



What are Varicose Veins?

If you're over 40, you probably see them; those little purple veins that suddenly seem to appear on your legs. Veins are the soft, thin-walled tubes that return blood from the arms and legs to the heart. Because veins work against the force of gravity, they have valves that allow forward blood flow, but not reverse. Your legs and arms have two major types of veins: superficial and deep. The superficial veins are near the surface of the skin and are often visible. The deep veins are located near the bones and are surrounded by muscle. Connecting the deep and superficial veins is a third type of vein, the perforator vein. Contraction (squeezing) of the muscles in the arms and legs with exercise helps blood flow in the veins.

Varicose veins are enlarged, bulging superficial veins that can be felt beneath the skin, generally larger than 3-mm in diameter. They are usually located on the inside of the calf or thigh and develop due to weakness of the vein wall and loss of valve function. Under the pressure of gravity, they continue to enlarge, and in the course of time, they may become elongated, twisted, pouched and thickened.

Spider veins or telangiectasia are tiny dilated, veins, usually less than 1-mm in diameter, located at the surface skin layers. Spider veins cannot be felt. Veins larger than the spider veins, but still under 3-mm are called reticular veins.

Symptoms

Varicose veins may be entirely symptom-free and cause no health problems. Treatment in such cases is often for cosmetic purposes. When symptomatic, varicose veins may cause ankle and leg swelling, heaviness or tension, aching, restlessness, cramps and itching. Varicose veins are more often symptomatic in women than in men. Signs of chronic venous disease include skin pigmentation (usually rusty brown), and loss of the soft texture of the skin and underlying tissue in the ankle area (called induration). Itching is perhaps the most consistent symptom of varicose veins in men. Women most often complain of leg heaviness, tension and aching.

Causes

The causes of varicose veins may be primary, secondary, or congenital. Primary varicose veins develop as a result of an inherent weakness in the wall of the vein. Varicose veins can have a hereditary factor and often occur in several members of the same family. Varicose veins that develop after trauma or deep vein thrombosis are of secondary cause. Congenital varicose veins are due to disorders in the natural development of the venous system, and usually are part of a vascular malformation in the limb, present at birth. In addition to varicose veins, these individuals may also have an enlarged and longer limb and often have birthmarks (port-wine stains), like in Klippel Trenaunay Syndrome (KT syndrome). No matter the cause, defective venous valves may cause venous blood to stagnate in the leg, leading to increased pressure in the veins. This may result in further enlargement of the varicose veins, increasing the likelihood of symptoms, and causing complications such as skin changes and ulcer formation. Blockage of the pelvic veins may severely aggravate the effects of varicose veins, requiring a separate treatment.

Risk Factors



The most important factors leading to the development of varicose veins include:

- Heredity
- Prolonged standing
- Increasing age
- Heavy lifting
- Prior superficial or deep vein clots
- Female gender
- Multiple pregnancies

Less physical activity, a higher blood pressure and obesity have also been linked with the presence of varicose veins in females.

Diagnosis

The diagnosis of varicose veins is made primarily by physical examination. The accuracy of physical examination is improved with the aid of a hand-held Doppler instrument, which allows the examiner to listen to the blood flow. The most accurate and detailed test is a duplex ultrasound exam, which provides an ultrasound image of the vein to detect any blockage caused by blood clots and to determine whether the vein valves are working properly. Measurement of the venous function of the leg may be obtained with other tests such as plethysmography. These diagnostic tests are painless.

How Common are Varicose Veins?

Venous problems are probably among the most common chronic conditions in North America and Western Europe. They are less common in the Mediterranean, South America and India, and even less in the Far East and Africa. In one study from Southern California, venous problems were present in 33 percent of women and 17 percent of men. Varicose veins occur almost as often in women as in men, however, spider veins were more frequent in women. A large U.S. survey, the Framingham study, reported that 27 percent of the American adult population had some form of venous disease in their legs. It is estimated that at least 20 to 25 million Americans have varicose veins.



Prevention

You can't do anything about your heredity, age or gender. However, you can help delay the development of varicose veins or keep them from progressing.

- Be active. Moving leg muscles keeps the blood flowing.
- Keep your blood pressure under control. Work with your doctor.
- To temporarily relieve symptoms, lie down and raise your legs at least six inches above the level of your heart. Do this for ten minutes a few times each day.
- Maintain a normal body weight.
- Wear prescription compression stockings as specified by your doctor.
- See a qualified doctor who can diagnose the cause of your varicose veins, the sources of venous reflux in your legs and offer a variety of treatment options.

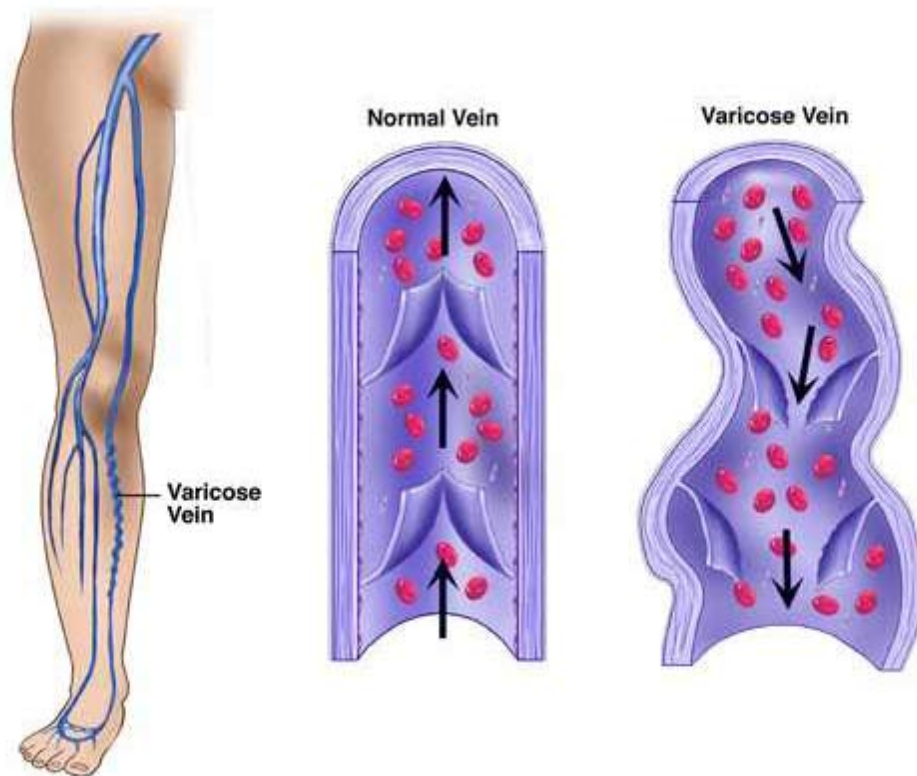


Illustration used with permission from the Society of Interventional Radiology

Treatment

The treatment of primary varicose veins depends on the extent of the varicosity. Graduated elastic compression stockings may reduce the symptoms of varicose veins, prevent leg swelling and decrease the risk of blood clots. However, in hot environments, the use of elastic stockings may be impractical. Sclerotherapy is an injection of a sclerosing solution into spider veins (telangiectases), reticular or small varicose veins to block these veins. It is considered a minimally invasive outpatient procedure offering best results in limbs with localized areas of valvular incompetence.

Ambulatory phlebectomy is also a minimally invasive outpatient procedure that can be performed under local, epidural or general anesthesia. Varicose veins are removed with hooks through small skin incisions. Stitches are not necessary, and the incision edges are held together with fine paper-tape. Recovery is brief.

Venous stripping is the standard treatment of valvular incompetence of the great saphenous vein. The great saphenous is the largest superficial vein along the inner thigh and calf and generally receives the most varicose veins. Usually the thigh portion of the great saphenous vein is stripped (removed) after its junction with the deep veins and its branches are disconnected (a procedure called high ligation) through a small groin incision. Multiple fine incisions are made to allow removal of the varicose veins. The entire procedure is safely performed under general, epidural or spinal anesthesia.

New minimally invasive treatments have been developed in the past five years to reduce the need for surgery in limbs with valvular incompetence of the great saphenous vein. A radiofrequency (Closure) or laser energy (Endovenous Laser Therapy, EVLT) catheter is threaded into the great saphenous vein at the level of the knee, through a small needle puncture, and is advanced to the groin, where it is positioned using duplex ultrasonography. Release of radiofrequency or laser energy at the tip of the catheter, as it is shifted from the groin to the knee under ultrasound guidance, results in an effective, long-term closing of the great saphenous vein opening, replacing surgical venous stripping. Both of these methods avoid the groin incision and the vein strip that are part of the standard surgical treatment.

Variable size varicose veins scattered over the calf and thigh may be eliminated via two small skin incisions alone, with a powered mechanical aspirator system (Trivex), in contrast to the multiple incision wounds in the standard surgical procedure. A strong light-source inserted under the skin through one of the incisions illuminates the varicose veins, which are eliminated with a thin mechanical aspirator inserted through the other incision.



An example of one type of treatment used for varicose veins.