

Tooth Fragment Reattachment: An Aesthetic Alternative - A Case Report

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Abstract

Maxillary anterior teeth are the most affected teeth from dental trauma. The immediate reattachment of natural tooth fragment is a good alternative option as an emergency treatment for remaining aesthetical and functional problem. This treatment offers a conservative, aesthetic, and cost effective restorative option that has been shown to be an acceptable alternative to the restoration of the fractured area with composite resin or crown. In this case report we presents a clinical technique of reattachment of coronal fragment of maxillary central & lateral incisor after trauma using glass fibre – reinforced composite post systems.

Introduction

Anterior maxillary crown fractures are a common form of injury that mainly affects children and adolescents due to their position in the oral cavity. If the original tooth fragment is retained following fracture, the natural tooth structures can be reattached using adhesive protocols. This provides relatively quick, biologic and easthetic restoration[1] as well as a positive psychological response. Chosack and Eidelman in 1964 first described the reattachment of a tooth fragment [1]. Thereafter Tennery in1988 reported the re-attachment of a fractured fragment using acid-etch technique[2]. Whereas Zorba and Ozcan in

2007 used a fibre reinforced post to increase retention of the reattached crown fragment [3].

The present case report shows reattachment of the coronal fragment of maxillary central & lateral incisor after trauma by using glass fibre – reinforced composite post systems.

Case Report

A 24 year old male patient reported to Dept. of Conservative Dentistry and Endodontics, Govt. Dental College & Hospital Aurangabad, with chief complaint of fracture of anterior teeth due to an accidental fall a day before. There were no associated injuries except minor mucosal bruises.Clinical and radiographic examination revealed that there was a horizontal fracture in the middle third region of crown of the maxillary left central (21) & lateral incisor(22) involving enamel and dentin with exposure of the pulp. The fractured fragment of 21 was loosely attached to the tooth & fracture line extent was subgingival on palatal aspect. Fractured fragment of 22 was totally separated from tooth which the patient had brought along with him.

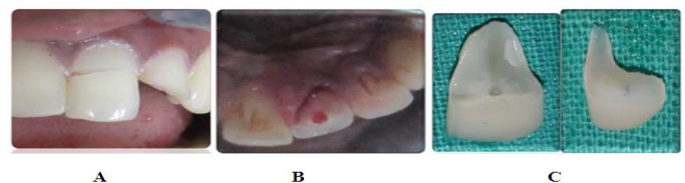


Figure : A.Preoperative photograph; B.Labial Aspect, C.Palatal aspect, Fragment of 21,22

A periapical radiograph of that region showed that the root formation of involved teeth was complete with no other injury. Diagnosis was made as Ellis' class III fracture with tooth no. 21 & 22.

Treatment plan was explained in details to the patient and patient expressed his desire to maintain the tooth & restore it, subsequently an informed consent was obtained. Local anaesthesia was administered and the segment of 21 is removed with minimal force and trauma. Both the fractured fragments were recovered & stored in normal saline.

The root canals of 21,22 were enlarged to ISO size 60 at working length. 2.5% Sodium hypochlorite & normal saline was used during the preparation for irrigation. The root canals were dried with absorbent paper points & obturated using lateral condensation of gutta percha and resin sealer. The root canal orifices were sealed with temporary cement.



Figure : D. Pre-operative IOPA Radiograph , E. Mastercone IOPA Radiograph And F.

Postobturation IOPA Radiograph

Subsequent day after completion of the endodontic treatment, the root canals were prepared for the post placement by removing the gutta percha from the coronal two third of the canal with peeso reamers. Apical 5 mm of GP was kept intact. The fibre posts (FIBRAPOST, PD) were tried in the canals and adjusted to the desired length. Grooves were also prepared in the pulp chambers of the fractured crown fragments for receiving the coronal portion of the post and core. The alignment of the coronal fragments were verified with the posts in situ.

After periodontal examination, surgical exposure of palatal aspect was planned with respect to 21. Crevicular incision was given and 2 mm palatal flap was raised.

The posts were then luted in the canals using Dual cured resin luting cement (Selfcem, Medicept). The inner portion of the coronal fragments were similarly luted to the tooth in position. Palatal flaps are then sutured with 3-0 silk & sutures removed after 7 days.

Patient was recalled for follow up at 3 months, 6months and 1 year.



Figure: G Post space preparation and trial in pulp chamber of fractured fragments



Figure: Surgical procedure: H.crevicular incision, I. palatal flap reflected, J.post operative IOPA radiograph.

Discussion

Although the fracture of a tooth is one of the most traumatic incident for a young patient, the preservation of natural tooth structure results in a positive emotional and social response from the patient, [4].

Rationale of attaching fractured tooth fragment is that it provides better aesthetics and achievement of natural translucency, tooth wear at a rate similar to that of the adjacent teeth, requires less time & relatively inexpensive. It also eliminates problems of differential wear, unmatched shades and difficulty of contour and texture

reproduction associated with other restorative techniques [2]. Fiber reinforced composite posts consists of resin matrix in which structural reinforcing quartz or glass fibers are embedded. Quality of fiber post depends on even distribution of the fiber in the organic matrix and presence of as dense as possible fibers in organic matrix. This structure results in high tensile and flexural strength of fiber post. Its advantages are esthetics.

It bonds to tooth structure and has modulus of elasticity similar to that of dentin[1]. Minimal preparation is required as it uses the undercuts and surface irregularities of dentin to increase the surface area for bonding[2]. Reinforcement of restored segments by the formation of monobloc leaving no inherent weak interlayer interface helps in distribution of stresses to the remaining radicular dentin in less chairside time. To determine the ideal treatment option some conditions must be taken into consideration such as the location and extent of the fracture, the pulpal condition, the degree of root formation the degree of tooth eruption and the patient's desire for esthetics.[5].

Success of such reattachment cases is highly dependent upon the rapid retrieval of the fragment, which should be preserved in physiologic solution or saline in order to avoid any change in colour due to dehydration. In this case, the fractured fragment was stored in normal saline until reattachment was done. After one year at follow up visit no discoloration was observed[6]



Figure : K. Follow up photographs , L.1year follow up , M.1 year follow up palatal aspect

Conclusion

When the fractured fragment is available tooth fragment reattachment procedure offers an ultraconservative, safe, fast and aesthetically pleasing result. With use of fiber reinforced resins an aesthetic restorations is obtained with excellent preservation and reinforcement of tooth structure. To recommend this treatment approach on routine basis more case reports with long term follow up are required. Authors are working on similar case models with more number of patients and long term follow ups in coming future.

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