

Estimation and Evaluation of Maxillary Anterior Cast Post & Core Treatment Satisfaction Amongst Institutionalized Patients In North Indian Region: An Original Study

Rohit Nagar^{1*} Saleem Azhar² Mohd Nazar Rana³ Sahil Dhingra⁴ Nimish Tyagi⁵ Saeed Bin Hamid⁶

¹Professor, Department of Conservative Dentistry & Endodontics, Kalka Dental College & Hospital, Meerut, UP, India.

²Senior Lecturer, Department of Conservative Dentistry & Endodontics, Kalka Dental College & Hospital, Meerut, UP, India.

³Senior Lecturer, Department of Periodontology and Implantology, Kalka Dental College & Hospital, Meerut, UP, India.

⁴Senior Lecturer, Department of Conservative Dentistry & Endodontics, Kalka Dental College & Hospital, Meerut, UP, India.

⁵Senior Resident, Department of Dental Surgery, LLRM Medical College, Meerut, UP, India.

⁶Senior Lecturer, Department of Orthodontics & Dentofacial Orthopedics, Kalka Dental College & Hospital, Meerut, UP, India.

ABSTRACT

Background: Post and core therapies are considered as one of the most common endodontic techniques in oral rehabilitation. Nevertheless, with the latest advancements in endodontic trends, cast post and core are becoming obsolete gradually. Though, it is the first choice of the clinicians as far as the strength is concerned. The primary aim of this original study was to evaluate the post treatment satisfaction in cast post & core done in maxillary anterior teeth.

Materials & Methods: This study was planned on a cross sectional idea wherein a questionnaire was employed. A total of 100 cast post and core patients were evaluated. All were asked to fill the questionnaire as per their own experiences. The questionnaire was distributed amongst patients of the department by hand. We had made sure to analyze the data of patients who honestly answered to this questionnaire. Responses were accumulated and data was analyzed statistically to calculate final results.

Results: Statistical analysis was completed using statistical software Statistical Package for the Social Sciences (SPSS). The resultant and recorded data was subjected to suitable statistical tests to obtain p values, mean and standard deviation. $P \leq 0.05$ was considered as statistically significant. 42 patients think that temporization is really complicated in cast post and core treatment. 71 patients believe that cast post and core requires removal of additional coronal tooth structure. 69 patients did not find cast post and core therapy esthetically acceptable in anterior teeth. 58 patients think that cast post and core therapy is the most suitable way to restore the teeth when compared to the other options [Fiber Post].

Conclusion: Within the limitations of the study authors concluded that the studied patients were fairly satisfied with custom made or cast post & core treatment. However, few patients were quite unsatisfied as they find it pretty expensive and time consuming.

Keywords: Endodontics, Post, Questionnaire, Core, Satisfaction.

INTRODUCTION

As we all are aware that Post and core therapies are considered as one of the most common endodontic techniques in oral rehabilitation. There are many

factors to be considered for achieving a successful rehabilitation using post and core. Nevertheless, with the latest advancements in endodontic trends, cast post and core is becoming obsolete gradually. Many factors can affect the treatment's success and

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*Correspondence Dr. Rohit Nagar.

Department of Conservative Dentistry & Endodontics, Kalka Dental College & Hospital, Meerut, UP, India.

Email: dr.rohit@yahoo.com

survival rate. Though, it is the first choice of the clinicians as far as the strength is concerned.¹⁻² Crucial is the amount of tooth structure left, both the length and the diameter of the root. In order to achieve adequate space for restoring root filling material after root canal preparation, sufficient length is critical. The root diameter also plays a very crucial role in providing optimal diameter of the filling materials. Many of the researchers believe that though post & core is done in grossly decayed teeth; this therapy does not strengthen the tooth but rather weakens it.³⁻⁵ Ferrule effect is one additional feature which is added to the tooth to improve materials retention. It is basically a ring like bracing of the core portion to the tooth. Therefore it is a feature of the tooth (crown) preparation. The ferrule must be at least 2.0 mm in height of dentin, providing a collar coronal to the crown margin. Literature has well evidenced that accurately prepared and placed ferrule is a key factor in achieving a successful post and core treatment. Many clinicians usually stay away from post and core therapies if possible as they think that it is quite a complicated clinical procedure. Post and core therapies are usually classified into cast and fiber post and core depending on the clinical circumstances. They may also be classified in different cast metal post and cores made by gold, titanium or cobalt-chromium. Other combinations are prefabricated post and cores those fabricated by ceramic, carbon, quartz and glass fibers.⁶⁻⁷ The primary aim of this original study was to estimate and evaluate the post treatment satisfaction in cast post & core done in maxillary anterior teeth.

MATERIALS & METHODS

The present study was conducted to estimate and evaluate the post treatment satisfaction amongst cast post & core patients of a dental institution in Northern India. This study was designed on a cross sectional and questionnaire basis. This study was conducted in the department of conservative dentistry and endodontics of the institute. Authors have screened and selected total 100 cast post & core patients from the regular patient footfall of department of conservative dentistry and endodontics. We had ensured to select the only those patients who received post and core therapy from our department erstwhile. Our chief concern was to evaluate the cast post & core satisfaction in

maxillary anterior teeth only. The contact no and address details of the patients were also recorded for future reference or record purposes. All patients were informed in detail about the study and written consent was obtained. A self prepared, close ended questionnaire was provided to patients. It comprised of 8 questions related to the satisfaction and other parameters of post and core therapy. We had finalized to conduct and complete our study on questionnaire basis. Literature has well evidenced that questionnaire based studies are extremely useful in obtaining detailed information regarding individual and group perceptions and attitudes. Furthermore, questionnaire based studies also offer a wider range of information with better intelligibility. Right before the execution of the study, we had explained the relative significance of this study to all participating patients. The privacy and other interrelated rights of the patients along with their freedom of expression were absolutely guaranteed. Characteristically, we had made every effort to complete the questionnaire in the area which is well away from the working stations of the department. This is done to generate anxiety free responses of the patients those may be seen if done haphazardly. The recorded data was subjected to suitable statistical tests to obtain p values, mean, standard deviation, chi-square test, standard error and 95% CI. P values less than 0.05 were considered as significant.

RESULTS

All data those obtained from questionnaire procedures were sent for statistical analysis using statistical software Statistical Package for the Social Sciences version 21 (IBM Inc., Armonk, New York, USA). The finalized data was then subjected to suitable statistical tests to obtain p values, mean, standard deviation, chi-square test, standard deviation. Table 1 and Graph 1 showed that out of 100 patients, males were 70 and females were 30. Total 30 patients were belonging to age group >60 years. During results quantification and compilation, we also observed that roughly more than half of the patients were falling in the age range of >50 years therefore we can presume that majority of the patients were of older age groups [>50 Yrs]. P value was considered as significant in age range 41-50 years and >60 years. Questionnaire responses exhibited very remarkable outcomes.

While evaluating combined p value for all questions, it was noticed to be significant [0.001]. 62 patients were not satisfied with the number of appointments needed for cast post and core compared to other viable options [Fiber Post]. 42 patients think that temporization is really complicated in cast post and core treatment. 71 patients believe that cast post and core requires removal of additional coronal tooth structure. 69 patients did not find cast post and core therapy esthetically acceptable in anterior

teeth. 58 patients think that cast post and core therapy is the most suitable way to restore the teeth when compared to the other options [Fiber Post]. 49 patients believe that cast post and core increases the fracture possibility of Endodontically treated teeth (Table 2). Fundamental statistical analysis was also attempted with level of significance evaluation using Pearson Chi-Square test. It revealed significant outcomes [p values] for question no 4,5,6 and 7 (Table 3).

Table 1: Age & Gender Wise Distribution of Patients.

Age Group (Yrs)	Male	Female	Total %	Mean	SD	P value
21-30	5	3	8 [8 %]	3.64	2.065	0.08
31-40	11	4	15 [15 %]	4.81	2.567	0.60
41-50	19	5	24 [24 %]	3.22	2.563	0.01*
51-60	16	7	23 [23 %]	2.34	1.365	0.60
>60	19	11	30 [30 %]	3.65	2.689	0.00*
Total	70	30	100%	3.45	2.04	*Significant

*p<0.05 significant

Table 2: Questionnaire responses evaluation with interrelated statistical inferences.

Demographic Responses				
Name				
Age (Yrs = 21 to >60)				
Sex (M = 70/F = 30)				
Questions	Variables	Responses of patients in 'Yes' [n]	Responses of patients in 'No' [n]	p Value
1	Do you find cast post and core therapy economical	48	52	0.001*
2	Do you believe that cast post and core increases the fracture possibility of Endodontically treated teeth	49	51	
3	Do you think that cast post and core therapies usually strengthens Endodontically treated teeth	51	49	
4	Are you satisfied with the number of appointments needed for cast post and core compared to other viable options [Fiber Post]	38	62	

5	Do you think that temporization is really complicated in cast post and core treatment	42	58	
6	Do you believe that cast post and core requires removal of additional coronal tooth structure	71	29	
7	Do you find cast post and core therapy esthetically acceptable in anterior teeth	31	69	
8	Do you think that cast post and core therapy is the most suitable way to restore the teeth when compared to the other options [Fiber Post]	58	42	

* $p < 0.05$ significant

Graph 1: Distribution Of The Patients Among Various Age Groups.

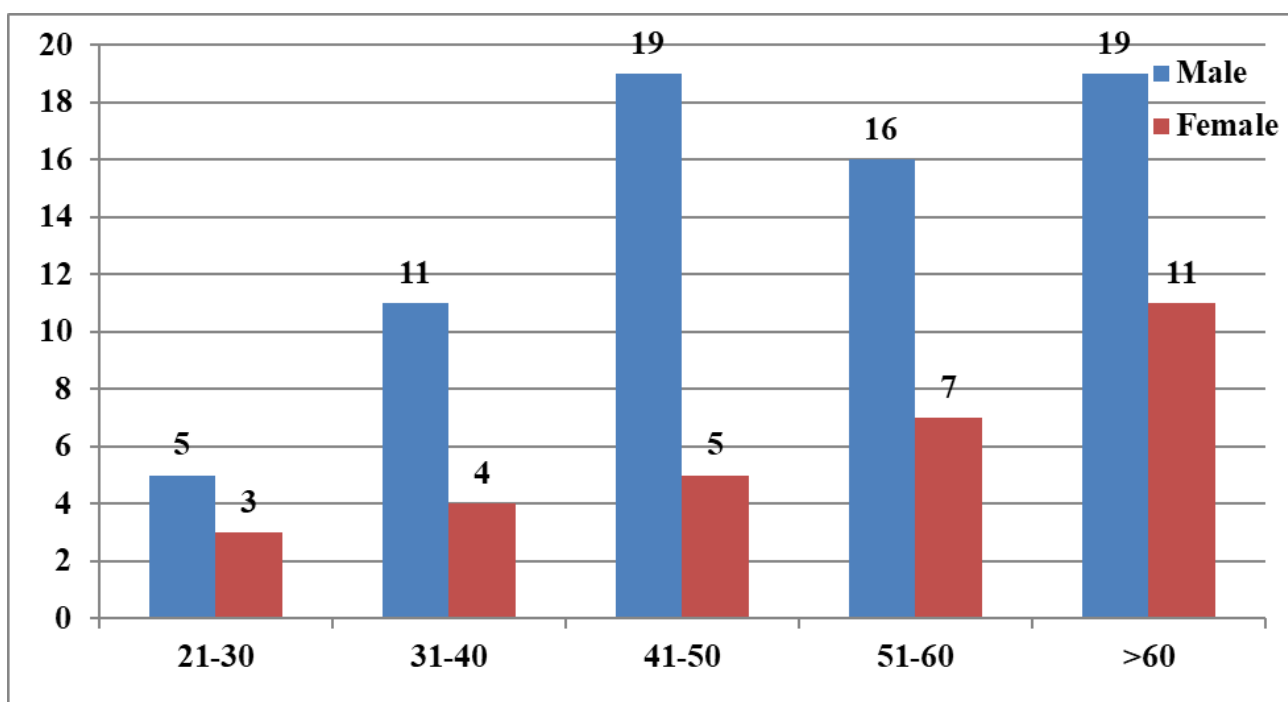


Table 3: Elemental statistical description with level of significance evaluation using pearson chi-square test .

Question No.	Mean	Std. Deviation	Std. Error	95% CI	Pearson Chi-Square Value	df	Level of Significance (p value)
1	3.32	0.248	0.020	1.96	1.343	1.0	0.090
2	2.35	0.245	0.020	1.96	2.234	2.0	0.080
3	2.45	1.890	0.067	2.43	2.432	1.0	0.510
4	2.23	0.432	0.032	1.96	1.765	1.0	0.020*

5	3.57	0.356	0.045	1.96	1.674	3.0	0.010*
6	1.46	0.787	0.037	1.96	2.775	1.0	0.005*
7	1.34	0.145	0.087	1.96	2.243	1.0	0.001*
8	2.38	0.323	0.033	1.67	1.223	1.0	0.384

*p<0.05 significant

DISCUSSION

Since many decades, custom made post has been generally employed to offer adequate support and retention for the restoration of endodontically treated teeth. Even if it is doing well, numerous cases of failure have been reported in the literature.⁸⁻¹⁰ Endodontic treatment can never be thought of complete until the concerned tooth has been completely rehabilitated to offer correct function along with other related parameters. Grossly decayed teeth are usually indicated for root canal therapy. Such endodontically treated teeth generally pose with a large amount of coronal tooth structure loss. It is therefore deemed necessary to place a post inside the root canal that could further offer suitable strength to core portion. Literature has well evidence that major function of the root canal post is to sustain the core portion.¹¹⁻¹⁴ Furthermore core part consequently provides an appropriate foundation for definitive restoration. Core is also considered to offer a suitable substructure for holding a final restoration to the concerned tooth. Many of the pioneer workers have worked on the material science of the core materials. They have mainly explored about their biocompatibility, mechanical properties, simplicity of production, and commercial availability with economical factor.¹⁵ When assuming intraoral situations, the post and core materials are usually subjected to similar masticatory forces as teeth. Therefore while planning a cast post and core therapy, the clinician must be very careful about the associated dynamic occlusion, esthetics, amount of remaining tooth structure after caries excavation, plaque factors and other infectious factors.¹⁶ The ultimate fracture strength of the post & core with root assemblage is very imperative to retain the mechanical support of the restoration. It is therefore, high fracture strength of the material is critical for long term clinical successes.¹⁷ The principal function of a root post is to stand the core

material, especially in crownless teeth. Our study aimed to estimate and evaluate the post treatment satisfaction in cast post & core done in maxillary anterior teeth. We found very crucial and intermingling responses from patients regarding custom made post and core.

CONCLUSION

Within the limitations of the study authors concluded that the studied patients were fairly satisfied with custom made or cast post & core treatment. We had genuinely attempted to evaluate various factors related to cast post and core including procedure time, tooth strength, economy and ease of doing it. Nevertheless, few patients were quite unsatisfied as they find it pretty expensive and time consuming. Our study results must be treated as suggestive for assuming clinical outcomes for such critical conditions. Nonetheless, we expect some other large scale studies to be conducted that might further establish certain standard and concrete guidelines in this perspective.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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