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CLINICAL RESEARCH – PERI-IMPLANT BIOLOGY

The effect of soft tissue thickness on crestal bone loss of early loaded implants

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Background: CBL around implants is a multifactorial process with multiple etiology. Several factors like thickness of the gingiva at the implant site have been identified to affect early in time the amount of CBL. Most of the studies have been generated with implants loaded after more than 2 months following surgery. To the best of our knowledge, there is no experimental or clinical study comparing the effect of the gingiva thickness on early loaded implants.

Aim/Hypothesis: To retrospectively evaluate the effect of soft tissue thickness on crestal bone loss of early loaded implants after 1 and 5 years.

Materials and Methods: 44 tapered implants with platform switching (C1®, MIS) were crestally placed in the posterior mandible and maxilla to rehabilitate edentulous sites; healing followed a 2-stage surgical protocol. The implants were loaded after six to eight weeks. Mesial and distal crestal bone loss (CBL) and soft tissue thickness (STT) were measured on standardized panoramic radiographs. Thin gingiva sites were 21, average thickness was 2.0 ± 0.3 mm; thick gingiva sites were 23, average thickness was 3.0 ± 0.8 mm. Success rate and crestal bone loss were measured after 1 and 5 years. The *t*-test was used to compare the CBL differences between groups; significance was set at 0.05.

Results: No early loaded implant failed at the 1- and 5-year of follow-up; the success rate was 100%. After 1 year, the CBL of the thin and thick gingival groups were 0.96 ± 0.49 and 0.55 ± 0.41 mm, respectively; the difference was statistically significant ($P = 0.004$). After 5 years, the CBL of the thin and thick gingiva groups increased to 1.12 ± 0.84 and 0.65 ± 0.69 mm, respectively; the difference however was not statistically significant ($P = 0.052$). Pairwise comparison of CBL between the 1- and 5-year follow-up for the thin and thick gingiva groups showed no statistically significant differences.

Conclusions and Clinical Implications: Within the limitations of this study, early loading of C1 implants within 6 to 8 weeks is considered to be safe. After 1 year, CBL was more pronounced at sites with a thin gingiva; at 5 years the difference between the groups was levelled. Between 1 and 5 years, the CBL increased slightly but not in a statistically significant way.

Keywords: early loading, soft tissue thickness, platform switching, crestal bone loss, dental implants