

A rare presentation of a saccular aneurysm of the popliteal vein: A case report

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ABSTRACT

Most popliteal vein aneurysms are asymptomatic and commonly detected during Duplex ultrasound examination for varicose veins. Some cases may be misdiagnosed as Baker's cyst or tibiofibular cysts. Surgical repair is recommended to avoid life-threatening complications including pulmonary embolism. Herein, we report the successful surgical repair of a primary popliteal vein saccular aneurysm misdiagnosed as Baker's cyst during the initial admission for pulmonary embolism.

Keywords: Baker's cyst, popliteal vein, saccular aneurysm.

True aneurysms of the popliteal vein are uncommon conditions that may cause life-threatening complications, such as pulmonary thromboembolism.^[1] The overall incidence of this condition is still unknown. Most popliteal vein aneurysms are asymptomatic and commonly detected during ultrasound examination for varicose veins. Some cases are misdiagnosed as Baker's cyst, also known as a popliteal cyst, which is characterized by swelling in the popliteal space. In this article, we report a case of a true popliteal vein saccular aneurysm, leading to pulmonary embolism, and its successful surgical treatment.

CASE REPORT

A 69-year-old female patient presented with pain and swelling in the popliteal space. She had a medical history of osteoarthritis of the left knee, hypertension, and pulmonary embolism which was diagnosed nine months ago. She was treated with a three-month anticoagulation regimen and pulmonary embolism was totally cured. Any history of trauma, inflammatory disease or vascular intervention noted. She was receiving

a physical therapy program due to left knee pain and Baker's cyst. Physical examination revealed a soft and non-pulsatile mass in the popliteal space (Figure 1). Peripheral pulses were all palpable. Duplex ultrasound showed a 4×5-cm saccular aneurysm originating from the left popliteal vein (Figure 2) and any finding consistent with deep venous thrombus documented. Crescentic organized thrombus and spontaneous echo contrast were seen in the aneurysm sac. Surgical repair was decided to prevent further thromboembolic events and a written informed consent was obtained from the patient.

The aneurysm sac was explored through a posterior approach. The aneurysm sac was resected and the neck of the sac was primarily sutured with 6/0 polypropylene suture (Figure 3). The defect in the popliteal fascia was also sutured to avoid recurrence. Histological examination confirmed true aneurysm formation involving the three layers of the vein wall.

The postoperative course was uneventful and the patient was discharged to home the following day. Compression stockings and anticoagulation with low-

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molecular-weight heparin was continued for four weeks and, then, switched to acetylsalicylic acid. The patient is still under follow-up without any complaints three months later.



Figure 1. An image showing popliteal mass resembling a Baker's cyst.



Figure 2. A Duplex ultrasound image showing popliteal vein and saccular venous aneurysm. The thrombus in the aneurysm sac is remarkable.

DISCUSSION

Primary popliteal vein aneurysms are rare pathological entities, but they may cause significant clinical consequences. Most patients remain asymptomatic and are incidentally diagnosed during a Duplex examination for another reason, such as chronic venous insufficiency. Pulmonary embolism or thrombophlebitis is the most common symptom in the majority of the patients. Although popliteal venous aneurysms have become more frequently diagnosed with the widespread use of venous imaging modalities, accompanying pathologies may cause misdiagnoses, as in our case. In the present case, the patient had a history of pulmonary thromboembolism; however, the probable source of the thrombi was misdiagnosed as Baker's cyst previously. We believe that her prominent history of osteoarthritis and the thrombus formation in the aneurysm sac might have caused such a misdiagnosis during the initial examination for pulmonary embolism.

The secondary venous aneurysms can be caused by inflammatory conditions, endovenous interventions, trauma or degenerative changes.^[2] Our patient had none of these conditions in her medical history. The etiology of the primary popliteal aneurysm is unclear. Most of the true popliteal vein aneurysms are saccular. Congenital weakness of



Figure 3. An intraoperative view showing a large saccular popliteal vein aneurysm, its neck, and popliteal vein.

the vein wall and aneurysmal dilatation secondary to venous hypertension are thought to be the main pathophysiological mechanism.^[3]

Venous Duplex scanning is considered to be the initial choice of diagnostic method for popliteal vein aneurysms.^[4] Duplex scan is also helpful during follow-up to document patency. Although computed tomography and magnetic resonance imaging can be also used as initial diagnostic tools, costs and the use of intravenous contrast material and ionized radiation limit their clinical benefit. Ascending venography is the earliest diagnostic tool; however, many authors recommend it as the imaging technique of choice owing to the advantages of better visualization of the venous anatomy before surgical repair, particularly in cases with previous deep vein thrombosis.^[3-5] In the clinical scenarios which the Duplex scanning could not detect the source of thrombi, it is suggested to perform venography even in healthy patients without clinical signs of deep venous thrombus.^[5]

Anticoagulation alone is used as a treatment method in the management of popliteal vein aneurysms in asymptomatic patients, but presenting with frequent recurrent thrombosis or pulmonary embolism.^[4] Tangential aneurysmectomy, resection with end-to-end anastomosis, and resection with graft interpositioning are commonly used surgical treatment options. In our case, we chose ligation and resection due to saccular formation of the aneurysm. We also performed primary closure of the defected fascia to avoid recurrence which is not uncommon.^[6]

In conclusion, although rare, popliteal vein aneurysms should be kept in mind in cases with

popliteal swelling and mass due to its life-threatening complications. Early diagnosis is essential to avoid pulmonary embolism and Duplex scanning can be chosen as the initial diagnostic tool. Baker's cysts or tibiofibular cysts may cause delay in the diagnosis. Therefore, further imaging tools should be utilized to investigate the source of thrombi, even the Duplex scanning reveals normal findings, particularly in cases with a history of pulmonary embolism.

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