

Retrospective study on the clinical outcomes of small-diameter implants supporting fixed prostheses without bone augmentation in the posterior region after 2 to 12 years

Misi Si DDS, PhD, Yu Zhang DDS, Jiaying Li DDS, Fuming He DDS, PhD 

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Abstract

Background

Small-diameter implants (SDIs: diameter <math>< 3.5\text{ mm}</math>

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Purpose

To evaluate the clinical and radiographic outcomes of SDIs supporting fixed prostheses without bone augmentation in the posterior region, and to analyze the potential influencing factors related to SDI failures.

Materials and Methods

Clinical and radiographic data of 243 SDIs in 156 patients were retrospectively assembled after 2 to 12 (mean 4.75) years of follow-up. Implant and prosthesis failures, mechanical and biological complications, and radiographic marginal bone loss (MBL) were evaluated. The influence of patient/implant characteristics and prosthetic design on SDI failures was investigated.

Results

Five implants in five patients failed, contributing to 10-year cumulative survival rates of 97.9% on an implant-based analysis and 96.8% on a patient-based analysis. Biological complications and mechanical complications were detected in 22 (9.1%) and 31 (12.8%) of implants, respectively. No implant fracture was detected. Peri-implant MBL during 10 years was $0.60 \pm 0.90\text{ mm}$ on average. The implant type (bone-level or tissue-level) was the only factor that significantly influenced SDI failures.

Conclusion

SDIs supporting fixed prostheses in the posterior region achieved predictable long-term clinical outcomes. However, tissue-level titanium SDIs should be avoided where possible.

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