

Endovenous laser ablation of great saphenous veins using a 1470 nm diode laser and the radial fibre – follow-up after six months

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Abstract

Background: Endovenous laser ablation (EVLA) is an efficient method to treat insufficient great saphenous veins (GSV) with high occlusion rates.^{1–5} Most studies used 810, 940 or 980 nm diode lasers and a bare fibre.^{1,2,6} Moderate postoperative pain and bruising are frequent findings.^{2,6} Laser systems with higher wavelengths like 1470 nm with a higher absorption in water show less pain and bruising after the procedure.^{7–9} A newly-developed fibre (radial fibre, Biolitec) emits the laser energy radially around the tip directly into the venous wall contrary to the bare fibre.⁹ The aim of this study was to demonstrate the outcome and side-effects after EVLA of GSV with a 1470 nm diode laser (Ceralas E, Biolitec) by using the radial fibre.

Methods: Non-randomized, prospective study including 50 unselected limbs of 50 patients with a duplex sonographically verified incompetent GSV. EVLA was performed with a 1470 nm diode laser (Ceralas E, Biolitec) and a radial fibre. In the same session all insufficient tributaries were treated by phlebectomy. Tumescence local anaesthesia with 0.05% lidocaine was applied perivenously. Laser treatment was carried out in a continuous mode with a power of 15 W. Compression stockings (30 mmHg) were applied for one month. Postinterventional checkups took place one, 10, 30 days and six months after the procedure.

Results: Three patients were lost to follow-up. The average linear endovenous energy density (LEED) was 90.8 J/cm vein (SD 35.3). At the six month follow-up all treated veins remained occluded and no new reflux in the treated segments occurred. No recurrent varicose veins had occurred so far. No severe complications such as deep venous thrombosis could be detected. In four patients at 30 days and three patients at six months local paresthesia occurred in the region of EVLA. Forty-four percent of patients did not have any pain after the treatment and 50% did not take any analgesic tablets at any time after the procedure. Postoperative ecchymoses in the track of the treated GSV was rare. In 80% of the limbs, no ecchymoses was observed after the treatment.

Conclusion: EVLA of GSV with a radially emitting laser fibre by using a 1470 nm diode laser is a safe and efficient treatment option.

Keywords: EVLA; great saphenous vein; 1470 nm; endovenous laser; radial fibre

Background

Endovenous laser ablation (EVLA) is an effective method to treat insufficient great saphenous veins (GSV).^{1–5} Occlusion rates were demonstrated to reach about 95%.¹ Most of the studies used 810, 940 or 980 nm diode lasers and a bare fibre.⁶ Moderate postoperative pain and bruising are frequent

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