

Lasers are mainstream in endodontics



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One of the most innovative technologies widely used in medicine, kind to tissue and excellent for healing, has only recently begun to make a significant dental impact. Dental lasers have been commercially available for several decades, but the profession has been slow to incorporate this technology into the practice. Lasers, extensively documented in the academic and clinical dental literature, have long been perceived by practitioners as too limited in intra-oral applications, too complicated and too expensive. In recent years, ease of use, scientific research and documentation, and greater affordability have converged to make lasers essential for every dental practice.

Lasers were first indicated for soft-tissue treatment and management. Diode technology has reduced the initial financial investment and made lasers largely affordable for most practices. More recently, laser technologies have been successfully incorporated into endodontic procedures.

The success of intra-radicular endodontic treatment is dependent upon the cleaning and shaping of the root-canal space, disinfection of the root-canal space and 3-D obturation of the root-canal system. Many technologies have been utilised to accomplish these tasks: instrumentation systems, irrigants, intra-canal medications, and a host of obturation materials. Unfortunately, conventional endodontic therapy is still observed to fail on occasion owing to incomplete disinfection and subsequent reinfection. Bacteria may also be found outside the tooth's root-canal system at the apex and elsewhere on the root surface. These extra-radicular bacteria cannot be eliminated with conventional therapies, and the residual contamination maintains the active infectious process.

Laser-assisted endodontic therapy, undertaken after access and mechanical preparation, overcomes the inherent difficulties of existing treatment. Lasers must be considered additions to the existing endodontic armamentarium rather than as stand-alone instruments. The benefits of the variously documented endodontic laser therapies include patient comfort, effective debridement, and penetrating disinfection. Laser therapy avoids vibration, facilitating anaesthesia and eliminating microfractures. The energy of the laser and its associated hydro-photonic activity efficiently remove pulpal tissue, the smear layer and bacteria from the canal walls three-dimensionally, typically without physical contact and without the risk of over-instrumentation beyond the apex.

While the future mainstream laser tools and techniques are still in the process of development and definition, the mounting scientific and clinical evidence indicates that photoactivated debridement and disinfection instruments cannot be dismissed. Dentists who perform endodontic therapy must consider integrating endodontic lasers into their practices. Lasers have arrived in endodontics!

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