INPLASY

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The clinical effects of diode laser on gingival hyperpigmentation: A meta-analysis

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ADMINISTRATIVE INFORMATION

INTRODUCTION

Review question / Objective To determine the exact role of diode laser in gingival hyperpigmentation.

Condition being studied The application of diode laser for patients with gingival hyperpigmentation.

METHODS

Participant or population The patients with gingival hyperpigmentation treated with or without diode laser.

Intervention Diode laser therapy.

Comparator Diode laser therapy VS Er:YAG, Electrosurgery, Sieve Method, Cryosurgery, CO2 Laser, Ceramic soft tissue trimming bur, Scalpel, Ozonated oil.

Study designs to be included Randomized controlled trial.

Eligibility criteria The following inclusion criteria were established for screening: (1) randomized controlled study (RCT) ; (2) gingival hyperpigmentation diode laser intervention test ; (3) available raw data of target parameters. At the same time, the exclusion criteria are as follows: (1) non-RCTs ; (2) repeated publication ; (3) no English full text ; (4) the original data of gingival hyperpigmentation in each study group were insufficient ; (5) papers published more than ten years ago ; (6) non-gingival hyperpigmentation patients ; (7) basic science or animal experiments ; (8) study protocols, comments, reviews, case reports, or conference summaries ; (9) full text cannot be tracked.

Information sources Globally recognized online databases, including Pubmed, Embase, Web Of Science, and Cochrane Central.

Main outcome(s) To estimate the relative impact of the diode laser, we calculated the combined standard mean difference (SMD) of the relevant 95 % confidence interval (CI) of the Dummett-Gupta oral pigmentation index (DOPI)、visual analog scale(VAS) and wound healing index(WHI). The quantitative synthesis was manipulated based on the mean values and SDs.

Quality assessment / Risk of bias analysis The quality assessment was accomplished using the Cochrane risk-of-bias assessment tool. The funnel plot's symmetry was utilized to assess publication bias.

Strategy of data synthesis We calculated the pooled standardized mean deviation (SMD) of the associated 95% confidence intervals (CIs) for the primary outcomes. Quantitative pooled results were processed based on mean and SDs, and data were analyzed according to STATA software, with $I2 > 50\%$ considered heterogeneous, with the presence of heterogeneity selecting a random-effects combined effect size and the absence of heterogeneity selecting a fixed-effects combined effect size.

Subgroup analysis A subgroup investigation was conducted for further stratified analysis to reveal potential factors that may influence the primary outcomes—mainly based on the surgical types, laser type, country, and publication time.

Sensitivity analysis Sensitivity analyses were conducted using STATA software to reflect the sensitivity of the article by the change in effect size after deleting one of the articles.

Country(ies) involved China.

Keywords Diode laser; Gingival hyperpigmentation; Meta-analysis.

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