INVITED COMMENTARY

Concomitant or Staged Tributary Treatment for Varicose Veins: Are We Asking the Wrong Question?

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The optimal management of varicose tributaries remains one of the most persistent debates in modern venous intervention. The FinnTrunk randomised trial revisits this question by comparing concomitant and delayed or staged tributary treatment alongside axial (also called truncal) ablation.[1] Despite several randomised trials and meta-analyses, clinical practice remains variable and implementation of existing evidence inconsistent.[2—4] This variation is not solely a question of evidence interpretation. Practical considerations influence decision making: concomitant treatment increases procedure time, introduces additional variation, and sometimes requires different facilities or techniques, while in some healthcare systems staged intervention may align more closely with reimbursement structures. Additionally, clinicians frequently observe apparently paradoxical behaviour of superficial veins, including segments that diminish, become asymptomatic, or even regain competence following treatment of adjacent veins. Such observations encourage the view that some superficial veins may recover without direct treatment. Together, these factors reflect a deeper uncertainty about the biological nature of superficial venous disease and the behaviour of individual venous segments.

In FinnTrunk, concomitant tributary treatment modestly increased procedure duration but reduced the need for subsequent interventions, while differences in disease specific quality of life were less clear. These findings are broadly consistent with earlier trials in which isolated axial ablation frequently leads to re-intervention.[2—4] When a large proportion undergoes secondary tributary treatment, quality of life deficits may ultimately be corrected, whereas limited uptake of secondary procedures may leave persistent quality of life impairment.[2,3] Importantly, studies exploring patient priorities indicate that individuals often prefer definitive treatment in a single episode of care rather than multiple staged interventions.[5]

The persistence of this debate may also reflect a deeper conceptual problem. Historically, treatment strategies have focused on the axial vein, an approach inherited from the era of surgical stripping rather than derived from a detailed understanding of venous biology. Yet in clinical practice, the manifestations that matter to patients arise primarily from the tributary network. Painful varicosities, thrombophlebitis, bleeding, and the visible features of disease occur mostly within tributaries, and it is through these superficial networks that venous hypertension is transmitted to the surrounding tissues. Varicose vein disease may therefore be better understood as a disorder of the superficial venous network in which axial reflux represents only one component of a wider pathological system. The clinical problem we treat is largely a disease of tributaries rather than of the axial vein itself.

These observations can be interpreted through a segmental model of venous pathophysiology (Fig. 1). In this conceptual framework, venous hypertension leads to vein dilatation, valve leaflet separation, and reflux. These haemodynamic changes drive further venous hypertension and trigger endothelial activation and inflammation.[6] Progressive inflammatory remodelling of the venous wall may then produce structural valve failure, wall stiffness, morphological changes, and further haemodynamic disturbance, reinforcing the cycle. Crucially, this process may begin in any segment of the superficial venous system and propagate to adjoining segments. At present it is often unclear which stage of the pathological cycle an individual vein segment is in and therefore it can be difficult to predict whether the disease is reversible following a change in the haemodynamic status of an adjacent segment, whereas some veins progress to irreversible structural damage. Strategies such as isolated tributary treatment and prophylactic venous ablation implicitly test different assumptions about the pathophysiology at play.[7,8]

Concern is often expressed about overtreatment when tributaries are addressed during the index procedure. Concomitant treatment increases procedure duration, sometimes substantially, but this must be weighed against

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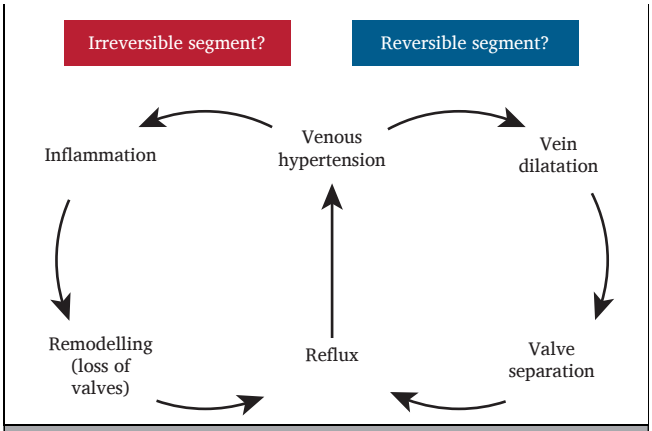

Figure 1. Conceptual model of venous pathophysiology.

the reduction in subsequent clinic visits, imaging, and repeat interventions that staged strategies may generate. When viewed across the entire patient pathway, a modest increase in index procedure time may ultimately represent a more efficient use of healthcare resources. The available evidence suggests that until we can accurately characterise the cellular pathology within individual venous segments, comprehensive single stage treatment may represent a pragmatic baseline strategy that optimises outcomes for the greatest number of patients with varicose veins.

The central unanswered question may not be when tributaries should be treated, but why some venous segments recover while others progress to irreversible inflammatory disease. A better understanding of segmental venous pathophysiology may ultimately prove most valuable not in refining uncomplicated vein treatment, but in preventing and treating the chronic inflammatory soft tissue injury that underpins advanced chronic venous disease and venous ulceration. Until this biology is better understood, the debate over timing of tributary treatment may persist, not because the evidence is absent, but because the underlying disease process remains only partially explained (Fig. 1).

USE OF GENERATIVE AI TOOLS

During the preparation of this work the authors used ChatGPT in order to assist with language editing and improving clarity of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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