

The use of minimally invasive technologies for the treatment of primary chronic venous ulcers

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The selection of patients with primary chronic venous eczema and ulcers for EVLA as an alternative to conventional open surgery is a subject of discussion among surgeons and phlebologists. There is no consensus on the preference of conventional open surgery or EVLA in the patients with a large diameter of saphenous vein trunk and saphenofemoral junction.

(Mendoza E., Blättler W., Amsler F. Eur J Vasc Endovasc Surg. 2013; 45(1):76-83).

Objective: to estimate the safety and efficacy of using the laser wavelength of 1560 nm with the foam Sclerotherapy (FS) of varicose veins (VVs) for the treatment of primary chronic venous leg ulcers in patients with different diameters of the proximal segment of the great saphenous vein (GSV).

Methods

We have separated the patients into two groups depending on the size of great saphenous vein: group 1 (22 cases; the diameter of the proximal segment of GSV less than 15 mm) and group 2 (25 cases; the diameter of the proximal segment of GSV more than 15 mm). Both groups received the endovenous laser ablation (EVLA) of the saphenous vein trunk, incompetent perforator veins (IPs) and FS (the original Tessari method) of VVs. Taking into consideration the complexity in carrying out EVLA of IPs in the area of trophic disorders, in the 2nd group EVLA of IPs (subfascial segment) and FS of epifascial segment of IP and VVs after EVLA were performed.

TRansluminal Occlusion of Perforator (TRLOP) technique of IPs of thigh and shin was used in all cases. Parameters of the linear endovenous energy density (LEED) taking into account the diameter of the vein are shown in Table 1.

Table 1 Parameters of LEED taking into account the diameter of the vein

Wavelength	Diameter proximal segment of GSV		Diameter trunks of GSV, accessory GSV, SSV	Diameter IPs
	?15 mm	>15 mm	5-15 mm	3-8 mm
1560 HM	100 J/cm	150 J/cm	90 J/cm	50 J/cm



Fig.1. Patient C. Status before the minimally invasive treatment (2 years of the ulcer subsistence).



Fig.2. Patient C. Status post mini-invasive treatment (after 2 months).

Results:

The site of the ulcer (C6) was in the medial aspect of the ankle at the perimaleolar region in the majority of cases in both groups. Most of the ulcers were 3 – 5 cm in the longest part in both groups (Table 2).

cm	Group 1 (N=22)	Group 2 (N=25)	p
1-3	5 (23%)	6 (24%)	p=0.91
3-5	12 (54%)	14 (56%)	p=0.92
5-10	5 (23%)	5 (20%)	p=0.82

The healing of ulcers in 18 (81%) cases in group 1 and in 22 cases (88%) in group 2 (Fig.1, 2) in 2 months was determined (p=0.55).

The recanalization of thigh trunk of GSV was not found during the follow-up ultrasound from 2 to 6 months after EVLA.

The control ultrasound examination showed 6 (27%) cases (group 1) and 1 (4%) cases (group 2) of ineffective TRLOP (p=0.03). Reinterventions were carried out in both groups (TRLOP with FS of epifascial segment of IP and VVs). The reinterventions in all cases (both groups) were effective.

Postoperative data and long-term results in groups are shown in Table 3.

Table 3 Postoperative data and long-term results in groups

Parameters	Group 1 (N =22)	Group 2 (N =25)	P
Healing of trophic ulcers for 2 months	18 from 22(81%)	22 from 25 (88%)	p=0.86
Healing of trophic ulcers after 6 months	21 from 22 (95%)	24 from 25 (96%)	p=0.92
Skin necrosis (N of limbs)	0	0	N/A
Skin burn (N of limbs)	0	0	N/A
Deep vein thrombosis	0	0	N/A
Pulmonary embolism	0	0	N/A
Recanalisation of GSV	0	0	N/A
Reintervention of IPs	6(27%)	1(4%)	p=0.03

In the cases of ineffective treatment the patients suffered significant obesity (BMI > 40). Leg ulcer recurrence for two years follow-up in the remaining patients were not determined

Conclusion: Our experience of using laser wavelength of 1560 nm and FS of VVs for the treatment of the primary venous eczema and ulcer shows the safety and efficacy of this technique in patients with different diameters of the proximal segment of GSV.