"Lethal photosensitization for decontamination of implant surfaces in the treatment of peri-implantitis."

Peri-implantitis is considered to be a multifactorial process involving bacterial contamination of the implant surface. A previous study demonstrated that a combination of toluidine blue O (100 microgram/ml) and irradiation with a diode soft laser with a wavelength of 905 nm results in an elimination of Porphyromonas gingivalis (P. gingivalis), Prevotella intermedia (P. intermedia), and Actinobacillus actinomycetemcomitans (A. actinomycetemcomitans) on different implant surfaces (machined, plasma-flame-sprayed, etched, hydroxyapatite-coated). The aim of this study was to examine the laser effect in vivo. In 15 patients with IMZ implants who showed clinical and radiographic signs of peri-implantitis, toluidine blue O was applied to the implant surface for 1 min and the surface was then irradiated with a diode soft laser with a wavelength of 690 nm for 60 s. Bacterial samples were taken before and after application of the dye and after lasing. The cultures were evaluated semiquantitatively for A. actinomycetemcomitans, P. gingivalis, and P. intermedia. It was found that the combined treatment reduced the bacterial counts by 2 log steps on average. The application of TBO and laser resulted in a significant reduction ($P<0.0001$) of the initial values in all 3 groups of bacteria. Complete elimination of bacteria was not achieved.

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