

Different lasers vs. conventional technique for second stage surgery

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Background: The surgical exposure of dental implants can be performed using scalpel, punch, or, with less bleeding and postoperative discomfort, laser uncovering. Lasers are becoming widely used due to its beneficial effects regarding sufficient haemostasis, precise incision margin, absence of swelling and pain.

Aim/Hypothesis: The purpose of this study was to compare diode, Er,Cr:YSGG and Er:YAG lasers and conventional scalpel surgery for dental implants exposure with regard to oedema, haematoma, postoperative pain and patients' satisfaction.

Material and methods: The study consisted of 49 dental implants inserted in the lateral mandible, 36 in the study group (12 for diode, 12 for Er,Cr:YSGG, 12 for Er:YAG) and 13 in the control group (scalpel). High power diode laser (LaserHF, Hager&Werken, Duisburg, Germany), was used with following parameters: 975 nm, Fibroma removal program, 5W, continuous mode, spot size of 0.1–0.5 mm. Er,Cr:YSGG (Waterlase MD Turbo, Biolase, USA) was used with Implant Recovery programme (2780 nm, 4.5W, 50 Hz, water 30%, air 15%, H mode). Er:YAG study group (Light Walker, Fotona d.d., Ljubljana, Slovenia) were treated using X-Runner handpiece in QSP mode (2940 nm, 2.4W, 120 mJ, 20 Hz, spray:air 8 : 5), with OPTOflex articulated arm and scanner-ready technology. Control group was treated using scalpel for crestal incision technique with silk sutures. Three days after surgery oedema, haematoma, postoperative pain and patient's satisfaction rate were assessed using VAS for patient's evaluation. After 3 weeks patients were recalled to evaluate delayed postoperative complications.

Results: No significant differences regarding age and gender were observed between the groups. Patients in laser study groups had significantly lower oedema and haematoma scores ($P < 0.05$), according to clinical findings. Patients in study groups reported significantly lower pain and higher satisfaction rate ($P < 0.05$), with slightly better results for Er,Cr:YSGG and Er:YAG lasers. There was no statistically significant difference between 3 examined lasers. After 3 weeks follow-up no postoperative complications or healing complications were found.

Conclusions and clinical implications: Lasers can be used as an effective modality for dental implants exposure, due to precise incision, reduced bleeding and postoperative discomfort.