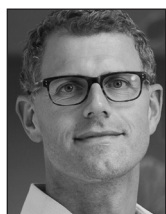


AN INTERVIEW WITH...

Rick de Graaf, MD, PhD

Dr. de Graaf discusses his approaches to treatment of deep venous obstruction and postthrombotic syndrome, current imaging modalities and technology for venous disease, and the benefits attending vascular congresses.



Which factors might lead you to select a surgical or hybrid approach to treat deep venous obstruction?

First, the endovascular technique has clearly surpassed surgical therapy as the primary treatment strategy.

Theoretically, one might still consider bypass surgery when all other procedures failed. However, taking into consideration the reason for failure (ie, lack of inflow), bypass surgery would be similarly unsuccessful. Consequently, this brings us to one of the major challenges in deep venous interventions: how to help patients with severe deep venous obstruction and no main outflow veins fit for stent placement.

A hybrid procedure with surgical desobstruction of the common femoral vein and its tributaries might be the only valuable option left. We strongly believe in placing an additional arteriovenous fistula to ensure stent patency in the vulnerable postoperative period. When there is insufficient potential inflow into the common femoral vein, even a hybrid procedure may not result in long-term success. We currently do not have a reliable treatment to offer these patients. Recently, Mark Garcia, MD, started groundbreaking research with a combination of percutaneous transluminal angioplasty (PTA) and overnight fibrinolysis. I'm really excited to see what this new technique might offer for that very difficult patient group.

In what ways does the pathophysiology of postthrombotic syndrome (PTS) affect your approach to treatment?

There's a specific time frame in the development of PTS during which endovascular treatment is either ineffective or undesirable. We believe this period lies between 3 weeks after initial deep vein thrombosis to 1 year after deep vein thrombosis. Routine thrombus-

eradicating techniques rarely work sufficiently on this "old thrombus." Moreover, the natural compensatory mechanisms of the human body might be adequate enough for patients to avoid development of significant complications, and therefore, they don't require treatment at all.

I refrain from using anything other than PTA and bare-metal stenting at the moment. However, among physicians, I have increasingly observed the application of unsupported novel techniques (eg, cutting balloons or drug-eluting balloons). Macroscopic evaluation of postthrombotic material during endophlebectomy in relation to the features of a cutting balloon makes its deployment in PTS superfluous. Usage of drug-eluting balloons suggests intimal hyperplasia playing a significant part in in-stent restenosis, probably due to assumptions made in some publications and presentations. However, to the best of my knowledge, there is no proof for substantial intimal hyperplasia after stenting for PTS. Animal models of PTS are currently lacking, and the response of a healthy vein wall to stent implantation cannot be translated to the response in a postthrombotic vein. Not following the natural evolution from basic research to clinical application might be a detrimental mistake in the relatively young field of deep venous endovascular therapy.

Is there any tool that you use in your daily practice that is available to you in Europe that you are excited for the world to have access to in the future?

I'm not sure, actually. Relatively new technologies such as laser atherectomy and optical coherence tomography guidance for recanalization of peripheral arterial occlusions are also available in the United States. The only thing I would say is dedicated venous stents, although most will be available shortly after the comple-

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tion of US Food and Drug Administration–approved studies. Some products from smaller companies might be beneficial, but I would like to see clinical data before I suggest that they are superior and recommend them over any other dedicated venous stents.

What specific actions should physicians take after they first diagnose a collateral vein in the abdominal wall or pubic bone? What additional steps should be taken to identify a deep venous obstruction?

We found that a collateral vein in the abdominal wall is pathognomonic for deep venous obstruction. Subsequently, we like to perform magnetic resonance venography (MRV) to identify the extent of the disease and plan our procedure. I think MRV is superior to CT venography for identifying those small but significant trabeculations in the common femoral vein that dictate either an endovascular or hybrid procedure. If MRV is unavailable, as in many centers, intravascular ultrasound (IVUS) is mandatory to evaluate the quality of the vein segments.

What information does IVUS supply that makes it a better option than plain angiography, specifically in the setting of central venous obstructions in hemodialysis patients? Should physicians forego angiography in favor of IVUS in any cases, or are they best used in a combination approach?

I think that central venous obstructions are not that much different from chronic iliac vein obstructions in which IVUS has established itself. Usually, angiography performed immediately after PTA shows brisk flow and adequate vein diameter. In contrast, IVUS might show significant recoil and intraluminal trabeculations depending on the pathophysiology. Therefore, IVUS should always be used while treating lesions between the cephalic arch and the right atrium, because you simply do not know what you are missing using angiography alone. The rest of the hemodialysis access can easily be evaluated with duplex ultrasonography, and therefore, the cost might be more of a consideration.

In your experience with using dedicated venous stents for symptomatic chronic venous obstruction, what do the current iterations offer, and what improvements are still needed?

Dedicated venous stents offer a lot to physicians, which in turn might be beneficial for the patient.

Accurate deployment and stent geometry might help in not obstructing the contralateral common iliac vein or important tributaries at the level of the common femoral vein. Furthermore, a dedicated venous stent should have the optimal ratio between flexibility and radial force/crush resistance. With currently available techniques, I think the stent industry comes pretty close to the best achievable design. Probably the “hybrid design” with extreme crush resistance at the high-compression spots, and flexibility throughout the rest of the stent is next to come. After a PTS model is established, I will be very interested to see if we can restore a postthrombotic vein to its original characteristics by temporarily supporting the vein wall. Theoretically, this might open the door for bioresorbable stents.

What do you believe are the greatest benefits of traveling to modern vascular congresses? Which elements should be modified or replaced with those that might be more worthwhile?

The diversity. Currently, there are many different conferences that practice interesting concepts. For example, the annual European Vascular Course (EVC) in Maastricht places a strong emphasis on comprehensive learning and education. Master classes, workshops, and case discussions in small groups provide ample opportunity to interact with experts from the arterial, venous, and vascular access fields. At the VEITHsymposium, you’ll find unmatched exposure to the newest vascular medicine through fast-paced presentations, a most efficient way to gain up-to-date knowledge. LINC is fulfilling another unmet need. Several live cases show the current practice of experts in the vascular field. Novice physicians can learn from the relatively routine procedures, while complicated cases demonstrate the many tips and tricks you’ll find helpful to reach successful results in your practice. Finally, CIRSE gives you an overview in evidence-based vascular medicine, with a focus on guidelines and standard of practice in interventional radiology.

Naturally, there are many other high-quality vascular conferences throughout the world, but my point is that physicians can decide how best to fill any possible gaps in their knowledge. Nevertheless, going to all these conferences requires quite a bit of time, time that is usually scarce among physicians. Therefore, I applaud web-based initiatives like Incathlab that share live cases and expert discussions online, so you can have the experience from your home or directly discuss it at work with your colleagues.

Something I would give much more attention to is simulation. The current models are extremely realistic and should be an integral part of vascular training. In fact, I would recommend experiencing a full training session on a simulator before you start to learn the real deal on a patient. Sadly, however, there's still no deep venous program available.

Do you have any ongoing projects or endeavors outside of the field of vascular therapy?

Well, vascular therapy is a huge part of my life that demands a lot of my time. Apart from that, golf has been a passion of mine for a long time. Sadly, playing at a decent level requires significant time as well. Still, I do have time to combine golf with another passion of mine, which is innovation and development. Both endovascular therapy and the golf industry are moving fast in the sense that evolving techniques play a huge part. In both fields, I am interested to see my ideas mature and touch the different communities in a positive way.

If you had a sibling interested in training in the vascular field, what advice would you most emphatically offer?

First of all, do what you love, and do it with the greatest of passion and dedication. When you do that, I believe there is no chance you will not achieve your goals. Specifically in (endo)vascular medicine, there are different routes to become an interventionist. In Europe, you can go through angiology, vascular surgery, or interventional radiology, and every specialty training has something unique to offer. Probably, and hopefully, vascular medicine will be concentrated in dedicated centers in the future, where skills count more than heritage, and patients will benefit from a highly specialized multidisciplinary team. ■

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