

An update on the management of varicose veins

Varicose veins are a common complaint, and patients may present with symptomatic venous problems, cosmetic complaints or vascular complications. The key planks of treatment are graduated compression stockings, sclerotherapy and surgery.



G. MARK MALOUF

MB BS, FRACS, FRCS

Dr Malouf is a Surgeon in private practice in Woollahra, Sydney, NSW, and President of the Australian and New Zealand Society of Phlebology.

The term 'varicose veins' describes a wide range of clinical conditions, from unsightly venules and starburst vessels to dilated and refluxing saphenous trunks and tributaries or bulging varicosities, possibly with associated signs of prolonged high venous pressure. Some examples are shown in Figures 1 to 4. The incidence is high – some experts estimate that up to 50% of women over 40 years suffer some varicose vein problems. Varicose veins account for a significant number of medical consultations, referrals and specialist treatments, as well as expenditure on vascular diagnostic technology.

The aetiology of varicose veins is usually primary, but the condition is often influenced by lifestyle and physiological factors, such as pregnancy and prolonged standing, and it can arise secondary to trauma or thrombosis (usually DVT). Occasionally it is congenital, associated with a vascular malformation.

Valvular dysfunction and flow abnormalities can affect the veins in any or all of the superficial venous system (usually the legs), the deep venous system or the perforating veins that connect these by crossing the deep fascia. The most common pathology is reflux from absent or malfunctioning venous valves; the second most common is obstruction, partial or complete, from venous thrombosis. A combination of reflux and obstruction is sometimes seen in the deep venous system.

History

Patients with varicose veins may suffer from aches, pain, tiredness, cramp, itch, or sensations of burning or heaviness. It is wrong, however, to assume that all patients with these symptoms should blame their veins because a number of causes exist. Taking a careful history is the first step in diagnosis. Many other patients do not have any symptoms.

IN SUMMARY

- Varicose veins present in many shapes and sizes. They may or may not produce symptoms.
- Be careful when ascribing leg symptoms specifically to the veins. There are many causes to consider.
- Compression sclerotherapy is the treatment of choice for reticular veins, dilated venules and telangiectasias. Its use is extending into the larger tributary veins, recurrent veins and even large primary veins. Ultrasound guidance has enhanced this treatment greatly.
- Surgery delivers longer term control of larger varicose veins than does sclerotherapy alone. Ambulatory phlebectomy is becoming increasingly popular.
- It is not sensible to promise patients a 'cure' for their varicose veins. More realistic outcomes are significant disease control for a long period of time and improvement in symptoms and appearance. The patient and treating doctor must discuss the potential risks and benefits of treatment before commencement.

Table 1. Types of varicose veins

- Telangiectasias (red or blue, <1 mm diameter, intracutaneous)
- Venules (1 to 2 mm diameter)
- Reticular veins (2 to 4 mm diameter, subdermal, zigzag appearance)
- Tributary varicosities
- Truncal varicosities, including great and short saphenous trunks

Note the patient's main complaint, which may be a specific symptom, concern about the vein appearance, or a complication (e.g. bleeding, eczema, ulceration or skin discolouration). Symptoms attributable to varicose veins are generally worse in the lower part of the legs (not the upper); these usually subside with rest, elevation or sleep but are typically worse in hot weather. About 70% of patients with varicose veins have a family history of the condition.

It is important to enquire about the number of pregnancies (and intended pregnancies), the amount of standing required at work, exercise, changes in weight, and previous trauma, leg or pelvic fractures, and thrombosis in superficial or deep veins. An intention of pregnancy may alter the timing of treatment for venous disease because pregnancy following treatment is likely to produce further problems. A personal history as well as a family history of venous thrombosis should be taken because awareness of familial thrombophilia is increasing.

'Jumpy legs' at night in bed is rarely due to venous pathology. This is a manifestation of restless legs syndrome, a constitutional problem that may be related to dietary indiscretions (e.g. coffee, alcohol), exercise, hormones and stress.

Examination

It is important to perform the leg examination under good lighting, with the patient standing. Both the front and back of the legs should be inspected, from the groins down to the bare feet. This may reveal unsightly small surface veins or large varices in different distributions, including the great saphenous and short saphenous territo-

Clinical presentations of varicose veins



Figure 1. Telangiectasias in the inner thigh.



Figure 2. Dilated venules and reticular veins.



Figure 3. Large tributary varicose veins.



Figure 4. Large varicose veins.

ries and nonsaphenous areas such as the vulva, perineum, posterior thigh or lateral leg. Types of varicose veins that may be seen or felt are listed in Table 1. In men, a varicocele and scrotal veins may be noted.

Palpating the standing leg can reveal dilated high pressure veins that may not be easily visible. These veins empty when the patient is recumbent, and palpable defects in the subcutaneous fatty tissue are noted. These defects may suggest nearby incompetent perforating veins, and occasionally they represent gaps in the deep fascia through which perforators emerge. Percussion is sometimes helpful to feel a fluid thrill or tap. Tourniquet testing is now rarely used.

Patients may display leg changes resulting

continued

from chronic venous hypertension. These include chronic oedema, skin pigmentation (Figure 5), lipodermatosclerosis, fat necrosis (panniculitis), varicose eczema, atrophie blanche (Figure 6), and healed or active leg ulceration (Figure 7). Lipodermatosclerosis in the medial gaiter area can often be misdiagnosed as superficial thrombophlebitis, which is common after minor trauma and appears as an angry, palpable, solid lump in and around the veins. Superficial thrombophlebitis is not an infective condition, and no antibiotics are required in treatment.

Patients may also present because of direct varicose vein complications. The major ones are bleeding (external or subcutaneous) and thrombosis (superficial or deep).

Investigation

It is reasonable for GPs to investigate directly the patients with varicose veins. Alternatively, referral to an appropriate practitioner can be arranged.

Duplex scan

The gold standard investigation for varicose veins is a duplex ultrasound scan for venous reflux, which is performed with the patient standing and the leg muscles relaxed. Two modalities are used simultaneously: tissue ultrasonography, and Doppler flow sampling. The aim is to detect reflux in superficial, deep or perforating veins as well as incompetent valves from which it may be originating.

This test is highly operator-dependent, and best performed by an experienced

vascular laboratory or ultrasound department. The report will include a map of the veins and list the sites of venous reflux. To receive results that reflect the clinical situation, it is important to provide an accurate history on the request form (e.g. previous varicose vein surgery, DVT) and to ask pertinent questions of the sonographer.

Most patients who are to be treated for large varicose veins will require a venous incompetence duplex scan in order to map the problem. Accurate clinical examination and precise preoperative marking are essential, but often duplex adds to the picture. A patient who has symptoms for investigation requires duplex scanning if significant venous incompetence needs to be excluded. Patients with much smaller surface veins often do not require such a scan.

Legs exhibiting the signs of prolonged venous hypertension



Figure 5 (above). Large varicosities with oedema and skin pigmentation.



Figure 6 (above right). Atrophie blanche and varicose eczema associated with hard woody lipodermatosclerosis.



Figure 7 (right). Healed ulcer of the medial ankle with large varicosities, lipodermatosclerosis and pigmentation.

Contrast venograms

Contrast venograms are seldom performed as a diagnostic test. However, they are useful in association with thrombolysis of a proven clot or when venous reconstruction is considered.

Treatment options

There are three broad indications for varicose vein treatment:

- troublesome symptoms when varicose veins are suspected to be the cause
- unsightly appearance causing the patient concern
- obvious damage to legs.

Changes in the skin and subcutaneous tissue resulting from prolonged high venous pressure must be brought to the patient's attention. Even if the veins do not cause pain, treatment should be suggested to reduce the chance of further deterioration and possible leg ulceration.

Conservative measures

Conservative management for varicose veins is aimed at reducing the venous pressure, supporting the legs and

improving calf muscle pump function. This includes graduated compression stockings, which are available in different lengths, strengths and textures. The most effective type for venous disease is below-knee brown/black stockings that provide a minimum compression of 20 to 30 mmHg at the ankle. Antiem-bolism stockings do not give enough support to counteract venous pressure in ambulatory patients. Correct fitting is essential, and a knowledgeable and experienced pharmacist or surgical supplier is very valuable in this regard. In patients with active leg ulceration, dressings alone are of little value without graduated compression stockings or bandages.

Other conservative measures for managing varicose veins include:

- elevating the foot of the bed on bricks or telephone books – this reduces oedema and further decreases venous pressure
- increasing the level of exercise and walking to improve the calf muscle pump
- reducing weight
- avoiding prolonged standing unless effective hose is worn.

Medications

Simple analgesics may be of assistance for venous leg pain. There are venotonics available from pharmacies and health food outlets for relieving the symptoms of varicose veins. These usually contain bioflavonoids or rutins (e.g. Paroven Forte) and aim to reduce capillary permeability (among other things) but do nothing to improve the appearance of the veins. They are popular in Europe.

Topical corticosteroid ointments combined with support stockings are useful in varicose eczema.

Sclerotherapy

Sclerotherapy involves injection of an irritating agent (scleragent) into a vein, which destroys the endothelial lining and

causes inflammation, and subsequent compression to appose the vein walls and produce fibrosis and eventually sclerosis into a very fine fibrous cord. It is the treatment of choice for reticular veins, dilated venules and telangiectasias, and its use has been extended for larger tributary veins, recurrent veins and even large primary varicose veins.

Three scleragents have been approved by the TGA: laurith-9 (Aethoxysklerol), sodium tetradecyl sulfate (Fibro-Vein), and hypertonic saline 20%. In general, the larger the vein to be injected, the stronger the scleragent used and the longer the period of compression required. Current practice is to use graduated compression stockings, usually 20 to 30 mmHg strength at the ankle, for periods ranging from three days to one month (depending on the size of the veins). Thigh length stockings or pantyhose are required for sclerotherapy above the knee.

Complications can occur. These include retained blood in the sclerosed vein, extension of superficial thrombophlebitis, injection ulceration where inflammation has extended outside the vein wall and necrosed a patch of skin, pigmentation or haemosiderin staining in the skin over the vein, and occasionally DVT. It is essential to obtain adequate informed consent, signed and witnessed, before commencing sclerotherapy. Contraindications include known allergy to the scleragent, immobility, thrombophilia or previous DVT, significant peripheral arterial disease and inability to compress the vein.

Ultrasound guided sclerotherapy

Ultrasound guided sclerotherapy using detergent scleragents is a recent advance in this form of treatment. It is used for deeper veins that cannot be seen or felt and thus would not have been suitable for sclerotherapy under direct vision. It is easily repeated, which is often necessary for recanalised segments or new areas of venous reflux, and less costly or painful

than varicose vein surgery. The significant risks of superficial thrombophlebitis and pigmentation after large vein sclerotherapy are somewhat of a problem and take weeks or months to settle. The long term efficacy of the procedure is still being evaluated.

Surgery

Varicose vein surgery is used for large and extensive varicosities involving the great and short saphenous trunks and their major tributaries and possibly for severe perforator incompetence. About 24,000 varicose veins operations are performed in Australia annually, with many being for significant recurrence following previous surgery or repeated sclerotherapy.

Traditionally, ligation of incompetent saphenofemoral or saphenopopliteal junctions is performed, with or without stripping of some or all of the diseased saphenous trunks and removal of large branching varicosities. Sometimes significant incompetent perforating veins in the calf or thigh are ligated.

Many patients undergo varicose vein surgery in the consulting room under local anaesthetic or tumescent anaesthesia ('ambulatory phlebectomy'); patients who are hospitalised are generally admitted as day patients. Improved surgical instruments have enabled inversion stripping of the saphenous trunks with minimal blood loss and minimal trauma to adjacent tissues. Small, cosmetically-acceptable stab incisions and vein hooks allow removal of the largest varicose veins, with incisions often closed with Steristrips. Stripping the great saphenous vein to the ankle is now discouraged in favour of removing just the upper two-thirds of the vein. Large calf incisions for locating and ligating calf perforators have been replaced by localised perforator ligation.

Surgery for varicose veins involves a much greater effort for both the patient and doctor but delivers longer term control than does sclerotherapy alone. The

surgery carries potential risks, all of which must be explained adequately to the patient before informed consent is obtained. Discussion must include noticeable scarring, possible paraesthesia, requirements for time off work (generally between one day and two weeks, depending on the extent of surgery and the patient's occupation) and the possibility of recurrent varicose veins sometime in the future.

Treatment for ovarian and pelvic venous disease

Varicosities in the pelvis, usually in the broad ligaments, can cause symptoms of venous congestion (e.g. pelvic pain, heaviness and dyspareunia) and may be the source of perineal, vulval, buttock and posterior thigh varicosities. Saphenous vein reflux may also be present. The most common cause is reflux in the left ovarian

vein, followed by the right ovarian vein, and the internal iliac veins or tributaries.

In the past, gynaecological surgery or simply ligation and excision of the offending ovarian veins has been performed. Recent advances include interventional radiological ablation of incompetent veins using sclerotherapy agents and coils, which shows similar symptomatic improvement to surgery. In men, endovenous coiling of gonadal veins to treat varicocele has been performed for years.

Selecting treatment

Every patient may have factors that will modify treatment options. These include age, overall health and comorbidities, parity (and intention for pregnancy), future work prospects and any previous vein treatment. Patient preferences also need to be considered.

Generally, the best long term control for a set of large varicose veins is achieved by good surgery, but this is usually at the expense of a day in hospital, anaesthesia, some bruising and scarring, and a short period of 'down time'. Direct vision sclerotherapy can be used to treat smaller veins that remain after surgery. Ultrasound guided sclerotherapy is very effective for recurrent varicose veins, mild truncal varicose veins, and veins that are difficult to access surgically. Ambulatory phlebectomy is very useful in treating early disease and localised recurrent varicosities, and can be accompanied by sclerotherapy.

The best treatment available for patients with reticular veins, dilated venules and telangiectasias is sclerotherapy under direct vision. It is minimally invasive, can be easily repeated, and patients can expect a significant improvement in

symptoms and appearance with a minimum of inconvenience.

Discussion with patients

It is important to discuss with patients whether varicose veins are responsible for their complaints or whether in fact they have varicose veins pathology. When discussing the effectiveness of treatment options for varicose veins, realistic outcomes must be given and no miracles promised. Advice about compression stockings and other conservative measures can be given immediately, possibly with medication to help with symptoms. Explanation of sclerotherapy or surgery must include a description of the treatment and potential side effects (see Table 2).

For many patients contemplating definitive treatment, the main choice to be made will be between:

Complication	Sclerotherapy	Surgery
Venous thrombosis		
– deep	+	+
– superficial	++	–
Pigmentation	++	+
Telangiectatic matting	++	+
Leg ulceration	+	–
Anaesthetic complications	–	+
Scarring	–	++
Haematoma or lumps	+	++
Wound infection	–	+

Key: – does not occur, + may occur, ++ not unexpected.

- varicose vein surgery, possibly followed by sclerotherapy to treat remaining smaller veins, and
- compression sclerotherapy alone, under direct vision or ultrasound guidance.

continued

Recurrence of varicose veins – both large and small – is a common problem after sclerotherapy or surgery. Inappropriate or inadequate treatment may be a possible explanation, but generally recurrence indicates an overall vein wall weakness and progression of the disease to involve other segments of vein. Before treatment is commenced, patients must be made aware that future treatment may be required in the form of further sclerotherapy, ambulatory phlebectomy or repeat surgery.

Aftercare

With the advent of ambulatory procedures and day only admission for varicose vein treatment, patients usually return to the care of their GP in the post-treatment phase. Thus, the GP may be the first person to diagnose a complication, such as wound infection, DVT or ascending superficial thrombophlebitis. In such cases, the treating surgeon or physician must be notified as soon as possible and appropriate treatment must be instituted.

Venous thrombosis associated with varicose veins is a common problem in general practice. Superficial thrombophlebitis presents with pain and redness and can be dramatic in extent. A superficial clot can extend proximally and may enter the deep system via perforating veins or extend beyond the saphenofemoral or saphenopopliteal junctions. Treatment involves analgesics, external support, anti-inflammatory agents (not antibiotics) and mobilisation; if progression occurs then low molecular weight heparin should be given in therapeutic doses. The use of knee-length support stockings are advised in patients with gross varicosities when travelling long distances, as long as the top of the stocking does not cut into a cluster of veins (if so the stocking should extend above the knee). Patients who have a significant thromboembolic history should be provided with prophylactic

low molecular weight heparin when they are travelling.

Future developments

New treatments for varicose veins are under evaluation. One approach is venous valve repair, which is an attempt to avoid destruction of the great saphenous vein. This involves hospitalisation and open surgery, with valves repaired either internally by opening the vein or externally by stenting with a cuff to re-establish competence.

A different approach being trialled involves total destruction of saphenous veins *in situ* by using heat from high frequency radiowaves or from an endovenous laser fibre activated within the lumen of the saphenous vein. The desired result is the same as that of chemical destructive endovenous obliteration. Thermal destruction is gaining popularity in the USA but is not yet widely available in Australia.

Laser therapy directly onto the skin to treat small leg veins has been attempted over many years. However, the results are patchy and generally poor because of high pressure in the veins of the legs (compared with, say, the face), and also to variations in skin colour, vessel colour and vessel depth. Sclerotherapy to these vessels gives a better result.

Summary

Varicose veins are a common problem. Patients may present with symptomatic venous problems, cosmetic complaints, or serious vascular complications. Assessment is clinical, but in many cases a duplex scan for venous reflux is required to determine the nature and extent of the problem. The three planks of treatment currently comprise graduated compression stockings, sclerotherapy, and varicose vein surgery. Advances are occurring in the diagnosis and management of varicose veins. MT

DECLARATION OF INTEREST: None.