Unusual presentation of more common disease/injury

Ganglion cyst of the posterior cruciate ligament

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Summary

A ganglion is a fluid cyst with a myxoid matrix that arises close to the tendons and joints. Its occurrence inside a joint is rare. Among the various pathological conditions producing impairment of the knee function, ganglia of the cruciate ligaments are quite rare.

It may be painful or asymptomatic. Some patients may have a trauma history. Ganglia may mimic intra-articular lesions like tears of the anterior cruciate ligament (ACL) or meniscus.

Ganglia, though commonly arise from the ACL, can also arise from other structures such as the posterior cruciate ligament (PCL) or meniscus. Ganglia are typically treated by arthroscopic excision and debridement. We report a case of ganglion of the PCL in a 28-year-old man; the lesion was incidentally discovered during ACL reconstruction with double bundle (Rigid fix technique). The patient underwent arthroscopic excision of the ganglion. At the end of 1-year follow-up the patient was pain free; a full range of motion of his right knee was restored, and he returned to his preinjury sport activity.

BACKGROUND

Ganglion cysts are tumour-like lesions commonly seen close to the tendons sheath or joint capsules; its occurrence inside a joint is very rare, however. The common sites of cystic lesions of the knee joint is the ACL followed by PCL, and then menisci, especially medial meniscus; other rare sites are infrapatellar pad of fat, medial plica and popliteus tendon.¹ Nearly two-third of all intra-articular ganglion cysts of the knee originated from the ACL; in our series, the ganglion arose from the PCL within its mid-substance extending to its femoral attachment; the shape of the ganglion could be fusiform ovoid or spindle shaped and may appear uni- or multi-ocular, and usually, unilateral or bilateral.^{1 2}

It is one of the rare reported cases where PCL ganglion was incidentally discovered during ACL reconstruction in which symptoms were masked by other intra-articular lesions, for example, meniscal or ACL tears (figure 1).

CASE PRESENTATION

A 28-year-old man presented to our sports-medicine clinic complaining of joint instability in his right knee, with frequent giving way and reduced knee-flexion range due to pain. He reported being able to walk only short distances and described a history of a twisting injury while playing football 9 months earlier. Initial conservative treatment consisted of physiotherapy and anti-inflammatory medication prescribed by his family medicine doctor. Although this treatment reduced his pain, his knee did not recover the 15-degree flexion range of motion lost (in comparison to the sound knee). Clinical examination revealed signs of consistent right-ACL deficiency of the knee. These signs included positive anterior drawer test, positive Lachman test, positive pivot-shift test, mild effusion, mild wasting of the quadriceps muscle and lack of the final 15-degree flexion due to pain. There was generally an absence of signs

indicative of meniscal tears. These included no joint-line tenderness on palpation, and the McMurray test carried out was also negative. The patellar articular surface was not tender, and the patellar movements were normal.

Arthroscopic examination revealed a complete tear of the ACL with detachment of the ligament from its femoral attachment. The patient underwent ACL reconstruction with double-bundle rigidfix technique, during which a cyst arising within the PCL was detected; it was ovoid, 1 cm by 1.5 cm in diameter, thin walled, transparent and well demarcated and was the main cause of the loss of 15-degree flexion.

INVESTIGATIONS

MRI was not carried out because clinical examination was very clear regarding to the diagnosis of ACL tear and also for economic reasons.

DIFFERENTIAL DIAGNOSIS

All these cystic lesions can represent with the same clinical picture of our patient as joint pain, swelling, limited range of motion and recurrent effusion.

1. Intra-articular lipoma
2. Synovial chondromatosis
3. Aneurysm
4. Synovial proliferation
5. Pigmented villonodular synovitis
6. Fibroma
7. Haemangioma
8. Myxoma
9. Ganglion

TREATMENT

Arthroscopic resection of the ganglion was done immediately before ACL reconstruction during the same surgery.

Figure 1 (A) Arthroscopic photography of the knee during anterior cruciate ligament reconstruction showing the cyst arising within the posterior cruciate ligament. (B) Arthroscopic photography of the knee showing ovoid, thin-walled, transparent and well-demarcated cyst.

OUTCOME AND FOLLOW-UP

Treatment yielded excellent outcomes; post-treatment follow-up at 1 year showed there was no recurrence of problems presented during the initial clinical examination.

At the end of follow-up, the patient was pain free; a full range of motion of his right knee was restored, and the patient returned to his preinjury sport activity.

DISCUSSION

Intra-articular ganglion cysts of the knee have reported prevalence ranging from 0.2% to 1.3%, detected on knee MRI images, and 0.6%, on knee arthroscopy.^{3–5} Cann⁶ first described the ACL ganglion cyst during a routine autopsy in 1924. In the early 1990s only a few sporadic cases were found in the literature;^{1 7–11} thus, widespread use of MRI and arthroscopy, owing to increasing the number of cases, is a more recent development in this discipline.¹²

The pathogenesis of the ganglion cysts remains unclear; nevertheless, probable causative factors include herniation of the synovium into surrounding tissue, connective tissue

degeneration after trauma, ectopia of the synovial tissue or proliferation of the pluripotential mesenchymal stem cells.^{2 5 8}

In the instant case, however, the patient had a history of trauma and he presented with clinical features of internal derangement of the knee as the ACL was ruptured; the pain that he experienced limited the range of motions otherwise possible in a sound knee, especially the loss of 15-degree knee flexion and was one of the main symptoms of the damage.

Krudwig *et al*⁹ reported 85 cases of intra-articular ganglion cysts of which nine were symptomatic and 76 were asymptomatic. Symptoms of intra-articular ganglion cysts vary according to their size and location, including pain, joint line tenderness, palpable mass, clicky sound, mechanical knee symptoms such as limitation of extension or flexion. Cysts of the ACL limit extension of joints; on the other hand, cysts of the PCL tend to limit the flexion of knee joint in particular, and in such cases, symptoms may worsen with increased physical activities, for example, running, jumping, standing for long time and squatting.

Ganglion cysts are differentiated from pigmented villous-nodular synovitis, fibroma, synovial sarcoma, myxoma, haemangioma, synovial chondromatosis, synovial proliferation, aneurysm and intra-articular lipoma.²

MRI and arthroscopy are the usual tools for diagnosing intra-articular ACL cysts; thus, the clinical diagnosis of such cases may be difficult due to their rare occurrence.¹¹

Although final diagnoses depend on pathological examination of the excised specimen, arthroscopy provides direct visualisation of the lesion; in our patient arthroscopy revealed a complete tear of the ACL with detachment of the ligament from its femoral attachment. The patient underwent ACL reconstruction with double-bundle rigidfix technique, during which a cyst within the PCL was detected; it was ovoid, 1 cm by 1.5 cm in diameter, thin walled, transparent and well demarcated and was the main cause of the loss of 15-degree knee flexion.

Asymptomatic cysts need to be treated and excised; otherwise, they may become symptomatic later. Arthroscopic resection, debridement and excision are the treatments of choice for ganglion cysts as the rate of recurrence is remote.^{13 14}

Brown and Dandy¹⁴ found that 95% of their patients had good or excellent results after arthroscopic excision. No recurrence was reported. Other treatments include ultrasound; CT-guided needle aspiration has also been reported to be successful, but reports indicate the possibility of recurrence of symptoms.

Nokes *et al*¹⁵ reported treating two cases of ganglion cysts: in both cases, ganglion cysts of the PCL of the knee were aspirated using CT-guided fine-needle and syringe holder, in order to avoid the popliteal vessels; both patients had relief from pain and had no recurrence of the ganglia after the follow-up at 2 years. Recurrence is unlikely if the ganglion cyst is treated by arthroscopic excision.^{14 16}

Learning points

- ▶ Diagnosis of intra-articular ganglion cysts should be considered significant in cases of internal derangement of the knee, and gaining awareness of any history of trauma arising out of patient's past ailments or injury is equally important, as diagnosis may later reveal it to be the leading cause for cyst formation.
- ▶ Clinical picture of ganglion cysts of the knee may mimic ligamentous and meniscal injuries.
- ▶ Arthroscopic resection is the treatment of choice, given the absence of symptoms recurrence post-surgery.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Ahmed F, Ibrahim SA, Soliman A, Khirat S. Ganglion cyst of the posterior cruciate ligament. *BMJ Case Reports* 2010;10.1136/bcr.09.2009.2263, date of publication

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