

Effect of Nd: YAG laser on titanium dental implants studied by AFM

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SUMMARY

Bacterial contamination of dental implants is considered the main cause of implant failure. Recently, the laser treatment of the implant surface has been proposed as an useful method for decontamination. In such a view, the present study was conducted to investigate the effects of a Nd:YAG laser on the surface morphology of a titanium dental implant by means of an atomic force microscope. We demonstrated that, when the pulse energy of the laser was kept below 30 mJ, independently from the pulse rate, the laser-treated specimens exhibited a qualitatively similar surface morphology when compared to the untreated titanium implants, suggesting that the implant surface was unaffected by the treatment, in these particular conditions. We also found that, by cooling the implant surface with an air flow[?] during laser irradiation, the mean temperature of the implant was maintained under 37°C.

All these data taken together suggest the possibility to use Nd:YAG laser for the treatment of failing dental implants.