



PHYSICIAN

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ACCESS SITES

- For the great saphenous vein (GSV), access is achieved percutaneously at the most distal segment of axial vein reflux. This is usually below the knee at the level of Boyd's perforating vein.
- For small saphenous vein (SSV) treatment, access is obtained at the midcalf posteriorly, where the gastrocnemius muscle becomes prominent.

DIAGNOSTIC NOTES

Diagnostic workup is noninvasive; physical examination with color flow duplex ultrasound imaging is adequate in the majority of patients presenting with lower-extremity venous disease.

One should be familiar with the anatomy of the GSV, anterior accessory saphenous vein, posterior accessory saphenous vein, thigh circumflex veins, SSV, vein of Giacomini, perforating veins of the thigh and calf, and the deep venous system.

The GSV and SSV are identified sonographically in their respective saphenous canals. If incompetent by duplex imaging, they may be sources of venous hypertension and are candidates for endovenous ablation.

Vein diameters, obtained via duplex ultrasound imaging with the patient in the standing position, must be documented to guide energy delivery.

INTERVENTIONAL DEVICES USED

SHEATH SIZES

A 4-F or 5-F microintroducer kit contains a 21-gauge needle, a .018-inch-wide X 40-cm-long guidewire, and a microintroducer/sheath set. Percutaneous access is achieved with a 21-gauge needle under ultrasound control for both endovenous laser (EVL) and radiofrequency (RF) procedures.

GUIDEWIRES

A .035-inch-diameter, 150-cm-length, J-tipped guidewire is placed through the microintroducer sheath and navigated to target site. If it is not possible to traverse tortuous segments, a second entry site above the tortuosity is performed, and the vein is treated as two separate segments. To minimize procedure costs, expensive interventional wires are discouraged.

SHEATHS OR GUIDE CATHETERS

- EVL: 5-F coaxial introducer and sheath placed over guidewire. The 35-cm, 45-cm, and 65-cm lengths should be available to accommodate all entry sites. A 600- μ m diameter, bare-tipped laser fiber is placed through a sheath and deployed at the target site under ultrasound control. Occasionally, for ablation of short-length veins, the laser fiber can be placed directly through the microsheat under ultrasound control.
- RF: 6-F or 8-F coaxial introducer sheath, 7-cm long to accommodate 6-F and 8-F catheters, respectively.

OTHER DEVICES

- RF generator
- Laser generator: 810-nm, 940-nm, 980-nm, and 1,320-nm wavelengths available.
- Tumescent anesthesia delivery: a 30-mL syringe with a 25-gauge needle is preferred if anesthesia is delivered by the operator. Extension sets with three-way stopcocks are useful if an assistant is available to push the anesthetic solution. Alternatively, tumescent anesthesia infusion pumps are commercially available.
- Sterile bag required to isolate ultrasound transducer from sterile prepped leg.

INTERVENTIONAL NOTES

- One should not introduce wires, sheaths, fibers, and/or catheters into the common femoral vein (CFV); they should be parked at the saphenofemoral junction 1 cm distal to the common femoral vein (CFV) prior to treatment.

- With EVL, one works with a long (35-cm, 45-cm, or 65-cm) sheath. Approximately 2 cm of the laser fiber tip is deployed at target site by withdrawing the sheath. For GSV ablation, the fiber tip is positioned 1 cm distal to the CFV.
- With RF, one works with a short (7-cm) sheath. For GSV ablation, the RF electrodes are deployed 1 cm distal to the CFV. Occasionally, the RF catheters require coaxial navigation over a .025-inch guidewire (requires a Y-connector). Transcatheter heparinized saline infusion is required during treatment.

IMAGING

The ideal imaging system incorporates color flow duplex ultrasound with a 5- to 7-MHz linear array transducer. The newer laptop-style platforms are adequate for vein work.

PHARMACEUTICALS

- Tumescent anesthesia: 0.1% solution of lidocaine with epinephrine (EVL, RF)
- Heparinized saline solution (RF) ■