

5447 PHOTODINAMIC THERAPY FOR VARICOSE VEINS

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FUNDAMENTALS

The Nd:YAG laser has been shown to be effective in the treatment of venous dilations. Nevertheless, the low absorption coefficient of Hb for 1064 nm make it necessary for clinicians to use high fluencies with a higher risk of unwanted thermal damage, hypo or hyperpigmentary sequelae and significant discomfort during the treatment.

Studies carried out by Mordon show that the **heating of Hb causes it to change into metahaemoglobin (with an absorption coefficient 3 to 4 times higher than that of haemoglobin)**, contributing to the first optimisation factor in the treatment of varicose veins using the Nd-YAG laser. Previous studies have described that the use of a **detergent sclerosant (Aethoxysklerol or polydocanol) induces the formation of fast-elimination uroporphyrins**. In the same line, our initial studies and the studies conducted by Miyake, appear to suggest that **polydocanol also causes an increase in metahaemoglobin**. In any case, be it due to the increase in uroporphyrins or to the increase of metahaemoglobin, the absorption coefficient of our heater increases 3 to 4 times above the baseline absorption coefficient of haemoglobin. Additionally, **polydocanol -in microfoam form- causes**, depending on the existing surface tension, **an increase in thermal transmission through the submolecular microwholes**.

The aim of this study is to show the biochemical changes resulting from the administration of polydocanol that are responsible for the greater absorption of the energy transmitted by the Nd:YAG laser. The entire process achieves better results in the treatment of varicose veins, with fewer failures and a lower incidence of secondary effects.

MATERIAL AND METHODS

150 patients were studied over a period of 2 years. Mean age 43.7 years, with peaks at 17 and 74 years. According to gender, there were 46 men and 104 females.

Protoporphyrin IX and intraerythrocytary metahaemoglobin values were determined in 10 patients **before and after injecting polydocanol microfoam**. The absorption for a 1064 nm Nd-YAG laser emission in total blood was determined and compared against blood with polydocanol liquid state and blood with polydocanol in a microfoam state

The treatment technique was carried out by means of an intravenous injection of polydocanol microfoam at 0.5% for truncular veins and at 0.3% for the remaining cases. We used a Nd: YAG laser from Laserscope, models Geminia and Lyra "I" and the Cryosmart cooling system.

Laser Dosimetry	Truncular veins	Reticular veins	Telangiectasias
Spot (mm)	5	3	2
Fluence (J/cmsq)	100	200	300
Pulse (ms)	100	80	60

Dosimetry of laser Nd-YAG

Subsequent sessions were administered at 60 days intervals until complete remission of the clinical symptoms

RESULTS

Clinical results:

Number of sessions:

- Truncular veins: 1 session, excepting 2 patients who received 2 sessions.
- Reticular veins: 2, 3 +/- 0.8 sessions.
- Telangiectasias: 3, 4 +/- 1.2 sessions.

Tolerance to laser and injection of foam was good or acceptable in all our patients.

The disappearance of inflammatory signs and the vessel's reabsorption occurred between the 4th and the 8th week.

Side effects were burns (3 patients), hiperpigmentations (12 patients), intravascular trombi (12 patients with truncular veins) and matting (5 patients)

Blood assessments:

Metahaemoglobin: Mean basal values were 0.87 mcg% and after the administration of polydocanol, the mean value raised to 4.17 mcg% (table 1).

Protoporphyrin: Mean basal figures were 37.6 mcg% and after the administration of polydocanol, the mean value raised to 46.8 mcg% (table 2).

Wilcoxon test. Mean values of both metahaemoglobin and protoporphyrin increased significantly (p>0.003).

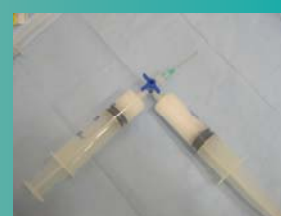
Assessment of Nd:YAG laser absorption:

The absorption coefficient of polydocanol at 0.5% in total blood was 4 times greater than that of baseline blood.(table 3)

The absorption coefficient of total blood in the presence of polydocanol microfoam was 14 greater (0,28 to 3.9) than that of baseline blood (table 4).

DISCUSSION AND CONCLUSIONS:

The presence of polydocanol foam improves the performance of the Nd-YAG light energy. It allows to work with lower fluence resulting in less discomfort. This combined therapy results in fewer sessions with optimal results even in truncular veins



Foam polydocanol was obtained by passing the polydocanol repeatedly between two syringes that were connected by way of a 3-way stopcock, following the conventional sclerosis procedure.

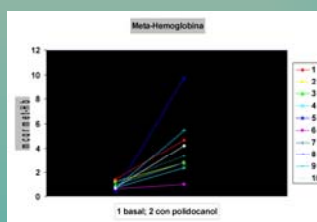


TABLE 1

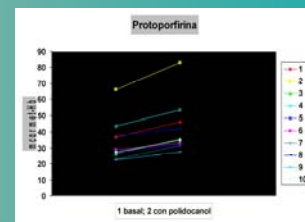


TABLE 2

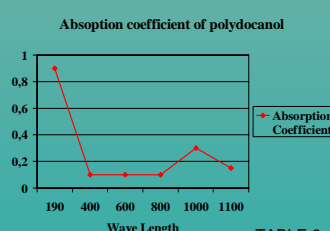


TABLE 3

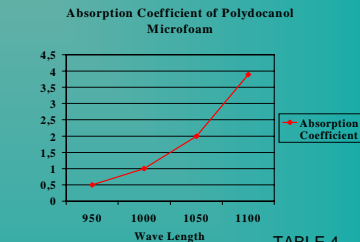


TABLE 4

5427 MINIMAL DOWNTIME REJUVENATION WITH A FRACTIONAL CO2 LASER

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BACKGROUND

CO2 laser resurfacing is one of the most effective rejuvenation methods to remove wrinkles, acne scars and solar elastosis. The depth of dermal heating dictates the degree of clinical and histologic improvement that will result, along with the duration of wound healing and postoperative erythema.

The fractional CO2 laser resurfacing modality is an advance to minimize the patient's downtime. This device creates "dots" on the skin, tiny columns of deep thermal damage that stimulate the growth of new collagen. A "fraction" of the skin's surface is treated rather than the entire surface. This allows for faster healing, while reducing collateral skin damage, swelling and redness. Patients typically reepithelialize in 4-7 days and erythema is gone within 2-3 weeks.

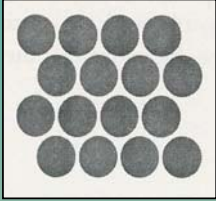
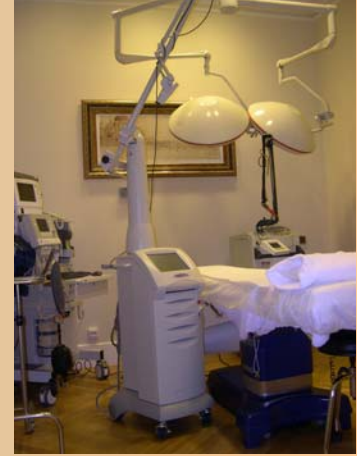


Foto cortesía del Dr. Greg Chernoff



METHODS

Forty-eight patients with II-IV phototypes were treated with Ultrapulse Encore Active-FX device (17 perioral areas, 13 periocular areas and 18 full-face resurfacings). All of them used tretinoin and Hydroquinone 4% prior to treatment. Anesthesia was performed with EMLA cream or lidocaine 2% local infiltration. Aggressivity was agreed prior to the procedure and settings vary from 80-170 mJ and the pattern density was 4-8. We made a second pass on problem areas (crows feet, perioral wrinkles and acne scars). Post-procedure skin care was washing and wiping skin debris, dialysis and applying antibiotic cream.

RESULTS

All patients showed a significant clinical improvement in skin tone, texture and appearance depending on the ablation degree. Re-epithelialization occurred between 4-5 days in less aggressive treatments and 7-8 days in the most aggressive ones. Side effects were transitory hyperpigmentation (seven patients) and postoperative erythema resolved in less than two weeks.



CONCLUSION

Ultrapulse Encore Active FX treatment fills the wishes of patients and doctors. This laser can be used with a wide range of possibilities, because the injury can be modulated from an Erbium-like resurfacing to a classical CO2. For active patients desiring significant effects from a single treatment with very little downtime, the ActiveFX procedure provides a good alternative.