

Project No: 19-2023
Applicant: MATARAZZO,
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Osteology Poster Exhibition and Research Forum

General Information

Title of study The influence of inadequate access to hygiene around dental implants on marginal bone level. A 4-year cohort prospective study.

Abstract content must fit in one of the two categories:

☒ Clinical research ☐ Basic research

Your abstract of the Clinical research category should fit in one of the two subtopics

☒ Clinical studies ☐ Case reports

Clinical research or Basic research abstracts might include the following primary investigating topics.

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Objectives

The peri-implant inflammatory reaction around dental implants has been related to the presence of bacterial biofilm. Most individuals seem to find it difficult to achieve adequate levels of plaque control, either due to little cooperation/motivation, or difficulties to access specific sites around implant-supported oral rehabilitations. The objective of this 4-year cohort prospective study was to evaluate the influence of the inadequate access to hygiene on marginal bone level.

Methods

Forty-one patients (16 male and 25 female, aged 49.8 ± 11.9 years) treated with implant-supported prostheses were rigorously selected during a maintenance visit in 2010 and were clinically and radiographically assessed at three different time points: 2010 – baseline (T0), 2012 (T1), and 2014 (T2). Radiographic marginal bone level (MBL), plaque index (PI), probing depth (PD) and bleeding on probing (BoP) around implants were registered at each visit. At T0, participants were individually instructed on the correct performance of oral hygiene with the assistance of different oral hygiene devices and a dental model featuring an implant-supported prosthesis. On its completion, all implant surfaces were analyzed for the presence of bacterial plaque by moving a periodontal probe around the peri-implant mucosal margin. Implants sites presenting all aspects free of plaque were considered as having adequate hygiene access (AHA), while implant sites still showing signs of plaque on at least one implant surface were defined as having inadequate hygiene access (IHA). Mean clinical parameters (PI, BoP, and PD) measurements were analysed using Friedman repeated measures test to verify possible statistically significant differences among different times within groups, and Mann–Whitney U-test to verify statistically significant differences between groups. MBL data were analyzed using a linear mixed model for clustered longitudinal data.

Results

All 41 participants completed the analysis; 18 presented implants with AHA, 16 with IHA, while 7 patients presented implants with both AHA and IHA. Of the 131 implants, 74 (56.5%) were considered with AHA, and 57 (43.5%) with IHA at T0. A statistically significant difference was observed in PI from baseline (T0) to other times (T1 and T2) in both groups over time, but no differences were observed between implants with AHA and IHA. PD measurements did not show any statistically significant differences either among times or between groups. No statistically significant differences were observed for BoP in both groups among times. However, for implants with IHA, BoP was statistically higher at all time points when compared to implants with AHA. At T0, mean MBL and standard error (SE) were 1.88 (0.05) and 2.02 (0.07), in T1 they were 1.98 (0.05) and 2.16 (0.07), and in T2 they were 2.13 (0.06) and 2.41 (0.07) for implants with AHA and IHA, respectively. The regression model revealed that the interaction between IHA (group 2) and T2 was significant. At T2, of 131 implants assessed, 13 (10%) presented signs of peri-implantitis, 5/74 implants (6.7%) with AHA, and 8/57 implants (14%) with IHA, based on the case definitions according to the most recent criteria for studies using MBL ($MBL \geq 3$ mm with BoP and $PD \geq 6$ mm).

Conclusions

The findings from the current 4-year follow-up prospective study indicated that the lack of proper oral hygiene access results in more peri-implant inflammation and marginal bone loss. Additionally, it also shows that factors that influence accessibility (prosthetic design, location in the mouth, implant type, type of material, etc.) also require greater attention from the scientific community. The provision of an aesthetic smile and masticatory function without proper attention to oral hygiene access may result in temporary solutions that could lead to future discomfort and health concerns to the patient. Before being treated with implant therapy, the patient must be properly warned of the required regular self and supportive maintenance care, while clinicians should see this type of treatment as a long-term therapy that will require their continued attention.