15891 POSTER DISPLAYCLINICAL RESEARCH – PERI-IMPLANT BIOLOGY

Do crestal bone levels change gradually with time? An up to 7.5-year study on SEVEN and C1 implants

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Background: The distinction between survival rates and success rates has been around for several decades; it is widely used to compare implant performance over time. Survival rates consider functioning implants only while success rates includes the measurement of crestal bone loss (CBL) over time on both proximal implant sides. To be considered as a success, the accepted criteria of CBL is 1.0-1.5 mm during the first year and then 0.20 mm per additional year. This concept supposes a gradual CBL over time.

Aim/Hypothesis: Aim of the study was to measure the CBL as a function of time for 2 distinct time periods on 2 different implant systems. The CBL over a period of 2.5-5.5 years was first considered on an implant with a conical connection; then a 4-7.5 year period was considered on an implant with an internal hex.

Material and Methods: A total of 62 implants (36 SEVEN, 26 C1, MIS) have been placed in the mandible and were followed over time. Follow-up time of the C1 was 31 to 69 months (median 55)- follow-up time of the SEVEN implants was 48 to 91 months (median 79). Crestal bone loss around the implants was measured on panoramic radiographs on the mesial and distal sides. Implants on unreadable radiographs were excluded. Implants that underwent clear radiographic signs of peri-implantitis (noticeable U-shape bone defect) and implants that had a CBL difference between the mesial and distal sides > 1.2 mm were considered to have suffered from a non-'physiological' progressive CBL. They were not included in this survey because the aim of this study was to measure a 'physiological' homogeneous progressive bone loss that is supposed to occur with time at a rate of 0.20 mm per year of function after the first year. The Kendall rank correlation coefficient was used to test the association strength between CBL and time.

Results: Mean CBL of the C1 implants was 1.11 ± 0.73 mm; mean CBL of the SEVEN implants was 1.44 ± 0.72 mm. The difference was statistically significant (Mann-Whitney U test, $P = .021$; $P < .05$). For the shorter interval of follow-up with the C1 implants- during the 2-3 year interval CBL was 1.13 ± 1.43 mm, during the 3-4-year interval CBL was 1.30 ± 0.51 mm; during the 4-5-year interval CBL was 1.05 ± 0.87 mm; during the 5-6-year interval CBL was 1.00 ± 0.54 mm. The Kendall correlation coefficient was = -.031; therefore, no association between CBL and time was found. For the longer interval of follow-up with the SEVEN implants- during the 4-5-year interval CBL was 1.41 ± 0.74 mm; during the 5-6 year interval CBL was 1.33 ± 0.48 mm; during the 6-7 year interval CBL was 1.28 ± 0.77 mm; during the 7-8 year interval CBL was 1.70 ± 0.78 mm. The Kendall correlation coefficient was = .052; therefore, no association between CBL and time was found.

Conclusion and Clinical Implications: Within the limitations of this study, the present data obtained with the SEVEN and the C1 implant systems are suggesting that there is no association between crestal bone loss and time of implantation for periods between 2.5 to 7.5 years. The amount of CBL widely used to assess survival rates of implants and compare implant performances over time might need refinement.