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VARICOSE VEINS

The expression VARICOSE VEINS is the medical terminology for describing dilated and tortuous veins normally visible on the surface of the body. The most common site for the occurrence of varicose veins is the lower limb although they can also occur anywhere on the surface of the body or within the body itself. Varicose veins, affecting the lower limbs, are essentially a phenomenon that tends to run in families but are also aggravated by pregnancy, hormones and other environmental factors. They are not particularly dangerous to life or limb although they can be painful, unsightly and cause damage.

Varicose veins can be primary, in other words the inherited variety, or they can be secondary to a previous episode of deep vein thrombosis (blood clot formation in a central vein). They are very occasionally associated with abnormal vessels inside the limb or body. They appear as large bulges under the skin of the body and are ropey and tortuous in appearance. When the limb is elevated they generally collapse leaving grooves in the skin but refill on standing.

Varicose veins are not to be confused with small superficial blood vessels called **starburst veins, burst capillaries, telangiectases dermal venules or flares**. These have the appearance of a fine tracery of blood vessels and look like bruises or wavy blue lines. They are a separate entity to varicose veins although they often are present with varicose veins.

LOWER LIMB COMPLICATIONS OF VARICOSE VEINS:

Problems from varicose veins are generally associated with periods of standing, when the pressure in the veins is highest, but activities such as walking and sitting are also aggravating but less uncomfortable. Pregnancy makes varicose veins much more noticeable and uncomfortable.

Problems associated with varicose veins are:

Unsightly appearance from lumps and distended veins with discolouration.

Swelling of the limbs from fluid accumulation, generally around the ankles.

Aching of the limbs from high venous pressure and fluid accumulation in the limbs.

Easy bruising after minor knocks or bumps.

Surface vein formation (spider veins) is more pronounced with varicose veins but harmless.

Dermatitis & itch in the form of an uncomfortable itchy rash (normally around the ankles).

Inflammation & pain from pressure in the veins making them tender and bruised.

Damage to the tissue under the skin of the leg causing **scarring** of the tissue around the ankles. This occurs from damage to the subcutaneous fat (fat necrosis) causing inflammation **cellulitis** and tissue hardening in the calf. This often looks like infection in the calf but is usually only inflammation from tissue damage and fat liquefaction.

Ulcer formation especially around the ankles. Any abrasion in the presence of varicose veins will take a longer time to heal. Sores and ulcers can occur without injury and just appear spontaneously

Bleeding from veins can occur especially from the lower third of the leg or foot where venous blebs can form. Bleeding can be life threatening unless treated. A bandage and leg elevation prevents catastrophic blood loss.

Discolouration of the limbs with brown staining from haemosiderin deposition secondary to leakage of blood cells. Aggravation of surface veins (blue-purple discolouration) can occur .

Superficial Thrombosis: Surface clot formation in the veins themselves, causing lumps and inflammation under the skin, is common but usually harmless. Thigh clots, however, need review promptly if it occurs. Most episodes of surface thrombosis are managed with anti inflammatories. Although Deep Vein Thrombosis can occur subsequent to surface thrombosis, varicose veins represent only a minimal predisposition to deep vein clots. Thrombosis close to the groin (10 cm) can result in serious complications and needs prompt management with ligation.

Death Bleeding from veins can be life threatening but only if neglected and not managed by pressure and elevation of the leg. The veins that tend to bleed are the purple lumpy veins at the ankles. Thrombosis close to the groin can result in clots breaking off and traveling to the lungs (pulmonary embolism) causing death. Thrombosis in very large leg veins can also propagate and be dangerous.

QUESTIONS PATIENTS ASK:

HOW DO VEINS FORM?

The essential defect is a weakness in the valves or walls of the veins that allows blood to flow in the wrong direction. Veins are supposed to carry the blood from the limb back towards the heart, upwards against gravity. This feat is managed by the presence of valves within the veins themselves, which shut to prevent backwards flow of blood towards the feet. If the valves are defective, faulty or weak then there tends to be backwards flow through the valves in the wrong direction down the vein. This places extra strain on other valves in the vein, which may then also fail. The common area of initial leakage is in the groin (SFJ), where the large surface vein joins the vein inside the leg. The valve behind the knee is the second most common site of failure (SPJ) followed by smaller veins in the thigh or calf called perforating veins. Failure of valves at these junctions results in excess strain on the vein below, which tends to blow out and also become leaky. This is the reason veins tend to become progressively worse with time. Aggravation is also caused by pregnancy or obesity, which throws

additional strain on the valves in the veins of the lower limbs. As the veins stretch under the additional pressure they tend to dilate, become longer and thus tortuous appearing like a bunch of worms.

The pressure inside the veins can become so great in the lower part of the limb that leakage of blood occurs into the tissues (Diapedesis) giving rise to brown staining of the skin and dermatitis. Damage to the circulation and the tissue under the skin occurs making the legs inflamed and hardened. Fluid leaking through the veins, because of the high pressure within, causes swelling around the ankles. Eventually damage to the limb tissues is so great as to result in ulcer formation. Very superficial blowouts can occur and these sometimes break and bleed.

All of these complications of varicose veins can be managed initially by the use of compression stockings or bandages. This however stockings do not stop the progressive process of varicose vein growth.

WHAT CAUSES VARICOSE VEINS?

The inherited predisposition to valve weakness or vein weakness is the most common cause of varicose veins in the lower limbs. Aggravation by pregnancy and/or obesity, accelerates the formation of varicose veins. Other causes can be a previous deep vein thrombosis in the leg or a malformation in the blood vessels of the limb, usually the result of a birth defect in the blood vessels. This latter group of varices are called secondary varicose veins.

HOW ARE VARICOSE VEINS TREATED?

Initially management of the symptoms of varicose veins can be by intermittent elevation of the leg, which reduces the pressure in the veins allowing reduction in swelling discomfort. The normal horizontal position of the body in bed at night provides relief from the symptoms of varicose veins.

Elastic stockings can assist with the symptoms of varicose veins by providing external support (compression) to the limb. Unfortunately the stockings are sometimes unpleasant to wear because of tightness and warmth. They are only useful for alleviation of symptoms but they do not prevent varicose veins. The use of elastic stockings may, in fact, make the leg feel less uncomfortable and therefore is of no benefit for the patient. The exception is when they are being used to treat complications like ulcers and acceptance of discomfort is necessary.

Injection treatment of varicose veins is possible for minor superficial varicose veins and for discoloured areas. Injections under ultrasound guidance are also useful for bigger varicose veins or recurrent varicose veins after previous surgery. Injection treatment with coil occlusion of veins is a new technology that may help and is under investigation and has good results over 10 years. Injection and coil treatment does not require hospitalization for more than a couple of hours. A few hours off work following treatment is all that is required.

Laser, Coiling, Ultrasound Sclerosis or Surgery are still the major means of controlling large varicose veins. The aim of these treatments is to remove refluxing veins (veins flowing backwards) from the limb leaving normal veins untouched.

Various investigations into the use of **laser, electro coagulation, coil occlusion and valve repair** have all been undertaken and treatment decisions are now made after anatomical mapping of veins with Duplex Ultrasound. Non-

surgical methods of control of varicose veins now have a major role in venous disease.

Laser and electrocoagulation combined with injection treatment are effective and enable outpatient treatment but complications are similar to surgery.

Comfort is now much better after treatment for varicose veins.

AIM OF SURGERY AND OTHER TREATMENTS:

The operation for varicose veins is designed to ligate points of venous valve failure and extract the varicose veins from the leg, by means of multiple small incisions. The technique is known as "ligation, puncture and extraction". Usually removal of the surface thigh vein or calf vein is required and this is performed by invaginating the vein rather than "stripping" the vein. This technique allows for reduced trauma and a faster recovery than the old technique of "stripping". The preoperative ultrasound (duplex scan) is to identify all the points of valve failure so as a few as possible valve leaks are missed at surgery. At present this technique has resulted in a 95% rate of "cure" for high-pressure varicose veins over 5 years. Follow up ultrasound and/or injection therapy is sometimes required as vascular neogenesis occurs in most people in the form of new veins. When you have Laser treatment only needle punctures occur and normal mobility is resumed in 2-3 hours. This can be done as an outpatient or inpatient. Bruising is common but transient. Bandages are required for the first day only and showering is resumed the next day

When you have an operation, you can expect an incision, approximately one to three centimeters long, over the site of leaking valves. These are generally at each groin and less frequently behind the knee. Some of the incisions for extraction of the varicose veins themselves will be approximately 1/2 to 1 millimeters in length and will be closed by single suture or adhesive tape. Most extraction sites are small punctures (less than 1 mm) and will not require any suture or closure at all. Firm compression bandages are applied at completion of surgery. Only minimal blood loss occurs with this surgery so transfusion is not considered a possibility. The leg(s) are bandaged from toes to groin firmly and impede walking to a mild degree for 2 days. Driving a car may be challenging during the first 2 days post op. Re bandaging of leg(s) takes place on the second day after surgery and this is usually a transfer into stockings.

The hospital time for surgery is in the range of one to two days, depending on comfort. For Laser treatment in hospital, 4 hours only is required.

Stockings are used for up to 2 weeks or as little as two days.

Hospital time for Coiling or Laser treatment is 1-2 hours with a similar period of bandaging and impeded mobility. The lumpy veins however take longer to absorb and produce lines of brown staining from haemosiderin deposition.

All treatments are 99.9% safe there being a 1:1000 chance of further hospital admission for thrombosis or infection. All treatment modalities are of similar risk. The risk of loss of life or limb from complications of surgery is extremely small (<1:50,000).

ARE VARICOSE VEINS DANGEROUS?

Rarely. The only dangerous complications of varicose veins are clot (surface thrombosis) ascending up the thigh towards the groin in the main surface vein and bleeding from bubble like varicose veins around the foot and ankle.

Thrombosis is rare and easy to notice because of pain and a firm lump in the thigh. This complication requires urgent surgery. Bleeding can occur if a small

vein gets injured usually towel drying after a shower. This can open a small vein and lead to substantial blood loss. First aid is leg elevation and immediate compression with the thumb followed by a firm bandage. Either of these complications can be lethal. You will be advised if either of these complications is likely at the time of your consultation.

ARE VARICOSE VEINS PREVENTABLE

No! The only reliable means of preventing varicose veins is to spend one's life in bed or walk on the hands. This would remove gravity from the equation. Changing one's parents or walking on the hands are not practical remedies. Crossing the legs while sitting does not cause varicose veins.

ARE VARICOSE VEINS CURABLE?

Not really. Large varicose veins are usually curable with surgery for a 10 year interval. Injection treatment alone is not normally able to cure large varicose veins. With ultrasound mapping, surgery is now able to cure large varicose veins in 95% of patients for at least 5 years. Varicose veins do tend to recur with pregnancy, obesity, other illnesses and with time. Recurrences are often manageable by sclerotherapy. New treatments yet to be proven in the long term are Coil Occlusion and Laser Ablation of varicose veins . These two new treatments allow for outpatient treatment but long-term results are yet to be finalized. Coil occlusion therapy with Sclerotherapy can manage most vein patients and appears effective at five years duration but, long-term studies have yet to be done. The smaller "spider veins" (venules) and surface varices recur throughout life and are only manageable by repeated treatment with injections. One can liken this management to regular "haircuts" but less frequent as the injections are usually good at clearing veins for a couple of years at a time.

SHOULD I HAVE MY VEINS FIXED ?

The indication for varicose vein surgery is patient request, except for dangerous circumstances like thigh thrombosis or bleeding. The main purpose of treatment is to manage the complications and symptoms mentioned on page one. It is essentially 100% safe to keep ones varicose veins unless thigh thrombosis (very rare) or bleeding occurs. Varicose veins are associated with a minor increased risk of thrombosis of the deep veins (**Deep Vein Thrombosis**) under normal conditions. Air travel, long bus or car trips may predispose to deep vein thrombosis but this is not a reason to have one's varicose veins treated surgically. Surface thrombosis in the varicose veins is not uncommon but is usually harmless but painful. It is never too late to request treatment as age is not a contraindication to surgery . Recurring ulceration, pain or bleeding often drives people to surgery but most operations are elective.

WILL I HAVE ENOUGH VEINS LEFT AFTER SURGERY ?

The deep veins inside the leg are the main system for blood transport back to the heart and these are not involved in varicose vein surgery. These deep veins however, are put under additional strain by the leaky surface varicose veins so removal of the abnormal surface veins actually lessens the load on the deep system inside the leg. Therefore varicose vein surgery reduces the strain on other leg veins.

WILL I NEED MY VEINS LATER IN LIFE ?

You may! The use of the leg vein, for leg bypass, remains the best way of saving legs from gangrene secondary to blocked arteries. People that can expect to have this problem are **smokers** and **diabetics**. The use of leg vein for heart bypass is no longer common, as other vessels are now used for this type of bypass. For diabetic patients valve repair may be a preferable therapy for varices. For smokers cessation of this poison is always advised not only to make surgery safer but also to reduce the likelihood of death or limb artery disease.

WHICH TREATMENT IS BEST FOR ME?

Your initial consultation with your vascular surgeon is the time to ask about the best option for treatment. For very large, complicated varicose veins surgery is still the quickest and most comfortable method of treatment. For modest, less complex problems, Sclerotherapy , Coil Occlusion or Laser ablation are more attractive options as they do not involve significant hospitalization times. All therapies are of equal safety (99.8%) but side effects are different. After surgery bruising lumps and bumps with discomfort have resolved by 6 weeks. After Sclerotherapy, Laser and Coil treatment lumps, bumps and tenderness may take 3-6 months to resolve and discolouration may last more than 12 months.