

Letter to the Editor

Angioseal use after antegrade femoral arteriotomy in patients undergoing percutaneous revascularization for critical limb ischemia: A case series

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Abstract

Antegrade femoral artery access is commonly used for percutaneous transluminal revascularization of ipsilateral lower limbs in patients with critical limb ischemia. While hemostasis at the end of the procedure can be achieved by manual compression, this may lead to an increase in local vascular complications. Femoral artery closure devices, such as the Angioseal collagen plug and anchor device, have been approved and shown of benefit after retrograde femoral artery catheterization. To date, there are however no data on the use of such arteriotomy closure device after antegrade femoral access. We hereby report a case series of five patients in whom Angioseal was successfully used after antegrade femoral puncture and below-the-knee percutaneous transluminal angioplasty. In all cases the device enabled immediate and complete hemostasis without major complications, despite the intense antithrombotic regimen, including heparin, aspirin, and clopidogrel in all patients, as well as glycoprotein IIb/IIIa inhibitors (in two patients) and fibrinolytic therapy (in one).

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1. Introduction

Anterograde femoral access is commonly used for percutaneous transluminal revascularization in patients with critical limb ischemia. While post-procedural hemostasis can be achieved manually, this has cost and logistic implications. Moreover, local hemorrhagic complications may be more frequent after anterograde vs retrograde femoral access [1]. Femoral closure devices have been approved and shown of benefit after retrograde access. While data supporting the safety of suture devices for antegrade arteriotomy closure are available [2,3], to date there are no data on the use of the Angioseal (St. Jude, Milan, Italy), after antegrade femoral access. We hereby report 5 consecutive cases of successful Angioseal use in such setting.

2. Cases

Five diabetic patients (four males and one female) with critical limb ischemia and foot ulcers were referred for lower limb arteriography. Antegrade femoral access was obtained according to standard methods. Specifically, a 19G needle (Cordis, Milan, Italy) was inserted in the common femoral artery, checking the position with contrast injection (Fig. 1A). After confirmation of true lumen seating, a 0.035" wire was inserted engaging the superficial femoral artery, and a 6 Fr 11 cm sheath (Cordis) was then deployed over-the-wire. Recanalization of below-the-knee occlusion was then carried out by means of true lumen and/or subintimal angioplasty, achieving a good final angiographic result. Peri-procedural antithrombotic treatment included heparin, aspirin, and clopidogrel in all cases, plus intra-arterial glycoprotein IIb/IIIa inhibitors in two patients (one of them treated concomitantly with intra-arterial urokinase).

Given the lack of significant atherosclerosis in the common femoral artery and the good quality puncture (Fig. 1A),

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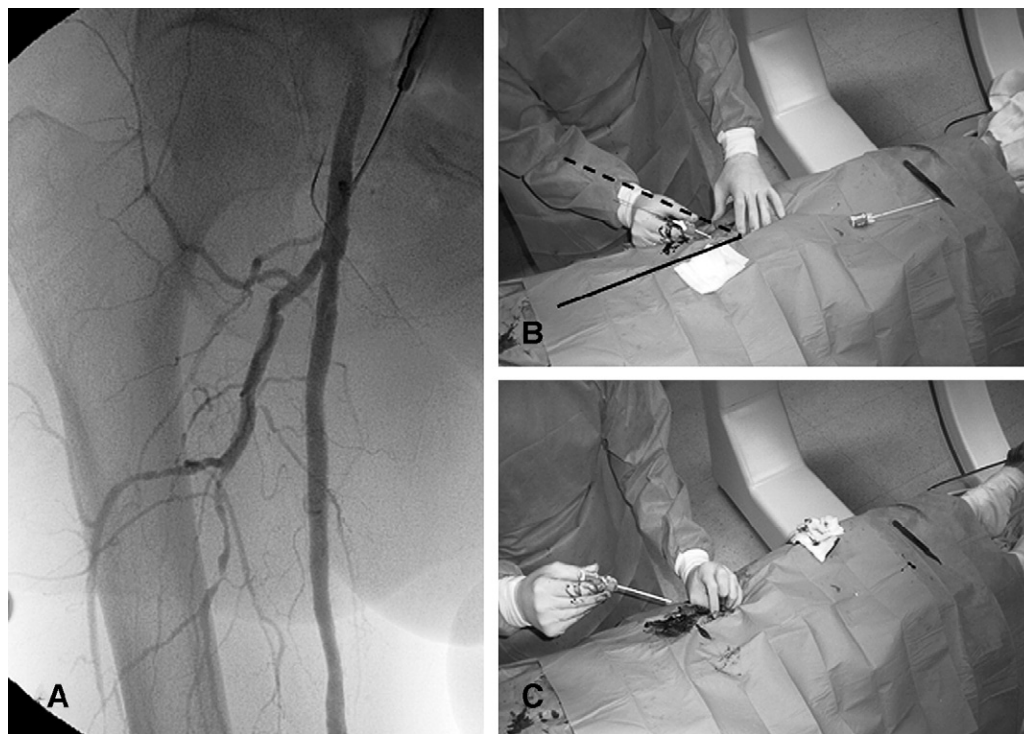


Fig. 1. Successful use of Angioseal to obtain hemostasis after antegrade femoral arteriotomy for ipsilateral below-the-knee percutaneous revascularization in a 63-year-old female with critical left limb ischemia, despite potent peri-procedural antithrombotic treatment with unfractionated heparin, eptifibatide and urokinase. Femoral antegrade arteriography is an obligatory preliminary step, as the common femoral artery should be free of major atherosclerosis, and the correct entry point in the mid to distal common femoral artery should be confirmed, thus avoiding the bifurcation (A). At the end of the procedure, Angioseal was deployed using the appropriate wire according to standard methods (B–C). It is important to take care in maintaining correct device angulation (around 45°, as shown by the lines), which may be challenging especially in obese patients, as excessive angulation may lead to device failure.

Angioseal was deployed at the end of the procedure (Fig. 1 B–C), achieving in all cases immediate hemostasis in the absence of vascular complications, and the patients could be mobilized after >12 h of bed rest with a loose compressive bandage. Successful hemostasis was also confirmed by physical examinations on the following days and at discharge.

3. Discussion

The present report suggests the feasibility and safety of Angioseal for antegrade arteriotomy closure, especially in light of the aggressive antithrombotic regimen used in both patients. Nonetheless, we should bear in mind that all closure devices have limitations, and their use may be dangerous in patients with femoral artery disease or in case of too low or too high punctures. Moreover, one specific drawback of Angioseal may lie in the risk of local complications if restick is performed before the anchor and collagen plug has been completely absorbed (90 days according to the manufacturer), even if there is now evidence that early restick can be accomplished with relative safety [4]. Problems may also arise in case of steep device angulation [2]. Nonetheless, we chose to use Angioseal instead of suture-based devices given its greater ease of use and potential superiority, as prelim-

inary data on retrograde arteriotomy closure suggest a lower rate of device failure with the Angioseal in comparison to suture-based devices [5].

In conclusion, notwithstanding its limitations, this case series supports the conduct of further larger studies testing the risk–benefit ratio of Angioseal for antegrade femoral arteriotomy closure.

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