ELVeS® Radial

The gentle procedure for laser treatment of varicose veins

Enjoy life on healthy legs

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Do you suffer from varicose veins?
You're not alone.

Up to 40% of women and 20% of men suffer from symptoms such as tired, heavy legs and swelling, as well as prominent veins that are clearly visible under the skin. Experts* estimate that these symptoms are experienced by over 22 million individuals in Germany alone. This makes diseases of the veins one of the most prevalent conditions today. The primary causes include congenital connective tissue weakness, hormonal changes and long stretches of standing and sitting.

Impaired veins are more than just a cosmetic problem – in the worst cases and in advanced stages, they can lead to painful skin ulcers if not treated.

*Rabe, E. et al, Bonner Venenstudie der DGP, Phlebologie 1, 2003

Anatomy of the vein system

An intricate network of blood vessels runs through the human body, transporting oxygen and nutrients, as well as the waste products of our metabolic processes.

Within this vascular system, the heart pumps blood rich in oxygen into the arteries and, from there, into all organs and tissues in the body. Veins, meanwhile, transport used blood back to the heart. Throughout this process, the arteries contain about 15% of the total blood volume, while the veins contain over 80%.

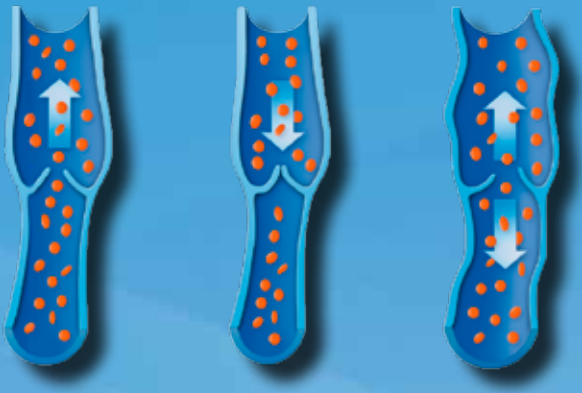
While the heart serves as the pump for transporting blood in the arteries, the veins require additional pumping mechanisms to counteract the force of gravity when the body is upright.

The "calf muscle pump" plays the most important role in transporting blood back to the heart. When we move, the calf muscles squeeze the veins together and force the blood against the force of gravity back in the direction of the heart.

The transport of blood back to the heart is supported by the workings of the valves in our veins. The valves allow blood flow in only one direction. This prevents venous blood from flowing back into the legs.

If these valves do not close properly, blood flows back into the legs and pools in the veins, which become distended due to the increased pressure.

The condition where veins malfunction in this way is referred to as varicose veins, varicosis or venous insufficiency. Pronounced varicose veins lead to problems with the drainage of blood from the veins and typically result in complaints and complications such as heavy legs, pain, swelling and, in extreme cases, open wounds.



open vein closed vein defective vein

Diseases of the veins

The system of veins in our legs comprises both superficial and deep veins. The superficial veins transport blood from the upper layers of the skin through the connective "perforator" veins into the deep vein system. The deep veins transport the blood back to the heart. These veins are surrounded by muscle and located deep within the legs close to the bones.

Disease of the superficial venous system leads to the development of varicose veins and associated complications. This includes inflammation, varicose hemorrhage, and leg ulcers.

If impaired superficial veins are surgically removed or sealed, this loss is compensated for by the deep veins. These can adapt their transport capacities to handle an increased volume of blood.

Impairment of the deep vein system, on the other hand, means a major disruption to blood flow. If these veins fail, they are unable to divert the flow of blood, which leads to chronic disease of the veins in the long term. Diseases of the deep veins include thrombosis and their associated complications, including pulmonary embolism or chronic degradation of the venous valves.

If left untreated, all diseases of the superficial or deep veins lead to chronic venous insufficiency (CVI). This begins with an initial tendency of the legs to swell, progressing to skin discoloration, and, ultimately, to open-leg wounds (leg ulcers).

Diagnosis

The earlier vein impairment is identified, the lower the risks.

To determine the type and severity of a disease of the veins, specific precautionary examinations are required to determine the condition of the veins or the form of disease that may be present. Today's vein diagnostic techniques also provide a starting point for determining an appropriate form of treatment.

The specialist starts the examination by recording the patient's past medical history.

In addition to previous thromboses and vein inflammations, disease patterns within the patient's immediate family indicate a possible susceptibility to varicose veins and other venous diseases.

After taking the medical history, the doctor examines the legs more closely with the patient in various positions. This is because varicose veins usually bulge out when the patient is standing up and disappear when he or she is lying down. If necessary, this first impression can be verified by using additional methods of examination.

The most commonly used Doppler ultrasound method lets you measure the direction and speed of venous blood flow. An enhancement of this method is duplex and color duplex sonography, which maps blood flow but also creates an ultrasound image of the blood vessels to provide even more detailed information about the condition and sufficiency of the veins. An x-ray examination of the veins using a contrast medium (venography) reveals the shape and appearance of the veins, as well as the functioning of the valves and the direction of blood flow. Venography is only used in exceptional cases in addition to a duplex ultrasound for diagnostic and surgical planning purposes.

Treatment options

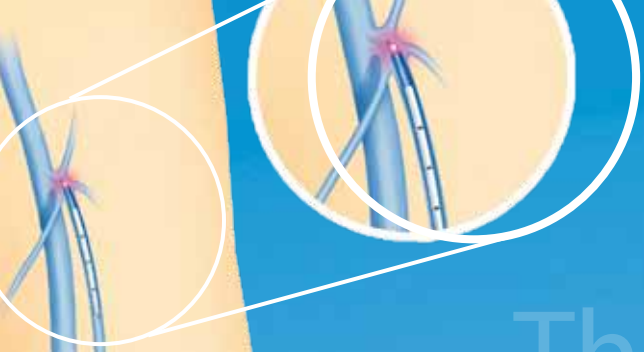
Varicose veins are often treated for aesthetic reasons. However, treatment is also highly advisable for medical reasons because the complications may be severe and can be avoided in most cases if the condition is treated in time.

The basic form of treatment for diseases of the veins is compression therapy. The principle underlying this type of treatment is to reduce the width of the vein by applying external pressure.

This speeds up the flow of blood through the vein and eliminates swelling in the leg. However, once a vein becomes distended, it can never contract back to its original size, and so compression therapy needs to be applied for the remainder of the patient's life. Alternatively, the vein can be disconnected from the vein system. Surgical measures to do so seek to completely eliminate venous diseases as far as possible.

The advantage of this approach is that it removes the cause of the disease, rather than merely treating the symptoms. Vein stripping is the standard surgical treatment for removing large varicose veins. This procedure extracts the diseased saphenous vein from the leg in its entirety. Surgery is usually performed under general anesthesia, and recovery takes approximately three weeks.

Radiofrequency therapy and foam sclerotherapy are additional methods in use. The latter involves injecting foam into the vessels where it causes an inflammation. When the inflammation is in remission, the veins scar over. The varicose vein scleroses. However, certain basic undesirable effects may occur: allergic reactions, skin necroses (death of skin cells), excessive sclerosis reactions, nerve damage, migraine-like symptoms, orthostatic collapse, and thromboembolism.



Another example is the radiofrequency method: This method involves insertion of a catheter into the vein and heating up the interior wall of the vein using radio waves. The vessel wall and neighbouring connective tissue denature and contract. In a matter of weeks, a long fibrotic cord develops.

According to manufacturer specifications, potential complications include*1 vessel perforation, thrombosis, pulmonary embolism, vein inflammation, bruising, infections, and sensitivity disruption (paresthesia). Treating veins close to the skin surface may cause skin burns. The risk of sensitivity disruption is higher when the treatment is performed at or below the calf. This method has to be used with caution in patients with pacemakers and implanted defibrillators.

ELVeS® Radial

A gentle and effective procedure that ensures patient comfort during and after treatment

biolitec AG, a pioneer in the area of minimally-invasive therapy, introduced the first generation of lasers (810-980nm) for the treatment of varicose veins as early as 1998.

*1 Quelle: www.vnus.com

Based on continuous research and enhancements and many years of experience, the ELVeS® (Endo Laser Vein System) Radial system was developed together with world-renowned experts and introduced in 2007.

In combination with the world's first-ever radial emitting laser probe ELVeS® RADIAL, the meanwhile clinically proven ELVeS® Radial laser with its special wavelength of 1470nm provides a uniform beam pattern in order to minimize the risk of perforation. The effective application of laser energy to the venous wall and the extremely low penetration depth of this radiation wavelength makes it possible to close the vein using minimum energy and to avoid sensitivity disruptions or skin burns. In addition, the need for local anesthesia can be reduced to a minimum. The patient can see the desired result directly following this gentle, minimally invasive procedure.

biolitec AG's unique bi-protect safety system helps ensure the intended one-time use of each probe, preventing wear and malfunction.

The patented ELVeS® RADIAL and ELVeS® Radial components as well as the unique safety system prove once more how biolitec AG leads the way with unique features and innovation leadership in the area of minimally-invasive therapy approaches.

ELVeS® R

ELVeS® Radial represents a minimally invasive procedure that is performed on an outpatient basis under local anesthetic and only takes about 30 - 45 minutes to complete.

In this procedure, the ELVeS® Radial probe is inserted into the affected vein through a small puncture site. The probe is then used to direct the laser light into the vein using targeted radial emission. The laser then seals the vein.

Patients experience little or no pain during or after the procedure. Patients can also resume normal activities immediately after treatment with ELVeS® Radial.

Benefits of **ELVeS®Radial**

- ***A virtually pain-free recovery***
- ***Maximum patient comfort***
- ***Short treatment times***
- ***No scarring***
- ***Little or no post-operative bruising***
- ***Excellent medical and cosmetic results***
- ***Quick return to normal activities***

FAQ

Q | What are the risks?

A | Endovenous laser treatment is a minimally invasive procedure and the risks are therefore very low. This treatment can be administered on an outpatient basis under local anesthetic.

F | How long does the procedure take?

A | The procedure takes no more than 30 to 45 minutes. The subsequent resting period can be agreed with the doctor on a case-by-case basis.

F | How soon will I see a result?

A | After treatment with ELVeS Radial, the results are immediately visible. The vein that was treated is sealed permanently and it won't be long before you can resume normal activities.

F | How much does the treatment cost?

A | This may depend on where your treatment is performed but In individual cases the costs may be covered by health insurance providers following consultation with the doctor

For more information about the treatment of varicose veins and to locate an ELVeS® treatment centre, visit:

www.info-vene.de

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