

# A modern approach for treating peri-implantitis with Er: YAG Laser



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## Introduction

The number of dental implants is growing each year and proportionally, the number of biological complications is increasing. Among them, peri-implant disease is the most common cause of implant loss after loss of osseointegration. Microorganisms residing on the surfaces of implants and their prosthetic components are the primary etiologic factor for peri-implantitis.

Thus, nowadays the efforts to treat peri-implantitis by achieving a complete implant surface disinfection has become the periodontists main challenge.

## Laser Treatment

Although the etiologies of Peri-Implantitis are varied and often combined, the primary treatment should include removal of deposits, calculus and granulation tissue, but most important is to eradicate the microorganisms that contaminates the implant surface and the surrounding tissue.

The current different treatment modalities manage to remove the granulation tissue and other infected deposits but do not fully manage to decontaminate the treated area and implants, especially without harming the implant surface.

Recently, the dental laser Er:YAG

technology emerged as an alternative therapy against different oral pathogens causing peri-implantitis, offering good options for successful Peri-Implantitis treatment:

- Ablation of the granulation tissue, also in areas difficult to reach by conventional tools and it can be performed without causing any damage to the implant surface and the adjacent tissues.
- The Implant surface decontamination can be performed without causing any thermal side-effects to the tissue and the surrounding bone.
- Bone surgery, when needed, can be performed with the laser in a very minimally invasive mode, precise and selective, while maintaining tissue integrity and vascularization.
- The Er:YAG laser can perform osseous contouring accompanied by a cooling water spray that can be switched off for soft tissue surgery.
- Dental lasers' increases tissue regeneration success rate, due to the lasers bio-stimulation effect.

## Er: YAG LASER

The Er:YAG Laser therapy, is the alternative promising approach with a growing number of well documented clinical evidence. The Er:YAG laser is based on the laser

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light unique properties: emitted photons with the same wavelength (monochromaticism), that oscillate in the same phase (coherence), and ray lights that are all parallel and aligned towards the same direction.

The laser apparatus consists of: a lasing medium, a pumping system and a laser resonator. The laser medium is the material that emits the photons and for Er:YAG Laser is an erbium medium doped yttrium, aluminium garnet crystal that emits energy at a wavelength of 2940nm.

This wavelength has an affinity for water. Since soft and hard oral tissues contain water, the laser is suitable for both hard and soft tissue surgery: ablation, cutting and for decontamination with excellent efficiency. The "Laser-in-Handpiece™" in which the technology houses the entire laser mechanism within a small sized

chamber and so does not require a delivery mechanism, permitting direct energy delivery to the soft tissue and bone.

## Conclusions

The Er:YAG Laser technology is very well documented and evidence based for its benefits, efficiency and safety, making it now, the treatment of choice also for peri-implantitis.

(Case report of Dr Dahan)