

Lower limb ischemia due to popliteal artery compression by Baker cyst

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ABSTRACT

A Baker cyst is the most common mass around the knee joint. It is mostly asymptomatic; however, it may cause knee pain or focal swelling because of compression of vein or nerve. Herein, we report a case of Baker cyst obstructing arterial flow and causing intermittent claudication. An attached polycystic mass was found posterior to the popliteal artery. Needle aspiration was ineffective, and the patient experienced recurrent lower leg pain. Surgical resection was performed, and the patient became symptom free. Baker cyst may cause lower limb ischemia through obstruction of arterial flow, requiring surgical intervention. (*J Vasc Surg Cases and Innovative Techniques* 2018;4:99-101.)

Fluid-filled Baker cysts are the most common masses found around the knee joint.¹ Although asymptomatic in most cases, the cysts may cause knee pain, focal swelling, or leg edema because of compression of the nerve or vein, with subsequent neuropathy, deep venous thrombosis, or thrombophlebitis.^{2,3} Lower leg ischemia may be due to popliteal artery compression.⁴ Herein, we report a case of Baker cyst obstructing popliteal artery blood flow and requiring surgical repair. Written informed consent was obtained.

CASE REPORT

A 71-year-old man visited our hospital with right intermittent claudication for 3 months. He had been diagnosed with an asymptomatic Baker cyst in his right knee 10 years before. Because his right ankle-brachial pressure index was decreased (0.41), the presence of arteriosclerotic stenosis was suspected. Computed tomography angiography revealed focal narrowing of the popliteal artery around his right knee; however, this was accompanied by a polycystic mass (*Fig 1, A*). Color Doppler ultrasound demonstrated that the popliteal artery was compressed by the mass, resulting in a severe flow disturbance without arteriosclerotic changes (*Fig 1, B*). Needle aspiration under computed tomography angiography guidance temporarily ameliorated the claudication. However, 1 month later, he

had recurrent pain. Ultrasound examination demonstrated thrombus formation in the popliteal artery. To remove both the Baker cyst and thrombus within the artery, a surgical procedure rather than endovascular therapy was planned. Surgical exposure revealed that the attached Baker cyst was posterior to the popliteal artery in the fossa and compressed the artery (*Fig 2, A*). As extensive thrombus was present, bypass grafting using the right small saphenous vein rather than direct repair with patch angioplasty was performed. The pathologic specimen revealed typical findings of a Baker cyst with a thick fibrous wall surrounded by a synovial membrane (*Fig 2, B*). Thrombus formation was observed within the popliteal artery without arteriosclerotic changes. After surgery, the patient was symptom free, with an ankle-brachial pressure index of 1.26 (*Fig 3*).

DISCUSSION

We encountered a case of leg ischemia caused by a Baker cyst requiring surgical intervention. In contrast to asymptomatic cysts or cases with neuropathy or deep venous thrombosis,² this case had two distinct characteristics associated with popliteal artery compression and leg ischemia. First, the Baker cyst was located at an atypical site. Baker cyst forms by distention of the gastrocnemius-semimembranosus bursa, which composes the medial aspect of the popliteal fossa.¹ The bursa communicates with the knee joint capsule through the transverse opening in the posterior capsule at the level of the medial femoral condyle. However, the opening in this case was directly below the popliteal artery. Second, the mass in this case was polycystic, whereas the common presentation is that of a single cyst. Lying between several surrounding cysts, the main cyst expanded in a posterosuperior direction and compressed the popliteal artery despite its modest size.^{5,6} In addition, the polycystic nature might have led to limited efficacy of needle aspiration. Thus, surgical resection was inevitable to relieve the pain and to avoid severe limb ischemia for this unusual Baker cyst with arterial flow disturbance.

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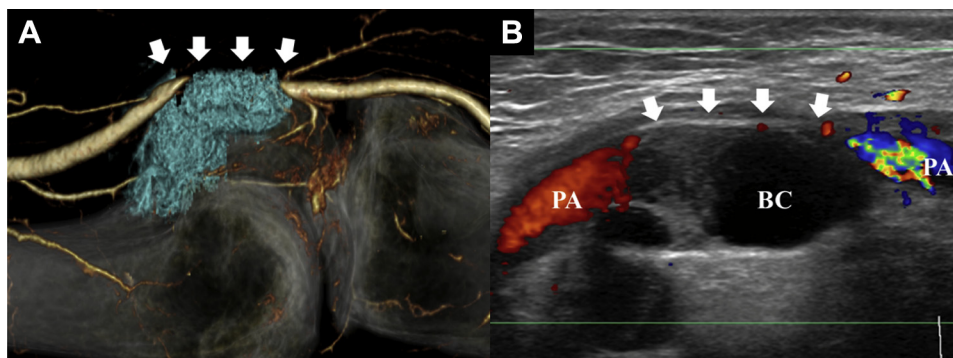


Fig 1. A, Computed tomography angiography image showing focal narrowing of the popliteal artery (arrows) at the right knee. The Baker cyst appears polycystic (blue masses) and attached to the popliteal artery. **B,** Color Doppler ultrasound image demonstrating flow disturbance in the popliteal artery (PA) by the Baker cyst (BC).

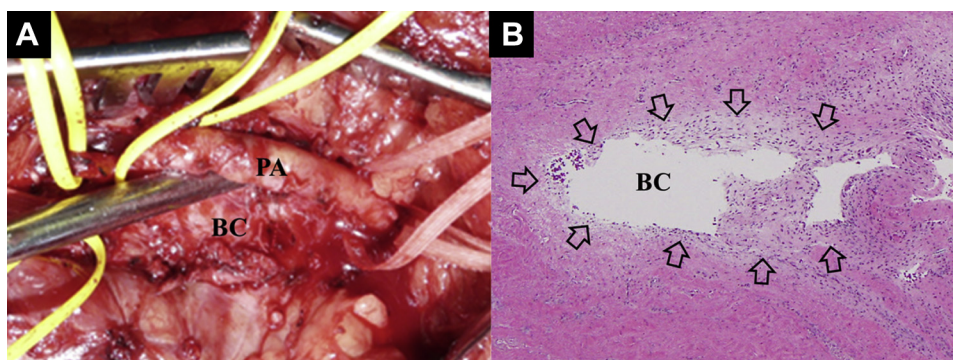


Fig 2. A, Surgical resection of the Baker cyst (BC) attached to the popliteal artery (PA). **B,** Pathologic findings of the resected Baker cyst. The cyst wall was surrounded by synovial membrane and composed of thick fibrous tissue (arrows).

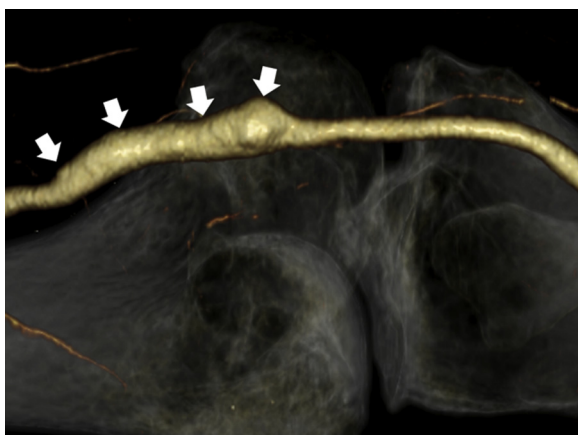


Fig 3. Computed tomography angiography image showing the postoperative popliteal artery (arrows) at the right knee. The flow in the popliteal artery recovered with bypass grafting using the saphenous vein.

Among several technical options for revascularization, vein bypass grafting was chosen in this case for the following three reasons. First, direct repair with simple resection was unsuitable because the diameter of the

popliteal artery was relatively small and the anastomotic segment would be located at a bending site. Second, patch angioplasty was technically difficult because extensive thrombus occupied the artery, although the artery was not atretic. Third, prosthetic bypass grafting was unsuitable for this bending site. The need for lifelong anticoagulant therapy was also a concern. In this case, antiplatelet or anticoagulant drugs were unnecessary because the primary cause of thrombus was physically removed, with sufficient flow recovery. In addition to careful follow-up of the patient's symptoms, regular surveillance using imaging modalities may be required for the early diagnosis of recurrent cyst formation and subsequent vascular compression or bypass failure.

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