# Mark J. Garcia, MD, MS, FSIR

This venous expert shares his insights on physician education for DVT management, compression syndromes, and his venous armamentarium wish list.

**What do you think is the best way to educate physicians in other specialties about chronic deep vein thrombosis (DVT) to encourage effective treatment?**

To this day, there is still a big debate as to whether patients should be treated. Until we can answer the question with level 1 evidence, it's going to be an issue for both acute and chronic DVT patients. Hopefully, ATTRACT will answer the question, whether acute DVT should be treated. At our center, we have certainly seen hundreds of patients benefit from treatment over the past 15 years.

Chronic DVT is a bit of a unique issue, because for decades, the mentality has been that if the clot didn't resolve and is now old, there is nothing, aside from conservative care with anticoagulation and compression, that can be done; the patient must live with it. That's the mindset we have to change. At the local level, treating physicians should be engaged in lecturing about treatment options at grand rounds and participate in community outreach programs in conjunction with the hospitals, to offer patients a free evaluation and let them know that something can be done. Physicians need to share their successes and show what can be accomplished.

We're about to embark on the first chronic DVT intervention trial (ACCESS DVT, sponsored by Ekos Corporation, a BTG International group company, Bothell, WA) on patients with documented chronic DVT, (ultrasound-confirmed for a minimum of 6 months) who have failed 3 months of conservative therapy (therapeutic anticoagulation and compression stockings) and continue to have postthrombotic sequelae. Patients who are enrolled for treatment will be followed to assess both the ability to restore venous flow as well as clinical improvement at defined intervals for up to 1 year. We will measure improvement in Villalta scoring to see if we've made a difference for these patients. If the results are indeed positive, as I would anticipate, these published outcomes can help change the medical community's mindset by showing that chronic DVT can safely and effectively be treated.

**What is your usual approach for treating venous chronic total occlusions (CTOs) below the inguinal ligament?**

First and foremost, I evaluate whether intervention would benefit the patient by looking at risk/benefit ratios. I then identify the disease extent—are the common femoral vein and profunda involved? Is the popliteal involved? If the popliteal is involved and there is no flow out of the calf, then my access will be from the tibial vein and possibly from the contralateral femoral access, going up and over.

Contralateral femoral access can allow you to get into the profunda to try and restore flow there as well. The key is to be able to restore inflow from the calf into the thigh and outflow from the thigh into the pelvis. If you can only establish one or the other, it won't be terribly helpful, and there will be risk of rethrombosis or reocclusion.

**When it comes to venous compression syndromes, what is your method for diagnosis and treatment?**

For patients with May-Thurner syndrome specifically, the initial Doppler study helps to determine if the abnormal waveform suggests an iliac compression or occlusion, if there is DVT present, and whether there is any thrombosis in the lower extremity, which will change the plan of attack.

For the compression syndrome itself, I will obtain either a CT or MR venography to noninvasively confirm the compression and to define the extent of central involvement. I use the same approach for nutcracker syndrome, which involves the renal vein. If the symptoms, exam, and imaging all concur, then we proceed with venography. If there is anything equivocal or if I have concerns regarding anatomy, I will use intravascular ultrasound to help confirm the diagnosis and measure the vein size, place a self-expanding nitinol stent after initial angioplasty, postdilating the stent to the appropriate size.

**What do you believe will be the future of managing patients with postthrombotic syndrome (PTS)?**

My first hope is that we as physicians better understand the effects of endovascular treatment for acute DVT and the ability to reduce PTS from early intervention. For patients suffering from significant postthrombotic sequelae despite conservative management, I hope the medical community will recognize what can be performed and refer those patients for an attempt at recanalizing the veins and reduce their symptomatology while improving their quality of life. We have to continue to push the envelope and develop devices and techniques to enhance the outcomes of our treatment, with greater attention to

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creating evidence-based results through trials.

The future will also demand physicians and industry to partner to develop medical devices that will help to more effectively treat chronic venous occlusions as well as develop posttreatment regimens to help keep the recanalized segment patent for the long term, perhaps with anticoagulation and/or antiplatelet regimens, drug-eluting balloons or drug-eluting, biodegradable stents. Today, I believe the future in treating chronic venous occlusions and PTS is very bright and wide open, and I am incredibly optimistic.

**What is on your device/medical armamentarium wish list for the venous segment?**

First, I think we need a support system that will give stability in helping us gain access across chronically occluded veins. Right now, we get across successfully the majority of time, but it can be a challenge. Once I get across, I need a device that can safely and effectively clean out the chronic organized thrombus, much like an endovenectomy, but through a percutaneous approach.

Venous-indicated stents will also be needed. The VIVO trial (Cook Medical, Bloomington, IN), which will study a dedicated venous stent, will hopefully be ready to go soon.

**You presented at VEITH 2013 on downgrading contraindications for venous clot removal in high-risk patients using the pharmacomechanical "rapid lysis" technique. Why do you believe these should be reduced? What data will it take to change the contraindications?**

There are patients who develop extensive DVT and are at risk for suffering from the PTS and a poor quality of life, because they are unable to undergo thrombolysis due to absolute contraindications to the lytic agent. Pharmacomechanical thrombolysis and particularly rapid lysis—a technique we devised in 1997—has allowed us to downgrade patients who had absolute contraindications to relative contraindications. We have been able to successfully perform pharmacomechanical thrombolysis in patients who are postsurgical, have immediate posttraumatic injuries, neurometastatic disease and glioblastomas who were all absolute contraindicated patients at high risk for bleeding with catheter-directed lytic therapy. Previously, those patients never would have received endovascular treatment for their acute DVT.

Unfortunately, these patients are suffering from their acute DVT, and the longer they have to go before they are cleared for lytic therapy, the more likely it is that their acute clot could become chronic clot, making it harder to treat and possibly result in more permanent damage. If we can successfully treat these patients earlier and safely remove the clot, then vein patency can be established, and valve function can hopefully be maintained.

As far as changing these absolute contraindications are concerned, I don't know that they will ever change, or should change, because standard lytic therapy should not be performed because of the bleeding risk. If we continue to develop techniques, however, that can minimize the need for catheter-directed lytic therapy, then we can expand that population to include patients who have real contraindications to catheter-directed lytic therapy. This is what we've been able to accomplish thus far with the rapid lysis technique.

**As the Chair of SIR's Venous Service Line, can you tell us a little bit about what attendees can expect to see in the course this year?**

This year's meeting will have continued education on venous disease from the initial evaluation to management of both acute and chronic DVT, as well as postthrombotic syndrome and wound care. The biggest change will be a greater opportunity for members to interact with the faculty and ask questions through newly designed workshops, as well as the "How I Do It" venous symposium, which will close the week-long meeting.

**You are an internationally recognized expert on venous therapy, but maintaining a thriving practice requires exposure on a more local level. What has helped your practice gain regional recognition and a steady referral base? How do you market your practice to the public and keep referring physicians aware of its capabilities?**

Early on, we gained regional and national recognition after we presented our technique for treating acute DVT, which we called *rapid lysis*. We initially performed the technique in 1998 and presented the data at the 2004 Society of Interventional Radiology (SIR) annual meeting. Locally, I presented at medical and surgical grand rounds as well as at community educational series. In addition, patients started searching online for DVT treatments and would find information on our treatment technique.

The real boost came in 2007 when we received SIR recognition with a national press release for our work. We saw many more patients coming from out of town after they searched the Internet for treatment options and saw the work we were doing. Because many patients were suffering from PTS, we started seeing more and more chronic patients, both locally and from out of town. That led to our chronic DVT outcomes registry that we presented at the 2012 SIR annual meeting, which again received a national press release. That really helped from the internet-based marketing standpoint, because people could now Google

"DVT treatments," and they would come up with Christiana Care and the work that we were doing.

In addition, a great opportunity for the chronic DVT work came when I was invited to be part of the VEITH Symposium faculty. The marketing from that meeting and the interactions with press enhanced our Internet presence once again.

Locally, early on, our physicians became aware of the successes we had with their patients, which led to a steady referral pattern. In summary, our success has been from the combination of our local work presenting at grand rounds and community series as well as the notoriety from presenting at the SIR and VEITH meetings and more recently the European interventional meeting, CIRSE, all of which help with our Internet presence and recognition.

Furthermore, patients from out of town have told me that they search treatment options and information through DVT forums, where patients discuss the doctors with whom they have had a successful course of treatment. The Internet has really changed the way patients interact with each other and gain further knowledge on treatment options and physicians who perform these procedures. Patients now become more involved with their care, and I think an educated patient is vital to enhancing the treatment of DVT. ■

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