

Bilateral Popliteal Artery Aneurysms with Rupture and Pseudoaneurysm Formation on the Left

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The rupture of a popliteal artery aneurysm is very rare, and can lead to serious complications if untreated. Any reports of a huge pseudoaneurysm, following rupture of the popliteal artery aneurysm could not be found in a review of the literature.

A pulsatile huge mass leading to a deep venous thrombosis, was observed in a 74 years old male patient who for 2 months had had a progressively swollen and painful left leg. On angiographic evaluation, the mass was found to be a pseudoaneurysm originating from a ruptured true aneurysm of the popliteal artery. There was also a small true aneurysm in the contralateral extremity at the same localization. Both the false, and true aneurysms were resected surgically and arterial continuity was established with a synthetic polytetrafluoroethylene graft.

Key Words: Popliteal aneurysm, bilateral aneurysms, ruptured aneurysm, popliteal pseudoaneurysm.

INTRODUCTION

A rupture of the popliteal artery is a rare, but dangerous, complication of aneurysmal disease.¹ Thrombosis and distal arterial occlusion, due to an embolism, are other serious risks.²⁻⁵ Popliteal aneurysms are almost exclusively true aneurysm, and may be found together concomitantly with

aortic and iliac aneurysms or bilaterally.⁶ A pseudoaneurysm of the popliteal artery is rare, and has been reported as a complication following knee surgery.^{7,8} In this article, we report on bilateral popliteal artery true aneurysms with a rupture on one side causing a pseudoaneurysm secondary to a popliteal vein thrombosis.

CASE REPORT

A 74-year-old male patient was admitted complaining of a painful, and progressively enlarging, mass on the left thigh for the previous two months. On physical examination a pulsatile, tender mass was found in the left thigh, with all the pulses of the extremity being palpable. There was a vigorous systolic thrill in the left thigh. The hemoglobin level was found to be 8.5gr/dl, with a hematocrit of 25.9%. From a Doppler ultrasound evaluation of the lower extremities; a thrombosis in the left popliteal and the femoral veins, and a large, pulsatile mass in the left thigh, were detected. Bilateral saccular aneurysms (with a 2.5cm external diameter on the left, and less than a 2cm external diameter on the right) in the distal portions of the thighs were determined on the magnetic resonance angiography, with a thick, regularly limited opaque mass, of approximately 15cm in diameter, around the ruptured aneurysm was observed in the left thigh (Fig. 1). From a digital subtraction angiography of the bilateral lower extremities; a ruptured saccular aneurysm,

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Fig. 2. Digital subtraction angiographic viewing of the ruptured saccular aneurysm that inner diameter was 2 cm in the left popliteal artery and a large, smooth boundary pseudoaneurysm that was seen filling from true aneurysm.

Fig. 3. Digital subtraction angiographic viewing of the small aneurysm which is less than 2 cm in diameter was settled in the right popliteal artery.

The left popliteal and femoral venous thromboses were managed conservatively with the administration of oral anticoagulant agents. The right popliteal artery aneurysm was managed conservatively because its external diameter was less than 2 cm and it contained no thrombi. Peripheral pulses were normal, and the patient was discharged in a satisfactory condition after three weeks. Both anticoagulant (warfarin) and antiplatelet (acetyl salicylic acid) therapy were orally administered to the patient, for 6 months,

postoperatively for the popliteal venous thrombosis and synthetic graft patency. Later, two antiplatelet agents (acetyl salicylic acid and clopidogrel) were given. It was histopathologically confirmed that the aneurysm had developed on an atherosclerotic ground. The patient was followed up for 16 months and his peripheral pulses were palpable.

DISCUSSION

It has been suggested that popliteal aneurysms are usually secondary to atherosclerosis, with other etiological reasons mainly being: mycotic aneurysms, trauma and fibrodysplasia.^{6,9} The most common location for peripheral arterial aneurysms is in the popliteal region. It has been reported that the rupture rate of popliteal artery aneurysms was between 2.5% to 5.3%, and can result in limb-loss or life-threatening conditions.^{1,6,9,10} Other frequent complications of popliteal aneurysms were thromboses, thromboembolic events and compression onto the surrounding tissues and neurovascular elements.^{6,11,12} Several reports have shown that atherosclerotic aneurysms of the popliteal artery were bilateral in the range of 30% to 50%.^{5,6} Reports of a huge pseudoaneurysm, due to rupture of the primary true popliteal artery aneurysm, could not be found in a review of the literature.

In this case; a left popliteal artery aneurysm had ruptured, whereas the right popliteal aneurysm was asymptomatic, with a diameter of less than 2cm. The hematoma was limited by the surrounding tissues, and enlarged progressively transforming into an arterial pseudoaneurysm. A deep venous thrombosis had developed in the popliteal and femoral veins, most probably due to the compressive effects of the large mass. Neither thromboembolic events nor distal arterial ischemia were observed. The generally accepted treatment for popliteal artery aneurysms is surgical resection of the aneurysm with arterial reconstruction.^{3,6,9} However, it has been proposed that small asymptomatic peripheral arterial aneurysms should usually be managed conservatively if its external diameter is not more than 2 cm.¹³ Additionally, percutaneous endovascular

stented graft insertions are another evolving alternative technique.¹ When there are prospective complications, such as; increased risk of rupture, thrombosis of the aneurysm or thromboembolic events in the distal arterial vasculature, major surgical intervention may become inevitable.

Our purpose in the case presented was; surgical resection and reconstruction of both the true aneurysm and the pseudoaneurysm due to the rupture of true aneurysm. The patient was nonsurgically managed in close follow-up for the right popliteal aneurysm due to external diameter being less than 2cm. And because it was asymptomatic. After the resection of the aneurysm either synthetic or, autogenous grafts, might be preferred for the arterial continuity above the level of the knee.^{9,14,15} We used a synthetic graft in our case because the inserted graft would be situated almost above the knee level. The greater saphenous vein, which has a more long term patency rate, was not preferred because there was a deep venous thrombosis in the same leg, the probability of a further arterial intervention to the contralateral extremity, the advanced age and worsened general condition (anemia etc.) of the patient, and the short time required for surgery.¹⁴ Construction of an arterial bypass is recommended, following the ligation of the aneurysmal neck, when a graft interposition is found to be unfeasible.⁶ Surgery of a popliteal aneurysm has a very low risk of mortality and complications.^{2,6,9,12,15}

In conclusion although ruptures of popliteal aneurysms are fairly rare, serious complications and sequela threatening the limb, or even the patient's life may arise. The left popliteal aneurysm has been asymptomatic since its rupture, possibly for a substantial period. The clinical signs and symptoms arose when the rupture changed into a pseudoaneurysm, which progressively enlarged. Even though a popliteal artery aneurysm is a frequent clinical pathology in vascular practice, we report this case, with a related literature review as a saccular type aneurysm bilateral and ruptured on the left side, changing into a large pseudoaneurysm in the thigh, with an overall atypical scenario.

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