

Endovenous laser ablation of varicose veins with the 1470-nm diode laser

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Background

Endovenous laser ablation (EVLA) is one of the most accepted treatment options for varicose veins. In previous studies conducted with a laser at 810 to 1320 nm, paresthesia, pain, and ecchymosis were common adverse effects. We hypothesized that a lower linear endovenous energy density (LEED), as used with 1470-nm diode laser fibers, would lead to a reduction in adverse events.

Methods

We conducted a prospective, nonrandomized observational cohort study of 312 consecutively treated lower limbs legs in 286 patients. Of these, a bare laser fiber (ELVeS-plus kit) was used to treat 168 legs in 150 patients (group 1), and a radial fiber (ELVeS-radial kit) was used in 144 legs in 136 patients (group 2). Laser treatment was performed in the great saphenous vein. Follow-up for all patients was 3 months. The primary end point was the occurrence of ecchymosis and bruising. This was correlated to the reduced LEED needed with the 1470-nm diode laser.


Results

Laser fiber (odds ratio [OR], 22.3; 95% confidence interval [CI], 20.2-24.5) and body mass index (OR, 0.35; 95% CI, 0.15-0.55) were identified as independent parameters for LEED. In group 2 compared with group 1, LEED in the great saphenous vein could be reduced from 79.4 ± 9.1 to 57.4 ± 10 J/cm ($P < .0001$). LEED was an independent parameter for skin bleeding (OR, 1.04; 95% CI, 1.017-1.058). Ecchymosis and bruising were significantly less frequent in group 2 than in group 1 ($P < .0001$). The need for analgesia was low, with 103.08 ± 15.34 mg diclofenac-sodium in group 1 vs 82.08 ± 18.86 mg in group 2 ($P < .04$). Occlusion with elimination of reflux was achieved in 100% of group 1 and group 2 ($P < 1$). No recanalization occurred at follow-up.

Conclusion

Endovenous laser treatment of varicose veins in the great saphenous vein with the 1470-nm diode laser is safe and highly effective. The lower energy level needed using the radial laser fiber significantly minimized adverse effects compared with the bare laser fiber.

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