CASE REPORT

Reattachment of fractured maxillary canine reinforced with fiber post used as an abutment: A case report

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Abstract

Traumatic injuries are often encountered most commonly in maxillary anterior teeth and often require immediate attention. One of the treatment options is reattachment of the intact tooth fragment. In the present case report, the patient had complex fracture in maxillary central and canine. We have used one of the least invasive methods for reattachment of the tooth fragment which is ultraconservative and restores the original contour and esthetics of the tooth. Furthermore, if the reattachment procedure had not been followed, it would have led to the loss of the maxillary canine and compromised the crown root ration severely for the permanent prosthesis.

Keywords: Maxillary canine, fiber post, re-attachment, resin cement

Introduction

The maxillary central incisors are the teeth most susceptible to fractures caused by direct trauma such as contact sports, road accidents and falls. To restore a tooth with crown fracture is one of the major challenges to a restorative dentist, especially the maxillary anterior teeth. The present generation is very conscious about their appearance and demand for immediate treatment and aesthetic rehabilitation. The conventional approach for rehabilitation of fractured anterior teeth includes composite restoration, post and core followed by fixed crown and in some cases extraction followed by fixed prosthetics.¹ With the introduction of technologically improved composite resins especially dual-cured resins and dentin bonding agents, innovative techniques to treat fractured teeth has evolved.

The first case report on the reattachment of a fractured incisor fragment was published by Chosack et al. in 1964.² Eighty percent of traumatized incisors fracture in an oblique fashion from labial to the lingual aspect with fracture line proceeding in an oblique direction.² Factors influencing the success or failure of reattachment are the location of the fracture line, size of fragments, periodontal status of the tooth in question, pulpal involvement, root formation, occlusion, invasion of the biological, time material used for reattachment, use of post, and prognosis.³ Reattachment of intact natural tooth fragment is advantageous compared to crowns since color, morphology, translucency can be retained, and treatment is immediate.

Case Report

A 16-year-old girl reported to College of Dental Sciences Amargadh Bhavnagar District. Following fracture of the crown...
in the left maxillary canine. The trauma was due to a fall while she was fetching water about 3 h ago.

Clinical examination revealed no trauma to the soft tissues. The tooth had oblique, horizontal fracture line in the middle third of the tooth, involving enamel, dentine and pulp. The fragment was mobile and loosely attached to the crown (Figure 1a-d). The left lateral incisor was intact with a mild tenderness and mobility. Both the upper central incisors were discolored, patient gave a history of the fall a few years back.

An intraoral periapical (IOPA) radiograph revealed the fracture line extending obliquely into the cementoenamel junction, the root formation was complete and suggested no intrusion or extrusion. An IOPA radiograph taken in relation to the upper incisors revealed root resorption of both the central Incisors with poor crown root ratio.

After the administration of local anesthesia, the fractured segment was removed with minimal force, recovered and stored in normal saline to prevent discoloration and dehydration. The pulp was extirpated, and working length determined with radiograph. The canal space was prepared using rotary instruments up to #F3 (ProtaperDentsply) and irrigated with 2.5% sodium hypochlorite. The root canal was dried with paper points coated with resin sealer and laterally condensed with gutta-percha. The root canal was sealed with temporary cementation.

The day after completion of root canal treatment, the canal was prepared for post space using peeso reamers. A glass fiber post was tried in the canal checked for passive fit. The post was cemented using resin cement (Rebuilds DC, V Dental, Queensland, Australia). Which was also used further for the core build up (Figures 2a-c, and 3a,b).

The patient was then referred to the Department of Prosthodontics for fabrication of an immediate removal partial denture in relation to 11, 21. Once the Impression was made, the patient was reoffered to Department of Maxillo Facial Surgery where both incisors were extracted. An immediate RPD was kept in position and the patient was asked to report after 3 weeks.

The patient was evaluated clinically and radiographically and was uneventful. Crown preparation was done in relation to 13, 12 and 22, 23. An elastomeric Impression was made, and a temporary bridge was fabricated and patient was asked to come after 1 week. The final crown and bridge prosthesis was checked for high points and cemented using Type 1 glass ionomer cement. The patient was thankful as her esthetics was restored along with function (Figure 4a and b).

**Discussion**

Reattachment of intact coronal fragment is an economical and less time-consuming procedure. The original form and aesthetics of the tooth were regained by the attachment procedure. The psychological trauma caused to the individual due loss of aesthetics can be managed by this procedure successfully. When a tooth has not sustained a luxation injury, this technique should be considered. In this case, the central incisors had to be compromised because of poor prognosis. But the reattachment procedure allowed us to provide a fixed partial denture to restore the lost teeth along with preservation of the canine. This case was special in a way that the reattached tooth was used as an abutment. The wide range of materials available in the market today makes the choice of material difficult. Various materials such as flowable composite, dual cure or resin modified glass ionomers can be used. In this case, Panavia F2.0 was used. It is a dual-curing (chemical and light cure) resin. The system consists of ED primer 11, Panavia F 2.0 paste and oxyguard 11. The advantage of this system is bond strength, esthetics, complete curing. The medium of dental fragment conservation is important to maintain fragment hydration. The best medium for a short duration is physiological solution. A prefabricated post was used as it is economical and increases the retention and distributes the forces along the root.
Conclusion

Traumatic injuries in the anterior teeth region of the arch propose great deal of challenge in esthetic rehabilitation. Reattachment of the fragment should be considered as a line of treatment as it is an ultraconservative procedure and recently introduced adhesive post systems make it a more viable option.

References


