



VEIN SOLUTIONS

MEDICAL CLINIC

INFORMATION DOCUMENT

Minimal Invasive Therapy of Leg Veins

(Injection Microsclerotherapy / Ultrasound Guided Sclerotherapy / Endovenous Laser Ablation - EVLA, Modified Ambulatory Phlebectomy and Medical Adhesive Closure). This document will provide general information about veins and their causes and will outline the minimally invasive treatment options that are provided at Vein Solutions. The relative advantages and disadvantages of each treatment option will be discussed. Many patients will require a combination of these treatments to address their concern.

Please read this document carefully and clarify any concerns prior to any treatment.

Types of Veins

Abnormal, dilated veins appearing on the legs affect 30-50% percentage of the population during their lifetime. There are three common types, which are frequently seen in combination. 'Spider veins' are the finest and are usually fed by larger 'reticular veins', which lie deeper under the skin. 'Varicose' veins are the largest and bulge above the skin surface and are due to a weakness in the vein wall. Symptoms associated with varicose veins include heaviness, burning, aching, stinging, throbbing, swollen ankles, restless legs and leg cramps. The presence of a skin rash, small blue veins on the feet, skin discolouration, ulcers and scarring is usually due to advancing vein problems. Treating the abnormal veins will significantly improve symptoms for the majority of patients.

Why do abnormal veins develop?

A definitive cause is not known, however a strong family history suggests that some people inherit veins that are more likely to deteriorate. In women, oestrogen may play a role as the onset of puberty and pregnancy and taking the oral contraceptive can give rise to vein abnormalities. In pregnancy, the enlarged uterus can restrict blood flow from the legs and promote the development of varicose veins. Spider Veins and Varicose Veins are also associated with obesity. Occupations involving prolonged standing tend to increase the likelihood of veins to develop. Bone fractures and soft tissue trauma can cause localized vein abnormalities.

What is the mechanism by which veins develop?

Blood in leg veins normally travels upwards to the heart. Due to gravity blood tries to flow back down towards the feet. However, normal veins have valves, which close to prevent abnormal flow towards the feet. It is the breakdown of the valves that leads to abnormal flow, which in turn leads to increased pressure in the vein. The increased pressure eventually causes the vein wall to expand and bulge producing a varicose vein. Varicose veins serve no useful function to the body's circulation. Our body has the ability to establish alternative pathways to bypass the abnormal varicose veins. When varicose veins are closed down the circulatory system improves, as do many of the symptoms.

It is important to understand that varicose veins can be a progressive condition and that totally new veins can develop with time. Maintenance treatment is likely for most patients.

Can vein problems be prevented?

If you are prone to vein problems, it is advisable to pursue a healthy diet and lifestyle, to maintain normal weight and exercise regularly to minimize the likelihood of further problems. Wearing specialized venous support stockings may ease symptoms and slow the progression of abnormal veins; however no specific preventative treatment exists. Crossing your legs does not cause varicose veins.

Non-Surgical Treatment

There are 5 main treatment methods available: -

- (1) **Direct Vision Microsclerotherapy** - reserved for the treatment of small veins including spider veins.
- (2) **Ultrasound Guided Sclerotherapy** - reserved for the treatment of medium sized veins and bulging varicose veins and some hidden veins.
- (3) **Endovenous Laser Ablation (EVLA)** – for large hidden varicose veins previously treated with surgical stripping.
- (4) **Modified Ambulatory Phlebectomy** – is a ‘modified minor surgical procedure that involves the removal of the abnormal veins through tiny incisions under local anaesthetic.
- (5) **Medical Adhesive Closure - Late 2014** saw an interesting and clever addition to the treatment of large abnormal veins using medical glue (cyanoacrylate) with the adhesive closure procedure.

Many patients will require combinations of the above treatment methods to achieve the best results.

Direct Vision

Microsclerotherapy of surface veins

Surface veins are often numerous, widespread and usually require several treatments. Sclerotherapy is considered the first choice method for the treatment of small reticular and spider veins. This involves the injection of a sclerosant detergent solution through a tiny needle into the diseased vein. This causes the vein wall to seal up. The veins dissolve and disappear as the body gradually absorbs them. For most patients with spider veins the underlying blue reticular veins need to be treated first.

Ultrasound Guided Sclerotherapy (UGS) and the treatment of varicose veins

UGS is a safe and effective method for the eradication of small varicose veins. Unlike surgery there is no need for hospitalization or any general anaesthetic. There is no surgical scarring and virtually no downtime.

Most patients with varicose veins are suitable for UGS. Dr Loizou will determine your individual suitability during the course of the assessment. Some patients will require follow-up treatments to achieve the best results. Prior to treatment a duplex ultrasound scan is performed to establish and map out the exact nature of the vein problem. The UGS procedure is performed using ultrasound technology to locate the hidden

abnormal veins and allow the doctor to accurately and safely inject sclerosant detergent solution or more recently with sclerosant detergent foam.

Registered Sclerosants used in Australia include Sodium Tetradecyl Sulphate (STS-Fibro vein) and Polidocanol (Aethoxysclerol). These are available in liquid form but for large veins injected under ultrasound, we may use them in foam form. Please note that the doctor will make up the foam during the procedure. Using the product in foam format (rather than liquid) is an off-label use but International experience and research has demonstrated it is safer and much more effective option when compared to liquid.

Once injected the veins seal up and the process of absorption begins. Numerous injections may be required and can be associated with a slight burning sensation that usually only lasts for seconds. The sclerosant becomes diluted and absorbed and neutralized within a short distance from the injection site and therefore does not linger in the body. Normal veins are rarely damaged due to different flow patterns as compared to flow patterns in abnormal diseased veins. The appearance of the treated veins rapidly improves over a few weeks and depending on the initial severity with continued improvement still occurring for about three months.

Endovenous Laser Ablation (EVLA) for large varicose veins.

EVLA is an extremely predictable method for the treatment of major veins previously treated by stripping surgery under general anaesthetic. The procedure involves the placement of a laser fiber with ultrasound guidance into the abnormal vein through a tiny incision. The vein is then numbed with local anaesthetic. The Laser is then activated as the fiber is slowly removed. This produces a change in the vein wall along the treated section. This change then begins the process of absorption and the treated vein gradually dissolves. The procedure involves minimal discomfort. The published success of EVLA treatment has been reported up to 99.8% success with far fewer complications as compared to stripping surgery.

Modified Ambulatory Phlebectomy

This is a safe and effective outpatient procedure that is used to physically remove bulging varicose veins. Ambulatory phlebectomy treatment may be suggested to you as a part of your proposed treatment protocol. Prior to the procedure the skin overlying the veins to be removed are marked out. The veins to be removed are then injected with sclerosant foam which makes the vein contract in size and renders it virtually bloodless. The surrounding tissue is numbed with local anaesthetic solution. Special instruments are then used to remove the varicose veins using minute incisions. These incisions are usually closed with tape and very occasionally a single suture is used and usually heal with virtually no scar. After the procedure is completed, a dressing is applied to your legs then covered by compression stockings.

Medical Adhesive Closure

Late 2014 saw an interesting and clever addition to the treatment of large abnormal veins using medical glue (cyanoacrylate) with the introduction of the adhesive closure procedure. The available data from trials performed from large centres of excellence suggest that adhesive closure is almost as effective as Endovenous Laser Ablation (EVLA) when used on small to medium sized veins. Adhesive closure unlike EVLA does not use heat energy which means the whole procedure can be performed with one anaesthetic micro injection. The procedure involves the painless introduction of a small catheter through anaesthetised skin into the vein lumen and the accurate placement of medical glue inside the vein. Hand pressure is applied that bonds the vein wall together so there is no longer any blood flow in the abnormal vein. Medical glue has been used for many years in various medical procedures such as closing down brain aneurysms and liver aneurysms. It is considered very safe and effective. Medical adhesive can also be introduced with direct puncture injection to seal up otherwise in the past very tricky segments of veins to treat. The long term outcome of using medical adhesive in veins is still unknown but expected to be successful.

Compression

Following each treatment you will be required to wear a Class 2 compression stocking to assist closure of the treated veins and protect against phlebitis and deep vein thrombosis (DVT). The length of time the stocking needs to be worn varies from three days to two weeks depending on the size of the veins injected and the treatment method provided. It is important to follow the provided compression instructions carefully to achieve the best results.

Common Side Effects of Minimally Invasive Vein Treatments

There are a number of possible side effects seen with minimally invasive vein treatment that are considered a normal consequence of successful treatment

Stinging sensation – some stinging may be experienced at the time of treatment, which settles quickly. Many patients find the treatment almost painless.

Bruising may appear and will disappear over a couple of weeks. Bruising can be extensive following laser treatment or ambulatory phlebectomy and completely disappears over a couple of weeks.

Darkening of spider veins soon after treatment is common and is a sign of successful therapy. This fades over the next few weeks as your body absorbs the treated vein.

Tender Lumps due to dead blood trapping along the course of the treated veins. It may feel like a pea or an olive or even like a cord under the skin. This represents trapped blood in a treated vein segment. Every patient will experience one or more of these lumps and should not alarm you. It is harmless but may make the vessels more noticeable in the first few weeks. Trapped blood is usually released at review appointments. This accelerates the healing process. Persistent lumps (even without draining) will usually disappear within six months. Blood trapping is common with treatment of all vein sizes.

Aching in the legs for the first few days can occur after treatment and may persist for about 2 weeks. This actually represents your body's immune system attacking the treated veins as they are dissolved. This more commonly occurs when larger veins are treated and is usually improved by walking. You may take Panadol or Nurofen or a combination such as Nuromol or Maxigesic to help relieve any aching. Most people do not require any pain relief after treatment.

Phlebitis is the appearance of tender, red, swollen areas and is due to inflammation of the treated veins. This represents accumulation of debris in the tissues as

the veins are dissolving. It may be associated with tender lumps along the line of the treated veins. These lumps are a normal reaction to the vein treatment and are due to trapped blood. Phlebitis can be treated with anti-inflammatory medication (such as Nurofen or Voltaren Rapid 25mg or in combination with Paracetamol such as Nuromol or Maxigesic) and improves with walking and the continued wearing of the compression stocking. Please contact Dr Loizou if you suffer excessive tenderness.

Possible Complications of Minimally Invasive Vein Treatment

There are a number of possible complications that can occur with minimally invasive vein treatment even when the greatest of care is taken.

Pigmentation⁷ is the appearance of brown marks on the skin located over or near the treated veins. This is a consequence of therapy, particularly when treating spider vein clusters with injection microsclerotherapy. Pigmented areas are composed of haemosiderin (a form of iron) that can become trapped in the skin. In most patients the pigmentation gradually fades, disappearing completely within 3-12 months although faint pigmentation lasting greater than 12 months has been reported in 5% of cases. Close attention to wearing the compression stocking and having trapped blood removed at your follow-up appointments will minimize pigmentation. It is advisable to stop iron supplements before your treatment.

Matting⁸ is the development of extremely fine networks of spider veins likely to occur on the outer and inner thighs usually in female patients with translucent hormone sensitive skin. Matting usually resolves spontaneously though some will resolve with further injection treatment. Some may persist despite further treatment. Matting is more common in people with extensive surface veins and in overweight people with poor muscle tone. Matting can also follow the surgical removal of varicose veins. Matting is usually not seen with EVLA or medical adhesive closure techniques. By taking Zyrtec (antihistamine) and Cyklokapron 2 hours prior to vein treatment helps prepare the skin to be less reactive. Your relative risk of developing matting will be discussed at the time of the initial consultation

Hair growth at sclerotherapy injection sites can occur but is mild, quite localized, temporary and rare. It resolves spontaneously over several weeks.

Swelling of the leg or ankle can occur and will settle with time. It is due to inflammation of the skin which leads to overload of the lymphatics in the initial phase of healing. Wearing the compression stocking, elevating the leg when sitting and regular walking will help.

Numbness of the skin is rare and temporary but can last up to three months. It is usually located in the inner aspect or back of the calf. It is due to irritation of nerves that lie in close proximity to an injected vein. Numbness can be expected for a few hours with EVLA procedures as local anaesthetic is used to

numb the vein to be treated.

Migraine sufferers may experience visual disturbances lasting a few minutes and can occur in patients treated with injection sclerotherapy. This may be followed by the onset of a headache. Taking a mild analgesic such as Panadol or Panadeine or anti-migraine medication can provide relief. Should you suffer with frequent migraines then it is best to attend with a friend to assist with driving home. Migraine has not been reported with EVLA or with Medical adhesive closure. (Please note there is a remote and rare possibility of developing a transient reversible stroke with sclerotherapy treatments. This has been reported in patients who have migraines with visual aura and who also have a hole in the heart. Though rare the incidence has been further reduced by the introduction of CO2 foam).

Ulcers of the skin are rare and usually appear as small, painful sores within two weeks of injection sclerotherapy treatment. They heal slowly and leave a scar, which can be excised if unsightly. They occur due to sclerosant passing from the injected veins into the small associated skin arterioles often at sites of past trauma. Ulcers are more common in people who smoke cigarettes or who have certain associated skin types. Ulcers are not seen with EVLA or Medical Adhesive Closure.

Allergic reactions to either the sclerosant or medical adhesive or to the local anaesthetic are rare but may be serious and life threatening. Some reactions require immediate treatment. Should you feel any abnormal sensations during treatment such as generalized itchiness, nausea or shortness of breath, don't hesitate to tell Dr Loizou who will then provide the appropriate treatment.

Deep Vein Thrombosis is a clot in the deep venous system – not in the treated varicose veins. This potentially serious problem is extremely rare if the compression stocking is worn as directed and regular daily walking is maintained. If your relative risk of DVT is considered increased then prophylactic treatment will be advised. Deep vein thrombosis may lead to clots in the lung (pulmonary embolism), which can be a life threatening condition requiring hospitalization. It is advisable to avoid long distance travel (greater than 4 hours duration) for at least 4 weeks following the treatment of varicose veins. Should you need to travel within 4 weeks of your last treatment please contact Dr Loizou for advice. Symptoms of deep venous thrombosis and pulmonary embolism include a painful swollen calf or leg unrelieved by walking, unusual shortness of breath, cough with or without blood stained sputum and stabbing chest pain. Should you experience any of the above symptoms please contact Dr Loizou immediately.

Intra-arterial injection is an extremely rare complication that can result in significant muscle and skin damage. This now rarely occurs due to the use of ultrasound guidance of the needle, which allows for a more accurate placement under ultrasound visualisation during the injection procedure.

Infection- following vein procedures is rare due to the precautions taken during treatment. It is however always possible despite the precautions. It is more likely to occur with modified ambulatory phlebectomy when veins are removed as described in the relevant section above. Should you develop fever and or increasing tenderness in the treated area not responding to anti-inflammatory medication then you must contact Dr Loizou by paging him or by email.

Precautions

Pregnancy and breastfeeding - sclerotherapy is best avoided when pregnant or breastfeeding. This is advised

even though there is no current documented evidence to suggest that sclerotherapy is unsafe during pregnancy or breastfeeding. There is a relative increased risk of clotting if treatment is provided during pregnancy or breastfeeding. Vein treatments during pregnancy are not as effective often-producing poor results. It is recommended that sclerotherapy should be avoided if pregnancy is contemplated within the treatment course. Veins that appear during pregnancy should be treated before the next pregnancy to avoid deterioration with subsequent pregnancies.

Oral contraception and hormone replacement therapy- both oestrogen and progestogen have been implicated in increasing the risk of thrombosis whether you have a vein treatment or not. Taking the low dose Contraceptive pill or HRT increases the risk of deep vein thrombosis 3 fold as compared to those not taking these products. Total correction of this increased risk requires ceasing hormone treatment for a minimum of 4 weeks and preferably for 3 months. However when restarting the Pill or HRT the risk of DVT increases to 20 fold in the first 3 months and gradually decreases to 3 fold as time passes. There is no current evidence that during vein treatment that taking low dose contraceptive pill or HRT actually increases the risk of thrombosis above the already existing risk before treatment. The relative merits of ceasing or continuing hormone therapy prior to sclerotherapy and EVLA will be discussed. Prophylactic anticoagulation may be prescribed depending on your relative risk of thrombosis.

Dental treatments- should be avoided 1 week prior and for 4 weeks after any vein treatment. During dental treatment bacteria can enter the blood stream and then seed into the treated vein area leading to tissue infection. Should a dental treatment be necessary within the above time then prophylactic antibiotics should be taken. Your dentist must be informed of the timing of your vein treatments.

How successful are Vein Treatments?

Dr Loizou will explain the treatment course required to produce a significant improvement to your legs. The degree of success from treatment depends on many factors including your age, severity of the disease, your natural healing rate, whether you have any other concurrent medical conditions and how well you adhere to the post-treatment instructions. It is not possible to guarantee complete clearance. Treatment should restore an even and uniform appearance to the legs and an improvement of 80-90% can be expected within 2-6 months. Initially the treated legs may look worse, due to bruising and trapped blood, however this will disappear over a number of weeks. It is therefore

important that you should attend for all scheduled appointments so that Dr Loizou can address any concerns. **Missing or delaying a scheduled appointment may lead to some cosmetic concerns that could have been avoided.** Veins treated effectively by sclerotherapy and /or EVLA or adhesive closure should not return. Totally new veins can appear with time particularly if you are prone to making veins. The treatment is therefore directed at the current problem with future treatments likely for some people.

Preparation before treatment

Do not apply moisturizer to your legs on the day of the treatment. Moisturiser may make the needle tip slip. Avoid using fake tan for at least two weeks prior to treatment as the skin thickens considerably making it difficult to treat. If possible, do not expose your legs to the sun for at least one week before treatment. You may prefer to wear trousers to your appointment, as they will help to conceal the compression stocking. Wear comfortable shoes so you can go for a walk after the procedure. Stop iron and vitamin supplements 2 weeks prior to treatment but can be resumed after the treatment series has been completed. In males who have hairy legs and who require Laser treatment and/or Modified Ambulatory Phlebectomy it is best to clip the hair down with a beard trimmer or use "Veet for Men" cream (from Supermarket) to remove the hair 2 days prior to treatment. It is preferred that driving within 2 hours is avoided if you are undergoing EVLA or Phlebectomy. It is best to be accompanied to be driven home. Please ensure you are familiar with the information presented in this document and don't hesitate to ask Dr Loizou questions.

Post-treatment instructions

In order to ensure the success of your treatment it is essential you observe the following instructions.

- You are required to walk at a gentle pace immediately after the treatment and for at least 30 minutes each day for the next 2 weeks. Walking uses the calf muscles, reduces the pressure in the treated veins, and can ease aching. Avoid power walking for 2 weeks after treatment. The combination of compression and walking minimizes the risk of deep vein thrombosis. Do not confine yourself to bed. Avoid travel greater than 4 hours by any means. If unavoidable please inform Dr Loizou who will discuss prophylactic measures for your safety.
- Any cotton balls applied to the skin under the stocking can be removed 4 hours after treatment.
- Avoid prolonged standing in one spot and elevate your legs when sitting if practical.
- Avoid rigorous activities (e.g. running, squash, high impact aerobics or heavy lifting) for the first 2 weeks

after treatment. Mild to moderate exercise such as golf or an easy stationary bike ride is permitted. You can carry on with your normal work or home duties provided they are not strenuous.

- You may experience some pain and heaviness in the legs in the first few days after vein treatment as your immune system begins attacking the treated vein segments. This may be more noticeable at night. If this troubles you take 2x Nurofen or 2x Voltaren Rapid 25mg tablets and go for a short walk. If EVLA was used then you may experience some discomfort similar to a pulled muscle sensation in the inner thigh which is due to the healing process. If so take 2X Nurofen or 2x Voltaren Rapid 25mg with food as per instructions on the packet for the next 5 days. Should you develop indigestion whilst taking the tablets then stop them and take Panadol instead.
- Remove the stocking if it causes any discomfort in your foot or leg when sleeping. The stocking should be put on again after rising from bed however it may be difficult to reapply once taken off. Do not cut the stocking and contact the clinic if problems persist.
- Precise written instructions for wearing the stocking will be given to you following the treatment.
- Review appointments will be organized as necessary.

What are the possible complications if I DO NOT have treatment?

In case of large varicose veins, spontaneous blood clots may develop in the deep or surface veins with the associated possibility of the clot travelling to the lungs. Also skin changes including increased pigmentation, hardening of the skin and underlying fat and eventually ulcers may develop in the lower legs as the disease process progresses. Leg symptoms of aching and pain and swelling can increase with time if left untreated.

In general all patients are reviewed at two weeks. All appointments are usually made following the initial consultation.

- **Please advise your doctor if you have any travel arrangements that have not already been discussed so that appropriate instructions can be given.**
- **Always bring your compression stockings to each appointment.**
- Contact Dr Loizou if you have any questions or concerns about your treatment. Should you develop any of the serious symptoms such as soreness or swelling of the calf ~~unrelieved~~ by walking, shortness of breath, chest pain or other chest problems this may be due to deep vein thrombosis. You should contact Dr Loizou immediately. If Dr Loizou cannot be contacted go to hospital for immediate assessment.

Fee Structure

The expected cost for treatment will be provided in writing following your assessment. Rebate is claimable through Medicare except for the smallest spider veins. In Australia, Medicare Safety Net reimburses eligible patients to a recently capped maximum amount.

Disclaimer

This document is provided only as a guide to the patient. At the time of writing this document is accurate to the best of my ability.

Updated 12/2017

Are there alternative treatment methods?

Laser light (not EVLA) applied to the legs for surface veins has proved disappointing. Lasers are best used for treating small veins and capillaries on the face.

Surgery is an option for some patients with large varicose veins. Surgical treatment involves hospitalisation and is performed under general anaesthetic. The risks associated with surgical stripping when compared to minimally invasive treatment include an increased incidence of infection, scarring, deep vein thrombosis, varicose vein recurrence, lymphatic damage and permanent nerve damage and a higher risk of vein regrowth.

General anaesthesia has some associated serious risks including the remote possibility of paralysis, brain damage and death.



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