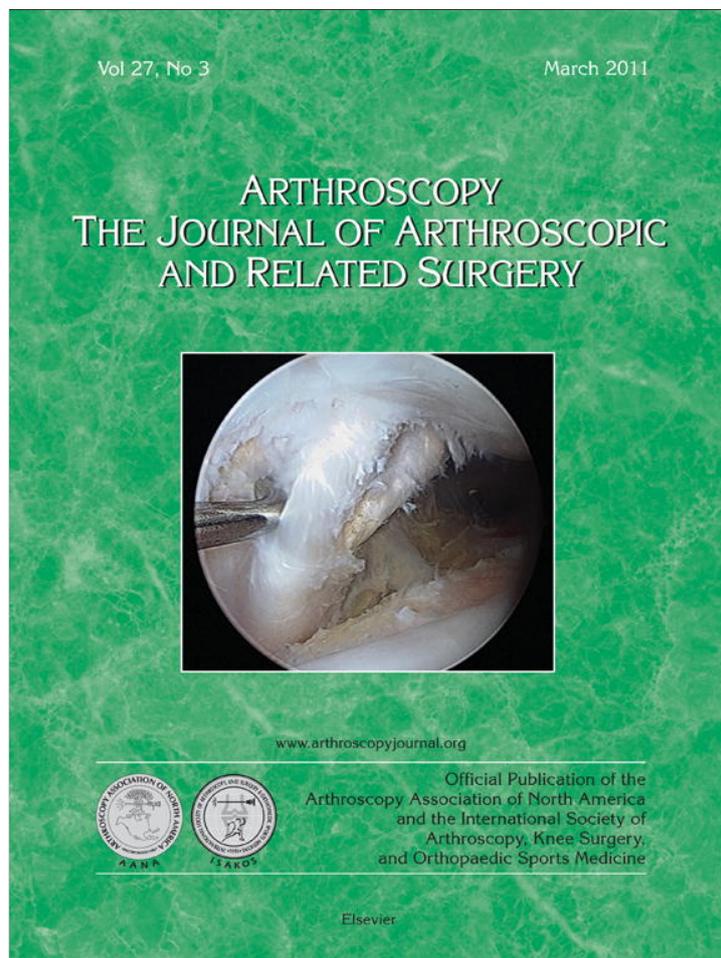


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Case Report

Pseudoaneurysm of the Medial Inferior Genicular Artery After Anterior Cruciate Ligament Reconstruction

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Abstract: We present a case of pseudoaneurysm formation of the medial inferior genicular artery after anterior cruciate ligament reconstruction. The patient presented with repeated knee hemarthrosis. He was diagnosed by means of magnetic resonance angiography and was treated by means of transluminal embolization. The patient's normal was normal after resolution of the vascular pathologic condition.

Vascular lesions during knee arthroscopy procedures are a rare complication and are responsible for less than 1% of all complications from these procedures.¹ When such vascular lesions are acute, sudden bleeding into the joint cavity can occur, and formation of a pseudoaneurysm can be seen as a pulsatile palpable mass or repeated voluminous effusion. We report on a case of pseudoaneurysm after anterior cruciate ligament (ACL) reconstruction that presented with repeated voluminous hemarthrosis.

CASE REPORT

A 23-year-old man presented with right knee instability after rotational trauma during 5-a-side football practice. An ACL injury was diagnosed, and after 2 years, he underwent ACL reconstruction by use of the

central third of the patellar tendon. During the procedure, an infusion pump was used (70 mm Hg), and nonaggressive intercondylar-plasty was performed, with a soft-tissue and bone shaver. Femoral and tibial fixation was achieved with absorbable interference screws (Fig 1). During the operation and the immediate postoperative period, there were no complications or excessive bleeding. The pneumatic tourniquet was kept insufflated until after the dressing had been applied.

The patient had a satisfactory recovery at first, but during the second postoperative week, he presented with formation of acute hemarthrosis. Because of the large volume, the joint was punctured and a large quantity of fresh blood came out. A compressive dressing was applied, with immobilization, and the symptoms gradually regressed.

In the sixth week, the patient again presented voluminous acute hemarthrosis, which occurred during physiotherapy. The joint was again punctured, and a large quantity of fresh blood came out. A coagulogram was then requested, and a hematologist evaluated the case. From this assessment, the possibility of blood dyscrasia was ruled out.

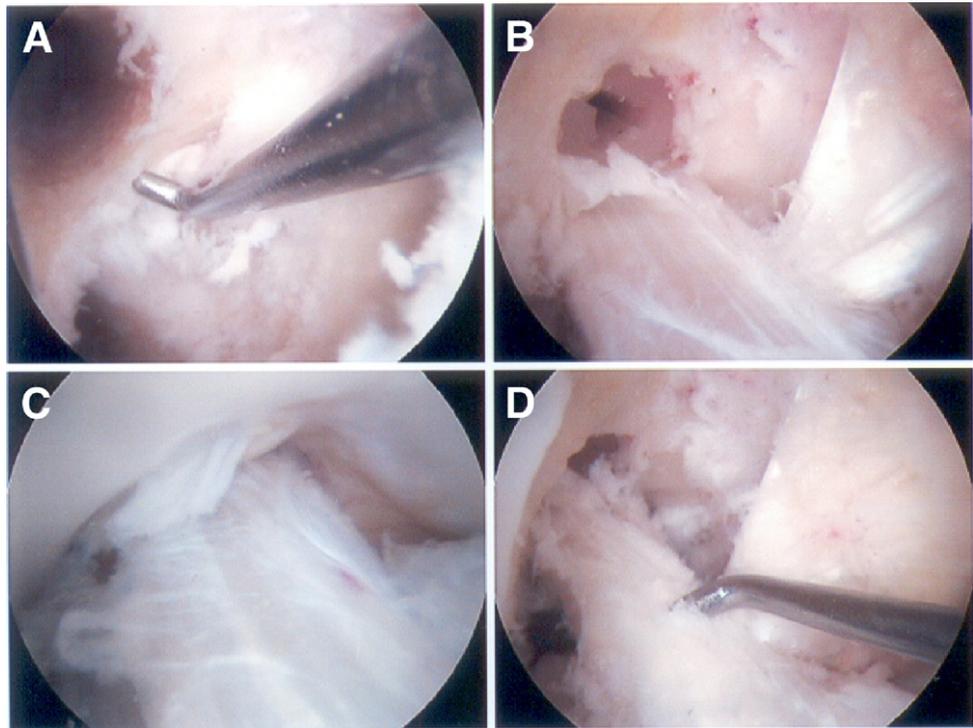
With the suspicion of bleeding of arterial-venous origin, the case was discussed with a radiologist, who suggested that nuclear magnetic resonance and magnetic resonance angiography should be performed. On nuclear

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FIGURE 1. View of the medial wall of the lateral femoral condyle of the right knee through the anterolateral portal, construction of femoral tunnel (A) and (B) fixation of graft from patellar tendon by use of an absorbable interference screw. (C) Extension of the knee showed no impingement of the graft to the intercondylar notch. It should be noted that the (D) synovial membrane of the posterior cruciate ligament was removed for better viewing of the femoral tunnel.



magnetic resonance imaging, voluminous hemarthrosis and a cyst formed posteriorly to the ACL graft were observed (Fig 2). From magnetic resonance angiography imaging (Fig 3), a pseudoaneurysm was diagnosed in the medial inferior genicular artery, measuring 11.3×16.2 mm. It was decided to treat the case with embolization by use of Histoacryl (B. Braun Medical, Bethlehem, PA). Anterograde puncture of the common femoral artery was performed, and a 0.014-inch-diameter catheter was introduced as far as the vessel feeding the pseudo-

aneurysm, with injection of 2.5 mL of Histoacryl (Figs 4 and 5).

The patient experienced progressive diminution of the edema and gains in range of motion and muscle strength, without any neurovascular deficit, and with the normal course of evolution after ACL reconstruction. At the last assessment, 5 years after the operation, the patient presented with a KT-1000 difference (MEDmetric, San Diego, CA) of 1 mm, a right-side extensor deficit of 5% on the isokinetic

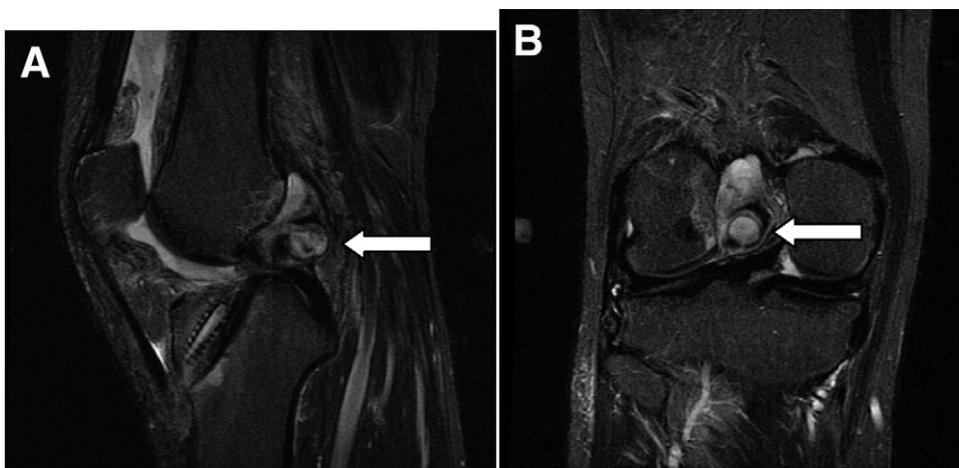


FIGURE 2. T2-weighted magnetic resonance images with fat saturation of right knee, showing cyst posterior to ACL graft (arrows), both on (A) sagittal and (B) coronal sections.

There are also reports of occurrences after arthroscopic meniscectomy,^{1,7-9} upper tibial osteotomy,¹⁰⁻¹² open synovectomy,¹³ intramedullary osteosynthesis of the tibia,¹⁴ or osteochondroma.¹⁵

The few studies that found formation of pseudoaneurysms of the medial inferior genicular artery^{16,17} and the popliteal artery¹⁸ after ACL reconstruction reported that these patients were treated by means of open surgery and ligation of the vessel affected, with good results. In those cases as well, the pseudoaneurysm originated from the medial inferior genicular artery. However, there are also studies that show good results after treatment of pseudoaneurysm formation after arthroscopic synovectomy¹⁹ or meniscectomy⁹ and after total knee replacement²⁰ by means of endovascular procedures. The development of those cases resembled what we found in our study. In all the cases, after resolution of the vascular abnormality, there was a benign evolution that resembled that in cases without this type of complication.

We present a case of formation of a pseudoaneurysm in the medial inferior genicular artery after ACL reconstruction using the middle third of the patellar tendon, which presented voluminous acute hemarthrosis after the operation. We believe that the lesion to the artery that feeds the synovial membrane of the posterior cruciate ligament was caused by cleaning this membrane (Fig 1), which was done to view the roof of the intercondylar area and its posterior wall. The diagnosis and localization were achieved by means of magnetic resonance angiography. The pseudoaneurysm was successfully treated by means of intraluminal embolization. In this case, our patient recovered normally after the vascular lesion was treated. The patient has been followed-up for 5 years; he has normal range of motion, his condition is stable, and his musculature is normal.

This case alerted us to the possibility that pseudoaneurysm might develop after orthopaedic surgery. It showed us the possibility that the lesion could be located and diagnosed better through magnetic resonance angiography and the possibility of minimally invasive treatment using intraluminal embolization. Orthopaedic surgeons need to be aware of this treatment option and of their limits as surgeons.

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