

# Systematic review of outcomes after surgical management of venous disease incorporating subfascial endoscopic perforator surgery

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**Introduction:** In the United States more than 6 million persons have chronic venous insufficiency and more than 500,000 have venous ulcers. Patients in whom conservative therapies fail may improve after surgical treatment of superficial and perforating venous disease, but the degree of this benefit is uncertain.

**Purpose:** We performed a systematic review of health outcomes in patients with severe chronic venous insufficiency treated with surgical management that incorporated subfascial endoscopic perforator surgery (SEPS), to quantify the overall rates of surgical outcomes.

**Methods:** Published studies in English reporting venous ulcer healing and recurrence outcomes after SEPS were obtained from a MEDLINE search. Data regarding patient characteristics and surgical outcomes were abstracted from each study, and the outcomes were combined by using a random effects model.

**Results:** Our search identified 20 studies, 1 randomized trial and 19 case series, involving 1140 treated limbs. CEAP classification was secondary cause ( $E_2$ ) in 36%, deep venous involvement ( $A_2$ ) in 56%, and obstructive ( $P_{2,3}$ ) in 12%. Overall, after surgical treatment including SEPS, with or without concomitant superficial venous ablation, ulcers in 88% of limbs healed. Ulcers recurred in 13%, at mean time of 21 months. Risk factors for nonhealing and recurrence included postoperative incompetent perforator veins, pathophysiologic obstruction, secondary cause, and ulcer diameter greater than 2 cm. Complications and their overall rates after surgical treatment including SEPS were wound infection (6%), hematoma (9%), neuralgia (7%), and deep venous thrombosis (1%).

**Conclusion:** Our results suggest that surgical management of venous ulcer including SEPS, with or without saphenous ablation, leads to an 88% chance of ulcer healing and a 13% chance of ulcer recurrence over the short term. Randomized controlled trials are needed to discern the contributions of compression therapy, superficial venous surgery, and SEPS in the treatment of venous ulcer disease. (J Vasc Surg 2004;39:583-9.)

More than 6 million persons in the United States have chronic venous insufficiency,<sup>1</sup> leading to treatment costs of up to \$2.5 billion<sup>2</sup> and 2 million lost workdays annually.<sup>3</sup> Venous ulcer accounts for much of this morbidity and treatment cost, because the natural history of this disorder is slow healing and high recurrence rate.<sup>4</sup> Despite vigorous efforts at conservative therapies such as compression dressings and elevation, many patients fail to improve. Surgical approaches such as the Linton procedure and subsequent modifications of this procedure sought to eliminate perforator vein incompetence and therefore favorably affect venous hemodynamics and clinical outcome.<sup>5</sup> While some studies have reported good results, morbidity related to

wound complications has led many to abandon this procedure.<sup>6</sup>

Subfascial endoscopic perforator surgery (SEPS) enables surgeons to address perforator vein incompetence less invasively, with small upper calf incisions remote from severely diseased skin in the distal leg. SEPS is performed in many centers as a component of a comprehensive treatment program for venous insufficiency,<sup>7</sup> but few studies have compared SEPS with the Linton procedure. In the only randomized trial, Pierik et al<sup>8</sup> found similar ulcer healing and recurrence rates and lower surgical complication rates with SEPS, but the study was too small to enable definitive conclusions about the efficacy of SEPS. The rest of the studies incorporating SEPS have had an observational study design, often without comparison treatment groups, so the usefulness of SEPS in patients with venous disease remains uncertain.

When there is controversy regarding the efficacy of an intervention a systematic review of the literature to summarize the available data may be helpful. In a systematic review, investigators follow a specified protocol to conduct a comprehensive literature search, to apply well-defined inclusion and exclusion criteria to selected studies that address the research question, and to critically appraise the methodologic quality and applicability of the studies. When

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# Surgical Management Of Venous Disease

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