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Laser Alveolar Preservation (LAP)

Dr. Thierry Maleca

Parameters:

Laser source:	Er:YAG, 2940 nm	Nd:YAG, 1064 nm
Pulse duration:	MSP	LP or VLP
Power:	3 W	2-4 W
Frequency:	20 to 30 Hz	10 to 20 Hz
Handpiece:	H14 or H02	Fiber 300 and Genova

Treatment procedure:

Removal of teeth results in both horizontal and vertical challenges to hard and soft tissues. To reduce the loss of alveolar bone to acceptable levels, a laser-assisted dual-wavelength procedure is an effective, noninvasive technique when combined with autologous blood graft. A female patient, 85 years of age, came to our office. We proposed extraction of tooth 14, which was covered partially by gingival tissue, and to add an element to her removable prosthetic. First, soft granulation tissue was vaporized with the LightWalker, followed by curettage of necrotic bone until reaching healthy osseous tissue around the teeth (both steps with Er:YAG). Bleeding occurred and the socket filled with the help of the Nd:YAG laser (3 W, VLP mode, without contact) in order to enhance vasodilatation in the socket.

In the next step, we sought to obtain a stable clot (with thermal effect). For this, Nd:YAG is the appropriate tool because of its high absorption in blood. In the first stage of laser-tissue interaction, when the temperature of the blood reaches 41-46°C, hemoglobin and oxyhemoglobin are modified into methemoglobin. Methemoglobin in turn absorbs Nd:YAG much better – about 4 times more compared to hemoglobin and oxyhemoglobin. With this procedure a stable clot is created along the full height of the socket, which gives a suitable surface to epithelium cells and furthers the repairing process.

Fig. 1: Er:YAG gingival tissue ablation to provide access to the root.

Fig. 2: Extraction.

Fig. 3: Nd:YAG for Laser Alveolar Protocol.

Fig. 4: 24 hours after extraction.