WHAT WOULD YOU DO?

Recurrent Superficial Vein Thrombosis, Thrombophilia, Recurrent Recanalization of GSVs, Ulcerations, and AVF

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CASE PRESENTATION

A 43-year-old man with a long-standing history of bilateral leg varicose veins since age 19 developed progressive symptoms of fatigue, heaviness, swelling, and skin changes in both legs (Figure 1). He also had several "flares" of superficial thrombophlebitis in both legs after minor trauma or immobility (eg, plane flights) that had been occurring since his 20s, which he self-treated with aspirin. He had never tried compression. His past medical history was unremarkable except for a history of asymptomatic patent foramen ovale (PFO). His family history of thrombosis and/or venous disease was unknown.

An initial ultrasound showed severe reflux with chronic changes and partial recanalization along the left mid and distal thigh great saphenous vein (GSV) (Figure 2) and occlusion of the right GSV after a recent superficial phlebitis. There was no evidence of deep vein thrombosis and normal phasicity in both common femoral veins.

With this patient's history of multiple recurrent superficial thrombophlebitis with minimal provocation, would you order thrombophilia screening?

Dr. Kiguchi: Yes. Patients with spontaneous thrombophlebitis without provocation should be considered for evaluation of a hypercoagulable state. In this case, with the history of multiple recurrent episodes, not only is the location and extent of thrombosis relevant, but the etiology of the persistent recurrences should be explored to prevent future events.

Dr. Dillavou: Yes, I would. I rarely order hypercoagulable screening, as it seldom makes a clinical impact, but with his long history of venous disease, it would be helpful. If positive, I would place him on anticoagulation.

How would you treat this patient? If compression helped his symptoms, would you intervene at this time?

Dr. Dillavou: I would start with compression. I would ablate the bilateral GSVs, if he was amenable, as he has a long history of problems, is having current symptoms, and I think is likely to have more thrombophlebitis if the GSVs are not closed.

Figure 1. Progressive skin changes associated with symptoms of chronic venous insufficiency.

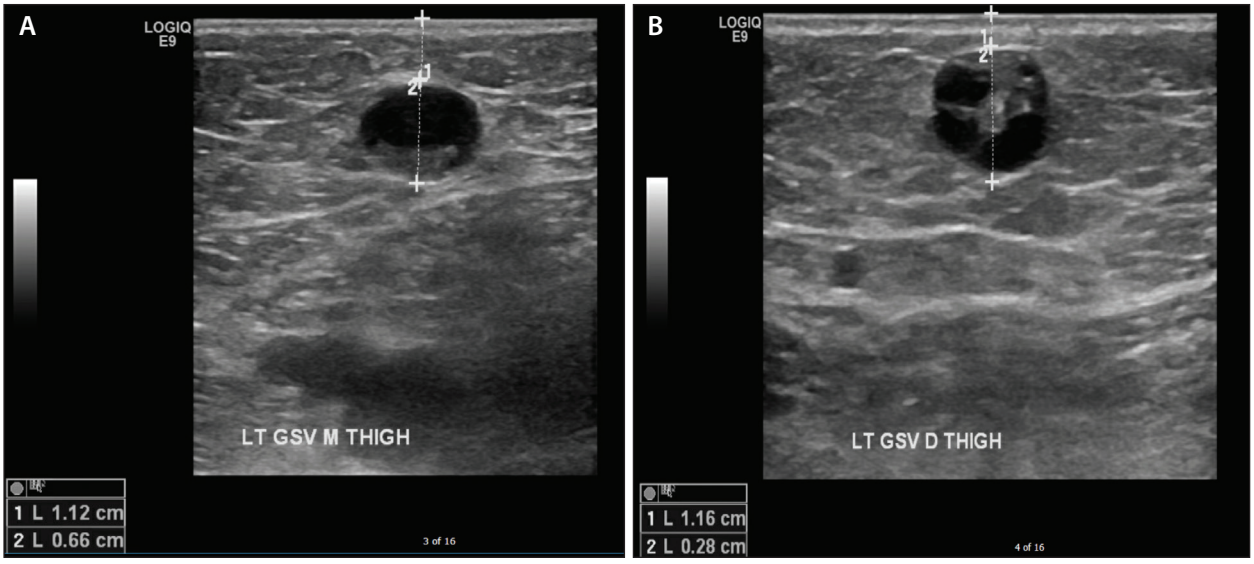

Figure 2. Chronic changes of previous superficial thrombosis in the mid thigh left GSV (A) and distal thigh left GSV (B).

Dr. Kiguchi: The patient's symptoms indicate mild superficial thrombophlebitis, and thus, mild anti-inflammatory drugs and compression are recommended for 6 months. If compression helps the symptoms and skin changes stabilize, I would recommend conservative management for at least 6 months without procedural intervention.

CASE CONTINUED

Despite conservative measures, the patient developed another unprovoked superficial thrombophlebitis of the left GSV up to the saphenofemoral junction (SFJ), which was initially managed with anticoagulation with enoxaparin. Thrombophilia testing revealed positive homozygous factor V Leiden mutation and heterozygous prothrombin G20210A mutation.

Weeks later, the left GSV recanalized and began to reflux (Figure 3). He soon developed ulceration around his left ankle, which failed to heal with the use of compression and wound care. Eventually, he underwent endovenous radiofrequency ablation (RFA) of the GSV, which initially closed, yet the left GSV recanalized again after only a few months.

How would you treat the partially recanalized refluxing left GSV at this point?

Dr. Dillavou: I would keep him on anticoagulation, make a small incision in the groin, and proximally ligate the GSV. I would then treat the distal aspect with Varithena polidocanol injectable foam (BTG Vascular) to close the distal GSV and as many tributaries as possible.

Dr. Kiguchi: Treatment of recanalized saphenous veins can be challenging. If retreatment is necessary, as indicated by a refluxing recanalized saphenous vein, then repeat RFA of the GSV is my preference if the scarred vein can tolerate passage of the catheter. I would treat each segment twice and may need higher energy requirements to successfully close the saphenous vein due to the thickened vein wall. My preference is also to perform a high SFJ ligation in conjunction with repeat RFA of the GSV.

If the scarred lumen cannot tolerate passage of the catheter, I would attempt adhesive closure or mechanochemical ablation. Given the patient's history of a PFO, I would not attempt mechanochemical closure unless I had performed a high SFJ ligation earlier.

How would you manage this patient's anticoagulation around the time of the procedure?

Dr. Kiguchi: I do not usually stop anticoagulation for RFA. Studies have shown that anticoagulation use does not increase the risk of RFA failure.

Dr. Dillavou: I also would not stop anticoagulation.

Are you concerned with using foam (physician compounded or proprietary cannister microfoam) with this patient's history of asymptomatic PFO?

Dr. Dillavou: No, the VANISH-2 trial specifically looked at this situation and found no adverse events.[1] Additionally, I think the proximal ligation offers additional protection.

Dr. Kiguchi: Although Regan et al showed that patients with known PFO had no subclinical injury from Varithena foam,[2] my personal preference is not to use foam in

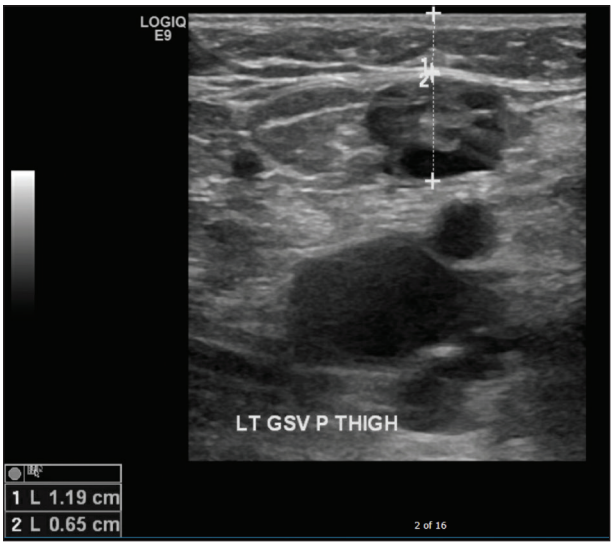

Figure 3. Proximal thigh with incompetent recanalized left GSV.

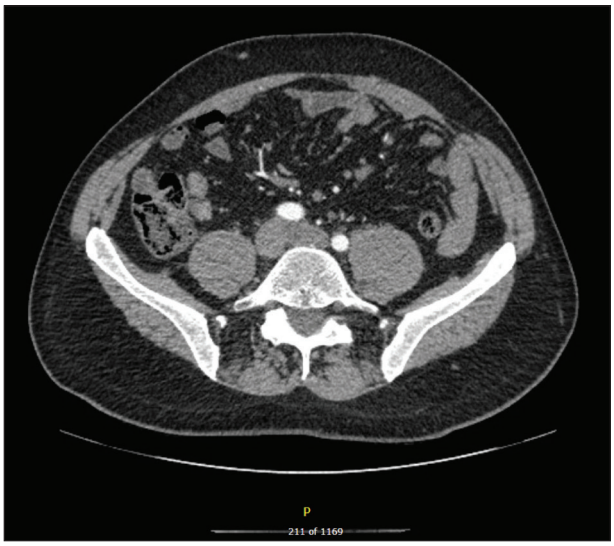

Figure 4. No evidence of proximal iliocaval venous obstruction on CTV.

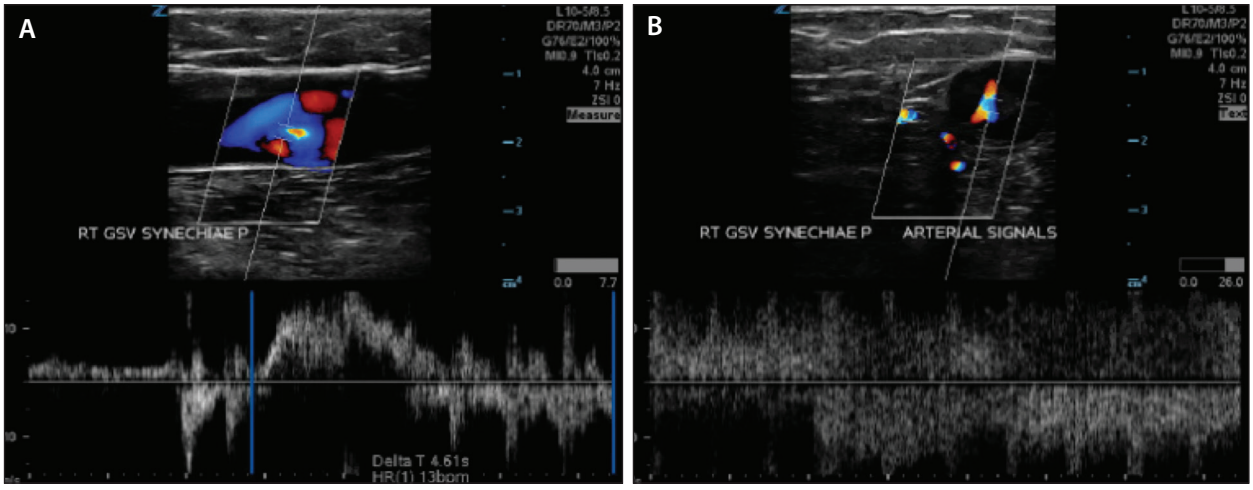

Figure 5. Right GSV duplex scan showing recanalization following superficial thrombosis (A) and arterialized signals within the GSV lumen (B).

anyone with a PFO. The rare neurologic symptoms that occur even without a documented PFO are alarming, and although most resolve, my preference is to not use foam in a patient with a known PFO unless I have performed a high ligation of the SFJ.

When would you consider additional proximal imaging to rule out obstruction in the iliac system, and what test would you perform?

Dr. Kiguchi: I would consider performing CT venography (CTV) to rule out symptomatic May-Thurner syndrome.

Dr. Dillavou: I would perform CTV of the abdomen/pelvis early on, as his symptoms are not typical and I would want to see if there was any sign of inferior vena cava agenesis/stenosis.

CASE CONTINUED

Proximal imaging was performed, which was negative for iliac or inferior vena cava compression (Figure 4). The patient was taken to the day surgery operating room and underwent an open left SFJ ligation and endovenous laser ablation of the partially recanalized left GSV with ultrasound-guided liquid sclerotherapy of the segments of vein that were not negotiable by a wire. Intraoperatively, there was extensive scarring noted around the GSV and stripping would not have been an option. Tumescent local anesthesia was utilized, and the patient had very little postoperative pain and was immediately ambulatory.

Figure 6. CTV of the groin showing an AVF with a proximal SFA branch to the proximal thigh recanalized GSV.

He was maintained on periprocedural enoxaparin for the first 2 weeks and was then transitioned to rivaroxaban. His left leg currently remains asymptomatic and the GSV has not recanalized for several years.

Regarding follow-up of the right leg, the patient was taking long-term rivaroxaban for several years and did not have any further thrombotic episodes on either side. However, he did return with a new ulceration in the right leg with recanalization of the right GSV, and arterialized signals were noted on duplex ultrasonography (Figure 5).

What imaging would you obtain to better characterize the arterial signals noted in the GSV?

Dr. Kiguchi: If I could not identify a source of the arterial signals in the right venous system using duplex ultrasonography, I would obtain a CTA.

Dr. Dillavou: I would obtain an MRA/MR venogram to assess for an arteriovenous fistula (AVF) if that test was done well in my hospital. Alternately, CTV with contrast would be acceptable.

CASE CONTINUED

CT was performed, which showed an AVF connecting from the right superficial femoral artery (SFA) to the proximal thigh right GSV (Figure 6).

How would you approach the postthrombotic AVF in the right GSV? Would you repair it given the new venous ulceration on the right leg? If so, would you approach from the arterial side (via SFA) or try to treat it from the venous side (via GSV)?

Dr. Dillavou: I would approach from the venous side and oversew.

Dr. Kiguchi: I would repair this AVF, given the new venous ulceration of the right leg. With the patient's young age and minimal comorbidities, I would make a small incision over the fistula and repair it directly under local anesthetic. Endovascular stenting to exclude the AVF from the SFA would be reserved for a patient who couldn't tolerate an open procedure. The vein is likely to be quite scarred from the multiple phlebitis episodes and thus will be easy to dissect out and repair.

I would then ensure no connection exists between the SFA and GSV with duplex ultrasound postprocedurally. After a few weeks, I would again repeat the reflux study of the GSV to determine whether ablation is needed.

CASE CONCLUSION

My plan is to address the AVF through an endovascular approach, initially from the venous side. Ultrasound-guided injection sclerotherapy will be performed into the venous side, and then if there is no response, or if there are signs of increased progression, we will select the arterial feeding vessel for embolization if needed. ■

1. Todd KL 3rd, Wright DI; VANISH-2 Investigator Group. The VANISH-2 study: a randomized, blinded, multicenter study to evaluate the efficacy and safety of polidocanol endovenous microfoam 0.5% and 1.0% compared with placebo for the treatment of saphenofemoral junction incompetence. Phlebology. 2014;29:608-618.
2. Regan JD, Gibson KD, Rush JE, et al. Clinical significance of cerebrovascular gas emboli during polidocanol endovenous ultra-low nitrogen microfoam ablation and correlation with magnetic resonance imaging in patients with right-to-left shunt. J Vasc Surg. 2011;53:131-137.

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