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Post-Procedure Pain, Safety and Efficacy Following Great Saphenous Vein (GSV) Endovenous Laser Ablation (EVLA) Using a 1470 nm Diode Laser

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AIMS: EVLA abolishes GSV reflux and is an alternative to surgery for treating varicose veins. Currently lasers of 810-980 nm wavelength (peak absorption by haemoglobin) are used. Both direct vein wall contact and steam derived from intra-luminal blood may facilitate ablation. Despite its minimally invasive nature post-procedure pain was similar to that for surgery in a recent RCT. We have therefore assessed pain scores (and safety and efficacy) after GSV EVLA using a 1470 nm diode laser (energy absorption by water in vein wall 40x > haemoglobin).

METHODS: GSV ablation (ultrasound, 6 weeks), post-operative pain (100 mm linear analogue scale, days 1-7) and complications were assessed in patients treated with either an 810 nm laser (Group A: n = 29) or a 1470 nm laser (Group B: n = 22).

RESULTS: Both groups received 70J/cm laser energy (median) with complete GSV occlusion achieved in 26/29 legs (90%, Group A) and 22/22 (100%, Group B) respectively. In Group A 2/29 (7%) patients developed temporary saphenous nerve paraesthesia (resolved by 6 weeks) and 3 (10%) significant “phlebitis”. No complications occurred in Group B. Median pain scores (days 1-7) were 41, 20, 19, 8, 11.5, 14.5, 15 and 1, 0.5, 0, 0, 0.5, 1 for Groups A and B respectively (P < 0.001 for all days).

CONCLUSIONS: GSV EVLA using a 1470 nm diode laser is safe and effective. Furthermore patients experienced minimal post-procedure discomfort compared to those treated with the current generation of lasers. This may reflect more specific vein wall injury secondary to the absorption characteristics of the laser energy.

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Table 1. Methods and Treatment Parameters

	Group A	Group B
Laser	810 nm	1470 nm
Type of Fiber	Bare tip fiber	Bare tip fiber
Number of Patients Treated	29	22
Joules Used Per cm	70 J/cm (median)	70 J/cm (median)

Table 2. Results – Success Rates & Patient Complications

	Group A	Group B
Patients With Complete GSV Occlusion	90%	100%
Patients Who Developed Temporary Saphenous Nerve Paresthesia	7%	0
Patients Who Developed Significant Phlebitis	10%	0

Table 3. Results – Median Pain Scores

Median Pain Scores Scale 0 – 100 P < 0.001 for all days	Group A	Group B
Day 1	41	1
Day 2	20	0.5
Day 3	19	0
Day 4	11.5	0
Day 5	14.5	0.5
Day 6	15	1

Graph 1. Results – Median Pain Scores

