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Gingival Depigmentation with Er:YAG or Nd:YAG Lasers

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Gingival hyperpigmentation may appear unaesthetic to patients with a high lip-line or gummy smile. The traditional means of treating such conditions involves the use of rotary instruments. However, with the use of lasers, pigmented tissue can be ablated more precisely, layer by layer, without bleeding.

Both Er:YAG and Nd:YAG lasers can perform this type of procedure since both wavelengths can ablate gingival tissue efficiently at low power settings that avoid damage to underlying tissues such as the periosteum, bone, root and pulp.

This case presents the results obtained with implementing gingival depigmentation treatment procedures using the following laser parameters:

Parameters:

Laser source	Er:YAG	Nd:YAG
Wavelength	2940nm	1064nm
Pulse duration	1000 μ s (VLP)	100 μ s (MSP)
Pulse Energy	80-100mJ	-
Frequency	10-15 Hz	25Hz
Power	0.8-1.5W	2.5W
Water / Air	Water + air	-

The diameter of the sapphire tip for the Er:YAG handpieces used was 1-1.2mm. A smaller diameter tip end will increase the energy density, which may endanger underlying tissues. For the Nd:YAG laser, a 320 μ m fiber was used for the procedure. The fiber should not be pointed perpendicularly over the pigmented area, as the laser can easily penetrate and damage the underlying tissue. A more horizontal angulation, e.g., about 30 degree, will be safer to the bone and pulp.

The handpiece or fiber tip should be kept in motion. The gingival margin or papilla area should be handled very carefully to avoid causing gingival recession. For most patients, topical or even local anesthesia will be indicated, and there will be no bleeding or pain post-operatively. Patients can brush and eat as usual and the wound will typically heal in 7-10 days.

Er:YAG case:



Pre-op



Immediate post-op



10 days post-treatment

Nd:YAG case:



Pre-op



Immediate post-op
(only upper treated)



10 days post-treatment

