

Effect of air polishing with glycine powder on titanium abutment surfaces

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Abstract

Objective

The aim of the present study was to evaluate morphological changes induced by glycine powder air polishing on titanium surfaces and its effect on bacteria recolonization in comparison with sodium bicarbonate powder.

Materials and methods

5 mm wide and 1 mm thick titanium grade II disks were divided into three groups of treatments: (i) no treatment; (ii) air polishing with glycine powder; (iii) air polishing with sodium bicarbonate powder. Specimens were characterized by laser profilometry, scanning electron microscopy (SEM) and then installed onto removable appliances worn for 24 h by healthy volunteers. Surface contamination was evaluated using SEM and counting the number of colony forming units (CFU).

Results

SEM observation revealed an increased roughness with the formation of craters on samples treated with sodium bicarbonate powder, while not in glycine ones. Statistical analysis failed to show significant differences of both R_a and R_{max} parameters in treated groups. SEM observation of specimens surfaces, after 24 h of permanence in the oral cavity, showed a higher contamination of the disks treated with sodium bicarbonate compared with those not treated ($P < 0.05$). Conversely, the group treated with glycine showed the lower contamination if compared with bicarbonate-treated group ($P < 0.05$).

Conclusions

Air polishing with glycine powder may be considered as a better method to remove plaque from dental implant because glycine is less aggressive than sodium bicarbonate powder. Moreover, the use of glycine powder seems to have an active role on the inhibition of bacterial recolonization of implants in a short test period (24 h). Further studies are needed to demonstrate the bacteriostatic properties of glycine, envisaged on the basis of reduced contamination of the disks polished with glycine compared with those not treated.