Endolaser and endo-perivenous laser : from GSV to extrasaphenous veins and spider veins treatment.

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Objective:

The presentation combines the historical evolution of endovenous laser procedures on the great saphenous vein, starting from the first experiences using the so called "blood absorbed wavelengths" as 808, 980 instead of latest "water absorbed" one working at 1470 nm.

We have also evaluated 808 nm wavelenght laser in intra-extra luminal procedure for the treatment of extrasaphenous veins and teleangectasias. Endolasering with 200 μ m micro optical fibers can cause photothermocoagulation of the vessel wall thanks to the direct intra-extra venous contact.

Infact 808 nm being scarcely absorbed by both water and fat tissue does not harm surrounding perivenous tissues during photocoagulation. When lasering effect becomes out of the vessel side, the first target is the adventitial vasa venarum.

Materials and Methods:

200 patients (85% female, 15% male) presenting tortuous reticular veins and teleangectasias are treated with intra-extra luminal 808 nm diode Laser (Eufoton, Italy). After topical anaesthesia (cryogenic local therapy), a special micro fiber of 200 μ m in teleangectasias are inserted intra - extra near the veins wall, using at the same time a combined skin cooling system during and after treatment. We differentiate 2 types of teleangectasias treatments.

a) Telangectasias sized from 0,5 mm to 1 mm (blue, violet)

We used a special titanium introducer for 25 G needle (FZ connector) to introduce easily the fiber into the needle. Skin temperature must be controlled by palpation. The fiber is pushed up where the reflux originates and the optical tip is indicated by the pilot red light at 635 nm. Once it has reached the reflux point, it is gently withdrawn under variable pullback speed and power laser setting. The end point is photocoagulation of the varicose blood content and wall, which immediately becomes shrinked as soon as it gets touched. The treatment of these telangectasias requires pressure applied with a cylinder of cotton, and elastic stocking 20-30 mmHg. Treatment was well tolerated.

b) Teleangectasias sized less than 0,5 mm (red)

We used the direct transcutaneous impact of the naked bare micro optical fiber of 100 or 200 μ m (without FZ connector). The laser emission enables us to puncture the skin penetrating the vessel wall structure and causing a photothermic damage to the vessel and connected perivenium vasa vasorum. Combined skin cooling is recommended. The immediate vessel bleaching is followed by micro skin burns sized 200/300 microns that disappear on approx 14 days.

Conclusions:

Effective treatment of teleangectasias was achieved with intra-extra luminal 808nm laser with acceptable side effects. The vessel shrinking was achieved for:

- the selective photothermolysis of intraluminal Hb, in extraluminal procedure on vasa venarum Hb, - direct contact of the optical fiber on collagen of the vessel wall.

The treatment is cost effective because the low cost of the disposable micro optical fibers (Eufoton Italy -FTF devices system)