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Er:YAG laser supported endodontic treatment and endodontic retreatment**Adam Stabholz**

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Laser technology is being developed very quickly and new lasers applications are available today and are being used in the various fields of dentistry. The search for new laser applications for dental procedures was always challenging and through the years more experience and knowledge was gained. Our studies using SEM analysis following debridement and removal of pulp tissue as well as old gutta percha root canal fillings, could demonstrate heavy smear layers on the wall surfaces of the root canals as well as remnants of the old filling materials in cases of endodontic retreatments. The use of Er:YAG laser irradiation in the root canal system enabled a thorough cleansing of the root canal and SEM photographs showed clean root canal walls with open dentinal tubules. The walls of root canals lased with the Er:YAG laser after biomechanical preparation with NiTi rotary files were cleaner in comparison to root canals that were similarly prepared but not lased. Endodontic retreatment varies in many respects from primary endodontic treatment. Endodontic retreatment of an endodontically treated tooth raises several questions: Is it worth damaging a successful restoration in order to gain access to the root canal? What are the chances of improving the cleaning and filling of the root canal by performing the retreatment and can we expect a higher success rate in cases where previous treatments failed? These questions affect the subjective interpretation of information that is the basis for case selection in endodontics. In addition, modified techniques must be used in endodontic retreatment to overcome obstacles of a nature and incidence not encountered in primary endodontic treatment. Clinical cases with follow-up that were performed using the Er:YAG laser will be presented and discussed.

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