

Meeting abstract

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## Endovenous laser in the treatment of varicose veins of the lower limbs geriatric patient: results of activity for 6 years

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### Introduction

Endovenous laser ablation (ELA) of the incompetent greater (GSV) and short (SSV) saphenous veins have been used with increasing frequency and the mechanism of action was recently clarified by histological, ultrasound and clinical observations.

To verify the results obtained in the 535 limbs affected with varicose veins of the lower limbs (VVLL) treated by ELA of the GSV and the SSV, various surgical, sclerosant and ELA, from March 2002 to March 2008.

### Materials and methods

535 limbs of 473 patients (62 bilateral) with VVLL were selected by clinical and ultrasound examination. C class of the CEAP classification of every single limb: C from 3 to 6, Ep, As +/- p, Pr. Inclusion criteria: superficial venous insufficiency, venous diameters of less than 15 mm. Exclusion criteria: phlebitis, saphenous aneurysms, congenital malformations, deep venous insufficiency. Age of the patients: range 70–85; right 215, left 320; veins subjected to ELA: GSV 330 (61.7%), SSV (65 (12.1%), peripheral varices incompetence (cases free from GSV and/or SSV incompetence) 105 (19.6%), other incompetent v. districts 35 (6.6%). In the different centers 210 peripheral varices were subjected to ELA: (39.2%), 250 to stab avulsion plus foam sclerotherapy (46.7%), 75 to stab avulsion only (14%); 162 incompetent perforators (30.2%) were subjected to ELA only, 243 (45.4%) were subjected to surgical interruption or foam sclerotherapy. Local or spinal

anesthesia was used in one day surgery patients. An endovenous Diode 808 nm laser (Eufoton-Trieste-Italia) was employed, with sterilizable optical fibers of variable diameter from 400 to 1000 microns, by continuous 6–12 W emission power and variable retraction speed from <1 mm/sec to 3 mm/sec. Spinal or local anesthesia were preferred. Tumescence anesthesia and skin protection were seldom applied. All the 535 cases were clinically controlled once at least after 5–7 days. 330 limbs were followed up by duplex examinations from 30 days up to 2 years; 117 were controlled by clinical observation up to 3 years. Follow up and statistical analysis are still in progress.

### Results

The intervention time was comprised between 20 and 90 minutes in the different centers. No skin burns in the GSV and SSV districts were produced. Limited skin burns by ELA of 27/260 peripheral varices (10.3%), limited ecchymosis, moderate pain in all the ELA districts was observed at the early clinical control. Saphenous phlebitis occurred in 44/535 limbs (8.2%) mainly in veins of more than 10 mm. in diameter. Duplex controls of 330 limbs shown the following reports: initially fibrous thrombosis at 7 days, fibrotic thrombosis at the following controls with decreasing venous diameter up to saphenous atrophy not earlier than 12 months. Short non-occluded segments were observed in 63/330 cases (19%) without any hemodynamic or clinical relevance. 5/301 GSVs (1.6%) developed a full recanalization with recurrent varices in 2 cases (0.6%). Satisfactory cosmetic results were obtained in

307/330 (93%) at 2 years. 23 (7%) unsatisfactory results were mainly due to temporary pigmentations. 37/330 (11.2%) limbs required foam sclerotherapy of residual varices. At 3 years 7/117 (5.9%) recurrent VVLL due to anatomical variations (5 limbs) and GSV recanalization (2 limbs) were observed. No haematomas, nervous damage or major complications occurred in the controlled cases.

### Conclusion

ELA of the GSV and SSV using an 808 nm diode laser leads to sufficient vein wall injury to assure venous occlusion but limits the effect to the vein wall without thermal injury to the surrounding tissues. No tumescent anesthesia and skin protection seem to be essential. Shrinking, thrombosis, early fibrosis and atrophy represent the mechanism of this. Saphenofemoral and saphenopopliteal disconnection facilitates the mechanism of action, prevents recurrence and ascending thrombosis. A higher risk for saphenous phlebitis in veins exceeding 10–12 mm in diameter has to be taken in account. In these veins the surgical ablation seems more recommendable. Stable occlusion in the majority of perforators and peripheral varices extensive disappearance were obtained (incompletely analyzed data). ELA and/or foam sclerotherapy of perforators and varices leads to the intervention time reduction and to more satisfactory clinical and cosmetic results in comparison with stripping and surgical stab avulsion.

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