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New Treatment Methods in Phlebology



By Robert C. Kiser, DO, MSPH

Phlebology is a rapidly advancing branch of medicine. It has been just over 10 years that thermal closure techniques such as radiofrequency and laser ablation were invented, and now they are the standard of care for ablation of superficial venous insufficiency. Thermal closure is extremely effective and safe. It is far less time consuming and has much less down time and associated expense compared with ligation and stripping.

Thermal closure has much more reproducible results and is also much more consistently effective in the long term as compared to sclerotherapy alone. However,

endovenous thermal closure does have its own requirements, such as disposable catheters, laser fibers, and because it uses heat within the vein it requires the use of tumescent anesthesia around the vein to act as a heat-sink. For the phlebologist, requirements add expense and time to the procedure. For the patient, the more that the body is penetrated with needles, infused with fluids, or otherwise invaded, the less comfortable the procedure.

Newer phlebology treatments focus on providing highly effective treatment methods (>90% success over multiple years) with less bodily invasion, less time and fewer or equal risks.¹

SUPERGLUING VEINS: SAPHEON

Cyanoacrylate has been used in medicine for many years, primarily to close skin wounds. It also has been used to close arterio-venous malformations,

incompetent ovarian veins and duodenal varicose veins.² Cyanoacrylate for saphenous vein closure is not yet available in the United States, although phase



Disposable catheter inserted into vein

Vein warmed and collapses

Catheter withdrawn, closing vein

3 trials are underway in the US and the UK. The technique is as follows: a long glue-installation catheter is placed within the vein, much as one would place a thermal catheter. Glue is injected under ultrasound-guidance, starting at 5cm from the saphenofemoral junction. The ultrasound probe compresses the glued vein for 3 minutes. The remaining length of incompetent vein is then glued in a proximal to distal fashion. The effect is a

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VENOUS Review

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Understanding Post Thrombotic Syndrome



By Gautam Shrikhande, MD

In patients with deep venous thrombosis (DVT), the most significant immediate concern is that of pulmonary embolus. Over the next several months to years, however, development of post thrombotic syndrome (PTS) presents a much more prevalent chronic morbidity. PTS refers to the signs and symptoms that occur as long term consequences of DVT. PTS can affect up to 23-60% of patients in the two years following DVT, and up to 10% of these patients may go on to have ulceration.¹ The most significant long term sequelae of PTS are a significant loss of quality of life and limitations in the abilities to perform daily activities.² Signs and symptoms in the leg include swelling, heaviness, aching, cramping, varicose veins, skin discoloration, and ulceration. The inflammatory response secondary to the thrombus as well as the physical pressure from the thrombus is thought to lead to venous valvular disruption and incompetence.³ This valvular incompetence, combined with persistent venous obstruction from the thrombus,

increases the pressure in the veins and leads to a state of venous hypertension. Risk factors for the development of PTS include proximal DVT, recurrent ipsilateral DVT, persistent DVT symptoms one month after DVT diagnosis, obesity, and inadequate anticoagulation during the first 3 months of DVT treatment.



Venographic image (pre-treatment) representing a right external iliac vein narrowing due to chronic DVT which has resulted in venous outflow obstruction and post-thrombotic syndrome (PTS).

Images courtesy of Center for Vascular Medicine

The most important initial step in the evaluation of PTS after obtaining a history of DVT is obtaining a venous duplex ultrasound. The key features of this evaluation include the degree of recanalization of the deep venous system, the location of the obstruction (proximal or distal), and the presence of both deep and superficial venous insufficiency.

Initial, conservative treatment options for PTS include appropriate anticoagulation for DVT, leg elevation, weight loss in overweight patients, and the use of elastic compression stockings for up to 2 years post DVT.⁴ In patients with ulceration development, appropriate wound care and compression bandages are indicated. Also, in some patients, venous ablation in patients with significant superficial venous reflux may provide symptomatic relief.

In addition, from the American College of Chest Physician Evidence-Based Clinical Practice Guidelines in 2012, there is evidence to suggest that catheter directed thrombolysis (CDT) in the setting of acute DVT may reduce PTS and improve quality of life without being associated with an unacceptable increase in bleeding. The patients who experience the best results are those who have iliofemoral DVT for less than 14 days.⁵ CDT involves taking the patient to an angiography suite and infusing thrombolytic therapy, typically tissue plasminogen activator (TPA), directly into the thrombus. The dissolution of thrombus can prevent the subsequent inflammation of obstruction which occurs secondary to the thrombus and can preserve long term deep venous function.

Lastly, in patients with established PTS, some have shown that venous balloon dilation and stent therapy can be effective treatments for chronic iliofemoral thrombosis.⁶ With this minimally invasive approach which can be safely and



Venographic image (post-treatment) representing a stent placed in the right external iliac vein to relieve the venous outflow obstruction and decompress the post-thrombotic syndrome (PTS)

easily accomplished in an angiography suite, patients with PTS can get quick symptomatic relief with minimal morbidity and good patency of the venous system after stenting. We have had several patients with ulcerations in the setting of PTS who have gone onto complete resolution of this pathology.

In summary, PTS can be a significant source of morbidity

in patient with DVT, however with the proper evaluation and treatment selection by a venous specialist, PTS can be either prevented or treated to provide patients with an excellent quality of life.

Footnotes:

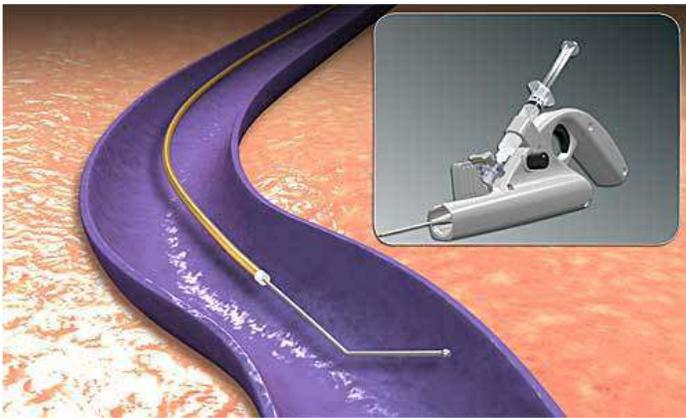
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New Treatment Methods in Phlebology

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sort of “spot welding” of the vein. The cyanoacrylate causes an acute inflammatory reaction, at the endothelium, that results in fibrotic closure of the vein.

I had the good fortune to speak with Tristan Lane, surgeon and clinical research fellow at the Imperial College, London. Mr. Lane has had the experience of performing more than 100 of these procedures during phase 3 trials. He states he has seen no embolization of glue, no skin pigmentation, no DVT or PE. He did report one case of asymptomatic thrombus extension, which did not recur after changing the starting placement from 3cm to 5cm from the SFJ. A similar threadlike thrombus extension was noted after Jose Almeida’s series of 38 patients which also resolved spontaneously and asymptotically.³



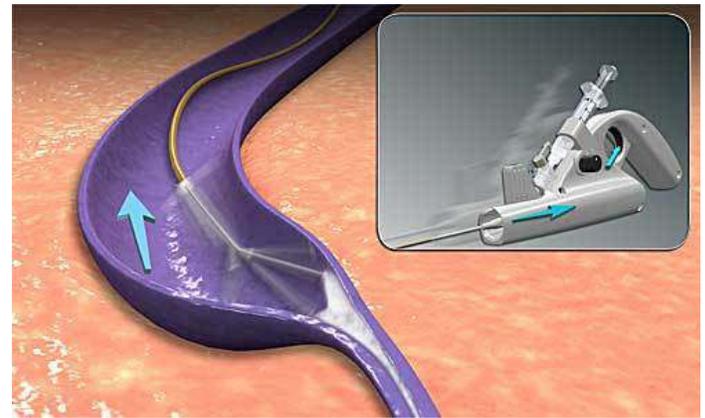
In Clarivein’s sclerotherapy treatment, a motorized agitator, positioned below the saphenofemoral junction, oscillates to traumatize the endothelium, causing the vein to spasm.

The major difficulties to consider when using cyanoacrylate intravascularly are the control of viscosity and curing time. If the mixture is not viscous enough, or takes too long to cure, then the glue can migrate to unwanted areas. If the glue cures too quickly then the delivery catheter can become adhered to the vessel walls. The delivery system includes an especially mixed, proprietary blend of cyanoacrylate with additives that affect polymerization. The glue, along with the delivery catheter, is made and distributed in a disposable kit by Sapheon, Inc. The entire process is carried out through a single incision, with no tumescent, only a single dot of anesthesia, and no machinery required save for the ultrasound machine. Post-operative care does not mandate compression for this technique.

A NEW TWIST ON AN OLD THERAPY: CLARIVEIN SCLEROTHERAPY

Sclerotherapy for varicose veins has been around for several hundred years. The method has been refined and evolved by many individuals and “schools” of sclerotherapeutic technique. Currently the most widely used and FDA-approved sclerosants are sodium tetradecyl sulfate and polidocanol. These being detergent sclerosants, they are frequently used as a foamed preparation to displace intraluminal blood and increase contact time with the vein wall, thus improving fibrous closure and reducing the amount of retained blood. In the best of hands, sclerotherapy can produce excellent results that yield short and

even long-term closure. However, the percentage of veins that reopen some years after sclerotherapy is estimated to be as high as 40% in some studies.⁴ This is likely due to varying techniques, which can lead to inadequate destruction of endothelium and subsequent, inadequate fibrotic closure. Clarivein uses both chemical sclerosant (generally sodium tetradecyl sulfate in the United States) and mechanical agitation of the vein wall. The device is inserted into the vein to be treated (great or small saphenous vein or other straight vein), and positioned below the saphenofemoral junction. The catheter has a thin stainless steel mechanical agitator that runs the length of the catheter to a motor at the hub. An infusion port connects to the lumen surrounding the agitator, and allows the instillation of a sclerosant. Once the agitator is deployed and the motor engaged, the agitator oscillates at 3,500 repetitions per



At the same time, infused sclerosant travels to the traumatized endothelium, allowing for more effective sclerosis of the vein and more robust fibrosis of the lumen.

minute in a to-fro motion. This traumatizes the endothelium and causes the vein to spasm. At the same time, the infused sclerosant travels to the tip of the agitator, contacting the traumatized endothelium. This allows for more effective sclerosis of the vein and more robust fibrosis of the lumen.⁵

Because no heat is used, no tumescent anesthesia is needed. Once again, the entire procedure can be done through one small incision, requiring only a dot of anesthesia. Compression is recommended after the procedure, using either compression stocking or bandaging. This is because, unlike the glue method, sclerotherapy does not obstruct the proximal point of reflux, but rather induces an immediate spasm, which then relaxes and allows the admittance of blood into the lumen. Compression is used to reduce the amount of retained blood, which improves the ability of the vein lumen to fibrose and eventually become a fibrous cord.⁶

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Q & A

In each issue of the Venous Review, members of our medical team answer questions we've received from referring physicians.

This issue's guest Q & A Editors are John Pietropaoli, MD, FACS and Luis Dibos, MD, FACS.

Dr. Pietropaoli



Dr. Dibos

Q: "What happens if the patient is having a bypass and they need the Great Saphenous vein?"

A: Generally, if the Great Saphenous Vein (GSV) is diseased enough that ablation is recommended, then the vein is not suitable for any type of use in a bypass surgery setting—either peripheral arterial bypass or coronary artery bypass grafting (CABG). In this setting, the rendering surgeon will select a different vein, or use an arterial conduit. Rarely, he may choose to use a cadaver vein.



Q: "How do you do a CABG without the Great Saphenous Vein?"

A: There are multiple additional options for bypass grafting. Qualified cardiac surgeons can perform coronary bypass grafting (CABG) surgery without the need for the Great Saphenous. Either other veins, or even other arteries, and sometimes artificial or cadaver grafts can be used. A diseased and dilated Great Saphenous Vein would never be used on the heart. This concern should not be a reason to avoid treating your leg veins, if symptoms are present.

Q: "What medical history issues will exclude a patient from being considered for vein ablation (i.e., clotting issues, etc)?"

A: Each patient's individual situation is different. At CVR we take the entire medical history of every patient into account before we make a recommendation for treatment. Cardiac (heart) and pulmonary (lungs) history is very significant as well as other risk factors such as diabetes, hypertension, clotting history, lipid (cholesterol) profile, etc. All of these factors and more will be reviewed with each patient before a recommendation for ablation is made. There are very few factors that, in and of themselves, will exclude a patient from being a candidate for venous ablation techniques.



Q: "What is the success rate of the RF and Endovenous Laser treatments at CVR?"

A: We follow all of our patients for at least one year following their last venous intervention with us. The rate of venous closure in our facilities at a 1 year follow up is well over 90%.

Q: "How many cases of venous ulcers has CVR encountered? And how many of those ulcers were successfully treated?"

A: Venous stasis ulceration indicates is a very advanced stage of venous reflux disease. We care for many patients with this stage of venous insufficiency. Ideally we would recommend treating patients long before their venous reflux issues result in this advanced level of problems.

Venous reflux ulceration has to be treated on a case-by-case basis and, again, is individualized to the specific patient and the specific ulcer. These treatments are usually taking place over a period of time and throughout several phases and in order to heal the ulcer and prevent recurrence. Our success rate with these objectives for venous stasis ulceration is very high.

Q: "Do patients need to stop taking medications before having this procedure?"

A: At CVR, we review our patients' entire medical history, including a comprehensive review and analysis of all medications that are currently being taken or that have been taken in the past. As well, we review any medications or substances to which our patients may have had an allergic reaction in the past.



Depending on the medication, the dosage and the reason it is being taken, certain medicines may be temporarily discontinued prior to a procedure. Most medications, however, can be continued through the course of the treatment pathway.

DO YOU HAVE CLINICAL QUESTIONS FOR OUR TEAM? PLEASE LET US KNOW. SUBMIT THEM TO MANAGING EDITOR [KATHLEEN.HART@CENTERFORVEIN.COM](mailto:kathleen.hart@centerforvein.com).

CME COURSES & EVENTS

We are pleased to announce more CME sessions for 2013 on venous insufficiency. Each course is valued at 3 CME credits. Details are below; to learn more or to request a CME in a region we serve, please contact Brent Matherly at 443-370-3830 or 301-860-0930 and at brent.matherly@centerforvein.com.

Chronic Venous Insufficiency

3.0 Category One CME Credits

It's a problem affecting 30+ million adults, including patients in your practice: chronic venous insufficiency, the often undiagnosed medical condition behind varicose veins and spider veins (telangiectasia). Venous insufficiency affects a broad range of people. Common causes include heredity, age, sex, weight, history of DVT, pregnancy, inactivity and prolonged sitting or standing. Certain groups, such as expectant moms, have extra difficulty – studies show that varicose veins get worse with each subsequent pregnancy. In this informative and relevant 3-hour session, our physician presenters will describe causes, symptoms, diagnosis and treatment of venous insufficiency. Participants will learn about the staging/classification of

venous insufficiency, how duplex ultrasonography is used to evaluate patients and how modern, outpatient treatments including radiofrequency and laser ablation, and foam and cosmetic sclerotherapy can make addressing varicose and spider veins quick and relatively painless so your patients can return to normal activity with short recovery times.

UPCOMING COURSES IN SEPTEMBER

SEPTEMBER 19 – WHITE PLAINS, NY

(Location to be announced)

SEPTEMBER 26 – PORTAGE, MI

(Location to be announced)

SEPTEMBER 26 – ALEXANDRIA, VA

(Location to be announced)

FOR MORE INFORMATION ON THE ABOVE DATES, PLEASE CONTACT BRENT MATHERLY AT 443-370-3830 OR 301-860-0930 AND AT [BRENT.MATHERLY@CENTERFORVEIN.COM](mailto:brent.matherly@centerforvein.com)

Community Outreach: Free Workshops in our LegsWork Program

We're proud to announce our community outreach program, LegsWork, in which our talented vascular technicians give free vein health workshops to local residents. Events are now being held in Maryland, Northern Virginia and New York (Scarsdale area).

Launched in January, we've conducted more than 40 workshops so far. Our goal is to educate people who are at higher risk for venous insufficiency – particularly those over the age of 50 and individuals whose professions require prolonged standing, such as school employees, retail workers, etc. Locations have included school system offices and senior centers.

Each interactive session includes an instructive presentation, question and answer session, a vascular ultrasound demonstration using an audience member, and a display of newer-style compression stockings. Reaction to the events have

been positive, with the most positive feedback coming from the lower leg ultrasound demonstration; about 80% of those who had an ultrasound were positive for venous insufficiency.

Several participants expressed surprise that symptoms they've experienced, such as leg cramps or restless legs, were actually related to venous insufficiency. Said one, "I have had this type of issue for many years; now I know what may really be going on with my legs."

"I thought that my heavy and aching legs were just a sign of me getting older but I am glad there is a place I can go to help me feel better," said another.

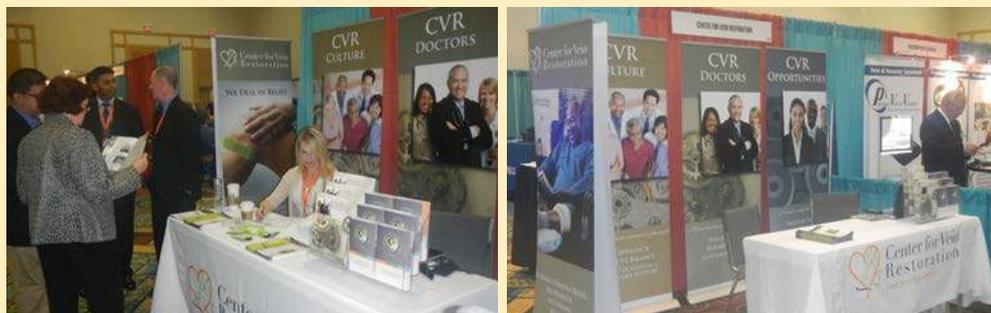
Watch our website for news of upcoming LegsWork workshops in your area. To request a session, please contact Robert Howell, Director of the LegsWork Community Outreach Program, at bob.howell@centerforvein.com



CME CONFERENCES

MARYLAND ACADEMY OF FAMILY PHYSICIANS' ANNUAL CME ASSEMBLY OCEAN CITY, MARYLAND • JUNE 27TH-29TH

CVR Physician Liaisons and Doctors will be on hand to create awareness of venous insufficiency amongst family practitioners, and to promote CVR as the leader in its treatment at the Maryland Academy of Family Physicians' Annual CME Assembly in Ocean City, MD at the Clarion Fontainebleau Resort Hotel. For more info: <http://mdafp.org/>



Meet Drs. Nguyen, Hong & Ahuja

CVR is proud to welcome three talented physicians to our team: Michelle Nguyen, MD, Lina Hong, MD, and Sameer Ahuja, MD.



Dr. Nguyen is Board Certified in OB/GYN and is an Assistant Clinical Professor at Georgetown University/Medstar. She was named a Top Doctor in *Washingtonian Magazine*.

She also is a member of the American College of Obstetricians and Gynecologists, the Medical Society of Northern Virginia and the Arlington Medical Society. She has specialized training in treatment of varicose veins and venous insufficiency.

Dr. Hong is Board Certified in Emergency Medicine and Medical Examination. She is an Assistant Clinical Professor in Emergency Medicine, Georgetown University Medical Center and is an attending emergency physician, Holy Cross Hospital, Silver Spring, MD.



Her certifications include: Maryland EMS MIEMSS Base Station, Holy Cross Hospital Stroke Center, Pediatric Advanced Life Support, and Advanced Cardiac Life Support (also instructor). Additionally, she is a former stadium and event physician (via Thomas Jefferson University Hospital) for the Philadelphia Eagles and the Philadelphia Marathon.



Dr. Ahuja is Board Certified in Cardiovascular Disease, Interventional Cardiology, Nuclear Cardiology, Echocardiography, and Vascular ultrasound interpretation (RVPI/ARDMS). He is in private practice in General and Interventional Cardiology in Rockville and Riverdale, MD and has privileges at

Washington Hospital Center, Washington Adventist Hospital, and Prince George's Hospital Center.

He is a Former Fellow in interventional cardiology, cardiology and cardiomyopathy at Banner Good Samaritan Medical Center (Phoenix, AZ), University of Medicine and Dentistry of New Jersey, and Boston University Medical Center.

2nd New York Location to Open in July

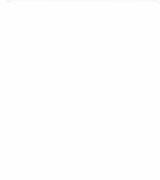
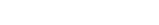
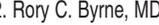
We're proud to announce that our second New York clinic is set to open in July in White Plains; the clinic is now accepting referrals for July and after. Our first New York Clinic, in Scarsdale, opened in April and is currently seeing patients.

As with all our locations, the White Plains clinic is opening under the supervision of our senior medical team: Sanjiv Lakhnjal, MD, FACS, CVR President and CEO, and Khan Nguyen, DO, CVR Corporate Medical Officer. Our local supervising physician is Gautam Shrikhande, MD; Dr. Shrikhande is a talented, vascular surgeon and previously served as Assistant Professor of Surgery and Director of the Vascular Laboratory, Columbia University Medical Center. He is Board Certified in General and Vascular Surgery and is a Registered Physician in Vascular Interpretation (RPVI). He lives in Manhattan with his family.

The White Plains clinic is located at: 3010 Westchester Avenue, Suite 105 Purchase, New York 10577, Phone: 1-855-840-8346.

We look forward to serving the needs of patients in White Plains!





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22. Lina Hong, MD
23. Samir Ahuja, MD



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Editor,
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Venous care is a rapidly evolving specialty and it's more important than ever to be up-to-date on the latest research and information on venous insufficiency, related conditions and treatment options. In this edition of the Venous Review we take a look first at the newest treatment methods in phlebology. We also profile post thrombotic syndrome (PTS); PTS can be a significant source of morbidity in patients with DVT, but with the proper evaluation and treatment selection by a venous specialist, it can be either prevented or treated to provide patients with an excellent quality of life.

Meanwhile, we're excited to report that our growth continues; we're opening our 2nd clinic in New York in White Plains – making it the 22nd clinic in our growing family of locations serving patients in New York, Maryland, Northern Virginia, Washington, D.C. and western Michigan.

We're also happy to tell you about our successful LegsWork community outreach program, in which our talented vascular technicians offer free education on venous insufficiency to local patients in the communities we serve. At the same time our team continues to grow. In this issue you'll meet three of our newest physicians: Michelle Nguyen, MD, Lina Hong, MD, and Sameer Ahuja, MD.

Thank you as always for your interest in Center for Vein Restoration. We hope you continue to find our newsletter helpful and informative.

Yours in good health,
Robert C. Kiser, DO, MSPH
Editor



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**2ND NEW YORK
LOCATION TO OPEN
IN WHITE PLAINS, NY
JULY 2013**