External valvuloplasty has been gaining in popularity as an alternative treatment for incompetent great saphenous veins. The procedure involves the implantation of a synthetic cuff around the saphenofemoral junction to compress the vein to a physiological diameter and thus restore the competence of the terminal and preterminal veins (1) (Fig. 1). The important advantage of this method is that it preserves the great saphenous vein for possible use as a bypass graft in any vascular or cardiac surgery that may be necessary in the future, autologous veins being superior to artificial grafts for this purpose.

**Particular indications for valvuloplasty**
- Trunk vein incompetence in Hach stage I
- Trunk vein incompetence in Hach stage I, with reflux via an accessory vein
- Trunk vein incompetence associated with post-thrombotic syndrome, with free flow across the pelvis
- Trunk vein incompetence with associated coronary heart disease (CHD) or peripheral artery occlusive disease (pAOD)

The indication for surgery has to be decided in the individual case, after careful duplex ultrasonography of the saphenofemoral junction. Contraindications areavalvula, postphlebitic changes along the vein and valves, and veins measuring more than 10 mm in diameter in women or 12 mm in diabeter in men (1).

**Technique**

The operation commences in the same way as a routine high saphenous ligation (cross-ecotomy). Because of the synthetic implant, however, we do give preoperative antibiotic cover. We use a first-generation cephalosporin (e.g. cefazolin 2g, i.v.), administered 30 minutes before the start of surgery. The great saphenous vein is exposed through a small incision in the groin. All tributary veins emptying into the GSV are ligated, except for a distally located ‘indictor vein’ (Fig. 2). Reflux through the incompetent valves can now be seen in the indicator vein (Fig. 3).

A pre-formed synthetic patch with a U-shaped cutout is now moulded around the vein. The patch is then compressed, using two forceps, until there is no reflux in the indicator vein during a Valsalva manoeuvre (Fig. 4). If the patient is being ventilated, this manoeuvre can be simul-

lated with positive pressure ventilation. Duplex ultrasound scanning is not performed during the operation. The patch and the vein are secured with four or five interrupted sutures using 5-0 Prolene to constrict the vein to the diameter determined previously (Fig. 5). The patch is then fixed to the common femoral vein, anchoring the two superior slips with interrupted 5–0 Prolene sutures (Fig. 6). To facilitate this step, it is important that a short segment of the anterior wall of the deep vein is exposed during the earlier preparation of the saphenous opening proximal to the saphenofemoral junction. The surgical site is then rinsed and the wound closed in layers (Fig. 7).

The operation does not usually take any longer than standard high saphenous ligation and stripping. The long-term results of the vein-preserving surgery have been published in studies with follow-up periods of up to ten years (2–6). All these studies found a sustained improvement in venous function. Overcoming reflux at the saphenofemoral junction induced an increase in the tone of the trunk veins treated. On the basis of these findings, we can postulate that it is, in fact, possible to preserve initially incompetent veins for bypass grafting at a later date.

However, no studies have yet looked at the quality of preserved trunk veins in the context of reconstructive vascular surgery.

**Conflict of interest**
The author declares no conflict of interest.

**Ethical guidelines**

Data were obtained in accordance with national laws, the current Helsinki Declaration and informed consent of the patients.

**References**


Moulding the patch to the diameter determined previously and holding the ends with two mosquito forceps.

Fixing the patch with interrupted sutures.

Fixing the slips of the patch to the common femoral vein.

The patch implanted; subsequent wound closure in layers.

5. Geier B, Voigt I, Barbera L, et al. Extraluminale Valvuloplastie bei Stamminsuffizienz der V. saphe-