Systematic review on success of narrow-diameter dental implants.

Review article

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Abstract

PURPOSE: The aim of this systematic review was to determine the survival and success rates of narrow-diameter implants (NDI) in different clinical indications compared to standard diameter implants.

MATERIALS AND METHODS: Implant diameters were categorized into categories 1 (< 3.0 mm), 2 (3.00 to 3.25 mm), and 3 (3.30 to 3.50 mm). Retro- and prospective studies with more than 10 patients and a follow-up time of 1 year or more were included.

RESULTS: A literature search from 1995 to 2012 revealed 10 articles reporting on implant diameters < 3 mm (Category 1), 12 articles reporting on implant diameters 3 to 3.25 mm (Category 2), and 16 articles reporting on implant diameters 3.3 to 3.5 mm (Category 3). The quality of the studies was mostly low with a high risk of bias. Dental implants < 3.0 mm (mini-implants) were one-piece in the edentulous arch and non-loaded frontal region with survival rates between 90.9% and 100%. For dental implants with a diameter between 3.0 and 3.25 mm, most were two-piece implants inserted into narrow tooth gaps without loading and in the frontal region. Survival rates for these implants ranged between 93.8% and 100%. Implants of 3.3 to 3.5 mm were two-piece and were also used in the load-bearing posterior region. Survival rates were between 88.9% and 100%, and success rates ranged between 91.4% and 97.6%. A meta-analysis was conducted for NDI (3.3 to 3.5 mm), which showed no statistically significant difference in implant survival compared to conventional implants with an odds ratio of 1.16 (0.7 to 1.69).

CONCLUSIONS: Narrow-diameter implants of 3.3 to 3.5 mm are well documented in all indications including load-bearing posterior regions. Smaller implants of 3.0 to 3.25 mm in diameter are well documented only for single-tooth non-load-bearing regions. Mini-implants < 3.0 mm in diameter are only documented for the edentulous arch and single-tooth non-load-bearing regions, and success rates are not available. Long-term follow-up times > 1 year and information on patient specific risk factors (bruxism, restoration type) are also missing.

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