Oscar Clinical Guideline: Varicose Vein Treatment (CG004, Ver.12)

Varicose Vein Treatment

Summary

The lower extremities contain a system of veins that bring blood back towards the heart. This venous system consists of superficial veins (great and small saphenous veins) and deep veins (femoral and popliteal veins), which are connected by a series of perforator veins. These veins have small one-way valves in them, which normally function to prevent the blood from flowing backwards. When these valves fail to function as intended, the blood can flow in the opposite direction and pool in the superficial veins. The condition associated with this venous reflux or insufficiency is called varicose veins, and it is a relatively common condition that may affect 10-30% of the population. Symptoms of varicose veins can range from visible varicosities to more severe symptoms such as ulceration and hemorrhage. Treatment is usually conservative and consists of leg elevation and compression stockings. In many patients, symptoms can be alleviated with conservative management, which may include compression, analgesics, NSAIDS, exercise, weight loss, and elevation of extremity. However, when conservative treatment fails or the symptoms warrant further intervention, surgical procedures may be indicated. The Plan considers treatment of varicose veins in the setting of non-cosmetic, persistent symptoms of venous disease medically necessary. Findings of venous insufficiency on a recent ultrasound examination of the veins in the leg must be documented. The specific indications of medical necessity are outlined below. *Please check your plan coverage for varicose vein treatment benefits.*

Definitions

"Endovenous Mechanochemical Ablation" is a technique that uses a combination of sclerotherapy and mechanical disruption of the venous walls.

"Perforator Veins" are veins that connect the superficial veins to the deep draining veins.

"Phlebectomy" is a technique in which the varicose vein is removed through numerous tiny cuts made in the skin. Types of phlebectomy include, but are not limited to, the following:

- "Hook Phlebectomy" or "stab avulsion"or "stab phlebectomy" is where a small hook-shaped device is inserted through the cut in the skin to remove the vein
- "Transilluminated powered phlebectomy" is performed with a bright light to illuminate the vein and then suction is used to remove the targeted region.

"Sclerotherapy" is an injection of a chemical into the vein that causes fibrosis (scarring) and permanent occlusion of the vessel. Types of sclerotherapy include, but are not limited to, the following:

- "Liquid Sclerotherapy" is the traditional method of sclerotherapy where a liquid agent is injected into the vein
- "Foam Sclerotherapy" is similar to liquid sclerotherapy but instead uses a foam substance rather than a liquid, which may allow for more rapid treatment and that of larger areas.
- "Echosclerotherapy" uses ultrasound to guide the needle to the appropriate vein, often used for deeper or difficult to visualize veins.

"Subfascial Endoscopic Perforator Surgery (SEPS)" is surgical procedure used to treat incompetent perforator veins where the veins are divided and clipped as treatment.

"Thermal Ablation" is a technique that uses laser light or radiofrequency energy to generate a temperature high enough that damages the vein wall and subsequently occludes the vessel.

"Vein Ligation/Stripping" is a surgical procedure where the incompetent vein (usually the great saphenous vein) is surgically tied and then pulled out from under the skin through an incision.

Clinical Indications

Open Venous Surgery (Stripping/Ligation) and Endovascular Thermal Ablation (Radiofrequency or Laser)
(Please check your plan coverage for varicose vein treatment benefits)

1. For the Great Saphenous Vein, Accessory Saphenous Vein, or Small Saphenous Vein, The Plan considers initial open venous surgery or endovascular thermal ablation medically necessary when ALL of the following criteria are met:
    a. Varicose veins result in at least one of the following symptoms:
        i. Recurrent bleeding from a superficial varicose vein; *or*
        ii. Ulceration secondary to venous stasis; *or*

iii. The following symptoms despite a 3-month trial of adherence to conservative measures such as leg elevation, exercise, compression stockings, and analgesics or documentation as to why a 3-month trial of conservative management is not indicated:
1. Pain, edema, leg heaviness or cramps that interfere with activities of daily living; *or*
2. Persistent or recurrent superficial thrombophlebitis.

b. Duplex ultrasound study of the legs within the last 12 months confirming reflux, defined by at least 0.5 seconds of retrograde flow, at a site proximal to the anticipated location of therapy; *and*
c. No evidence of acute deep venous thrombosis on duplex ultrasound or other contraindications to the therapy, including but not limited to local infection or systemic infection, advanced peripheral arterial disease, or advanced collagen vascular disease.

2. For Perforator Veins, The Plan considers initial surgical ligation (i.e., SEPS procedure) or endovascular thermal ablation medically necessary when ALL of the following criteria are met:
a. Duplex ultrasound study of the legs within the last 12 months confirming reflux, defined by at least 0.5 seconds of retrograde flow, at a site proximal to the anticipated location of therapy; *and*
b. Vein diameter of at least 3.5 mm as measured by duplex ultrasound study; *and*
c. Any reflux identified in superficial saphenous veins has been eliminated; *and*
d. Located beneath a healed or open venous ulcer; *or*
e. The ulcer has persisted despite a 3-month trial of adherence to conservative measures such as leg elevation, exercise, compression stockings, and analgesics or documentation as to why a 3-month trial of conservative management is not indicated.

Endovenous Chemical Ablation (Liquid Sclerotherapy, Foam Sclerotherapy, Echosclerotherapy, VenaSeal (Cyanoacrylate Adhesive, i.e., cyanoacrylate endovascular embolization that is a non-sclerosant)

(Please check your plan coverage for varicose vein treatment benefits)

The Plan considers initial treatment for varicose veins via endovenous chemical ablation medically necessary when ALL of the following criteria are met:

1. One of the following two treatment modality criteria is met:
a. After failure of endovenous thermal ablation or open venous surgery:
i. Endovenous chemical ablation is a standalone or follow-up treatment modality for great saphenous, small saphenous, accessory saphenous and perforator veins (measuring greater than 3.5 mm in diameter by ultrasound). Each vein segment is a uniquely separate vein from the greater or accessory saphenous veins; *or*
b. For veins that are not amenable to endovenous thermal treatments or open venous surgery:

i. Endovenous chemical ablation is a concurrent or follow-up treatment modality for great saphenous, small saphenous, accessory saphenous and perforator veins (measuring greater than 3.5 mm in diameter by ultrasound). Each vein segment is a uniquely separate vein from the greater or accessory saphenous veins; *and*

2. Varicose veins result in at least one of the following symptoms:
    a. Recurrent bleeding from a superficial varicose vein; *or*
    b. Ulceration secondary to venous stasis; *or*
    c. The following symptoms despite a 3-month trial of adherence to conservative measures such as leg elevation, exercise, compression stockings, and analgesics:
        i. Pain, edema, leg heaviness or cramps that interfere with activities of daily living; *or*
        ii. Persistent or recurrent superficial thrombophlebitis.
3. Duplex ultrasound study of the legs within the last 12 months confirming reflux, defined by at least 0.5 seconds of retrograde flow, at a site proximal to the anticipated location of therapy; *and*
4. No evidence of acute deep venous thrombosis on duplex ultrasound or other contraindications to the therapy, including but not limited to local infection or systemic infection, advanced peripheral arterial disease, or advanced collagen vascular disease.

Polidocanol Endovenous Microfoam 1% (Varithena)

(Please check your plan coverage for varicose vein treatment benefits)

The Plan considers initial treatment for varicose veins with Polidocanol Endovenous Microfoam 1% medically necessary when ALL of the following criteria are met:

1. After failure of endovenous thermal ablation or open venous surgery:
    a. Polidocanol Endovenous Microfoam 1% is either a standalone, follow-up, or concurrent treatment modality for great saphenous veins or accessory saphenous veins; *and*
2. No more than 3 injections (5 mL per injection,15mL total) per session (one or both legs); *and*
3. Varicose veins result in at least one of the following symptoms:
    a. Recurrent bleeding from a superficial varicose vein; *or*
    b. Ulceration secondary to venous stasis; *or*
    c. The following symptoms despite a 3-month trial of adherence to conservative measures such as leg elevation, exercise, compression stockings, and analgesics:
        i. Pain, edema, leg heaviness or cramps that interfere with activities of daily living; *or*
        ii. Persistent or recurrent superficial thrombophlebitis; *and*
4. Duplex ultrasound study of the legs within the last 12 months confirming reflux, defined by at least 0.5 seconds of retrograde flow, at a site proximal to the anticipated location of therapy; *and*
5. No allergy to polidocanol, no evidence of acute deep venous thrombosis on duplex ultrasound, or other contraindications to the therapy, including but not limited to local infection or systemic infection, advanced peripheral arterial disease, or advanced collagen vascular disease.

Stab Avulsion / Hook Phlebectomy/ Stab Phlebectomy

The Plan considers initial treatment for varicose veins by Stab Avulsion, or Hook Phlebectomy, or Stab Phlebectomy medically necessary when ALL of the following criteria are met:

1. Visible Superficial tributary varicosities, accessory, or perforator veins that are 3 mm or greater in diameter; *and*
2. Performed concurrently or in conjunction with or after another treatment method for varicose veins as listed above in the guideline (e.g., vein stripping, thermal or chemical ablation); *and*
3. Reflux, defined by at least 0.5 seconds of retrograde flow, confirmed by ultrasound or duplex ultrasound study of the legs within the last 12 months proximal to the incompetent junction that is also being treated; *and*
4. Saphenous venous insufficiency symptoms causing functional impairment to activities of daily living, including 1 or more of the following:
    a. Bleeding, recurrent bleeding, or ruptured superficial varicose veins; *or*
    b. Leg edema (swelling); *or*
    c. Leg fatigue or heaviness; *or*
    d. Leg pain or cramps; *or*
    e. Persistent or recurrent superficial thrombophlebitis; *or*
    f. Persistent or recurrent venous stasis ulcer; *or*
    g. Skin changes (e.g., hemosiderosis, lipodermatosclerosis); *and*
5. No other exclusions listed under Experimental or Investigational / Not Medically Necessary; *and*
6. No lymphedema or severe peripheral edema in region of procedure; *and*
7. No evidence of acute deep venous thrombosis on duplex ultrasound or other contraindications to the therapy, including but not limited to local infection or systemic infection, advanced peripheral arterial disease, or advanced collagen vascular disease.

Continued Care

Criteria for Continuing Treatment After Initial Trial

Open Venous Surgery (Stripping/Ligation), Endovascular Thermal Ablation (Radiofrequency or Laser)

The Plan considers repeat procedure medically necessary when the following criteria are met:

1. The member continues to have symptomatic varicose vein(s) after treatment with ≥0.5 seconds of retrograde flow (for perforator veins ≥3.5mm diameter).

Endovenous Chemical Ablation (Liquid Sclerotherapy, Foam Sclerotherapy, Echosclerotherapy), VenaSeal (CAA-Cyanoacrylate Ablation), i.e., cyanoacrylate embolization that is a non-sclerosant)

The Plan considers repeat procedure medically necessary when ALL of the following criteria are met:

1. The member continues to have symptomatic varicose vein(s) after treatment with ≥0.5 seconds of retrograde flow (for perforator veins ≥3.5mm diameter); *and*
2. No more than 3 sessions per vein field in total.

Polidocanol Endovenous Microfoam 1% (Varithena)

The Plan considers repeat procedure with Varithena medically necessary when ALL of the following criteria are met:

1. The member continues to have symptomatic varicose vein(s) after treatment with ≥0.5 seconds of retrograde flow (for perforator veins ≥3.5mm diameter); *and*
2. No more than 3 sessions per vein field in total; *and*
3. A minimum of 5 days have passed since the last session.

Stab Avulsion / Hook Phlebectomy/ Stab Phlebectomy

The Plan considers repeat procedures medically necessary when ALL of the following criteria are met:

1. The member continues to have symptomatic varicose vein(s) after treatment; *and*
2. The procedure is performed no more than a total of three sessions (dates of services) per leg; *and*;
3. A minimum of 10 days since last session; *and/or*
4. If a request is beyond three total sessions per leg, the member must meet initial treatment criteria and a 3-month trial of adherence to conservative measures such as leg elevation, exercise, compression stockings, and analgesics or documentation as to why a 3-month trial of conservative management is not indicated.

Experimental or Investigational / Not Medically Necessary

1. The treatment of asymptomatic varicose veins is considered cosmetic, not medically necessary.
2. Sclerotherapy performed in conjunction with an open ligation of the saphenofemoral junction is not medically necessary. Sclerotherapy or thermal ablation to the saphenofemoral junction, performed at the same time as a primary ligation procedure of the same, for any reason, is considered not medically necessary.
3. The treatment of small veins, telangiectasias, and spider veins (reticular veins) measuring less than 3 mm by any mechanism is not medically necessary, as such small veins are cosmetic problems and do not typically cause pain, bleeding, ulceration, or other medical problems. These include but are not limited to:
    a. Asclera polidocanol injections
    b. Photothermal sclerosis (phototherapy, e.g., PhotoDerm, VascuLight, VeinLase)
    c. Transdermal laser
    d. VeinGogh Ohmic Thermolysis System
4. The following treatment options are *not covered*, as they are considered experimental and investigational as there is insufficient evidence in the peer-reviewed literature documenting their effectiveness and long-term outcomes relative to established therapies:
    a. Endovenous Mechanochemical Ablation (ClariVein® Catheter, MOCA, MCEA, MEECA)
    b. Transdermal laser
    c. SEPS for the treatment of venous insufficiency associated with post-thrombotic syndrome

d. Coil embolization
e. Any type of cryosurgery or cryoablation or cryostripping
f. Endoluminal radiofrequency, thermal, or laser ablation of varicose tributaries or as an alternative to SEPS for perforator veins.
g. Transilluminated Powered Phlebectomy (TIPP)

5. Additional duplex ultrasound when used to monitor response to treatment within 90 days of procedure is not covered separately as it is considered integral to the original procedure.

Applicable Billing Codes (HCPCS/CPT Codes)

CPT/HCPCS Codes considered medically necessary if criteria are met:	
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; subsequent vein(s) 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 or 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, 1 extremity; more than 20 incisions
37780	Ligation and division of short saphenous vein at saphenopopliteal junction (separate procedure)
37785	Ligation, division, and/or excision of varicose vein cluster(s), one leg
93970	Duplex scan of extremity veins including responses to compression and other maneuvers; complete bilateral study
93971	Duplex scan of extremity veins including responses to compression and other maneuvers; unilateral or limited study
S2202	Echosclerotherapy
ICD-10 codes considered medically necessary if criteria are met:	
I80.00 - I80.009	Phlebitis and thrombophlebitis
I83.001 - I83.029	Varicose veins of lower extremity with ulcer
I83.10 - I83.12	Varicose veins of lower extremities with inflammation
I83.201 - I83.229	Varicose veins of lower extremities with both ulcer and inflammation
I83.811 - I83.899	Varicose veins of lower extremities with other complications
I87.001 - I87.099	Postthrombotic syndrome
I87.2	Venous Insufficiency (Chronic) (Peripheral)
I87.301 - I87.399	Chronic venous hypertension (idiopathic)
ICD-10 codes considered *NOT* medically necessary for above CPT/HCPCS codes:	
I83.90 - I83.93	Asymptomatic varicose veins of lower extremities

Codes considered NOT medically necessary for indications listed in this Guideline:

Code	*Description*
17106	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); less than 10 sq cm
17107	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); 10.0-50.0 sq cm
17108	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); greater than 50.0 sq cm
36011	Selective catheter placement, venous system; first order branch (e.g., renal vein, jugular vein)
36468	Single or multiple injections of sclerosing solutions, spider veins (telangiectasia); limb or trunk
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 (List separately in addition to code for primary procedure)
37241	Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; venous, other than hemorrhage (eg, congenital or acquired venous malformations, venous and capillary hemangiomas, varices, varicoceles)
37244	Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for arterial or venous hemorrhage or lymphatic extravasation
75894	Transcatheter therapy, embolization, any method, radiological supervision and interpretation
76942	Ultrasonic guidance for needle placement (eg, biopsy, aspiration, injection, localization device), imaging supervision and interpretation [not medically necessary for needle guidance]
76998	Ultrasonic guidance, intraoperative
37799	Unlisted procedure; vascular surgery
ICD-10 codes considered *NOT* medically necessary with the above CPT/HCPCS codes:	
I80.00 - I80.009	Phlebitis and thrombophlebitis
I83.001 - I83.029	Varicose veins of lower extremity with ulcer
I83.10 - I83.12	Varicose veins of lower extremities with inflammation
I83.201 - I83.229	Varicose veins of lower extremities with both ulcer and inflammation
I83.811 - I83.899	Varicose veins of lower extremities with other complications

I83.90 - I83.93	Asymptomatic varicose veins of lower extremities

Codes considered **experimental or investigational** for indications listed in this Guideline:

Code	*Description*
17106	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); less than 10 sq cm
17107	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); 10.0-50.0 sq cm
17108	Destruction of cutaneous vascular proliferative lesions (eg, laser technique); greater than 50.0 sq cm
ICD-10 codes considered experimental with the above CPT/HCPCS codes:	
I80.00 - I80.009	Phlebitis and thrombophlebitis
I83.001 - I83.029	Varicose veins of lower extremity with ulcer
I83.10 - I83.12	Varicose veins of lower extremities with inflammation
I83.201 - I83.229	Varicose veins of lower extremities with both ulcer and inflammation
I83.811 - I83.899	Varicose veins of lower extremities with other complications
I83.90 - I83.93	Asymptomatic varicose veins of lower extremities
I87.001 - I87.099	Postthrombotic syndrome
I87.2	Venous Insufficiency (Chronic) (Peripheral)
I87.301 - I87.399	Chronic venous hypertension (idiopathic)

References

1. American College of Phlebology. Practice Guidelines: Superficial Venous Disease. Treatment of Superficial Venous Disease of the Lower Leg. Available at: http://www.phlebology.org/member-resources/clinical-guidelines. Accessed January 5, 2017.
2. Biocompatibles, Inc. Varithena (polidocanol injectable foam) 1%, for intravenous use. Prescribing Information. Farnham, UK: Biocompatibles, Inc.; June 2014.
3. 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. 2015;19(27):1-342.

4. Carugo D, Ankrett DN, Zhao X, Zhang X, Hill M, O'Byrne V, Hoad J, Arif M, Wright DD, Lewis AL. Benefits of polidocanol endovenous microfoam (Varithena®) compared with physician-compounded foams. Phlebology. 2016 May;31(4):283-95.
5. Carradice D, Forsyth J, Mohammed A, Leung C, Hitchman L, Harwood AE, Wallace T, Smith GE, Campbell B, Chetter I. Compliance with NICE guidelines when commissioning varicose vein procedures. BJS Open. 2018 Aug 29;2(6):419-425.
6. Dimech AP, Cassar K. Efficacy of Cyanoacrylate Glue Ablation of Primary Truncal Varicose Veins Compared to Existing Endovenous Techniques: A Systematic Review of the Literature. The Surgery Journal. 2020;06(02):e77-e86.
7. De Maeseneer MGD, Kakkos SK, Aherne T, et al. Editor's Choice – European Society for Vascular Surgery (ESVS). 2022 Clinical Practice Guidelines on the Management of Chronic Venous Disease of the Lower Limbs. European Journal of Vascular and Endovascular Surgery. 2022;63(2):184-267.
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 of varicose veins. J Vasc Surg Venous Lymphat Disord. 2021.
9. Gibson K, Morrison N, Kolluri R, Vasquez M, Weiss R, Cher D, Madsen M, Jones A. Twenty-four month results from a randomized trial of cyanoacrylate closure versus radiofrequency ablation for the treatment of incompetent great saphenous veins. J Vasc Surg Venous Lymphat Disord. 2018 Sep;6(5):606-613. doi: 10.1016/j.jvsv.2018.04.009. Epub 2018 Jun 15. PMID: 29914814.
10. Gloviczki P, Lawrence PF, Suman MW, 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 ofbthe lower extremities. J Vasc Surg Venous Lymphat Disord. 2022. Doi: https://doi.org/10.1016/j.jvsv.2022.09.004.
11. 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 [published online ahead of print, 2023 Aug 29]. J Vasc Surg Venous Lymphat Disord. 2023;S2213-333X(23)00322-0. doi:10.1016/j.jvsv.2023.08.011
12. Gloviczki P, Gloviczki ML. Guidelines for the management of varicose veins. Phlebology. 2012;27(Suppl 1):2-9.
13. Hayes, Inc. Comparative Effectiveness Review. *Comparative Effectiveness Of Endovenous Laser Therapy Versus Conventional Surgery For Symptomatic Varicose Veins: A Review Of Reviews.* Lansdale, PA: Hayes, Inc.; Annual review Dec 1, 2020.
14. Hayes, Inc. Health Technology Assessment. Mechanochemical Endovenous Ablation (MOCA) with the ClariVein Infusion Catheter Nonthermal Vein Ablation System (Merit Medical Systems Inc.) for Treatment of Varicose Veins. Lansdale, PA: Hayes, Inc.; Published Feb 25, 2022.
15. Hayes, Inc. Health Technology Assessment. Cyanoacrylate Embolization With the VenaSeal Closure System (Medtronic Inc.) for the Treatment of Varicose Veins. Lansdale, PA: Hayes, Inc.; Sep 2, 2022. Annual Review: Sep 1, 2023.

16. Hayes, Inc. Health Technology Assessment. *Polidocanol Endovenous Microfoam (Varithena) 1% for Treatment of Varicose Veins.* Lansdale, PA: Hayes, Inc.; Annual review Dec 2, 2020.
17. Ihnat DM. Endovenous laser ablation for the treatment of lower extremity chronic venous disease. UpToDate Inc., Waltham, MA. Last updated Aug 29, 2023.
18. Jin HY, Ohe HJ, Hwang JK, Kim SD, Kim JY, Park SC, Kim JI, Won YS, Yun SS, Moon IS. Radiofrequency ablation of varicose veins improves venous clinical severity score despite failure of complete closure of the saphenous vein after 1 year. Asian J Surg. 2017 Jan;40(1):48-54.
19. Kantarovsky A, Vinogradski D, Mankowitsch E, Ashkenazi I. Pain is a Limiting Factor in Patients Suitable for Transilluminated Powered Phlebectomy. Rambam Maimonides Med J. 2019 Oct 29;10(4):e0023.
20. Kabnick LS, Scovell S. Overview of lower extremity chronic venous disease. UpToDate Inc., Waltham, MA. Last updated Sept, 2023.
21. Kabnick LS, Sadek M, Bjarnason H, Coleman DM, Dillavou ED, Hingorani AP, Lal BK, Lawrence PF, Malgor R, Puggioni A. Classification and treatment of endothermal heat-induced thrombosis: Recommendations from the American Venous Forum and the Society for Vascular Surgery This Practice Guidelines document has been co-published in Phlebology [DOI: 10.1177/0268355520953759] and Journal of Vascular Surgery: Venous and Lymphatic Disorders [DOI: 10.1016/j.jvsv.2020.06.008]. The publications are identical except for minor stylistic and spelling differences in keeping with each journal's style. The contribution has been published under a Attribution-Non Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0), (https://creativecommons.org/licenses/by-nc-nd/4.0/). Phlebology. 2021 Feb;36(1):8-25. doi: 10.1177/0268355520953759. Epub 2020 Sep 30.
22. Kim PS, Elias S, Gasparis A, Labropoulos N. Results of polidocanol endovenous microfoam in clinical practice. J Vasc Surg Venous Lymphat Disord. 2021 Jan;9(1):122-127. doi: 10.1016/j.jvsv.2020.04.015. Epub 2020 Apr 27.
23. El Kilic H, Bektas N, Bitargil M, Balkaya IA, Demir T, Koramaz I. Long-term outcomes of endovenous laser ablation, n-butyl cyanoacrylate, and radiofrequency ablation for treatment of chronic venous insufficiency. J Vasc Surg Venous Lymphat Disord. 2022 Jul;10(4):865-871.
24. McHugh SM, Leahy AL. What next after thermal ablation for varicose veins: Non-thermal ablation? Surgeon. 2014;12(5):237-238.
25. MCG™ Ambulatory Care 27th Edition. ACG-A-0170 (AC). Sclerotherapy, Leg Veins.
26. MCG™ Ambulatory Care 27th Edition. ACG-A-0171 (AC). Sclerotherapy Plus Ligation, Saphenofemoral Junction.
27. MCG™ Ambulatory Care 27th Edition. ACG-A-0172 (AC). Saphenous Vein Stripping.
28. MCG™ Ambulatory Care 27th Edition. ACG-A-0174 (AC). Saphenous Vein Ablation, Radiofrequency.
29. MCG™ Ambulatory Care 27th Edition. ACG-A-0425 (AC). Saphenous Vein Ablation, Laser.
30. MCG™ Ambulatory Care 27th Edition. ACG-A-0735 (AC). Stab Phlebectomy.
31. 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. 2018 Nov 7:268355518810259.

32. Morrison N, Gibson K, Vasquez M, Weiss R, Jones A. Five-year extension study of patients from a randomized clinical trial (VeClose) comparing cyanoacrylate closure versus radiofrequency ablation for the treatment of incompetent great saphenous veins. Journal of Vascular Surgery: Venous and Lymphatic Disorders. 2020;8(6):978-989.
33. 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. 2015;61(4):985-994.
34. Morrison N, Gibson K, Vasquez M, et al. VeClose trial 12-month outcomes of cyanoacrylate closure versus radiofrequency ablation for incompetent great saphenous veins. Journal of Vascular Surgery: Venous and Lymphatic Disorders. 2017;5(3):321-330.
35. Murad MH, et al. A systematic review and meta-analysis of the treatments of varicose veins. Journal of Vascular Surgery. Volume 53, Issue 5, 49S - 65S.
36. National Institute for Clinical Excellence (NICE). Cyanoacrylate glue occlusion for varicose veins. Interventional Procedure Guidance 526. London, UK: NICE; June 2015.Brittenden J, Cotton SC, Elders A, et al. A randomized trial comparing treatments for varicose veins. N Engl J Med. 2014;371(13):1218-1227.
37. Obi AT, Reames BN, Rook TJ, Mouch SO, Zarinsefat A, Stabler C, Rectenwald JE, Coleman DM, Wakefield TW; Michigan Vein Health Program. Outcomes associated with ablation compared to combined ablation and transilluminated powered phlebectomy in the treatment of venous varicosities. Phlebology. 2016 Oct;31(9):618-24.
38. Passman MA. Approach to treating symptomatic superficial venous insufficiency. UpToDate Inc., Waltham, MA. Last reviewed Sept 13, 2023.
39. Raetz J, Wilson M, Collins K. Varicose Veins: Diagnosis and Treatment. Am Fam Physician. 2019 Jun 1;99(11):682-688. https://www.aafp.org/afp/2019/0601/p682.html
40. Scovell S. Injection sclerotherapy techniques for the treatment of telangiectasias, reticular veins, and small varicose veins. UpToDate Inc., Waltham, MA. Last reviewed Sept 2023.
41. Scovell S.Techniques for radiofrequency ablation for the treatment of lower extremity chronic venous disease . UpToDate Inc., Waltham, MA. Last reviewed Sept 2023..
42. Treatment of superficial venous disease of the lower leg. [Internet] American College of Phlebology. Accessed at: http://www.phlebology.org. Last accessed December 27, 2016.
43. U.S. Food and Drug Administration. PROVENSIS. Varithena (polidocanol injectable foam) 1%, for intravenous use. Prescribing Information. Approved November 2013, Revised August 2019. https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/205098s031lbl.pdf
44. Vähäaho S, Halmesmäki K, Albäck A, Saarinen E, Venermo M. Five-year follow-up of a randomized clinical trial comparing open surgery, foam sclerotherapy and endovenous laser ablation for great saphenous varicose veins. Br J Surg. 2018 May;105(6):686-691.
45. Venermo M, Saarinen J, Eskelinen E, Vähäaho S, Saarinen E, Railo M et al. ; Finnish Venous Study Collaborators. Randomized clinical trial comparing surgery, endovenous laser ablation and ultrasound-guided foam sclerotherapy for the treatment of great saphenous varicose veins. Br J Surg 2016; 103: 1438–1444.

46. Whing J, Nandhra S, Nesbitt C, Stansby G. Interventions for great saphenous vein incompetence. Cochrane Database Syst Rev. 2021 Aug 11;8(8):CD005624. doi:10.1002/14651858.CD005624.pub4
47. Witte ME, Zeebregts CJ, de Borst GJ, Reijnen MMPJ, Boersma D. Mechanochemical endovenous ablation of saphenous veins using the ClariVein: A systematic review. Phlebology. 2017 Dec;32(10):649-657.
48. Wittens C, Davies AH, Baekgaard N, etc. Editor's Choice- Management of Chronic Venous Disease. Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS). *European Journal of Vascular & Endovascular.* 2015; 49(6): P678-737. https://doi.org/10.1016/j.ejvs.2015.02.007

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