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Comparative Analysis of Bacterial Communities Associated with Healthy and Inflamed Peri-implant Tissues

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Abstract

© 2016, Springer Science+Business Media New York. Dental implants are used to restore dentition defects. However, despite the high efficiency of the method of placing dental implants, their integration can be accompanied by peri-implant diseases (peri-implant mucositis and peri-implantitis), which are inflammatory reactions induced by the bacterial activity. In the present pilot study, we described and compared the bacterial communities associated with healthy and inflamed peri-implant mucosal tissues using 16S rRNA gene amplicon pyrosequencing approach. It was revealed that various representatives of the phyla Firmicutes, Bacteroidetes, Fusobacteria, and Proteobacteria were found at significant levels in healthy and peri-implant mucositis sites but in different proportions. Furthermore, it was shown that the genus *Fusobacterium* was the only group present in higher proportions on inflamed tissues than on healthy tissues surrounding dental implants of all patients. In addition, unclassified *Methylobacteriaceae* and the genus *Veillonella* as well as some other phylotypes were present at higher levels in peri-implant mucositis sites of some patients. This study indicates that several microbial agents may play important roles during the development of oral peri-implant diseases.

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Keywords

16S rRNA gene, 454 Pyrosequencing, Bacterial communities, Dental implants, Peri-implant mucositis