

## **Laser in dentistry**

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The oral cavity is a complex environment, where hard and soft tissue exists in close proximity and all within bacteria laden saliva. All oral tissue are receptive to laser treatment. LASER is an acronym of Light Amplification by the Stimulated Emission of Radiation. According to the clinical use in dentistry we know soft-tissue, hard tissue, and so called all-tissue lasers. Another classification is based on laser wavelength in the electromagnetic spectrum of light: ultraviolet, visible, near, mid, and far-infrared laser. The basic component of laser are: the optical cavity, the active medium which characterizes the wavelength of specific laser, the pumping source, the controller, the delivery system that transport the laser energy to a terminal handpiece and tips and finally to the tissue. Most of the laser wavelength used in dentistry fall in the visible and infrared spectrum. The medium-infrared laser represent the all-tissue lasers, for application on both the mucosa and gingiva, tooth, and bone. The visible, near and far-infrared laser are mainly used for soft-tissue application, some of them are use for caries detection and biostimulation. The interaction of laser light with tissue follows the rules of optical physics. Laser beam can be reflected, absorbed, diffused, and transmitted. The selectivity of action depended on the affinity between a wavelength and a target tissue.

While most dental lasers are relatively simple to use, certain precautions should be taken to make sure their safe and effective operation. First and foremost is protective eyewear by anyone within the vicinity of the laser, while it's in use. This includes the doctor, chairside assistants, patient, and any observers like family or friends. it's critical that each one protective eyewear worn is wavelength-specific. Additionally, accidental exposure to the non-target tissue are often prevented through the utilization of warning signs posted outside the nominal hazard zone, limiting access to the surgical environment, minimizing the reflective surfaces, and ensuring that the laser is in good working order, with all manufacturer safeguards in situ . With reference to prevention of possible exposure to infectious pathogens, high volume suction should be wont to evacuate any

vapor plume created during tissue ablation, and normal infection protocols should be followed. Each office should have a delegated Laser Safety Officer to supervise the right use of the laser, coordinate staff training, oversee the utilization of protective eyewear, and be conversant in the pertinent regulations.

Conservative soft tissue surgery with a dental laser is taken into account within the scope of accepted practice and typically considered a covered procedure under most professional insurance policies designed for dental specialists. consent must be routine and is best handled as a part of the overall consent form that each one patients read and sign before the initiation of dental treatment. it's highly recommended that every clinician take a course from a reputable provider.

Laser technology for hard tissue application and soft tissue surgery is at a high state of refinement, having had several decades of development, up to this time, and further improvements can occur. the sector of laser-based photochemical reactions holds great promise for extra applications, particularly for targeting specific cells, pathogens, or molecules. an extra area of future growth is predicted to be a mixture of diagnostic and therapeutic laser techniques. Looking to the longer term it's expected that specific laser technologies will become essential components of up to date practice over subsequent decade.