

morphology of lasers during endodontic treatment modalities. Further research will assess whether Er:YAG laser irradiation is capable of root canal preparation if appropriate parameters are selected.

9

Comparison of microleakage and thermographic evaluation of root canal irradiated by Er:YAG and Nd:YAG lasers

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Purpose: This study was carried out to compare the apical leakage after Er:YAG and Nd:YAG lasers irradiation with both techniques: helicoidal and vertical irradiations and to evaluate temperature changes at root surface.

Materials and Methods: The extracted human teeth were instrumented then treated by Nd:YAG (1,064nm) and Er:YAG (2,940nm) lasers with two techniques: helicoidal and vertical irradiations. The Nd:YAG laser parameters was: 100mJ, 15Hz, 1.5W, and for the Er:YAG laser was 160mJ, 10Hz. SEM, and stereoscopy evaluations were performed.

Results: The apical leakage was less in the teeth treated by lasers, and the irradiation with the Nd:YAG laser after Er:YAG laser decreased the apical leakage. The thermographic study found that temperature rise was less than 6°C.

Conclusion: The results suggest the usefulness of Nd:YAG laser intracanal irradiation after Er:YAG laser treatment, and the temperature rises would not cause injury to periodontal tissue.

10

Scanning electron microscopic study of root canal wall dentin irradiated with Er:YAG, Nd:YAG and Diode Lasers

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The purpose of this in vitro study was to evaluate the effects of Er:YAG, Nd:YAG and Diode lasers simulating laser intracanal disinfection technique. Thirty five single rooted teeth canal were instrumented and divided in groups: G1 - No irradiation, G2 - Er:YAG laser, G3 - Nd:YAG laser, G4 - Er:YAG and Nd:YAG lasers; G5 - Diode Laser, G6 - Er:YAG and Diode Lasers. The Laser groups were irradiated four times in helicoidal movement from apex to cervical. The energy settings were 54mJ/15Hz for Er:YAG laser, 100mJ/15Hz for Nd:YAG laser and 1,4W/10 pulses of 0,05 second for Diode Laser. SEM examinations were performed. Er:YAG laser irradiation showed ablated surface with opened dentinal tubules. Nd:YAG laser caused melting and recrystallization with partial closure of dentinal tubules. Nd:YAG laser followed Er:YAG laser irradiation also showed melted dentin. Diode laser did not close dentinal tubules also with previous Er:YAG laser irradiation. **Conclusion:** With the parameters used in this study, surface modification of intracanal dentin is not evident with Diode laser.

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