Leading article

Reconsidering the endovenous revolution

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Endovenous techniques (laser ablation, radiofrequency ablation and foam sclerotherapy) to treat varicose veins have increased rapidly during the past decade, and in some countries largely replaced the traditional high ligation and stripping, well before long-term data were available. These methods were introduced in the hope of being more effective than surgery with better outcomes, particularly lower rates of varicose vein recurrence. Being office-based, less invasive procedures, it was also anticipated that these approaches would result in shorter time to return to normal activities. Current literature, however, suggests about equal risk of varicose vein recurrence for endovenous methods compared with open surgery[1]. Overall, the mid-term recurrence rates of around 22 per cent after 2–3 years[1] are similar, but the nature of the recurrence differs markedly between open surgery and endovenous approaches[1,2]. Neovascularization is the dominant finding following surgery, whereas proximal saphenous stumps and incompetent anterior accessory saphenous veins (AASVs) are the main factors following endovenous treatments. These differences have implications for the need for retreatment. Longer-term data from randomized clinical trials (RCTs)[3–7] and cohort studies[8,9], after an average of 5 years of follow-up, suggest that these differences seem to increase over time.

In the era of open surgery, groin recurrence was the most common reason for repeat varicose vein surgery[2]. Most patients had unligated tributaries close to the saphenofemoral junction (SFJ), reflecting inadequate primary surgery leaving saphenous stumps. Neovascularization, the most commonly observed duplex-detected recurrence following open surgery, rarely leads to symptomatic recurrence and a need for repeat treatment[2], unless it originates from a remnant saphenous stump (an intact SFJ). Because of this, the concept of 'flush ligation' of the great saphenous vein (GSV) at the femoral vein has always been considered essential, as failure to do so substantially increases the risk of late symptomatic recurrence and the need for repeat intervention. This seems to have been neglected by proponents of endovenous treatments, where an emerging pattern of recurrence has become evident[2]. The major problem is that most endovenous treatments result in residual stumps of varying length[6,9]. Tributaries connecting to the most proximal part of the GSV or the SFJ (within 1–2 cm from the common femoral vein) are common. The AASV appears to play a major role[1,2]. An incompetent SFJ where the incompetence is propagated down the AASV seems to be the most common scenario, often with clinical recurrence and symptoms[4,7,9]. Many more patients, who are not yet symptomatic, can be added by duplex detection. Based on knowledge from open redo groin surgery, it takes around 10 years for incompetence to create symptoms[2]. Therefore, a substantial number of patients who have undergone endovenous treatment will eventually develop symptomatic recurrence requiring repeat treatment. Such a scenario would change the equation regarding patient benefit and costs, making endovenous treatments less competitive and challenging current guidelines[10].

A recent review[1] regarding recurrence following endovenous ablation included only a single 5-year report, where around half of patients were lost to follow-up. Since then five RCTs[3–7] and two large cohort studies[8,9] with long-term results have been published. All have shown a similar pattern regarding groin recurrence, with stumps and incompetent AASVs as the major reasons for recurrence in patients having thermal ablation (around 30 per cent at 5 years). By comparison, control high ligation and stripping groups mainly developed neovascularization and less than 5 per cent had SFJ reflux and GSV stumps. Reflux through remaining stumps (SFJs) can also be a major cause of recanalization of the ablated GSV[8], and the medium-term recanalization rate requiring repeat treatment averaged around 7 per cent[1].

There are, however, many interpretive problems in the analysis of treatment outcomes. Clinical recurrence seems to be present in 30–60 per cent of patients who have duplex-detected groin reflux and is often used as an outcome variable. This type of recurrence, meaning signs of new visible varicose veins, is highly subjective. Duplex-detected recurrence is more objective and of greater value in determining prognosis. Reasons for performing repeat intervention vary between studies, often being influenced by cosmesis rather than symptoms. Differences in

healthcare systems also dictate access to revisional surgery on the basis of symptoms *versus* appearances.

To date, only endovenous laser ablation[3–7] and foam sclerotherapy[4] have been evaluated against high ligation and stripping in the long term. In one study foam treatment was associated with significantly more recurrence and need for retreatments compared with laser and surgery[4]. Insufficiently studied endovenous techniques such as steam ablation and glue are likely to result in similar recurrence patterns.

Interestingly, two RCTs[3,6] that compared combined high ligation and laser treatment with high ligation and stripping alone had similar 5-year outcomes, practically eliminating the problem of stumps and incompetent AASVs. Further evidence that remaining stumps (SFJs) lead to an increasing problem over time exists in patients treated by radiofrequency ablation[9]. Virtually all had measurable stumps following the primary treatment, and after 4 years more than 35 per cent had developed incompetent AASVs. There is now sufficient evidence to question the generally recommended safety margin, of 1–2 cm to the common femoral vein, for laser and radiofrequency ablations. Leaving stumps is clearly not a good thing where recurrence is concerned, but that needs to be balanced against the risk of thermal damage to the femoral vein and the risk of heat-induced thrombosis. Technical developments with radial emitting laser fibres might allow treatment all the way down to the actual SFJ[7]. Until this can be demonstrated to be applicable widely and shown to be safe, open surgery still seems to be a good long-term alternative, calling existing guidelines into question[10].

Failure to address the issue of leaving saphenous stumps behind with current endovenous approaches is likely to result in a continued increase in the numbers of patients needing repeat interventions for recurrent varicose veins.

Disclosure

The author declares no conflict of interest.

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