

Original articles

New wavelength for the endovascular treatment of lower limb venous insufficiency

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Aim. The aim of this research was to show the efficacy of the 1 470-nm wavelength diode laser for endovenous laser treatments and the clinical results obtained.

Methods. Patients with varicose veins stratified by CEAP classification (clinical) in C2-6 and low-flow venous malformations were treated with and without crosssectomy. Endolaser venous system with Ceralas™ E 1 470 nm diode laser (ELVeS® PainLess, Biolitec AG, Jena, Germany) was used. The average power applied was in the range of 2-6 W, continuous mode and pull-back of 10 mm/5 s. Two optical fibres were used; frontal emission bare fibre of 400 µ (ELVeS®) and radial emission fibre of 600 µ (ELVeS®). All patients were evaluated with Duplex ultrasonography (US) before, intraproceeding, immediately after, at 48 hours, 7 and 30 days after the initial procedure. An average follow-up of twelve months was attained. In 15% of the cases, the endovenous laser proceeding was also evaluated during the treatment with thermographic images, direct thermography and direct venous angioscopy to assess the local temperature increase. After the treatment histopathological studies were also performed.

Results. Between 30% and 50% of the vein's initial diameter was immediately reduced in 100% of patients and fibrosis was observed by histopathological analysis. Thirty days post-treatment all cases presented venous obliteration observed by Duplex US. Clinical symptoms were resolved. Side-effects were: minimal discomfort, local pain, postpuncture ecchymosis and minimal fibrosis of the treated veins. Nevertheless, there was absence of hyperpigmentation in all patients and absence of neuritis in 98.6% of patients. Popliteal thrombosis was presented 24 hours after the procedure in 2.9% of the patients (these patients did not receive heparin).

Conclusion. With this laser wavelength, which is new in phlebology applications, remarkable effective results were achieved with lower power comparing to the results currently obtained by using higher power and shorter laser wavelengths. This development provides the benefit of potentially better therapeutic results with less collateral damage.

<http://www.minervamedica.it/en/journals/international-angiology/article.php?cod=R34Y2009N04A0281>