MASSACHUSETTS

Blue Cross Blue Shield of Massachusetts is an Independent Licensee of the Blue Cross and Blue Shield Association

Medical Policy

Treatment of Varicose Veins/Venous Insufficiency

Table of Contents

Policy Number: 238

BCBSA Reference Number: 7.01.124 (For Plan internal use only)

Related Policies

Treatment of Varicose Veins/Venous Insufficiency Prior Authorization Request Form MP #129

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

SAPHENOUS VEINS

Great or Small Saphenous Veins

Treatment of the great or small saphenous veins by surgery (ligation and stripping), endovenous thermal ablation (radiofrequency or laser), microfoam sclerotherapy or cyanoacrylate adhesive may be considered **MEDICALLY NECESSARY** for symptomatic varicose veins/venous insufficiency when the following criteria have been met:

- There is demonstrated saphenous reflux and CEAP [Clinical, Etiology, Anatomy, Pathophysiology] class C2 or greater, **AND**
- There is documentation of 1 or more of the following indications:
  - Ulceration secondary to venous stasis, **OR**
  - Recurrent superficial thrombophlebitis, **OR**
  - Hemorrhage or recurrent bleeding episodes from a ruptured superficial varicosity, **OR**
  - Persistent pain, swelling, itching, burning, or other symptoms are associated with saphenous reflux, **AND**
  - Symptoms significantly interfere with activities of daily living, **AND**
  - A failure after the use of medical grade compression stockings (medical grade at least 20-30mmHg pressure).[1]

Treatment of great or small saphenous veins by surgery, endovenous radiofrequency or laser ablation, or microfoam sclerotherapy or cyanoacrylate adhesive that does not meet the criteria described above is considered cosmetic and is considered **INVESTIGATIONAL**.

ACCESSORY SAPHENOUS VEINS

Treatment of accessory saphenous veins by surgery (ligation and stripping), endovenous radiofrequency or laser ablation, microfoam sclerotherapy or cyanoacrylate adhesive may be considered **MEDICALLY NECESSARY** for symptomatic varicose veins/venous insufficiency when the following criteria have been met:

- Incompetence of the accessory saphenous vein is isolated, **AND**
- There is demonstrated accessory saphenous reflux, **AND**
- There is documentation of 1 or more of the following indications:
  - Ulceration secondary to venous stasis, **OR**
  - Recurrent superficial thrombophlebitis, **OR**
  - Hemorrhage or recurrent bleeding episodes from a ruptured superficial varicosity, **OR**
  - Persistent pain, swelling, itching, burning, or other symptoms are associated with saphenous reflux, **AND**
  - Symptoms significantly interfere with activities of daily living, **AND**
  - A failure after use of medical grade compression stockings (medical grade at least 20-30mmHg pressure).[2]

Concurrent treatment of the accessory saphenous veins along with the great or small saphenous veins may be considered **MEDICALLY NECESSARY** when criteria is met for each vein and there is documentation of anatomy showing that the accessory saphenous vein discharged directly into the common femoral vein.

Treatment of accessory saphenous veins by surgery or endovenous radiofrequency or laser ablation, microfoam sclerotherapy, or cyanoacrylate adhesive that does not meet the criteria described above is considered cosmetic and is **INVESTIGATIONAL**.

SYMPTOMATIC VARICOSE TRIBUTARIES

The following treatments are considered **MEDICALLY NECESSARY** as a component of the treatment of symptomatic varicose tributaries when performed either at the same time or following prior treatment (surgical, radiofrequency, or laser) of the saphenous veins (none of these techniques has been shown to be superior to another):

- Stab avulsion
- Hook phlebectomy
- Sclerotherapy
- Transilluminated powered phlebectomy.

Treatment of symptomatic *varicose tributaries,* when performed either at the same time or following prior treatment of saphenous veins using any other techniques than noted above is considered **INVESTIGATIONAL**.

PERFORATOR VEINS

Surgical ligation (including subfascial endoscopic perforator surgery) or endovenous radiofrequency or laser ablation of incompetent perforator veins may be considered **MEDICALLY NECESSARY** as a treatment of leg ulcers associated with chronic venous insufficiency when the following conditions have been met:

- There is demonstrated perforator reflux, **AND**
- The superficial saphenous veins (great, small or accessory saphenous and symptomatic varicose tributaries) have been previously eliminated, **AND**
- Ulcers have not resolved following combined superficial vein treatment and compression therapy for at least 3 months, **AND**
- The venous insufficiency is not secondary to deep venous thromboembolism.

Ligation or ablation of incompetent perforator veins performed concurrently with superficial venous surgery is **INVESTIGATIONAL**.

TELANGIECTASIA

Treatment of telangiectasia such as spider veins, angiomata, and hemangiomata is considered cosmetic and **INVESTIGATIONAL**.

OTHER VEINS

Techniques for conditions not specifically listed above are **INVESTIGATIONAL**, including, but not limited to:

- Sclerotherapy techniques, other than microfoam sclerotherapy, of great, small or accessory saphenous veins
- Sclerotherapy of perforator veins
- Sclerotherapy of isolated tributary veins without prior or concurrent treatment of saphenous veins
- Stab avulsion, hook phlebectomy, or transilluminated powered phlebectomy of perforator, great or small saphenous, or accessory saphenous veins
- Endovenous radiofrequency or laser ablation of tributary veins
- Mechanochemical ablation of any vein
- Endovenous cryoablation of any vein.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	Prior authorization is **required.**
Commercial PPO	Prior authorization is **required**.

*Prior Authorization Request Form: Treatment of Varicose Veins/Venous Insufficiency

This form must be completed and faxed to: Medical and Surgical: 1-888-282-0780; Medicare Advantage: 1-800-447-2994.

Click here for Treatment of Varicose Veins/Venous Insufficiency Prior Authorization Request Form MP #129

Requesting Prior Authorization Using Authorization Manager

Providers will need to use Authorization Manager to submit initial authorization requests for services. Authorization Manager, available 24/7, is the quickest way to review authorization requirements, request authorizations, submit clinical documentation, check existing case status, and view/print the decision letter. For commercial members, the requests must meet medical policy guidelines.

To ensure the service request is processed accurately and quickly:

- Enter the facility's NPI or provider ID for where services are being performed.
- Enter the appropriate surgeon's NPI or provider ID as the servicing provider, *not* the billing group.

Authorization Manager Resources

Refer to our Authorization Manager page for tips, guides, and video demonstrations.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The above <u>medical necessity criteria MUST</u> be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

CPT Codes

CPT codes:	Code Description
36465	Injection of non-compounded foam sclerosant with ultrasound compression maneuvers to guide dispersion of the injectate, inclusive of all imaging guidance and monitoring; single incompetent extremity truncal vein (eg, great saphenous vein, accessory saphenous vein)
36466	Injection of non-compounded foam sclerosant with ultrasound compression maneuvers to guide dispersion of the injectate, inclusive of all imaging guidance and monitoring; multiple incompetent truncal veins (eg, great saphenous vein, accessory saphenous vein), same leg
36470	Injection of sclerosant; single incompetent vein (other than telangiectasia)
36471	Injection of sclerosant; multiple incompetent veins (other than telangiectasia), same leg
36475	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; first vein treated
36476	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, radiofrequency; second and subsequent veins treated in a single extremity, each through separate access sites (list separately in addition to code for primary procedure)
36478	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, laser; first vein treated
36479	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, laser; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)
36482	Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (eg, cyanoacrylate) remote from the access site, inclusive of all imaging guidance and monitoring, percutaneous; first vein treated
36483	Endovenous ablation therapy of incompetent vein, extremity, by transcatheter delivery of a chemical adhesive (eg, cyanoacrylate) remote from the access site, inclusive of all imaging guidance and monitoring, percutaneous; subsequent vein(s) treated in a single extremity, each through separate access sites (List separately in addition to code for primary procedure)
37500	Vascular endoscopy, surgical, with ligation of perforator veins, subfascial (SEPS)
37700	Ligation and division of long saphenous vein at saphenofemoral junction, or distal interruptions
37718	Ligation, division, and stripping, short saphenous vein
37722	Ligation, division, and stripping, long (greater) saphenous veins from saphenofemoral junction to knee or below
37735	Ligation and division and complete stripping of long and short saphenous veins with radical excision of ulcer and skin graft and/or interruption of communicating veins of lower leg, with excision of deep fascia
37760	Ligation of perforator veins, subfascial, radical (Linton type) including skin graft, when performed, open, 1 leg
37761	Ligation of perforator vein(s), subfascial, open, including ultrasound guidance, when performed, 1 leg
37765	Stab phlebectomy of varicose veins, one extremity; 10-20 stab incisions

37766	Stab phlebectomy of varicose veins, one extremity; more than 20 incisions
37780	Ligation and division of short saphenous vein at saphenopopliteal junction
37785	Ligation, division, and/or excision of varicose vein cluster(s), one leg

HCPCS Codes

HCPCS codes:	Code Description
S2202	Echosclerotherapy

ICD-10 Procedure Codes

ICD-10-PCS procedure codes:	Code Description
065M3ZZ	Destruction of Right Femoral Vein, Percutaneous Approach
065M4ZZ	Destruction of Right Femoral Vein, Percutaneous Endoscopic Approach
065N3ZZ	Destruction of Left Femoral Vein, Percutaneous Approach
065N4ZZ	Destruction of Left Femoral Vein, Percutaneous Endoscopic Approach
065P3ZZ	Destruction of Right Saphenous Vein, Percutaneous Approach
065P4ZZ	Destruction of Right Saphenous Vein, Percutaneous Endoscopic Approach
065Q3ZZ	Destruction of Left Saphenous Vein, Percutaneous Approach
065Q4ZZ	Destruction of Left Saphenous Vein, Percutaneous Endoscopic Approach
065T3ZZ	Destruction of Right Foot Vein, Percutaneous Approach
065T4ZZ	Destruction of Right Foot Vein, Percutaneous Endoscopic Approach
065V3ZZ	Destruction of Left Foot Vein, Percutaneous Approach
065V4ZZ	Destruction of Left Foot Vein, Percutaneous Endoscopic Approach
065Y3ZZ	Destruction of Lower Vein, Percutaneous Approach
065Y4ZZ	Destruction of Lower Vein, Percutaneous Endoscopic Approach
06BM0ZZ	Excision of Right Femoral Vein, Open Approach
06BM3ZZ	Excision of Right Femoral Vein, Percutaneous Approach
06BM4ZZ	Excision of Right Femoral Vein, Percutaneous Endoscopic Approach
06BN0ZZ	Excision of Left Femoral Vein, Open Approach
06BN3ZZ	Excision of Left Femoral Vein, Percutaneous Approach
06BN4ZZ	Excision of Left Femoral Vein, Percutaneous Endoscopic Approach
06BP0ZZ	Excision of Right Saphenous Vein, Open Approach
06BP3ZZ	Excision of Right Saphenous Vein, Percutaneous Approach
06BP4ZX	Excision of Right Saphenous Vein, Percutaneous Endoscopic Approach
06BQ0ZZ	Excision of Left Saphenous Vein, Open Approach
06BQ3ZZ	Excision of Left Saphenous Vein, Percutaneous Approach
06BQ4ZZ	Excision of Left Saphenous Vein, Percutaneous Endoscopic Approach
06BT0ZZ	Excision of Right Foot Vein, Open Approach
06BT3ZZ	Excision of Right Foot Vein, Percutaneous Approach
06BT4ZZ	Excision of Right Foot Vein, Percutaneous Endoscopic Approach
06BV0ZZ	Excision of Left Foot Vein, Open Approach
06BV3ZZ	Excision of Left Foot Vein, Percutaneous Approach
06BV4ZZ	Excision of Left Foot Vein, Percutaneous Endoscopic Approach
06DM0ZZ	Extraction of Right Femoral Vein, Open Approach
06DM3ZZ	Extraction of Right Femoral Vein, Percutaneous Approach
06DM4ZZ	Extraction of Right Femoral Vein, Percutaneous Endoscopic Approach
06DN0ZZ	Extraction of Left Femoral Vein, Open Approach
06DN3ZZ	Extraction of Left Femoral Vein, Percutaneous Approach
06DN4ZZ	Extraction of Left Femoral Vein, Percutaneous Endoscopic Approach

06DP0ZZ	Extraction of Right Saphenous Vein, Open Approach
06DP3ZZ	Extraction of Right Saphenous Vein, Percutaneous Approach
06DP4ZZ	Extraction of Right Saphenous Vein, Percutaneous Endoscopic Approach
06DQ0ZZ	Extraction of Left Saphenous Vein, Open Approach
06DQ3ZZ	Extraction of Left Saphenous Vein, Percutaneous Approach
06DQ4ZZ	Extraction of Left Saphenous Vein, Percutaneous Endoscopic Approach
06DY0ZZ	Extraction of Lower Vein, Open Approach
06DY3ZZ	Extraction of Lower Vein, Percutaneous Approach
06DY4ZZ	Extraction of Lower Vein, Percutaneous Endoscopic Approach
06LM0ZZ	Occlusion of Right Femoral Vein, Open Approach
06LM3ZZ	Occlusion of Right Femoral Vein, Percutaneous Approach
06LM4ZZ	Occlusion of Right Femoral Vein, Percutaneous Endoscopic Approach
06LN0ZZ	Occlusion of Left Femoral Vein, Open Approach
06LN3ZZ	Occlusion of Left Femoral Vein, Percutaneous Approach
06LN4ZZ	Occlusion of Left Femoral Vein, Percutaneous Endoscopic Approach
06LP0ZZ	Occlusion of Right Saphenous Vein, Open Approach
06LP3ZZ	Occlusion of Right Saphenous Vein, Percutaneous Approach
06LP4ZZ	Occlusion of Right Saphenous Vein, Percutaneous Endoscopic Approach
06LQ0ZZ	Occlusion of Left Saphenous Vein, Open Approach
06LQ3ZZ	Occlusion of Left Saphenous Vein, Percutaneous Approach
06LQ4ZZ	Occlusion of Left Saphenous Vein, Percutaneous Endoscopic Approach
06QM0ZZ	Repair Right Femoral Vein, Open Approach
06QM3ZZ	Repair Right Femoral Vein, Percutaneous Approach
06QM4ZZ	Repair Right Femoral Vein, Percutaneous Endoscopic Approach
06QN0ZZ	Repair Left Femoral Vein, Open Approach
06QN3ZZ	Repair Left Femoral Vein, Percutaneous Approach
06QN4ZZ	Repair Left Femoral Vein, Percutaneous Endoscopic Approach
06QP0ZZ	Repair Right Saphenous Vein, Open Approach
06QP3ZZ	Repair Right Saphenous Vein, Percutaneous Approach
06QP4ZZ	Repair Right Saphenous Vein, Percutaneous Endoscopic Approach
06QQ0ZZ	Repair Left Saphenous Vein, Open Approach
06QQ3ZZ	Repair Left Saphenous Vein, Percutaneous Approach
06QQ4ZZ	Repair Left Saphenous Vein, Percutaneous Endoscopic Approach
06QT0ZZ	Repair Right Foot Vein, Open Approach
06QT3ZZ	Repair Right Foot Vein, Percutaneous Approach
06QT4ZZ	Repair Right Foot Vein, Percutaneous Endoscopic Approach
06QV0ZZ	Repair Left Foot Vein, Open Approach
06QV3ZZ	Repair Left Foot Vein, Percutaneous Approach
06QV4ZZ	Repair Left Foot Vein, Percutaneous Endoscopic Approach
06QY0ZZ	Repair Lower Vein, Open Approach
06QY3ZZ	Repair Lower Vein, Percutaneous Approach
06QY4ZZ	Repair Lower Vein, Percutaneous Endoscopic Approach
0JBN0ZZ	Excision of Right Lower Leg Subcutaneous Tissue and Fascia, Open Approach
0JBP0ZZ	Excision of Left Lower Leg Subcutaneous Tissue and Fascia, Open Approach
0JUN07Z	Supplement of Right Lower Leg Subcutaneous Tissue and Fascia with Autologous Tissue Substitute, Open Approach
0JUP07Z	Supplement of Left Lower Leg Subcutaneous Tissue and Fascia with Autologous Tissue Substitute, Open Approach
3E033TZ	Introduction of Destructive Agent into Peripheral Vein, Percutaneous Approach

The following CPT code is considered not medically necessary for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

CPT Codes

CPT codes:	Code Description
36468	Injection(s) of sclerosant for spider veins (telangiectasia), limb or trunk

The following CPT codes are considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

CPT Codes

CPT codes:	Code Description
36473	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, mechanochemical; first vein treated
36474	Endovenous ablation therapy of incompetent vein, extremity, inclusive of all imaging guidance and monitoring, percutaneous, mechanochemical; subsequent vein(s) treated in a single extremity, each through separate access sites

The following CPT codes are considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:

CPT Codes

CPT codes:	Code Description
0524T	Endovenous catheter directed chemical ablation with balloon isolation of incompetent extremity vein, open or percutaneous, including all vascular access, catheter manipulation, diagnostic imaging, imaging guidance and monitoring

Description

Venous Reflux/Venous Insufficiency

The venous system of the lower extremities consists of the superficial veins (this includes the great and small saphenous and accessory, or duplicate, veins that travel in parallel with the great and small saphenous veins), the deep system (popliteal and femoral veins), and perforator veins that cross through the fascia and connect the deep and superficial systems. One-way valves are present within all veins to direct the return of blood up the lower limb. Because the venous pressure in the deep system is generally greater than that of the superficial system, valve incompetence at any level may lead to backflow (venous reflux) with pooling of blood in superficial veins. Varicose veins with visible varicosities may be the only sign of venous reflux, although itching, heaviness, tension, and pain may also occur. Chronic venous insufficiency secondary to venous reflux can lead to thrombophlebitis, leg ulcerations, and hemorrhage. The CEAP classification of venous disease considers the clinical, etiologic, anatomic, and pathologic characteristics of venous insufficiency, ranging from class 0 (no visible sign of disease) to class 6 (active ulceration).

Treatment of Saphenous Veins and Tributaries

Saphenous veins include the great and small saphenous and accessory saphenous veins that travel in parallel with the great or small saphenous veins. Tributaries are veins that empty into a larger vein. Treatment of venous reflux has traditionally included the following:

- Identification by preoperative Doppler ultrasonography of the valvular incompetence.
- Control of the most proximal point of reflux, traditionally by suture ligation of the incompetent saphenofemoral or saphenopopliteal junction.
- Removal of the superficial vein from circulation, eg, by stripping of the great and/or small saphenous veins.
- Removal of varicose tributaries (at the time of the initial treatment or subsequently) by stab avulsion (phlebectomy) or injection sclerotherapy.

Minimally invasive alternatives to ligation and stripping have been investigated. These include forms of sclerotherapy, cyanocrylate adhesive, and thermal ablation using cryotherapy, high-frequency radio waves (200 to 300 kHz), or laser energy.

Thermal Ablation
Radiofrequency ablation (RFA) is performed using a specially designed catheter inserted through a small incision in the distal medial thigh to within 1 to 2 cm of the saphenofemoral junction. The catheter is slowly withdrawn, closing the vein. Laser ablation is performed similarly. A laser fiber is introduced into the great saphenous vein under ultrasound guidance. The laser is then activated and slowly removed, along the course of the saphenous vein. Cryoablation uses extreme cold. The objective of endovenous techniques is to injure the vessel, causing retraction and subsequent fibrotic occlusion of the vein. Technical developments since thermal ablation procedures were initially introduced include the use of perivenous tumescent anesthesia, which allows successful treatment of veins larger than 12 mm in diameter and helps to protect adjacent tissue from thermal damage during treatment of the small saphenous vein.

Sclerotherapy
The objective of sclerotherapy is to destroy the endothelium of the target vessel by injecting an irritant solution (either a detergent, osmotic solution, or chemical irritant), ultimately occluding the vessel. Treatment success depends on accurate injection of the vessel, an adequate injectate volume and concentration of sclerosant, and compression. Historically, larger veins and very tortuous veins were not considered good candidates for sclerotherapy due to technical limitations. Technical improvements in sclerotherapy have included the routine use of Duplex ultrasound to target refluxing vessels, luminal compression of the vein with anesthetics, and a foam/sclerosant injectate in place of liquid sclerosant. Foam sclerosants are produced by forcibly mixing a gas (eg, air or carbon dioxide) with a liquid sclerosant (eg, polidocanol or sodium tetradecyl sulfate). Physician-compounded foam is produced at the time of treatment. A commercially available microfoam sclerosant with a proprietary gas mix is available and is proposed to provide a smaller and more consistent bubble size than what is produced with physician-compounded sclerosant foam.

Endovenous Mechanochemical Ablation
Endovenous mechanochemical ablation uses both sclerotherapy and mechanical damage to the lumen. Following ultrasound imaging, a disposable catheter with a motor drive is inserted into the distal end of the target vein and advanced to the saphenofemoral junction. As the catheter is pulled back, a wire rotates at 3500 rpm within the lumen of the vein, abrading the lumen. At the same time, a liquid sclerosant (sodium tetradecyl sulfate) is infused near the rotating wire. It is proposed that mechanical ablation allows for better efficacy of the sclerosant, and results in less pain and risk of nerve injury without the need for the tumescent anesthesia used with endovenous thermal ablation techniques (RFA, endovenous laser ablation).

Cyanoacrylate Adhesive
A cyanoacrylate adhesive is a clear, free-flowing liquid that polymerizes in the vessel via an anionic mechanism (ie, polymerizes into a solid material on contact with body fluids or tissue). The adhesive is gradually injected along the length of the vein in conjunction with ultrasound and manual compression. The acute coaptation halts blood flow through the vein until the implanted adhesive becomes fibrotically encapsulated and establishes chronic occlusion of the treated vein. Cyanoacrylate glue has been used as a surgical adhesive and sealant for a variety of indications, including gastrointestinal bleeding, embolization of brain arteriovenous malformations, and surgical incisions or other skin wounds.

Transilluminated Powered Phlebectomy
Transilluminated powered phlebectomy is an alternative to stab avulsion and hook phlebectomy. This procedure uses 2 instruments: an illuminator, which also provides irrigation, and a resector, which has an oscillating tip and suction pump. Following removal of the saphenous vein, the illuminator is introduced via a small incision in the skin and tumescence solution (anesthetic and epinephrine) is infiltrated along the course of varicosity. The resector is then inserted under the skin from the opposite direction, and the oscillating tip is placed directly beneath the illuminated veins to fragment and loosen the veins from the

supporting tissue. Irrigation from the illuminator is used to clear the vein fragments and blood through aspiration and additional drainage holes. The illuminator and resector tips may then be repositioned, thereby reducing the number of incisions needed when compared with stab avulsion or hook phlebectomy. It has been proposed that transilluminated powered phlebectomy might decrease surgical time, decrease complications such as bruising, and lead to a faster recovery than established procedures.

Summary

Description

A variety of treatment modalities are available to treat varicose veins/venous insufficiency, including surgery, thermal ablation, sclerotherapy, mechanochemical ablation (MOCA), cyanoacrylate adhesive (CAC), and cryotherapy. The application of each modality is influenced by the severity of the symptoms, type of vein, source of venous reflux, and the use of other (prior or concurrent) treatment.

Summary of Evidence

Saphenous Veins

For individuals who have varicose veins/venous insufficiency and saphenous vein reflux who receive endovenous thermal ablation (radiofrequency or laser), the evidence includes randomized controlled trials (RCTs) and systematic reviews of controlled trials. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. There are a number of large RCTs and systematic reviews of RCTs assessing endovenous thermal ablation of the saphenous veins. Comparison with the standard of ligation and stripping at 2- to 5-year follow-up has supported the use of both endovenous laser ablation and radiofrequency ablation (RFA). Evidence has suggested that ligation and stripping lead to more neovascularization, while thermal ablation leads to more recanalization, resulting in similar clinical outcomes for endovenous thermal ablation and surgery. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have varicose veins/venous insufficiency and saphenous vein reflux who receive microfoam sclerotherapy, the evidence includes RCTs and systematic reviews. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. In a Cochrane review, ultrasound-guided foam sclerotherapy was inferior to both ligation and stripping and endovenous laser ablation for technical success up to 5 years and beyond 5 years, but there was no significant difference between treatments for recurrence up to 3 years and at 5 years. For physician-compounded sclerotherapy, there is high variability in success rates and some reports of serious adverse events. By comparison, rates of occlusion with the microfoam sclerotherapy (polidocanol 1%) approved by the U.S. Food and Drug Administration (FDA) are similar to those reported for endovenous laser ablation or stripping. Results of a noninferiority trial of physician-compounded sclerotherapy have indicated that once occluded, recurrence rates at 2 years are similar to those of ligation and stripping. Together, this evidence indicates that the more consistent occlusion with the microfoam sclerotherapy preparation will lead to recurrence rates similar to ligation and stripping in the longer term. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have varicose veins/venous insufficiency and saphenous vein reflux who receive mechanochemical ablation (MOCA), the evidence includes 4 RCTs with 6 months to 2-year results that compared MOCA to thermal ablation, and 2 prospective cohorts with follow-up out to 8 years. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. MOCA is a combination of liquid sclerotherapy with mechanical abrasion. A potential advantage of this procedure compared with thermal ablation is that MOCA does not require tumescent anesthesia and may result in less pain during the procedure. Results to date have been mixed regarding a reduction in intraprocedural pain compared to thermal ablation procedures. Occlusion rates at 6 months to 2 years from RCTs indicate lower anatomic success rates compared to thermal ablation, but a difference in clinical outcomes at these early time points has not been observed. Experience with other endoluminal ablation procedures suggests that lower anatomic success in the short term is associated with recanalization and clinical recurrence between 2 to 5 years. The possibility of later clinical recurrence is supported by prospective cohort studies with up to 8-year follow-up following treatment with MOCA. However, there have been improvements in technique since the cohort studies began, and clinical

progression is frequently observed with venous disease. Because of these limitations, longer follow-up of the more recently conducted RCTs is needed to establish the efficacy and durability of this procedure compared with the criterion standard of thermal ablation. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have varicose veins/venous insufficiency and saphenous vein reflux who receive cyanoacrylate adhesive (CAC), the evidence includes 3 RCTs and prospective cohort studies. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. Evidence includes a multicenter noninferiority trial with follow-up through 36 months, 2 RCTs with follow-up through 24 months, and a prospective cohort with 30-month follow-up. The short-term efficacy of VenaSeal CAC has been shown to be noninferior to RFA at up to 36 months. At 24 and 36 months, the study had greater than 20% loss to follow-up, but loss to follow-up was similar in the 2 groups at the long-term follow-up and is not expected to influence the comparative results. Another RCT (N=248) comparing VenaSeal CAC with RFA found similar proportions of vein closures at 24 months with both treatments, with potentially shorter procedure duration with CAC versus RFA. A third RCT (N=525) with an active CAC ingredient (N-butyl cyanoacrylate) that is currently available outside of the U.S. found no significant differences in vein closure between CAC and thermal ablation controls at 24-month follow-up. The CAC procedure and return to work were shorter and pain scores were lower compared to thermal ablation, although the subjective pain scores may have been influenced by differing expectations in this study. Prospective cohort studies report high closure rates at follow up to 30 months. Overall, results indicate that outcomes from CAC are at least as good as thermal ablation techniques, the current standard of care. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have varicose veins/venous insufficiency and saphenous vein reflux who receive cryoablation, the evidence includes RCTs. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. Results from a recent RCT of cryoablation have indicated that this therapy is inferior to conventional stripping. Studies showing a benefit on health outcomes are needed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Varicose Tributary Veins
For individuals who have varicose tributary veins who receive ablation (stab avulsion, sclerotherapy, or phlebectomy) of tributary veins, the evidence includes RCTs and systematic reviews of RCTs. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. The literature has shown that sclerotherapy is effective for treating tributary veins following occlusion of the saphenofemoral or saphenopopliteal junction and saphenous veins. No studies have been identified comparing RFA or laser ablation of tributary veins with standard procedures (microphlebectomy and/or sclerotherapy). Transilluminated powered phlenectomy (TIPP) is effective at removing varicosities; outcomes are comparable to available alternatives such as stab avulsion and hook phlebectomy. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

Perforator Veins
For individuals who have perforator vein reflux who receive ablation (eg, subfascial endoscopic perforator surgery) of perforator veins, the evidence includes RCTs, systematic reviews of RCTs, and a retrospective study. Relevant outcomes are symptoms, change in disease status, morbid events, quality of life, and treatment-related morbidity. The literature has indicated that the routine ligation or ablation of incompetent perforator veins is not necessary for the treatment of varicose veins/venous insufficiency at the time of superficial vein procedures. However, when combined superficial vein procedures and compression therapy have failed to improve symptoms (ie, ulcers), treatment of perforator vein reflux may be as beneficial as an alternative (eg, deep vein valve replacement). Comparative studies are needed to determine the most effective method of ligating or ablating incompetent perforator veins. Subfascial endoscopic perforator surgery is possibly as effective as the Linton procedure with a reduction in adverse events. Endovenous ablation with specialized laser or radiofrequency probes has been shown to effectively ablate incompetent perforator veins with a potential decrease in morbidity compared with

surgical interventions. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

Policy History

Date	Action
7/2025	Annual policy review. Policy updated with literature review through March 13, 2025; references added. Policy statements unchanged.
4/2025	Policy clarified to align with the association national policy criteria on symptomatic varicose tributaries. Prior Authorization Request Form for Treatment of Varicose Veins/Venous Insufficiency MP #129 added.
11/2024	Policy clarified. The first policy statement under symptomatic varicose tributaries section was edited for clarity.
7/2024	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
5/2024	Policy revised to include the following medically necessary statement under Symptomatic Varicose Tributaries: Treatments of the tributary veins are considered medically necessary if saphenous reflux is not present or already successfully eliminated, the veins are > than 4 mm in diameter and if the individual remains symptomatic after a six-week trial of conservative therapy. Source: L33575. Effective 5/1/2024.
9/2023	Policy clarified to include prior authorization requests using Authorization Manager.
7/2023	Annual policy review. Minor editorial refinements to policy statement; intent unchanged.
7/2022	Annual policy review. Minor editorial refinements to policy statement to update "not medically necessary" language to "investigational"; intent unchanged.
6/2022	Prior authorization information clarified for PPO plans. Effective 6/1/2022.
5/2022	Last criteria clarified under saphenous veins and accessory saphenous veins to state: A failure after the use of medical grade compression stockings (medical grade at least 20-30mmHg pressure). Effective 5/1/2022.
6/2021	Annual policy review. Description, summary, and references updated. Policy statements unchanged.
1/2021	Medicare information removed. See MP #132 Medicare Advantage Management for local coverage determination and national coverage determination reference.
7/2020	Annual policy review. Description, summary and references updated. Policy statements unchanged.
10/2019	Annual policy review. Cyanoacrylate adhesive may be considered medically necessary. A medically necessary statement was added on concurrent treatment of the accessory saphenous veins. Effective 10/1/2019.
6/2019	Prior authorization is required. Clarified coding information. Effective 6/1/2019.
3/2019	Annual policy review. Description, summary and references updated. Policy statements unchanged.
1/2019	Clarified coding information.
7/2018	Annual policy review. Background and summary clarified. New references added.
1/2018	Clarified coding information.
10/2017	Clarified coding information.
6/2017	Annual policy review. New references added.
5/2017	Clarified coding information.
1/2017	Clarified coding information for the 2017 code changes.
4/2016	Annual policy review. The requirement of failure of compression therapy was removed from the policy statements on ulceration secondary to venous stasis and recurrent superficial thrombophlebitis; terminology was changed from greater and lesser to great and small saphenous veins. Effective 4/1/2016.
4/2015	Annual policy review. Clarified coding information. New medically necessary and investigational indications described. Effective 4/1/2015.

1/2015	Clarified coding information.
6/2014	Updated Coding section with ICD10 procedure and diagnosis codes. Effective 10/2015.
4/2014	Annual policy review. New references added.
11/2013	Added HCPCS code S2202.
5/2013	Annual policy review. New references added.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
11/2011	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
12/2010	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
11/1/2010	Medical Policy 238 describing covered and non-covered indications. Effective 11/2/2010.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

Medical Policy Terms of Use
Managed Care Guidelines
Indemnity/PPO Guidelines
Clinical Exception Process
Medical Technology Assessment Guidelines

References

1. O'Meara S, Cullum NA, Nelson EA. Compression for venous leg ulcers. Cochrane Database Syst Rev. Jan 21 2009; (1): CD000265. PMID 19160178
2. O'Meara S, Cullum N, Nelson EA, et al. Compression for venous leg ulcers. Cochrane Database Syst Rev. Nov 14 2012; 11(11): CD000265. PMID 23152202
3. Knight Nee Shingler SL, Robertson L, Stewart M. Graduated compression stockings for the initial treatment of varicose veins in people without venous ulceration. Cochrane Database Syst Rev. Jul 16 2021; 7(7): CD008819. PMID 34271595
4. Howard DP, Howard A, Kothari A, et al. The role of superficial venous surgery in the management of venous ulcers: a systematic review. Eur J Vasc Endovasc Surg. Oct 2008; 36(4): 458-65. PMID 18675558
5. O'Donnell TF. The present status of surgery of the superficial venous system in the management of venous ulcer and the evidence for the role of perforator interruption. J Vasc Surg. Oct 2008; 48(4): 1044-52. PMID 18992425
6. Jones L, Braithwaite BD, Selwyn D, et al. Neovascularisation is the principal cause of varicose vein recurrence: results of a randomised trial of stripping the long saphenous vein. Eur J Vasc Endovasc Surg. Nov 1996; 12(4): 442-5. PMID 8980434
7. Rutgers PH, Kitslaar PJ. Randomized trial of stripping versus high ligation combined with sclerotherapy in the treatment of the incompetent greater saphenous vein. Am J Surg. Oct 1994; 168(4): 311-5. PMID 7943585
8. Farah MH, Nayfeh T, Urtecho M, et al. A systematic review supporting the Society for Vascular Surgery, the American Venous Forum, and the American Vein and Lymphatic Society guidelines on the management of varicose veins. J Vasc Surg Venous Lymphat Disord. Sep 2022; 10(5): 1155-1171. PMID 34450355
9. Whing J, Nandhra S, Nesbitt C, et al. Interventions for great saphenous vein incompetence. Cochrane Database Syst Rev. Aug 11 2021; 8(8): CD005624. PMID 34378180
10. Paravastu SC, Horne M, Dodd PD. Endovenous ablation therapy (laser or radiofrequency) or foam sclerotherapy versus conventional surgical repair for short saphenous varicose veins. Cochrane Database Syst Rev. Nov 29 2016; 11(11): CD010878. PMID 27898181
11. Brittenden J, Cotton SC, Elders A, et al. A randomized trial comparing treatments for varicose veins. N Engl J Med. Sep 25 2014; 371(13): 1218-27. PMID 25251616

12. Rass K, Frings N, Glowacki P, et al. Comparable effectiveness of endovenous laser ablation and high ligation with stripping of the great saphenous vein: two-year results of a randomized clinical trial (RELACS study). Arch Dermatol. Jan 2012; 148(1): 49-58. PMID 21931012
13. Rass K, Frings N, Glowacki P, et al. Same Site Recurrence is More Frequent After Endovenous Laser Ablation Compared with High Ligation and Stripping of the Great Saphenous Vein: 5 year Results of a Randomized Clinical Trial (RELACS Study). Eur J Vasc Endovasc Surg. Nov 2015; 50(5): 648-56. PMID 26319476
14. Christenson JT, Gueddi S, Gemayel G, et al. Prospective randomized trial comparing endovenous laser ablation and surgery for treatment of primary great saphenous varicose veins with a 2-year follow-up. J Vasc Surg. Nov 2010; 52(5): 1234-41. PMID 20801608
15. Biemans AA, Kockaert M, Akkersdijk GP, et al. Comparing endovenous laser ablation, foam sclerotherapy, and conventional surgery for great saphenous varicose veins. J Vasc Surg. Sep 2013; 58(3): 727-34.e1. PMID 23769603
16. van der Velden SK, Biemans AA, De Maeseneer MG, et al. Five-year results of a randomized clinical trial of conventional surgery, endovenous laser ablation and ultrasound-guided foam sclerotherapy in patients with great saphenous varicose veins. Br J Surg. Sep 2015; 102(10): 1184-94. PMID 26132315
17. Wallace T, El-Sheikha J, Nandhra S, et al. Long-term outcomes of endovenous laser ablation and conventional surgery for great saphenous varicose veins. Br J Surg. Dec 2018; 105(13): 1759-1767. PMID 30132797
18. Alozai T, Huizing E, Schreve MA, et al. A systematic review and meta-analysis of treatment modalities for anterior accessory saphenous vein insufficiency. Phlebology. Apr 2022; 37(3): 165-179. PMID 34965757
19. Hamann SAS, Giang J, De Maeseneer MGR, et al. Editor's Choice - Five Year Results of Great Saphenous Vein Treatment: A Meta-analysis. Eur J Vasc Endovasc Surg. Dec 2017; 54(6): 760-770. PMID 29033337
20. Vähäaho S, Mahmoud O, Halmesmäki K, et al. Randomized clinical trial of mechanochemical and endovenous thermal ablation of great saphenous varicose veins. Br J Surg. Apr 2019; 106(5): 548-554. PMID 30908611
21. Hamel-Desnos C, Nyamekye I, Chauzat B, et al. FOVELASS: A Randomised Trial of Endovenous Laser Ablation Versus Polidocanol Foam for Small Saphenous Vein Incompetence. Eur J Vasc Endovasc Surg. Mar 2023; 65(3): 415-423. PMID 36470312
22. Shadid N, Ceulen R, Nelemans P, et al. Randomized clinical trial of ultrasound-guided foam sclerotherapy versus surgery for the incompetent great saphenous vein. Br J Surg. Aug 2012; 99(8): 1062-70. PMID 22627969
23. Lam YL, Lawson JA, Toonder IM, et al. Eight-year follow-up of a randomized clinical trial comparing ultrasound-guided foam sclerotherapy with surgical stripping of the great saphenous vein. Br J Surg. May 2018; 105(6): 692-698. PMID 29652081
24. U.S. Food and Drug Administration, Center for Drug Evaluation and Research. Summary Review: 205098 Varithena. 2013; https://www.accessdata.fda.gov/drugsatfda_docs/nda/2013/205098Orig1s000SumR.pdf. Accessed March 18, 2025.
25. Todd KL, Wright DI, Gibson K, et al. 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. Oct 2014; 29(9): 608-18. PMID 23864535
26. Vasquez M, Gasparis AP. A multicenter, randomized, placebo-controlled trial of endovenous thermal ablation with or without polidocanol endovenous microfoam treatment in patients with great saphenous vein incompetence and visible varicosities. Phlebology. May 2017; 32(4): 272-281. PMID 26957489
27. Watanabe S, Okamura A, Iwamoto M, et al. A randomized controlled study to evaluate the safety and feasibility of concomitant transluminal injection of foam sclerosant combined with endovenous laser ablation in patients with incompetent small saphenous veins. Phlebology. Mar 2025; 40(2): 116-125. PMID 39209827
28. Deak ST. Retrograde administration of ultrasound-guided endovenous microfoam chemical ablation for the treatment of superficial venous insufficiency. J Vasc Surg Venous Lymphat Disord. Jul 2018; 6(4): 477-484. PMID 29909854

29. Bootun R, Lane TR, Dharmarajah B, et al. Intra-procedural pain score in a randomised controlled trial comparing mechanochemical ablation to radiofrequency ablation: The Multicentre Venefit™ versus ClariVein® for varicose veins trial. Phlebology. Feb 2016; 31(1): 61-5. PMID 25193822
30. Lane T, Bootun R, Dharmarajah B, et al. A multi-centre randomised controlled trial comparing radiofrequency and mechanical occlusion chemically assisted ablation of varicose veins - Final results of the Venefit versus Clarivein for varicose veins trial. Phlebology. Mar 2017; 32(2): 89-98. PMID 27221810
31. Lam YL, Toonder IM, Wittens CH. Clarivein® mechano-chemical ablation an interim analysis of a randomized controlled trial dose-finding study. Phlebology. Apr 2016; 31(3): 170-6. PMID 26249150
32. Holewijn S, van Eekeren RRJP, Vahl A, et al. Two-year results of a multicenter randomized controlled trial comparing Mechanochemical endovenous Ablation to RADiOfrequeNcy Ablation in the treatment of primary great saphenous vein incompetence (MARADONA trial). J Vasc Surg Venous Lymphat Disord. May 2019; 7(3): 364-374. PMID 31000063
33. Mohamed AH, Leung C, Wallace T, et al. A Randomized Controlled Trial of Endovenous Laser Ablation Versus Mechanochemical Ablation With ClariVein in the Management of Superficial Venous Incompetence (LAMA Trial). Ann Surg. Jun 01 2021; 273(6): e188-e195. PMID 31977509
34. Oud S, Alozai T, Lam YL, et al. Long-term outcomes of mechanochemical ablation using the Clarivein device for the treatment of great saphenous vein incompetence. J Vasc Surg Venous Lymphat Disord. Jan 2025; 13(1): 101967. PMID 39270843
35. Thierens N, Holewijn S, Vissers WH, et al. Five-year outcomes of mechano-chemical ablation of primary great saphenous vein incompetence. Phlebology. May 2020; 35(4): 255-261. PMID 31291849
36. U.S. Food and Drug Administration. VenaSeal Closure System. PMA P140018. 2015; https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P140018. Accessed March 18, 2025.
37. Morrison N, Gibson K, McEnroe S, et al. Randomized trial comparing cyanoacrylate embolization and radiofrequency ablation for incompetent great saphenous veins (VeClose). J Vasc Surg. Apr 2015; 61(4): 985-94. PMID 25650040
38. Gibson K, Ferris B. Cyanoacrylate closure of incompetent great, small and accessory saphenous veins without the use of post-procedure compression: Initial outcomes of a post-market evaluation of the VenaSeal System (the WAVES Study). Vascular. Apr 2017; 25(2): 149-156. PMID 27206470
39. Klem TM, Schnater JM, Schütte PR, et al. A randomized trial of cryo stripping versus conventional stripping of the great saphenous vein. J Vasc Surg. Feb 2009; 49(2): 403-9. PMID 19028042
40. Gibson K, Khilnani N, Schul M, et al. American College of Phlebology Guidelines - Treatment of refluxing accessory saphenous veins. Phlebology. Aug 2017; 32(7): 448-452. PMID 27738242
41. Morrison N, Kolluri R, Vasquez M, et al. Comparison of cyanoacrylate closure and radiofrequency ablation for the treatment of incompetent great saphenous veins: 36-Month outcomes of the VeClose randomized controlled trial. Phlebology. Jul 2019; 34(6): 380-390. PMID 30403154
42. Eroglu E, Yasim A. A Randomised Clinical Trial Comparing N-Butyl Cyanoacrylate, Radiofrequency Ablation and Endovenous Laser Ablation for the Treatment of Superficial Venous Incompetence: Two Year Follow up Results. Eur J Vasc Endovasc Surg. Oct 2018; 56(4): 553-560. PMID 30042039
43. Alhewy MA, Abdo EM, Ghazala EAE, et al. Outcomes of Cyanoacrylate Closure Versus Radiofrequency Ablation for the Treatment of Incompetent Great Saphenous Veins. Ann Vasc Surg. Jan 2024; 98: 309-316. PMID 37802141
44. Morrison N, Gibson K, Vasquez M, et al. VeClose trial 12-month outcomes of cyanoacrylate closure versus radiofrequency ablation for incompetent great saphenous veins. J Vasc Surg Venous Lymphat Disord. May 2017; 5(3): 321-330. PMID 28411697
45. Eroglu E, Yasim A, Ari M, et al. Mid-term results in the treatment of varicose veins with N-butyl cyanoacrylate. Phlebology. Dec 2017; 32(10): 665-669. PMID 28669248
46. Zierau U. Sealing Veins with the VenaSeal Sapheon Closure System: Results for 795 Treated Truncal Veins after 1000 Days. Vasomed. 2015;27:124-127.
47. Imai T, Mo M, Hirokawa M, et al. Mid-term results of cyanoacrylate closure for the treatment of incompetent great and small saphenous veins: Findings from a Japanese prospective consecutive multi-center registry: Mid-term results of cyanoacrylate closure. Phlebology. Feb 2025; 40(1): 21-28. PMID 39116289

48. Disselhoff BC, der Kinderen DJ, Kelder JC, et al. Randomized clinical trial comparing endovenous laser with cryostripping for great saphenous varicose veins. Br J Surg. Oct 2008; 95(10): 1232-8. PMID 18763255
49. Disselhoff BC, der Kinderen DJ, Kelder JC, et al. Five-year results of a randomized clinical trial comparing endovenous laser ablation with cryostripping for great saphenous varicose veins. Br J Surg. Aug 2011; 98(8): 1107-11. PMID 21633948
50. de Ávila Oliveira R, Riera R, Vasconcelos V, et al. Injection sclerotherapy for varicose veins. Cochrane Database Syst Rev. Dec 10 2021; 12(12): CD001732. PMID 34883526
51. Leopardi D, Hoggan BL, Fitridge RA, et al. Systematic review of treatments for varicose veins. Ann Vasc Surg. Mar 2009; 23(2): 264-76. PMID 19059756
52. El-Sheikha J, Nandhra S, Carradice D, et al. Clinical outcomes and quality of life 5 years after a randomized trial of concomitant or sequential phlebectomy following endovenous laser ablation for varicose veins. Br J Surg. Aug 2014; 101(9): 1093-7. PMID 24916467
53. Yamaki T, Hamahata A, Soejima K, et al. Prospective randomised comparative study of visual foam sclerotherapy alone or in combination with ultrasound-guided foam sclerotherapy for treatment of superficial venous insufficiency: preliminary report. Eur J Vasc Endovasc Surg. Mar 2012; 43(3): 343-7. PMID 22230599
54. Michaels JA, Campbell WB, Brazier JE, et al. Randomised clinical trial, observational study and assessment of cost-effectiveness of the treatment of varicose veins (REACTIV trial). Health Technol Assess. Apr 2006; 10(13): 1-196, iii-iv. PMID 16707070
55. Luebke T, Brunkwall J. Meta-analysis of transilluminated powered phlebectomy for superficial varicosities. J Cardiovasc Surg (Torino). Dec 2008; 49(6): 757-64. PMID 19043390
56. Chetter IC, Mylankal KJ, Hughes H, et al. Randomized clinical trial comparing multiple stab incision phlebectomy and transilluminated powered phlebectomy for varicose veins. Br J Surg. Feb 2006; 93(2): 169-74. PMID 16432820
57. Giannopoulos S, Rodriguez L, Chau M, et al. A systematic review of the outcomes of percutaneous treatment modalities for pathologic saphenous and perforating veins. J Vasc Surg Venous Lymphat Disord. Sep 2022; 10(5): 1172-1183.e5. PMID 35364302
58. Ho VT, Adkar SS, Harris EJ. Systematic review and meta-analysis of management of incompetent perforators in patients with chronic venous insufficiency. J Vasc Surg Venous Lymphat Disord. Jul 2022; 10(4): 955-964.e5. PMID 35217217
59. Tenbrook JA, Iafrati MD, O'donnell TF, et al. Systematic review of outcomes after surgical management of venous disease incorporating subfascial endoscopic perforator surgery. J Vasc Surg. Mar 2004; 39(3): 583-9. PMID 14981453
60. van Gent WB, Catarinella FS, Lam YL, et al. Conservative versus surgical treatment of venous leg ulcers: 10-year follow up of a randomized, multicenter trial. Phlebology. Mar 2015; 30(1 Suppl): 35-41. PMID 25729066
61. Blomgren L, Johansson G, Dahlberg-Akerman A, et al. Changes in superficial and perforating vein reflux after varicose vein surgery. J Vasc Surg. Aug 2005; 42(2): 315-20. PMID 16102633
62. Lin ZC, Loveland PM, Johnston RV, et al. Subfascial endoscopic perforator surgery (SEPS) for treating venous leg ulcers. Cochrane Database Syst Rev. Mar 03 2019; 3(3): CD012164. PMID 30827037
63. Luebke T, Brunkwall J. Meta-analysis of subfascial endoscopic perforator vein surgery (SEPS) for chronic venous insufficiency. Phlebology. Feb 2009; 24(1): 8-16. PMID 19155335
64. Lawrence PF, Hager ES, Harlander-Locke MP, et al. Treatment of superficial and perforator reflux and deep venous stenosis improves healing of chronic venous leg ulcers. J Vasc Surg Venous Lymphat Disord. Jul 2020; 8(4): 601-609. PMID 32089497
65. Masuda E, Ozsvath K, Vossler J, et al. The 2020 appropriate use criteria for chronic lower extremity venous disease of the American Venous Forum, the Society for Vascular Surgery, the American Vein and Lymphatic Society, and the Society of Interventional Radiology. J Vasc Surg Venous Lymphat Disord. Jul 2020; 8(4): 505-525.e4. PMID 32139328
66. Gloviczki P, Comerota AJ, Dalsing MC, et al. The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. J Vasc Surg. May 2011; 53(5 Suppl): 2S-48S. PMID 21536172
67. Gloviczki P, Lawrence PF, Wasan SM, et al. The 2022 Society for Vascular Surgery, American Venous Forum, and American Vein and Lymphatic Society clinical practice guidelines for the management of varicose veins of the lower extremities. Part I. Duplex Scanning and Treatment of Superficial Truncal

Reflux: Endorsed by the Society for Vascular Medicine and the International Union of Phlebology. J Vasc Surg Venous Lymphat Disord. Mar 2023; 11(2): 231-261.e6. PMID 36326210
68. Gloviczki P, Lawrence PF, Wasan SM, et al. The 2023 Society for Vascular Surgery, American Venous Forum, and American Vein and Lymphatic Society clinical practice guidelines for the management of varicose veins of the lower extremities. Part II: Endorsed by the Society of Interventional Radiology and the Society for Vascular Medicine. J Vasc Surg Venous Lymphat Disord. Jan 2024; 12(1): 101670. PMID 37652254
69. American College of Phlebology. Superficial venous disease. 2015; https://www.myavls.org/assets/pdf/SuperficialVenousDiseaseGuidelinesPMS313-02.03.16.pdf. Accessed March 18, 2025.
70. Blebea J, Fukaya E, Moore KS, et al. Mechanochemical chemically assisted ablation of varicose veins for venous insufficiency: American vein and lymphatic society position statement. Phlebology. Mar 2025; 40(2): 104-109. PMID 39167828
71. Brittenden J, Cotton SC, Elders A, et al. Clinical effectiveness and cost-effectiveness of foam sclerotherapy, endovenous laser ablation and surgery for varicose veins: results from the Comparison of LAser, Surgery and foam Sclerotherapy (CLASS) randomised controlled trial. Health Technol Assess. Apr 2015; 19(27): 1-342. PMID 25858333

Endnotes

[1] Based on expert opinion
[2] Based on expert opinion