

## Surgical workshop

### Endoscopic subfascial division of incompetent perforating calf veins

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Incompetent perforating veins in the medial compartment of the calf are believed to be a major cause of varicose veins in the leg. Cockett and Linton originally described the location of these veins connecting the deep venous system to posterior arch veins and the long saphenous vein, respectively<sup>1,2</sup>.

The management of incompetent calf perforating veins remains a therapeutic challenge. Subfascial or extrafascial ligation described by Cockett and Linton has been used for recurrent perforators with or without lipodermatosclerosis<sup>1,2</sup>. These operations have considerable morbidity associated with large incisions through ulcerated areas that heal poorly.

A modified technique of endoscopic management of incompetent perforators which does not include an incision in the gaiter area is described here.

#### Patients and methods

##### Patients

Five female patients, median age 66 (range 58–71) years, underwent endoscopic disruption of incompetent perforating veins. Patients were selected by the presence of incompetent perforators in the medial compartment of the leg confirmed on clinical grounds and a duplex scan. On the morning of surgery all patients had a repeat duplex scan to mark the sites of the incompetent perforators.

##### Surgical technique

Under general anaesthesia the patient was placed supine and the whole limb and groin prepared and draped in the usual manner. Through a groin skin crease incision the saphenofemoral junction was identified, the tributaries ligated and divided, and the long saphenous vein (LSV) disconnected from the femoral vein. The LSV was stripped and retrieved from a small medial incision below the knee. A sterile tourniquet was placed above the knee and inflated above arterial pressure after exsanguination. Through the lower strip incision the subfascial space was developed initially by finger dissection to accept a 10-mm 0° operating endoscope connected to a video endoscopic camera (Storz, Karl Storz GmbH, Tuttlingen, Germany) (Fig. 1). Filmy adhesions between the deep fascia and muscle were broken down with blunt dissection employing the endoscope. A modified size 10.5-mm endotracheal tube (Portex Medical, Kent, UK) (Fig. 2) in conjunction with the 10-mm endoscope, which allowed a snug fit between the two while permitting free movement of the endoscope, were used to create operating space in the subfascial compartment. Inside the subfascial compartment, the endotracheal tube cuff was inflated to create a space between the fascia and the underlying muscle. Once identified, the perforating veins were either coagulated using modified bipolar diathermy graspers (Storz, Karl Storz GmbH)

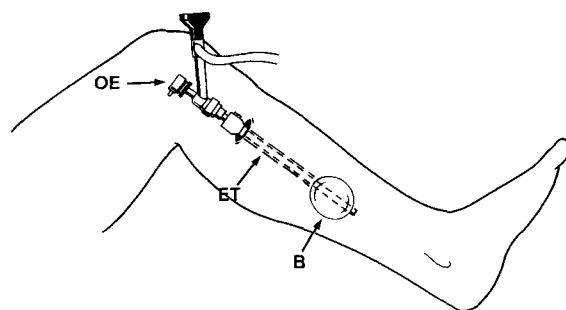


Fig. 1 The technique of insertion of the operating endoscope (OE) surrounded by the modified 10.5-mm endotracheal tube (ET) into an incision on the medial side of the knee. The position of the inflated balloon (B) is also shown

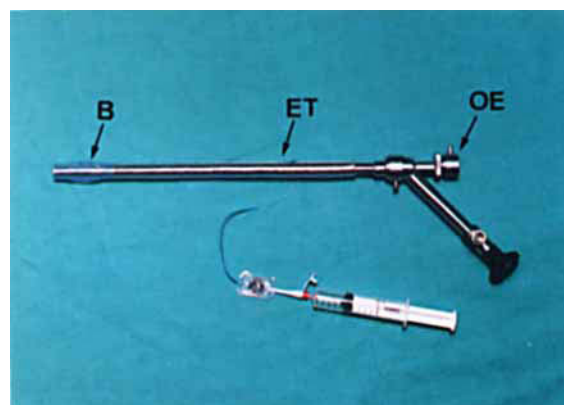


Fig. 2 The 10-mm operating endoscope (OE) placed through the modified 10.5-mm endotracheal tube (ET), together with a syringe to inflate the balloon (B)

or clipped if the perforating vein was larger than 3 mm. A specially designed loadable clip applicator was used (Storz, Karl Storz GmbH). Both instruments could be passed through an integral operating channel. The endoscope was passed distally until all perforating veins were identified. A mean of three perforators was identified per patient. In the presence of lipodermatosclerosis, endoscopic fasciotomy was performed using a hook knife (Storz, Karl Storz GmbH). Although not scientifically evaluated, fasciotomy has been used to increase ankle mobility, decrease the risk of compartment syndrome, and reduce the pressure in the deep veins of the calves. At the end of the procedure the groin and below-knee incisions were closed and the limb bandaged.

#### Results

All patients were discharged the day after the operation. There was a good clinical resolution of the varicose veins in all cases; median follow up was 6 (range 3–8) months. One patient complained of transient paraesthesia in the distribution of the short saphenous nerve for 2 weeks after surgery.

#### Discussion

Application of the endoscopic technique in combination with a high saphenous ligation may be useful in both

primary, and particularly recurrent, varicose veins and has been performed in Europe with success. It may also provide new options for the management of venous ulcers<sup>3-5</sup>.

# References

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- 2 Linton RR. The communicating veins of the lower leg and the operative technique for their ligation. *Ann Surg* 1938; 107: 582-93.
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