VDM Vascular Disease Management

INTERVIEW

# Advances in Deep Venous Arterialization and Coagulation Testing

*An Interview With Anahita Dua, MD*

Anahita Dua, MD
Massachusetts General Hospital, Boston, Massachusetts

**Keywords** Deep Venous Arterialization
Critical Limb Ischemia
Coagulation Testing
Thromboprophylaxis

January 2024
ISSN 2152-4343



***Anahita Dua, MD***
*Massachusetts General Hospital, Boston, Massachusetts*

VASCULAR DISEASE MANAGEMENT 2024;21(1):E6-E7

At the 2023 VEITH Symposium in New York City, vascular surgeon Anahita Dua, MD, presented several sessions, including “Advances in Deep Venous Arterialization Techniques: Better Access, Procedure Maintenance, and Wound Care Matter for Limb Salvage in No-Option CLTI Patients” and “Coagulation Testing to Allow Optimal Thromboprophylaxis and Decrease Thrombosis Rates in Lower Extremity Grafts and Stents.” *Vascular Disease Management* spoke with Dr. Dua to discuss these presentations as well as the research she is doing at Massachusetts General Hospital on coagulation testing.

***Dr. Dua, tell us a little about your presentation on advances in deep venous arterialization (DVA).***

DVA really has taken the world by storm, given that a *New England Journal of Medicine* article was published recently talking about the utility of DVA and, almost simultaneously, the LimFlow system, which is a system that makes DVA quite easy to do. It has now been FDA approved and is in commercial use already in the United States. I think people are hungry to not only learn about the actual procedure, but also, what do you do surrounding the patient to get limb salvage?

The beauty of DVA is it's not just about “put a stent in a patient” and walk away. It's very much a program. You do this procedure and then you have to really care for that patient over about 3 months until you can do some wound care and then the patient ultimately salvages their leg. My presentation focused on those extra bits that got the DVA from just the technical success element all the way through the actual success, which is limb salvage. I focused on 3 aspects: First, how you gain access to the patient's foot when you're doing the DVA visualization. Second, once you've finished it over the next 3 months, how you maintain flow to the foot and kind of almost shunt it all the way down as the DVA circuit develops. And third, very importantly, the wound care.

***Your second presentation was on coagulation testing to decrease thrombosis rates. Tell us more about the research you’re doing on this topic.***

My second presentation really dovetails nicely with the first one, and it’s about the research work that I do at Mass General. I have an NIH-funded lab that looks at anticoagulation and antiplatelet therapy. For all these incredible procedures that we do for patients, ultimately to maintain the flow that you've now established in the patient, you need some type of blood thinner. We've known that for ages. What we've never figured out, however, is how do you personalize the blood thinner that you give patients? If you and I both had a procedure, even though we're different in age and ethnicity and all the comorbidities, we are going to get the same medications, and this one-size-fits-all mentality doesn't work.

The medications may be perfect, but for me it might be too much and I might bleed, or it might be too little and I might clog. So what my lab does is use thromboelastography (TEG) and platelet mapping, which is a point-of-care coagulation test that can identify what that person's blood is doing at that time, and then actually tailor the medications that we need to give them to a particular threshold so we can ensure that their risk of clotting is decreased.

Initially, over the last couple of years, we spent time figuring out that threshold. What is the percentage of platelet function you need to hit to reduce your rate of thrombosis? We identified that to be 30%. If you inhibit platelets 30%, there seems to be an association with a decrease in thrombotic risk. The next part of the journey is, okay, we know that this is the magic number—how do we tailor medications in patients and then check that they're working so we can ensure they have a decreased risk? We introduced a new algorithm that we developed called the ACE algorithm that manipulates antiplatelet medication for a patient based on their TEG results, and we do that every month or so in the patient when they come to the hospital.

Thus far this year, our historical rate of thrombosis is about 20% in 6 months using the ACE algorithm, albeit in a small sample size of 26 patients. So far, we've managed to drop that thrombotic risk to 3.8%, which is a significant drop. Hopefully with more patients, we'll get to tease this out a bit better.

***What's the takeaway you wanted the audience to get from each of your presentations?***

The takeaway from my DVA presentation is that it's here to stay, and the more you can understand what you can do to make the procedure successful, the better your patients will be in terms of outcomes. For the coagulation presentation, the takeaway is that one size does not fit all. Antiplatelet anticoagulation never was the right thing to do and still is not the right thing to do. Maybe what we are doing right now will go through many iterations, but the idea of doing point-of-care viscoelastic testing and then being able to manipulate your medications personalizes and decreases thrombotic rates. It's certainly something to consider as we do more of this research and roll it out to the country. ■