

## CASE REPORT

# Successful Revascularization Utilizing Excimer Laser Photoablation After Failed Attempts With Other Modalities in a CLI Patient Presenting With Acute Limb Ischemia

BY MOHAMMAD M. ANSARI, MD, AND MARINA S. ISKANDIR, MD

Patients with critical limb ischemia (CLI) have a 1-year mortality rate of 20% and a 1-year limb loss rate of 20%.<sup>1</sup> Amputees have an increased mortality rate of 48% at 1 year and 71% at 3 years.<sup>2</sup> Many advances have been made and are continuing to be made to improve endovascular therapies. One such option is the DABRA catheter (Ra Medical Systems, Inc.). The DABRA catheter is a full aperture ratio forward cutter, delivering fast ablation of all types of plaque. DABRA removes plaque by ablation, limiting the vascular trauma caused by mechanical forces or acoustic or thermal energy used in competing products.<sup>3</sup> This article presents the case of a CLI patient presenting with acute limb ischemia treated initially with multiple conventional endovascular therapies that failed to reestablish flow; however, the DABRA Excimer Laser was used as a last resort and was successful in reestablishing flow to his distal limb.

## CASE PRESENTATION

A 55-year-old man with a history of smoking, hypertension, and hyperlipidemia presented to the emergency department with a cold left foot and severe pain. On examination, no pulses were palpable. The patient was emergently taken to the cath lab. An initial angiogram revealed an occluded left popliteal artery with no flow distally (Figure 1).

## COURSE OF TREATMENT

A decision was made to intervene. With the help of a support catheter and wire, the target lesion was crossed and wired into the posterior tibial artery. Results of angiography revealed a heavy clot burden.

An AngioJet catheter (Boston Scientific Corporation) was advanced over the wire, and multiple passes across the lesion were made (Figure 2). Sequential balloon

angioplasty was performed from the popliteal artery down to the distal posterior tibial artery (Figure 3). Results of angiography showed a very slight improvement in flow distally, but there was still significant clot burden. Again, sequential balloon angioplasty was performed; however, subsequent angiograms showed little improvement in the popliteal artery, giving the impression of chronic organized clot (Figure 4).

Next, an EkoSonic endovascular system with drug delivery catheter (BTG Vascular) was advanced over the wire and placed (Figure 5). Our 12-hour acute limb thrombolytic protocol was initiated via

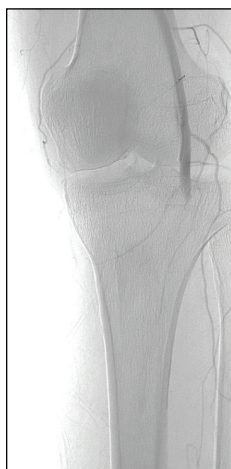


Figure 1. Completely occluded left popliteal artery.

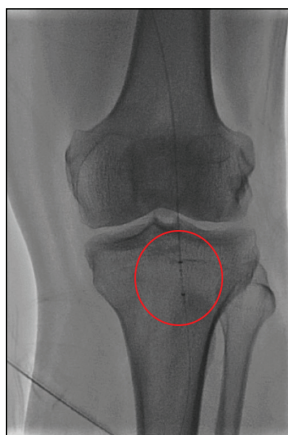
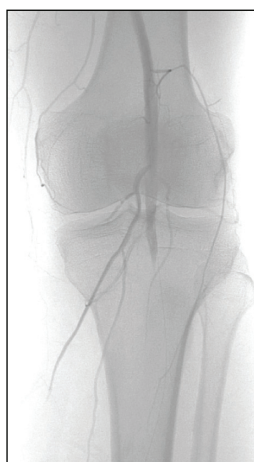


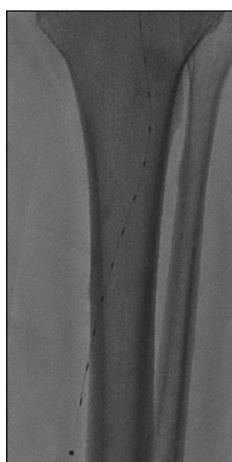
Figure 2. AngioJet thrombectomy of the popliteal artery after crossing the lesion.



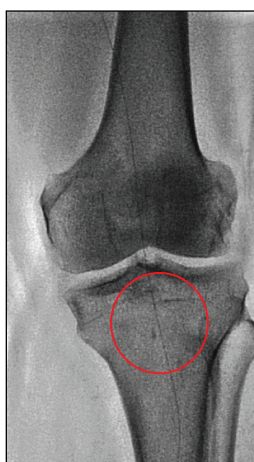
Figure 3. Balloon angioplasty of the popliteal artery.



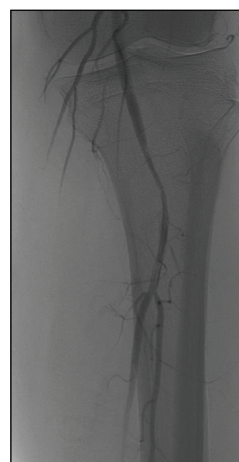
**Figure 4.** Angiogram after the initial intervention demonstrating no flow.



**Figure 5.** Placement of the EkoSonic catheter.



**Figure 6.** Laser ablation of the popliteal artery with the DABRA catheter.



**Figure 7.** Reestablished flow of the distal popliteal artery and tibio-peroneal trunk.



**Figure 8.** Reestablished flow of the posterior tibial and peroneal arteries.

the EkoSonic catheter, and the patient remained in the cardiac critical care unit overnight and was brought in to the cath lab the next day. Results of angiography showed a slight improvement, but significant clot was still seen. At this time, multiple passes were made with the Indigo mechanical thrombectomy system (Penumbra, Inc.), followed by a scoring balloon, to no avail. Finally, a DABRA 5F catheter was advanced using fluoroscopic guidance. Laser ablation was performed for 120 seconds (Figure 6), after which, flow was restored. Final balloon angioplasty was performed with an excellent result.

## RESULTS

The results of final angiography confirmed complete resolution and return of flow from the popliteal and tibial arteries to the foot (Figures 7 and 8).

## DISCUSSION

The importance of avoiding amputation is well-established in the literature because of its associated increased mortality rate. Furthermore, revascularization procedures can provide excellent results, short rehabilitation time, and short hospitalizations, which in turn can decrease the cost to patients, improve their overall experience, and decrease morbidity. The benefit to the patients is fueling innovation in this field to engineer better devices and techniques. As demonstrated in this case, the DABRA catheter is an example of a new effective technology for peripheral interventions, where other devices have failed to rescue the limb. We advocate for further studies and the use of this

device to demonstrate its usefulness in revascularization of CLI and acute limb ischemia to improve patient outcomes and most importantly prevent limb loss. ■

1. Rooke TW, Hirsch AT, Misra S, et al. 2011 ACCF/AHA focused update of the guideline for the management of patients with peripheral artery disease (updating the 2005 guideline): a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2011;58:2020-2045.
2. Jones WS, Patel MR, Dai D, et al. High mortality risks after major lower extremity amputation in Medicare patients with peripheral artery disease. *Am Heart J.* 2013;165:809-815.
3. Ansari A. Treatment of a long, heavily calcified left SFA lesion with single-vessel runoff via an ipsilateral antegrade approach. *Endovasc Today.* 2019;18:92-93.

### Mohammad M. Ansari, MD

Director, Cardiac Cath Lab, Structural Heart Program  
& Interventional Cardiology Research  
Assistant Professor of Medicine  
Division of Cardiology  
Department of Internal Medicine  
Texas Tech University Health Sciences Center  
Lubbock, Texas  
mac.ansari@ttuhsc.edu  
*Disclosures: None to disclose.*

### Marina S. Iskandir, MD

Chief Fellow, Cardiovascular Disease  
Division of Cardiology  
Department of Internal Medicine  
Texas Tech University Health Sciences Center  
Lubbock, Texas  
*Disclosures: None to disclose.*