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Long-Term Survival of Implant-Supported Overdentures: a Nine-Year Randomized Clinical Study

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Objectives In many clinical cases anatomical conditions such as atrophied alveolar ridge do not allow insertion of normal diameter implants. At this point, reduced diameter implants (>3.0 to <3.5 mm) can be a sufficient solution to avoid complex surgical treatments. The aim of this trial was to evaluate long term survival, prosthetic and biological complications for two-piece reduced-diameter implants in the interforaminal region supporting overdentures with Locator attachments.

Methods Twenty-five patients with edentulous mandibles received four diameters reduced implant-supported dentures with Locator attachments. Following implantation, anterior implants were immediately loaded with Locator-attachments, while posterior implants underwent conventional healing. Three months post-implantation, half of the patients received two Locator-attachments on anterior implants; the other half, received four. After three months the groups switched. From nine months on, all 4 implants in each patient were loaded. Follow-up examinations included documentation of implant-related complications, modified gingiva index, modified plaque index, OHIP-G and radiographic measurements of bone loss.

Results Up to nine years after restauration eighteen patients with seventy-two implants were available for the follow-up. During the observation period, one implant was lost resulting in implant survival of 98%. The outcomes of mPI and mGI for the 18 patients ranged between of 0-2 on the scale. During the observation period 136 prosthetic complications occurred requiring aftercare measures. Frequently encountered were minor complications, such as changing retention inserts. Another 9 Locator abutments had to be replaced due to wear. Effects of the initially different loading protocols on the complication rate of the two subgroups were not found. Functional limitations, psychological discomfort and other OHIP-G domains remained low and hardly differed between the last recalls. All participants would recommend the treatment option of mandibular dentures supported by four implants.



Conclusions Overdentures placed on 4 interforaminal implants using Locator attachment can be recommended as long-term treatment option for the edentulous mandible. Considerable aftercare caused by predominantly minor complications has to be taken into account.