

## Laser Applications in Oral Surgery

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**Abstract.** Oral surgery can be assisted by surgical lasers: diode, erbium, CO<sub>2</sub>, Nd:YAG. The surgical lasers are used in various procedures on oral soft and bone tissues: aesthetic procedures (gingival recontouring, gingival depigmentation); operculectomy; pro-prosthetic surgical procedures (remodeling of mucosa on edentulous sites, dental crown lengthening, frenectomies, vestibuloplasty); excision of gingival or mucosa hyperplasia; peri-implantitis treatment; the removal of small exophytic lesions; the removal of oral benign lesions (ranula, mucocele, pyogenic granuloma, fibrous hyperplasia, epulis fissuratum, hemangioma). For optimum effects at the level of the target oral tissues, the laser energy parameters should be set in relation to the wavelength, the type of intervention, the nature of the inflammatory process (acute-chronic), the tissue penetration depth, tissue pigmentation, and systemic status. The oral surgical procedures performed by surgical lasers are recommended in modern dentistry due to lower risk of soft and hard tissues necrosis, decreased rate of complications, higher patients' compliance (decreased postoperative pain and discomfort) and the acceleration of the healing processes.

**Keywords:** *oral surgery, lasers, incision, ablation, biostimulation*

### Introduction

The comparisons between scalpel oral surgery and laser-assisted oral surgical procedures favor the surgical lasers both in the relation to the intraoperative stage parameters (bleeding, pain, discomfort) and postoperative evolution (pain, discomfort, healing time). The lasers used in oral surgery emit light at specific wavelengths with various effects on the soft and hard tissues related to laser parameters, optical properties of oral tissues, distribution and absorption of laser beam in target area (1) (table I). The surgical lasers interact with the oral soft tissues in relation to pigmentation degree, the water content and tissue thickness, by absorption, reflection, diffusion, transmission (2). For optimum effects at the level of the target oral tissues, the laser energy parameters