

Er:YAG laser in dentistry Patients' experiences and clinical applicability

Akademisk avhandling

som för avläggande av odontologie doktorsexamen vid Sahlgrenska akademien vid Göteborgs universitet kommer att offentlig försvaras i föreläsningssal 3, Medicinaregatan 12 E, Göteborg, torsdagen den 1 nov. 2018 kl. 9.00
av

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Avhandlingen baseras på följande delarbeten:

- I. Sarmadi R, Hedman E, Gabre P: Laser in caries treatment- Patients' experiences and opinions. Int J Dent Hyg. 2014; 12:67–73.
- II. Sarmadi R, Andersson EV, Lingström P, Gabre P: A Randomized Controlled Trial Comparing Er:YAG Laser and Rotary Bur in the Excavation of Caries - Patients' Experiences and the Quality of Composite Restoration. Open Dent J. 2018; 12: 443-54.
- III. Sarmadi R, Gabre P, Thor A: Evaluation of upper labial frenectomy - a randomized controlled comparative study of conventional scalpel technique and Er:YAG Laser technique. Submitted for publication.

SAHLGRENSKA AKADEMIN



Abstract

Er:YAG laser in dentistry. Patients' experiences and clinical applicability

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Objective: This thesis focuses on the patients' experiences and the clinical applicability of the Er:YAG laser method in the excavation of caries and oral soft tissue surgery. **Design:** Both qualitative (Study I) and quantitative (Studies II and III) research methods were used. Study I was performed as individual interviews of 12 patients who had undergone at least one caries excavation with the Er:YAG laser method. Study II was a single blind, RCT investigation of 25 patients with at least two equal primary caries lesions (a total of 56 cavities). The patients compared their experiences of caries excavation using the laser method with the conventional rotary bur method and the time required for the treatments was measured. The restorations were evaluated over 24 months. In Study III, a single blind, RCT study was performed, based on 40 patients requiring frenectomy and treated with either conventional scalpel surgery or laser surgery. Patients' experiences, treatment time, bleeding and wound healing were evaluated. **Results:** In Studies I and II, patients described the Er:YAG laser method as less painful and less unpleasant, safe and more relaxing. In Study II the mean time for caries excavation using the laser method was three times longer than with the rotary bur. The quality and durability of restorations were assessed as equivalent after two years. In Study III conventional scalpel surgery took 50% longer time and bleeding was three times higher than after Er:YAG laser surgery. The patients assessed both methods as equal and were satisfied with both treatments. No differences concerning wound healing were found. **Conclusions:** Patients preferred the Er:YAG laser method in caries excavation to the rotary bur despite significantly longer treatment time, but valued it as equivalent to conventional scalpel surgery in frenectomies. The Er:YAG laser was less time-consuming and led to less bleeding when used in frenectomies, while no differences in wound healing were recorded.

Keywords: Dental caries, Er:YAG laser, Labial frenectomy, Patients' experiences, Qualitative research, Randomized controlled trial, Rotary bur.

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