ROB MCBANE: Hi, I'm Rob McBane from the vascular center at Mayo Clinic in Rochester, and today we have the pleasure of talking with my esteemed guests on the topic of venous disease. To my far right, we have Dr. Tom Rooke, next to him is Dr. Haraldur Bjarnason, and then Dr. Jeremy Friese, and today we're going to be talking about venous disease from the very beginning to the very complicated areas. So, welcome to each of you and thank you for participating. So we'll begin with Dr. Rooke and I would like to enter the discussion regarding varicose veins, a very common problem in our country. Doctor, how common of a problem is varicose veins in the United States and in the world?

TOM ROOKE: Very common. it's probably fair to say that varicose veins are normal, rather than the state of not having varicose veins. There's information, comes out of Scotland, suggesting that, if you're willing to count little Telangiectasias and spider veins, that as many as 80%, 85% of all people will have some type of varicose vein. In this country, I like to just throw out a number of 50% of people over 50 having varicose veins, so I think that's a good number to keep in your head.

ROB MCBANE: So a wonderful bit of information, it's common, it's maybe normal. What seems to bring patients to clinical attention with varicose veins? What types of problems would they be experiencing that would bring them to your office?

TOM ROOKE: Well, probably not surprisingly, the cosmetic concern becomes the biggest one, but there's a lot more to varicose veins than just the fact that they don't look good. I'd say that the second biggest thing that we see is pain. Patients will complain about discomfort, leg aching, tenderness in the region of their biggest varicose veins. Other things that we see, we see swelling as a common side effect of them, we hear about leg heaviness and generalized discomfort.

ROB MCBANE: What causes varicose veins?

TOM ROOKE: We used to think of sort of traditional causes for varicose veins as being the big ones. People would tell you, oh, it's due to too much standing, my job causes me to have to stand all day and that's why I got them. And that probably does play a role. We know that things like pregnancy play a role in developing them. We kind of have a standing joke that the varicose veins are hereditary-- you get them from your children, because they can come up so much with pregnancy. And of course injury and, you know, damage to the veins, either from clotting, phlebitis, or some kind of external trauma causes it. But nowadays, it's becoming really clear that a lot of what we see with varicose veins are being caused by genetic factors and we're now able to identify a number of these things, ranging from the metalloproteases all the way across some of the growth factors. And curiously, the same factors that seem to promote the development of varicose veins also promote the development of arteries and lymphatics, so it's becoming clear, and we're actually doing some work in this here at Mayo, that people who are prone to make varicose veins may also be good at making collateral arteries and collateral lymphatics when they need it.

ROB MCBANE: Well, that's fascinating. Tom, so tell me, I remember years ago when I first began that the common treatment would have been to send these patients with varicose veins, particularly of large veins, for surgical stripping. Is that is that needed anymore? Do we do we still send patients for varicose vein stripping, or do we have alternative options currently? And how do you approach that? Give us your general approach to patients with varicose vein therapy.

TOM ROOKE: Well, it's a very fair question. We still strip veins, but the numbers of them have been just plummeting in recent years. And the reason is because we've found less invasive alternative ways to treat these veins. Now, when we strip them, it's usually because a patient wants to be treated at Mayo and lives far from Mayo, so we need to do things in a one shot attempt here. The curious thing is that we can now treat these veins much less invasively than, say, your grandmother's vein stripping operation was. So when we do have to strip them, we're able to do it with ambulatory procedures, they can come in as an outpatient, get an ambulatory phlebectomy, we call it, with some very minimal incisions, and go right home. While that's still necessary in a few situations, the whole landscape has changed greatly with some of the new procedures that are available and the biggest breakthrough has been the advent of catheter-based therapy for treating, primarily saphenous veins, but also some of the other veins. And luckily I've got two of the colleagues that I turn to most often for treatment of this with catheter-based therapies, but using laser catheters or radio frequency catheters, we can now burn the large veins shut from within and get rid of them that way. The area that I tend to work in involves the use of a technique called sclerotherapy where I inject a material into the vein that will induce inflammation and destroy it, and this has now become the new gold standard for smaller veins. So, to answer the second part of your question, how do we decide, I think we use things like stripping when patients need to be done at Mayo and they can't make two or three or four visits back. But if you're a patient who lives in the Rochester area and can come on in, a combination of using, say, a catheter-based technique to get rid of the larger veins, and following that with two or three, sometimes more, sessions of sclerotherapy to get rid of the smaller veins seems to be more effective and is certainly more embraced by the patient population than the traditional stripping route.

ROB MCBANE: Very good, thank you very much, Tom. Since you bring up the issue of catheter-based, therapy might I ask some of our interventional colleagues about the catheter-based approach for great saphenous vein imcompetence. Jeremy, maybe I could ask you. Tell us about the procedure, tell us about the indications, and perhaps some of the things that you look for in a patient who might benefit from that type of therapy.

JEREMY FRIESE: Sure, so like Tom said, catheter-based ablation has really overtaken many of the patients that we previously would have treated with stripping, but you could even, I think probably, need to define what stripping is a little further and we do use stripping a fair bit, especially for folks that have focalized pain over a variety of specific varicosities. So it's usually done in conjunction with a catheter-based ablation, and so the sort of key criteria, at least that we use, for catheter-based ablation are patients that have, in general, significant symptoms or large bulging varicosities and have an insufficiency ultrasound that shows significant insufficiency, at least in multiple segments throughout the great saphenous vein, usually beginning at the saphenofemoral junction and extending in some aspects of the thigh and calf. The procedure is an outpatient procedure, and the reason that patients love it is they really are able to get back to much of their standard activities, daily living, even the same day as the procedure. So it's an outpatient procedure, done with conscious sedation, so no general anesthesia, and no incisions. So a small needle access into the great saphenous vein or some of the other veins that we treat. Our approach is generally to try to access below the level of the lowest incompetence and so if that's in the thigh or even down in the calf, we'll routinely do that. And with the catheter options today, we now have access to longer catheters for tall folks as well as people that need treatment down in the calf.

ROB MCBANE: So a very successful technique.

JEREMY FRIESE: So technically, it's a successful between 98 and 99 plus percent of the time. At least in our experience, I think generally the folks where we're not technically able to close them are oftentimes patients that are on anti-coagulation at the time of the ablation. So technically, very successful and frankly, clinically also very successful. We know that certainly well upwards of greater than 90% of folks have significant clinical improvement, or sometimes even resolution, of their symptoms.

ROB MCBANE: Very good, that's exciting. So now I want to move from varicose veins to venous thrombosis, and specifically we have experts in catheter-associated thrombolysis and mechanical thrombectomy, and I'm going to turn the mic back to Tom, though, and I want to ask Tom, if you have a patient with an extensive DVT, what types of variables do you consider when contacting one of our interventional colleagues? How extensive of a clot and/or where would the clot be in order to contact our team for more invasive therapies?

TOM ROOKE: Those are actually the two biggest criteria that we use when we try to make the decision of whether to lyse a clot or treat it conventionally: What's the extent of the clot and where is it located? And we're still working some of these things out. I mean, there are trials going on as we speak trying to answer both of these questions. In general, in my practice, I'm more inclined to lyse clots when they're more proximal and when they're more extensive, those are sort of the major guidelines. The things that complicate this, though, or other factors you have to take into consideration, are the age and functionality of the patient. We're more likely, I think, to lyse young people rather than old people, the activity levels of the patient, the age of the clot, you know, how far out are you catching it, how well you think the patient is going to tolerate conventional treatment or the more aggressive treatment. All of these things become big factors. Are there other complicating underlying factors like cancer or injury, the bleeding risk. So it's really a very difficult and complex decision, but I think proximal extent of the clot, symptomatology being produced by the clot, and the extent of the clot are the three big ones for me.

ROB MCBANE: Very good. I'd like to ask Dr. Bjarnason, you have an extensive experience, both of you have an extensive experience, of actually doing mechanical thrombectomy and thrombolysis. Tell us about the ideal patient.

HARALDUR BJARNASON: The ideal patient, as Tom actually mentioned, is the young patient with the central or iliac vein or inferior vena cava thrombosis. Those would be the type of patients that you generally would say that would benefit from the treatment. There are people that would say that femoral vein thrombosis might also be an indication, but the generally accepted indication is a younger person with a thrombosis that includes the iliac vein, the femoral vein, and the inferior vena cava.

ROB MCBANE: Very good. Tell us, Dr. Friese when you are seeing a patient who you're contemplating thrombolysis, what types of bleeding rates do you quote them as a bleeding complication.

JEREMY FRIESE: So, it depends on what their underlying history is, right. I mean, if they're an otherwise healthy person, no cancer, no previous surgeries, none of these other sort of relative contraindications, significant risk of major bleed is going to be in the 1% or 2% range and the risk of moderate or minor bleed is going be in the 10% range.

ROB MCBANE: I'm going to turn it back to Dr. Bjarnason. Are there any patients who are absolute contraindications to this type of procedure, or are there patients who you counsel to maybe step back and do the more conservative anti-coagulation route, as Dr. Rooke mentioned?

HARALDUR BJARNASON: This is something we are faced with all the time, and you have to weigh that cost benefit ratio. The best patient is obviously is the young patient that shows up with this as the only symptom and has not had any other illness before. Then you get patients that have cancer, or they may even have brain metastases, also relative to absolute indicators. Some people would consider a patient with brain metastases or a primary cancer in the brain to be an obstacle contraindication. Most of the other contraindications are self-explanatory: a patient with active bleeding from the GI tract or trauma, recent trauma, you would seriously consider not to do a procedure or perform a procedure on a patient like this. So we don't have many absolute contraindications, those would be mainly the patients that actually have ongoing bleeding. The other ones are in the gray zone and you have to judge the benefits versus the risk on an individualized basis.

ROB MCBANE: And so there are some patients who have a contraindication to thrombolysis, in fact, could even have a contraindication to anti-coagulation, and on the flip side of that, are the patients who potentially could be managed more conservatively without an intervention. One of the things that have come to light in recent years is our use of vena caval filters and I would like Dr. Friese to comment upon that, because Dr. Friese, Dr. Bjarnason, and colleagues are putting these filters in, and I would like you to comment about appropriate use of an IVC filter.

JEREMY FRIESE: So that that's actually a really tough question. Utilization in the United States is quite different than, oftentimes, the rest of the world, and so, if you look over the last 10 years in the United States, the numbers are really 10% increase year over year. And, in fact, at Mayo last year, we put in as many filters as the entire country of Spain, so there's clearly a very different utilization. The reasons that we absolutely think patients benefit are patients that cannot be anti-coagulated or patients that have failed anti-coagulation, so they get a DVT despite being anti-coagulated. Beyond that, there's a whole lot of gray zone, and so in the perioperative procedure in patients where we're doing thrombolysis, some people will choose to not to, our general approach is we don't. But it's a tough question.

ROB MCBANE: Dr. Bjarnason, a temporary filter or a retrievable filter compared to a permanent filter? Is that is also a tough decision making?

HARALDUR BJARNASON: In my mind, it is not an important decision, because most of the filters that we have are called optional filters, or filters this can be used as a permanent filter. It binds people's hands if you place a permanent filter and you don't have to consider removing it. On the other hand, I think there are other benefits to just placing those optional filters, it has practical yield and it's probably just as effective. So I would say that most patients should have an optional filter placed, and then, just based on the clinical situation, a decision is made if it should be attempted to be removed or not.

ROB MCBANE: And of note to the audience, we have a specific program that engages these optional filters, so that we don't lose track of those patients. So that if their filter needs to come out, our colleagues in vascular radiology have made a concerted effort to proactively contact these individuals so that that decision is not left unanswered and that those patients are taken care of appropriately. So, very good. I want to thank each and every one of you, Dr. Rooke, Dr. Bjarnason, Dr. Friese for an outstanding discussion regarding venous disease. We could go on and on, there's lots to talk about. This is a really exciting field and I would like to thank each and every one of you for discussing today. We hope that you will continue to check out future content of Mayo Clinic's page on heart.org. I thank you, as the viewing audience, for your time and attention to this interesting topic. Thank you very much.

JEREMY FRIESE: Thank you.

TOM ROOKE: Thank you.

HARALDUR BJARNASON: Thank you.