



Mitchel P. Goldman, MD
Medical Director
La Jolla Spa MD
La Jolla, CA USA



Douglas M. Keel, DO
La Jolla Spa MD+
La Jolla, CA USA

Facial Telangiectasia and Facial Rejuvenation

Background

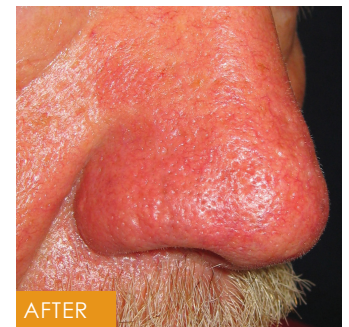
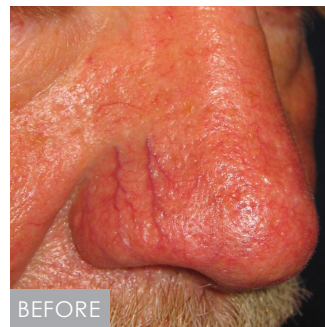
Both pulsed dye lasers (PDL) and Nd:YAG lasers have been used to treat various aspects of photo-aging, including discrete telangiectasias, diffuse redness, generalized dyschromias, and facial rhytids. When used alone, each individual laser has significant drawbacks, which limit its usefulness. PDL is effective in treating vascular lesions, with the main drawback being transitory purpura and limited depth of penetration. Nd:YAG photo rejuvenation takes advantage of the deeper tissue penetration and lack of purpura for vascular lesions, and generalized heating of the dermis to stimulate collagen remodeling. The main drawback of Nd:YAG treatment is the need for higher fluences which limits patient tolerance, and in the case of treating telangiectasias, has led to increased thermal damage and depressed scarring.

The use of dual sequential wavelength treatment has been suggested as a way to limit the side effect profile of each laser, while increasing the efficacy for treating vascular lesions. The PDL wavelength converts hemoglobin to methemoglobin followed by the Nd:YAG wavelength which is highly absorbed by methemoglobin. This allows a lower effective Nd:YAG fluence, limiting collateral thermal damage.

The Laser

The Cynergy laser employs a powerful Pulsed Dye Laser with variable pulse durations of 0.5, 2, 6, 10, 20, 40 msec, and spot sizes from 5 to 12 mm. The second wavelength is a Nd:YAG

1064 nm laser with variable pulse durations from .3 to 300 msec, and spot sizes from 3 to 15 mm. The lasers may be used individually as a PDL or Nd:YAG, or they may be combined in the "Multiplex" mode. The multiplex mode is used with a 7 or 10 mm spot, and fires the PDL first, followed by a delay that is programmable from short to extended, and finishes with the Nd:YAG pulse. The entire laser is under one hood with an intuitive touch screen interface. External cold air cooling is required during treatment using the SmartCool[™] system.



Nasal Telangiectasias before (left) and after one treatment (right) using the Cynergy laser, Multiplex mode, 7 mm spot, PDL 7 J/cm², 20 msec pulse duration, short delay, Nd:YAG 50 J/cm², 20 msec pulse duration, and SmartCool[™].

Methods

Facial and Perinasal Telangiectasias

Treatment consists of choosing a non-purpuric PDL setting, a short delay between lasers, and effective Nd:YAG fluence. The best settings produce transient blue blanching of the vessel caused by methemoglobin formation, followed by vessel constriction and blanching. Treatment consists of using the Cynergy laser with 7 mm spot in multiplex mode. PDL settings are 6-8 J/cm², 10-20 msec pulse duration, short delay before Nd:YAG settings of 40-60 J/cm², 15-20 msec pulse duration, and cold air cooling of 3-6. Pulses are delivered along the course of the vessel in a non-overlapping manner.

Facial Rejuvenation

Treatment consists of using the Cynergy laser with 10 mm spot in the multiplex mode. Test spots to determine the PDL treatment threshold are performed using the PDL only at 6-10 J/cm²,

10 msec pulse duration until purpura is achieved. The multiplex PDL settings are set at 1 J/cm² below the purpuric treatment threshold because the goal is "no patient downtime". The delay between lasers is set to long, and the Nd:YAG settings are 35-50 J/cm², 50 msec pulse duration based on patient tolerance. Treatments are performed once a month for 3-5 months, and delivered in conjunction with SmartCool™ cold-air cooling set on a fan speed of 3.

Results & Conclusions

The multiplex feature of the Cynergy laser provides no downtime facial rejuvenation for the treatment of the most common signs of photo-aging. The individual lasers enable familiar treatment settings for the experienced laser surgeon, and the advanced multiplex setting shows potential to lower the side effect profile, and increase the efficacy of commonly treated photo-aging conditions.

Bibliography

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