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Perspective

Brief Note on the Applications of Dental Laser in Dentistry

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DESCRIPTION

A medium designed expressly for use in oral surgery or dentistry is a dental laser. Dental lasers are available in a variety of diverse wavelengths, making them better suited for different applications. In order to cut or ablate soft tissues, such as the gingivae, diode lasers with wavelengths in the 810-1,100 nm range cannot effectively penetrate these tissues. Instead, the 810-1,100 nm laser beam burns the glass fiber's burnt distal end, which ultimately heats the glass fiber's tip. The laser beam does not actually pierce the fragile tissue; rather, the hot, burned glass tip does. Among other procedures, this is utilized for gingivectomy, frenectomy, pericoronitis therapy, and the exposure of superficially impacted teeth. This tactic was first used by the Michigan School of Dentistry.

Neodymium-doped Yttrium Aluminum Garnet (Nd:YAG) lasers are used for soft tissue procedures such gingivectomy, periodontal sulcular cleaning, LANAP, frenectomy, biopsy, and coagulation of graft donor sites. Tissue pigments like hemoglobin and melanin partially absorb the Nd:YAG laser's wavelength. These lasers are routinely used to clear and debride periodontal pockets. Because of their capacity to create fibrin, which aids in coagulation, they can seal therapy pockets. For soft tissue, the CO_2 laser is still the best surgical laser for achieving photothermal cutting and hemostasis (radiantly).

Both hard and soft tissue can be treated using erbium lasers. They allow for the completion of more procedures without the use of lidocaine and can be utilized for a wide range of dental treatments. Erbium lasers can be used to treat hard tissues like bone while putting the least amount of mechanical and thermal strain on the surrounding tissues. These surgeries on hard tissue have a relatively high percentage of recovery. Erbium lasers' capabilities for hemostasis and coagulation in soft tissue applications are less than those of CO_2 lasers. The Er,Cr:YSGG laser has been shown to be helpful for gum depigmentation. The most recent replacement for erbium lasers, the new CO_2 laser has significant absorption in both soft tissue and hard tissue at a wavelength of 9,300 nm. The 9,300 nm laser destroys hard tissue at temperatures of 5,000°C, producing dazzling thermal radiation. Hard tissue lasers are unable to complete some common procedures in the cavity treatment process.

Three different lasers were employed: Er:YAG, Er,Cr:YSGG, and Nd:YAG. Because to the poor quality of the evidence provided, they were unable to recommend one method of caries eradication over another. There was no proof that the restorations' little integrity or sustainability had a big impact. There was some evidence, nevertheless, that the drill was more unpleasant and required more anesthesia while the laser was less painful.

CONCLUSION

On the other hand, dental lasers have some benefits, such as lowering post-operative morbidity and lowering the requirement for anesthesia. Due to tissue cauterization, there will be less bleeding after soft tissue treatments, and some risks involved with alternative electrosurgery techniques will be avoided. Also, using dental lasers is linked to less vibration and a more preferable noise profile when compared to pneumatic dental drills.

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