

Treatment Guidelines for

Dental Peri-Implantitis

The following guidelines pertain to the use of LIGHTMED's Er:YAG SAPPHIRE Dental Laser for performing Peri-implantitis procedures.

All information presented herein has been compiled based on recommendations from experienced dental professionals, and is intended to serve as general guidance only. While the SAPPHIRE Dental Laser offers a highly effective and minimally invasive approach for soft and hard tissue management, LIGHTMED strongly advises all clinicians who are new to this technology to obtain formal professional training and to gain proficiency in the currently recommended laser-assisted treatment techniques prior to clinical implementation.

Q: What is Peri-Implantitis?

Peri-implantitis is an inflammatory condition that affects the tissues surrounding a dental implant. It involves the loss of bone around the implant due to infection, causing inflammation of the soft and hard tissues. Peri-implantitis can lead to implant failure if not treated promptly, and its symptoms include redness, swelling, or bleeding of the soft tissues, discomfort, and suppuration around the area. Treatment typically involves cleaning the surface of the implant and surrounding tissues, antibiotics, and, in some cases, surgical intervention and grafting when possible.

Less invasive laser therapy is increasingly being used for the treatment of peri-implantitis due to its precision and bactericidal effects. It can be an effective option on its own or when used in conjunction with the aforementioned treatments such as mechanical debridement.

Indications for Using Er:YAG Laser Treatment for Peri-Implantitis

- 1. Soft Tissue Decontamination:** The Er:YAG laser is effective for the removal of diseased soft tissues around an implant. The laser's ability to precisely target soft tissue makes it useful for removing inflamed or infected tissues without damaging the surrounding healthy tissue.
- 2. Implant and Bone Decontamination:** The Er:YAG laser can be used as an alternative to traditional surgical approaches and when a closed approach is indicated.
- 3. Non-Surgical Treatment:** The Er:YAG laser can be used as a non-invasive alternative to traditional surgical debridement, and the debridement is performed through a closed approach. It assists in cleaning the implant surface and improving the overall prognosis.
- 4. Promoting Healing:** The laser's ability to stimulate soft tissue regeneration and promote healing can be advantageous in restoring tissue health around the implant.
- 5. Adjunct to Mechanical Debridement:** The laser is often used as an adjunct to mechanical debridement with traditional hand instruments, such as curettes. This enhances the decontamination of the area, including both soft and hard tissues, and the implant surface.

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How to Perform Peri-Implantitis Treatment Using an Er:YAG Laser

1. Assessment and Diagnosis

- Initial Evaluation – Perform a thorough clinical examination, including probing depths, bleeding on probing, suppuration, plaque and calculus deposits, and mobility. Identify any possible prosthodontic failures such as an ill-fitting crown, broken screw or inadequate sitting followed by a radiographic examination to confirm evidence of bone loss.
- Confirm Diagnosis – Confirm the presence of peri-implantitis (bleeding, deep probing depths and radiographic bone loss) using clinical examination and x-rays.

2. Preparation of the Site

- Local Anesthesia – Proceed with local anesthesia to ensure the patient remains comfortable during the procedure.

3. Use of Er:YAG Laser for Tissue Decontamination

- Set the laser to the appropriate settings. This typically includes using lower energy levels to achieve effective decontamination while minimizing heat production to protect the surrounding bone.
- Gently direct the laser's focused energy to remove infected granulation tissue, biofilm, and bacterial debris from around the implant. If necessary, use the laser to clean the surface of the implant to remove biofilm and debris.

4. Post-Treatment Care

- Irrigate the surgical site with saline to flush any remaining debris, and assess the implant and surrounding tissue to ensure proper cleaning.
- Instruct patient to continue oral hygiene instructions with a very soft brush in the surgical area, and avoid the use of interproximal brushes or floss for 7 to 10 days, at the discretion of the surgeon.
- Evaluate the need for anti-inflammatory and antibiotic prescription.
- Schedule follow-up to monitor the healing process.

Sample Recorded Treatment of Peri-Implantitis and Implant Decontamination Using LIGHTMED's Er:YAG SAPPHIRE Dental Laser

Video can be found here: <https://youtu.be/y-BUKL4hDro>

Laser Settings:

- Select "Implant Decontamination" preset parameter on soft tissue of the panel
- Set laser settings to 150mJ (1.5W), 10Hz, Energy 150mJ (1.5W), and Water Level 6
- Use SAPPHIRE Dental Laser Tip ST100 (LIGHTMED SKU #A00921)

Prior to laser treatment, an intrasulcular incision was achieved with a 15C blade and a full-thickness flap raised with a periosteal elevator.

Degranulation and Decontamination of the Peri-Implant Defect:

- Granulomatous tissue surrounding the implant is being removed with the SAPPHIRE Dental Laser
- The laser tip is used in direct contact with the bone to degranulate the area distally, and then medially. It's important to identify the anatomy of the bony defect to avoid overheating the implant and to make sure the laser tip is being aimed at the tissue within the defect.
- Using the tip in a quick "back and forth" motion to avoid overheating, the implant is being decontaminated.
- Always perform these procedures under air cooling and copious irrigation.

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- It's essential to achieve complete degranulation – the video shows the surgeon lasers the area more than once to achieve a very thorough implant decontamination of the bony defect and the implant surface.

Bone Graft and Membrane Placement:

- Previously hydrated bone allograft is packed into defect, making sure to use small amounts at a time, to avoid empty spaces within the bone graft.
- Gauze is used to soak up the heme for a clear view of the surgical field.
- The surgeon proceeds to place a membrane and then stabilizes it by suturing the previously advanced flap, achieving primary closure.

In an open flap peri-implantitis treatment, the coagulation setting is typically not needed. If the practitioner chooses to do so, please refer to the following video link to learn how to achieve a stable blood clot using the Er: YAG SAPPHIRE Dental Laser: <https://youtu.be/izgaVTscPFO>

Laser Settings:

- Select “Coagulation” preset parameter on soft tissue of the panel
- Set laser settings to 30-50mJ (0.5W), 10Hz, and Water Level 0, Air Level 0
- Use SAPPHIRE Dental Laser Tip ST200 (LIGHTMED SKU #A00923)

No irrigation or air cooling is used during the coagulation phase and the laser tip is used with a similar technique – the tip does not directly contact the area, but it moves in a “back and forth” motion that stimulates blood clot formation. A thicker, gelatinous-like blood clot is obtained compared to a naturally formed one.

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