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Research Article

FIBER-REINFORCED POSTS-A QUESTIONNAIRE SURVEY

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ABSTRACT

Aim: The purpose of the present questionnaire-based survey was to evaluate the predominant opinion and knowledge of endodontists in chennai on fiber-reinforced posts.

Background: Numerous studies have confirmed that the prognosis of an endodontically treated tooth does not depend exclusively on endodontic procedures, but is essentially influenced by the postendodontic restoration. The prognosis is dependent upon several factors which include substance loss, tooth type, choice of post and core build-up material, length and precision of fit of the endodontic post and luting medium. In comparison to metal post, Fiber-reinforced composite posts (FRC) are being increasingly used as it provides improved esthetics, potential to reinforce compromised tooth structure, modulus of elasticity similar to dentin, increased tensile strength and fracture resistance.

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INTRODUCTION

Numerous studies have confirmed that the prognosis of an endodontically treated tooth does not depend exclusively on endodontic procedures, but is essentially influenced by the postendodontic restoration (Lynch *et al*, 2004). The prognosis is dependent upon several factors which include substance loss, tooth type, choice of post and core build-up material, length and precision of fit of the endodontic post and luting medium. Glass fiber-reinforced resin post systems were introduced in 1992 (Goldberg & Burstone 1992). In comparison to metal post, Fiber-reinforced composite posts (FRC) are being increasingly used as it provides improved esthetics, potential to reinforce compromised tooth structure, modulus of elasticity similar to dentin, increased tensile strength and fracture resistance (Piovesan *et al*, 2007). These glass fiber post systems have similar elastic modulus as of human radicular dentin (Plotino *et al*. 2007).

Two different types of fiber-reinforced posts can be used as post-and-core systems: prefabricated posts and customized posts. Glass-fiber posts can be made of different types of glass. Prefabricated FRC posts are composed of glass fiber, quartz fiber or carbon fiber embedded in a polymer matrix with a silane coupling agent binding the fibers and resin together (Mannocci & Sherriff 2001). Customized post-and-core

commonly involve the use of glass or polyethylene fiber-reinforced posts that are luted directly into the root canal.

Electrical glass, so termed because its chemical composition makes it an excellent electrical insulator. It is made from a mixture of SiO₂, CaO, B₂O₃, Al₂O₃, and some other oxides of alkali metals. The fiber bundles can be adapted directly into the post space, so as to obtain a customized post, which is then adhesively luted (Piovesan *et al*. 2007). An advantage of glass fibers is that they distribute stress over a broad surface area, increasing the load threshold at which the post begins to show evidence of micro-fractures (Pest *et al*.2002). Consequently, fiber-reinforced posts are reported to reduce the risk of tooth fractures.

Aim

The purpose of the present questionnaire-based survey was to evaluate the predominant opinion and knowledge of endodontists in chennai on fiber-reinforced posts.

MATERIALS AND METHODS

Questionnaire was prepared which comprised of 10 questions with multiple choice answers and were distributed to 450 Endodontists. The participants were selected through simple random sampling technique. Respondents were assured of the confidentiality of their responses.

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Demographic and professional data of the participants (n=382)

Age (years)	Frequency N (%)
30	169 (44.2)
31-40	103 (26.9)
>40	110 (28.8)
Gender	
Male	186 (48.7)
Female	196 (51.3)
Practice experience (years)	Frequency N (%)
5	58 (15.2)
6-10	144 (37.7)
11-15	80 (20.9)
>15	100 (26.2)

RESULTS

1.Are you aware of the different post endodontic restorations?	Frequency N (%)
Yes	280 (73.3)
No	70 (18.3)
Dont know	32 (8.4)
2.Whether a post-and-core build-up strengthens an endodontically treated tooth?	Frequency N (%)
Yes	190 (49.7)
No	130 (34)
Dont know	62 (16.2)
3.How often do you place a post in an endodontically treated tooth?	Frequency N (%)
Often	140 (36.6)
Occasionally	125 (32.7)
Rarely	80 (21)
Never	37 (9.7)
4.Which of the following type of post you commonly use to restore an endodontically treated tooth?	Frequency N (%)
Metal posts	65 (17)
Glass fiber-posts	270 (70.7)
Cast post	35 (9.2)
Zirconia posts	12 (3.1)
5.Are you aware of the different types of fiber-reinforced posts?	Frequency N (%)
Yes	255 (66.7)
No	95 (24.9)
Dont know	32 (8.4)
6.What are the advantages of using glass fiber posts?	Frequency N (%)
Distributes stress over a broad surface area	155 (40.6)
Elastic modulus similar to dentin	98 (25.6)
Reduces load threshold	62 (16.2)
Requires minimal preparation of root canals	67 (17.5)
7.What are the drawbacks of using glass fiber posts?	Frequency N (%)
Microleakage	130 (34)
Debonding of post from the root canal	165 (43.2)
Root fracture	32 (8.4)
Does not withstand compressive stresses	55 (14.4)
8.Do you think fiber post can be used as an alternative to conventional cast post and core system?	Frequency N (%)
Yes	195 (51)
No	155 (40.6)
Dont know	32 (8.4)
9.Do you agree that the fracture resistance and tensile retentive strength of a customized fiber post is higher than that of prefabricated fiber post?	Frequency N (%)
Yes	120 (31.4)
No	127 (33.2)
Dont know	135 (35.3)
10.Which luting cement do you prefer for the cementation of a fiber post?	Frequency N (%)
Zinc phosphate cement	0 (0)
Resin cement	290 (75.9)
Glass ionomer cement	65 (17)
Other	27 (7.1)

In the first part, general personal information on age, sex and professional work experience was requested. The second part of the questionnaire focussed on the different postendodontic restorations and the use of fiber-reinforced posts in daily practice.

DISCUSSION

A total of 382 completed questionnaires were collected, representing a response rate of 84.88%. More than 50% of the participants were aware of the different post endodontic restorations. 49.7% participants reported that a post-and-core build-up strengthens an endodontically treated tooth.

36.6% of the respondents placed posts often. However, 32.7% of the participants placed posts occasionally. Glass fiber-posts was used most commonly to restore an endodontically treated tooth (70.7%) 66.7% of the participants were aware of the different types of fiber-reinforced posts. More than 30% of the participants reported that the advantage of using glass fiber post is the distribution of stresses over a broad surface area. Drawbacks of using glass fiber-posts are debonding of posts (43.2%) and microleakage (34%). 51% of the respondents agreed that fiber post can be used as an alternative to conventional cast post and core system. 31.4% of the participants agreed that the fracture resistance and tensile retentive strength of a customized fiber post is higher than that of prefabricated fiber post, whereas 35.3 % were unaware. Resin cement was the most commonly used luting cement (75.9%).

CONCLUSION

The following conclusions can be drawn:

Majority of endodontists were aware of the different types of glass fiber-reinforced posts. In terms of post type, glass fiber -posts were predominantly used to restore an endodontically treated tooth. Resin cement was the most commonly used luting cement for the cementation of glass fiber-posts.

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