VARICOSE VEINS - TREATMENT

What are varicose veins?

Varicose veins are swollen, twisted, and sometimes painful veins that have filled with an abnormal collection of blood. These veins have experienced the breakdown in the return pump valve, which in turn allows the blood to stay in these veins resulting in their dilation.

Once a vein becomes dilated, it is no longer functioning optimally for the benefit for the body's circulatory system.

Why varicose veins do occurs?

Varicose veins can happen to anybody. It is more likely to happen to you if your parents or relatives had them.

Standing per se does not cause varicose veins. It hastens the deterioration of malfunctioning valves and thus the development of varicose veins.

Pregnancy again does not cause varicose veins. Varicose veins occur in pregnant women with already deteriorating valves. So pregnancy is not a cause but a contributing factor.
A varicose vein presence does not necessarily produce varicosities as environmental factors also play a role in gene expression. Controlling these factors one can delay an unpleasant appearance of varicose veins.

**What are the stages of varicose veins?**

**C0**  No visible or palpable signs of venous disease

**C1**  Telangiectasia or reticular veins

**C2**  Varicose veins

**C3**  Edema
What are the treatment options available for varicose veins?

1. **Endovascular Laser Treatment (EVLT)**

EVLT is performed for the treatment of large, bulging varicose veins and their underlying cause, venous reflux. With endovenous laser therapy, no surgery is required and the entire procedure can be performed in less than an hour, making it the best laser treatment for varicose leg veins.

The most advanced laser of the latest generation emits an infrared laser beam. The laser energy delivered intravenously does not penetrate through the vein wall and, therefore, does not cause damage to the tissues, surrounding the vein. Result: less or completely absent post-procedure discomfort.
Local anesthesia is used for endovenous laser treatment (EVLT). With the assistance of ultrasound, a small catheter is inserted into the greater saphenous vein (a large vein in the inner thigh); a thin laser fiber is threaded into the catheter and laser energy is delivered through the fiber into the vein, causing the vein to close.

After the endovenous laser treatment, a gauze pad and tape will be placed over the puncture site and a compression bandage will be worn for several days and replaced by compression hose for several weeks. Individuals are able to walk and return to work or resume usual activities on the same or the next day. Patients are prescribed an antibiotic and a pain killer for 3 days.
2. **Endovascular Radiofrequency Ablation (EVRFA)**

With this therapy, a catheter is inserted into the incompetent vein. Radiofrequency energy is delivered to the inner walls of the vein, closing it. Post procedure discomfort is minimal or absent.

Both, Endovenous Radiofrequency Ablation (RFA) and Endovenous Laser Therapy (ELT) result in similar effects: closing (or ablating) the diseased vein by healing the vein wall. The result: no more blood flow in the vein; the vein lumen is scarred, which is the goal of such treatments. There is an ongoing debate in the scientific literature regarding the advantages of laser VS Radiofrequency treatments.
3. Foam Sclerotherapy

Sclerotherapy is another treatment for both varicose and spider veins. This outpatient procedure involves injecting a sclerosing solution (usually Sodium Tetradecyl Sulphate) through a tiny needle into the vein, which then collapses and is absorbed by the body. Foam is made first from sclerosant and then injected via scalp vein.

Na Tetradecyl Sulphate  Making of Foam  Scalp Vein

Treatments involve one or more injections during one or more sessions, depending on the type, number and severity of the varicose / spider veins being treated. By the end of the sclerotherapy treatment program, the veins are no longer visible on the skin surface. Sclerotherapy can also relieve symptoms associated with enlarged veins and prevent further complications from occurring. On average, two to three sclerotherapy sessions are required, spaced four to six weeks apart. After each session, patients may have to wear bandages or support hose for a few days or weeks and are encouraged to walk or exercise to speed recovery. Bruising and swelling (if present) should fade within a week or two. Sclerotherapy rarely produces more severe side effects such as scarring, although it cannot prevent the recurrence of vascular lesions.

Ultra-sound Guided Sclerotherapy

In Ultrasound-Guided Sclerotherapy, diseased veins are monitored on an ultrasound screen during the injection process, allowing the Doctor to treat problem veins that aren't visible on the skin's surface. This type of sclerotherapy allows for more complete treatment of venous insufficiency and better resolution of symptoms. It also lowers the chance of recurrence.

Trans-illuminated Sclerotherapy
Trans-Illuminated Sclerotherapy uses a new technology known as side-trans-illumination or Veinlite. Light generated by a halogen bulb travels through a high quality fiber into the Veinlite ring where it is directed into the skin at a fixed angle, providing uniform illumination and visualization of varicose / spider veins in the legs. This method is able to uniformly trans-illuminate a small region of the skin so that much better imaging of the veins is achieved without shadows. This allows better visualization of those hard-to-find veins in young and old patients and spider veins during Micro-Sclerotherapy.

**What is the best treatment available right now?**

**EVLTL combined with Foam Sclerotherapy**

![Before After](image)

**What are the future treatment options?**

1. **ClariVein**

ClariVein ® is a special catheter with a rotating tip. It promotes controlled, well dispersed and effective drug coverage of the targeted treatment area to treat varicose veins. It does this with no pain and minimal discomfort or bruising. No tumescent anesthesia is needed therefore there are no multiple injections. Due to there being no thermal (heat) energy used in the procedure, there is no risk of nerve damage;
there are reduced risks over other treatment options. ClariVein offers a safe and effective treatment for varicose veins.

About the ClariVein Catheter
ClariVein is a simple-to-use, minimally invasive, small caliber (2 ⅔ French), soft, flexible, battery-powered infusion catheter designed to treat peripheral vascular diseases such as varicose veins. The ClariVein system is used to treat the root cause of varicose veins. Through the use of targeted and well dispersed delivery of a drug, combined with a rotating tip which agitates the internal lining of the vein, very effective results are achieved and the vein is closed down. Infusion catheters are used in a variety of procedures to infuse a drug directly to a treatment site. They allow for direct, highly controllable, and concentrated treatment, minimizing the toxicity of systemic administration while increasing therapeutic efficacy, yield, and safety.

How is ClariVein Used to Treat Varicose Veins?
ClariVein is a special catheter with a rotating tip. It is two to three times thinner than the current devices used in radiofrequency and laser treatments. ClariVein catheter treats the abnormal feeding vein that is the underlying cause of visible bulging varicose veins. The procedure with ClariVein is minimally invasive and takes less than 30 minutes. Here are the steps involved:
1. The ClariVein catheter is introduced into the vein to be treated under ultrasound guidance. This is done through a tiny access point and the catheter is threaded along the length of vein to be treated. No tumescent anesthesia is required.
2. Once in the correct position, the rotating tip of the catheter is set in motion which sensitizes and damages the lining of the vein. At the same time, a sclerosant drug is sprayed from the tip of the catheter and causes the vein to close. The device is pulled back along the vein to treat the full length required.
3. After short procedure is complete, patient returns to normal activity the same day. If there is any minor soreness or bruising it can be treated with over-the-counter non-aspirin pain relievers as needed.

2. Glue

Venaseal™ - "Superglue" for Varicose Veins
Dr Rodney Raabe, Sapheon’s chief medical officer and the consultant radiologist invented Venaseal, a fast-acting glue which is being hailed as a breakthrough treatment for varicose veins.

Venaseal™ is a new “superglue” that is currently undergoing studies as a treatment for varicose veins.

Venaseal™ is basically a form of "superglue" that is introduced into the great saphenous vein under ultrasound control, using a single needle point. Through this, a very long thin tube is passed up to the top of the vein. Tiny amounts of glue are then squeezed into the vein, as the catheter is withdrawn. This leads to the whole of the length of the treated segment of the great saphenous vein being glued together. Patients are not required to wear compression stockings afterwards because compression is not part of the action used to close the vein.

"Unlike laser, radiofrequency and steam treatments, procedure is also entirely non-energy based so there is no need for expensive equipment to generate heat and no need for local anaesthetic to be administered the full-length of the vein to reduce any pain."

Initial results seem to show that not only does the glue close the vein successfully, without the need for tumescence anaesthesia, but there has been a suggestion that it permanently destroys the vein reducing the risk of recurrence the same way that endovenous laser ablation and radiofrequency ablation does.

Of course there is still the requirement for additional phlebectomies or foam sclerotherapy (or other tailored techniques) but this does represent a significant reduction in the number of injections and the amount of local anaesthetic required.

3. **STEAM**

Steam ablation of varicose veins appears to be a safe, effective, and relatively simple new endovascular thermal therapy with excellent patient acceptance. Steam may offer a safer alternative to endovascular laser ablation of saphenous varicose veins.
"If you look at your laser probe after treating a vessel, you can see strong carbonization and slight damage to the tip of the probe. This foreign material may stay within the body. Endovascular laser ablation of varicose veins has become a popular procedure in recent years. But it results in temperatures of 600°-1,000° degrees C, causing blood to literally boil and carbonize. In contrast, steam ablation is performed at a temperature of 120° C. The pulsed steam is released under pressure into the blood vessel through two holes near the tip. Steam ablation utilizes a 1.2-mm highly flexible catheter which is introduced directly through the puncturing needle without need for a sheath or guide wire. This makes for a simpler and safer procedure than with the stiff glass fibers used in laser ablation."