Subfascial endoscopy of the perforator veins allows insufficiency of perforator veins to be diagnosed and treated in a single procedure. The procedure known as subfascial endoscopic perforator surgery (SEPS), for endoscopic dissection of insufficient perforator veins, is an addition to a varicosis therapy concept intended to stop antegrade reflux due to varicose veins. It may be performed as a stand-alone procedure or in combination with high ligation and stripping of saphenous veins.

The perforator veins relevant to the hemodynamics and hence to the treatment of varicosis are located in the lower leg along the course of the great and small saphenous veins.

### 31.1 Indications

- Multiple insufficient perforator veins related to stem varicosis
- Multiple insufficient perforator veins as part of a post-thrombotic syndrome
- Multiple insufficient perforator veins in association with dermatoliposclerosis or venous leg ulcer
- Single post-traumatic perforator vein

### 31.2 Complications

Peri- and postoperative complications occur with insufficient anesthesia in very severe cases of advanced chronic venous insufficiency with extensive dermatolipofasciosclerosis or, e.g., in circumferential ulcers of the lower leg.

Subfascial hematomas are very rare. As long as the subfascial exploration does not extend distal to the medial malleolus, there need be no fear of damaging nerves or arteries.

### 31.3 Technique

An incision of about 2 cm length on the medial lower leg is sufficient for subfascial endoscopic exploration and dissection of the perforator veins. The transcutaneous access is placed about a hand’s breadth distal to the cleft of the knee joint and about 2–3 fingers’ breadth back from the medial tibial crest. From here, the whole
medial and mediodorsal area of the lower leg can be reached with the endoscopic shaft.

In the infusion of the TLA solution, it is important to insure that the entire medial and mediodorsal aspect of the lower leg is anesthetized evenly. This will require between 400 and 1500 ml TLA solution, depending on the patient. The volume of solution used for one or even both lower legs may as a rule be regarded as toxicologically harmless (see Chaps. 4 and 5).

The infusion procedure does not differ from that for other indications (see Chap. 9). Sufficient tumescence must be achieved for the tumescent solution to diffuse well subfascially. When the desired bulging turgor has been established, a hypoxemic blue discoloration of the feet may often be noticed, but this is not dangerous and soon passes.

After waiting about 30 min after the infusion, the endoscope is inserted into the subfascial space, which is mobilized and opened further by careful pendulum movements (Fig. 31.1).

In order to achieve the best view possible, one should lift the skin above the endoscopic lens with a strong needle. Additional suctioning of the fluid in the subfascial space then allows the perforator veins to be explored, assessed, and dissected endoscopically without a tourniquet (Fig. 31.2). Because the tumescent solution is lipophilic, the anesthesia remains effective in the subfascial space even though excess solution has been suctioned out, since the local anesthetic remains bound to neural structures, connective tissue, and fat.

The perforator veins can then be dissected by electrocoagulation or metal or resorbable clips. In TLA, for preference the perforator veins should be clipped off from the deep vein stem with resorbable clips and then severed from the epifascial vein system with scissors (Figs. 31.3, 31.4). This prevents the occurrence of subfascial hematomas, although for safety’s sake a Redon drainage should always

Fig. 31.1. View of the subfascial space in the medial lower leg with an as yet unmobilized perforator vein on the left side

Fig. 31.2. Perforator vein before the ligature