

Research Article

Presenting Features and Factors Leading to Extraction of Root Canal Treated Teeth

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Abstract

Tooth pain is one of the most devastating symptoms manifested as a result of various dental pathologies. Root canal therapy and tooth extraction are the two most common procedures carried out for treatment of toothache. The aim of this study was to find out the most common causes of root canal treated teeth failure and its frequency in different age and gender population.

Methodology: Sixty patients with root canal treated teeth who presented for extractions to the minor oral surgery were included in the present study. Names of the patients were replaced by their OPD numbers for the

sake of privacy. The subjects were selected regardless from where they had received the treatment, properly examined and their histories recorded after taking written consent. Information was collected using a detailed questionnaire, and questions regarding symptoms/causes for extraction of root canal treated teeth were asked. The data so collected was analysed through SPSS version 26.

Results: There were total 60 patients out of which 28 (46.67%) were female and 32 (53.33%) were male. These patients belonged to various age groups out of which 46-55 (26%) age group was the most prevalent followed by 15-25 (25%) and 36-45 (25%) age groups.

Most of these patients were from poor socioeconomic background (66%), followed by satisfactory (23%) and good socioeconomic status (11%). The oral hygiene maintenance of these patients was such that 33 (55%) patients were maintaining oral hygiene. The most prevalent method of oral hygiene maintenance was found to be the tooth brushing, used by 42 (70%) patients. Brushing frequency was once a day for 23 (38%) patients and twice per day for 16 (26%) patients. Most of the patients 40 (61%) presented with pain in mandibular teeth as compared to maxillary (20 patients, 33%). The most common tooth involved in these patients was molar 36 (60%), followed by premolar in 13 (22%) patients. The RCT time elapsed varied from only days (1.7%) to years in 36 (60%) patients. Twenty patients (33%) had months elapsed since RCT while 3 (5%) had weeks elapsed. In 45 (75%) patients, RCT was followed by crowning while 15 (25%) didn't get benefited by any prosthesis. Of these patients that did not get any crown for the treated tooth, 14 (23%) were aware that they had to get a crown while 32 (53%) were not. The factors that led these patients to extraction were many, pain being the chief factor in 17 (28%) patients.

Conclusion: Pain was the most common cause in root canal treated teeth due to which patients presented for tooth extraction.

Keywords: Root canal treated teeth; Extraction; Failure; Factors; Causes

1. Introduction

Tooth pain is one of the most devastating symptoms manifested as a result of various dental pathologies [1]. There are various causes of dental pain such as pulpitis, periodontitis and cracked tooth. Tooth pain causes suffering and reduced functioning and is a major component of oral health and quality of life. Dental pain management is also one of the major dilemmas of

modern dental and oral health sciences. The pain of dental origin is popularly managed by extraction and analgesics have a poor role when used alone [2]. Advances in oral rehabilitation process have led to majority of methods of pain relief and tooth preservation. One of these methods is root canal treatment of the affected tooth. These both help in the relief of pain as well as restoration and preservation of a tooth [3]. Unfortunately root canal treated teeth often are presented with pain and can lead to acute and chronic abscess like conditions. Such patients with root canal treated teeth seek help from oral surgery where teeth are being extracted [4]. Customarily, research assessing the outcomes of root canal therapies has focused not on pain, but rather on the presence of radiographic signs, specifically periapical rarefaction. When this metric is used to define the success/failure of endodontic procedures, reports suggest an overall favourable outcome rate ranging from 68% to 91% after at least 1 year [5]. The problem with using periapical rarefaction as the primary measure of outcome status, either alone or as part of a composite index, is that it fails to address the issues of primary concern to patients - whether it hurts and whether the patient can function [6]. Although the survival of teeth could be related to the absence of pain symptoms, tooth survival alone is not a definitive indication that patients are asymptomatic after treatment. The importance of evaluating the outcome of pain is all the more evident by the knowledge that pain is a prominent reason for tooth loss and for continued care seeking, is a major component of oral functioning, and is associated with long-term negative perceptions of dental care [7]. Pain following root canal therapy is known to occur and has many possible explanations, including an untreated or incompletely obturated canal, failed coronal seal, tooth fracture, pain associated with an adjacent tooth, referred pain from a non-odontogenic structure, or deafferentation pain [8]. Thus, the aim of this study was

to find out the most common causes of root canal treated teeth failure and its frequency in different age and gender population.

2. Methodology

The study was conducted in the Department of Oral and Maxillofacial, Lady Reading Hospital Peshawar Pakistan. Institutional ethical approval was obtained and informed written consent was taken from patients to be included in the study. A total of 60 patients with root canal treated teeth who presented for extractions to the minor oral surgery were included in the present study. The subjects were selected regardless from where they had received the treatment. Detailed history was obtained and proper examination was done for each patient. Names of the patients were replaced by their OPD numbers for the sake of privacy. The information was collected thereafter using a detailed questionnaire, and questions regarding symptoms /causes for extraction of root canal treated teeth were asked. The data so collected was analysed through SPSS version 26.

3. Results

The present study was conducted on 60 patients out of which 28 (46.67%) were female and 32 (53.33%) were male. These patients belonged to various age groups out of which 46-55 (26%) age group was the most prevalent followed by 15-25 and 36-45 (25%) age groups. Detail is given in Table 1. Most of these patients were from poor socioeconomic background (66%), followed by satisfactory (23%) and good socioeconomic status (11%). The oral hygiene maintenance of these patients was such that 33 (55%) patients maintained oral hygiene. The most prevalent method of oral hygiene maintenance was found to be the tooth brushing, used by 42 (70%) patients (Table 2). Brushing frequency was once a day for 23 (38%) patients and twice per day for 16 (26%) patients (Figure 1). Frequency of pain was

higher in mandibular teeth (61%) as compared to maxillary teeth (33%). The most common tooth involved in these patients was in patients (60%), followed by premolar in 13 (22%) patient (Table 3). The RCT time elapsed varied from only days (1.7%) to years in 36 (60%) patients. Twenty patients (33%) had months elapsed since RCT while 3 (5%) had weeks elapsed. In 15 patients (25%), RCT was followed by crowning while 45 (75%) patients didn't get benefited by any prosthesis. Of these patients that did not get any crown for the treated tooth, 13 (22%) were aware that they had to get a crown while 32 (53%) were not. The factors that led these patients to extraction were many, pain being the chief factor in 17 (28%). Detail is given in Table 4.

4. Discussion

In the recent past, despite advances in prevention and operative techniques, teeth extraction remains an important part of oral and dental surgery domain. Reasons for teeth extraction report predominance of carious and periodontal diseases in the available literature [9,10]. Endodontic treatments are carried out for the prevention of teeth extraction and it is important to evaluate the fate of endodontically treated teeth. In the present study the sociodemographic variables were evaluated and it was found that incidence for failure of root canal therapy was more for males (53%) compared to females (46%) [11]. According to a study conducted in Karachi Pakistan, females dominated males. The reason for this difference may be because in Khyber Pakhtunkhwa, the females are resistant to treatment especially by male doctors. They are home ridden and not socially very active. Most of the time, dental facility is far away from their home, so they avail the nearest available facility for the treatment. While in Karachi, females are more socially active. Most of the time, they are independent and confident. They make their own decision and can avail the best dental facility available.

In the present study, the patients most commonly were of age group 46-55(26%) followed by 15-25 & 36-45, which is in accordance with the study, conducted in Alabama with a sample size of 174 teeth. They had a mean age of 49 years with the most prevalent age group of 18-35 years [12]. Out of total subjects, 66% patients who presented for the extraction of endodontically treated teeth were poor. This finding is reflected in most of the studies conducted in this part of the world. The general population in Pakistan is socioeconomically poor. In a local study 66% patients belong to poor and 23% patients had satisfactory socioeconomic status. There is growing evidence that actually this population represent public sector facilities [13]. The most prevalent method of OHM found to be tooth brushing used by 70% of the patient followed by Miswak. Tooth brushing is the most common method of OHM worldwide but Miswake is among the ancient and traditional oral hygiene aid popular in India, Pakistan and most of the Arabian countries. Muslims use Miswak as a part of basic Islamic tradition. These findings are also reflected in a study conducted by Dahiyat al [14]. Mandibular teeth were the most commonly involved in RCT failure. These finding are in contrast with the study done by Jafferian et al [15]. They showed upper jaw involvement in 63% of the cases. This difference may be due to social demographic variations and sample size. They used 2620 sample size while in the present study the sample size is only 60 patients. Although they

showed that caries was the most prevalent cause of extraction, which is in agreement with our study. In the present study, the molars were the most involved teeth (60%) followed by premolar (21.6), incisor (11%) and canine (6.6%). In a research article by Fuss et al in which mandibular molar were involved in 32% patients followed by maxillary 1st molars (17.75%), maxillary central incisor (8.5%), maxillary second premolar (7.75%) and mandibular second premolar (7%) [16]. The reason of involvement of molars in RCT failure cases is of course its multi-rooted nature and complexity of finding and obturation of canals in comparison to the single rooted teeth. In our study, majority of the patients (60%) had received the treatment approximately 12 months after which the problems arise and in 75% patients RCT was followed by crowning. The findings of international studies support the outcome of the present investigations [12,17].

5. Conclusion

Pain was the most common cause in root canal treated teeth due to which patients presented for tooth extraction.

Age in years	N (n=60)	Percentage
15-25	15	25
26-35	12	20
36-45	15	25
46-55	16	26.7
56 and above	2	3.3
Total	60	100

Table 1: Age distribution

Oral Hygiene methods (OHM)	N	Percentage
Tooth brush	42	70
Miswak	13	21.67
Tooth brush + miswak	3	5
Others	2	3.33
Total	60	100

Table 2: Oral Hygiene methods

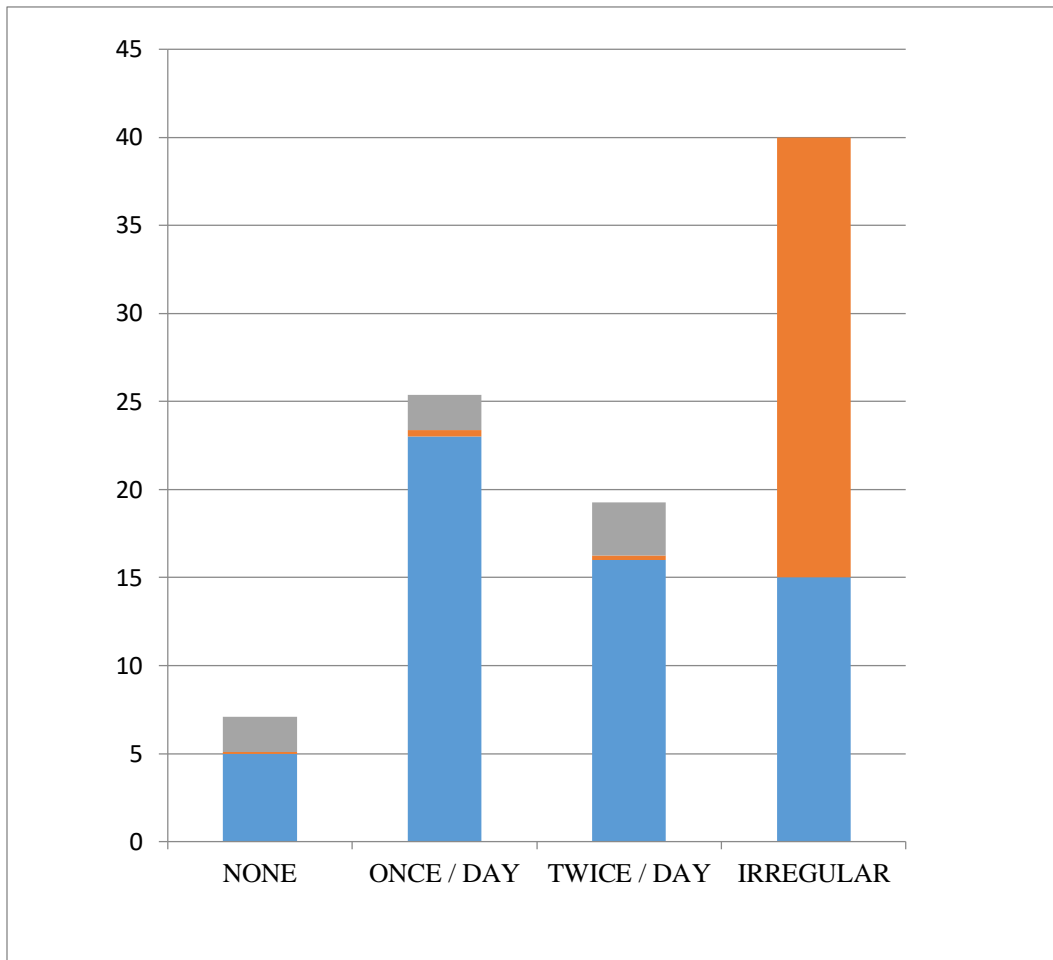


Figure 1: Brushing frequency

Tooth involved	N	Percentage
Incisor	7	11.6
Canine	4	6.67
Premolar	13	21.67
Molar	36	60
Total	60	100

Table 3: Tooth involved

Complains	N	Percentage
Pain	17	28.33
Pain + Swelling	17	28.33
Fractured Tooth	5	8.33
Recurrent Caries	6	10
Mobility	4	6.67
Pain + Fractured Tooth	4	6.67
Pain + Recurrent Caries	3	5
Pain, Swelling, Fractured Tooth	1	1.67
Swelling	1	1.67
Pain + Periapical Pathology	2	3.33
Total	60	100

Table 4: Presenting complaints

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