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Original Research

A comparison between fiber post and metal post in root canal treated tooth

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***ABSTRACT*:**
Background: The root canal treated teeth with thin remaining radicular dentin thickness are predisposed to fracture therefore they require the diligent selection and the execution of endodontic post treatment. The aim of the study was to compare the fiber post and metal posts in root canal treated tooth. **Material and methods:** The present study involves 50 patients indicated for the post and core systems which were visited the department during the period of 6 months. The patients of either sex between the age group of 18-30 years were included in the study. After clinical and radiological examination, the selected cases were randomly divided into two groups:

- Group I: Cast metal post group – 25 teeth were restored with the prefabricated cast metal posts
- Group II: Glass fiber post group – 25 root canal treated teeth were restored with the prefabricated glass fiber posts

The treated patients were recalled after an interval of 6 months for clinical and radiological evaluations. The clinical parameters of evaluation were debonding at the post/core and the tooth inter phase (marginal integrity), the mobility of the tooth, crown fracture, and periodontal status. The radiological evaluation parameters were root fracture, crown fracture, periapical status, and adaptation of the posts in the root canal. The results were calculated and analyzed with the help of IBM SPSS Statistics 20 (IBM Inc., Chicago, USA), using Student's *t*-test. **Results:** In our study total patients were 50 in which 25 patients were in each group. Marginal integrity was present in 3 patients in group I whereas in Group II it was absent. Mobility of the crown was present in 4 patients whereas in group II it was present in 2 patients. Crown fracture was present in 2 patients whereas in group II it was absent. Periodontal pathology was absent in both Group I and Group II. Root fracture was present in 4 patients in Group I but absent in Group II. Crown fracture was present in 2 patients in Group I but absent in Group II. Periapical status was good in both the group i.e. Group I and Group II. Adapatation of post in the canal was poor in 3 patients in Group I whereas it was poor in 1 patient in Group II. **Conclusion:** The results of our study concluded that prefabricated fibre post were better than prefabricated metal post.
Keywords: fibre post, metal post, marginal integrity.

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INTRODUCTION:

Post-core systems are widely used for the rehabilitation of teeth with endodontic treatment which incurred excessive material loss. [1,2] The root canal treated tooth is mostly associated with the loss of coronal and radicular tooth structure from preexisting restorations, restorative failures, trauma, dental caries, and endodontic access preparation. When a huge amount of the clinical crown has been lost due to damage, it is often impossible to achieve the sufficient anchorage of a restoration in the remaining dentin. This hard tissue tooth structure leads to decreased occlusal load carrying capacity of the root canal treated tooth. Therefore, posts are essentially indicated for the root canal treated teeth to prevent fracture of the remaining tooth structure and to prevent tooth loss. [3,4] A post provides a suitable way to anchor the restorative material to the tooth. The post is inserted into the root canal of endodontically treated tooth, and thus enables the coronal prosthetic core to be built and retained.[3] Traditionally, prefabricated posts were made with the metal, which sometimes visible through the structure of endodontically treated teeth commonly in the anterior region. Carbon fiber post are among the many prefabricated fiber post and core systems which were introduced to reduce the failure rate of post-retained restored teeth. In addition, quartz and glass fiber posts

embedded in a filled resin matrix have been developed to fulfill esthetic requirement.[5] The aim of the study was to compare the fiber post and metal posts in root canal treated tooth.

MATERIAL AND METHODS:

The present study involves 50 patients indicated for the post and core systems which were visited the department during the period of 6 months. The patients of either sex between the age group of 18-30 years were included in the study. After the approval from Ethical Committee, the written informed consent was obtained from all the individual patients involved in the study. Patients with nonvital or discolored teeth with cervical and middle third crown fracture ,Teeth with healthy periodontal status and occlusion with sufficient over jet and over bite, Teeth with complete root formation and without any anatomic variation , Endodontically treated teeth, patients who were willing to give written informed consent and agreeing for regular follow-up were included in the study. Patient aged <18 years and more than 25 years, Teeth with periodontal problems or with the large persistent periapical lesion, Patients having malocclusion with a deep bite, edge-to-edge bite, and a cross bite were excluded from the study. After clinical and radiological examination, the selected cases were randomly divided into two groups:

- Group I: Cast metal post group – 25 teeth were restored with the prefabricated cast metal posts
- Group II: Glass fiber post group – 25 root canal treated teeth were restored with the prefabricated glass fiber posts

The treated patients were recalled after an interval of 6 months for clinical and radiological evaluations. The clinical parameters of evaluation were debonding at the post/core and the tooth inter phase (marginal integrity), the mobility of the tooth, crown fracture, and periodontal status. The radiological evaluation parameters were root fracture, crown fracture, periapical status, and adaptation of the posts in the root canal.

The results were calculated and analyzed with the help of IBM SPSS Statistics 20 (IBM Inc., Chicago, USA), using Student's *t*-test.

RESULTS:

In our study total patients were 50 in which 25 patients were in each group. Marginal integrity was present in 3 patients in group I whereas in Group II it was absent. Mobility of the crown was presnt in 4 patients whereas in group II it was present in 2 patients. Crown fracture was present in 2 patients whereas in group II it was absent. Periodontal pathology was absent in both Group I and Group II. Root fracture was present in 4 patients in Group I but absent in Group II. Crown fracture was present in 2 patients in Group I but absent in Group II. Periapical status was good in both the group i.e. Group I and Group II. Adapatation of post in the canal was poor in 3 patients in Group I whereas it was poor in 1 patient in Group II.

Table 1: Clinical Evaluation

Criteria	Group	Presence of defect	Total
Marginal integrity	I	03	25
	II	00	25
Mobility of the crown	I	04	25
	II	02	25
Crown fracture	I	02	25
	II	00	25
Periodontal pathology	I	00	25
	II	00	25

Table 2: Radiological Evaluation

Criteria	Group	Presence of defect	Total
Root Fracture	I	04	25
	II	00	25
Crown fracture	I	02	25
	II	00	25
Periapical status	I	00	25
	II	00	25
Adaptation of the post in the canal	I	03	25
	II	01	25

DISCUSSION:

In our study total patients were 50 in which 25 patients were in each group. Marginal integrity was present in 3 patients in group I whereas in Group II it was absent. Mobility of the crown was present in 4 patients whereas in group II it was present in 2 patients. Crown fracture was present in 2 patients whereas in group II it was absent. Periodontal pathology was absent in both Group I and Group II.

Root fracture was present in 4 patients in Group I but absent in Group II. Crown fracture was present in 2 patients in Group I but absent in Group II. Periapical status was good in both the group i.e. Group I and Group II. Adapatation of post in the canal was poor in 3 patients in Group I whereas it was poor in 1 patient in Group II.

Hayashi et al that the root fracture of the teeth which were restored with cast post depended on the hardness of the post. In our study, the fracture occurred mostly obliquely and in the middle third.[6]

Pereria et al. applied four different post systems (cast post core, pre-fabricated stainless steel, carbon fiber, and glass fiber post) to the same root length of canine teeth and examined their fracture resistance. It was identified that the cast post showed higher resistance according to the glass fiber post, while catastrophic fracture was observed in all the teeth in the cast post group, root fracture was not observed in the other groups.[7]

Franco et al. compared the fracture resistance of the cast posts (2/3) and fiber (1/3,1/2. 2/3) posts which were applied in different length and as a result they concluded that cast post showed a higher fracture resistance value.[8]

A study by Gbadebo *et al* 01 patients of metal post showed mobility of the teeth and 01 patient showed tooth mobility in the fiber posts.[9]

CONCLUSION:

The results of our study concluded that prefabricated fibre post were better than prefabricated metal post.

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