

Insufficient evidence that pulsed Nd:YAG laser treatment is superior to conventional nonsurgical therapy in the treatment of periodontal disease

A critical summary of Slot DE, Kranendonk AA, Paraskevas S, Van der Weijden F. The effect of a pulsed Nd:YAG laser in non-surgical periodontal therapy. *J Periodontol* 2009;80(7):1041-1056.

Mark Thomas, DMD; Kathy Shafer, DMD

Systematic review conclusion. There is no evidence to support the superiority of the neodymium:yttrium-aluminum-garnet (Nd:YAG) laser over traditional modalities of periodontal therapy.

Critical summary assessment. The authors conducted a review of MEDLINE/PubMed and the Cochrane Central Register of Controlled Trials and found no evidence that the Nd:YAG laser offers any benefit over scaling and root planing (SRP).

Evidence quality rating. Poor.

Clinical question. What is the effectiveness of a pulsed Nd:YAG laser in the treatment of chronic periodontitis (either as a monotherapy or as an adjunct to conventional nonsurgical therapy) in improving clinical outcomes as compared with conventional nonsurgical therapy?

Review methods. The investigators searched two online databases for English-language studies reporting use of the Nd:YAG laser in the initial treatment of periodontitis, either as a monotherapy or as an adjunct to standard nonsurgical therapy. Search terms included key words associated with the Nd:YAG laser and related to various clinical outcome variables, such as inflammation, plaque, probing depth and attachment level. The investigators conducted a search for articles published through January 2009. They

included only randomized controlled trials in which researchers compared the Nd:YAG laser with conventional nonsurgical therapy. Two independent reviewers assessed all titles and abstracts for quality and heterogeneity, resolving any disagreements by means of discussion.

Main results. The reviewers identified 285 PubMed and 38 Cochrane articles; after removing duplicate articles, they had 296 titles and abstracts to screen. Screening resulted in 11 full-text articles, three of which the reviewers excluded because of methodological issues. This resulted in the inclusion of eight studies with a cumulative sample of 166 participants. The design of the studies was heterogeneous, and the reviewers estimated the risk of bias to be high in seven of the eight

studies. All studies involved randomization, but the method used often was unclear. Given the short follow-up periods, the investigators used only surrogate variables (that is, those of which the patient is normally unaware, such as pocket depth), as opposed to variables of direct interest to the patient (such as tooth loss). Two studies did not provide sufficient data to allow between-group comparisons. In only one study did investigators assess gingival recession. The use of the laser offered no advantage over conventional nonsurgical therapy, and results from one study actually showed scaling and root planing to be superior to Nd:YAG laser therapy. Results from three studies showed some evidence that the laser therapy yielded results similar to those produced by standard nonsurgical therapy in reduction of inflammation and probing depth.

Conclusions. Current evidence shows no benefit of the pulsed Nd:YAG laser over conventional nonsurgical therapy in the initial treatment of periodontitis.

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Dr. Thomas is the division chief, Division of Periodontics, College of Dentistry, University of Kentucky, Lexington. He also is an evidence reviewer for the American Dental Association. Address reprint requests to Dr. Thomas at the College of Dentistry, Chandler Medical Center, University of Kentucky, Lexington, Ky. 40536-0297, e-mail "mvthom0@uky.edu".

Dr. Shafer is a clinical assistant professor, Department of Restorative Dentistry, School of Dental Medicine, Southern Illinois University, Alton. She also is an evidence reviewer for the American Dental Association.