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PRESERVING THE NON-VITALS

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ABSTRACT

In recent times esthetics plays a essential role. They directly or indirectly affect the lifestyle of a person. Having a good smile is very crucial; it helps boost morale and self-confidence. Functional and esthetic restoration of fractured anterior teeth is always a challenge, particularly when coronal structure is insufficient to provide resistance and retention. As Prosthodontists it is our responsibility to offer best solutions for patients with economic limitations. This article illustrates the use of custom cast post and core treatment for Ellis Class III fracture in maxillary incisors to successfully restore them with porcelain-fused-to-metal crowns.

Key words- Cast post and core, Esthetics, Endodontic, Porcelain-fused-to-metal

INTRODUCTION

The prognosis of endodontically treated teeth (ETT) is influenced by a variety of different parameters such as the number of adjacent teeth, occlusal contacts, position of the tooth in the dental arch, apical status, collagen degradation, intermolecular cross linking of the root dentin, amount of hard tissue loss, remaining dentin wall thickness, type of definitive restoration, presence of a minimum of 1.5- to 2.0-mm-high ferrule preparation, and type of post and core

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material used.[1] Endodontically treated teeth are more prone to biomechanical failures when compared to vital teeth.

Excessive loss of dental hard tissues produces complications for the aesthetic outcome of final restorations. In these cases interdisciplinary approach is essential to assess, diagnose and restore aesthetic problems. The success of a root canal treated tooth depends on the remaining tooth structure and the final restoration[2.]

If substantial amount of coronal structure is missing, a post and core restoration is indicated. The main purpose of this procedure is to provide retention for the core restoration, which replaces lost coronal structure.[3]

CASE REPORT-

A 38-year-old male patient reported to Department of Prosthodontics crown and bridge in D.Y. Patil University, school of dentistry, Nerul with the chief complaint of fractured anterior teeth (Figure1) in upper front region of jaw since 1 year. On clinical examination, 11, 12, 22 showed Ellis class III fractures; 21 showed G. v. Black class V caries. Pre-operative radiographs (Figure 2) showed 11,12,21,22 were endodontically treated 2 years ago.

After ruling out all the options, patient opted to preserve his remaining teeth and root stump. Preprosthetic treatment plan included crown lengthening and excavation of dental caries. Prosthetic treatment plan included fabrication of cast post and core on 11, 12 and 22, and porcelain fused to metal crowns on 11, 12, 21 and 22.

Clinical Procedure:

After evaluation of endodontic treatment in 11,12,21,22, post space was prepared in 11, 12, 22 using Peeso Reamer (MANI) up to number 3. The canal was prepared so that 5 mm gutta percha remained in the apical third of the root to maintain the apical seal. (Figure 3) which was then confirmed on radiograph the canal space was lubricated using petroleum jelly. Impression of post space was made by direct technique using auto polymerizing pattern resin (GC Corporation Tokyo, Japan). The pattern resin was carried into the canal and supported by a pin jet. Auto polymerizing pattern resin was also used to build the core (figure4, 5). 11,12,21,22 were prepared for porcelain fused to metal crowns. Cast post and core pattern was invested and casted.

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The cast posts and cores (figure 6) were tried in the oral cavity and luted with glass ionomer cement. (shofu) (Figure 7)

Gingival retraction (figure 7) using 00 retraction cord (Ultradent Products, Inc.) was done. Final impression was made in condensation polyvinyl siloxane impression material (Zhermack). Shade selection, shade A3 cervical and A2 body was selected from the Vita shade guide taking other adjacent teeth into consideration. 3-D printed Provisional restorations (figure 8) were fabricated and luted with TempoSIL , a temporary A-silicone-cement (COLTENE)

Metal coping trial was done to see the marginal fit . Bisque Tryin of PFM crowns for 11,12,21,22 was carried out along with occlusal adjustment and then glazed crowns were luted using high bond glass Ionomer cement (Shofu INC.) (Figure 9).

The patient was satisfied with the final result. The patient was recalled after a 2-month interval.

DISCUSSION

Previously it was believed that posts reinforced endodontically treated teeth and made the subsequent restoration stronger. However, research shows that posts do not reinforce teeth; in fact, they may weaken them. The main reason for using posts is now recognized to be connection of the replacement for the missing coronal portion of the tooth to the remaining root structure, thereby providing retention for the crown.[4]

These days, prefabricated posts have become much more popular than custom-cast posts and cores[5], due to their ease of use, availability, and less chair side time during treatment. Although prefabricated posts have their advantages, the customized cast post and core possesses superior adaptation to the root canal[6]

When the ferrule was not present, the fracture strength of the teeth restored with cast post and core was significantly higher than those restored with prefabricated post and those restored with composite resin [7]

There are several options available to restore fractured teeth. The choice of treatment should vary case to case and not be based on set guidelines. The tooth condition, root length, degree of discoloration, success of endodontic treatment, and previous restorations should be kept in mind before selecting a particular treatment plan. Dentistry is constantly evolving. Treatment plan must be in harmony with these biologic factors and with patient satisfaction.

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CONCLUSION

Endodontic procedure has become more predictable in the recent years. Restoration of teeth after root canal treatment is an important part of everyday dentistry. Cast post and core is a treatment of choice to restore teeth with inadequate coronal tooth structure and inadequate ferrule. It is a simple, effective and a conservative approach used to preservation of remaining dental tissue.

Figure 1: Pre-operative intra-oral photo

figure 2: pre-operative radiograph

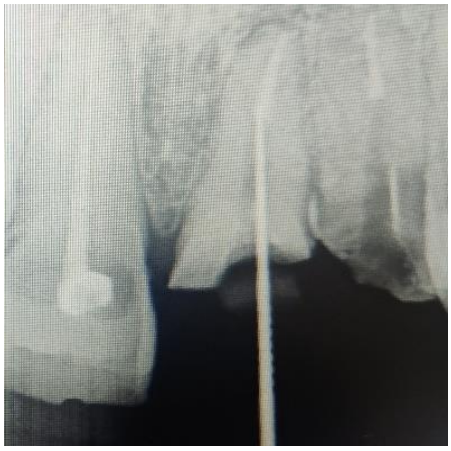

Figure 3: radiograph showing 5mm apical gutta percha

Figure 4: Core build-up with autopolymerising resin

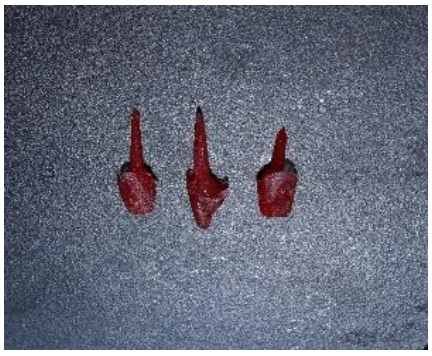

figure 5: resin pattern

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Figure 6: cast post and core

Figure 7: cementation of cast post and core and gingival retraction

Figure 8: Temporary crowns

Figure 9: Final PFM restoration

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Figure 10 : post-operative view

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