

## A PROSPECTIVE COMPARISON OF FOUR METHODS OF ENDOVENOUS THERMAL ABLATION

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**The aim of the study** was to compare clinical and duplex Doppler results of treatment of varicose veins with four methods of endovenous thermal ablation (EVTA).

**Material and methods.** The results of treatment of varicose veins with 980 nm laser (EVLA980) in 67 extremities, with a radiofrequency ablation (RFA) in 43 extremities, with 810 nm laser (EVLA810) in 46 extremities and with 1470 nm laser (EVLA1470) in 15 extremities were prospectively analyzed. The data on patients' demographics, weight, stage of the venous disease, type of anesthesia, duration of the procedure, linear energy density (LED) applied, intra- and postoperative complications were collected. Thromboprophylaxis was not routinely administered. The patients were followed clinically and with duplex Doppler for 12 (1-24) months.

**Results.** Technical success was achieved in 99% of limbs. The procedure was carried out under local anesthesia in 140 (91%) of patients. In 17 patients bilateral procedure was performed. There were one gastrocnemius muscle vein thrombosis and one protruding thrombus from sapheno-femoral junction in EVLA810. No other serious complications were observed. A median LED was higher in EVLA810 than in EVLA980 and EVLA1470, 86.8 (82-94), 59.2 (45.4-74.4) and 58.8 (53-67.7) J/cm, respectively ( $p < 0.001$ ), though only in EVLA980 was below the intended range. Recanalization rates were 7% after EVLA980, 2% after EVLA810 and 0% after RFA and EVLA1470,  $p = 0.14$ . The vein shrinking was fastest after EVLA1470. Neither neovascularization nor formation of arteriovenous fistulas was observed. Permanent saphenous nerve paresthesia occurred in two patients after RFA.

**Conclusions.** All methods of ambulatory EVTA are safe and effective once the adequate linear energy density is applied.

**Key words:** varicose veins, thermal ablation, results

Varicose veins (VV) are an important social and health problem. In developed countries they occur in 25-50% of women and in 7-40% of men and their prevalence increases with age (1-4). Because of aging of the human population, it can be assumed that their prevalence will grow. VV may lead to phlebitis, bleeding and ulcers. Healing of venous leg ulcers is very long and expensive, they tend to reoccur and recurrent ulcers are more difficult to heal (5-8).

A standard surgical treatment of VV may be complicated by prolonged postoperative

pain, saphenous nerve injury, hematomas, wound infection and lymphatic vessels injury and even, though rarely, by femoral vessels injury and venous thromboembolism (9-15). Moreover a high percentage of recurrence following saphenectomy has been reported reaching 20-50% (16, 17).

In an attempt to find a less invasive and more effective alternative to saphenectomy an endovenous thermal ablation (EVTA) either by laser or radiofrequency has been introduced (18, 19). The methods of EVTA have a different mode of action and the basic difference is in the