

Original Article

Assessment of incidence of apical periodontitis and quality of endodontic therapy in a known population

Gursimran Singh Marwah¹, Sameer Khajuria², Ravneet Kour³, Charanpreet Singh⁴, Reevea Singh⁴

¹PG student, Department of Conservative Dentistry, ²PG student, Department of Periodontics, ³PG student, Department of Pedodontics, ⁴BDS Intern, BRS Dental College & Hospital, Sultanpur, Panchkula

Abstract

Background: One of the common reason for which patients seek dental treatment is toothache. Root canal therapy and tooth extraction are amongst the most commonly administered treatments for pain relief. Hence; we planned the present study to evaluate the incidence of apical periodontitis and endodontic therapy quality in a known population. **Materials & methods:** The present study included assessment of incidence of apical periodontitis and quality of root canal therapy in a known population. A total of 100 participants were included in the present study. De Moor et al criteria were used for the evaluation of endodontic therapy and peri- apical status. All the results were compiled and analysed by SPSS software. Chi- square test and student t test were used for the assessment of level of significance. **Results:** 5 percent of the root canal treated cases showed presence of apical periodontitis whereas in 56 percent of the cases, no apical periodontitis was detected. 70 percent of the cases of teeth treated with root canal therapy with less than 2 mm from radiographic apex showed presence of apical periodontitis. **Conclusion:** Prevalence of apical periodontitis is dependent up on the technical quality of root canal therapy.

Key words: Apical Periodontitis, Quality, Root Canal Therapy,

Corresponding author: Gursimran Singh Marwah¹, PG student, Department of Conservative Dentistry,, BRS Dental College & Hospital, Sultanpur, Panchkula.

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INTRODUCTION

Toothache is highly prevalent in the community that makes patients to seek for necessary pain-relieving treatments. Root canal therapy (RCT) and tooth extraction are amongst the most commonly administered treatments for pain relief.^{1, 2} During the past two decades new advances such as introduction of biomaterials, application of dental operating microscope (DOM) during surgical and nonsurgical treatments and improvement of engine-driven instruments for root canal preparation have led to higher success rate in endodontic treatment.^{3, 4} Hence; we planned the present study to evaluate the incidence of apical

periodontitis and endodontic therapy quality in a known population.

MATERIALS & METHODS

The present study was conducted in the department of endodontic of the dental institute and included assessment of incidence of apical periodontitis and quality of root canal therapy in a known population. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 100 participants were included in the present study. The accompanying information were recorded on an organized frame for each subject: age and sex, teeth exhibit (barring

third molars), number and area of non-root-filled teeth with apical sores, number and area of root-filled teeth with and without AP, and specialized nature of root channel fillings (length of root filling from the radiographic pinnacle). Complete radiographic examination was done of all the patients for assessment of quality of root canal and prevalence of apical periodontitis. De Moor et al criteria were used for the evaluation of endodontic therapy and peri- apical status.⁵ All the results were compiled and analysed by SPSS software. Chi- square test and student t test were used for the assessment of level of significance. P- Value of less than 0.05 was taken as significant.

RESULTS

Table 1 shows the association of endodontic therapy quality and apical periodontitis. 5 percent of the root canal treated cases showed presence of apical periodontitis whereas in 56 percent of the cases, no apical periodontitis was detected. 70 percent of the cases of teeth treated with root canal therapy with less than 2 mm from radiographic apex showed presence of apical periodontitis.

Table 1: Association of quality of endodontic therapy and apical periodontitis

Length of root canal filling	Endodontic therapy with apical periodontitis (%)	Endodontic therapy without apical periodontitis (%)
Adequate	5	56
Inadequate		
Less than 2 mm from radiographic apex	70	35
Material extrusion through apex	8	3
Material only in pulp chamber	17	6
Total	100	100

DISCUSSION

In the present study, we observed that apical periodontitis was more prevalent in patients with inadequately treated root canal therapy (**Table 1**). Peciuliene V et al investigated the technical quality of root fillings in root filled teeth, their association with periapical status and prevalence of apical periodontitis. The sample consisted of 83 subjects, presenting consecutively as new patients seeking dental care (prosthetic, endodontic and cariologic treatment) in the years 2005/2006. Clinical and radiographic examination on each patient was performed using the scoring system (Periapical index (PAI)) proposed by Ørstavik et al. From the periapical radiographs status of endodontically treated teeth was recorded. For each tooth the following items were surveyed: the presence of a root filling, its quality (lateral seal and length in the root canal) and the periapical status. Of the 2186 functional teeth, 283 had undergone root canal treatment (13%). Amongst 283 root filled teeth, 122 teeth (43.1%) had radiological signs of a periapical lesion (PAI>2). Only 28.6% of the root filled teeth fulfilled the criteria of an acceptable root canal filling. Inadequate lateral seal of root filling was observed in 165 (58.3%) of 283 endodontically treated teeth. Inadequate length of endodontic treatment was discovered in 183 (64.7%) out of 283 teeth. Root filled teeth without voids had apical periodontitis in 25 (21.0%) out of 118 of cases, whereas if voids were detected, disease was present in 97 (58.8%) out of 165 teeth. Apical periodontitis was found in 23 (23.0%) out of 100 teeth with adequate length of root filling, whereas if the filling was too short or long, periapical lesions were present in 99 (54.0%) out of 183 teeth. Apical periodontitis was present in 43,1% of root filled teeth. Only 28.6% of the root filled teeth fulfilled the criteria of an acceptable root canal filling. The results of this study indicate that inadequate root fillings were more often associated with an increased prevalence of apical periodontitis. On the contrary, adequate root fillings significantly reduced the prevalence of disease. Many root canal treatments were technically unsatisfactory and substantial efforts must be made to improve the standard of endodontic treatment.⁶⁻⁹ Kamberi B et al investigated apical periodontitis AP and endodontic treatment in an adult Kosovar population based on radiographic examination. The sample used for this study consisted of randomly selected individuals referred to the University Dentistry Clinical Center of Kosovo in the years 2006-2007. Orthopantomographs of 193 patients were evaluated. The periapical status of all teeth

(with the exception of third molars) was examined according to Ørstavik's Periapical Index. The quality of the root canal filling was rated as 'adequate' or 'inadequate' based on whether all canals were filled, the depth of fill relative to the radiographic apex and the quality of compaction (absence/presence of voids). Data were analyzed statistically using the Chi-square test and calculation of odds ratios. Out of 4131 examined teeth, the prevalence of apical periodontitis (AP) and endodontic treatment was 12.3% and 2.3%, respectively. Of 95 endodontically-treated teeth, 46.3% were associated with AP. The prevalence of AP increased with age. The prevalence in subjects aged over 60 years old (20.2%) was higher than in other age groups. A statistically significant difference was found for the frequency of endodontically-treated teeth associated with AP in the 40-49 year age group ($P < 0.001$). Of some concern was the discovery that only 30.5% of the endodontically-treated teeth examined met the criteria of an acceptable root canal filling. Inadequately root-filled teeth were associated with an increased AP risk. The prevalence of AP and the frequency of endodontically-treated teeth with AP in this Kosovar population are higher than those found in other countries. Inadequate root canal fillings were associated with an increased prevalence of AP.¹⁰⁻¹²

CONCLUSION

From the above results, the authors concluded that prevalence of apical periodontitis is dependent up on the technical quality of root canal therapy. However, future studies are recommended.

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