Endovenous Laser Ablation (EVLT), Ambulatory Phlebectomy (AP), Ultrasound Guided Foam Sclerotherapy (UGFS) of Varicose Veins – A minimally invasive day case procedure

Dr Sanjay Nadkarni,
Endovascular Specialist &
Internventional Radiologist,
Subiaco. Tel 08 9381 6292

Percutaneous laser ablation combined with ambulatory phlebectomy and ultrasound guided foam sclerotherapy is now available as a minimally invasive alternative to the traditional surgical high ligation and stripping of symptomatic varicose veins. This procedure has been used extensively by interventional radiologists in North America and Europe and is now attracting more attention in Australia. This percutaneous method of treating incompetent veins provides patients with a less invasive alternative and virtually no downtime. Its literally a "walk in-walk out" clinic procedure.

Background

Varicose veins affect up to 30% of the population, causing aching, leg heaviness, itching, and cramps. Objective features include oedema, eczema, lipodermatosclerosis and ulceration. Patients may seek treatment because of symptoms or cosmetic appearance. The majority of varicose veins (60-80%) arise from incompetence of the saphenofemoral junction (SFJ) with resultant great saphenous vein (GSV) reflux. Successful long term treatment of varicose veins aims to eliminate the highest point of reflux and the incompetent segments of veins.

For long saphenous varicosities, the procedure of choice to date has been SFJ ligation, GSV stripping to the knee level and multiple avulsions of the varicosities. Requiring general anaesthesia, this surgery carries significant peri operative morbidity, hospitalization costs and delayed return to normal activities and work. Recurrence varies (20-80%), depending on definition and timing.

In recent years, the combined techniques of laser ablation (EVLT), ambulatory phlebectomy (AP) and ultrasound guided foam sclerotherapy (UGFS) have achieved good clinical results and better patient satisfaction.

Diagnosis

Venous duplex ultrasound remains the cornerstone of diagnosis. Done well, an ultrasound demonstrates a "virtual map" of the incompetent veins, and may also show incompetent pelvic veins as a source of the leg varicosities. This allows for staged treatment to reduce the risk of recurrence, i.e. pelvic vein embolisation in addition to EVLT, AP and UGFS.

EVLT

The outpatient procedure is performed under local tumescent anesthesia. Ultrasound is used to guide a 20G spinal needle onto the surface of the vein. Local anaesthetic mixed with normal saline is infiltrated to create a peri-venous sheath of anaesthetic. Tumescent anaesthesia not only provides analgesia but it also compresses the vein onto the laser catheter to achieve good contact between the vein wall and the catheter as well as provide a heat sink to preventing damage to surrounding non target tissue.

Under ultrasound guidance, a 19G needle is used to access the GSV via a pinhole (1-2mm) puncture at the level of the knee joint. The laser catheter is inserted into the vein and guided to a point just distal (1-2cm) to the SFJ before the catheter is connected to a laser generator. The catheter is slowly withdrawn to the point of vein access.

Laser energy causes sufficient heating of the vein wall and results in collagen contraction and denudation of the endothelium. This stimulates vein wall thickening and luminal contraction initially (non thrombotic occlusion), and eventual fibrosis of the vein.

Aftercare

A compression bandage is applied from foot to upper thigh for 24 hours and then type 2 compression stockings are worn for the next 2-6 weeks. The patient can walk immediately after the procedure and return to work the following day. Paracetamol and a NSAID may be required for a few days after the procedure.

Ultrasound Guided Foam Sclerotherapy (UGFS)

Foam sclerotherapy is a technique that involves injecting "foamed sclerosant drugs" within a blood vessel using a syringe. The sclerosant drugs (Sodium Tetradecyl Sulfate or polidocanol) are mixed with air in a syringe. This increases the surface area of the drug. The foam sclerosant drug is more efficacious than liquid alone in causing sclerosis (thickening of the vessel wall and sealing off the blood flow). It is therefore useful for tortuous veins. Experts in foam sclerotherapy have created "tooth paste" like thick foam for their injections, which has revolutionized the non-surgical treatment of varicose veins.

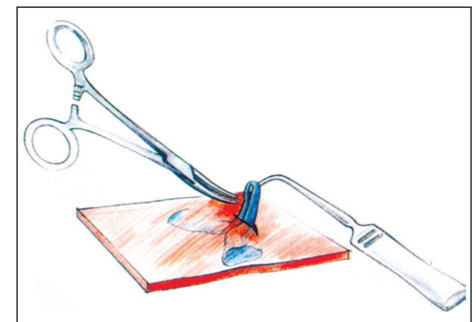
The patient's leg is then compressed with a bandage for 24 hours and then stockings for 4-6 weeks. Patients are also encouraged to walk regularly during that time. It is common practice for the patient to require at least 2 treatment sessions separated by days to weeks to significantly improve the appearance of their leg veins especially spider veins.

Ambulatory phlebectomy

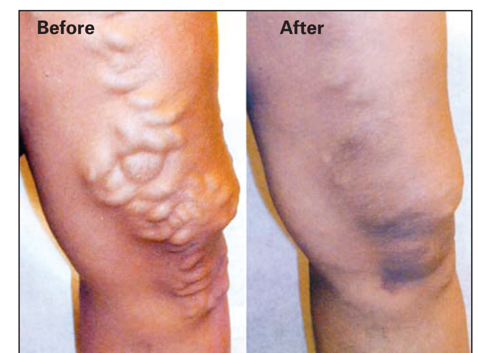
This adjunct procedure to remove large varicose tributaries is performed under local anaesthetic and is done at the same time as EVLT and UGFS.

The site of varicosities is marked on the skin. A series of small cuts (2-5mm) are made 2-4cm apart along the course of the varicosities using a small scalpel. Venous phlebectomy hooks are used to "pluck" the veins through the incisions. Steri-strips are then applied and a compression dressing applied overnight and compression stockings are worn for 2-4 weeks after treatment.

Antibiotics are given at the time of the procedure and for one week following the procedure to minimise the risk of infection.



Method of ambulatory phlebectomy using venous hooks



Long saphenous varicosities, pre and post laser ablation