

# Clinical applications of Er:YAG lasers in periodontal therapy

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Using lasers for the treatment of periodontal disease is particularly indicated for patients with debilitating medical conditions. By receiving laser periodontal treatment, patients often have no need for local anesthesia in phase I of periodontal therapy. In this article, the potential of the new Er:YAG laser (LiteTouch, Syneron) was assessed in various periodontal procedures including gingivectomy, reduction or elimination of perio pockets, flap surgery and crown lengthening. The Er:YAG laser is safe and more controlled when used to cut soft and osseous tissues but does not provide good haemostatic properties in aggressive periodontal surgery.

## Introduction

The use of lasers in clinical dentistry is becoming more commonplace. It is even suggested that clinical dentistry is undergoing a paradigm shift thanks to advanced laser technology.<sup>1</sup> This is particularly thanks to the Erbium family of lasers, including the Er:YAG (2940nm) and Er,Cr:YSGG (2780 nm) which have very similar properties, and provide excellent absorption in the water of soft and hard tissue and hydroxyapatite.<sup>2,3</sup> Erbium lasers contour osseous structures without damaging tooth structure by using a cooling water spray for hard tissue procedures that can be switched off for soft tissue procedures.<sup>4</sup>

Different types of lasers have been used in non-surgical periodontal treatment as an alternative or as an

adjunct to mechanical scaling and root planing.<sup>5-8</sup> A 5-year clinical study indicated that Er:YAG laser-assisted periodontal flap surgery on single-rooted teeth results in greater periodontal depth reduction and gains in clinical attachment as compared to conventional treatment with the modified Widman flap procedure.<sup>9</sup>

Clinical studies and research indicates that Erbium lasers are indicated for all oral tissues and absorption in the water of soft and hard tissue. Erbium lasers have the ability to remove caries in enamel and dentin with greatly reduced local anesthetic or without anesthetic at all.<sup>2,10-12</sup> The Erbium laser light can be used in the periodontal field as an adjunct to conventional therapy (phase I)<sup>13,14</sup> or as a tool in periodontal surgery,<sup>9,17</sup> because the periodontium consists of both soft and hard tissue. It provides dentists with the capability to perform a wide range of clinical procedures in periodontics with improved patient outcomes, less trauma, reduced postoperative complications and in some cases, again without the need for LA. The Er:YAG laser photons distinctively target the chromophore of molecular water within calcified tissue, but not the calcified structure itself.

In 2006, Syneron Medical in Israel developed the new LiteTouch Er:YAG laser for dental use. In this unit, the laser is wholly contained within the handpiece, negating the need for a fiber-optic delivery system.

The purpose of this article is to describe the use of this Er:YAG laser in various periodontal

## **Reference:**

Peng TK. Clinical Applications OF Er:YAG Lasers in Periodontal Therapy. Australasian Dental Practice. 2008. Sep/Oct.