

Esthetic Rehabilitation Using Custom Cast Post and Core

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DOI: 10.31080/ASDS.2023.07.1532

Received: November 09, 2022

Published: December 08, 2022

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Abstract

The custom-made post is the time-proven method for post and core construction. When properly designed, the custom-made post can conform to a canal of any shape to provide maximum retention and allow a more even distribution of stresses throughout the tooth structure.² This case report presents restoration of anterior teeth using custom cast post followed by PFM crown.

Keywords: Cast Post and Core; Esthetic Rehabilitation; Badly Broken Tooth

Introduction

The successful treatment of teeth with substantial damage to the tooth structure not only depends on good endodontic treatment, but also on prompt post endodontic restoration of the tooth. The primary purpose of the post is to retain a core that holds the definitive prosthesis. A post and core also helps to improve the fracture resistance following RCT when the remaining tooth structure is very less. It is critical to decide the type of post endodontic restoration according to the clinical situation. When a large amount of tooth structure is lost or if an insufficient ferrule is present, a custom cast post and core is indicated [1-5]. The following case reports depicts the restoration of anterior teeth after using custom cast posts followed by PFM crowns.

Case 1

A 18-year-old male patient came in to the conservative dentistry and endodontic department with the main concern that the right upper central incisor was unsightly. The patient had previously experienced injuries to the maxillary front area. The maxillary right central incisor's substantial coronal damage was discovered during a clinical examination. There were no lacerations, signs of an alveolar bone fracture, or gingival irritation upon intraoral inspection. On percussion, the tooth was discovered to be non-tender. There was a class III fracture seen in the right maxillary central incisor. teeth had no movement. The electric pulp test

and other vitality tests on the tooth produced no results, indicating that it was nonvital. The affected tooth's completed root end development was visible on radiographs. When the pre-operative periapical radiograph was carefully examined, it appeared that the tooth had a very broadly flared canal and a thin remaining radicular dentinal wall. His medical background was irrelevant. The strategy called for root canal therapy to be followed by anatomically specific post and core. Following the patient's informed permission, the operation was explained to them.

Following the injection of 2% lignocaine and epinephrine local anaesthesia (1:100000). On tooth No. 11, an access opening was made using an endo access bur (DENTSPLY Maillefer, Switzerland). The working length was determined using an apex locator and was confirmed by a periapical radiograph. The root canal was then enlarged to ISO size 70 at the working length. Complete biomechanical preparation was then carried out using the step-back technique. During preparation, thorough irrigation with 2.5% sodium hypochlorite was carried out. The master cone was then confirmed by taking a radiograph, root canal obturation was done using down packing and back fill technique and then a radiograph after obturation was taken. After completing the root canal procedure, the post space was prepared during the following appointment by removing the gutta percha from the coronal two-thirds of the canal while leaving the five millimetres of guttapercha apically untouched.

In the same appointment After the canal was thoroughly cleaned, pertolun was coated throughout the entire post space with the help of a H- file, custom made tooth pick was used on to which the auto polymerising resin was coated followed by its insertion into the root canal to record the pattern of the post space. To verify the position and correct orientation of the post during customiza- tion the labial surface of the post was marked with a marker pen. Core build-up was also done with auto polymerising resin. Crown preparation for porcelain fused to metal crowns was done on 11.

Post and core patterns were cast right away with the special precaution of mixing distilled water with the investment to pre- vent mould expansion. Glass ionomer cement was used to cement the cast post and core. For the PFM crown, final preparations were made w.r.t 11. Polyvinyl siloxane impression material was used to create the final impression (3M). Shade selection was done using Vita Classical Sade guide and shade A2 was selected.

On the last appointment the porcelain fused to metal crown was made for 11 and cemented using glass ionomer cement.



Figure 1

Case 2

A 22 years old male patient presented to the department of Conservative Dentistry and Endodontics with the chief complaint of broken upper front teeth and wanted to get them filled. Patient gave a history of trauma in the upper front teeth one year ago.

Intra Oral Examination Ellis Class 3 fracture in relation to upper right lateral incisors.

Radiograph revealed radiolucency involving enamel, dentin and pulp i.r.t 12 with negative response to EPT and cold test.

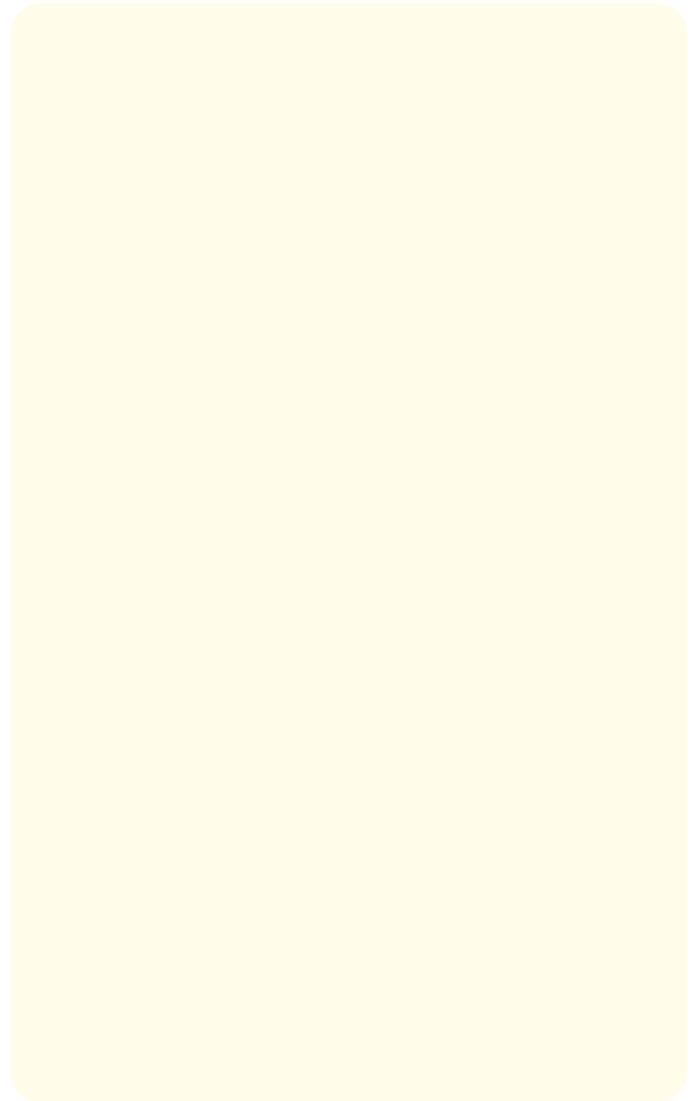
Access opening was done in relation to 12. Biomechanical prep- aration was done using hand files in a step back technique and in- tracanal medicament of calcium hydroxide was placed in relation to 12 for 1 week. Obturation was completed using gutta percha by lateral compaction technique. Owing to the amount of tooth struc- ture lost and presence of non-uniform ferrule, crown lengthening was done and custom cast post and PFM crowns were planned for the tooth.

Case 3

A 29 years old male patient presented to the department of Conservative Dentistry and Endodontics with the chief complaint of broken teeth in upper front tooth region. Patient met with an accident by falling from bike 1 week back. Diagnosis made was Ellis class III i.r.t 11 and Ellis class I i.r.t 21. The treatment plan decided was root canal treatment followed by cast post and core and prosthesis i.r.t 11 and composite restoration i.r.t 21. Patient only wanted the treatment of 11.



Figure 2



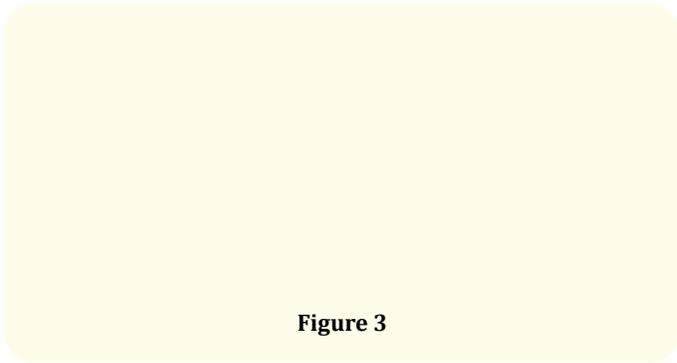


Figure 3

Case 4

A 30-year-old female patient came with a chief complaint of dislodged cap in upper right front region of mouth since 1 week. Radiographic examination showed 11,12, 21 were root canal treated 3 years ago with signs of periapical radiolucency i.r.t 11,21. Patient was advised root canal retreatment i.r.t 11,21 and followed by post endodontic rehabilitation. As patient was asymptomatic patient wanted only to get aesthetic treatment regarding 11. Hence multi visit root canal retreatment was done i.r.t 11 followed by cast post and core with PFM crown.

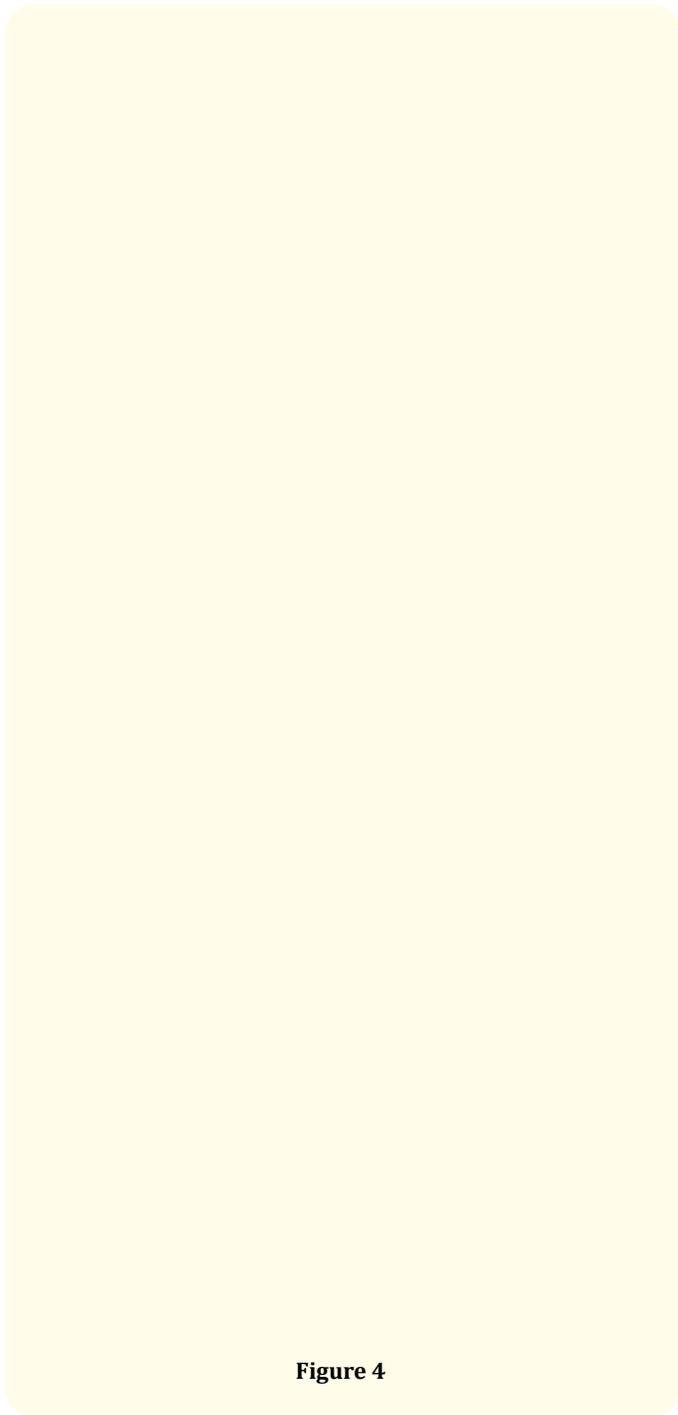


Figure 4

Case 5

A 18 year old patient came to the department of conservative dentistry and endodontics with the chief complaint of broken tooth in the upper front tooth region since 7 months. patient also gave history of trauma 7 months back.

Intraoral examination revealed ellis class 3 fracture i.r.t 21. Electric pulp test gave a lingering response i.r.t 21. A treatment plan of nonsurgical root canal treatment followed by crown placement was made.

After access opening was done working length was determined radiographically and cleaning and shaping was done upto master apical file and was obturated with master apical cone.

post space preparation was done in the distal canal with the help of Peeso Reamer up to number 3 leaving 4-5 mm gutta-percha apically. Resin impression of the post space created was recorded and casting was done .

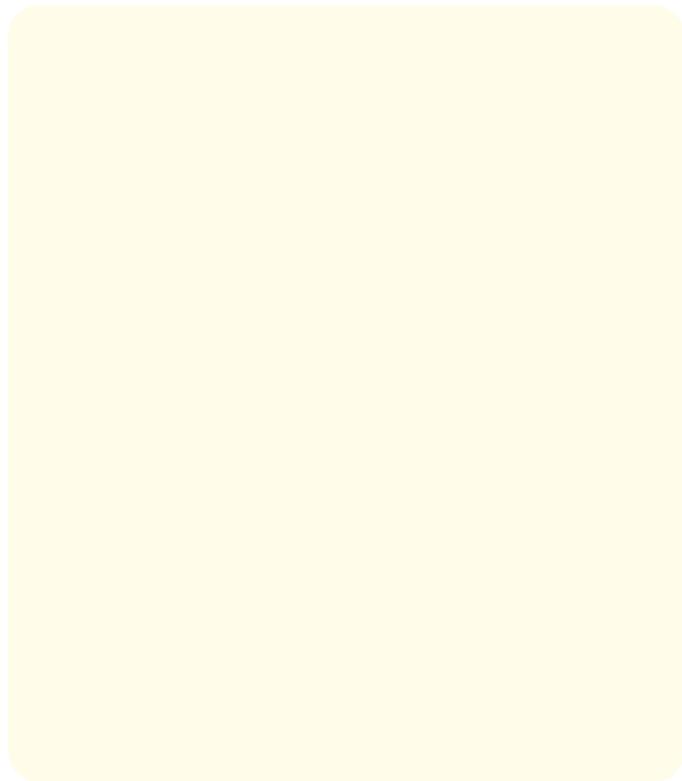


Figure 5

Conclusion

The aesthetic rehabilitation of traumatised labially inclined tooth poses tough challenge to the dentist. Custom cast post offers advantages in form of higher strength, precise fit with minimal luting surface and inherent anti rotation mechanism [6]. The use of cast metallic posts and cores are recommended to restore severe loss of coronal tooth structure with insufficient ferrule and to retain metal-ceramic crowns. Establishment of esthetics and function for the patient has been achieved in these cases using cast metal posts and metal ceramic crowns for rehabilitation of anterior teeth [7].

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