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ORIGINAL RESEARCH

Assessment of profile and treatment outcome of patients with apical periodontitis

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ABSTRACT:

Background: Apical periodontitis is a destruction of periradicular tissues, in progressive inflammation stages. The present study was conducted to assess treatment outcome of apical periodontitis. **Materials & Methods:** The present study was conducted on 134 cases of apical periodontitis reported to the department. Root canal filling (RCF) was evaluated according to the European Society of Endodontology criteria. A final evaluation and agreement were done with a qualified endodontist and an oral radiologist. **Results:** Out of 134 patients, males were 74 and females were 60. Maxillary teeth were involved in 80 and mandible in 54. On subsequent recall visits only 22 had still apical periodontitis. Intra-operative treatment session was 1 in 58 and 2 in 76. There were complications in 15 cases only. The difference was significant ($P < 0.05$). **Conclusion:** Authors found that there was significant less failure rate of endodontic treatment of cases performed in apical periodontitis patients.

Key words: Apical periodontitis, Root canal filling, Treatment outcome

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INTRODUCTION

The main objectives of endodontic treatment are to prevent or treat apical periodontitis so that the tooth can be retained in the oral cavity in healthy conditions. The occurrence of signs and/or symptoms of disease in association with root canal-treated teeth means that apical periodontitis (disease) is present.¹ This is often referred to as post-treatment apical periodontitis, which can be categorized as emergent persistent or recurrent. These are the same diseases as the primary apical periodontitis associated with untreated canals; the difference is the root canal conditions.²

Apical periodontitis (AP) is a destruction of periradicular tissues, in progressive inflammation stages, involving most frequently bacteria of endodontic origin. Pulp and periapical diseases are most commonly due to caries and

dental trauma, but dental material toxicity and iatrogenic procedures are also involved. The cause of post-treatment disease is essentially bacterial infection. This can be a persistent or secondary intra-radicular infection, but in some cases it may be an extra-radicular infection. Non-microbial factors have also been suggested as a potential cause of post-treatment disease, but evidence is relatively weak as it comes from a few case reports.³

Boykin et al reported that dental pain and infection are the most predominant reported reasons for which endodontic treatment is performed, 40 and 30%, respectively. Improvements in molecular biology techniques and in the fields related to endodontics lead to a better understanding of the oral microbiota and management of endodontic infections and apical periodontitis (AP). Despite the

extensive literature published regarding success and failure related to root canal treatments (RCTs) or endodontic treatment outcomes (ETOs), a great variability exists between study protocols, prognostic factors included and data obtained.⁴ The present study was conducted to assess treatment outcome of apical periodontitis.

MATERIALS & METHODS

The present study was conducted in the department of Endodontics. It comprised of 134 cases of apical periodontitis reported to the department. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. Data such as name, age, gender etc. was recorded. In all cases, root canal treatment was performed as per manufacturer instructions.

Root canal filling (RCF) was evaluated according to the European Society of Endontology criteria. RCF is considered adequate when it is dense and homogeneous with a filling material level within 0–2 mm of the radiographic apex; RCF is inadequate if the root canal is underfilled (>2 mm short of the radiographic apex) or overfilled (extrusion of the filling material beyond the apex), and the RCF is inhomogeneous, not dense with presence of voids. For multirrooted teeth, the canal presenting the most inadequate RCF is considered. A final evaluation and agreement were done with a qualified endodontist and an oral radiologist. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant (P< 0.05).

RESULTS

Table I Distribution of patients

Gender	Males	Females
Number	74	60

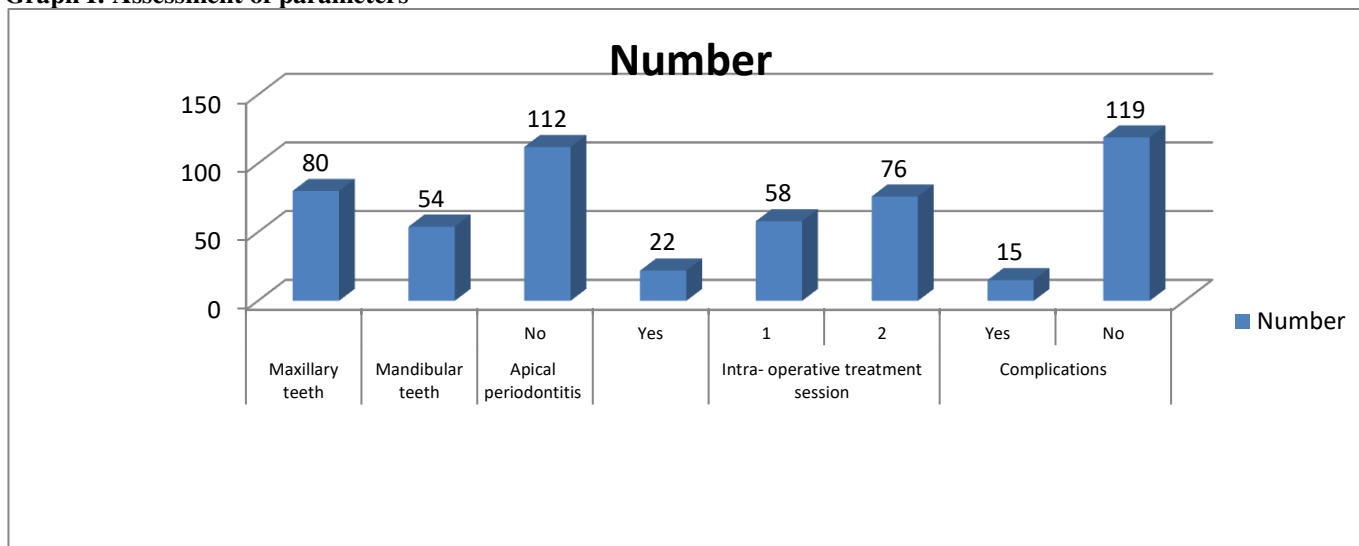
Table I shows that out of 134 patients, males were 74 and females were 60.

Table II Assessment of parameters

Parameters	Number	P value
Maxillary teeth	80	0.45
Mandibular teeth	54	
Apical periodontitis	No	0.01
	Yes	
Intra- operative treatment session	1	0.52
	2	
Complications	Yes	0.01
	No	

Table II, graph I shows that maxillary teeth were involved in 80 and mandible in 54. On subsequent recall visits only 22 had still apical periodontitis. Intra- operative treatment session was 1 in 58 and 2 in 76. There were complications in 15 cases only. The difference was significant (P< 0.05).

Graph I: Assessment of parameters



DISCUSSION

The general purpose of the endodontic treatment is to maintain teeth duration as long as possible in the oral cavity. The main purpose of root canal treatment is to fill up or block all root canal and to form a fluid-tight seal on the apical foramen of the tooth, so that any possibility of a secondary infection occurrence due to the mouth cavity or periradicular tissue leakage into the root canal system can be avoided. The necessity for properly filling the canal seems obvious, once cleaning, shaping and disinfection are completed, yet ineffective obturation is often a prelude to eventual endodontic failure. For symptoms such as fistulation, swelling, pain, percussion, tenderness, discomfort during chewing and in cases in which the apical lesion becomes larger or is not diminishing retreatment is indicated. The goals of nonsurgical retreatment are to remove materials from the root canal space.⁵

Post-treatment apical periodontitis is usually observed after endodontic treatments that have not followed acceptable standards for prevention and control of the root canal infection. In these cases it is not difficult to realize the cause of disease: persistent or secondary root canal infection resulting from inadequate treatment.⁶ Nevertheless, post-treatment apical periodontitis can also be Hülsmann⁶ observed in some teeth that were apparently well treated. Post-treatment disease has been reported to occur in 5-15% of teeth with pre-operative apical periodontitis even when treatment has followed proper standards.⁷ The present study was conducted to assess treatment outcome of apical periodontitis.

In present study, out of 134 patients, males were 74 and females were 60. Maxillary teeth were involved in 80 and mandible in 54. On subsequent recall visits only 22 had still apical periodontitis. Intra-operative treatment session was 1 in 58 and 2 in 76. There were complications in 15 cases only. The difference was significant ($P < 0.05$).

It is well known that infection of the pulp may interfere with ET success, a reason why a more prolonged disinfection is required. PAI score ≤ 2 was found to be the predictor of periapical health. Antimicrobial effectiveness is the basic step for any endodontic procedure to be carried out in root canal preparations. Removal of intracanal tissue and necrotic material is served by root canal preparation. Large number of materials was available in marketplace, including the following techniques more flexible alloys which extends fatigue life. Practice of reciprocation motion. Use of instrument designed to instrument large area of the canal and Nickel-titanium rotary instruments.⁸

Post-treatment disease definitely requires intervention, even when symptoms are absent. When treatment is preferred over extraction, re-treatment and apical surgery should be

considered for both.⁹ Comparing the two modalities, retreatment offers a greater benefit and better ability to eliminate the disease's etiology (root canal infection) with minimal invasion and a smaller risk such as significantly less postoperative discomfort and a lesser chance of injuring nerves, sinuses or other structures. Canal blockage can occur during the process of canal enlargement. Files are known to compact debris at the apex; even vital tissue can be compacted against the apical restriction.¹⁰ Suddenly, working length is shorter because the instruments are working against the packed mass at the apex.

CONCLUSION

Authors found that there was significant less failure rate of endodontic treatment of cases performed in apical periodontitis patients.

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