

INTRA-ARTICULAR GANGLION CYST FROM MEDIAL COLLATERAL LIGAMENT OF THE KNEE JOINT: A CASE REPORT AND REVIEW OF THE LITERATURE

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A 57-year-old male complained of a painful sensation on the medial joint line of the right knee for about 5 years. A palpable soft mass measuring about $5.5 \times 4.0 \times 2.0$ cm was found on the medial joint line. Plain roentgenography showed bulging soft tissue over the medial aspect of the right knee. Sonography revealed a hypoechoic intra-articular soft tissue mass. Magnetic resonance imaging revealed a multilobulated homogeneous cystic lesion originating from the medial collateral ligament, with hypointensity on T1-weighted images and hyperintensity on T2-weighted images. We performed an arthroscopic examination before surgical excision of the tumor to rule out a parameniscal cyst, and no meniscal tear was found. Microscopic examination proved that the excised tumor was a ganglion cyst. The patient was free of his previous symptoms and had no recurrence at 2-year follow-up.

Key Words: ganglion cyst, medial collateral ligament, intra-articular, knee joint
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A ganglion cyst is a soft mass surrounded by a dense connective-tissue capsule. The capsule is filled with viscous fluid that is rich in hyaluronic acid and other mucopolysaccharides. The common locations of ganglion cysts are the wrist, knee, and anterolateral aspect of the ankle. Intra-articular ganglion cysts of the knee are rare, and most originate from the cruciate ligaments. The symptoms and signs of intra-articular ganglion cysts of the knee are pain, effusion, limitation of motion, and a clicking sensation. Increased size may lead to increased symptoms. Different locations of the ganglion cyst result in different symptoms. The first case of a ganglion cyst of either the anterior cruciate ligament (ACL) or posterior cruciate ligament (PCL) was reported by Caan, who found an asymptomatic ganglion of the ACL in an elderly man at

autopsy in 1924 [1]. Kang et al reported eight cases of ganglion cysts without specific symptoms, including two cysts found in the infrapatellar fat pad [2]. We report a case of symptomatic intra-articular ganglion cyst with medial femoral condylar erosion that originated between the medial collateral ligament (MCL) and medial parameniscal area. As far as we know, this is a rare location for an intra-articular ganglion cyst.

CASE PRESENTATION

A 57-year-old man complained of a painful sensation over the medial joint line of the right knee, off and on, for approximately 5 years. A mass was easily noted on inspection and palpation over the diseased knee. The patient reported minor trauma over the right knee in several motor vehicle accidents, but he denied major trauma or bony fracture. The mass had been increasing in size. On physical examination, a remarkably well-demarcated, soft, mobile mass was found on the medial joint line of the right knee. It measured about $5.5 \times 4.0 \times 2.0$ cm. Ten-

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derness was noted on palpation. There were no changes on the overlying skin, no joint effusion was noted, and there was no locking sensation during motion. The pain was aggravated when the knee moved, and could be relieved by rest. The patient had full range of motion in the diseased knee. The results of Lachman's test, anterior drawer test, posterior drawer test, and McMurray test were negative. There was no neurovascular deficit. He had no history of major medical or surgical diseases, including gouty arthritis. Plain roentgenography showed a bulging soft-tissue mass over the medial aspect of the right knee associated with adjacent bone erosion. Sonography revealed a hypoechoic soft-tissue mass with a well-defined margin, suggesting an intra-articular soft-tissue mass. Coronal and axial T2-weighted magnetic resonance images revealed a multilobular cystic lesion with focal enhancement over the anteromedial aspect of the right knee between the MCL, medial patellar retinaculum, and medial femoral condyle (Figure 1). Focal erosion of the adjacent femoral condyle was also noted. The tentative diagnosis was intra-articular ganglion cyst or parameniscal cyst.

Arthroscopy of the right knee showed no horizontal tear of the medial and lateral meniscus. The lobulated, cystic mass was identified and dissected. Its stalk was found just adjacent to the insertion of the MCL (Figure 2). The mass was excised completely and separated from the MCL and the medial parameniscal complex (Figure 3). The specimen measured about $6.8 \times 3.2 \times 0.8$ cm, and had a multilobulated wall with lining cells and mucoïd material in the cyst. Microscopic examination proved that the mass was an intra-articular ganglion cyst. There was no recurrence or symptoms at 2-year follow-up.

DISCUSSION

A ganglion cyst may originate from bone, tendon, bursae, parameniscal tissue, and intercompartment septi [3]. These lesions occur most frequently on the dorsum of the wrist, the palm of the hand, and the dorsolateral aspect of the foot. Ganglion cysts within knee joints are rare. The common locations of intra-articular ganglion cysts are the ACL and PCL and, rarely, the infrapatellar fat pad. Ganglion cyst from the MCL is very rare.

The pathogenesis of ganglion cysts is unknown. Most authors believe that they result from the degeneration of the menisci or from synovial tissue herniated through a defect in the joint capsule [4]. Although trauma may play



Figure 1. T2-weighted coronal and axial views of the right knee show that the mass lesion has a homogeneously increased signal intensity and multilobular appearance. It is located adjacent to the medial collateral ligament.

an important role in the formation of ganglion cysts [5], Liu et al reported that ganglion cysts of the ACL might be a congenital abnormality because of a negative trauma history and symptom relief after cyst removal [6]. Pressure from high-viscosity fluid in the ganglion cyst against the adjacent bone surface over a long period may produce an indentation through gradual erosion of the

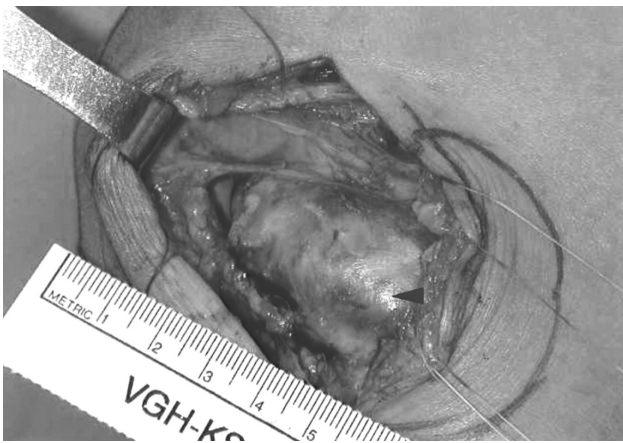


Figure 2. Intraoperative photograph demonstrates a large cystic mass (black arrow) adjacent to the medial collateral ligament and parameniscal complex after capsulotomy.



Figure 3. Grossly, the mass has a multilobular cystic appearance and measured 6.8 × 3.2 × 0.8 cm. The stalk of the cyst was excised.

bone [7], as demonstrated in our case. Such cysts are frequently interpreted as intraosseous ganglia.

Clinical presentations

The most common symptom of intra-articular ganglion cysts of the knee is pain. Other usual symptoms and signs include effusion, limitation of motion, and a clicking sensation [8,9]. Deutsch et al hypothesized that the symptoms may be correlated with the variable size of the cyst [5]. In our case, symptoms of pain were aggravated by activity. Symptoms worsened as the mass size increased.

Diagnostic techniques

Differential diagnoses of a cyst-like lesion in the knee in-

clude synovial cyst, ganglion cyst, and parameniscal cyst. The diagnostic methods for ganglion cysts include plain roentgenography, soft-tissue sonography, computerized tomography (CT), magnetic resonance imaging (MRI), and arthrography. MRI has been advocated as the modality of choice in diagnosing cystic lesions of the knee [10,11]. Delayed roentgenography and CT after arthrography may sometimes help the diagnosis by showing articular communication of ganglion cysts of the knee. The advantages of multiplanar capabilities and superior soft-tissue contrast make MRI better at identifying the anatomic and morphologic relationships of synovial tissue to surrounding structures, such as bone, vessels, and other soft-tissue structures. In this case, the differential diagnoses from MRI findings should include parameniscal cyst or intra-articular ganglion cyst. Before excision of the mass, arthroscopic evaluation was carried out to rule out the possibility of a medial meniscus tear. Since there was no remarkable horizontal tear in the medial meniscus, intra-articular ganglion cyst was the more likely diagnosis.

Treatment

The treatment of ganglion cysts includes arthroscopic excision, aspiration, and open excision. Brown and Dandy found that 95% of patients had good or excellent results after arthroscopic excision [12]. No recurrence after arthroscopic excision was reported, although it seems that ganglion cysts may recur after excision. CT-guided aspiration is another choice. Nokes et al aspirated two ganglion cysts of the PCL of the knee with an 18-gauge needle and syringe holder, using CT guidance to avoid the popliteal vessels [13]. Both patients had relief from pain and had no recurrence of the cysts at 2 years. To reduce the possibility of recurrence, surgical excision is better than aspiration. We performed parapatellar arthrotomy to excise the ganglion cyst because it was located out of reach of arthroscopy. There was no pain after surgical treatment and no recurrence at 2-year follow-up.

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起源自內側副韌帶之膝關節內囊腫 — 病例 1 報告及文獻回顧

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一位五十七歲男性門診病患，主訴右膝內側疼痛約五年。理學檢查發現右膝內側一個約 $5.5 \times 4.0 \times 2.0$ 公分之軟組織腫塊。X 光檢查發現軟組織突出物於右膝內側。超音波檢查發現為一低回音之關節內囊腫，核磁共振掃描影像發現為一源自於膝關節內側副韌帶之多葉型均勻強度之囊性病灶，在 T1 下是低強度，在 T2 下則是高強度。在切除囊腫之前我們先以關節鏡檢查確定並無半月板破裂情形以排除半月板旁囊腫之可能。顯微檢查證實此腫塊是一膝關節內韌鞘囊腫。手術後病人症狀解除並且術後兩年追蹤無復發情形。

關鍵詞：韌鞘囊腫，內側副韌帶，關節內，膝關節
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