Other journals in brief

A selection of abstracts of clinically relevant papers from other journals.
The abstracts on this page have been chosen and edited by **Reena Wadia.**

Biofilm as a risk factor in implant treatment

Daubert D M, Weinstein B F. Biofilm as a risk factor in implant treatment. *Periodontol* 2000 2019; **81:** 29–40.

Evidence supports the use of glycine powder air polishing as a valuable adjunct to conventional therapies for use at implant maintenance visits. There remains a lack of consensus for a specific microbial profile that is associated with peri-implantitis, suggesting that there may be other factors which influence the microbiome such as titanium surface dissolution. Therapeutic interventions to address the biofilm are presented. Evidence supports that perioperative chlorhexidine reduces biofilm-related implant complications and failure. Regular maintenance for dental implants is shown to reduce peri-implant mucositis and implant failure. Maintenance procedures should aim to disrupt the biofilm without damaging the titanium dioxide surface layer in an effort to prevent further oxidation. Evidence supports the use of glycine powder air polishing as a valuable adjunct to conventional therapies for use at implant maintenance visits. For the treatment of peri-implantitis, nonsurgical therapy has not been shown to be effective, and while surgical intervention is not always predictable, it has been shown to be superior to nonsurgical treatment for decontamination of the implant surface that is not covered by bone.

https://doi.org/10.1038/s41415-019-1055-3

Titanium particles/ions favour dysbiosis

Souza J G S, Costa Oliveira B E, Bertolini M *et al*. Titanium particles and ions favour dysbiosis in oral biofilms. *J Periodontal Res* 2019: DOI: 10.1111/jre.12711 [Epub ahead of print].

Ti products, especially ions, have the potential to change the microbiological composition of biofilms formed on Ti surfaces and thus may contribute to microbial dysbiosis and peri-implantitis. This *in situ* study tested the effect of titanium (Ti) particles and ions on the composition of oral biofilms. Volunteers wore a palatal appliance containing Ti disks for seven days to allow biofilm formation. Disks were collected and biofilms were treated, *in vitro*, with Ti particles, ions or a combination. After 24 hours, biofilms were collected and analysed. Direct effects of Ti particles and ions on biofilm/cellular morphology were evaluated by transmission electron microscopy (TEM). Ti particles affected biofilm composition, increasing population of four bacterial species, while Ti ions showed higher levels of putative pathogens from the orange complex with reduction in species from the yellow complex, compared with control. The combination of particles + ions increased green complex and reduced yellow complex proportions. TEM showed clusters of particles agglomerated in extracellular environment, while Ti ions were precipitated in both extracellular and intracellular sites.

https://doi.org/10.1038/s41415-019-1109-6

Biofilm removal

Menini M, Setti P, Dellepiane E, Zunino P, Pera P, Pesce P. Comparison of biofilm removal using glycine air polishing versus sodium bicarbonate air polishing or hand instrumentation on full-arch fixed implant rehabilitations: a split-mouth study. *Quintessence Int* 2019; **50:** 722–730.

Professional oral hygiene on implants using glycine air polishing showed high levels of both cleaning efficacy and patients' acceptance. Thirty patients with a total of 32 implant fixed full-arch rehabilitations in the maxilla and/or mandible (134 implants) were included in this study. After the removal of the screw-retained prostheses, baseline peri-implant spontaneous bleeding (SB), Plaque Index (PI), probing depth (PD), and bleeding on probing (BOP) were recorded. Three oral hygiene treatments were assigned randomly following a split-mouth method: all received glycine air polishing (G) on one side of the arch, and sodium bicarbonate air polishing (B) or manual scaling with carbon-fibre curette (C) was performed on the opposite side. PI reduction was significantly higher for G and B as compared with C. B reported the highest mean value of SB compared with G and C. A significant difference in comfort mean score was found between G and B, no difference between G and C.

https://doi.org/10.1038/s41415-019-1110-0

Composite resin roughness and biofilms

Park J W, An J S, Lim W H, Lim B S, Ahn S J. Microbial changes in biofilms on composite resins with different surface roughness: An in vitro study with a multispecies biofilm model. *J Prosthet Dent* 2019; **122:** 493.

Periodic finishing of surface roughness should be considered to minimise adhesion of cariogenic streptococci to composite resin surfaces. This *in vitro* study investigated microbial changes in biofilms on composite resins of varying surface roughness. Composite resin disks were prepared with different roughness: SR180, SR400, SR1500, and SRGlass roughened with 180-, 400-, and 1500-grit silicon carbide paper and glass (control surface without roughening). After multispecies biofilms had been grown on the composite resin surfaces, the adhesion of *Streptococcus mutans*, *Streptococcus sobrinus*, *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans*, and of total bacteria was determined after one (T1) and four (T2) days. Increased surface roughness was not proportional to bacterial adhesion. Significant differences in the adhesion of total bacteria was only found between SRGlass and SR180. The adhesion of S. mutans and S. sobrinus to SR180 and SR400 was higher than that to SRGlass. The adhesion of *A. actinomycetemcomitans* and *P. gingivalis* to composite resin was not significantly influenced by surface roughness. Adhesion of total bacteria, *S. mutans*, and *S. sobrinus* increased, whereas the adhesion of periodontal pathogens decreased from T1 to T2.

https://doi.org/10.1038/s41415-019-1111-z