

LONG-PULSED Nd:YAG LASER-ASSISTED HAIR REMOVAL IN PIGMENTED SKIN: A Clinical & Histological Evaluation

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Introduction: The clinical results achieved by laser hair removal systems since 1995 constitute an impressive, but nonetheless essentially qualified success. None of the currently approved systems can yet be said to induce permanent hair loss. At best, a significant delay in the regrowth of unwanted hair for many patients can be achieved. Because follicular melanin is the intended chromophore for laser epilation, the treatment of darker skin phototypes remains problematic due to the absorption of laser energy by overlying epidermal melanin. As wavelengths increase from 630 nm to 1100 nm, epidermal melanin absorbs progressively less radiant energy. At the far end of this scale, the 1064-nm Nd:YAG laser can penetrate from 5 to 7 mm into the dermis, depths more than sufficient to reach the base of the bulb. Thus, the use of a long-pulsed Nd:YAG laser would be expected to produce sufficient follicular injury with less epidermal damage in patients with pigmented skin. In addition, it would be expected that significantly fewer instances of crusting, blistering, purpura, dyspigmentation and other adverse epidermal side effects would occur with 1064nm Nd:YAG laser irradiation.

Materials & Methods: A series of three long-pulsed (50ms) 1064nm Nd:YAG laser treatments were delivered on a monthly basis to 20 patients with skin phototypes III-V. Patients returned for follow-up examinations at 1, 3, and 6 months after the final treatment sessions. During each treatment and follow-up visit, photographic and clinical evaluations were documented. Histologic specimens were obtained at baseline, immediately after the initial laser treatment, and at 1 and 6 months postoperatively.

Results: Significant hair reduction was seen after each of the three treatment sessions (70-90% hair reduction). Prolonged hair loss was observed 6 months after the final laser treatment. Side effects included mild treatment pain and rare vesiculation/transient pigmentary alteration without fibrosis or scarring. Histologic tissue changes mirrored clinical response rates with evidence of selective follicular injury without epidermal disruption.

Conclusions: The long-pulsed 1064nm Nd:YAG laser is a safe and effective method to effect long-term hair reduction in patients with darkly pigmented skin.

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