

# Treating Varicose Veins in Patients With DVT

Vein closure in patients with a history of deep vein thrombosis is achievable and may lead to beneficial results, but further research is needed.

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The combination of varicose veins and deep vein thrombosis (DVT) is a common clinical scenario that is frequently encountered by phlebologists. In general, it is contraindicated to perform venous closure procedures in patients who have a history of DVT, which is due to a significant risk for recurrent postoperative DVT in this population.<sup>1-4</sup> In addition, it is intuitive that closing the superficial venous system in the setting of occlusive DVT may compromise the entire venous drainage of the involved limb. There has been one study demonstrating that surgical stripping of the saphenous vein is possibly beneficial in patients with chronic DVT.<sup>5</sup> To our knowledge, there has only been one publication that reported on patients with DVT who underwent percutaneous venous closure procedures.<sup>6</sup> Due to the scarcity of literature addressing this patient population, we decided to report our cases to help inspire future research in this particular clinical setting. From our own practice, we identified a total of four patients who had a history of DVT and underwent a radiofrequency ablation (RFA) closure procedure of the great saphenous vein (GSV) combined with ultrasound-guided foam sclerotherapy (USGFS) to the tributaries. A summary of the following cases can be found in Table 1.

## CASE 1

A 75-year-old woman with a known history of DVT and inferior vena cava (IVC) filter placement who was on warfarin therapy also had a history of varicose veins for more than 30 years. The patient presented with edema, leg pain, and discoloration in her left lower calf. Venous duplex ultrasound yielded negative results for DVT but positive findings for bilateral superficial venous reflux. The patient underwent RFA to the left GSV. She was advised to wear thigh-high graduated compression stockings (30–40 mm Hg) continuously for 48 hours postprocedure and then for an additional 2 weeks while awake. Warfarin therapy was not interrupted and was maintained at a therapeutic level. Venous duplex ultrasound was performed 1 week postprocedure and yielded negative results for DVT. The patient was urged to undergo a follow-up venous duplex ultrasound at 6 weeks but opted not to do so. Upon numerous telephone follow-up conversations in the year after the procedure, she denied any symptoms suggestive of recurrent DVT.

## CASE 2

A 63-year-old man with a known history of DVT and pulmonary embolism also had an IVC filter and

TABLE 1. SUMMARY OF CASES

Case No.	Age/Sex	DVT Status	Reflux Type	Vein Treated With RFA	Posttreatment Results
1	75/Female	Pre-RFA venous duplex ultrasound yielded negative findings for DVT	Bilateral GSV	Left GSV	1-week post-RFA venous duplex ultrasound yielded negative results for DVT
2	63/Male	Chronic in left leg	Right GSV/SSV	Right GSV/ right SSV	1-week post-RFA to SSV venous duplex ultrasound yielded negative results for DVT; 6-week venous duplex ultrasound yielded positive findings for thrombus in right gastrocnemius vein; no extension of clot after 2 weeks; stable
3	62/Female	Pre-RFA venous duplex ultrasound was yielded negative findings for DVT	Right GSV/SSV	Right GSV	1- and 6-week venous duplex ultrasound yielded negative results for DVT
4	57/Male	Chronic nonocclusive DVT in the left leg; there was no DVT in the right leg	Right GSV	Right GSV	1- and 6-week venous duplex ultrasound yielded negative results for DVT

was being maintained on warfarin. He presented with varicose veins and right leg discomfort. Venous duplex ultrasound revealed that he had a chronic occlusive thrombus in both the left femoral vein and left small saphenous vein (SSV) and a nonocclusive thrombus in the left popliteal vein. He was also found to have reflux in the right leg involving the common femoral vein, saphenofemoral junction, GSV, SSV, and tributaries.

The patient was maintained on conservative therapy with graduated compression stockings (20–30 mm Hg) for 2 months, which failed to relieve his symptoms. We then proceeded with RFA to the right GSV with adjunctive USGFS to the tributaries of the GSV. The patient was advised to wear graduated compression stockings continuously for 48 hours postprocedure and then for an additional 2 weeks while awake. Warfarin therapy was not interrupted and was maintained at a therapeutic level.

Two months later, he underwent RFA to the right SSV with adjunctive USGFS to the tributaries. He followed the same postprocedure instructions as the first treatment. One week after the second procedure, the

results of venous duplex ultrasound were negative for thrombus in the right lower extremity. Six weeks post-treatment, venous duplex ultrasound demonstrated positive results for an acute thrombus in the right gastrocnemius vein; however, the patient was asymptomatic. He was treated with warfarin and compression stockings. The thrombus remained contained, as documented by venous duplex ultrasound performed 2 weeks later.

### CASE 3

A 62-year-old woman with a history of recurrent DVT and IVC filter placement who was being maintained on warfarin presented with symptoms of edema and leg pain, as well as heaviness and numbness in the legs. The results of an initial venous duplex ultrasound were negative for DVT in the right leg, but there was a chronic DVT in the left superficial femoral vein. The result was positive for reflux in the right GSV, SSV, and tributaries, as well as left saphenofemoral junction, GSV, anterior accessory saphenous vein, and tributaries. The

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patient underwent RFA to the right GSV with adjunctive USGFS to the tributaries. The patient was advised to wear graduated compression stockings (20–30 mm Hg) continuously for 48 hours postprocedure, then for an additional 2 weeks while awake. Warfarin therapy was continued uninterrupted and was maintained at a therapeutic level. A venous duplex ultrasound resulted in negative findings for DVT at 1 and 6 weeks postprocedure. Three months later, the patient underwent RFA to the right SSV. One week after the RFA procedure, the results of a venous duplex ultrasound were negative for DVT. Two weeks later, the patient returned with swelling in the left foot. Venous duplex ultrasound revealed a DVT in the left superficial femoral vein, which appeared to be chronic and stable. She continued with stocking use and warfarin. She is currently undergoing lymphedema therapy.

#### CASE 4

A 57-year-old man with no known history of DVT presented with symptoms of right leg swelling and pain in his posterior calf. He was asymptomatic in his left leg. An initial venous duplex ultrasound yielded positive findings for a chronic occlusive thrombus in the left posterior tibial vein, with no reflux on the left. The results of a venous duplex ultrasound of the right leg were negative for DVT but positive for reflux in the GSV. The patient was treated conservatively for 3 months with compression stockings. His symptoms did not respond to conservative therapy; therefore, we proceeded with RFA to the right GSV. One- and 6-week venous duplex studies yielded negative findings for DVT in both legs, and the patient's symptoms resolved 6 weeks postprocedure. He was followed for 2 years postprocedure with stable, chronic DVT in the left posterior tibial vein.

#### DISCUSSION

Treating varicose veins in patients with previous DVT presents big challenges to clinicians. These patients are usually quite symptomatic due to advanced venous insufficiency, and they experience many sequelae, such as venous ulcers and intractable edema, resulting in poor quality of life. Such patients often demand aggressive care due to their advanced symptoms. We

find ourselves obligated to be proactive in providing treatment options to help them, as long as the benefit outweighs the risk.

In theory, treating varicose veins in this subset of patients carries an increased risk for recurrent DVT. However, the limited number of patients we reported renders statistics impossible. Puggioni et al compared 29 patients with previous DVT to 264 patients without previous DVT.<sup>6</sup> Their superficial venous reflux disease was treated with RFA and a variety of other procedures, including phlebectomy and perforator treatment. The incidence of recurrent DVT was 7% and 14% in these two groups, respectively ( $P = .36$ ). By multivariate analysis, larger proximal GSV and previous DVT were significant risks for recurrent DVT. The use of multiple procedures was a risk by univariate analysis. They concluded that RFA of the GSV in patients with previous DVT is safe. We have intuitively avoided prolonged multiple procedures, but we have adopted an approach of combining RFA with USGFS. We believe this approach decreases the incidence of postoperative phlebitis.

Raju et al studied patients with chronic venous obstruction due to previous DVT and found that surgical stripping was well tolerated in both the experimental and the control groups.<sup>5</sup> Surgical removal of the saphenous vein did not lead to worsening of the venous obstruction but provided significant clinical relief of venous reflux symptoms. They found that the saphenous vein contributes little to the collateral compensation in patients with obstructive disease and that the vein may therefore be surgically removed without compromising the collateral circulation. With this information, we predict that outcomes will be similar using percutaneous closure techniques, but additional studies need to be conducted to provide insight into the safety of this particular method.

#### CONCLUSION

In our cases, we have demonstrated that closure of incompetent superficial saphenous veins in patients with DVT in the affected leg is feasible and could render benefit. It should be performed only after the thrombus has resolved and venous flow is restored, as documented by venous duplex ultrasound, in the treated limb. It is our intuitive bias that it should not be performed in the presence of ipsilateral DVT. This is in order to allow for sufficient venous return through the deep system postprocedure.

Despite the publication by Raju et al, we believe that the jury is still out on this particular population, and more research is needed. We have also shown that it is possible to close the incompetent superficial saphenous

veins in patients with chronic stable DVT in the contralateral limb. We have taken certain precautions to minimize the risks for recurrent DVT, such as continuation of warfarin and extending postprocedural stocking usage. Using periprocedural enoxaparin is reasonable when warfarin is not used or is subtherapeutic.

We are suggesting that selected patients with saphenous reflux may be treated safely in the presence of DVT. However, we cannot suggest wide adoption of this approach due to the lack of larger trials. Certain precautions, such as periprocedural anticoagulation, should be individualized based on the etiology of the DVT as well as the patient's clinical signs and symptoms. The following questions still await an answer: In a large population, would the benefit of improving symptoms and quality of life outweigh the risk of recurrent DVT? Are there measures to take to lower that risk? Are RFA and other percutaneous closure techniques equally safe and effective in this cohort? Will patients with a known clotting disorder have similar risks? Will special precautions need to be taken periprocedurally in this population? A large multicenter study is needed to answer these questions. ■

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