

## Editorial

# Erbium Lasers and Re-osseointegration of Teeth and Implants

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Today, periodontitis and peri-implantitis still are being challenging, widespread and progressive diseases. Prevalence of periodontal disease in US adult's population is reported to be 44.7%. Similarly, rate of peri-implantitis is high, around 20-25%. Several studies has been done focusing on etiology and mechanism of both periodontal and peri-implant disease. Once the "attachment" of periodontium to tooth or implant surface is lost -primarily due to bacterial invasion- the problem begins. Various techniques have been implemented for purpose of root or implant surface decontamination for final goal of "re-osseointegration". This term refers to attachment of cells namely fibroblast or osteoblast which was previously deprived from their original position relating to tooth or titanium surface. The diseased surface should be treated in a way to provide a biologically favorable environment for cells to migrate again. So far there is no gold standard treatment for peri-implantitis. Ability to regenerate periodontal structure is still debatable.

Lasers from Erbium family are highly absorbed in water and hydroxyapatite, therefore can be absorbed effectively on tooth tissues. Also they have intrinsic detoxifying properties, which makes them a good candidate for periodontal therapy. Recently attempts have been made on application of Erbium family lasers (Er: YAG, Er, Cr: YSGG) on root dentin and titanium surfaces and subsequent effect on fibroblast attachment. Further studies should be done especially with different laser protocols, as different settings of lasers can have different biologic effects.

Promising results of antibacterial and cell adhesion of laser therapy on dentin and titanium discs, gives the impression of potential application of laser for treatment of such conditions. More in-vitro, animal or randomized clinical trials are needed to further assess the effect. For example, to the best of our knowledge, no randomized clinical trial has been published in United States on laser treatment of peri-implantitis.

In future, laser therapy (alone or as adjunct) will be part of routine periodontal practice. This would be bolded in field of periodontology, as the current approaches are not optimal. Ability to control periodontal disease, especially around dental implants is still controversial. Bone regeneration studies and new attachment procedures have shown promising bone formation. However, absence of true attachment and formation of long junctional epithelium between newly formed bone and tooth or implant surface is still a problem.

Field of periodontics is still waiting for Tsunami of cases of peri-implantitis. Early signs can be observed noting the increasing number of referred peri-implantitis cases. There has been a tremendous grow in number of dental implants being placed by different dental specialties and general practitioners, with new implant systems. In future, it is expected that patient pool of periodontists would be mostly cases referred for treatment of peri-implantitis of implants placed 15 years ago, rather than placing an implant. It can be discussed in another way that patients and general practitioners would insist and try more to save a natural tooth with a problem, like an involved furcation, rather than implant replacement.

Therefore the field of periodontology should be prepared for a shift in clinical perspective of clinicians and general population toward saving a tooth. Finding a predictable way for bone or gingival re-attachment combined with regenerative therapeutic approaches should be periodontics' highest priority in current research and Erbium family lasers are potential agents for this purpose.