Clinical Focus: Venous Disease

VARICOSE VEINS

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INTRODUCTION

Caius Marius, who died in 86 BC, underwent an operation for his varicose veins: *He stretched one of his legs, and silently, without ever changing countenance, endured most excessive torments in the cutting, never flinching or complaining; but when the surgeon went to the other, he declined to have it done, saying "I see the cure is not worth the pain"*⁽¹⁾.

Varicose veins have troubled humans for centuries. The question today remains the same as in the time of Caius Marius: is the cure worth the pain and risk of treatment? In this paper I shall set out the benefits and risks of treatment of varicose veins.

Cadaver studies of the iliofemoral segments of the human venous system have shown that nearly 40% of the world population have the potential to develop varicose veins⁽²⁾. These studies suggest that there is rarely more than one valve in the iliofemoral venous system to protect the long saphenous vein against intra-abdominal pressures. In 37% of limbs there is no such valve present and the saphenous system is subject to the gravitational effect on a column of blood from the right atrium, and to the raised intra-abdominal pressure of daily activities. So many people have varicose veins that it is the commonest cause of outpatient referral to most general surgeons.

Varicose veins are the dilated veins that can be seen and palpated just under the skin of the lower limb. They are a different condition to cutaneous thread veins which may occur in conjunction with true varicosities or in the absence of varicose veins. Although varicose veins most commonly occur on the medial aspect of the leg in the distribution of the long saphenous vein, they may occur on the posterior aspect of the calf as a result of valvular incompetence in the popliteal fossa, or over the vulva and posterior upper thigh if the internal iliac vein is incompetent. Occasionally varicose veins may be associated with congenital venous abnormalities (Klippel-Trenaunay syndrome), congenital arterio-venous malformations (Park-Weber syndrome), or an acquired traumatic arterio-venous fistula. Perhaps the most important group to recognise are those patients whose varicose veins arise as a consequence of deep venous thrombosis, so-called secondary or postphlebotic varicose veins. In these patients careful assessment is necessary prior to treatment, since these veins may have an important physiological role in venous return from the leg.

SYMPTOMS AND COMPLICATIONS

Varicose veins often cause no symptoms, but such cases are the minority. Symptoms include:

Pain: Aching or pain with a heavy feeling after prolonged standing is quite a common complaint. Pain is often worse premenstrually or in warm weather. Discomfort may be felt over the varicosities or in the whole limb. If there is doubt about the cause of the pain a successful trial period of compression hosiery is useful to confirm that the pain is arising from the varicosities.

Swelling: Swelling about the ankle may occur, usually in conjunction with aching.

Cosmetic appearance: The most frequent reason for a request to treat veins is cosmetic unacceptability. This may appear quite minor to others but can be an important issue for the patient. The flaring of venules beneath the skin may be the major cause of concern. These changes do not always respond to conventional treatment. Sometimes normal veins can be prominent, particularly over the dorsum of the foot.

Superficial thrombophlebitis: This normally responds to gentle compression therapy and a non-steroidal anti-inflammatory agent. Antibiotics are unnecessary since bacterial infection is not usually involved. Phlebitis may be recurrent and indicate surgical intervention of remaining varicosities. There is rarely any need for urgent surgery unless the thrombus propagates along the long saphenous vein and involves the femoral vein.

Haemorrhage: Although an uncommon event, haemorrhage can be a frightening experience for the patient. Local pressure and elevation of the limb are simple measures that will stop the bleeding. Sclerotherapy of the offending vein is usually adequate in preventing recurrent haemorrhage.

Eczema and cellulitis: These complications indicate treatment of veins since they are the forerunners of ulceration. Areas of eczematous skin changes will often respond well to treatment of associated veins.

Ulceration: This important complication is by no means universal in patients whose varicose veins are left untreated. It is the recognition and treatment of patients who are at risk of ulceration that presents the greatest challenge to GPs and surgeons. The association of superficial varicose veins, deep venous insufficiency and ulceration can require specialised assessment prior to treatment. Often treatment of the superficial varicosities is indicated, but occasionally their treatment can worsen the situation.

Patients who suffer from any of the above symptoms may be considered for treatment.

ASSESSMENT

Failures of management stem from an inadequate assessment of the patient. More than 90% of varicose veins are of the

familial or primary type. Clinical examination supplemented by examination of the popliteal fossa with a hand-held Doppler is adequate to determine the sites of venous incompetence. The problem will usually arise from valvular incompetence at the groin or popliteal fossa. Perforator incompetence at mid-thigh level or mid to lower calf can usually be detected clinically.

A history of deep venous thrombosis, prolonged immobility, or long bone lower limb fracture should alert one to the possibility of deep venous damage and secondary varicose veins. Duplex imaging of the deep veins, sometimes complemented by ascending phlebography, is mandatory in such patients. Ulceration may indicate the need for imaging techniques prior to treatment. A family history of thrombosis, particularly in patients with recurrent thrombosis, should be investigated with a thrombophilia screen. Inherited prothrombotic tendency has implications for the patient and relatives and should be assessed and treated, usually with anticoagulation.

Recurrent varicose veins require full clinical and radiological assessment to plan correct further treatment.

TREATMENT

The goals of treatment may be set out as follows:

- Alleviation of symptoms
- Satisfactory (to the patient) cosmetic result
- Reduction in the risk of ulceration
- Avoidance of detrimental effects to venous return from the limb

Surgical treatment

Operative treatment remains the mainstay of treatment for varicose veins. The operation must deal with all sites of deep to superficial vein incompetence. This often involves flush ligation of the long saphenous vein and its tributaries at their junction with the femoral vein. This operation, eponymously called Trendelenburg ligation after the first description in 1890⁽³⁾, requires exposure of the saphenofemoral junction and 1 cm of the femoral vein above and below the junction. Inadequate surgery at this level is a major factor in the development of recurrent varicose veins. Some authors advocate the routine placement of a small piece of artificial material over the femoral vein after ligation of the saphenous vein⁽⁴⁾. In theory, this should reduce the incidence of neovascularisation which results in recurrences. This practice has not yet gained general acceptance because of the small risk of prosthetic infection. The femoral triangle has been described by some surgeons as the most surgically litigious area of the human body. Certainly great care is needed to avoid damage to the femoral vein in patients with anomalous venous anatomy. It is not appropriate for inexperienced surgeons to perform this operation unsupervised. The short saphenous vein requires ligation flush with the popliteal vein if there is incompetence in the popliteal fossa.

Removal of the long saphenous vein in the thigh, either by stripping or avulsion, has been associated with a lower incidence of recurrent varicosities. If this vein is dilated, or there is incompetence at the mid-thigh perforator, then removal of the vein is indicated. A normal saphenous vein

should not be removed since autologous vein is so valuable in later life in the treatment of coronary or peripheral arterial disease.

Surgical wounds may be made in skin creases and closed with absorbable subcuticular sutures or paper strips to improve cosmetic appearance. Postoperative compression with stockings for about two weeks is important to reduce bruising, to compress remaining veins and to reduce the risk of deep venous thrombosis. Some surgeons use subcutaneous heparin as further prophylaxis.

In patients with ulceration, skin grafting may be performed at the time of venous surgery. Occasionally patients with ulceration of "mixed" venous and arterial aetiology benefit from simultaneous venous surgery and arterial reconstruction.

Most patients with varicose veins can be treated as a day case. Patients with coexisting medical conditions may require inpatient care.

Injection sclerotherapy

If there is no evidence of valvular incompetence or the patient does not wish to consider surgical treatment, injection sclerotherapy provides an alternative treatment modality. Small varicosities in the calf often respond well to sclerotherapy. The high recurrence rate of thigh veins makes sclerotherapy a poor alternative for thigh varicosities⁽⁵⁾. Patients should be prepared to undergo several sessions of injections to obtain a satisfactory result and compression for three weeks is necessary after each session. Sclerotherapy is not without complications. Skin pigmentation at the injection site and even local ulceration may occur. A history of atopy, or severe arterial insufficiency, contraindicate the use of many sclerosants. Sclerotherapy may be a useful adjunctive treatment after surgery if there are small residual veins that have escaped surgical attention.

Treatment of thread veins

Sclerotherapy with hypertonic saline or conventional sclerosants is advocated by some for the treatment of thread veins. Recently, pulsed laser therapy has been gaining acceptance for facial and lower limb thread veins although the results may sometimes be disappointing⁽⁶⁾.

Compression hosiery

When surgical treatment is inappropriate because of coexisting medical problems, good relief of symptoms may be achieved by the use of fitted, graduated class 2 compression stockings. They need only cover the area of symptoms and often below knee stockings are adequate. The important point here is that the stocking must be custom fitted to avoid problems with a tourniquet effect particularly in the thigh area.

RESULTS OF TREATMENT

The recurrence rate following surgical treatment of primary varicose veins is between 13% and 40%, with a mean of 17.5% at 15 years. This means that approximately 10% of operations are for recurrent veins. It has been estimated that 50% of these recurrences are due to inadequate surgery in the groin or popliteal fossa, with the rest due to neovascularisation or inadequate preoperative assessment and an incorrect operation. No combination of treatment methods is proof against recurrence.

The most serious complication following surgery is deep venous thrombosis which may occur in 0.5% of patients. I use prophylactic subcutaneous unfractionated heparin in selected patients, even if they are undergoing day case surgery. Patients must be warned of the considerable bruising that can occur when heparin is used in conjunction with vein stripping. Damage to the femoral vein is, fortunately, an uncommon event if the junction between the saphenous and femoral veins is clearly identified before ligation of the saphenous vein. Horror stories of major complications such as stripping of the femoral artery occasionally occur due to incorrect recognition of anatomy. Infection of groin wounds is rare and does not justify the routine use of antibiotics.

MYTHS ABOUT VARICOSE VEINS

There are many myths about varicose veins and the following really should be dispelled:

Varicose veins cause ulceration Although many venous ulcers are due at least in part to varicose veins, not all varicose veins cause ulceration. It is perfectly acceptable to treat asymptomatic patients with quite severe varicose veins by compression stockings, provided that the skin at the ankle remains healthy. Now that some healthcare purchasers have opted to withdraw funding for varicose vein surgery, it will be interesting to compare rates of venous ulceration in matched districts in fifteen or twenty years.

Treatment should be deferred until after the final pregnancy I can see no reason why a woman should have to bear the discomfort of varicose veins during subsequent gestations if adequate treatment can be performed between pregnancies.

Varicose vein surgery is purely cosmetic Veins cause a variety of symptoms of which unacceptable appearance is only one.

Treatment of varicose veins can be performed unsupervised by inexperienced surgeons Major complication rates, patient satisfaction with treatment, and recurrence rates are all dependent upon adequate primary assessment and treatment. Although varicose vein surgery is ideal for the training of

junior surgeons, it is not surgery which inexperienced surgeons should perform unsupervised. Some authorities believe that all varicose veins surgery should be performed by a specialist vascular surgeon. My own feeling is that provided the surgeon understands the principles of aetiology and treatment it is appropriate for general surgeons to share this workload. The assessment and treatment of recurrent veins can be more challenging and perhaps a surgeon with a specialist interest is useful in these circumstances.

In summary, I hope that this discussion presents a balanced view to answer the question posed in the introduction: is the cure worth the pain and risks of treatment? This can really only be answered individually by each patient after full information is made available. Varicose veins are rarely a life-threatening disorder, but they may give rise to significant symptoms, and in some cases predispose to venous ulceration in later life. In the current climate of rationalisation of healthcare, purchasers may wish to ponder on the personal and financial cost of venous ulceration that could be stored up for the future if all varicose veins are left untreated.

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