

## Pseudoaneurysms of Peroneal Artery: Treatment with Transcatheter Platinum Coil Embolization

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**This report describes two cases of pseudoaneurysms of the peroneal artery which were successfully treated by transluminal platinum coil embolization. A pseudoaneurysm developed following a penetrating wound of the calf, and another did following thromboembolism of the occluded femoropopliteal bypass with a Fogarty balloon catheter. The coils were guided and released into the proximal peroneal arteries via the placed catheters on the ipsilateral and contralateral femoral arteries, respectively. The pseudoaneurysms disappeared in both cases and the patients have been doing well until now. (Ann Thorac Cardiovasc Surg 2004; 10: 263–5)**

**Key words:** pseudoaneurysm, peroneal artery, coil embolization

### Introduction

Pseudoaneurysms of the peroneal artery are relatively rare and present some interesting management strategies.<sup>1,2</sup> This report describes two cases of pseudoaneurysms of the peroneal artery which were successfully treated by transluminal platinum coil embolization.

### Case Report

#### Case 1

A 12-year-old boy was referred to our hospital with continuing swelling and pain of the right calf. He had suffered a penetrating wound to the right calf from an iron bar one week previously. Physical examination revealed a tender, space occupying, pulsatile mass in the calf. The calf was swollen and ecchymotic, and distal pulses were intact. Subtraction angiography showed a pseudoaneurysm at the peroneal artery with patent anterior and posterior tibial arteries (Fig. 1A). A microcatheter system (Leggiero®, Terumo Corporation, Tokyo, Japan) was inserted via the antegrade surgically placed catheter on the ipsilateral femoral artery. The tip of the microcatheter was

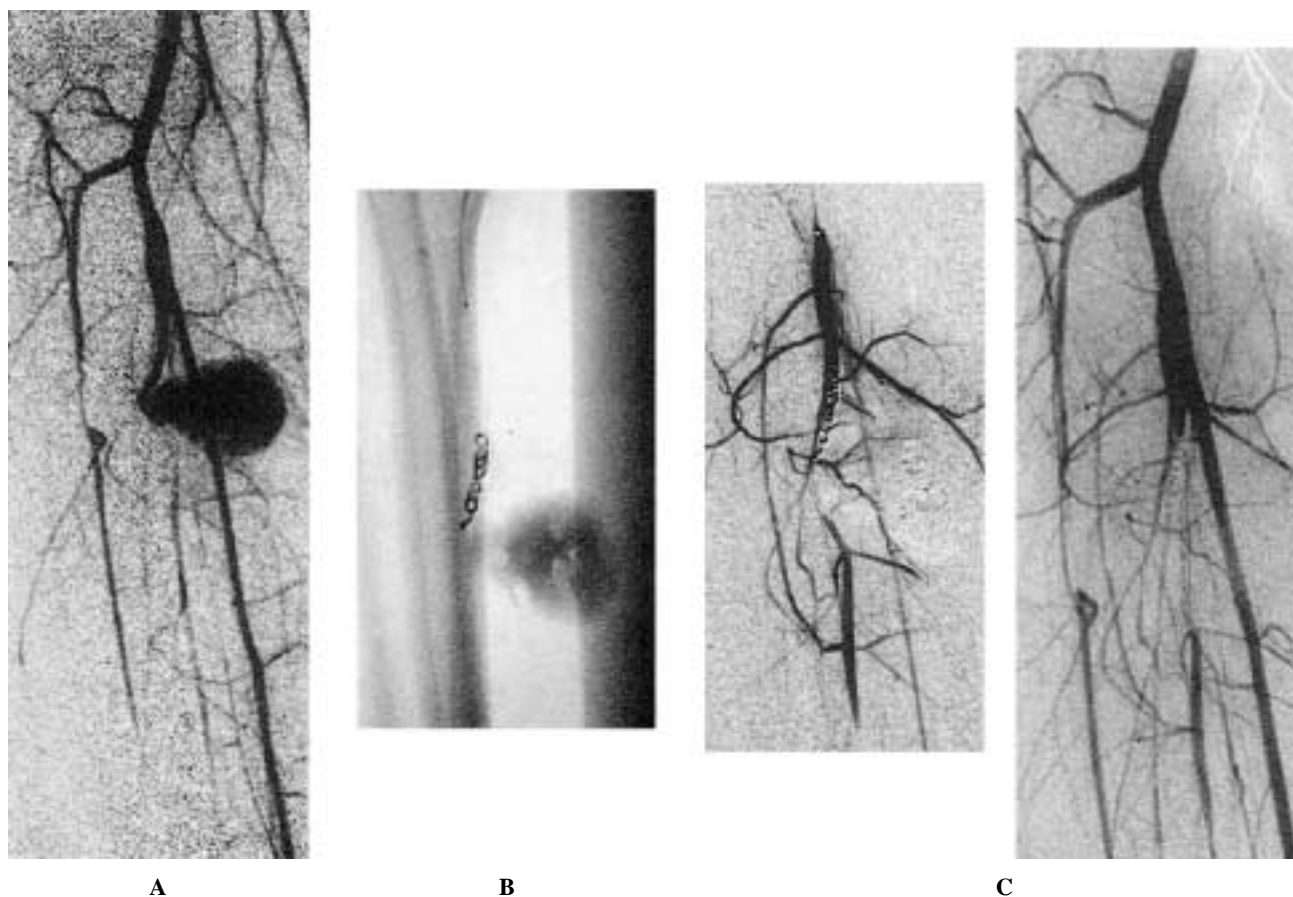
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placed in the proximal peroneal artery, and two 5-mm platinum coils (VORTX®, Boston Scientific Corporate, Natick, MA) were released (Fig. 1B). The subsequent injection of contrast medium demonstrated no flow into the pseudoaneurysm with intact anterior and posterior tibial arteries (Fig. 1C), and symptoms gradually disappeared. He has resumed normal activities.

#### Case 2

A 63-year-old man who had been under medical treatment for essential thrombocythemia underwent a femoropopliteal bypass using expanded polytetrafluoroethylene for occlusion of the superficial femoral artery. Ten months later, his discontinuation of medication caused an acute occlusion of the artificial graft. Thromboembolism was emergently performed with 4 Fr and 3 Fr Fogarty catheters, and multiple clots were evacuated. The Fogarty catheters were passed down to the ankle with minimal manipulation. After this procedure, there were good distal pulses and the patient was heparinized. Three days later, a hematoma and pain developed in the posterior lower calf, which developed into a pulsating mass. Subtraction angiography showed an iatrogenic pseudoaneurysm arising from the mid-portion of the peroneal artery with patent anterior and posterior tibial arteries (Fig. 2A, B). A microcatheter system was inserted via the percutaneously placed catheter on the contralateral femoral artery. The tip of the microcatheter was placed in the proximal peroneal artery, and two 5-mm platinum coils



**Fig. 1.** A: Digital subtraction angiography in case 1 shows a pseudoaneurysm at the peroneal artery with patent anterior and posterior tibial arteries. B: Two 5-mm platinum coils were released. C: Pseudoaneurysm is not contrasted with intact anterior and posterior tibial arteries.

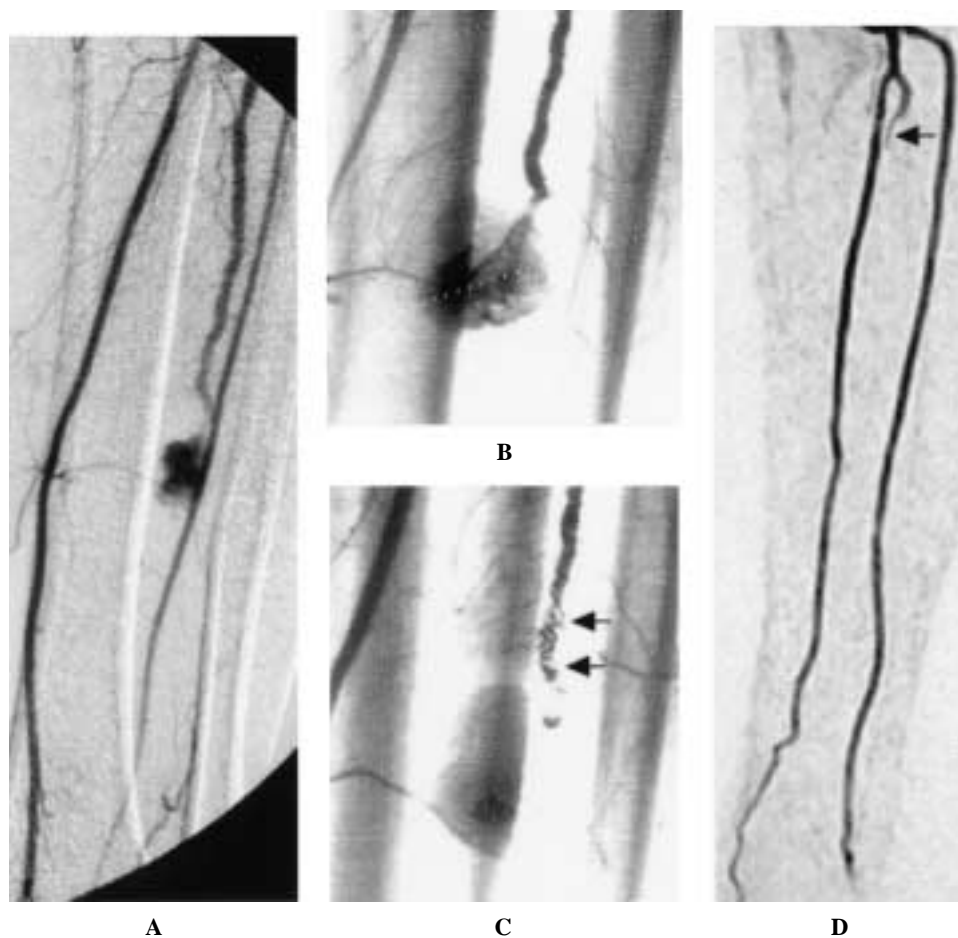
were released. The subsequent injection of contrast medium demonstrated no flow into the pseudoaneurysm (Fig. 2C), and symptoms disappeared. His magnetic resonance angiography which was performed one year later showed a complete cessation of the peroneal artery with patent anterior and posterior tibial arteries (Fig. 2D). He has been doing well now without recurrence.

## Discussion

The pathogenesis of a pseudoaneurysm is characterized by a disruption of arterial continuity with extravasation of blood into the surrounding tissues. This leads to the formation of a fibrous sac that progressively enlarges due to the arterial pressure. Pseudoaneurysms of the crural arteries are relatively rare, but recognized complications after Fogarty-balloon thromboembolectomy or blunt and penetrating trauma.<sup>1,3)</sup> Some of these aneurysms are clinically silent and incidentally recognized with arteriogra-

phy, and some others present with a variety of symptoms due to the associated compartment syndrome and arteriovenous fistulas. Pseudoaneurysms after Fogarty-balloon thromboembolectomy are apparently caused by overdilation of the balloon or direct catheter perforation, and postoperative heparinization enhances the formation of the pseudoaneurysm.<sup>4-6)</sup> To prevent these complications, a gentle manipulation with the Fogarty catheter is essential. In addition, angiography is necessary to predict these complications, because the presence of distal pulses does not preclude complications such as perforation, longitudinal arterial tear or arteriovenous fistula formation.

Regarding management of a pseudoaneurysm of the peroneal artery, resection and re-establishment of continuity are difficult in this small vessel and generally unnecessary. Loss of at least some collateral flow which would be expected following surgical exposure for such a procedure could add important morbidity. Transcatheter coil embolization is an accepted treatment modality



**Fig. 2.** A, B: Digital subtraction angiography in case 2 shows an iatrogenic pseudoaneurysm arising from the mid-portion of the peroneal artery with patent anterior and posterior tibial arteries. C: Two 5-mm platinum coils (arrows) occluded the blood flow into the aneurysm. D: Magnetic resonance angiography performed one year later shows a complete cessation of the peroneal artery with patent anterior and posterior tibial arteries.

which offers many advantages including rapid safe occlusion.<sup>1,7)</sup> Foot ischemia as a consequence of peroneal artery occlusion was not likely, when there were patent posterior and anterior tibial arteries. In this procedure, in the first report<sup>1)</sup> insisted that occlusion should have been performed both proximal and distal to the aneurysm for resultant complete cessation of blood flow into and from the lesion. On the other hand, we consider that a simple proximal arterial occlusion to the aneurysm is safe and sufficient because the arterial occlusion distal to the aneurysm using a microcatheter has a risk of perforation or rupture of it. Actually in the present cases, the aneurysms have completely disappeared with no recurrence.

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