

Laser Dentistry Revolution: Integrating Laser Techniques into the Dental Curriculum

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Laser dentistry is a field that utilizes laser technology for various dental procedures. It has gained popularity in recent years due to its ability to provide precise and minimally invasive treatment. Dental lasers are valuable tools that can be used by graduate dentists to perform various procedures more effectively and efficiently.

Dental caries is a highly prevalent disease and dentists spend most of their clinical time removing caries with dental drills. Lasers can be used precisely targeting and removing the decayed area, leaving healthy tooth structure intact. This can be particularly beneficial for patients who are apprehensive about traditional dental drills as noiseless laser-assisted caries removal is a more comfortable option for them.

For tooth-colored dental restorations, etching of enamel and dentin has to be performed quite frequently by dentists. Laser etching has been assessed as an alternative to acid etching of enamel and dentin. Etching these surfaces with lasers show micro-irregularities and no smear layer formation.

Dentinal hypersensitivity is one of the prevalent complaints among aging individuals. Dentists apply conventional desensitizing agents on cervically exposed dentin but desensitization with an Er: YAG laser is not only effective but encouraging outcome lasts longer.

Dentists in their clinics, perform root canal treatment as a routine procedure. They can use dental lasers to clean and disinfect root canals during root canal therapy. Laser technology helps in effectively eliminating bacteria and reducing the risk of reinfection. Hence, Laser-assisted root canal treatment enhances the success rate.

Another very important area which requires dentists' attention is gum diseases. They can effectually use lasers to treat gum disease, reshape gum tissue, remove excess gum tissue, and perform gum surgeries. Laser gum treatments are less invasive and cause less post-operative bleeding. They result in faster healing compared to traditional soft tissue cutting methods. Dentists may also use lasers for procedures like frenectomies and operculectomies. The former procedure is done to relieve the tongue-tie and later one to help in reducing infection caused

during eruption of wisdom teeth.

Teeth whitening is an ever-increasing demand from the patients. Laser can be successfully used in teeth whitening procedures. Laser activates a whitening agent applied to the teeth, enhancing its effects and speeding up the whitening process. This technique may produce quicker results compared to the traditional bleaching methods.

Lasers can assist the dentists in the removal of benign oral lesions as they precisely target the affected area and remove the abnormal tissue, minimizing damage to surrounding healthy tissue.

Moreover, a general dentist can play a key role in educating patients about dental laser-assisted procedures. He/she can explain the benefits, potential risks and expected outcomes to help patients make informed decisions and can provide post-treatment instructions to ensure proper healing and maintenance.

Though it is clearly evident that dental lasers have expanded the treatment options available to general dentists, allowing them to provide enhanced care with improved precision, patient comfort, and healing times but most of the dental schools all over the globe including Pakistan, haven't incorporated it in their undergraduate curriculum.

The absenteeism of laser dentistry from the undergraduate dental curriculum can be attributed to a few factors;

Traditional Approach: Dental education is entrenched in traditional techniques and methods that have been taught for many years. Laser dentistry is a relatively newer field and therefore, has not been fully integrated into the undergraduate dental curriculum yet.

Restricted Resources: Dental schools and universities may not have the necessary resources, including faculty with expertise in laser dentistry and the equipment required for training, to incorporate it into the curriculum.

Time Constraints: Dental curricula are already packed with a wide range of subjects that students need to learn within a

stipulated timeframe. It may be difficult to find additional time to include laser dentistry as a standalone subject.

Mindset to resist curricular changes: A specific mindset and approach of the hierarchy of dental institutions and statutory bodies resists mandatory changes in the undergraduate dental curriculum while it is imperative to realize that change is often necessary for growth and improvement.

Stakeholder disinterest: Different stakeholders, such as teachers, administrators, parents, owners and policymakers may have differing perspectives and interests. If some stakeholders perceive that the changes will negatively impact their role, influence or goals, they resist the change in the curriculum. In this country, private dental schools' management insist to keep the 4-year curriculum. Adding other subject will require extending BDS degree program to an additional year.

Despite all restraints, some dental schools recognize the significance of introducing students to this field and have managed to integrate laser dentistry as part of their curriculum. Some dental schools, however, offer only elective courses or

training in laser dentistry. These courses provide some knowledge and hands-on experience in using lasers for various dental procedures. It is insufficient stuff for the graduates who will serve in the approaching future as Laser dentistry is a rapidly growing field with ongoing advancements in technology and techniques.

It is anticipated that specific laser technologies will become an integral component of contemporary dental practice in the near future which necessitates the introduction of upcoming dental clinicians with the innovative technology. For the sake of acquaintance of the dental students in Pakistan, 1-semester course on Basic Science and Principles of lasers in dentistry can be included in the existing BDS curriculum. Teaching hours of some non-clinical subjects may be deducted to fit in dental lasers. It will cover the fundamental science and principles underlying laser technology in dentistry. The course may include topics such as laser physics, tissue interaction, laser safety, and different laser types used in dental practice. A pre-clinical hands-on training on simulation procedures on models can be added where students can learn laser handling, settings, and safety protocols.