



## Attitude of General Dental Practitioners toward Root Canal Treatment Procedures in India

Ashwini Gaikwad, Deepak Jain, Prasad Rane, Sarvesha Bhondwe, Swapnil Taur, Saurabh Doshi

### ABSTRACT

**Objective:** The percentage of general dental practitioners is very common in India, so the purpose of this study was to assess attitude of general dental practitioners toward root canal treatment (RCT) procedures.

**Materials and methods:** In a cross-sectional study, 178 dentists (96 males and 82 females) were surveyed using a self-administered, structured questionnaire pretested through a pilot survey. The questionnaire collected information regarding RCT procedures among participants. Data were analyzed using SPSS version 15. Frequency and percentage distributions were calculated.

**Results:** In the present study most of the participants, i.e. 86.4% reported that they perform (RCT) procedures in posterior teeth. Isolation is mainly done with cotton rolls only (74.6%) and very few are using rubber dam in their practice (3.2%). Radiographs were not taken after every step in most of the cases. Rotary instruments were used in less number of cases and K-files were the most popular instruments (66.2%). Also single sitting RCT was not commonly seen.

**Clinical significance:** This study indicates that most of the general dental practitioners' do not comply with quality standards guidelines such as use of rubber dam as isolation. So dentist should update their knowledge and practices with current techniques and materials through CDE programs.

**Keywords:** Root canal treatment, Attitude, General dental Practitioners.

**How to cite this article:** Gaikwad A, Jain D, Rane P, Bhondwe S, Taur S, Doshi S. Attitude of General Dental Practitioners toward Root Canal Treatment Procedures in India. *J Contemp Dent Pract* 2013;14(3):528-531.

**Source of support:** Nil

**Conflict of interest:** None declared

### INTRODUCTION

Root canal treatment (RCT) is considered as an essential element in the dental services provided to the population. Total elimination of microorganisms from the root canal system is the goal of endodontic treatment. There is

substantial evidence that the technical quality of RCT has a significant influence on endodontic therapy outcomes.<sup>1</sup>

Successful RCT depends not only on specific factors like root canal infection, complexity of root canal morphology, etc. but is also very much influenced by less specific, more distinct causes such as dentist's skills and attitudes. Majority of RCT in India is provided by general dental practitioner. Various investigations are therefore, carried out to explore the standard of RCT carried out by them.

Several studies have revealed that the majority of dentists do not comply with the formulated guidelines on the quality of RCT. Danish data have shown on the basis of subpopulations that the vast majority of the examined root canal fillings were of suboptimal quality. A total of 59% of the root-filled teeth had insufficient lateral seal and 40% displayed inadequate length of the root filling. Moreover, apical radiolucency was present in 52% of the root-filled teeth. These studies have demonstrated that more than 50% of the teeth are inadequately treated and approximately 30 to 50% of these examined teeth show radiographic signs of apical periodontitis.<sup>2</sup>

Numerous studies investigated the attitude of dentists in Western countries such as Germany, UK<sup>3</sup> and USA<sup>4</sup> whereas very few studies have investigated the attitude of general dental practitioners toward various aspects of endodontic treatment in developing countries like India.<sup>5</sup> Hence, this study is conducted to assess the attitude of general dental practitioners regarding RCT procedures.

### MATERIALS AND METHODS

The present cross-sectional study was conducted in January 2013 to know the attitude of general dental practitioners toward RCT procedures in Karad district, India.

A list of 190 general dental practitioners was obtained from the local Indian Dental Association branch. All dentists

who were performing root canal procedures in their clinics and were available during the study period came under the inclusion criteria of the study. So a total of 178 dentists were taken into the study sample including 96 males and 82 females. Before commencement of the survey, a written informed consent was obtained from all those who were willing to participate in the survey.

A pilot study was conducted among 20 dentists to check the appropriateness of the questionnaire, and it was found that the questions were unambiguous clear, and easy to respond. A self-administered, structured questionnaire format was made including 11 questions like practice of RCT procedure in clinics, steps in root canal procedure, choice of instruments, isolation methods, number of radiographs taken throughout the treatment, the use of canal irrigants, the choice of obturation technique, filling material, and number of visits.

Dentists were visited by a single investigator, and all participants were asked to respond to each item according to the response format provided with the questionnaire.

## Data Analysis

Data were analyzed using SPSS version 15. Frequency and percentage distributions were calculated. Simple descriptive statistics were used together with Chi-square ( $\chi^2$ ) test. Statistical significance for all tests was accepted at  $p < 0.05$ .

## RESULTS

The distribution of the participants according to years of experience is as 0 to 5 years were 59; 6 to 10 years were 44;

11 to 15 years were 41 and  $\geq 16$  years were 34 dentists. The number of the first two groups (0-5 and 6-10) consisted of more than half the total respondents due to the significant increase in the number of graduates in the last 10 years.

In the present study most of the participants, i.e. 86.4% reported that they perform RCT procedures in posterior teeth. Among them large proportion of dentists are doing isolation with cotton rolls only (74.6%) and very few are using rubber dam in their practice (3.2%) as shown in Graph 1. According to the technique used for preparation of the root canals, around 90% using step-back technique followed by push-pull (6.2%) and step down technique (5.3%).

Table 1 shows that root canal preparation was mainly done with hand instruments (71.4%) and K-files were the most popular instruments (66.2%) followed by Hedstrom files. Eighty-two percent used gutta-percha points as their principle root canal filling material, whereas 11.4% used silver cones and only 6.6% used cement to obturate the canal.

Around half of the participants take radiographs before the start of RCT. However, 21.4% do it for working length determination and 15.8% for master cone determination, whereas 16.1% take radiograph after every step.

Most common intracanal irrigant used was combination of normal saline and sodium hypochlorite (53%). Lateral condensation was the most common obturation technique (Table 2).

Table 3 showed that zinc oxide eugenol sealer with the gutta-percha points is used by most participants and few dentists used the sealer Endomethasone and Sealapex. Cavit

**Table 1:** Instruments used for root canal preparation

Type of instrument	Percentage	Type of root canal hand instrument	Percentage
Hand instruments only	71.4	K-file	66.2
Engine-driven (Rotary) instruments	12.6	Reamer	7.5
Both hand and rotary instrument	16.0	Hedström file	26.3

**Table 2:** Intracanal irrigant used and method of root canal preparation

Intracanal irrigant used	Percentage	Obturation technique	Percentage
Normal saline	27.1	Single-cone	11.5
Hydrogen peroxide	7.4	Lateral condensation	78.2
Sodium hypochlorite	12.5	Vertical condensation	4.3
Combination of normal saline and sodium hypochlorite	53.0	All of the above	6.0

**Table 3:** Type of sealer and temporary material used for RCT

Type of sealer used	Percentage	Temporary filling material	Percentage
Zinc oxide eugenol	82.6	Zinc oxide eugenol	12.1
Endomethasone	7.0	Intermediate restorative material	5.3
Sealapex	10.4	Glass ionomer	4.9
		Cavity	77.7

was the most common temporary filling material used to seal the coronal access cavity between appointments.

The present study mentioned that most of the practitioners (52.4%) complete RCTs in three visits and 26.8% do it in single sitting. Whereas few participants reported completing RCT in more than three visits (Graph 2).

## DISCUSSION

In the present study most of the general dental practitioners practice RCT procedures. The findings were higher than study conducted by Che Aziz in 2006.<sup>6</sup> The reason behind this could be that the present study has been conducted in 2013 as new advancement had come in the endodontics and more number of dentists attend CDE programs in endodontics. Whereas Omari' study had found 100% practice of performing RCT among general dental practitioners in North Jordan.<sup>7</sup>

According to the method of isolation most of the dental professional used cotton rolls and few participants used

rubber dam. Similar findings were obtained in studies done by Che Ab Aziz in 2006,<sup>6</sup> Hommeze et al in 2003,<sup>8</sup> Saunders et al in 1999.<sup>9</sup> This might be due to their belief that better isolation can be achieved without rubber dam and other methods are easy to apply. However, 59% of American dentists,<sup>4</sup> 60% of dentists in UK<sup>10</sup> and 57% of general dental practitioners in New Zealand<sup>11</sup> reported using rubber dam routinely in endodontic treatment. It was found that continuing education course attendees seem to be encouraged to use rubber dam.

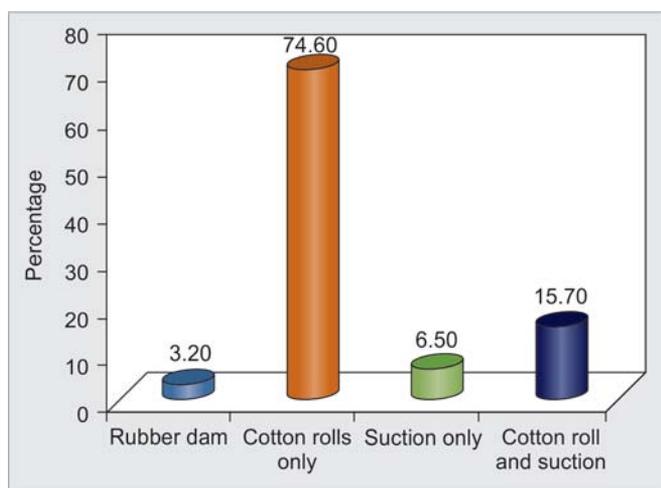
Most common technique used in the present study was step back and the results were similar to studies done by Omari<sup>7</sup> among North Jordanian general dental practitioners and Che Aziz among dental practitioners in 2006.<sup>6</sup>

Dentists in this survey tended to use hand instruments and were not inclined to use more advanced engine driven techniques for shaping the root canal system. Danish study showed that only 18% of the Copenhagen dentists often negotiated root canals with hand NiTi instruments and 10% often used rotary NiTi instrumentation.<sup>12</sup> In Australian survey rotary NiTi instrumentation was used by 22% of the general dental practitioners, 80% of the users of rotary instrumentation reported a more rapid preparation of root canals.<sup>13</sup>

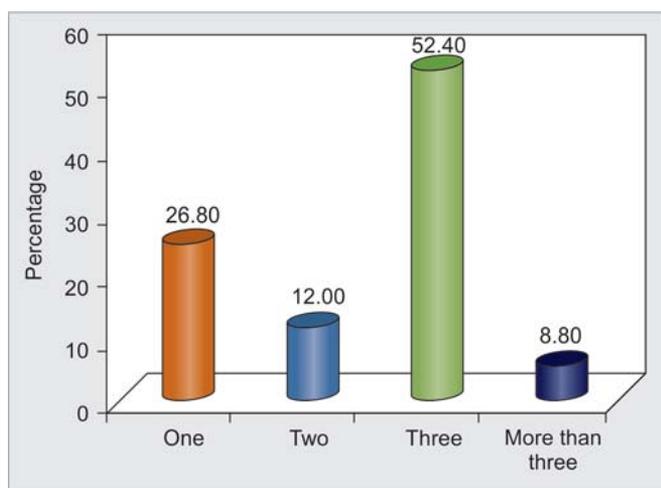
In the present survey half of the participants take radiographs preoperatively whereas more than 50% of the dentists took one radiograph for determining the working length, while 22.9% did not take any radiograph at all in Omari' study.<sup>7</sup>

Most general dental practitioners used combination of normal saline and hydrogen peroxide solutions as canal irrigants. Whereas Barbakow found common usage of hydrogen peroxide and sodium hypochlorite solutions as canal irrigants.<sup>14</sup> Sodium hypochlorite is recommended as the material of choice for irrigating the root canal system because of its effective antimicrobial and tissue solving action.<sup>15</sup> The use of either sodium hypochlorite or hydrogen peroxide without isolating the field of operation tightly with a rubber dam presents an obviously hazardous practice in dentistry. Despite the fact that calcium hydroxide is recognized as standard intracanal medicament for interappointment dressing,<sup>16</sup> it was used only by 11.5% of the respondents.

In this study most common technique for obturation of gutta-percha is by lateral condensation method. However, 31.3% of the dentists in the Jordan used a single cone technique, in common with 68% of Swiss dentists.<sup>14</sup> This may be attributed to the lack of skill and training. Similarly findings are in contrast with the findings of Jenkins et al in 2001.<sup>3</sup>



**Graph 1:** Method of isolation used among dental professionals



**Graph 2:** Number of visits for root canals per tooth by dental professionals

In current data it was found that Cavit was the common temporary filling material to seal coronal access. But Omari<sup>7</sup> found that zinc oxide eugenol cement was the most commonly placed temporary filling (92%).

RCTs were mostly carried out in three visits. The present findings were in contrast with the results found by Saunders et al<sup>9</sup> (1999) who studied general dental practitioners in Great Britain. However, a study from the United States<sup>17</sup> demonstrated a clear inclination to single visit endodontics, especially in cases without apical periodontitis. Single visit treatment appears to have gained more popularity and an increased credibility in the preclinical endodontic teaching in America and Europe.<sup>18</sup>

## CONCLUSION

The present study assessed attitude of general dental practitioners toward RCT procedures. It was found that dentists did not use rubber dam for isolation and most common method of isolation was with cotton rolls. Only few of them use rotary instruments. Also single sitting RCT is done by less number of dentists. So, there should be continuing dental education programs in endodontics with new advanced techniques.

## REFERENCES

- Ricucci D, Gröndahl K, Bergenholtz G. Periapical status of root-filled teeth exposed to the oral environment by loss of restoration or caries. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2000 Sep;90(3):354-359.
- De Moor RJ, Hommez GM, De Boever JG, Delme KI, Martens GE. Periapical health related to the quality of root canal treatment in a Belgian population. *Int Endod J* 2000 Mar;33(2):113-120.
- Jenkins SM, Hayes SJ, Dummer PM. A study of endodontic treatment carried out in dental practice within the UK. *Int Endod J* 2001 Jan;34(1):16-22.
- Whitten BH, Gardiner DL, Jeanson BG, Lemon RR. Current trends in endodontic treatment: report of a national survey. *J Am Dent Assoc* 1996 Sep;127(9):133-341.
- Maina SW, Ng'ang'a PM. Root canal treatment and pulpotomy in Kenya. *East Afr Med J* 1991 Apr;68(4):243-248.
- Che Ab Aziz ZA, Abdullah M, Vello CDS, Thangavelu K. General dental practitioners' knowledge and practice on root canal treatment. *Ann Dent* 2006;13(1):12-17.
- Al-Omari WM. Survey of attitudes, materials and methods employed in endodontic treatment by general dental practitioners in North Jordan. *BMC Oral Health* 2004;4(1):1-6.
- Hommez GM, Braem M, De Moor RJ. Root canal treatment performed by Flemish dentists. Part 1. Cleaning and shaping. *Int Endod J* 2003 Mar;36(3):166-173.
- Saunders WP, Chestnutt IG, Saunders EM. Factors influencing the diagnosis and management of teeth with pulpal and periradicular disease by general dental practitioners. Part 1. *Br Dent J* 1999 Nov;187(9):492-497.
- Whitworth JM, Seccombe GV, Shoker K, Steele JG. Use of rubber dam and irrigant selection in UK general dental practice. *Int Endod J* 2000 Sep;33(5):435-441.
- Koshy S, Chandler NP. Use of rubber dam and its association with other endodontic procedures in New Zealand. *N Z Dent J* 2002 Mar;98(431):12-16.
- Sjögren U, Figdor D, Persson S, Sundqvist G. Influence of infection at the time of root filling on the outcome of endodontic treatment of teeth with apical periodontitis. *Int Endod J* 1997 Sep;30(5):297-306.
- Parashos P, Messer HH. Questionnaire survey on the use of rotary nickel-titanium endodontic instruments by Australian dentists. *Int Endod J* 2004 Apr;37(4):249-259.
- Barbakow F. The status of root canal therapy in Switzerland in 1993. *J Dent Assoc S Afr* 1996 Dec;51(12):819-822.
- Byström A, Sundqvist G. Bacteriologic evaluation of the effect of 0.5 percent sodium hypochlorite in endodontic therapy. *Oral Surg Oral Med Oral Path* 1983 Mar;55(3):307-312.
- Chong BS, Pitt Ford TR. The role of intracanal medication in root canal treatment. *Int Endod J* 1992 Mar;25(2):97-106.
- Gatewood RS, Himel VT, Dorn SO. Treatment of the endodontic emergency: a decade later. *J Endod* 1990 Jun;16(6):284-291.
- Qualtrough AJ, Whitworth JM, Dummer PM. Preclinical endodontology: an international comparison. *Int Endod J* 1999 Sep;32(5):406-414.

## ABOUT THE AUTHORS

### Ashwini Gaikwad (Corresponding Author)

Professor and Head, Department of Conservative Dentistry and Endodontics, School of Dental Sciences, Krishna Dental College and Hospital, Karad, Maharashtra, India, e-mail: aagaikwad931@gmail.com

### Deepak Jain

Associate Professor, Department of Conservative Dentistry and Endodontics, School of Dental Sciences, Krishna Dental College and Hospital, Karad, Maharashtra, India

### Prasad Rane

Reader, Department of Conservative Dentistry, ACPM Dental College Dhule, Maharashtra, India

### Sarvesha Bhondwe

Professor and Head, Department of Conservative Dentistry and Endodontics, YCMM and RDF's Dental College, Ahmednagar Maharashtra, India

### Swapnil Taur

Senior Lecturer, Department of Pediatric Dentistry, School of Dental Sciences, Krishna Dental College and Hospital, Karad, Maharashtra India

### Saurabh Doshi

Intern, Department of Conservative Dentistry and Endodontics, School of Dental Sciences, Krishna Dental College and Hospital, Karad Maharashtra, India