

TOMORROW'S WELLNESS CENTER

Overview of Varicose Veins

General

Varicose Veins are known as venous insufficiency and is a common condition affecting approximately half the population. 55% women and 45% men are affected. The Common age range for development of varicose veins is between 30 to 60 years of age.

Causes of Varicose Veins

The heart pumps blood through the arterial system to the tissues delivering oxygen and nutrients. The blood returns with waste products and de-oxygenated blood through the venous system. At any given time, nearly 2/3's of the total blood volume is circulating in the venous system. Approximately 15% of the venous supply is in the superficial venous system and 85% is in the deep venous system. The blood moves through the venous system, aided by the contractions of the muscles and valves, which are unidirectional (one-way) located within the vein. Competent valves open during muscle contractions and remain close during muscle relaxation. Damaged and/or stretched valves remain continually open allowing backwards flow (or reflux) of de-oxygenated blood to collect in the veins. High-pressure buildup of the blood weakens the vein walls allowing further stretching to occur. As the blood continues to collect in the veins they become tortuous, twisted, gnarled, and bulging in appearance, known as a *varicose vein*. The vein walls may show an increase in permeability allowing fluid to leak into the tissues. Any vein may become a varicose vein. Reticular veins, are flat blue veins found behind the knees. Venous lakes are pools of blood in the veins commonly found on the face and neck. Telangiectasias are similar to Spider veins found on the upper body and face.

Factors Affecting Varicose Veins

There is approximately a 60% to 90% chance of developing varicose veins if your family is known to have the same disorder. The problem may be either a compliance and contractility problem or may be due to congenital defects of the venous system. Female hormones make the smooth muscle in the vein wall relax, soften and weaken therefore women are affected more often than men. In addition, exogenous hormones including birth control pills or hormone replacement therapy may contribute to the development and advancement of existent varicosities. Veins and valves will weaken over time, losing their compliance and contractility. Obesity and poor nutritional habits as well as the mechanical stress from excess weight are contributing factors. Pregnancy contributes to varicose vein formation because of several factors, including increases in hormones to support the pregnancy, increase in blood volume to support a developing fetus, and mechanical compression of the veins to the lower extremities from the enlarging uterus in the pelvis. Pregnant patients in addition to leg varicose veins may develop varicosities around the anus (i.e. hemorrhoids) and/or the labia. The patient will usually observe a worsening of this condition with subsequent pregnancies. Trauma to a vein will damage the integrity of the walls and concurrent valves allowing for the increase possibility of a

varicosity. Immobilizing the lower extremity in a cast or splint decreases the ability of the muscles to contract and assist the vein in returning the blood to the heart therefore allowing for pooling of blood. Pooling of deoxygenated blood forms a clot that will cause an inflammatory reaction within the vein and damage the valve, allowing for the development of a varicosity. Inflammation of the vein is associated with an increase in the incidence of varicose veins. Inactivity of the individuals increases the risk of developing a deep vein thrombosis and/or varicose vein. This is due to the overall lack of assistance of the muscles in the lower extremity to assist in helping pump the blood toward the heart. This allows for pooling of the blood in the venous system distorting the vein wall and compromising the venous valves. Fair skinned individuals can have damage to the dermis (skin) from sun-exposure. This encourages the development of spider veins on the face.

Signs and Symptoms of Varicose Veins

Varicose veins are greater than 3mm, raised and palpable. They may be flesh colored or a purple to bluish discoloration. Although any vein may become a varicosity, most are on the legs due to the ability of the vein to pump the blood against gravity up to the heart.

Spider veins are less than 3mm seen on the face and legs as a bluish red discoloration that resembles a spider web or tree with branches. A simple test for the diagnosis of spider veins of the lower extremities is to lie flat and elevate the legs above the heart. The small spider veins should empty out of the residual blood.

Common complaints of varicose veins are a heavy, achy, burning, throbbing, sensation in one or both of the lower extremities. Symptoms increase with prolonged sitting and standing. Skin changes may develop. Discoloration of the skin (darkened, blue, and shiny) will result from the constant pressure secondary to fluid leaking out of the varicose vein. This is known as stasis dermatitis. Trauma to varicose vein may result in prolonged bleeding and healing of the affected area.

Diagnoses

Diagnosis is made by a thorough history, family history of venous disease, and physical examination. It is prudent to be evaluated by a vascular surgeon. A venous duplex ultrasound is encouraged in order to rule out more severe venous disease. A venogram may be utilized for more extensive diagnostic testing. Once it has been determined that the varicosities are in the superficial venous system then education, preventive care, and both medical and cosmetic interventions should be considered. Medical treatment is certainly indicated for those patients in whom the disease causes chronic pain and discomfort. Cosmetic concerns are valid and should be addressed.

Preventive Care

It is important to maintain an ideal body weight through exercise and diet. Avoid tight fitting clothing around their waist, groin, and legs. Individuals should shift their position every 30 minutes when standing and every 2 hours when sitting for prolonged periods and elevate their legs above the level of the heart 3-4 times a day. Stop smoking!! The effects of smoking on the vascular system are devastating. Sunscreen use is encouraged. Compression stockings are important in preventive care and management of varicose and spider veins of the lower extremities. There

are two kinds: uniform versus gradient, with gradient being clinically superior for the treatment of varicose veins of the lower extremity. Gradient stockings have the firmest compression at the ankle due to the fact that gravity causes the greatest amount of pressure at the ankle. In addition, the pressure is also dependent on the vertical column of blood from the ankle to the heart. The greatest pressure is at the greatest distance from the heart (i.e. ankle). The stockings are most effective for individuals who complain of leg fatigue, aching, and heaviness in the legs and who are committed to wearing them.

An herbal medication used for the support of varicose veins is Horse Chestnut (*Aesculus Hippocastanum*). It has been used to treat venous insufficiency, post-traumatic and post-operative soft tissue swelling. In chronic venous disease or trauma to the vein the activity of lysosomal enzymes increase in the vein breaking down the compounds in the vessel wall. This leads to an increase permeability of the wall allow fluids to leak into the surrounding tissue. The mechanism of action of Horse Chestnut is believed to result in a reduction of this enzyme activity thereby inhibiting the breakdown of compound in the vessel wall. This inhibition is believed to improve the integrity of the vein wall, decreasing the permeability of the wall and preventing a leaking of fluids. Adverse reactions from Horse Chestnut include, gastrointestinal mucous membrane irritation including vomiting and diarrhea. The individual may experience severe thirst, flushing of the facial skin, enlargement of the pupils, vision changes, severe itching, renal failure and liver damage. More severe reactions such as severe allergic reactions, anaphylaxis, have been noted with the administration by intramuscular injection or intravenously.

Treatment

The treatment options include, Sclerotherapy, Endovenous Laser Treatment, Radiofrequency Occlusion, Ambulatory Phlebectomy, Venous ligation, and Venous stripping.

Laser treatments

Treatments consist of a laser placed closed to the vein that sends out bursts of light. The wavelengths of light are absorbed by the hemoglobin in the targeted vein causing an obliteration of the hemoglobin and collapsing of the vein. Lasers are very direct and accurate and may be used on all skin types depending on the type of laser used. Individuals may feel a pinch or a rubber band snap as well as a warming sensation to the skin as the laser passes over the skin. This is counterbalanced by cooling of the skin prior to and after the treatment. Typically the treatments last 15-20 minutes and may need to be repeated several times to treat the varicosity. Redness, swelling or discoloration may be noticed but will fade. Scarring is possible if the operator is not careful. Advantages are no needles or incisions are needed and individuals may return to normal activity quickly.

Sclerotherapy

Injecting the varicose veins or spider vein with a saline or chemical solution that causes scarring of the vein walls and collapsing them. The body absorbs the treated vein. Compression bandages or support hose for two to three weeks after treatment. Several treatments may be necessary. Individuals may expect 80% to 90% improvement. Microsclerotherapy uses a smaller needle and less solution. Minor side effects are at the injection site. They include

stinging, muscle cramping, and raised red patches of skin, small sores, bruising and spots around the treated vein. All of those side effects are temporary. Serious side effects include reactions at the injection site that could become inflamed, residual blood that has pooled and clotted, or an ulcer secondary to infiltration of the solution into the surrounding tissues.

Endovenous Laser Treatment

This procedure treats the great saphenous vein, which runs from the groin to the ankle. It is performed by inserting a small catheter in the vein. Local anesthesia is administered to the vein and is followed by the introduction of the laser diode fiber. It will deliver the laser energy, heating the inside of the vein as it is slowly withdrawn. This will obliterate the blood inside the vein, irritating the vein wall and causing it to collapse as the laser diode is withdrawn slowly from the vein. The procedure takes 30-60 minutes and individuals may return to work the next day. Side effects include skin numbness, blood clots, bruising and vein inflammation. The laser does not touch the walls of the vein; therefore there is no limitation of size of the varicose vein to be treated.

Radiofrequency Treatment

The procedure is the same as for the Endovenous Laser Treatment but uses radiofrequency energy to treat the varicosity. A fan-shaped catheter is inserted into the vein and advanced to the endpoint of treatment. It will deliver radiofrequency energy to the vein wall causing it to heat up, collapsing it. Eventually the vein will scar shut allowing no further blood flow. This treatment can treat veins up to 12mm in diameter. Side effects are similar to EVLT.

Surgical Options

Vein ligation involves tying off the varicosity allowing the flow of blood to stop making it less visible.

Vein ligation and stripping involves general or local anesthesia and complete removal of the vein. Serious complications include reactions to the anesthesia, inflammation and infection at the sites of incisions. Individuals may also have bruising, swelling, redness. Permanent scars are also possible. Nerve damage may occur around the treated vein. Ambulatory phlebectomy includes very small incisions made over the varicose vein, which is then grasped with tiny surgical hooks, and the vein is removed. This requires anesthesia (local or regional). Small scars may occur. Side effects are similar to ligation and stripping.