

CASOS CLÍNICOS - ODONTOLOGÍA

TREATMENT OF MELASMA WITH Q-SWITCHED ND:YAG ASSOCIATED WITH PHOTOBIMODULATION WITH AMBER LED: CASE REPORT

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Introduction: Melasma is a chronic, relapsing facial hypermelanosis of multifactorial etiology, prevalent in Fitzpatrick skin phototypes III–VI. Beyond epidermal hyperpigmentation, its pathophysiology involves dermal alterations such as solar elastosis, basement membrane disruption, increased dermal vascularization, and a chronic inflammatory microenvironment. The Q-switched Nd:YAG laser, particularly at low fluence, provides selective subcellular photothermolysis, fragmenting melanosomes. Amber light photobiomodulation (PBM) has shown anti-inflammatory, biostimulatory, and vascular-modulating effects. In this sense the combination of Nd:YAG laser and PBM may yield synergistic benefits: the Nd:YAG laser directly targets hyperpigmentation, while PBM optimizes the tissue microenvironment, modulates inflammation, and promotes dermal homeostasis. **Objective:** To report the clinical outcomes of melasma treatment using a Q-switched Nd:YAG laser combined with amber PBM. **Methodology:** A 46-year-old female, phototype IV, with melasma in the posterior maxillary region refractory to topical agents, underwent a combined

protocol over 8 weeks. Four Nd:YAG sessions (ÔMER, Medical San, Brazil; 1064 nm, 2.4 J/cm² fluence, 4 mm spot, 6 Hz, four passes) were performed biweekly, each immediately followed by one PBM session (Elite, DMC, Brazil; amber LED cluster in direct contact, 7 minutes, radiant exposure 5.25 J/cm²). During the intervening weeks, two additional PBM sessions were performed per week. In total, 4 Nd:YAG sessions and 12 PBM sessions were completed. Results: Treatment achieved an estimated 66,48% reduction in the Melasma Area and Severity Index, reducing from 10,8 to 3,62. Also, the skin texture was improved, residual erythema was decreased, and no adverse effects was found. PBM appeared to potentiate laser outcomes by modulating vascularization and local inflammatory responses. Conclusion: The combination of Q-switched Nd:YAG laser and amber PBM seems to be safe and effective for melasma, suggesting synergistic action on multiple pathophysiological targets, particularly in higher phototypes. Further studies with robust design, such as randomized controlled trials are needed to demonstrate efficacy.

Palavras-chave: : melasma; photobiomodulation; nd:yag laser.