

Case Report: Significant Removal of Fresh Large-Vessel Thrombus With the New 8-F AngioJet™ ZelanteDVT™ Catheter

BY ERIC G. SCHOCH, MD, AND CHRISTOPH A. BINKERT, MD, MBA

A 76-year-old woman was referred by her gynecologist for suspected left deep vein thrombosis (DVT). For 3 days, she suffered from severe left leg swelling and pain. On physical examination, the patient was obese (body mass index, 40.4 kg/m²) and had a painful and swollen left leg with no ulcerations.

DIAGNOSTIC EVALUATION

CT venography was performed, confirming the patient's swollen left leg (Figure 1A) with an enlarged unenhanced femoral vein (Figure 1B). In order to secure the diagnosis of DVT, an ultrasound was performed, which showed hyperechoic acute thrombus in the left common femoral vein (Figure 1C). A multidisciplinary group decided to treat with pharmacomechanical thrombolysis for fast symptomatic relief and prevention of sequelae. Because only a small amount of thrombus extended into the inferior vena cava, no filter was implanted.

TREATMENT APPROACH

The procedure was performed under conscious sedation, and 5,000 units of heparin were administered intravenously at the beginning of the intervention. The patient was placed in a prone position on the angiographic table. Ultrasound-guided access into the popliteal vein was performed, and an 8-F sheath was inserted. The AngioJet™ ZelanteDVT™ thrombectomy catheter (Boston Scientific Corporation) was advanced into the thrombus, and 200,000 units of urokinase were injected into the thrombus using the Power Pulse™ spray technique. Because of the large vein diameter, the steerable option of the ZelanteDVT catheter was used to deliver the urokinase into the entire thrombus. After a dwell time of 20 minutes, the ZelanteDVT catheter was switched into thrombectomy mode, and the thrombus was aspirated for a total of 180 seconds. The rotation option of the ZelanteDVT catheter tip was used to direct the

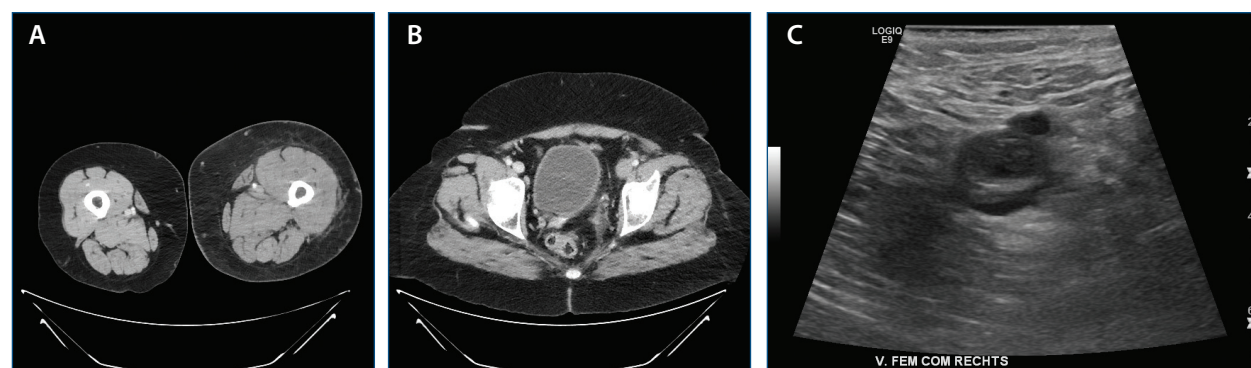


Figure 1. Preinterventional workup with CT venography showing substantial left leg swelling (A) and an enlarged iliofemoral vein (B). Ultrasound confirmed the diagnosis of acute DVT (C).

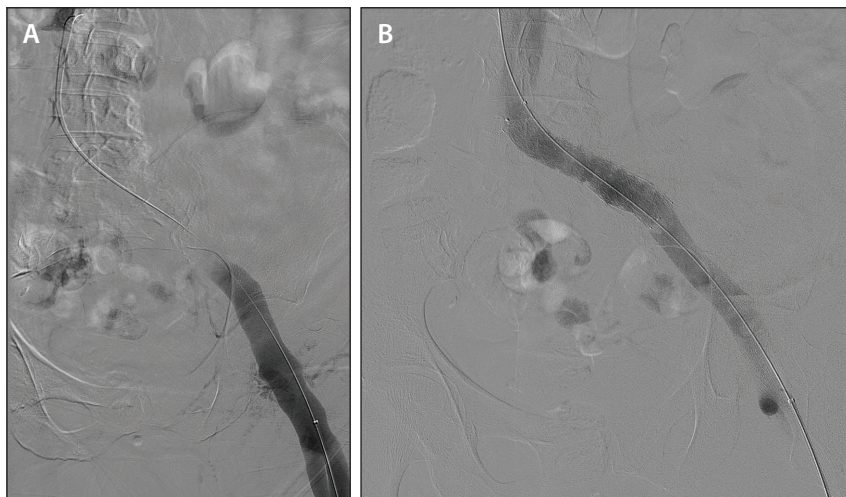


Figure 2. After Power Pulse spray thrombolysis and AngioJet thrombectomy, the iliofemoral veins were cleared of thrombus (A). Because of May-Thurner syndrome, there was still impaired flow, which was restored with stent implantation (B).

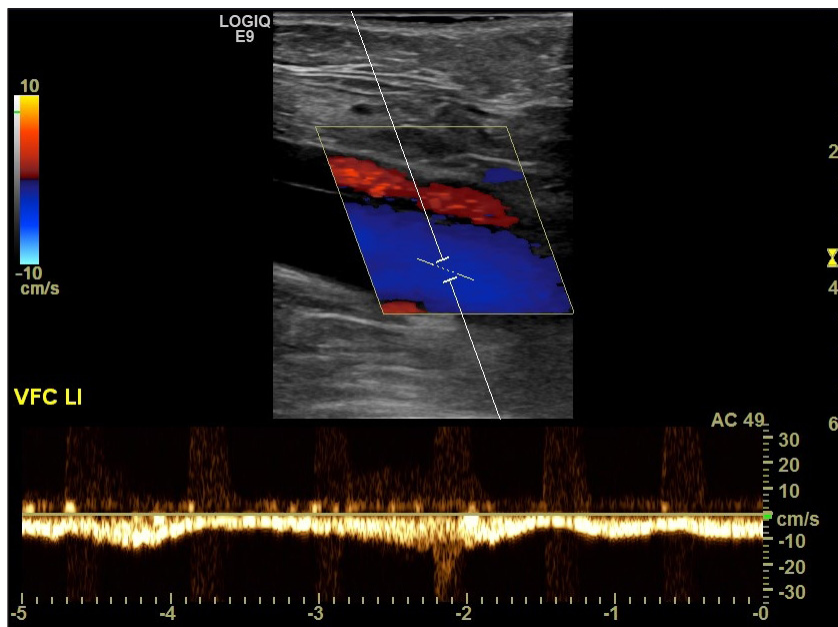


Figure 3. Duplex control the day after the intervention showed patent iliofemoral veins with respiratory modulation of flow.

thrombus removal power and clean the vein as completely as possible. A follow-up venogram showed successful thrombus removal within the left common femoral and left external iliac vein (Figure 2A); however, at that time, there was no flow because of the obstruction in the left common iliac vein due to May-Thurner syndrome. After stenting the left common iliac vein with a self-expandable nitinol stent and expanded to 14 mm, good venous outflow was observed (Figure 2B).

Results from case studies are not necessarily predictive of results in other cases. Results in other cases may vary.

After the procedure, the leg was wrapped with compression bandages, and rivaroxaban was started the next morning. A control duplex examination the next day showed a widely patent common femoral vein with no residual thrombus and good venous flow with respiratory modulation (Figure 3). Clinically, the pain improved within 24 hours after the procedure, and the leg swelling resolved over the following week.

CONCLUSION

The removal of thrombus in a large vein was successful using the ZelanteDVT catheter with the Power Pulse spray technique followed by the thrombectomy mode using the Venturi-Bernoulli effect.¹ AngioJet offers a variety of catheters for different venous and arterial thrombus applications.² The newest addition, the ZelanteDVT catheter, offers the opportunity to remove thrombus from large venous vessels with a directional tip. It will be interesting to see if this new directional catheter will allow for consistent removal of thrombus from large vessels. ■

Eric G. Schoch, MD, is Senior Consultant of Interventional Radiology, Institute of Radiology and Nuclear Medicine, Kantonsspital in Winterthur, Switzerland. He has stated that he has no financial interests related to this article. Dr. Schoch may be reached at eric.schoch@ksw.ch.

Christoph A. Binkert, MD, MBA, is Director, Institute of Radiology and Nuclear Medicine, Kantonsspital in Winterthur, Switzerland. He has disclosed that he is a consultant to Boston Scientific Corporation. Dr. Binkert may be reached at christoph.binkert@ksw.ch.

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