

Deep Dentin Treatment and Pulp Conservation: the Laser Approach

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SUMMARY

The conservation of pulp vitality is one of the objectives in restorative dentistry and can be viewed as the borderline between restorative dentistry and endodontics.

The maintenance of pulp vitality depends on the diagnosis of normal pulp (or reversible pulpitis) versus infected pulp (or irreversible pulpitis) and on the correct therapeutic approach: this includes deep caries removal, direct pulp capping, partial pulpotomy and apexogenesis (root formation).

Treatment of the deep dentin at the completion of cavity preparation is an important step for maintaining pulp vitality. The identification and removal of the deeper layers of caries is clinically subjective to perform. Concern about the survival of microorganisms in deep carious lesions may often lead to unnecessary over-excitation of healthy dentin, with exposure of the pulp during complete caries excavation.

All laser wavelengths allow for deep decontamination in the outer and inner dentin layers, but it is the full cavity preparation performed with the Erbium:YAG laser that offers several advantages.

Using Erbium lasers, whether the choice is an indirect pulp capping or stepwise excavation or complete caries excavation, the laser-assisted technique makes the procedure much more predictable, as the LightWalker is more selective for carious tissue, thus allowing for complete caries vaporization while preventing possible unwanted pulp exposure, as well as the detoxification of the surface up to 300-500 microns, thus ensuring a deeper decontamination in dentin.

If, during the procedure, a pulp exposure occurs, a laser direct pulp capping can be performed. If the diagnosis has been correct, the exposure is minimal, and the surrounding area is clean and decontaminated, the Erbium laser also makes this procedure more predictable.

Lasers in Endodontics

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SUMMARY

The use of lasers in Endodontics is an important aid for root canal cleaning and decontamination. The evolution of the technology in both the laser and endodontic fields has completely changed the approach from a conventional to an advanced, cutting-edge practice. The problem today is in seeking to understand, within an oceanic storm of information, what exactly is correct or incorrect, what is true or not true, what is old and what is truly innovative. This lecture will offer a critical revision of the 2014-2015 literature of this field.

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