

## ► Clot Retrieval in Lungs: Safer Treatment with Less Hospitalization

Pulmonary embolism (PE) can quickly lead to death if the causative thrombus is not quickly resolved. And now, at the same time that COVID-19 has placed added attention on thrombosis treatment, specialty teams continue to put emphasis on newer and more expeditious ways to resolve blockage of pulmonary arteries. Direct withdrawal of the embolus via catheter is increasingly the solution.

Last spring, Virtua became the first center in the region to make use of the FlowTrievers device, which captures and withdraws a pulmonary embolus by suction and/or nitinol-mesh snare. This endovascular technique is for patients with submassive PE—or, in some cases, massive PE—if the patient is at high risk for other approaches. Patients with thrombi originating from DVT or post-surgery are typical candidates.

“Percutaneous embolectomy allows us to remove large clots from large vessels, immediately restoring blood flow,” said Virtua interventional cardiologist Ibrahim Moussa, DO, FACC, FSCAI, RPVI. “We don’t have to risk use of thrombolytics and, since this is a minimally invasive, catheter-based procedure, we can better treat patients who are not candidates for open-chest surgery.”

### Suction, Mechanical Capture Withdraws Clot

Patients with acute proximal PE have a main or lobar embolus. These patients with significant clot burden in central or segmental pulmonary arteries often have significant hypotensive and hemodynamic instability.

They undergo CT with contrast and receive oxygen and anticoagulants. Patients in acute risk may be placed on ECMO. A decision for mechanical endovascular removal is based on size of the embolus and symptoms, including blood oxygen saturation, as well as right heart dysfunction.

With access through the femoral vein, the team threads the FlowTrievers catheter to the pulmonary arteries and the site of the blockage. Suction from the device pulls the clot

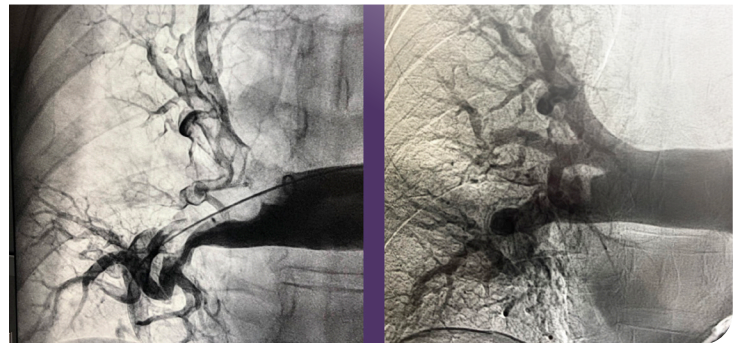
out of the vessel. If the clot is adherent, the specialists can deploy a tool on the tip of the catheter that buries into the clot and expands with three mesh discs to drag the clot out. Patients have a shorter ICU and overall length of stay compared to those treated with thrombolytic drugs. Many require no ICU stay at all.

### Removal Prevents Later Complications

The team may try to dislodge a fresh clot (e.g., one formed soon after surgery) with a slow thrombolytic drip and/or ultrasound. “But aged clots are hardened and difficult to protect patients from without removal,” said Dr. Moussa.

A residual clot in the pulmonary arteries increases risk of heart failure, dyspnea, pulmonary hypertension, recurrent clotting, and death. The FlowTrievers has a similar safety profile to embolism retrieval procedures in the heart, leg, or brain.

“Surgical thrombectomy requires heart-lung bypass and carries high morbidity and mortality. And both systemic administration and direct infusion of thrombolytics at the site carry risk of major bleeding and intracranial hemorrhage,” says internist/pulmonologist, Emilio Mazza, MD, PhD, Chief of Critical Care Medicine at Virtua Memorial Hospital. “Being able to route these patients to Virtua Our Lady of Lourdes for FlowTrievers is a great addition to our armamentarium for PE.”



Pulmonary blood flow before (*left*) and after (*right*) use of the first thrombectomy device purpose built and FDA indicated for mechanical removal of pulmonary emboli.

Image courtesy of Inari Medical

To contact the interventional cardiology service at Virtua, call the Virtua Transfer Center at 856-757-3284.

Virtua stands ready to evaluate and treat your patients in locations that incorporate social distancing, safety, and cleaning protocols developed in the wake of COVID-19. To learn more about the safety precautions that are now a part of Virtua’s standard procedures, visit: <http://virtua.org/coronavirus>

## Improved Methods for Closure of Refluxed Veins in Extremities

Vein issues, especially those that are cosmetic, have a variety of new solutions. But common complaints in the lower extremities are frequently related to or accompanied by a more serious medical issue in, or signaled by, vasculature of these limbs. Patients frequently need the attention of specialists with cardiology, phlebology, and vascular expertise.

### Catheter Treatment Collapses Bulging Veins

Swelling in the legs is a typical presentation, but even an ulcer may be inadequately attributed, for example, to diabetes. Virtua's vein team can use CT, MRI, ultrasound, angiography, or venography to get to the cause, which in the extremities is often manifested in the great saphenous vein, where reflux can occur. In such cases, the team emphasizes thermal ablation via laser or radio-frequency catheter inserted through a small puncture.

Collapsing the vein in this way eliminates the backward flow of blood from venous reflux. With such same-day catheter-based interventions, patients may walk out of the procedures and almost immediately return to daily activities. Of course, symptoms may also come from peripheral arterial disease. When medications are inadequate for this condition, the vein team can perform an angioplasty via the femoral artery, with placement of a drug-coated stent. Virtua's vein and vascular experts also collaborate with wound services for nonhealing lesions.

### Nonthermal Ablation Popular for Cosmetic Concerns

Whether their cosmetic vein concerns are connected to more serious vascular or cardiac conditions or not, patients are often willing to pursue solutions to the

appearance or discomfort issues that these problems present. Varicose veins are a common complaint, as are the related challenge of spider veins.

Ablation, through endovenous closure, to shut off and shrink these veins is the preferred approach. For cosmetic conditions, nonthermal ablation is particularly popular. These are brief office procedures that spare patients much postoperative pain and recovery. Among these steps, updated methods of sclerotherapy serve to irritate the lining of the errant vessel, causing it to swell and stick together. Over several weeks or months, the vessel turns into scar tissue that retracts and fades from view.

In addition, phlebectomy remains an option that has also improved. In-office microphlebectomy is a minimally invasive approach for residual veins that are too twisted or too close to the surface for catheter treatment, or that are too large to treat with sclerotherapy. The specialist removes the veins percutaneously and closes the wound with surgical glue.

**For vein and vascular consultation at Virtua, call 856-309-5869.**



Results of sclerotherapy using injectable foam.

Image courtesy of BTG Interventional Medicine