Influence of the quality of coronal restoration on periapical health

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INTRODUCTION: Many teeth presenting poorly filled and probably poorly prepared root canals remain clinically and radiographically asymptomatic for years. Therefore, factors other than the endodontic treatment quality determine the clinical success. Many laboratory studies have shown that coronal leakage may lead to the contamination of the periapical area by bacteria originating from the oral cavity. Some clinical studies have evaluated the influence of the coronal seal on periapical health but, apart from Hommez et al.'s work, they suffer from a severe bias because the quality of coronal restoration is only based on a radiographic examination. The aim of the present work was to confirm previous results, combining a clinical and a radiographic investigation, to evaluate the relative influence of coronal restoration on periapical health.

METHODS: A radiographic investigation, evaluating the endodontic treatment quality and the presence of periapical radiolucency, was performed upon 592 teeth with root canal treatment performed at least 4 years before the examination. Three factors were recorded. Factor 1: periapical health was recorded according to the PAI index[2]. Factor 2: the endodontic treatments were classified into “good endodontic treatment" i.e. dense filling material within 2 mm of the apex and “poor endodontic treatment” i.e. other cases. Factor 3: the quality of the coronal restoration was then recorded according to the USPHS criteria [3]. A chi[2] test was performed, at the 95% confidence level, to evaluate the influence of quality of endodontic treatment and quality of coronal restoration on the presence of periapical radiolucency.

RESULTS:

Table 1: Number of teeth showing periapical radiolucency according to quality of root canal filling (n=592)

p=0.004	With periapical radiolucency	Without pericapical radiolucency
Good endodontics	16	201
Poor endodontics	117	258

Table 2: Number of teeth showing periapical radiolucency according to quality of coronal restoration (n=592)

p=0.04	With periapical radiolucency	Without pericapical radiolucency
Good restoration	70	302
Poor restoration	63	157

Table 3: Number of teeth showing periapical radiolucency according to quality of root canal filling and quality of coronal restoration (n=133)

	Good restoration	Poor restoration	Total
Good endodontics	5	11	16
Poor endodontics	65	52	117
Total	70	63	133

CONCLUSIONS: Both factors influence periapical health . A good coronal restoration increases periapical health by 10% regardless of the quality of root canal filling.

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