Leading article

Varicose veins today

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A decade ago a doctor's advice to a patient with varicose veins was easy: the alternatives are injection sclerotherapy or surgery. Only these techniques have existed long enough to know about both their short- and long-term results. Results have generally been disappointing, with high recurrence rates as time goes by[1]. The past few years have witnessed an explosion in types of minimally invasive treatment technique and this has made decisions about varicose vein treatment more difficult. These techniques include thermal ablation in the form of endovenous laser ablation or radiofrequency ablation (RFA), and foam sclerotherapy[2].

The introduction of these new methods has been rapid, before any adequate scientific evaluation. It is based on the enthusiasm of practitioners and some short-term trials that demonstrate equivalence of outcome with conventional surgery, but with less postoperative discomfort and speedier return to normal activity. In addition, the new techniques can be employed under local anaesthetic, often in an outpatient setting, thereby freeing operating theatre time and potentially improving cost efficacy. Increasing access to information has encouraged patients to seek these new treatments, often after visiting commercially sponsored websites. Many feel bewildered by the available choice, while being seduced by the prospect of involvement in decision making.

Evidence-based medicine demands controlled trials, particularly of new techniques. Such trials are sparse and often underpowered in venous surgery, a regrettable situation when one considers the large number of patients treated each year. Proper evaluation of the new methods would require huge trials over 5–10 years, which might well be compromised by further evolution in methodology.

Conventional varicose vein operations are high volume and low risk, and are typically carried out on an ambulant basis under general anaesthesia. These operations have changed little over decades. There is a low rate of complication and a high rate of patient satisfaction. The Randomized and Economic Assessment of Conservative and Therapeutic Interventions for Varicose Veins (REACTIV) trial suggests that the cost of varicose vein surgery in the UK is within National Institute of Health and Clinical Excellence (NICE) guidelines for quality-adjusted life years[3]. Yet general anaesthesia carries risk, albeit small, and serious wound complications occasionally arise. The few long-term studies confirm that there is a relatively high recurrence rate and about 20 per cent of patients request reoperation[1,4]. Conventional surgery is, however, the standard procedure against which new treatments should be compared.

Thermal ablation techniques destroy the venous endothelium, heat being produced by either laser or radiofrequency energy. Controlled trials show that the great saphenous vein is permanently obliterated in over 90 per cent of patients[5,6]. Yet thermal ablation is usually possible only in long, straight veins, meaning that typically it is only the truncal vein that is treated thermally. An alternative method must be used to obliterate residual varices, although many patients obtain symptomatic improvement without this additional step. Thermal ablation techniques do not usually treat the tributaries at the saphenofemoral junction and, although recent research suggests that these may not become incompetent in the short term[7], there remains a suspicion that they will eventually be a source of recurrence. There are several different laser and RFA devices; specific training and experience are required for their use.

Thermal ablation is usually carried out under 'tumescent' local anaesthesia, in which the volume of anaesthetic agent injected not only provides pain relief but also moves the vein away from nerve and skin to reduce the chance of thermal damage to these structures. The early randomized trials suggest a reduction in pain after the procedure compared with conventional operation[5,6]. Thermal ablation, however, requires skills not traditionally taught to vascular surgeons, namely duplex ultrasonography and duplex-guided venous cannulation. So far there are no official guidelines for training and accreditation in these methods.

Liquid sclerotherapy was popular 30 years ago but was found to have high recurrence rates in clinical trials. Modern foam sclerotherapy is a variation on this theme. The foam is produced by mixing air with conventional liquid sclerosant, usually sodium tetradecyl sulphate. The concept is that foam should enhance contact between active agent and vein

wall to maximize endothelial damage. It also allows the sclerosant to be visualized with duplex imaging so that the injection can be placed more accurately. It requires little or no local anaesthetic, takes less than 30 min and is a true outpatient procedure. Minimal discomfort and an immediate return to normal activity can be anticipated in most patients. In this month's issue of *BJS*, Darvall and colleagues[8] have shown that, like the other endovenous treatments, foam sclerotherapy delivers measurable improvements in quality of life. A disadvantage is that the primary occlusion rate appears to be lower than that of thermal ablation – 74 per cent at 6 months in these authors' experience. Still, this can be improved up to 95 per cent by those who routinely treat venous segments that remain patent. Another problem is that the process of resolution is much slower than for thermal ablation; local thrombophlebitis and tenderness are common, and it can take 6 months for a palpable vein to disappear. Some patients also develop visible skin staining over the treated vein and, although this usually disappears over time, it may persist. Yet foam sclerotherapy is cheap and particularly attractive in those unfit for, or unhappy about, surgery. It may also have a place in situations where surgery is less reliable, such as when varicosities relate to the small saphenous vein[9].

There is a current concern that sclerosant foam can cause focal neurological events through embolization of air or particulate matter. A small number of instances have been described. In the UK, NICE has examined the evidence from a large number of patient series and has concluded that foam is safe for routine use, but audit of late results is recommended (http://guidance.nice.org.uk/IPG314/NiceGuidance/pdf/English).

Many venous specialists in current practice will have retired before the late results of controlled trials comparing the new techniques become available. As it can be concluded already that all of the techniques addressed in this article improve quality of life, best practice seems to be to offer patients options that fit their personal circumstances. Today, clinicians should be able to offer at least one alternative to conventional surgery, but new methods of management should be introduced only after formal training and with appropriate support[10]. Foam sclerotherapy is clearly the cheapest and most expedient treatment, but it may lose its cost efficacy if retreatment is needed for either primary failure or recurrence. Formal consent should include the very small risk of focal neurological events. The optimal foam technique probably includes duplex follow-up and retreatment. Conventional venous surgery is evidence based and effective at relieving symptoms. There are several practical and financial advantages in moving the routine treatment of varicose veins into an outpatient setting and these can be realized using thermal ablation techniques. These are clearly effective and less painful than operation under general anaesthesia; in many parts of the world they are now the routine choice.

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