

Effect of six different peri-implantitis disinfection methods on in vivo human oral biofilm.

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Abstract

OBJECTIVE: The aim of this human in vivo pilot study was to evaluate the efficacy of six antimicrobial agents on the surface decontamination of an oral biofilm attached to titanium implants.

DESIGN: For in vivo biofilm formation, we fixed titanium specimens to individual removable acrylic upper jaw splints (14 specimens in every splint), which were worn by four volunteers overnight for 12 h. The specimens were then treated with different antimicrobial agents for 1 min (Sodium hypochlorite, Hydrogen peroxide 3%, Chlorhexidinguconate 0.2%, Plax, Listerine, citric acid 40%). Afterwards, we quantified the total bacterial load and the viability of adhering bacteria by live or dead cell labelling in combination with fluorescence microscopy.

RESULTS: The total bacterial load on the titanium surfaces was significantly higher after incubation in the control solution phosphate-buffered saline (PBS) than after disinfection in sodium hypochlorite, hydrogen peroxide, chlorhexidine, Plax, Listerine, and citric acid. Furthermore, a significantly lower ratio between dead and total adhering bacteria (bactericidal effect) was found after incubation in control PBS, Plax mouth rinse, and citric acid than after incubation in sodium hypochlorite, hydrogen peroxide, chlorhexidine, and Listerine.

CONCLUSIONS: All tested antiseptics seem to be able to reduce the total amount of microorganisms accumulating on titanium surfaces. Furthermore, sodium hypochlorite, hydrogen peroxide, chlorhexidine, and Listerine showed a significant bactericidal effect against adhering bacteria.

PMID: 20666798 [PubMed - indexed for MEDLINE]