Evaluation of bone loss in antibacterial coated dental implants: An experimental study in dogs - DTU Orbit (09/11/2017)

Evaluation of bone loss in antibacterial coated dental implants: An experimental study in dogs

The aim of this study was to evaluate the in vivo effect of antibacterial modified dental implants in the first stages of peri-implantitis. Thirty dental implants were inserted in the mandibular premolar sites of 5 beagle dogs. Sites were randomly assigned to Ti (untreated implants, 10 units), Ti_Ag (silver electrodeposition treatment, 10 units), and Ti_TSP (silanization treatment, 10 units). Coated implants were characterized by scanning electron microscopy, interferometry and X-ray photoelectron spectroscopy. Two months after implant insertion, experimental peri-implantitis was initiated by ligature placement. Ligatures were removed 2 months later, and plaque formation was allowed for 2 additional months. Clinical and radiographic analyses were performed during the study. Implant-tissue samples were prepared for micro computed tomography, backscattered scanning electron microscopy, histomorphometric and histological analyses and ion release measurements. X-ray, SEM and histology images showed that vertical bone resorption in treated implants was lower than in the control group (P b 0.05). This effect is likely due to the capacity of the treatments to reduce bacteria colonization on the implant surface. Histological analysis suggested an increase of peri-implant bone formation on silanized implants. However, the short post-ligature period was not enough to detect differences in clinical parameters among implant groups. Within the limits of this study, antibacterial surface treatments have a positive effect against bone resorption induced by peri-implantitis.

General information

State: Published
Organisations: Department of Micro- and Nanotechnology, Colloids and Biological Interfaces, University of Barcelona, Escola Universitària Salesiana de Sarrià , Universitat Internacional de Catalunya, Polytechnic University of Catalonia, University of Calgary
Authors: Gallardo, M. G. (Intern), Manzanares-Céspedes, M. C. (Ekstern), Sevilla, P. (Ekstern), Nart, J. (Ekstern), Manzanares, N. (Ekstern), Manero, J. M. (Ekstern), Gil, F. J. (Ekstern), Boyd, S. K. (Ekstern), Rodríguez, D. (Ekstern)
Pages: 538-545
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Materials Science and Engineering C: Biomimetic Materials, Sensors and Systems
Volume: 69
ISSN (Print): 0928-4931
Ratings:

Web of Science (2017): Indexed Yes

Scopus rating (2016): CiteScore 3.78

Web of Science (2016): Indexed yes

Scopus rating (2015): CiteScore 3.13

Scopus rating (2014): CiteScore 2.88

Scopus rating (2013): CiteScore 3.07

Scopus rating (2012): CiteScore 2.78

Scopus rating (2011): CiteScore 2.93

Web of Science (2011): Indexed yes

BFI (2008): BFI-level 1

Web of Science (2002): Indexed yes

Original language: English
Antibacterial coating, Dental implants, In vivo, Peri-implantitis, Silver electrodeposition, TESPSA
DOIs:

10.1016/j.msec.2016.07.020
Source: FindIt
Source-ID: 2306462542
Publication: Research - peer-review › Journal article – Annual report year: 2016