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Application of Laser Technology in the Non-surgical Management of Periprosthetic Joint Infection (PJI); Novel Insights from Peri-implantitis

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Abstract:

Introduction: The management of periprosthetic joint infection (PJI) is challenging, and its socio-economic impact is significant. Moreover, the incidence of MRSA and other resistant organisms are on the rise. Recently, laser technology has been incorporated into treatment protocols of dental peri-implantitis. This review explores the possibility of using laser technology to manage peri-implantitis.

Methods: This article will provide a detailed, comprehensive, and perspective review of the existing evidence of laser technology in management of dental peri-implantitis.

Results: Dental literature investigated the efficacy of several types of lasers. It was shown that diode lasers improved periodontal probing depth (PPD) and bleeding on probing (BOP). CO_2 and Nd:YAG lasers have bactericidal and decontaminant functions. Er:YAG and Er,Cr:YSGG lasers seem to have the least heat-related side effects and can be safely used for cleaning of implants in dentistry. Photodynamic therapy is shown to decontaminate 2 types of implants used in PJI.

Discussion and Conclusion: A combination of good surgical skills and application of novel technologies will deliver the best outcomes. Our aim is to provide orthopedic surgeons with the effect size and quality analysis of the current evidence behind different laser techniques to decontaminate the implant surface and preserve the surrounding tissue.