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Root-Canal Treatment Success Evaluation With Loose Rather Than Strict Criteria

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Objectives To determine which of the loose or strict radiographic criteria for root-canal treatment success is most predictive of long-term *clinical* success (patient-centred).

Methods Loose radiographic criteria for treatment success are defined as reduction of periapical radiolucency, while strict criteria imply absence or complete resolution of periapical radiolucency. Clinical success is defined as the absence of signs and symptoms. This paper uses a similar data set and methodology as a recently published one and (Van Nieuwenhuysen et al., IEJ 2023). Briefly, data concerning the root canal treatments (N=2500) were systematically collected and prospectively followed for up to 25 years. Information was recorded among clinical, technical, radiographic and patient-related characteristics (~150 variables/treatment). The data were analysed by multivariable Cox proportional hazards model and survival curves were generated ($\alpha=0.0125$).

Results Survival probability for strict *radiographic* success decreased more rapidly than for *clinical* success, the former reaching just under 75% after 20 years, while the latter remained slightly above 85% (follow-up rate = 56.4%, mean and median follow-up times = 6.5 and 5 years, respectively).

“Size of periapical bone radiolucency”, corresponding to strict criteria, was not significant for *clinical* failure ($p=0.0178$) in the multivariate model. However, considering “favourable radiographic evolution” - corresponding to loose criteria (change to a lower size category) - instead of “size of periapical radiolucency” (strict criteria) in the multivariate model revealed high significance ($p<0.0001$).

Conclusions Based on the present results and analysis, it appears that the emphasis should be put on the *radiographic evolution*, which is associated with *clinical* success, rather than on the presence or size of the periapical radiolucency. This advocates the use of “loose” rather than “strict” radiographic success criteria, which is a form of theoretical abstraction lacking the necessary dynamics of healing processes, particularly in a patient-centered perspective.