Retrospective Study of 1087 Anodized Implants Placed in Private Practice: Risk Indicators Associated With Implant Failure and Relationship Between Bone Levels and Soft Tissue Health

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Introduction: *To evaluate risk indicators associated with implant failure and relationship between bone levels and soft-tissue health of anodized implants placed in private practice.*

Material and Methods: *Partially or completely edentulous patients who received an anodized implant between 2003 and 2013 were included. Univariate and multivariate analysis was used to identify the relationship between study variables and implant failure. Mean marginal bone level changes (MBLΔ) were assessed using periapical radiographs. Periimplant soft tissue was evaluated using a modified bleeding index (implant mucosal index, IMI).*

Results: *A total of 1087 implants placed in 414 patients were followed for 3.9 ± 2.7 years. The cumulative implant survival rate after 10 years of function was 97.0%. Shorter (P = 0.0068) and maxillary implants (P = 0.0314) were associated with lower implant survival rate. Mean MBL decreased from −0.16 ± 0.43 mm at baseline to −0.53 ± 0.53 mm 8 to 10 years later. Implants with healthier mucosa were associated with less bone loss.*

Conclusions: *Implants with an anodized surface showed a high long-term survival rate in a daily practice. Longer implants and implants placed in the mandible were associated with greater survival. Immediate loading and tapered design did not affect implant survival. Profuse multipoint bleeding and suppuration on recall were associated with greater bone loss. (Implant Dent 2018;27:177–187)*

Key Words: dental implants, anodized surface, cohort study, survival analysis

Osseointegration has proven to be a reliable mode of fixation for oral implants, providing more than 30 years of positive clinical outcomes.[1] Factors including biocompatibility, design, and surface characteristics of the dental implant, patients' susceptibilities, as well as clinicians' skills, may play a significant role in this process.[2–6] Despite high survival rate of implant-supported prostheses and substantial improvements within implant dentistry over time, esthetic, biologic, and technical complications are still frequent.[7] Hence, there is still a need to analyze detailed information on implant survival and complication rates over time. Patient-related risk factors, such as smoking, lack of oral hygiene compliance, or history of periodontal disease, may jeopardize the overall implant survival and success rate.[8–11] Furthermore, implant-related risk indicators, such as bone conditions, implant design, surgical procedure, timing of implant placement, time before loading, and overload,[12] may lead to periimplant bone loss and loss of implant stability. Several implant surface modifications have been introduced in the last years to improve osteoconductive properties,[13] facilitate a strong osseointegration in shorter periods of time through increased surface roughness,[14,15] and ultimately lead to a lower incidence of implant failure.[16] Among them, implants with the anodized surface pro-

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