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Knowledge And Attitude About Post Endodontic Restoration Among Dental Practitioners In Dakshina Kannada: A Questionnaire Based Study

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ABSTRACT

INTRODUCTION

The purpose of endodontic and restorative dentistry is the conservation of natural tooth structure. Endodontically treated tooth (ETT) undergoes loss of tooth structure and changes in physical characteristics. Therefore, proper selection of restoration for ETT is mandatory. The clinical approach of restoring ETT needs taking into considerations several issues. However, the best way to restore teeth after root canal treatment has long been and still a controversial subject to debate. Therefore, this study was carried out to detect the frequency of preferred methods of restoring ETT under different conditions.

AIM: The aim of this study was to assess the knowledge and attitude about post endodontic restoration among general dental practitioners and specialists in Dakshina Kannada.

MATERIAL AND METHOD: A standard questionnaire based survey containing 10 multiple choice questions about techniques and treatment methods, effect of dentin thickness, type of post, choice of luting cement, core material, reason of failure of endodontic treatment was distributed by hand and through email among general dental practitioners and specialists in Dakshina Kannada.

RESULT: Majority of the clinicians preferred to restore the tooth with composite restorative material (40.4%), when more than 50% of the crown structure remains. The ferrule effect was considered an important factor in increasing fracture resistance of an Endodontically Treated Teeth

(74.5%). Most of the clinicians (63.4%) preferred a flowable composite resin while restoring an ETT with direct composite restoration. From the study, it is observed that 42.6% of participants thought the most frequent mode of failure for an endodontically treated teeth can be due crown failure and 42.6% as endodontic failure. When post is cemented adhesively, 46.2% of the participants had an opinion that it strengthens an ETT and reduces the probability of fracture. Most of the respondents (44.1%) believed retention for a prefabricated post depends upon the canal anatomy and available.

CONCLUSION:

Within the limitations of this study, the knowledge and attitude regarding post endodontic restoration was found to be adequate among general dental practitioners and specialists in Dakshina kannada. However, it is seen that there is a relative lack of knowledge regarding the most frequent mode of failure, direct core buildup material and the post whether strengthen the ETT and reduces fracture probability. Therefore, various seminars, continuous dental education or workshops should be conducted so as to increase their awareness about post endodontic restoration.

KEY WORDS: Endodontically Treated Teeth, Posts, Restoration.

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INTRODUCTION

The objective of post endodontic treatment is to restore the normal function and occlusion of the tooth and to maintain the stability of the dental arch.[1] Endodontic treatment is widely done on teeth with significantly affected by caries, multiple restorations or fractures. Such teeth are again weakened by the endodontic procedure to provide optimal access and by restorative procedures required to restore the tooth. Therefore, It is acknowledged that endodontically treated teeth (ETT) are weaker and have lesser lifetime prognosis.[2] For treatment to be successful there must be successful endodontic therapy and the tooth should be properly restored to provide protection for remaining tooth structure.[3] Saliva and microorganisms from the mouth migrate rapidly alongside poorly adapted restorations and even root fillings which appear well condensed.. Therefore properly sealed both temporary and permanent coronal restoration is necessary for the success of endodontic therapy.[4] A lot of factors which influence the prognosis of endodontically treated teeth should be taken into consideration such as apical status, position of the tooth in the dental arch, number of adjacent teeth, occlusal contacts, amount of hard tissue loss, remaining dentin wall thickness, collagen degradation and intermolecular cross linking of the root dentin, type of long–term coronal restoration, type of post and core material used.[5] Posts and cores are commonly encouraged to save or strengthen the tooth against intraoral forces by equally distributing torquing forces within the radicular dentin to supporting tissues, thus dispersing the forces along the root, and deliver retention for the core that replaced lost coronal tooth structure, and retain the restoration.[6] With increase demand for esthetic and good physical quality, various tooth-coloured posts such as glass fiber reinforced post, carbon fiber post, zirconia post, and composite post were developed.[7] Cast post and core are prone to corrosion and its elasticity is different compared to natural tooth structure, resulting into stress and chances of tooth fracture.[8] The patients main motivation for seeking superior dental aesthetics, particularly in the anterior aesthetic zone, has prompted the development of non-metallic restorations.[9] There is no significant change in the resistance of teeth with fiber posts regardless of which ferrule design is incorporated.[10]

Best way to restore teeth after root canal treatment has long been and still a controversial subject. Hence, the aim of this study was to assess the knowledge and attitude about post endodontic restoration among general dental practitioners and in Dakshina Kannada.

MATERIALS AND METHODS

A standard questionnaire based survey containing 10 multiple choice questions about techniques and treatment methods, effect of dentin thickness, type of post, choice of luting cement, core material, reason of failure of endodontic treatment was distributed by hand and through email among general dental practitioners and specialists in Dakshina Kannada. The questionnaire was in

English language and open ended and self-administered. The Ethical approval was obtained from the Ethics committee KVG dental college Sullia, Dakshina Kannada. The data on general information were required mandatory to be filled by participants or response cannot be recorded. The participants average number of restoring in a year were asked in general information. Dental practitioner both general practitioner and specialists treating ETT were included while those not treating were excluded from the study.

RESULT

Out of 100 clinical dentists both general dental practitioner and specialists, 94 returned the complete questionnaire. Responses of the questionnaire are tabulated. 40 (42.5%) of the respondents were general dental practitioners while 54 (57.4%) were specialists. Majority of the clinicians preferred to restore the tooth with composite restorative material (40.4%) and full coverage crown (33%), when more than 50% of the crown structure remained presented in Table 1. Ferrule effect was considered an important factor in increasing fracture resistance of an ETT (74.5%) is presented Table 2. Table 3 shows the preferred direct core build up material was compomers (55.3%) followed by composite (23.4%). Most of the clinicians (63.4%) preferred a flowable composite resin while restoring an ETT with direct composite restoration as in Table 4. Response of the clinicians (80.9%) was aware about the usage of rubber dam isolation during a post endodontic restoration as shown in Table 5. From the study, it is observed that 42.6% of participants thought the most frequent mode of failure for an endodontically treated teeth can be due crown failure and 42.6% as endodontic failure. 46.2% of the participants had an opinion that a post does strengthen an ETT and reduces the probability of fracture, when it is cemented adhesively (Table 6).

Table 1. Restorative method preferred for Endodontically treated teeth (ETT), when more than 50% of crown structure remaining:

Participants	Composite	Inlay or onlay	Full coverage crown	Post and core restoration
General Practitioner	15.4%	3%	10%	10.4%
Specialists	25%	4.4%	23%	9%
Total	40.4%	7.4%	33%	19.4%

Table 2. Opinion on envelopment of ETT within the sound dentin by a crown restoration (ferrule effect) does increase the fracture resistance of ETT:

Participants	Yes	No	Don't know
General Practitioner	23.5%	2%	15.2%
Specialists	51%	3.3%	5%
Total	74.5%	5.3%	20.2%

Table3. Showing response to the question on preferred direct core build-up material:

Participants	Amalgam	Composite resin	Glass ionomer cement	Compomers
General Practitioner	5.3%	20%	11.9%	45.1%
Specialists	1.1%	3.4%	3%	10.2%
Total	6.4%	23.4%	14.9%	55.3%

Table4. Rubber dam isolation is required during a post endodontic restoration:

Participants	Yes	No	Don't know
General Practitioner	60.8%	11.9%	4.43%
Specialists	20.1%	3%	0%
Total	80.9%	14.9%	4.43%

Table5. Flowable composite resin be used while restoring an ETT with direct composite restoration:

Participants	Yes	No
General Practitioner	12.4%	30.4%
Specialists	51%	6.2%
Total	63.4%	36.6%

Table 6. The most frequent mode of failure for endodontically treated teeth:

Participants	Endodontic failure	Crown failure	Root fracture	Others
General Practitioner	31.3%	14.6%	5.4%	3.4%
Specialists	11.3%	28%	3.1%	3%
Total	42.6%	42.6%	8.5%	6.4%

Table7. Opinion on a post strengthen an ETT and reduces the probability of fracture:

Participants	Yes, in every case	Yes, when cement post adhesively	Yes, when cement post conventionally	No
General Practitioner	7.4%	13%	9.4%	20.6%
Specialists	15.2%	33.2%	10%	2%
Total	22.6%	46.2%	19.4%	22.6%

Table8. The decision to place a post is affected by:

Participants	Quantity of the tooth structure	Location of the tooth in arch	Type of planned restoration	Other
General Practitioner	16%	3.4%	1.1%	1%
Specialists	73.2%	2	2.1%	1.2%
Total	89.2%	5.4%	3.2%	2.2%

Table9. On the basis of shape, the type of prefabricated post that has more retention:

Participants	Parallel sided post	Tapered post	Parallel tapered post	Available dentin
General Practitioner	12.2%	2.3%	13%	15%
Specialists	21.1%	2%	5.3%	29.1%
Total	33.3	4.3	18.3	44.1

Table10. The preferred luting agent for fibre post cementation:

Participants	Zinc phosphate cement	Polycarboxylate cement	Glass ionomer cement	Composite resin
General Practitioner	3.3%	2%	35%	12%
Specialists	3.2%	2.2%	22%	22.4%
Total	6.5%	2.2%	57%	34.4%

Majority of clinicians (89.2%) thought decision to place a post is affected by the quantity of tooth structure remaining (Table 8). Most of the respondents (44.1%) believed retention for prefabricated post depends upon the canal anatomy and available dentin and 33.3% believed parallel sided post gives more retention (Table 9) and most of them (57%) preferred glass ionomer cement as the luting agent for fibre post cementation as shown in Table 10.

DISCUSSION

This survey collects data on knowledge and attitude about the post endodontic restoration among dental practitioners in Dakshina kannada. . In this study, Clinicians preferred to restore the tooth with composite restorative material (40.4%) and full coverage crown (33%), when more than 50% of the crown structure remains. If tooth has more than 50% of the coronal structure missing, the use of post and foundation is used. A previously unrestored tooth requiring endodontic therapy generally does not need a post and core restoration as its inherent strength is still present. Teeth are treated adequately by placement of filling material in the root canal using glass ionomer, bonded composite and bonded spherical amalgam.[11] Ferrule effect increases the fracture resistance of ETT[1]. In the present study, 23.5% of general practitioners and 51% of specialists were in agreement with this knowledge. Compomers are supposed to expand in oral condition, this property may have a better effect in filling materials. But, the same phenomenon may lead to crack formation in ceramic caps when RMGIC/compomer materials are used as luting cements and core build-up materials.[12] In the present study, the preferred direct core build up material was compomers (55.3%) followed by composite (23.4%). Composite provide many advantages and have therefore become popular for core reconstruction. These advantages include strength, bonding capability, ease of manipulation, and rapid setting time [13]. 80.9% were aware about the usage of rubber dam isolation during a post endodontic restoration. The post space should be disinfected after post space preparation with disinfecting solution before the custom cast or prefabricated post is cemented, preferably with the use of a rubber dam[14]. When 12.4% of general practitioner used flowable composite resin for the restoration, 51% of the specialists used it. Bulk fill flowable resin composites are used in association with conventional composites for aesthetic restorations in posterior teeth[15]. Crown and endodontic failure were the most common reason of failure of ETT followed by root fracture in the present study (42.6%). In one study conducted about failure of endodontically treated teeth, crown fracture was most common cause[16]. Clinicians (46.2%) had a knowledge that a post strengthen an ETT and reduces the probability of fracture. Guzy and Nicholls determined that there is no significant strengthening achieved by cementing a post into an endodontically treated tooth that was intact except for the access opening[17]. In this study, 89.2% thought the decision to place a post is affected

by the quantity of tooth structure remaining. Along with quantity of remaining tooth structure, it is also influenced by the post's length and rigidity, presence of antirotation features, and the presence of a ferrule[18]. Most of the respondents (44.1%) believed retention for a prefabricated post depends upon the canal anatomy and 33.3% believed parallel sided post gives more retention. As mentioned earlier it is influenced tooth structure left and parallel posts are more retentive than tapered posts[18]. Most frequently used luting agent by the clinicians (57%) for fibre post cementation was glass ionomer cement. Conventional glass ionomer cements or resin-modified glass ionomer cements may be alternatively used for the luting of fiber posts[19].

CONCLUSION

Within the limitations of this study, the knowledge and attitude regarding post endodontic restoration was found to be adequate among dental practitioners in Dakshina kannada. However, it is seen that there is a relative lack of knowledge regarding the most frequent mode of failure, direct core buildup material and the post whether strengthen the ETT and reduces fracture probability. Therefore, various seminars, continuous dental education or workshops should be conducted so as to increase their awareness about post endodontic restoration.

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