

THE VASCULAR DISEASE FOUNDATION

The Vascular Disease Foundation is a non-profit, educational organization dedicated to reducing death and disability from vascular diseases and improving vascular health for all Americans. We are continually developing educational information and other resources about vascular disease for medical professionals, the public, and for those affected by common vascular disorders. The Board of Directors of the Foundation include leading experts in vascular care, including physicians, researchers, and members of national vascular medical societies who have been active in fighting vascular disease. The Foundation is dedicated to operating with minimal overhead expenses, choosing to apply funds to provide information and educational materials for the public.



Vascular Disease
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What you need to know
about risk factors,
symptoms, and treatment

Focus on Varicose Veins



WHAT ARE VARICOSE VEINS?

Varicose veins are the visible and large, bulging, surface veins felt under the skin. They generally are larger than one eighth inch in width, and are usually located along the inside part of the calf or thigh. Varicose veins develop due to weakness of the vein wall and because the valves of the veins no



longer work. Under the pressure of gravity these veins can continue to expand and, in time, they may become longer, twisty, pouched, thickened, and painful. Other veins often mistaken for varicose veins are spider veins and reticular veins, which are the visible purple or bluish veins that appear in our legs. **Spider veins** or *teleangiectesias* are tiny veins that you can easily see, but cannot feel, and are usually located at the surface skin layers. **Reticular veins** are larger than spider veins but smaller than varicose veins. Both spider and reticular veins typically do not cause symptoms, and treatment for these is frequently cosmetic unless symptoms are present.

Vein problems are among the most common chronic conditions in North America. In fact, more people lose work time from vein disorders than from artery disease. By the age of 50, nearly 40 percent of women and 20 percent of men have significant leg vein problems. Although varicose veins are thought to be slightly more frequent in men than in women, that could be, in part, because men delay evaluation and treatment until a later stage of the vein disorder. Spider veins occur much more frequently in women. It is estimated that at least 20 to 25 million Americans have varicose veins.

WHO IS AT RISK?

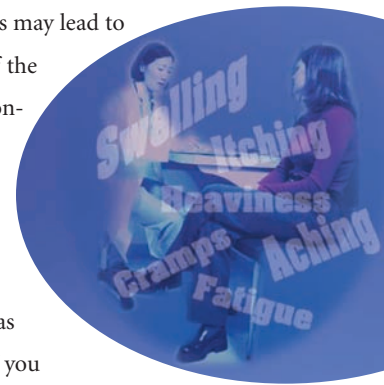
The most important factors leading to the development of varicose veins include:

- Family history of varicose veins
- Prolonged standing
- Increasing age
- Heavy lifting
- Prior blood clots in superficial or deep veins
- Multiple pregnancies

Limited physical activity, high blood pressure, and obesity have also been linked with the presence of varicose veins in women.

WHAT ARE THE SIGNS AND SYMPTOMS?

Varicose veins may be entirely symptom-free and cause no immediate health problems. Treatment in such cases is usually considered cosmetic. When symptoms are present, the most common are ankle and leg swelling, heaviness or fullness, aching, restlessness, fatigue, pain, cramps, and itching. In the most severe cases, varicose veins may lead to thickening and discoloration of the skin of the legs, eczema, and non-healing sores (ulcers) around the ankle area. Varicose veins, especially when they are very large, are at risk for forming a blood clot, a condition known as superficial thrombophlebitis. If you experience any of these symptoms, talk with your doctor. Don't ignore leg pains.



WHAT ARE THE CAUSES?

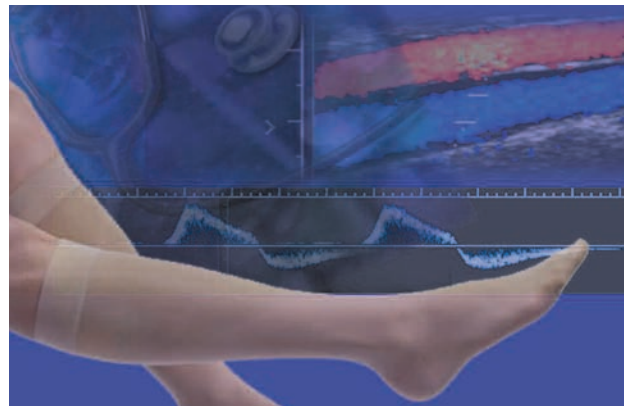
The causes of varicose veins are related to non-functioning vein valves. Vein valves are designed to allow blood to flow from the legs toward the heart against gravity, while preventing reverse flow back down the legs. Reverse flow is called venous reflux. Vein valves may fail to close due to either, 1) vein wall weakness that causes the vein to enlarge and the valves to leak; 2) a history of blood clots in the vein that damage the valves; or 3) an absence of vein valves since birth. Varicose veins can be hereditary, often occurring in several members of the same family. Varicose veins can also develop after trauma or injury. Regardless of cause, defective valves cause venous blood to stagnate (pool) in the legs, leading to high blood pressure in the leg veins. This may result in further enlargement of the varicose veins, increasing the likelihood of advanced symptoms such as skin changes and ulcers at the ankles. Reflux in the largest superficial veins, such as the saphenous veins, is often an underlying cause of painful varicose veins. Venous reflux is a condition that can be progressive. If left untreated, it can worsen and cause more advanced symptoms. In addition, blockage of the veins in the pelvis may severely aggravate the symptoms of varicose veins, requiring separate treatment.

HOW ARE VARICOSE VEINS DIAGNOSED?

The diagnosis of varicose veins is made primarily by physical examination. The accuracy of physical examination is further improved with the aid of a hand-held Doppler (ultrasound) 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 or have evidence of reflux. Measurement of the venous function of the leg may also be obtained with other tests such as plethysmography. These diagnostic tests are non-invasive and painless.

HOW ARE VARICOSE VEINS TREATED?

Varicose veins are always a sign of an underlying venous insufficiency disorder, whether symptomatic or not. If not treated, symptoms may develop, and the existing venous insufficiency signs and symptoms will worsen. Significant advances in the treatment of leg vein problems have occurred in recent years. The treatment of varicose veins may be conservative, minimally invasive, or invasive, depending on the extent of the varicosities, the symptoms of the patient, and the specific veins involved. However, each treatment has some risks and downsides that should be discussed with your physician or surgeon.



Here are the most common treatments:

- **Prescription compression stockings** to reduce the symptoms of varicose veins, prevent leg swelling, and decrease the risk of blood clots. Prescription stockings offer appropriate counter-compression and are more effective than the over the counter stockings.
- **Sclerotherapy** (injections of the veins) involves injecting a sclerosing solution into spider, reticular, or varicose veins. This is a minimally invasive office procedure. This blocks the veins that are unsightly or not working well. Injection of sclerosing solutions slowly eliminates the unsightly skin veins to improve appearance. Patients typically receive multiple treatments and most see significant improvement over the course of several months of treatment.

- **Ambulatory phlebectomy** is also a minimally invasive procedure that can be performed under local, epidural, or general anesthesia in an outpatient setting. Varicose veins are removed with small hooks through tiny skin incisions. Stitches are not used, and the tiny incisions are pulled together with sterile paper-tape. Recovery is generally brief and uneventful.
- **Vein stripping** has been the traditional treatment for bad valves in the great saphenous vein, the largest surface vein which goes down the inner side of the leg. Usually the thigh part of the great saphenous vein is stripped (removed). After stripping, multiple fine skin incisions are made to allow removal of the varicose veins. The entire surgery is safely performed under general, epidural, or local anesthesia, typically in an outpatient setting, and offers long-term results.
- **Laser treatments** use a fine optical fiber, which is advanced through a catheter into the saphenous vein. Laser energy is then delivered through the fiber. The fiber makes contact with the blood and inner wall of the vein and, as the fiber is slowly withdrawn, the laser energy is absorbed by the blood and vein tissue, sealing it shut. The procedure can be performed in a doctor's office or outpatient setting. Recovery time is usually fast with positive short and mid-term results.
- **RF treatment** involves controlled delivery of radio-frequency (RF) energy directly to a vein wall by a small catheter causing collagen in the vein wall to shrink and the vein to close. Once the vein is closed, blood is naturally rerouted by the body to other healthy veins. Studies after RF treatment confirm fast recovery, and it may offer early advantages over surgical vein stripping. In mid- and some long-term studies, RF treatment has been shown to offer durable results. It can be safely performed in a doctor's office or outpatient setting.

OTHER COMPLICATIONS: Without treatment, varicose veins may cause pain or aching, leg swelling, skin color changes, hardened skin and subcutaneous tissue (lipodermatosclerosis), and eczema. In advanced cases, breakdown of the skin may cause bleeding from varicose veins, and large varicosities may develop blood clots, a condition called superficial phlebitis or thrombophlebitis. Patients with varicose veins may also eventually develop chronic skin ulceration around the ankle.

WHAT YOU CAN DO!

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. Some things you can do:

- **Be active.** Moving leg muscles keeps the blood flowing.
- **Work with your doctor to keep your blood pressure under control.**
- **To temporarily relieve symptoms, lie down and raise your legs at least six inches above the level of your heart. Do this for at least ten minutes a few times each day.**
- **Strive for a normal weight.**
- **Wear your 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.**

