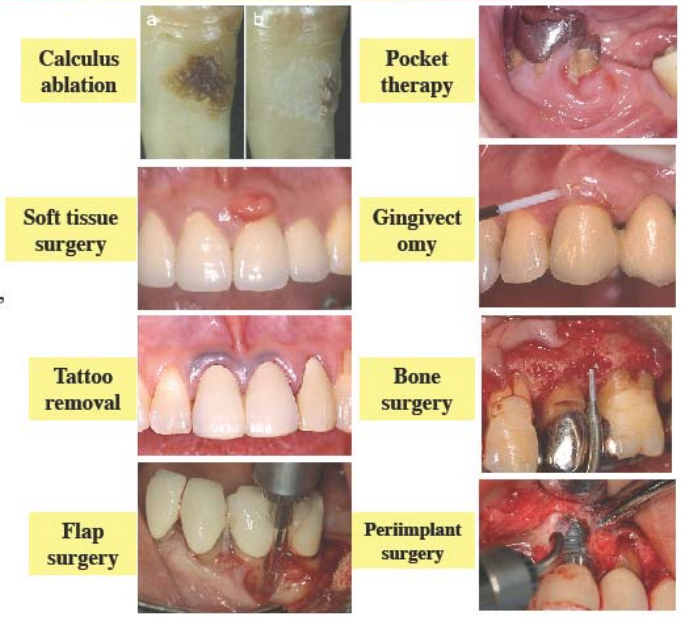
Achievement of tissue regeneration (bone regeneration) in the non-surgical treatment *(Former goal was Treatment of residual pocket after treatment)*

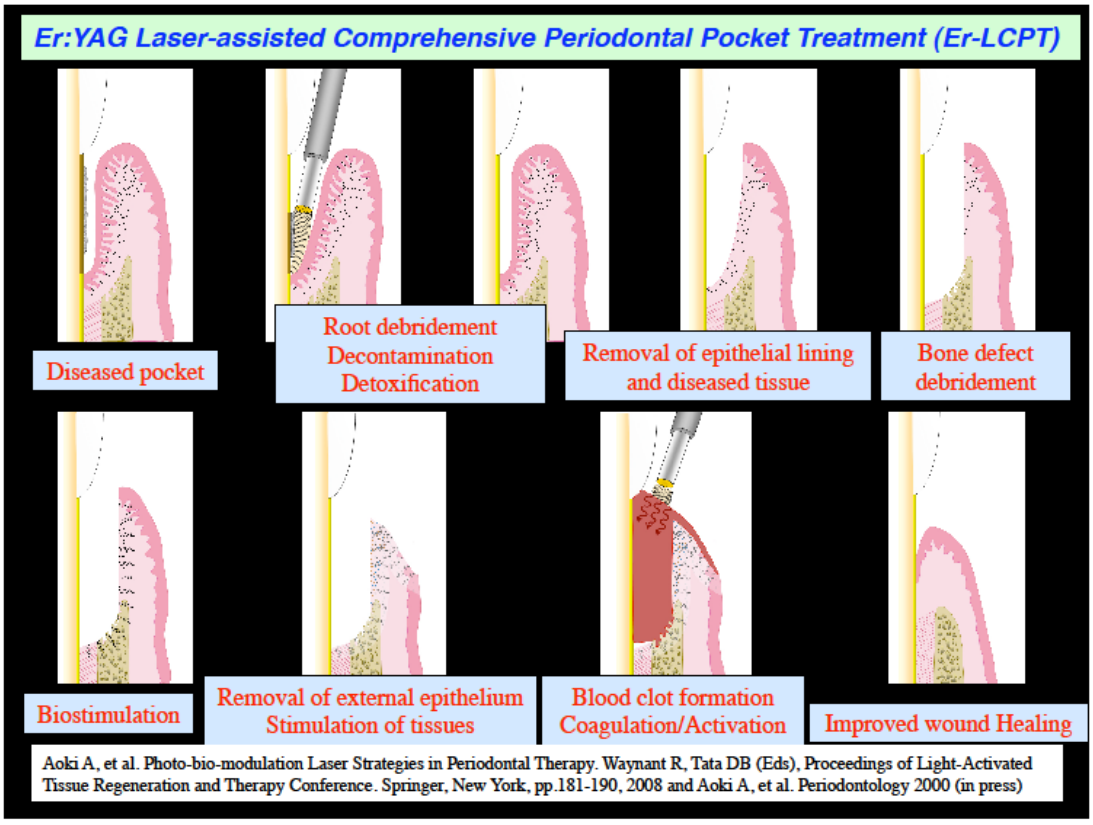
Er :YAG laser in periodontal treatment

- Dual ability of effectively ablating both soft and hard tissues with extremely low thermal side-effects.
- Applicable to various tissues such as gingiva, tooth roots, implants and bone tissue
- One of the most promising laser units for periodontal treatment.

Ishikawa I, et al..
Periodontology 2000, 2009.



Er -LCPT Periodontal disease patients with moderate or more (vertical bone defect depth > 3mm)



Aoki A, et al. Photo-bio-modulation Laser Strategies in Periodontal Therapy. Waynant R, Tata DB (Eds), Proceedings of Light-Activated Tissue Regeneration and Therapy Conference. Springer, New York, pp.181-190, 2008 and Aoki A, et al. Periodontology 2000 (in press)

Er -LCPT

Recurrence periodontal

Before

- Pocket depth at mesial site: 8 mm
- BOP: (+)

Before

- Pocket depth at mesial site: 8 mm
- BOP: (+)

Irradiation

- 40 mJ/pulse, C600F and C400F (Panel 70 mJ, ED 14.2-17.7 J/cm^2/pulse)
- Curved tip with a flat and rounfend
- Water spray
- Local anesthesia

Before

- Pocket depth at mesial site: 8 mm
- BOP: (+)

Immediately after

Before

- Pocket depth at mesial site: 8 mm
- BOP: (+)

3 months

- Pocket depth at mesial site: 3 mm
- BOP: (-)

Severe periodontal pocket

Before

- 58 Y. Male
- PD at DB site: 11-13 mm
- BOP: (+)

Severe periodontal pocket (Er-LCPT)

Before

- 58 Y. Male
- PD at DB site: 11-13 mm
- BOP: (+)

Blood clot coagulation

- 40 ~ 50 mJ/pulse (Panel 80 mJ, ED 14.2-17.7 J/cm^2/pulse)
- Curved tip with a round end (600μ)
- Water spray (-)
- Local anesthesia

Severe periodontal pocket (Er-LCPT)

Before

1 week

- 58 Y. Male
- PD at DB site: 11-13 mm
- BOP: (+)

Severe periodontal pocket (Er-LCPT)

Before (Feb 2008)

- 58 Y. Male
- PD at DB site: 11-13 mm
- BOP: (+)

4Y 4M (Jun 2012)

- PD 2 mm (-), BOP (-)

→ Root coverage procedure

Periodontal Pocket Treatment With Er-LCPT

Before (Feb 2008)

- PD at DB site: 11-13 mm
- BOP: (+)

3Y5M (Jul 2011)

PD 3 mm, BOP (-)

Advantages

① Alternatively, the new auxiliary means of periodontal pocket treatment

② Improve the quality and speed of treatment in combination with mechanical treatment of conventional

③ Decontamination, detoxification, thorough of the diseased tissue curettage, activation of peripheral tissue cells

④ The affected area can be treated close to the surgical procedure in flap-less condition

⑤ Treatment and maintenance of the remaining pocket in pinpoint

Subject patients

Periodontal disease patients with moderate or more （vertical bone defect depth > 3mm）

Experimental group

Er:YAG Laser SRP + Bone defect curettage by Er:YAG Laser
(According to Er-LCPT)

Control group

Conventional SRP

Evaluation item

a. GCF (gingival crevicular fluid) analysis: cytokine measurement
Preoperatively, after 1 week, (2 weeks later), one month (three months)

b. Bacteria test
Preoperative, immediate postoperative, 1 month, 3 months, 6 months, (1 year)

c. Clinical measurements
Preoperatively, after 1 week, (2 weeks later), 1 month, 3 months, 6 months, 1 year