Original Article

Root Canal Treatment

Selection of Single-Visit and Multiple-Visit Root Canal Treatment Protocol: A Survey of Endodontic Specialists and General Dental Practioner of Pakistan

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ABSTRACT

Objective: The aim of this study is to determine the selection and preference of single- and multi-visit root canal therapy by specialist's endodontists and general dental practitioners of Pakistan and to inquire their motive for selecting the choice of treatment protocol in their practice

Study Design: Comparative study.

Place and Duration of Study: This study was conducted at the Department of Operative Dentistry and Oral Biology, Institute of Dentistry, LUMHS, Jamshoro from May 2016 to August 2016

Material and Methods: A close ended questionnaire was send via emails, WhatsApp and Facebook accounts to 20 specialist endodontists and 150 selected GDPs in Pakistan to investigate their preference and motive for selecting the choice of treatment protocoleither single- or multi-visit for their patients. A literature search determined the commonest factors affect the choice of treatment either single- and multi-visit root canal treatment and were written in the questionnaire. The participants were informed to tick their response as agree, neutral and disagree as given in the questionnaire. The data collected were analyzed by the SPSS version 16. Frequency and percentages of variable like practice experience, current method of RCT and preference to the method of RCT were calculated. Chi-square tests were used to evaluate the differences in preference and current method of practice between both the groups of study. The level of statistical significance was set at 0.05.

Results: Response rate was 100% in this study. Amongst all participants 29.4% have experience of less than 10 years and 70.6% have experience of more than 10 years. Generally all participants were practicing 72.4% multi-visit RCT and 27.6% single visit RCT. When both groups were compared by using chi-square test, GDPs preferred multiple-visit endodontic treatment and specialist Endodontist preferred single visit treatment. Also current method of performing root canal treatment by specialist endodontists is single visit procedure as compared to the GDPs, who performed mostly by multi-visit. Most important factor to be considered for multi-visit root canal treatment were outstanding effects of intracanalmedication, reduction of postoperative pain and easy collection of fees for multiple visit were 66.3%, 62.9% and 64.7% respectively.as compared to single visit root canal treatment, the most important factor considered were low risk and complication of local anesthetics 62.4 , treatment can be completed in one visit 52.4% , patient's time limitation68.6%, dentist time limitation68.0% and patient preference 60.6%.

Conclusion: In conclusion, most specialist endodontists perform and prefer single visit root canal treatment and GDPs preferred multi-visit root canal treatment.

Key Words: Single visit endodontic treatment, Multiple-visit endodontic treatment, Specialist Endodontist, general dental practitioner, Pakistan

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INTRODUCTION

Endodontic treatment have a great valueinthe rehabilitation of teeth affected by pulp and/or periapical pathology.[1]

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Root canal treatment (RCT) described as the removal of the infected dental pulp and then chemo-mechanical preparation followed by obturation of the root canals of a tooth. Traditionally, endodontictreatment has been performed to take multi-visits to complete, however, the use of advanced endodontic technology and methods of treatment has not only improved the success outcome of endodontic treatment as high as 97% but also shortened the time required for the treatment.[2,3]

Although, the single-visit root canal treatment is not new concept; the single- versus multi-visit endodontic treatment has been the topic of controversy among dental professionals for many decades, with as yet no exact conclusion to the dilemma.Traditionally, multiple-visits root canal treatment protocol is based on

the theory that only chemo-mechanical canal instrumentation is not significantly enough to sterile the canal completely butit needs intra-canal dressing for few days to cope with the canal microorganisms.[2, 4] Multi-visit RCT is admitted as a safe and approved protocol of treatment especially for teeth with endodontic periradicular pathology.[5] However, there are many drawbacks of multi-visits RCT, such as the high risk of reinfection of root canal system through the leaky temporary filling or fracture of temporary restorations and higher postoperative pain occurrence.[6] Furthermore, to avoid such lengthy and multiple visits of root canal treatment, most of the patients choosethe extraction of their teeth. Also some patients when get rid of from pain they usually do not visit their dentist for further treatment after the first appointment. On the other hand Single visit treatment protocol has various benefits i.e. it reduces the number of patient's visits for the treatment, having no any risk of inter-appointment reinfection of canal and also allows the dentist to do the root canal filling, when they are more familiar with the canal anatomy. It also enable the dentist for immediate placement of post and core restorations in the same visit of treatment.[7,8,9,10] Hence, more dentists are encompassing the single-visit treatment protocol especially in teaching hospitals.[7] Usually to take the decision that which treatment method should be chosen , clinicians are influenced not only by treatment results and its complications as well as economic concerns but also by factors such as patient and operator convenience, preference, and desires .[11] Sathorn et al.[3] reported that the important factor in treatment selection was the human factor itself. Messer[12] described that the clinical judgment of general dentist for endodontic treatment was confusing and did not depend simply on their practical clinical components. The favored method of root canal treatment may not vary across cultures. Australian endodontists usually used and favored multi visit protocol over single visit RCT, [3] and in the United States only approximately one third of dentists perform one visit RCT.[13]

Little studies had been conducted to determine the selection and dentist's preference for choosing single- or multi-visit treatment methods in Pakistan. Therefore the purpose of this study was to find the preference for single- and multi-visit root canal treatment by endodontic specialists and general dental practitioner in Pakistan, and to sought out the criteria on which the selection is made.

MATERIALS AND METHODS

The study was conducted from May 2016 to August 2016. The sample consisted of two groups; endodontic specialist and GDPs. All were randomly selected to participate in our survey. A questionnaire (Figure-1) was sent to all participants via their Email addresses and social media accounts(WhatsApp and Facebook). The recipients were asked to complete and return the questionnaire.

A literature studied and a questionnaire with close ended questions was designed. The most important factors considered to affect the selection of treatment either single- and multi-visit root canal treatment were identified and included in the questionnaire. We collected information on participant's interpretation for single- and multi- visit endodontic treatment through total number of 6 closed questions on a single page. The questionnaire included a list of common factors that must influence the decision for selecting the single- or multi-visit root treatment, such as patient choice and high success outcome. The participants were informed to tick their response as agree,neutral and disagree at the end of close ended questions.The data collected were analyzed by the SPSS version 16. Frequency and percentages of variable like practice experience, current method of RCT and preference to the method of RCT were calculated. Chi-square tests were used to evaluatethe differences in preference and current method of practice between both the groups of study. The level of statistical significance was set at 0.05.

RESULTS

All participants (20 Specialist Endodontist and 150GDPs) returned the filled questionnaire and response rate was 100% by the participants. Information regarding their experience of practice, current practice of RCT and preference to method of RCT collected as given in table

Table No.1: Specialist Endodontist, GDPs, Practice Experience, Current Practice and Preference of RCT

Group, Practice Experience, Current Practice and Preference of RCT	N/170 (%)
Group	
Specialist Endodontist	20 (11.8)
GDPs	150 (88.2)
Experience of practice	
< 10 years	50 (29.4)
>10 years	120 (70.6)
Current practice of RCT	
Single visit RCT	47 (27.6)
Multiple visit RCT	123 (72.4)
Preference of RCT	
Single visit RCT	41 (24.1)
Multiple visit RCT	129 (75.9)

Factors affecting the choice of multi-visit endodontic treatment by GDPs and specialists endodontists and should be considered while choosing the method either single or multiple visit RCT are given in frequency and percentages in Table-2 and 3.

Factors considered for the selection of single-visit root canal treatment by GDPs and specialist Endodontists

while choosing the method either single or multiple visit RCT are given in frequency and percentages in Table-4 and 5.

Chi-square test was used to compare group of study (Specialist Endodontist and GDPs) and their current method of RCT and preference to the method of RCT. Figure 1 and 2;

Table No.2: Factors affecting the choice of multi-visit root canal treatment by Specialist Endodontist and GDPs in Pakistan

N		Tooth with guarded endodontic prognosis	Good results of intracanal dressing between appointments	Time needed for reduction of symptoms before obturation	Decrease of post-treatment pain	Quick and easy way of fees collection for multi-visits
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
170	Agree	10 (58.8)	114 (66.3)	101 (59.4)	107 (62.9)	110 (64.7)
	Neutral	34 (20.0)	50 (29.1)	38 (22.4)	43 (25.3)	39 (22.9)
	Disagree	36 (21.2)	6 (3.5)	31 (18.2)	20 (11.8)	21 (12.4)

Table No.3: Factors affecting the choice of multi-visit root canal treatment by Specialist Endodontist and GDPs in Pakistan

N		Dentists' choice	Patients' choice	Patient time limitation	Dentist time limitation	High success outcome
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
	Agree	62 (36.5)	70 (41.2)	82 (48.2)	126 (74.1)	23 (13.5)
	Neutral	11 (6.5)	62 (36.5)	48 (28.2)	31 (18.2)	72 (42.4)
170	Disagree	97 (57.1)	38 (22.4)	40 (23.5)	13 (7.6)	75 (44.1)

Table No.4:Factors affecting the selection of single-visit endodontic treatment by Specialist Endodontist and GDPs in Pakistan

N		One visit treatment	Lower risks and complications of anesthesia	Limited instrumental and procedural mishaps	Reduced use of material	Remembering of root canal morphology in same visit
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
170	Agree	89 (52.4)	106 (62.4)	84 (49.4)	99 (58.2)	69 (40.6)
	Neutral	54 (31.8)	35 (20.6)	36 (21.2)	36 (21.2)	52 (30.6)
	Disagree	27 (15.9)	29 (17.1)	50 (29.4)	35 (20.6)	49 (28.8)

Table No.5:Factors affecting the selection of single-visit endodontic treatment by Specialist Endodontist and GDPs in Pakistan

N		Dentists' choice	Patients' choice	Patient time limitation	Dentist time limitation	High success outcome
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
	Agree	63 (37.1)	103 (60.6)	117 (68.8)	115 (68.0)	46 (27.1)
	Neutral	56 (32.9)	39 (22.9)	25 (14.7)	32 (18.3)	57 (33.5)
170	Disagree	51 (30.0)	28 (16.5)	28 (16.5)	23 (13.6)	67 (39.4)

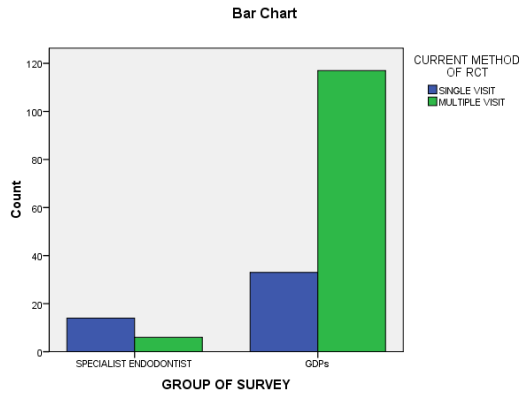

Figure No.1: Specialist Endodontist and GDPs and their current method of RCT.

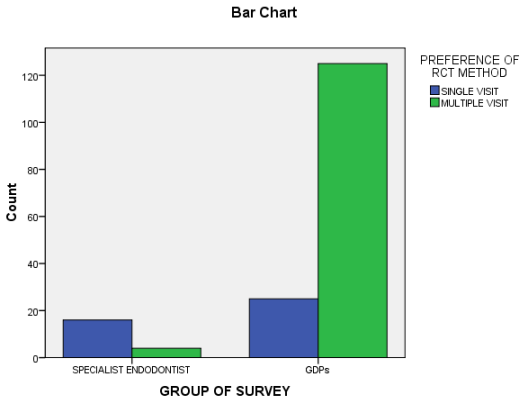

Figure No.2: Specialist Endodontist and GDPs and their preference to the method of RCT.

DISCUSSION

In this survey 170 participants selected randomly amongst which 150 were GDPs and 20 were specialist Endodontist. Evans described that a low response rate will be obtained when a survey is done with non-random samples as compared to random samples which results in high response rate.[14] A questionnaire (Figure-1) was sent to all participants via their Email addresses and social media accounts (WhatsApp and Facebook). The recipients were informed to completely fill and return the questionnaire.

Overall response rate was 100% in this study. Amongst all participants 29.4% have experience of less than 10 years and 70.6% have experience of more than 10 years. Generally all participants were practicing 72.4% multi-visit RCT and 27.6% single visit RCT.When both groups were compared by using chi-square test, GDPs preferred multiple-visit endodontic treatment and specialist Endodontist preferred single visit treatment. Also current method of performing root canal treatment by specialist endodontists is single visit procedure as compared to the GDPs, who performed mostly by multi-visit. Most important factor to be considered for multi-visit root canal treatment were good results of use of intracanal dressing between appointments, decreased of post-treatment pain and quick and easy way of fees collection for multiple visit were 66.3%, 62.9% and 64.7% respectively.as compared to single visit root canal treatment the most important factor considered were low risk and complication of anesthesia 62.4%, one visit treatment 52.4% , patient time limitations 68.6%, dentist time limitations68.0% and patient's choice 60.6%. The present study findings are agree with the results published by Gatewood et al.[15] in a survey of 568 actively practicing diplomats of theAmerican Board of Endodontics reported that teeth with normal periapex completed in one visit were 34.7% and for teeth with apical periodontitis were only 16.2%.Whitten et al.[16] reported that endodontists favored single-visit therapy, whereas GDPs usually used to follow the multi-visits treatment protocols.

Also the study findings are in agreement with previous studies in which specialist practitioners routinely used single- visit therapy protocol 20.5% and on the other hand only 9.0% of General Dentists performed the same method of therapy[17]

Our results are consistent with the findings in previous studies by Dechouniotis et al.[18] and McCaul et al.19 in that they compared GDPs and endodontists practical aspects, and their results showed that most of the GDPs were dissimilar in selection criteria for the choice of treatment techniquesand they presented diverse reasons for treatment selection, although endodontists were more consistent in their selection strategies for single- or multi- visit endodontic treatment; this might be because of their specialist training and educational qualification and experience.

In general, the finding of this study is that all participants preferred the multi-visit root canal treatment due to common factors such as post-treatment pain, tooth with guarded prognosis assessed during the treatment time, quick and easy collection of fees and dentist time constraint. However according to this study the success rate of multi-visit treatment is low as compared to single visit treatment. Furthermore, the GDPs mostly prefer and practice multi visit treatment protocol due to their training and educational qualification. One stronger motive why endodontists usually practice single-visit treatment is that it enables them to better remember the root-canal morphology, in this study the finding is 40.6%. This not only improves the success outcome of the endodontic treatment by reducing the treatment time but also decreases the risk of instrumental and procedural mishaps.

Despite a vast discussion on the dilemma of single- versus multi-visit root canal treatment as published by Sathorn et al.[20, 21, 22, 23] andFigini et al. [24] single-visit root protocol is still not a routine treatment method by endodontists practicing in Australia. The role of expert leaders in advocating and implementing changes has received a great deal of concentration in the medical literature and to some extent in the dental literature. General practitioner are often inspired by specialists as they are more expert due to their qualification and experience as reported by Robertson et al.[25]Amongst specialists, however, peer influence is more likely to occur.

Currently various studies reported that single-visit endodontic treatments could be implemented for needy patients to retain their dentition before more devastating damage occurs to their dentition. This could be a valid reason to promote these short time treatment techniques and further studies could be carried out to assess and determine the criteria for selection of better choice of treatment either single or multi-visit endodontic treatment.

CONCLUSION

In conclusion, most specialist endodontists perform and prefer single visit endodontic treatment as compared to GDPs who usually perform single visit. The commonest reasons for choosing multiple-visit treatment for GDPs were the extraordinary results of inter-appointment antimicrobial dressing and that the tooth to be undergone having guarded prognosis. The commonest reasons for choosing single-visit therapy for both specialist's endodontists and GDPs is that the treatment is completed shortly.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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