Surgical treatments for deep venous incompetence

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CRD summary
This review found limited evidence to suggest that combined saphenous vein stripping and valvuloplasty is relatively safe and potentially more effective than saphenous vein stripping alone in preventing ulcer recurrence in patients with primary deep venous incompetence in the short and mid term. Evidence for the efficacy of the other procedures was considered inconclusive. Despite some limitations, these conclusions are broadly supported by the data presented.

Authors' objectives
To critically appraise and synthesise the published evidence regarding the short- and long-term efficacy and effectiveness of surgical techniques for patients with deep venous incompetence, and attendant skin changes or ulceration, that was refractory to standard care.

Searching
The Cochrane Library, CINAHL, EMBASE, PubMed, the Science Citation Index, the Centre for Reviews and Dissemination's databases, NLM Gateway, TRIP, HTA agencies, research registers and guideline sites were searched from 1990 to 2003 for relevant publications in any language; the search terms were reported.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and non-randomised controlled studies were eligible for inclusion in the review. Only full, peer-reviewed articles were included.

Specific interventions included in the review
Studies of any surgical procedure or combination of surgical procedures compared with any medical, mechanical or surgical intervention for deep chronic venous insufficiency (CVI) were eligible for inclusion. The specific interventions evaluated in the selected studies included (alone or in combination): saphenous vein stripping (SVS), valvuloplasty, valve transplantation, valve transposition, sling procedure, venous stenting, crossover femoral vein sapheno-femoral bypass, sapheno-popliteal vein bypass, femoro-femoral bypass, femoro-iliac bypass, femoro-axillary bypass and subfascial endoscopic perforator surgery (SEPS).

Participants included in the review
Studies including non-pregnant human patients undergoing treatment for deep or mixed deep/superficial/perforator CVI were eligible for inclusion. Studies that included patients with other indications for surgery, such as arterial disease or superficial CVI with no deep vein involvement, were excluded unless the data subset for the patients with deep or mixed deep/superficial/perforator CVI could be separated from the aggregate data.

Outcomes assessed in the review
Studies reporting outcomes relating to peri-operative and post-operative morbidity and mortality, peri-operative and early post-operative efficacy, haemodynamics and morphology, and convalescence of patients were eligible for inclusion in the review.

How were decisions on the relevance of primary studies made?
One reviewer selected studies for inclusion in the review.

Assessment of study quality
The validity of the included studies was assessed using a published checklist that rated studies on various aspects of reporting, external validity, and the potential for bias and confounding. Two independent reviewers conducted the
assessment, with any disagreements resolved by discussion or referral to a third reviewer.

**Data extraction**
One reviewer extracted the data for the review. Data on key study characteristics and findings were extracted.

**Methods of synthesis**
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Key differences in study characteristics were discussed in the narrative synthesis; studies were presented according to the design and intervention being evaluated.

**Results of the review**
Fourteen studies (299 patients plus 667 limbs) were included in the review: 2 RCTs (160 patients) and 12 were non-randomised controlled studies (139 patients plus 667 limbs).

The 2 RCTs were of average to poor methodological quality.

The results of these 2 RCTs and of 2 non-randomised comparative studies suggested that combined SVS/valvuloplasty was a relatively safe procedure and was potentially more effective than SVS alone in preventing ulcer recurrence in patients with primary deep venous incompetence in both the short and mid term.

Evidence for the efficacy of valvuloplasty, transplantation and SEPS in the treatment of deep venous incompetence was inconclusive. This was also the case for bypass procedures and iliac stenting in the treatment of deep venous obstruction. The optimal surgery for patients with deep venous obstruction or secondary valvular incompetence remains unclear.

**Authors' conclusions**
There was limited evidence that combined SVS/valvuloplasty is a relatively safe procedure and potentially more effective than SVS alone in preventing ulcer recurrence in patients with primary deep venous incompetence in the short and mid term. Evidence for the efficacy of the other procedures evaluated was inconclusive. Given that controversy still surrounds many aspects of CVI, it is clear that further good-quality research is urgently needed.

**CRD commentary**
The review question was well defined in terms of the participants, interventions, study designs and outcomes. Several electronic sources were searched for relevant studies, though no attempt was made to include unpublished data, which may have led to publication bias. Two reviewers assessed the validity of the selected studies according to published criteria. However, only one reviewer selected studies for inclusion and extracted the data, leaving the potential for error and bias in these processes. The authors' conclusions appear to follow from the evidence presented, but these should be interpreted in light of the caveats highlighted.

**Implications of the review for practice and research**
The authors did not state any implications for practice or further research.

**Bibliographic details**
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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.