

AI ALGORITHMS FOR ASSESSING APICAL PERIODONTITIS HEALING

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ABSTRACT

Dental diagnostics are an ever-evolving field led by advances in artificial intelligence (AI); unlike subjective evaluative methods, many of these AI techniques give objective and reproducible measures of treatment outcomes. Classically, clinical and radiographic measures of healing of apical periodontitis have always been considered two-dimensional radiographs and clinical parameters: they suffer from subjectivity and distortion of images. With the evolution of AI algorithms, more recently in particular deep learning models, and with the advances in their development, periapical changes can be detected with increased accuracy, with bone regeneration being accurately quantified and the healing of lesions monitored over time. The models can view and assess very large volumes of images and thus can assist in improving accuracy in diagnoses and in standardizing the assessments of outcomes among various clinicians and settings for assessment. This paper explores AI algorithm development and application for apical periodontitis healing assessment, discussing their clinical usage potential and limitation, and future perspectives en route to integration into routine endodontic practice.

KEYWORDS: *Artificial Intelligence; Apical Periodontitis; Healing Assessment; Deep Learning; Endodontics; Cone-Beam Computed Tomography; Dental Imaging*

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