A 65-year-old woman was referred to the vascular laboratory after coronary angiography and stent insertion via an 8F right femoral artery sheath. The patient received ticlopidine 500 mg after the procedure. A large pulsatile mass with a diffuse hematoma developed several hours after removal of the sheath from the groin, and a 4.2-cm false aneurysm arising from the common femoral artery was confirmed on duplex ultrasound scanning (ATL HDI 3000, 4- to 7-MHz probe), as demonstrated in Figure 1. Attempts at ultrasound-guided compression as an initial treatment were limited by excessive pain and were eventually abandoned.

Percutaneous injection of thrombin (1000 US U/mL, GenTrac Inc) into the center of the false aneurysm cavity was performed under duplex guidance with a 2-mL syringe and a 22-gauge needle. After accurate placement of the needle into the pseudoaneurysm cavity (Figures 2 and 3), a total of 750 U (0.75 mL) was slowly injected over 10 seconds, during which rapid thrombosis of blood flow within the cavity occurred, as demonstrated in Figure 4. Pulsatility from within the cavity ceased, and the patient was discharged from hospital the following day after repeat scanning had confirmed absence of any arterial flow within the cavity. At subsequent review, the patient remained asymptomatic, with a small resolving hematoma.

The incidence of iatrogenic pseudoaneurysms after femoral artery catheterization is reported to be up to 1% to 2% and has increased over recent years as a result of the use of larger-size catheters for interventional procedures. The treatment of this complication has traditionally been surgical repair or, more recently, ultrasound-guided compression, but percutaneous injection of thrombin can be completed in several minutes, has the advantage of avoiding surgical intervention or the pain associated with ultrasound-guided compression, and can be performed effectively in patients who have received anticoagulation.
Figure 1. Duplex ultrasound image of pseudoaneurysm, demonstrating arterial flow through a long, narrow neck arising from defect in femoral artery and turbulent color flow into cavity.

Figure 2. With color flow removed, exact position of needle tip can be identified at all times during procedure, because a small amount of echogenic thrombus forms at needle tip when thrombin comes into contact with blood, helping to guide needle placement.
Figure 3. With needle in position, color flow during injection of thrombin confirms acute development of thrombus within sac.

Figure 4. Power Doppler image of patent native femoral vessels (CFA indicates common femoral artery; SFA, superficial femoral artery; and PFA, profunda femoris artery) and absence of flow after successful thrombin injection into pseudoaneurysm cavity.
Duplex-Guided Injection of Thrombin


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