

Reattachment and Aesthetic rehabilitation of fractured maxillary incisors: Case reports

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Abstract

The most common sequelae of dental trauma is coronal fracture of maxillary anteriors. In complicated crown fractures, when the fractured tooth segment is available and the fractured segment can be closely approximated to the remaining tooth, root canal treatment of the fragment retained in socket followed by reattachment of the fractured segment with fiber post is a feasible option. It is simple as well as economic procedure and requires less chair-side time. This article includes two case reports showing management of complicated crown fracture with reattachment procedure using fiber post.

Key Words: glass fibre post, aesthetic rehabilitation, PFM crown

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I. Introduction

The majority of dental traumatic injuries involve the maxillary anterior teeth, attributed to their position in the arch, whereas the mandibular incisors are less-frequently involved^{1,2}. Crown fractures may be classified as complicated and non complicated³. Complicated crown fracture involve the enamel, dentin, and pulp which constitute a majority of all dental injuries. Fractured anterior teeth require immediate clinical attention as this loss not only effects dentofacial esthetics but also emotional and psychological health⁴. Coronal fractures may or may not lead to pulpal exposure. The treatment of traumatised teeth depend on the biological tissues involved. A conservative option of treatment for fractured incisors is reattachment of the tooth fragment when it is available⁵. Though materials do not have an important role in fracture strength recovery, still reattachment of fractured fragments can provide immediate aesthetics, an outline form, can maintain occlusal function, prevent differential wear, lower economic burden is an excellent time resource management.⁶

II. Case Report 1

A 34 year old female injured in a road traffic accident was referred to the Department of Conservative Dentistry and Endodontics, RUHS college of dental sciences, Jaipur. Clinical (Fig.1.1) and radiographic examination revealed a complicated crown fracture with respect to 12 (Ellis class VIII). The fractured segment (Fig.1.2) was held in place by the gingival attachment. Ellis class III fracture of 11 was also noted but the fractured segment was missing. Periapical radiographs (Fig. 1.3) revealed an intact periodontal ligament space, complete root formation, and no root fracture in relation to both teeth. Medical history was noncontributory.

Single visit root canal treatment (RCT) on 12 followed by reattachment with fiber post reinforcement was planned. 11 was also planned for RCT and cast post-core restoration followed by PFM crown. Local anesthesia was administered and the fractured segment in relation to 12 was atraumatically removed and stored in sterile isotonic saline. RCT with sectional obturation (Fig.1.4) was completed on 12 and fibre post (parapost, Coltene whaldent) of diameter 1.5 mm was selected. Non rinse conditioner (parabond ,Coltene) was applied on prepared post space of the root canal and onto the contact surfaces using a brush for 30 seconds. Then excess non rinse conditioner was removed using paper point. Contact surfaces were air dried for 2 seconds. Next one drop of adhesive A was mixed with one drop of adhesive B (Parabond , chemical cured adhesive, coltene) and applied into the prepared post space of root canal and contact surfaces by brush for 30 seconds. This adhesive bond layer was air dried for 2 seconds and paracore resin cement (coltene) was applied directly to the preparation using mixing tip. Then fibre post was inserted in paracore resin cement within root

canal (Fig.1.5) and tooth fragment was reattached (Fig.1.6) using paracore resin cement. The RCT for 11 was performed subsequently and cast metal post was made followed by metal ceramic crown (Fig.1.7).



Fig.1.1 Preoperative view



Fig. 1.2 Preoperative IOPA

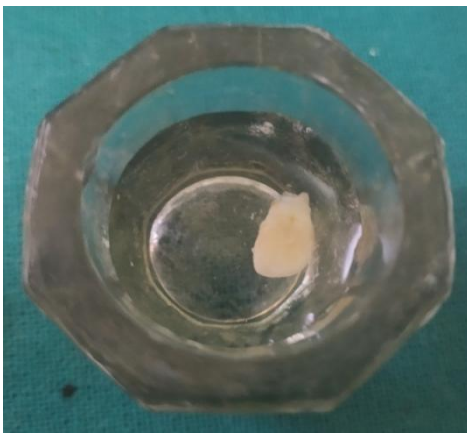


Fig.1.3 Fractured segment



Fig.1.4 IOPA after RCT



Fig.1.5 Fibre post placement



Fig.1.6 Reattachment of fractured segment



Fig.1.7 Postoperative view



Fig.1.8 Postoperative radiograph

III. Case Report 2

A 27 year old female injured in a road traffic accident was referred to the Department of Conservative Dentistry and Endodontics, RUHS college of dental sciences, Jaipur. Clinical (Fig.2.1) examination revealed a complicated crown fracture with respect to 11 (Ellis class VIII). Fracture of 21 and 22 (involving enamel and dentin ; Ellis class II) was also noted. fractured segment (fig. 2.2) of 11 was stored in sterile isotonic saline. Medical history was noncontributory.

Single visit root canal treatment (RCT) followed by reattachment with fiber post reinforcement of 11 and Composite restoration on 21 and 22 was planned. Local anesthesia was administered and RCT with sectional obturation (Fig.2.3) was completed on 11 and fibre post (parapost, Coltene whaldent) of diameter 1.5 mm was selected. Non rinse conditioner (parabond ,Coltene) was applied on prepared post space of the root canal and onto The contact surfaces using a brush for 30 seconds . Then excess non rinse conditioner was removed using paper point .contact surfaces were air dried for 2 seconds. Next one drop of adhesive A was mixed with one drop of adhesive B (Parabond , chemical cured adhesive, coltene) and applied into the prepared post space of root canal and contact surfaces by brush for 30 seconds . This adhesive bond layer was air dried for 2 seconds and paracore resin cement (coltene) was applied directly to the preparation using mixing tip. Then fibre post was inserted in paracore resin cement within root canal and tooth fragment was reattached (Fig.2.4) using paracore resin cement. Composite restoration (Fig.2.5) for 21 and 22 was performed subsequently. The patient was kept on periodic review (3 months ; fig.2.6) and it was observed that both endodontic and restorative treatments remained clinically acceptable.



Fig.2.1 Preoperative photograph



Fig.2.2 Tooth fragment



Fig.2.3 Sectional obturation



Fig.2.4 After Reattachment



Fig.2.5 Final restoration



Fig.2.6 Follow up after 3 months

IV. Discussion

There are several options for the treatment of tooth fractures involving the biologic width, i.e. tooth extrusion, crown lengthening followed by fragment reattachment or reconstruction, intentional reimplantation and even tooth extraction in severe cases^{7,8}. In order to restore coronal tooth fractures successfully, a systematic approach is required. One of the options is to reattach the dental fragment to the remaining tooth when it is available⁹.

Several factors affect the successful outcome of reattachment procedure : hydration of the fractured segment while outside oral cavity is one of them. This is necessary to maintain the vitality and original esthetic appearance of the tooth and also ensures adequate bond strength¹⁰. In all the reported cases, hydration of the fractured fragment was ensured by storage in sterile isotonic saline. The degree of conversion of the resin cement affects the retention of fiber posts in root, which may be inhibited in the most apical regions of post space, as these areas are far from the light. Therefore, it is recommended to use dual cure or self curing composites to lute the fiber post¹¹.

V. Conclusion

The use of a fibre post followed by original crown fragment is a simple and efficient procedure for the treatment of fractured anterior teeth that appears to provide excellent aesthetic and functional results.

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