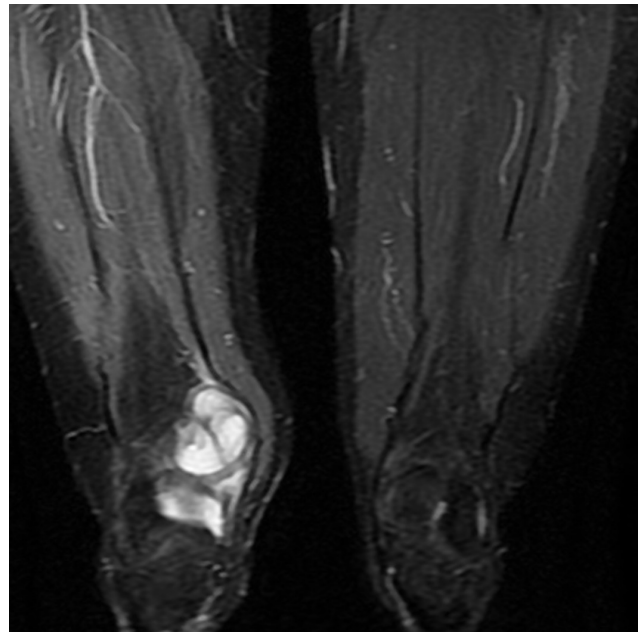


Figure 1. Coronal T₂-weighted magnetic resonance imaging of thighs shows septated ganglion cyst of right knee.

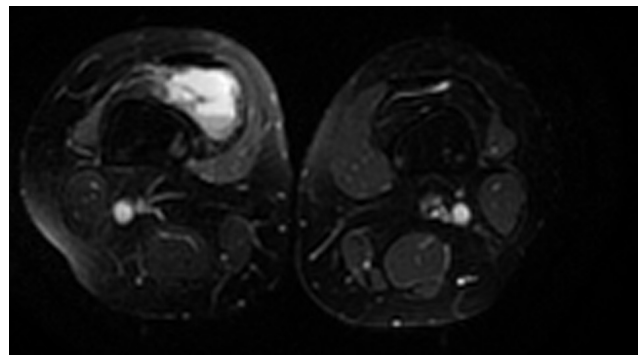


Figure 2. Axial T₂-weighted magnetic resonance imaging of thighs shows ganglion cyst just distal to vastus medialis within suprapatellar pouch.

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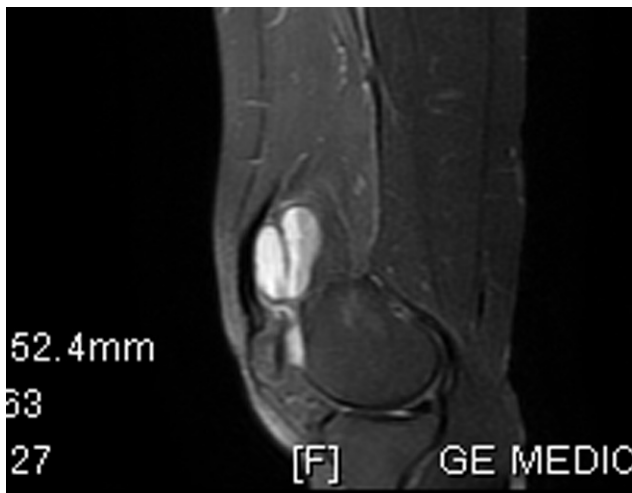


Figure 3. Sagittal magnetic resonance imaging sequence of right thigh shows ganglion cyst within suprapatellar pouch.

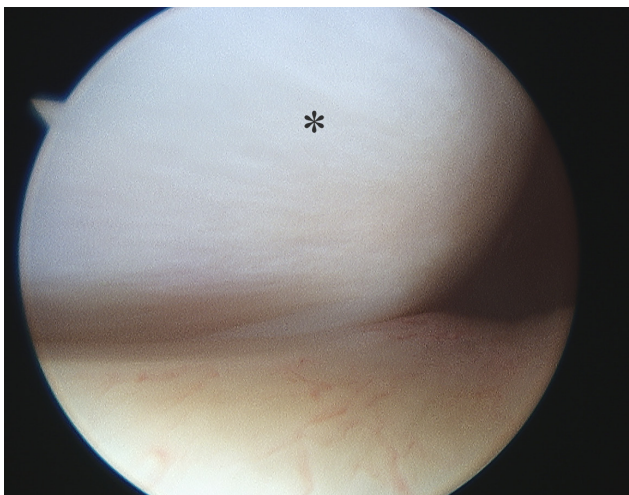


Figure 4. Arthroscopic view of superomedial patellar pouch shows cyst prominence (*).

This case report outlines an atypical presentation of a ganglion cyst of the suprapatellar pouch and describes the course of management and the outcome. To our knowledge, no such cyst was previously reported in the orthopedic literature. The patient provided written informed consent for print and electronic publication of this case report.

CASE REPORT

A 44-year-old woman presented for evaluation of right knee pain. Before presentation, she had seen her family physician for the same pain and had an extensive rheumatologic workup (ie, erythrocyte sedimentation rate, rheumatoid factor, Lyme titer), which was found to be negative. She reported stiffness, swelling, and localized pain over the anterior knee. On examination, she demonstrated painful range of motion (ROM) beyond 90°, pain with palpation over the patellofemoral joint, boggy swelling over the proximal and medial knee, and no effu-

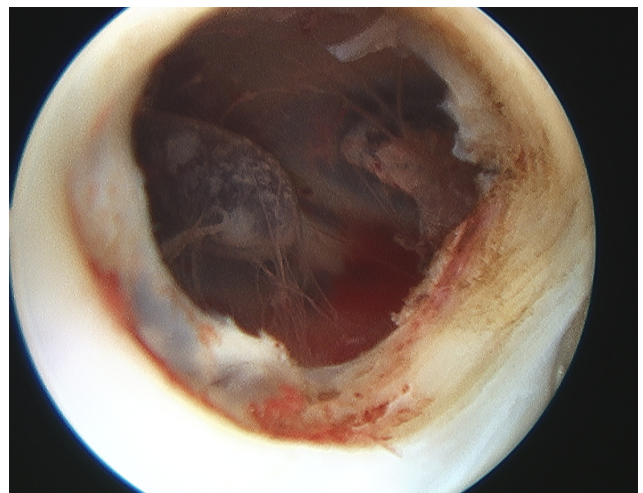


Figure 5. Arthroscopic view of suprapatellar pouch after electrocautery was used to enter cyst.

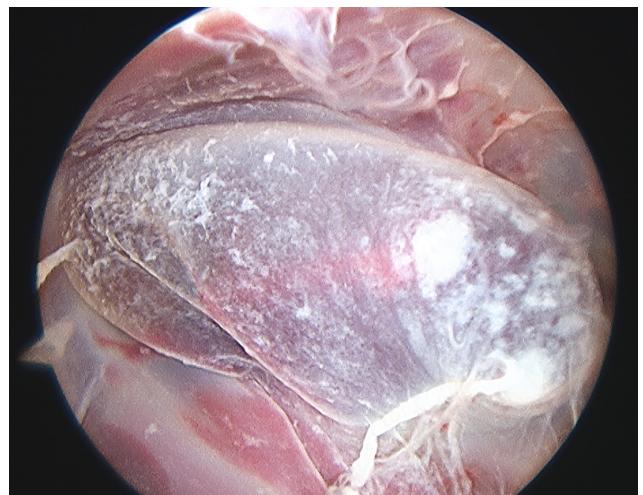


Figure 6. Cyst contents: combination of old blood and joint fluid.

sion. Joint line and ligamentous examination were normal. Plain radiographs and knee MRI were reviewed and showed no evidence of pathology. The patient was initially suspected to have chondromalacia patella with mild quadriceps insufficiency and was started on a physical therapy program to regain her motion.

After several weeks, the patient returned without improvement, with more difficulty achieving normal ROM, and increased swelling in the area of the vastus medialis. On review, the area of concern was discovered to be proximal to the sequences on the initial MRI. A thigh MRI was ordered at this appointment and the patient returned with the new study. The thigh MRI showed a ganglion cyst in the suprapatellar pouch of the knee (Figures 1-3). This MRI was reviewed with a musculoskeletal oncologist and a radiologist to confirm that it had a characteristic appearance of a ganglion. The cyst was large and in-office attempts at aspiration had limited success. Plans were made for arthroscopic

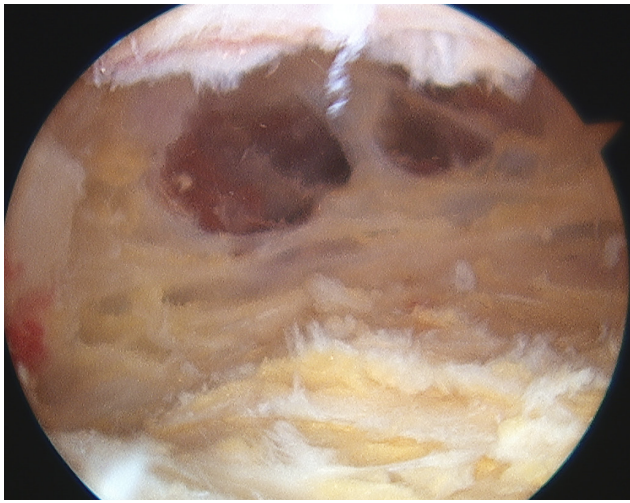


Figure 7. Arthroscopic view of area where cyst was after resection with arthroscopic synovator.

excision because of the size of the cyst and the associated disability.

During surgery, 2 portals were established in the patellofemoral joint (ie, superolateral and medial parapatellar portals) and the cyst was visualized in the medial suprapatellar pouch (Figure 4). An electrocautery device was used to enter the cyst, which was visualized (Figure 5). The hematoma and viscous contents were removed and complete excision was performed with an arthroscopic synovator to the level of the muscle (Figures 6, 7). Pathology of the cyst contents revealed benign fibrovascular tissue with a cystic appearance. Cyst wall contents were not sent for formal analysis, as this was an intralesional specimen.

After surgery, the patient started a physical therapy program to regain ROM. She returned for several follow-up appointments, which documented increasing ROM and diminishing pain. By final clinical follow-up, 6 months after cyst excision, she had regained full ROM, was without pain, and had resumed a normal, active lifestyle. Two years after cyst excision, she was asymptomatic and there was no recurrence.

DISCUSSION

To our knowledge, this is the first reported case of an intra-articular ganglion cyst in the suprapatellar pouch of the knee. The exact causes of ganglion cysts are unknown. Current theorized causes include connective tissue degeneration after trauma, proliferation of mesenchymal stem cells, and herniation of synovial fluid through ligament fibers.¹¹ Two studies have documented a traumatic etiology to cyst formation, whereas others have described a congenital anomaly as the source.^{13,14} Our patient had no antecedent trauma and lack of initial localized swelling made the diagnosis elusive. She had difficulty with knee flexion because the cyst pressing against the quadriceps mechanism during knee flexion was causing pain. Most ganglion cysts develop adjacent to the anterior cruciate

ligament; they may limit extension when located anteriorly in the intercondylar notch. The uncharacteristic location of our patient's cyst made the diagnosis challenging and conventional MRI evaluation did not include visualization of the entire suprapatellar pouch.

Ganglion cysts of the knee can have a variable presentation, often dictated by location. Patients with chronic knee discomfort and evolving clinical symptoms should be suspected of having this diagnosis. MRI is often diagnostic. Care should be taken to ensure that the imaging includes the area of concern when correlated with physical examination findings.⁸ These lesions often progress slowly, which may delay time to presentation. Most can be managed successfully with arthroscopic debridement, unless there is extensive invasion of native tissue, which may necessitate an open approach. In our patient's case, use of a minimally invasive approach to the cyst allowed for her quick return to normal activities. This patient, as with all patients with a similar presentation, should be monitored for recurrence during the first 2 years after resection.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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