

Nd:YAG Laser Treatment for Various Vascular Lesions

Jasmina Kozarev

Dermamedica Modern Laser Institute, Serbia

SUMMARY

Introduction: Conventional therapies such as sclerotherapy and RF surgery for the treatment cutaneous vascular anomalies have demonstrated efficacy with albeit with side effects. New laser systems offer greater potential to treat difficult lesions. The need for specific treatment guidelines is consistent in every day practice. Nd:YAG laser has recently been used for a wide range of options in the treatment of different vascular lesions, from easy to difficult.

Objectives: This presentation describes basic vascular and tissue interactions in the Nd:YAG laser treatment of vascular lesions and prepares a guide for clinical use. The author established a sequential, step-by-step algorithm for the safe, effective, and reproducible laser treatment of various types of vascular lesion. With the rational manipulation of specific variables, such as pulse duration, fluence and spot size in a logical, stepwise manner, many challenging vascular lesions were successfully treated. The crucial final step was to achieve a controlled amount of energy delivered to the tissue.

Methods: Within 3 years, 160 congenital and acquired vascular lesions of various types and anatomic sites were evaluated for vessel size, depth and color. An algorithm incorporating these characteristics was employed to determine laser parameter settings. All analyzed vessels were treated using a long-pulse Nd:YAG laser. Epidermal cooling was achieved with cold air cooling. In many deep vascular lesions, chromophore absorption is so great that a precooling process before cold air cooling is mandatory both preoperatively and postoperatively.

Results: Within 12 months of follow-up, 80% of treated areas demonstrated a 50% or greater resolution after a single treatment session, with complete clearance shown in 25%. Only minimal and transient side effects were observed. Of note, 85% of areas on the face and 63% of areas on the extremities showed a 50% or greater resolution after one treatment.

Conclusion: Various challenging congenital or acquired cutaneous vascular anomalies may be safely reduced or cleared with the use of a long-pulse Nd:YAG laser system using a proposed algorithm-directed technique. It is evident that lasers have been used increasingly as an alternative to surgical methods in the treatment of congenital and acquired vascular lesions.

Reduction of Purpuric Reactions and Long-lasting Erythema after QX MAX Laser Treatments in Pigmented Lesions and Tattoo Removal with a New Vasoconstrictor Distance Gauge

Pablo Naranjo García, Rodolfo López Andriño

Clínica Elite Láser, Madrid, Spain.

SUMMARY

Excellent results are usually obtained in pigmented lesions and tattoo removal treated with the QX MAX® KTP laser (Fotona's Q-Switched laser) on light phototypes. However, the high absorption by intradermal hemoglobin at this wavelength enables purpuric reactions and an excessive inflammatory process occurring during the treatment, and also increases the risk of long-lasting erythema, post-inflammatory hyperpigmentation and other adverse effects. Q-Switched laser systems are based on photomechanical effects in target chromophores. Delivery of very short pulse durations (nanoseconds) enables fragmentation of the pigments with minimal damage to the surrounding tissue. In this study, we applied a compressing distance gauge prototype that creates superficial vasoconstriction by direct compression of coated lens through the skin during the laser beam. QX MAX KTP laser treatments with this new compressing distance gauge were applied to 10 patients who wanted to remove their pigmented lesions and tattoos and another 10 treatments with a standard distance gauge (without compression) were applied to the same patients in other areas to remove the same type of pigments. Evaluation of common secondary effects like purpuric reactions and vasodilatation/erythema were performed immediately before and after those treatments in both groups of patients (regular vs prototype handpiece) with color echo-doppler and mexameter systems. This technology enables one to minimize or even prevent adverse effects like purpuric reactions or long-lasting erythema in pigmented lesions and tattoo-removal treatments, thereby reducing recovery time and the risk of more serious adverse effects.

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