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Reliability of Linear Distance Measurement for Dental Implant Length with Standardized Periapical Radiographs

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Abstract: The purpose of this study was to investigate the accuracy of distance measurements of implant length based on periapical radiographs compared with that of other modalities. We carried out an experimental trial to compare precision in distance measurement. Dental implant fixtures were buried in the canine and first molar regions. These were then subjected to periapical (PE) radiography, panoramic (PA) radiography, conventional (CV) and medical computed (CT) tomography. The length of the implant fixture on each film was measured by nine observers and degree of precision was statistically analyzed. The precision of both PE radiographs and CT tomograms was closest at the highest level. Standardized PE radiography, in particular, was superior to CT tomography in the first molar region. This suggests that standardized PE radiographs should be utilized as a reliable modality for longitudinal and linear distance measurement, depending on implant length at local implantation site.

Key words: Dental implant length, Radiography, Measurement accuracy, Mandible

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