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Original Article

Endovenous Laser Ablation in Chronic Venous Insufficiency – Study Of 50 Cases

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ABSTRACT

Background and Aims: *Chronic vein insufficiency of the lower extremities is one of the most common benign diseases. Surgery was the gold standard in the treatment of varicose veins. For several decades, high ligation at the sapheno-femoral junction (SFJ) and stripping of the GSV was the treatment of choice to eradicate the diseased vein. Insufficiency of the small saphenous vein (SSV) is treated in a similar way, by ligation at the sapheno-popliteal junction (SPJ) and stripping. In 1999, the first report on EVLA appeared in the literature. Endovenous laser ablation (EVLA) is a well-established treatment for chronic venous insufficiency. As India is developing country patients with chronic venous insufficiency usually present to clinician in advanced stages, so we must modify the technique accordingly. We are presenting our experience of EVLA in 50 cases.*

Methods and Materials: *Fifty patients were treated under spinal anesthesia in single centre by team of radiologist and surgeon over a period of 8 months (Jan 2015- Aug 2015). The greater saphenous vein and lesser saphenous veins treated by EVLA. This is a prospective observational study to determine whether EVLA could be used to treat saphenous veins in chronic venous insufficiency. The indications for treatment was varicosities [n = 28], leg edema [n = 9], varicosities and pain [n = 8], varicosities and ulcer [n= 5]. 7 In 28 patient EVLA was done in both lower limbs and in 22 patients unilateral limb treatment was done. lower 78 greater saphenous veins and 65 lesser saphenous veins were treated in 50 patients.*

Results: *Out of 143 veins single puncture was sufficient in 122 [85%], Two punctures were required in 21 cases [15%]. Treatment was successful in 126 venous segments (88%) in first setting, the residual veins were treated in second setting resulting in 100% obliteration. After treatment, ultrasound surveillance within the next few days confirmed that the saphenous veins and tributaries were all occluded. Bruising noted along the course of treated veins. Neuropraxia noted in leg in all the cases for variable period of 2 weeks to 4 months along the course of saphenous vein and sural nerve. There was no late sequel such as persisting induration or fat atrophy.*

Conclusion: *The greater and lesser saphenous veins can be treated by EVLA in single setting in all the cases without any significant complications. It is safe, cost effective with a comfortable recovery while maintaining minimally invasive treatment.*

Keywords: *Endovenous LASER, ultrasound, saphenous veins.*

Introduction

Chronic vein insufficiency of the lower extremities is one of the most common benign diseases. Surgery was the gold standard in the treatment of varicose veins[1]. For several decades, high ligation at the saphenofemoral junction (SFJ) and stripping of the GSV was the treatment of choice to eradicate the diseased vein. Insufficiency of the small saphenous vein (SSV) is treated in a similar way, by ligation at the saphenopopliteal junction (SPJ) and stripping. In 1999, the first report on EVLA appeared in the literature. Endovenous laser ablation (EVLA) is a well-established treatment for chronic venous insufficiency[2]. As India is developing country patients with chronic venous insufficiency usually present to clinician in advanced stages, so we must modify the technique accordingly. We are presenting our experience of EVLA in 50 cases.

Methods and materials

Over 8 months from Jan 2015- Aug 2015, fifty patients were treated under spinal anesthesia in single centre by team of radiologist and surgeon. This is a prospective observational study to determine whether EVLA could be used to treat greater and lesser saphenous veins in single setting in chronic venous insufficiency. The definition of saphenous veins and tributaries followed that recommended by a Consensus group of the International union of phlebology[3]. All the patients were examined in standing position prior to surgery on Toshiba Nemio 30, Japan ultrasound system, the length and diameters of the veins were recorded[4]. EVLA was done by using Diomed 15 Plus Diode Laser, 810 nm system, U.K. Spinal anesthesia was given in all the patients. Ethroli ultrasound system was used for intraoperative scanning. Sterile Xylocaine jelly was used as coupling agent. The veins were punctured with 16 G Jelco (Smiths Medical International Ltd., Italy), under ultrasound guidance (Fig 1 & 4), the stellate was replaced with 600 micron Laser fiber directly In few cases a Terumo 0.035″ hydrophilic glidewire (Terumo Corporation Australian Branch, Sydney, Australia) was maneuvered, long 5F sheath is passed over the glide wire. (Fig 1 & 2). After withdrawing wire 600-micron Laser fiber was passed through the sheath. Under ultrasound guidance isotonic saline was infiltrated around the entire course of veins with 22G needle. (Fig 3) In 28 patient EVLA was done in both lower limbs and in 22 patients unilateral limb treatment was done. lower 78 greater saphenous veins and 65 lesser saphenous veins were treated in 50 patients The Indications for treatment are mentioned in Table 1. The settings for EVLA used were 12W continuous power for above knee joint GSV, 10W for below knee GSV, and SSV at a withdrawal of 1 mm/second. All patients were admitted in the hospital for one day and scheduled for clinical and ultrasound review 2 weeks after treatment.

Fig 1. Laser fiber in great saphenous vein

Fig 2. Laser fiber at SFJ confirmed by doppler

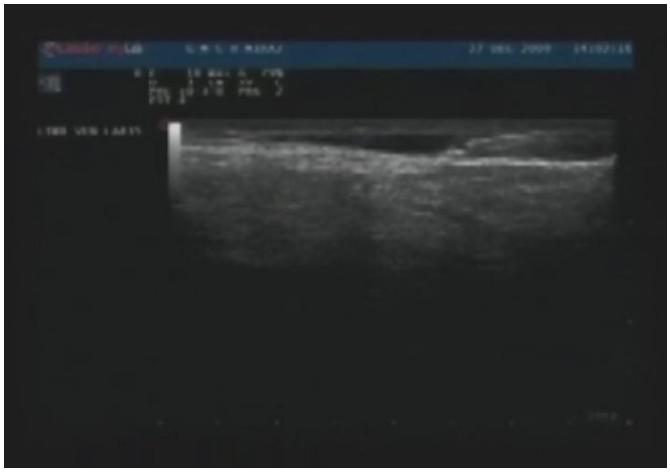

Fig. 3 Ultrasound guided perivenous infiltration of normal saline

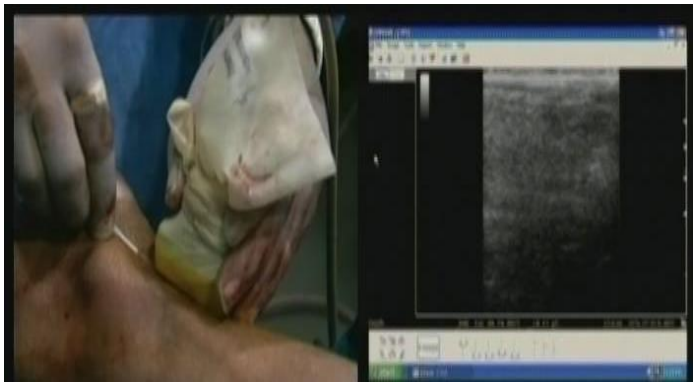

Fig. 4 Short saphenous vein being punctured under ultrasound guidance

Fig 5a. Pretreatment bilateral varicose ulcers, edema and varicosities

Fig 5b. Post EVLA Ulcers healed, varicosities disappeared

Table 1: Indications for treatment

Sr no.	Indication	Number of patients (N=50)
1	Varicosities	28
2	leg edema	9
3	varicosities and pain	8
4	varicosities and ulcer	5

Results

Out of 143 veins single puncture was sufficient in 122 [85%], two punctures were required in 21 cases [15%]. Glidewire was required in 25 veins, in remaining veins fiber was passed directly. The volume of isotonic saline required for GSV was 150-200ml, SSV was 80-100ml. The lengths of greater saphenous veins treated were 30– 90 (median = 60) cm, lesser saphenous veins treated were 15-40 (median = 30) cm. Treatment was successful in 126 venous segments (88%) in first setting, the residual veins were treated in second setting resulting in 100% obliteration. After treatment, ultrasound surveillance within the next few days confirmed that the saphenous veins and tributaries were all occluded. (Fig 5) Bruising noted along the course of treated veins. Neuropraxia noted in leg in all the cases for variable period of 2 weeks to 4 months along the course of saphenous vein and sural nerve. There was no late sequel such as persisting induration or fat atrophy.

Discussion

The saphenous veins within their saphenous sheaths are usually straight even when diseased and dilated. Their major varicose tributaries outside the sheaths are usually tortuous to varying degrees. The degree of tortuosity was assessed by intraoperative ultrasound. In most of the veins Laser fiber was passed directly, rarely glide wire is used. We used intraoperative ultrasound for guidance to puncture the veins and for perivenous infiltration of isotonic saline. The perivenous saline acts as heat sink and reduces the thermal damage to perivenous tissues[5]. Basically, EVLA is non-surgical procedure. The veins treated by EVLA become impalpable immediately after treatment and the draining superficial varicosities[6]. Most of the direct perforators also get obliterated. Increased cosmetic value as most of the visible veins on the legs disappear. Patient's symptoms of pain & leg fatigue reduce significantly. Ulcer healing improves with treatment of diseased veins. Reduced recurrence rate as venous pressure is significantly reduced with aggressive treatment. The hospital visits and expenditures on treatment are reduced[6].

Conclusion

The greater and lesser saphenous veins can be treated by EVLA in single setting in all the cases without any significant complications. It is safe, cost effective with a comfortable recovery while maintaining minimally invasive treatment

Conflict of interest - No

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