Comparison of Sintered Porous-Surfaced Implants (SPS) Inserted in Patients with versus Patients without Parafunction: a 24-months Cohort Prospective Study.

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INTRODUCTION

Primary predictors of implant failure are poor bone quality, chronic periodontitis, systemic diseases, smoking, short implants, acentric loading, and parafunctional habits: they can lead to the absence or loss of implant integration with hard and soft tissues. Oral parafunctions were usually divided in 2 types according to masticatory activities: grinding and clenching. Patients with parafunction showed high incidence of mechanical complications, such as implant or abutment fractures, screw loosening, occlusal surface wear or damage, and peri-implant bone loss. The purpose of the study was to evaluate the influence of parafunctional habits on success rate of SPS implants after 24 months of follow-up.

MATERIALS AND METHODS

160 patients were enrolled, but at this moment only 93 were followed at least for 24 months. All patients were partially edentulous and were rehabilitated by means of single or partial implant-supported fixed prostheses. In total 176 SPS implants were inserted in 93 patients, which were previously divided into 2 groups: 55 patients without parafunction (NPP), and 38 patients with bruxism and/or clenching (PP). Parafunction were diagnosed after patient anamnesis and clinical examination, and were confirmed by means of polysomnographic analysis, which permitted to monitor sleep symptoms. Crestal bone loss were assessed using standardized radiographs at 6, 12 and 24 months of functional loading; implant or prosthetic complications were also recorded during follow-up. Previously-established criteria were used to assess implant success rate, and Mann-Whitney/Kruskal Wallis test was used to establish statistically significant differences between 2 groups of study (P=0.05).

RESULTS

All implants had a minimum follow-up of 24 months. No post-surgical complications were observed. In NPP group, the mean crestal bone loss was 0.46 ± 0.32 mm and success rate was 99.0%; while, in PP group, the mean crestal bone loss was 0.54 ± 0.40 mm and success rate was 97.4%; no significant differences were observed (P=0.0821). After 24-month follow-up, incidence of implant and prosthetic complications was 3.3% for NPP group and 7.7% for PP group; differences between 2 groups were statistically significant (P=0.0435).

DISCUSSION AND CONCLUSION

Due to lack of the periodontal ligament, osseointegrated implants, unlike natural teeth, react biomechanically in a different fashion to occlusal forces. It is therefore believed that dental implants may be more prone to occlusal overloading, which is often regarded as one of the potential causes for peri-implant bone loss and failure of the implant/implant prosthesis. No comparative prospective studies were actually available in literature about influence of parafunctional oral habits on implant success. The stability of osseointegration with SPS implants under parafunctional forces was demonstrated comparable to that under functional forces. However, implant-prosthetic complex can be compromised by bruxism or clenching, leading to more complications.

References