Peri-implantitis Review

A quarterly review of the latest publications related to the study of Peri-implant inflammation and bone loss

A service of Dr. Aron Saffer and the Jerusalem Perio Center to provide useful, up-to-date information concerning one of the most complex and troubling problems facing dental professionals today.

Peri-implantitis treated with Lasers: What Does the Literature say?

Something that looks quite promising is the treatment of Peri-implantitis with Lasers. Inflammation around dental implants is caused by bacterial plaque and certainly a large contributing factor to the epidemic increase of mucositis and peri-implantitis is the patient’s inability to effectively clean around the implants. This is compounded by the difficulty of the dental professional to clean and maintain the dental implant, especially when the destructive inflammatory process has already found its way to the threads of the implants. Proper removal of infected tissue and detoxification of the implant surface is essential and the dental laser may be well-suited for that task. While the ultimate goal of Peri-implantitis treatment is to regenerate the bone lost around implants and for that bone to re-integrate with the implant surface, a more modest goal of arresting the disease would be a welcome outcome. Currently there have been many reports and claims by laser manufacturers declaring it’s effective use around infected implants. Below are 4 recent publications reviewing the latest studies in peri-implant laser therapy. The articles are taken from a wide range of respected peer-reviewed dental and medical laser journals and have no affiliation or sponsorship by the laser manufacturers.

*The claim, in my MANY years of professional clinical experience..., generally means I have been doing it the same way incorrectly for a long time! There is no substitute to Evidence Based Clinical Practice*.  

Professor Klaus Lang - Editor in Chief - Journal Clinical Oral Implant Research
Comparison of The Efficacy of the Different types of Lasers for the Treatment of Peri-implantitis: A Systematic Review


The purpose of the study was to evaluate the efficacy of the Nd-Yag, Er-Yag, CO₂, Diode, Er,Cr: YSGG (BioLase) – laser systems in the surgical and non-surgical treatment of peri-implantitis

Medical electronic search 812 studies identified in initially search

13 studies met the criteria for inclusion (proper control group, 6 month follow up)

Results

Meta analysis not possible due to high heterogeneity of the data collected

- ND-Yag- No human studies evaluated the effect on peri-implantitis
- CO₂ : Short term effect- Accelerated Healing 
  Long Term effect- No different than control
- Diode: One study –case report only- No Control
- Er,Cr:YSGG- Case report only –No Control
- Er:Yag- Multiple studies by 2 groups of investigators (Schwartz et al and Renvert/Perrson )- Both groups demonstrated improved healing initially, but limited benefits past six months without additional procedures such bone augmentation and GBR

Conclusion: While short term data for Er:Yag lasers looks promising, there is insufficient data for any conclusive long term benefits. More long term randomized controlled trials needed.
A Systemic Review and Meta-Analysis of the Effects of Various Laser Wavelengths in the Treatment of Peri-implantitis


The purpose of the study was to determine whether laser therapy as monotherapy or as an adjunctive therapy is an effective treatment modality for patients with peri-implantitis.

137 studies initially identified
6 studies were chosen for review based on inclusion criteria (prospective controlled study, more than 10 patients, follow up greater than 6 months)

Results:
Due to limited data meta-analysis possible only for Er:Yag Laser as opposed to CO₂ and Diode Lasers
After 6 months studies revealed:
• overall reduction in inflammation
• Did not reveal reduction in pocket depth
• Did not reveal gain in clinical attachment

Conclusions:
Based on the limited data, there was a reduction of mucosal inflammation. However, the superiority of laser treatment for peri-implantitis vs. other treatment methods could not be identified.

The Effects of ER: YAG Laser on the Treatment of Peri-implantitis – A Meta-Analysis of Randomised Controlled trial


The purpose of the study was to investigate the efficacy and safety of Er:YAG laser (ERL) compared to subgingival mechanical debridement (SMD) for the treatment of peri-implantitis.

123 studies initially identified
4 studies were chosen that met the inclusion criteria for the review (randomized control study, more than 20 patients and 6 months follow up)

Results:
After 6 months studies revealed
• There was a significant difference in pocket depth reduction compared to subgingival mechanical debridement
• No differences found in Clinical Attachment level gain or gingival recession
• Low methodological quality for all four included studies and limited number of studies, may prevent from obtaining unbiased and reliable results

Conclusions:
• No clinical recommendations can be suggested due to poor quality of studies
• Future long-term RCTs are needed to clarify the effectiveness of Er:YAG laser compared to SMD.
Laser Treatment of Peri-Implantitis: A Literature Review

The purpose of the study was review the current literature over the past ten years for the use of lasers in treatment of peri-implantitis,

A systematic electronic search identified 125 articles.
15 articles were selected for analysis
Study reviewed Er:Yag, Diode and CO\textsubscript{2} lasers
Studies included case reports with as few as one patient and 3 month follow up

Results:
Er:Yag lasers had the most reliable documentation.
Lasers had demonstrated initial positive data, but after 6 months there was varying degrees of relapse.
Failure in controlling the plaque index in most of the studies can be a serious confounding factor that led to inconsistencies in the results.

Conclusions:
Lasers showed an initial positive outcome after 6 months. Longer periods of follow-up revealed these results to be unstable.
Future studies should have a longer period of examination and follow-up for at least one year and plaque control policies should be strictly followed.

Welcome any questions or comments: please send correspondence to dr-sapir@jerusalemperio.com