

The Role of Lasers in Dentistry: Advancements, Applications, and Future Prospects

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ABSTRACT:

Lasers have revolutionized the practice of dentistry, offering precise and minimally invasive solutions across various dental specialties. This comprehensive review explores the historical evolution, fundamentals, applications, challenges, and future prospects of lasers in dentistry. Beginning with a historical overview, the review discusses the fundamental principles of laser-tissue interaction and the types of lasers commonly used in dental practice. It then delves into the diverse applications of lasers in conservative dentistry, periodontology, oral surgery, endodontics, pediatric dentistry, and orthodontics, highlighting their roles in cavity preparation, soft tissue management, disinfection, and surgical procedures. Despite their numerous advantages, challenges such as cost, learning curve, tissue interaction limitations, and regulatory considerations hinder the widespread adoption of lasers in dentistry. However, ongoing research and technological advancements continue to address these challenges, paving the way for enhanced patient care, improved treatment outcomes, and expanded applications of lasers in dentistry. Overall, lasers represent a promising toolset in modern dentistry, offering clinician's precision, efficiency, and patient comfort in various dental procedures.

KEY WORDS: Lasers, Dentistry, laser efficiency, patient care, laser application