Correlation between Pre-Extraction Periodontal Status and Implant-Retained Overdenture Peri-Implant Microbiome

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Introduction

- Concurrent with increased frequency of implant placement is the rise of microbial induced peri-implant disease.
- Previous studies have found that full-mouth extractions could significantly reduce but not eliminate the periodontal pathogens. Periodontal pathogens may remain for a long period of time in the oral cavity of edentulous patients with a history of periodontitis.
- There has not been a study focused on the correlation between patients’ periodontal condition before full mouth extraction and the microbiome of implants used as abutments for overdentures.
- More information about the peri-implant microbiota is needed including cross-sectional data on the composition of the microbiome around implants that serve as abutments for overdentures.
- It is also important to explore the potential effect of a patient’s peri-implant peri-extraction periodontal status on the microbiota of implants.
- This study will utilize next generation sequencing technique to explore peri-implant microbiome of overdenture abutments, and to study if there is any correlation between the peri-extraction periodontal status of a patient and the peri-implant microbiome.
- The result of this study will help clinicians understand more about peri-implant microbiota and the possible impact of patients’ periodontal status before full mouth extraction to the dental implants placed in overdenture and implant-retained overdenture treatment.

Methods

- This is a cross-sectional pilot study.
- 25 completely edentulous adult patients treated with extractions followed by mandibular implant-retained overdentures at East Carolina University School of Dental Medicine (SoDM) were recruited.
- Patients’ demographic characteristics and pre-treatment periodontal diagnoses from axiUm EHR were collected.
- Clinical examination was performed in the Clinical Research Center of SoDM for all cases. The examination included the following assessments of mandibular implants: modified plaque index (mPII); probing depth (PD); bleeding on probing (BOP); supuration; width of keratinized tissue.

Results

- Mean age of the 25 patients was 70 years, median was 69 years.
- 12 female patients, 13 male patients.

Discussion

- No peri-implantitis implant was detected in this study.
- Streptococcus spp. were more prevalent in male patients, while some periodontal pathogens (such as Porphyromonas, Prevotella, Fusobacterium) were more prevalent in female patients.
- Significant bacterial differences were detected among different pre-extraction periodontal status groups.
- Actinomyces oris, Gemella sanguinis, Streptococcus intermedius, and Streptococcus oralis were more prevalent in peri-implantitis implant sites.
- Statistical analysis of correlation between pre-extraction periodontal status and peri-implant clinical parameters is is still in progress.

Conclusions

- Several bacterial species may be associated with peri-implant health.
- Pre-extraction periodontal condition might affect peri-implant microbiome in completely edentulous patients treated with implant-retained overdenture.

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