THE HARMONY LASER 1064nm FOR TELANGIECTASIA'S FEEDER VEIN TREATMENT GUIDED BY THE VEINVIEWER™

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INTRODUCTION

The Harmony Laser is a flexible device that allows different pointers and settings in phlebology. Its capability to offer higher pulse duration in comparison to other laser devices represents the chance to avoid superficial damage (skin burns) while effectively treating deep veins, often less detectable to the naked eye.

In this study the contrast of veins was enhanced by acquiring their image using near-infrared light, enhancing the acquired image via software, and then projecting the enhanced vein image in green light (1) (Fig.1) over the same area upon the patient's skin. This near-infrared real-time imaging technique – VeinViewer™ (V V)*** (Fig.2) – simulates a local map of the subcutaneous veins.

Both varicose veins and telangiectasias requiring treatment are clearly visible to the naked eye. On the other hand, feeder veins which may make telangiectasias harder to treat, are more than often not visible (2,3,4).

Telangiectasias and their related feeder veins are commonly treated today with chemical or foam sclerotherapy. Another treatment option is the combination of phlebectomy and sclerotherapy (2,3).

It is important to point out the complications to each method (Table 1).

Technique	**Complication**
chemical sclerotherapy	skin ulcer, anaphylactic reaction
foam sclerotherapy	anaphylactic reaction, embolism and paradoxical embolism/infarction
phlebectomy	peripheral nerve lesion

Table 1: Possible complications related to each common technique (2,4-7).

Progressive technological advances are enabling more efficient as less invasive treatments, such as the laser.

Regarding telangiectasias as a benign condition, it is paramount to drive the quest for treatments with little or no complications.

A previous experience found that the combination of laser treatment and Dextrose 75% (D75) sclerotherapy had none of the complications above (Table 1), but was also rather ineffective on feeder veins (4,8).

It was hypothesized that the inefficiency of said treatment in the past was due to invisible feeder vein(s), rather than any inherent weakness of the laser/sclerotherapy technique. However, the laser/sclerotherapy treatment of feeder veins has been reassessed:

1 - with a modern flexible laser device capable of pulse-duration adjustment and different spot sizes;

2 - with a dynamic vein mapping device now available (9).

OBJECTIVE

The objective of this study is to reinforce the effective therapeutic role of the laser/sclerotherapy treatment under the use of a V V prototype (V V)(Fig.2) and to develop an efficient technique free of local and systemic complications.

METHODS

A pilot study took place in May, 2005, in Brazil.

Subjects were treated with 1064nm long pulse ND-YAG laser** immediately followed by sclerotherapy, both techniques were applied with a parallel forced air-cooling device****, guided by the V V (Fig.3 and Fig.4).

The Harmony Laser was applied starting with the 6mm pointer with 40ms pulse duration and 130J/cm^2 fluence. This startup setting was used even with type IV skin (Fitzpatric) patients. In the absence of pain, the fluence was increased by 10J up to 150J/cm^2.

For deeper reticular veins, 60ms pulse duration was preferred. Fluence also escalated from 130 to 150J/cm^2.

For observed telangiectasias with feeder veins, a first pass with 60ms was performed, followed by a second pass with 40ms shots.

The interval between sessions was 2 weeks.

Results were analyzed by comparing before and after photos, as well as by asking the subject's opinion on the outcome. The sclerosing agent used was D75 (one of the most common in Brazil).

RESULTS

A total of 15 subjects with telangiectasias and feeder veins were treated with laser and sclerotherapy guided by the V V. Nine of them reported a complete cure or partial remission of the lesion; four had no improvement; two reported worsening of the condition. One of the subjects was later treated with phlebectomy presenting good results.

The V V was able of both guiding the laser shots and showing its effect minutes after the laser treatment (e.g.: the V V image of a partially collapsed vein was shorter and thinner).

DISCUSSION

Our present results show that laser/sclerotherapy treatments of feeder veins can be effective when different pulse duration and higher fluence are applied, since the veins are adequately located. A new prospective clinical study is now being carried out with a larger number of subjects.

CONCLUSIONS

This pilot study made us believe that since physicians are able to locate invisible veins (or too small for ultrasound detection), the laser/sclerotherapy is effective and desired. The guidance tool for vein treatment projects its image dynamically and directly onto the patient's skin instead of being displayed on a monitor. It does not interfere with the technique and improves accuracy on locating the shots.

The combination of laser and sclerotherapy, both guided by the V V, may represent a good option in the quest for an effective treatment, free of local and systemic complications since telangiectasias and feeder veins are a benign condition.

Figure labels:

Figure 1: The projected vein image shows where the vein is.

Figure 2: VeinViewer prototype.

Figure 3: ND-YAG long pulse laser adapted with the cooling system and guided by the V V.

Figure 4: Dextrose 75% sclerotherapy and air cooling device.

Figure 5b: Superficial veins that need treatment, barely visible to naked eye, are located with the processed vein image.

Example labels:

Example 1: High pressure Telangiectasia with feeder vein (near the great saphenous vein).

Example 2, 3, 4 and 5: difficult to treat telangiectasias and their feeder veins. The vein image helps not only to aim the laser beam but also to inject the D75.

Example 6 and 7: Telangiectasia and feeder veins, before and after laser/sclerotherapy treatment. Note the green projected image documenting the absence of shadow corresponding to the feeder vein.

** Harmony™ – Almalasers

*** VeinViewer™ – Luminetx Corporation

**** Cryo5™ – Zimmer Elektromedizin

Disclosure:
The VeinViewer prototype was loaned by Luminetx Corporation.
Other equipments are owned by Clínica Miyake.
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REFERENCES

1. Zeman HD, Lovhoiden G, Vrancken C, Danish R. Prototype vein contrast enhancer. Opt Eng 2005;44:086401.

2. Miyake H, Miyake RK. Tratamento das microvarizes e telangiectasias. In Maffei FH, Lastória S, Yoshida WB, Rollo HA, eds. Doenças vasculares periféricas. Rio de Janeiro: Medsi, 2002; 1563-80.

3. Miyake H, Langer B, Albers MTV, Bouabci AS. Surgical Treatment of Telangiectasis. Rev Hosp Clin Fac Clin Med S Paulo 1993;48(5):209-13.

4. Miyake K. Tratamento a laser de microvarizes. In Maio M, ed. Tratado de Medicina Estética. São Paulo: Roca, 2004; 1055-72.

5. Forlee MV, Grouden M, Moore DJ, Shanik G. Stroke after varicose vein foam injection sclerotherapy. J Vasc Surg 2006, 43:162-4.

6. Guexx JJ, Allaert FA, Gillet JL, Chleir F. Immediate and midterm complications of sclerotherapy: report of a prospective multicenter registry of 12173 sclerotherapy sessions. Dermatol Surg 2005, 31:123-8.

7. Hanisch F, Muller T, Krivokuca M, Winterholler M. Stroke following variceal sclerotherapy. Eur J Med Res. 2004 May 28;9(5):282-4.

8. Miyake RK, Duarte FH, Fidelis RJ, Miyake H. New leg veins air cooled treatment using 1064nm laser combined with sclerotherapy. Technique description and one year follow-up. Las Med Sci 2003,18:S22.

9. Miyake RK, Zeman HD, Kikuchi R, Simmons J, Duarte FH. Vein contrast enhancement for phlebological treatments. Intern Angiology 2005, 24 (suppl1): 179.