

Case Report

Restoring smile by esthetic intraradiular tooth reinforcement and metal free crown: a case report

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ABSTRACT

Aesthetic management of maxillary anteriors provide a challenge to the artistic and technical abilities of a prosthodontist. Metal-free crowns in such cases allows for highly aesthetic solutions to reshape fractured teeth or teeth with other defects. In severely compromised anterior teeth, development of non-metallic post systems has made possible the generation of metal-free ceramic restorations. This article describes a case where all-ceramic crown reinforced with post was utilized to improve the esthetics of the patient.

Keywords: Aesthetics, Metal free crowns, Fibre post

INTRODUCTION

Fractured tooth especially in the anterior region is a cause of concern for the patient. It affects the self esteem and confidence of the patient. Although porcelain-fused-to-metal (PFM) restoration is the most widely used full coverage crown restoration system used to restore such cases, their inherent properties make the achievement of natural aesthetic restorations an elusive task.¹ In the last few years there has been an implosion of new materials, changing the trend towards metal free restorations.

The metal free systems offer excellent translucency and vitality, without the opacity associated with PFM restorations. Their vitality is further enhanced by an adhesive resin cementation method that conducts the color of the underlying tooth structure.¹

In such cases (fractured tooth), if there is substantial loss of the coronal tooth structure, tooth reinforcement using post becomes a mandatory treatment modality before placing the crown prosthesis. Posts were previously made of stainless steel, titanium or a precious alloy. Recently, several new types of esthetic post materials, such as

carbon fiber, quartz and glass fiber, have been introduced into the dental practice. Teeth restored with fiber posts, which have modulus of elasticity close to the dentin, resist fractures better than teeth restored with metallic posts². Also they help in maintenance of esthetics as metallic posts show through the crown, compromising the esthetics.

This article presents a case report in which esthetic improvement of a patient having fractured central incisors has been performed using fibre post followed by all ceramic crown.

CASE REPORT

A 21 year male patient reported to our department with chief complaint of chipped off central incisor due to trauma and wanted to seek treatment to restore his aesthetics. Oral examination revealed Ellis class III fracture on the left central incisor. Root canal treatment was planned for this tooth followed by porcelain jacket crown. Since, the tooth structure loss was substantial, we planned to give post to reinforce the tooth.



Figure 1: Pre rehabilitation extraoral view.

Procedure

Preliminary impression and wax up

Diagnostic impression of the maxillary and mandibular arches was made using irreversible hydrocolloid impression material. The casts were poured in dental stone after which they were mounted on a semiadjustable articulator on which occlusion was analyzed preoperatively. A diagnostic wax up was done on 21 and chairside modification was done until the final form of the new restorations was found esthetically satisfactory and in compliance with the patient's needs and desires.

Preparation of post and core

Root canal treatment was done on 21. After completion of root canal treatment the gutta-percha was partly removed leaving it 4 mm apically, to maintain a good apical seal, and the post space was prepared. Following this, fibre post (MJZ Quartz fiber post) of appropriate size was selected. Post cementation was done using Rely X Unicem Self Adhesive Universal Resin Cement (3M ESPE, Germany). Thereafter, core build - up was completed with composite using the incremental technique.



Figure 2: Fibre post.



Figure 3: Cementation of post followed by composite core build.

Tooth preparation and impression

Tooth preparation for all ceramic restoration was done and definite shoulder finish line of 1mm width was established all around; 0.05 mm deep into the sulcus. Retraction procedure was carried out, after which impression was made with polyvinyl siloxane elastomeric impression material (putty and light body) using double step putty wash technique.



Figure 4: Tooth preparation.

Temporization, shade selection

Temporization was then done using using Protemp™ crown temporization material (3M ESPE). The provisional crown was cemented in place using a temporary cement. The shade was determined with a shade guide (Vitapan 3D MasterVita, Bad Solingen, Germany). All ceramic crown was fabricated with lithium disilicate based ceramic (IPS emax; Ivoclar vivadent, Schaan, Liechtenstein) and checked for fit, marginal adaptation, contour and shade in patient's mouth.

Cementation

The tooth surface was cleaned with pumice slurry, rinsed with a water spray, and lightly air dried. Cementation was done with Rely XU 100 (3M ESPE, Germany) a dual cure self-adhesive resin cement. Excess resin cement was removed after brief light exposure (app. 2 sec) and then light curing was done for 20 sec on each surface. The

patient was instructed to continue with oral hygiene regime.



Figure 5: Postoperative intraoral view.



Figure 6: Postoperative extraoral view.

DISCUSSION

Full ceramic crowns have come as a blessing for patients with unaesthetic teeth especially in the anterior region. They have provided a cosmetic alternative to the traditional metal- ceramic crowns which have been employed since ages.³ Metal ceramic crowns have various disadvantages such as in full natural light, the metal base can show through as a shadow in the tooth, especially for anterior teeth. Also, over time, if the gums recede from the crown, the metal base can be seen as a dark line that will show where the crown meets the gingiva.⁴

All-ceramic systems on the other hand, have no metal framework to be masked or metal margins exposed that may produce an unattractive appearance. Also, chances of over contouring to provide a thicker layer of porcelain to mask the opaque-metal surface in areas that often are underprepared, which can affect the emergence profile of

the patient is avoided. Recent developments in dental materials have led to the introduction of a large number of all-ceramic systems for full-coverage restorations⁵.

This article presents a case report in which the patient reported with fractured maxillary central incisor which was restored with lithium disilicate based all ceramic crown after reinforcement with fibre post and composite core build up. Although fibre does not have the rigidity of a metal post, it was selected for this case as metal post would have jeopardized the esthetic result.

CONCLUSION

The technique described in this article provides the benefits of root strengthening and natural aesthetics for restoring the traumatized tooth. It provided the patient with both functional and esthetic result.

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REFERENCES

1. Jurel SK, Singh RD. All ceramic crown- An enhanced esthetics. Ind J Dent Sci. 2010;2(6):17-8.
2. Barutçigila C, Harorlia OT, Yildiza M. Restoration of crown fractures with a fiber post, polyethylene fiber and composite resin: a combined restorative technique with two case reports. Rev Clín Pesq Odontol. 2009;5(1):73-7.
3. Goswami RP, Mankar P, Mohan S. Enhanced esthetics by all- ceramic crown- case report. J Appl Dent Med Sci. 2015;1(1):12-4.
4. Anjum V, Aseem S. From Non-Esthetic to Esthetic Rehabilitation: A Case Report. Asian J Oral Heal Allied Sci. 2012;2(2):104-6.
5. Sharma AK, Bhanot R, Bansal P, Kapoor D. Aesthetic management of proclined maxillary central incisors with all-ceramic crowns: a case report. J Clin Diag Res. 2010; 4:3643-7.
6. Nanda SM, Nanda T, Yadav K, Sikka N. Fibre post and all ceramic crown- A simple approach to the perfect smile. Sch J Dent Sci. 2015;23:247-9.
7. Rajkiran C, Swapna M, Sapna S, Agarwal S. Esthetic intraradicular rehabilitation of grossly decayed anterior teeth with fibre reinforced composite post – A case report. Int J Contemp Dent. 2011;2(4):21-5.

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