CASE REPORT

Treatment of a Long, Heavily Calcified Left SFA Lesion With Single-Vessel Runoff Via an Ipsilateral Antegrade Approach

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An 84-year-old man presented with critical limb ischemia and a 2-month history of nonhealing ulceration of the left foot and lower leg (Rutherford class 5) and severe rest pain. The patient was a nonsmoker with a history of peripheral vascular disease, rheumatoid arthritis, hyperlipidemia, hypertension, and an ejection fraction of 29%.

Preoperative duplex ultrasound revealed that the left common iliac artery was heavily calcified but patent. The iliac arteries were extremely tortuous. The left superficial femoral artery (SFA) was heavily calcified and had a 50% to 60% stenosis in its proximal portion, extending approximately 7 cm from the mid to distal SFA. There was complete occlusion near the adductor canal, which then reconstituted below at the level of the popliteal artery, but was a severely underfilled vessel. The left profunda was patent. Below the knee, the left anterior tibial and posterior tibial arteries were occluded, with single-vessel runoff via the left peroneal vessel. The right common iliac artery was heavily calcified but patent, and the right common iliac artery was aneurysmal. Both internal iliac arteries were patent. The right SFA was heavily calcified, but patent. The right popliteal artery was patent. Below the knee, the right anterior and posterior tibial arteries were completely occluded with a single-vessel runoff to the foot via the right peroneal vessel.

Initial revascularization was attempted using a contralateral approach, but given the extensive calcification in the right common iliac artery, advancement of the sheath over the horn to the left side could not be achieved despite many attempts. The case was abandoned, and the patient was scheduled to return in 2 weeks for an attempt to recanalize the chronic total occlusion of the left SFA from an alternative approach.

TREATMENT OPTIONS

When the patient returned 2 weeks after the initial revascularization attempt, the various access and

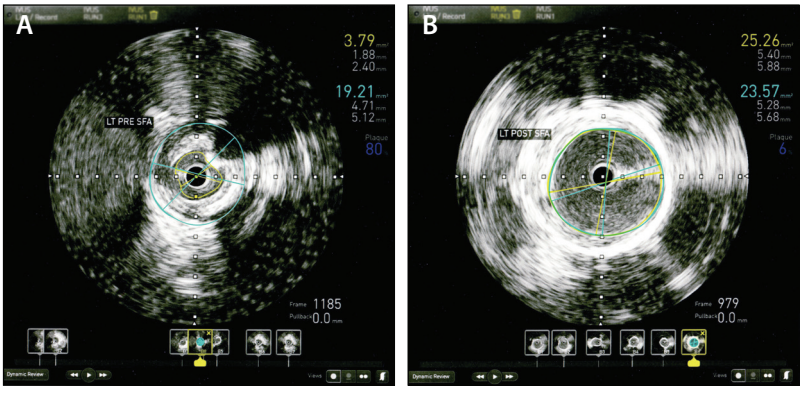

Figure 1. Intravascular ultrasound images before (A) and after (B) treatment. The smooth, clean lumen had a cross-sectional area diameter increase from 4 mm² to 25 mm² and a stenosis percentage decrease from 80% to 6%.

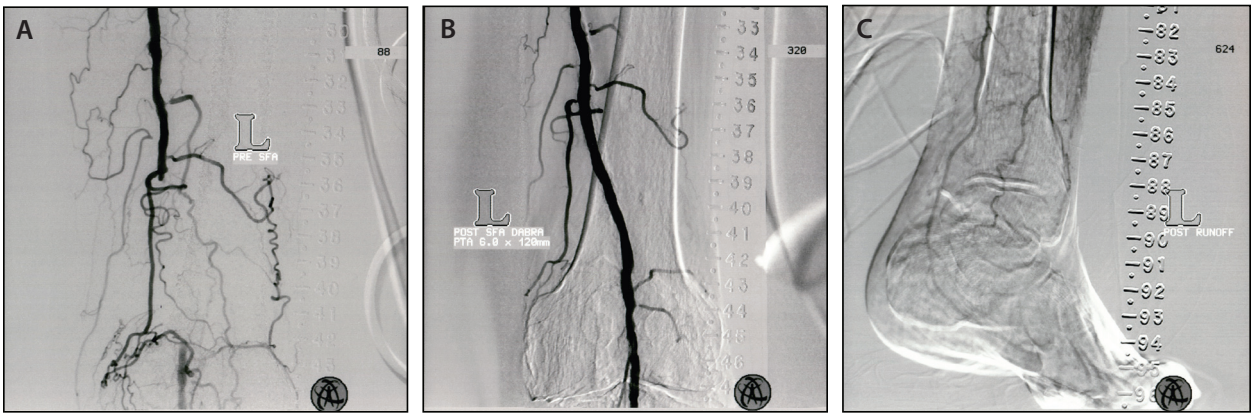

Figure 2. Pretreatment angiography (A). After laser and balloon angioplasty, an excellent result was seen, with reperfusion of the SFA and collateral vessels (B) and direct line of blood flow to the foot (C).

treatment options were assessed. Given the previous access challenges, access via a contralateral approach was not an available option. Brachial and antegrade popliteal approaches were considered, but because the left iliac artery was questionable and the condition and access of the tibial arteries were not yet known, an ipsilateral antegrade approach was selected. The patient had a significant collateral just at the proximal cap of the occlusion in the left SFA, which needed to be protected, and single-vessel runoff to the foot. These were key considerations in determining the treatment approach. Ultimately, it was decided to use the DABRA Excimer Laser (Ra Medical Systems, Inc.) because of the extensive previous clinical experience (>170 cases) with the device without observing any distal embolization.

COURSE OF TREATMENT

Using a 5F, 30-cm Flexor Ansel guiding sheath (Cook Medical) via an ipsilateral antegrade approach, the laser catheter was advanced to the occlusion, and laser debulking was performed for 3 minutes while advancing 3 to 4 cm through the obstruction. The laser catheter was removed, the catheter tip was shaped using wire-shaping techniques, and the catheter was reintroduced to navigate through a severe angle. Continued forward advancement was made with an additional 3 minutes of lasing, passing a significant boulder of calcium along the way, treating an additional 4 cm of heavily calcified vasculature. Next, a 260-cm stiff Zipwire (Boston Scientific Corporation) was easily advanced through the debulked lesion to the area of reconstitution of the popliteal artery. The case was completed with a long (4–5 minutes), low-pressure (3–4 atm) inflation of a 6- X 120-mm EverCross balloon (Medtronic) in the SFA.

RESULTS

The final angiogram revealed excellent luminal gain and an outstanding result. The patient was discharged approximately 3 hours postprocedure. At the completion of the procedure, residual stenosis was 6% (Figure 1), and final angiography demonstrated excellent SFA reperfusion with restoration of in-line flow to the foot (Figure 2). Given the previous experience with the laser catheter and no observation of distal emboli, embolic protection was not used for this procedure. There were no complications including vessel recoil, dissection, or distal embolus. Total lasing time was 6 minutes and total fluoroscopy time was just over 5 minutes. Patient follow-up at 1 week showed rapid healing of the wound on the left foot and lower leg.

DISCUSSION

This particularly challenging case highlights a few of the reasons I have adopted the DABRA device in my practice. It is fast and easy to use. In this case, the total lasing time was 6 minutes, which was 2 to 3 times longer than my typical lasing time with this device, but rapid given the difficulty of the case. This rapid lasing time means less contrast and radiation exposure (only 150 mL of contrast and 5 minutes and 26 seconds of fluoroscopy for this case). Additionally, I have not observed any instances of distal embolization, an important safety consideration for this and other cases. ■

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Disclosures: None.