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.

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.1

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.2

Numerous studies investigated the attitude of dentists in Western countries such as Germany, UK3 and USA4 whereas very few studies have investigated the attitude of general dental practitioners toward various aspects of endodontic treatment in developing countries like India.5 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

<table>
<thead>
<tr>
<th>Type of Instrument</th>
<th>Percentage</th>
<th>Type of root canal hand instrument</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand instruments only</td>
<td>71.4</td>
<td>K-file</td>
<td>66.2</td>
</tr>
<tr>
<td>Engine-driven (Rotary) instruments</td>
<td>12.6</td>
<td>Reamer</td>
<td>7.5</td>
</tr>
<tr>
<td>Both hand and rotary instrument</td>
<td>16.0</td>
<td>Hedström file</td>
<td>26.3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Intracanal irrigant used</th>
<th>Percentage</th>
<th>Obturation technique</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal saline</td>
<td>27.1</td>
<td>Single-cone</td>
<td>11.5</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>7.4</td>
<td>Lateral condensation</td>
<td>78.2</td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>12.5</td>
<td>Vertical condensation</td>
<td>4.3</td>
</tr>
<tr>
<td>Combination of normal saline and sodium hypochlorite</td>
<td>53.0</td>
<td>All of the above</td>
<td>6.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Type of sealer used</th>
<th>Percentage</th>
<th>Temporary filling material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc oxide eugenol</td>
<td>82.6</td>
<td>Zinc oxide eugenol</td>
<td>12.1</td>
</tr>
<tr>
<td>Endomethasone</td>
<td>7.0</td>
<td>Intermediate restorative material</td>
<td>5.3</td>
</tr>
<tr>
<td>Sealapex</td>
<td>10.4</td>
<td>Glass ionomer</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Cavity
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. 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.7

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, Hommez et al in 2003, Saunders et al in 1999.9 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, 60% of dentists in UK10 and 57% of general dental practitioners in New Zealand11 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 Omari7 among North Jordanian general dental practitioners and Che Aziz among dental practitioners in 2006.6

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.12 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.13

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.7

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.14 Sodium hypochlorite is recommended as the material of choice for irrigating the root canal system because of its effective antimicrobial and tissue solving action.15 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,16 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.14 This may be attributed to the lack of skill and training. Similarly findings are in contrast with the findings of Jenkins et al in 2001.3
In current data it was found that Cavit was the common temporary filling material to seal coronal access. But Omari\(^7\) 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\(^8\) (1999) who studied general dental practitioners in Great Britain. However, a study from the United States\(^17\) 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.\(^18\)

**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**


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