Tackling Adherent Thrombus and Focal Emboli With the Pounce™ System

A conversation with Dr. Eric Scott.

Vascular surgeon Eric Scott, MD, works in a physician-owned, multispecialty group in Des Moines, Iowa, with a primary focus on treatment of arterial disease. An avid researcher, Dr. Scott has contributed to several papers on new endovascular therapies and is a frequent presenter at global conferences. He currently splits his arterial practice between an office-based lab setting and a tertiary hospital. We spoke with Dr. Scott about how he treats limb ischemia and his experience using the Pounce™ Thrombectomy System (Surmodics, Inc.).

Can you give us a snapshot of your acute limb ischemia (ALI) practice and the patient population you serve?

Our group covers multiple hospitals in Des Moines, including a tertiary care hospital that is also a level 1 trauma center, so we routinely encounter patients experiencing acute ischemic events. These patients present with all forms of ALI. Sometimes it's a 90-year-old with atrial fibrillation and a common femoral artery (CFA) or popliteal artery embolus. Sometimes it's a 60-year-old with a superficial femoral artery (SFA) stent thrombosis who presents with sudden symptoms of limb ischemia. And other nights, it's a surprise 30-year-old who has no sensory or motor function and arterial injury due to blunt or penetrating trauma to the leg. The presentations can be really diverse and require a full range of approaches.

What challenges does your health care system face in expediting care for these patients?

ALI is not a new phenomenon and most every emergency department in the region can recognize it, but most small-to-medium–size hospitals lack vascular call coverage or therapeutic amenities to rapidly treat it. Vascular emergencies like this are typically transferred from outlying communities to one of two hospitals in the city that are equipped to quickly and effectively provide therapy. Unfortunately, this can sometimes result in considerable delay in revascularization. One of the critical, lingering side effects of COVID is that emergency departments are often understaffed and overwhelmed. Just getting the right diagnosis of ALI sometimes takes too long. So, for many patients, time is running out when they finally arrive, and expedient therapies are badly needed.

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How else did COVID impact care of ALI patients in your region and hospital?

Even before COVID hit in early 2020, we were beginning to realize that there were unmet needs when it came to dealing with thrombus in the periphery, particularly on the arterial side. Open surgical options are largely limited to Fogarty balloon thrombectomy, and this is not always effective, particularly when thrombus is subacute or small tibiopedal arteries are involved. In addition, there were fewer catheter-based options for dealing with thrombus in an endovascular fashion compared with now.

Then COVID hit. We saw patients coming in with limb- and even life-threatening thrombus in arterial beds not usually affected and in quantities typically unseen. Some of those cases made it clear to me that the thrombus burden exceeded all our capabilities—open or endovascular—to effectively deal with it. Thankfully, that period has passed, and we aren't seeing many patients present in that fashion anymore. But those challenges prompted many to seek out and learn the latest in percutaneous mechanical

thrombectomy (PMT) devices. There are now a host of PMT devices that can mechanically break up thrombus, aspirate it, or capture and extrude it. This has really opened the door to rapid, minimally invasive revascularization. My use of open thrombectomy, as well as catheter-directed thrombolysis (CDT), has dropped significantly.

How do you select patients for open surgery or catheter-directed treatments?

In my practice, open surgical methods are still utilized for most cases of aortoiliac or common femoral thromboembolization, simply due to the caliber of these vessels. Surgical exposure of the CFA can be accomplished quickly and under local anesthesia if needed and allows for rapid Fogarty balloon-based thrombectomy of the iliac arteries, the CFA, and even the femoropopliteal segment. Open surgical interventions are also often indicated for arterial trauma resulting in ALI. In particular, penetrating trauma often necessitates open surgical arterial repair or bypass, in addition to requiring that local thrombus formation be addressed.

Having said that, for most of my patients with thrombus below the inguinal ligament, endovascular therapies now provide sufficient thrombus-removing capability to avoid an open surgical approach. Patients presenting with class 1 ALI often have the greatest breadth of treatment options, as time is on their side. These patients can be effectively treated with CDT if there is diffuse thrombosis to treat, and I find this approach especially useful if there are multiple tibial arteries involved or if thrombus extends into the pedal arteries. Of course, not all these patients are ideal candidates for thrombolytic use.

However, I think patients presenting with class 2a and 2b ischemia benefit the most from PMT devices. These patients don't have the time to wait for CDT to work and need more urgent revascularization. As more and more different devices become available, each with a different mechanism of action, I think our success using percutaneous approaches will continue to expand.

What have you found separates the Pounce™ System from other arterial mechanical thrombectomy devices used for peripheral interventions?

Compared with other thrombectomy devices in the arterial peripheral space, the Pounce™ System has a different mechanism of action in that it has two nitinol baskets that can actively dislodge adherent thrombus from the vessel wall as the device is withdrawn across the thrombus. It's also large enough to effectively treat the entire circumference of vessel walls within its treatment range (3.5-6 mm) with a single pull-through, unlike angled aspiration catheters, which can require the correct angle of approach to engage focal, adherent thrombus.

In your experience, what are ideal applications for the Pounce™ System?

I think this device is particularly well-suited to treat emboli anywhere from the SFA and profunda femoris to the tibial arteries. (The Pounce™ System is intended for use in vessels 3.5-6 mm in diameter.) Our group has also had success using the device in cases of upper extremity thromboembolization and even acute emboli to the superior mesenteric artery. I find that the Pounce™ System is capable of removing more adherent, subacute thrombus from the vessel wall, which is something I've struggled to do with other devices.

How has use of the Pounce™ System affected your practice patterns?

Having the Pounce™ device on the shelf has made me more confident in tackling challenging infrainguinal ALI cases. For focal emboli, in my experience, I've often been successful removing material on a single pull-back, and the accompanying funnel does an excellent job preventing distal embolization. For cases of extensive femoropopliteal or tibioperoneal thrombosis, I may begin with CDT or an aspiration device that can clear an extensive quantity of thrombus, but I know the Pounce™ device is ready to clear adherent, residual thrombus and get into distal segments of the arterial tree to finish the job.

Where do you see the value of the Pounce™ System from a hospital's perspective?

One of the objectives of PMT is to reduce the risk of major bleeding resulting from the use of thrombolysis and to provide faster, more cost-effective care by avoiding use of the intensive care unit. Over the past 10 years, we've seen several different PMT devices come to market using aspiration as the central mechanism of action. But the Pounce™ System performs differently. The dual baskets for capturing material make this device an excellent tool for precise, targeted embolectomy under direct fluoroscopic visualization. The Pounce™ System is great for patients and saves hospital resources at the same time. ■

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Disclosures: Research for Abbott, Bard, Endologix, LimFlow; consultant to FastWave, Medtronic; speaker for Medtronic.