Ruptured peroneal aneurysm after infrapopliteal prosthetic bypass with Taylor patch

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Introduction: A 45-year-old mailman underwent an implantation of a femoro-peroneal polytetrafluoroethylene (PTFE) bypass with a distal Taylor patch six years prior to admission after two failed autologous reconstructions and extensive fasciotomy. The initial pathology was an acute ischemia due to popliteal entrapment with subsequent popliteal thrombectomy.

Report: The patient was examined because of pain, reduction of walking distance and development of a palpable mass at the medial fasciotomy site. A 6-cm pseudoaneurysm with complete disruption of the suture line of the vein patch was discovered and resected. Arterial continuity with a vein interposition graft was established using non-reversed cephalic vein.

Conclusion: The etiology of the aneurysm is not entirely clear. One may argue that the fourth revascularization could have been performed with an arm vein instead of a prosthetic graft with the probability of a better long term patency in a young patient. 15 months after the procedure the bypass is patent and the patient is without any symptoms. This complication of a Taylor patch has not been reported before.

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INTRODUCTION

Femoro-infrapopliteal bypass to tibial arteries using prosthetic grafts is rarely undertaken, considering the durability of autologous vein bypasses.1 Direct prosthetic to artery anastomosis can be challenging, and patency of prosthetic tibial bypass is low, mainly due to the development of intimal hyperplasia at the anastomotic site. A variety of technical solutions have been advocated to overcome this problem, mostly the interposition of vein patches or collars.2 Regarding to short longevity of prosthetic tibial bypasses, complications other than bypass occlusion and graft infection are rarely encountered. Pseudoaneurysm formation has been reported in the body of a PTFE graft rather than at the anastomotic site.3 Although aneurysm development after prosthetic bypass is well known in the groin, it is absent in literature dealing with prosthetic bypass distal to the popliteal artery.4

The patient was admitted with a patent tibial PTFE bypass to the peroneal artery with a distal Taylor patch,5 which was performed 6 years earlier after two failed autologous reconstructions. Primary surgery was a popliteal thrombectomy, undertaken for acute ischemia due to popliteal entrapment6 17 years prior to presentation. The patient was 28 years of age at initial surgery. After immediate reocclusion of the popliteal artery a femoro-popliteal bypass was implanted using reversed ipsilateral saphenous vein. Extensive fasciotomy with secondary skin grafting was necessary in consequence of prolonged ischemia. This graft remained patent for eleven years. In 2004 a second vein bypass was implanted to the tibioperoneal trunk using reversed contralateral saphenous vein. Ipsilateral veins were unavailable then due to the previous operations. This graft failed immediately and a reinforced femoro-tibial PTFE bypass with a distal Taylor patch was implanted. In 2010 the patient presented with pain upon walking, reduced walking distance, a tender calf and a palpable mass at the medial fasciotomy site. Magnetic resonance angiography (MRA) revealed a patent graft and 6-cm aneurysm at the distal anastomotic site (Fig. 1). Upon surgical exploration the aneurysm turned out to be a pseudoaneurysm with complete disruption of the suture line of the vein patch (Fig. 2). The anastomotic aneurysm was resected and an interposition graft with proximal and distal end-to-end anastomosis

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using non-reversed cephalic vein was performed. The postoperative course was uneventful. 15 months after the procedure, the composite graft is patent and the patient is continuing his job as a mailman with unlimited walking distance and complete absence of the previous symptoms.

DISCUSSION

Tibial aneurysms are extremely rare, and no single center series have been reported. Etiology seems to be related to trauma, bone surgery, infection or rare diseases. Due to the infrequent presentation, management guidelines are missing, and both open surgery as well as endovascular treatment with coil embolization or stentgraft coverage have been reported. To our knowledge this is the first report of a case presenting with aneurysmal degeneration of the distal anastomosis to a tibial artery with a Taylor patch. The etiology of this aneurysm is not entirely clear. There are two possible mechanisms: The bypass was performed to a healthy artery of a young patient with absence of atherosclerotic disease. Disruption of the suture line could have been caused by the tension of the stiff graft at the anastomosis in a patient who is walking long distances on a daily basis due to his profession as a mailman. Another cause could be chronic infection, as the surgical access of the peroneal artery had to be undertaken through a skin graft and compromised muscle at the former fasciotomy site. Yet, upon surgical exploration the graft was well incorporated and histological evaluation revealed no sign of infection, with absence of positive cultures from the aneurysm.

CONCLUSION

Antithrombotic therapy seems to be an important factor in these cases. After an initial therapy with Acenocoumarol and ASS for 6 months, the patient received 100-mg ASS daily as the only antithrombotic therapy after prosthetic graft placement. The absence of typical vascular risk factors and the unusual etiology of the arterial occlusion may have contributed to the favorable outcome of the distal bypass with a prosthetic graft in this patient. One may argue that the fourth revascularization should have been performed with arm vein instead of a prosthetic graft, probably yielding a better long term patency in a young patient. Yet,
the surgeon opted for this solution, and the graft remained patent for six years without any revision. Still there are enough arm veins available in this patient for a possible future distal revascularization, if necessary.

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REFERENCES