

## Case Reports

# Tibioperoneal Trunk Pseudoaneurysm Coil Embolization

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**Introduction:** Pseudoaneurysms of the tibioperoneal trunk are rare and can be limb threatening. There are various treatment options to seal pseudoaneurysms both percutaneously and via open surgery. **Case report:** Description of the case of a large tibioperoneal trunk pseudoaneurysm that has been successfully treated by coil embolization in a patient with a previous endocarditis. **Conclusion:** Endovascular treatment of pseudoaneurysm should be considered as an alternative treatment option to open surgery. © 2010 Wiley-Liss, Inc.

**Key words:** pseudoaneurysm; coil embolization; percutaneous intervention

### INTRODUCTION

Pseudoaneurysms of the tibioperoneal trunk are rare.

They can be limb-threatening and are normally associated with a poorer quality of life. There are different options of treatment to be considered. These include coil embolization, stent graft deployment, ultrasound guided compression, percutaneous injection of thrombin, and vascular surgery [1].

We describe a case of tibioperoneal trunk pseudoaneurysm successfully occluded by coil embolization.

### CASE REPORT

A 68-year-old male patient was referred to us with compartment syndrome of the right calf. Three years previously, mitral and aortic valves endocarditis lead to valve replacement. From this time onwards, the patient was on oral anticoagulation medication.

The patient complained of pain in the right calf with tingling sensation and paraesthesia.

Examination revealed a pulsing mass at the fossa poplitea level. The foot was oedematous and painful. The anterior tibial artery (ATA) pulse was ipsifemoral and the posterior tibial artery (PTA) pulse was not palpable.

A duplex ultrasound scan detected a large pseudoaneurysm of the tibioperoneal trunk with a detectable inflow.

The popliteal vein appeared dilated without signs of vein thrombosis.

A MRI-angiography demonstrated a 6 by 9 cm pseudoaneurysm emerging from the tibio-peroneal trunk

(Fig. 1A). Selective angiography confirmed the size, and evidenced a wide neck (Fig. 1B).

The peroneal artery and the PTA were occluded at their origin and a collateral flow refilled them retrogradually.

The ATA supplied the plantar arch circulation.

A 6F 45 cm long sheath “Destination” (Terumo Corporation, Japan) was positioned in the right CFA by a cross-over manoeuvre.

A 0.014” BMW wire was advanced into the pseudoaneurysm. Inflation at the tibioperoneal trunk level with a 4.0/20 mm balloon for ten minutes failed to obtain its sealing (Fig. 1C). The insertion of three 5 × 5 mm<sup>2</sup> coils (Boston Scientific, Natick, MA) through a 4 F JR catheter into the pseudoaneurysm’s neck could not induce a closure (Fig. 1D). This was finally reached through the insertion of a 10 by 300 mm Balt coil (Montmorency, France) thus sealing the pseudoaneurysm (Fig. 2A). The blood supply to the foot was ensured completely by the ATA (Fig. 2B). A day later,

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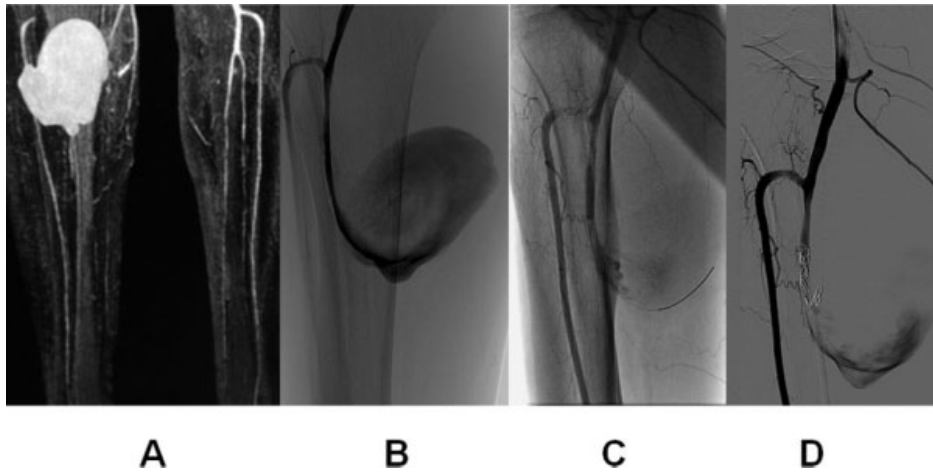


Fig. 1. Please refer to page 1 for figure description.

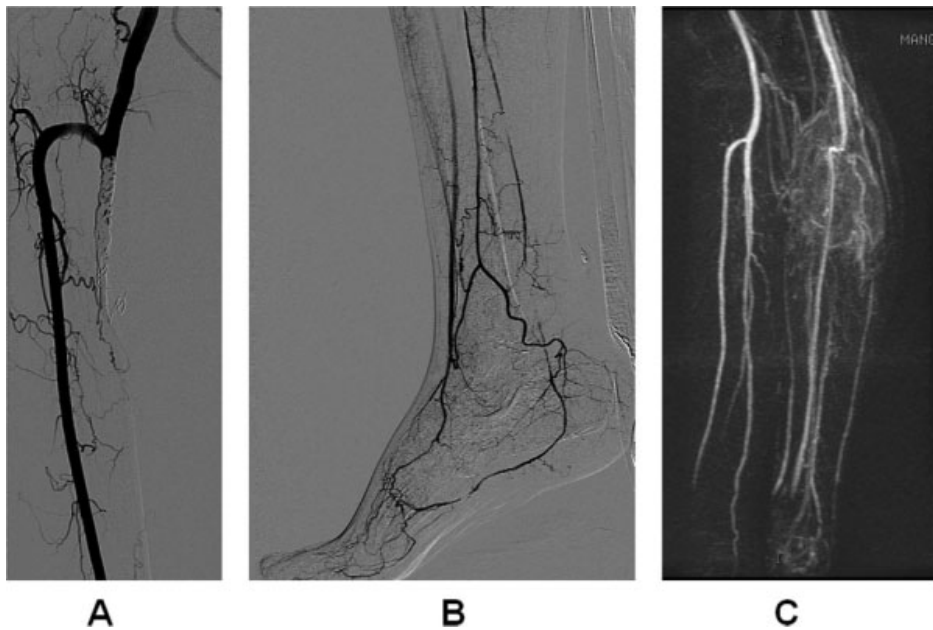


Fig. 2. Please refer to pages 1 and 2 for figure description.

a mini-invasive fasciotomy was performed and after five days the patient was discharged.

A follow-up angio-MRI 6 months later confirmed ATA patency and pseudoaneurysm occlusion (Fig. 2C).

## DISCUSSION

The pathogenesis of pseudoaneurysms is characterized by localized rupture of the arterial wall. Blood extravasations, walled off by the surrounding layers of connective tissue, communicates with the artery through a neck.

Pseudoaneurysms can be asymptomatic or may be present with swelling, bruising, pain, or neurological signs due to nerve compression, or rupture.

The main causes are traumatic, e.g., due to fogarty ballon catheter thrombolectomy, or leg trauma [2].

Mycotic or connective tissue diseases etiology have also been described [3]. Mycotic etiology is due, for the most part, to gram positive endocarditis [3].

Our patient had experienced a gram positive endocarditis a few years before. Connective tissue diseases and any trauma were anamnestically denied.

MRI angiography did not visualize other aneurysms. We could not determine a precise etiology of the

pseudoaneurysm but we presume that mycotic etiology may be plausible.

It was decided to embolize the pseudoaneurysm's neck with a coil. The blood supply to the foot was a critical point to consider.

After determining the prevalence of ATA, that supplied the plantar arch circulation sufficiently, it was decided to go ahead with the coils. The anterograde supply to the mass had been interrupted and there was no evidence of retrograde flow to the pseudo-aneurysm.

To avoid the complication of infection, no evacuation was performed, but a decompressive fasciotomy was effected.

Other treatment options have been proposed to seal pseudoaneurysms.

Ultrasound guided compression repair has been used especially when the size of the pseudoaneurysms is minor [4]. In this case, however, due to the patient's unbearable pain of the right calf, this option was not attempted.

Various authors have proposed long balloon inflation to occlude the pseudoaneurysms [1]. In our case, long occlusion with a 4-mm balloon was unsuccessful, probably due to the large neck of the pseudoaneurysm.

We have not tried to embolize the mass by thrombin injection because of the large size of the pseudoaneurysm [2].

Covered stents have been employed by other authors to exclude pseudoaneurysms [5]. In our specific case deploying a graft stent would have been impossible due to the absence of vessel continuity around pseudoaneurysm.

An open surgery approach would have been possible, but in our opinion it was not considered due to the anatomy disarray caused by the presence of a pseudoaneurysm in the fossa poplitea.

## CONCLUSION

An endovascular approach to seal pseudoaneurysms in the BTK zone is safe and feasible and could represent a primary option because it is less invasive with potentially fewer serious complications than with open surgery.

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