

Post and Core Treatment of Maxillary Right Central Incisor Using a Fibre Post: A Case Report

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Abstract

Preserving a badly mutilated tooth has always been a challenge for the dentist. Patients usually approach to a dentist where there is significant loss in tooth structure. Post and core can be done in such a case for the restoration of the teeth. For success in such cases, proper post-selection is of utmost importance. This case report highlights the usage of post and core to save teeth with less crown structure using prefabricated fiber posts.

Keywords: Mutilated tooth; Post and Core Treatment; Right Central Incisor; Fibre Post.

Introduction

Dental caries being a common chronic disease worldwide is a cause of pain-related loss of function in patients. Patients with dental caries in the anterior part of the dental arch come with an added challenge of decreased self-esteem and confidence owing to loss of speech and aesthetics.¹ A case of dental caries with pulpal involvement may require endodontic intervention followed by prosthetic rehabilitation both functionally and aesthetically. The endodontic intervention may lead to significant loss of tooth structure in the crown owing to dental caries and/or the preparation of access. This makes the tooth susceptible to fracture even under the normal force of biting. In the absence of sufficient tooth structure for proper rehabilitation after endodontic treatment, the use of post and core may be taken into account to retain the crown.² Post and

core is a widely used treatment protocol that helps in the preservation of grossly decayed teeth or teeth with less crown structure. It not only replaces the missing tooth structure but also provides resistive and retentive to the crown thus, restoring the tooth both in terms of function and aesthetics.³ “Dowel (Post): The dowel is a metal post or other rigid restorative material placed in the radicular portion of a non-vital tooth. A dowel, usually made of metal, is fitted into a prepared canal of a natural tooth. When combined with an artificial crown or core, it provides retention and resistance for the restoration. (Glossary of Prosthodontics) .Core: Refers to properly shaped and well substructure, which replaces missing coronal structure and retains the final restoration. The core is designed to resemble or become the crown preparation or crown itself. (Glossary of Prosthodontics).”⁴ The biological width is an important factor that has to be kept in mind in the treatment of any tooth. Post and core treatment helps in restoring the tooth by acting as a reinforcement for the tooth structure. Badly mutilated teeth are weak and susceptible to fracture. Root canal treatment alone can eliminate pain but will not strengthen the tooth structure. Hence, post and core is required in such cases. Indications for post and core are, when the crown length is less than 1 mm, root canal treated teeth with extensively damaged or lost, endodontically treated anterior teeth with susceptible

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to fracture at the cervical area, etc. Contraindications including poor crown root ratio, fragile/weak root, teeth with heavy occlusal load, poor periodontal health, dilacerated root, persistent periapical lesion, patient with unusual habits, inadequate skills, etc.⁵

Posts are available in a variety of sizes and materials. They can be custom made or prefabricated. The ideal post should be such that it closely conforms with the root canal wall and has sufficient strength to withstand the forces directed along the long axis of the tooth. The length of the post should extend up to 4-5 mm short of the apex leaving the apical gutta-percha intact. The apical seal with gutta-percha is necessary as the maximum incidence of lateral canals is seen in the apical 3mm. The obturating material seals these canals reducing the chances of failure of treatment.³⁻⁵

Prefabricated posts are made from fiber. They are available in a variety of sizes that can be selected according to the width of the root canal. They are not technique sensitive and are easy to perform. The ease of procedure with these posts make them a widely accepted procedure among the dentists. However, they don't conform well to the root canal walls. This leads to the appearance of potential space between the prepared root canal walls and the post itself.³⁻⁵

This case report is based on the management of a decayed maxillary right central incisor in a young permanent dentition. There was significant loss of crown structure and pre-fabricated post was used after the endodontic treatment.

Case Report: A 14-year-old male patient reported to the Department of pediatric and preventive dentistry with the chief complaint of pain in the upper front tooth region. The patient gave a history of sharp, shooting, and continuous pain that was aggravated on the intake of hot and cold beverages. On clinical examination, there was a presence of caries involving the pulp in the right central incisor (figure 1). There was also a loss of significant tooth structure due to long-standing decay and chipping of the tooth structure. Radiographic examination showed caries extending up to the pulp chamber. The patient was advised to post and core treatment.

After the administration of local anesthesia, the access cavity was prepared. Working length was established with electronic apex locator and a radiograph was taken for the same

The canals were cleaned and shaped upto 40k files. Irrigation was performed with 5.25% sodium hypochlorite and saline during each instrument change. Master cone radiograph was taken as depicted in. Obturation was done with mono cone technique using AH Plus sealer (figure 2). Following this, post space was prepared with peesoreamer upto size 3 leaving the apical 5mm gutta-percha technique (figure 3).



Figure 1. Pre-Operative



Figure 2. Obturation done



Figure 3. Post Space prepared

For the ease of preparation, it was decided to put a prefabricated fiber post in this tooth. Post space was prepared using peesoreamers up to size 3. The prefabricated post was selected according to the root canal width. The post was inserted and luted using resin cement. Following this, crown preparation was done was porcelain fused to metal crown was prefabricated and cemented using Type II glass ionomer cement. After 3 days crown was provided to the patient (figure 4).



Figure 4. Post-Operative

Discussion

It is often impossible to achieve sufficient support to a restoration when there is a loss of coronal tooth structure. Restoration of the endodontically treated tooth is very important as it has an impact on the long-term prognosis of tooth.⁶

Trauma and decay are mostly associated with an extensive loss of tooth structure, necessitating restoration of the tooth with a complete crown for esthetic and functional rehabilitation.⁷ It is impossible to achieve sufficient anchorage of a restoration in the remaining dentin when a large portion of the crown has been lost to damage. In such situations, post and core restorations are required for additional retention.⁸

The resin fiber post is more similar in its characteristics to natural dentinal structure than any previously used post. It has excellent transverse strength and acts as a shock absorber dissipating much of the stress placed on the finished restoration, transmitting only a small fraction of these forces to the dentinal walls. The fiber post bonds to tooth structure, core materials, and resin cements. It is delivered to the patient in a single-appointment, chairside procedure.⁹ Hence proper selection of post and meticulous clinical procedure is critical in the success of post endodontic restorations.¹⁰

Conclusion

The restoration of endodontically treated teeth with significant loss of tooth structure necessitates post and

core treatment. Post and core treatment have a long term prognosis. This case report highlights the usage of cast metal post. There are certain limitations of every post hence, the clinician must make a proper decision regarding the choice of post. The proper selection of proper post design and material is necessary to ensure a successful treatment outcome.

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