

A SINGLE VISIT REATTACHMENT OF FRACTURED MAXILLARY INCISOR USING FIBER-REINFORCED POST: A CASE REPORT

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ABSTRACT:

The reattachment of the crown fragment is a conservative treatment that should be considered for young patients. The teeth most commonly involved in the trauma are the maxillary incisors as they occupy a more vulnerable position in the arch & requires immediate attention, as it imparts psychological impact on the patient. One of the options for managing the coronal fracture fragment is immediate reattachment of the fragment. "Minimal intervention with maximum dentistry" The immediate restorative technique resolving the acute problem of traumatic tooth fracture with pulpal involvement—An immediate fracture fragment reattachment using pre-fabricated fiber post with dual cure cement—A challenging, conservative, aesthetics, rehabilitating, functionally, and economically viable single visit procedure. Aesthetic rehabilitation of crown fracture is one of the greatest challenges to the dentist. Innovation in adhesive dentistry gives opportunity to the clinicians to have minimal invasive approach and achieve maximum esthetic and functional restoration of the fractured tooth.

Keywords- Fiber post, Trauma, Aesthetics, Adhesive technique

INTRODUCTION

Facial trauma that results in fractured, displaced, or lost teeth can have significant negative functional, esthetic, and psychological effects. The most common injuries to permanent teeth occur secondary to falls, followed by traffic accidents, violence, and sports. In the permanent dentition, fractures comprise 26-76% of dental injuries. Complicated crown fractures involving the enamel, dentin, and pulp constitute a major share of all dental injuries and are

most common in maxillary central incisors.^[1,2,3] A fractured anterior tooth requires immediate clinical attention and, if untreated, can cause damage to dentition and even have a psychological impact on the patient. Coronal fractures of the anterior teeth are common sequelae of dental trauma. A multidisciplinary approach is the key.

In case of complex fractures, where the fractured segment is available and there is close approximation of the segment to the remaining tooth, root canal treatment

followed by reattachment of the fractured segment with fiber post reinforcement is a feasible option.^[4,5] The procedure is simple and economic and needs less chair-side time as compared to many conventional methods. In addition, the procedure provides good and long-lasting esthetics, because the original morphology, color, and surface texture are maintained. This paper reports a case of complex coronal tooth fracture successfully managed using tooth fragment reattachment.

CASE DETAIL

A male patient of 20 years old reported to the department of conservative dentistry & endodontics, with the chief complaint of pain and mobility in upper front region of jaw since four hours. There was complicated crown fracture with right maxillary central incisor (Figure1). There was no soft tissue injury or swelling. Tooth was tender. Radiographic examination revealed a horizontal fracture of the right maxillary central incisor involving enamel and dentin with exposure of the pulp. (Figure2)

A detailed explanation about the treatment plan was given to the patient, which included endodontic treatment, then reattachment of the tooth crown using a fiber post. The treatment plan was accepted by the patient and consent was taken. Under local anesthesia complete pulp tissue was removed and fragments were stored in saline. Working length was determined and cleaning and shaping was done by crown down technique, followed

by obturation of the canals using lateral condensation technique.

The fibre post (D.T Light Post Illusion™) was tried in the canal and adjusted to the desired length. Space was also prepared in the pulp chamber of the fractured crown fragment for receiving the coronal part of the post. The alignment of the coronal fragment was verified with the post in the canal. The root canal was then etched with 37% ortho phosphoric acid, rinsed, blot dried with paper points, and bonding agent (Dentsply) was applied. The post was then luted in the canal using dual cured resin luting cement (Rely X™U200-3M ESPE) (Figure 3). The inner portion of the coronal fragment was similarly etched and bonded to the tooth using flowable composite resin. The fracture line labially was then masked using composite resin. The tooth was polished with polishing disc. Occlusion was checked and post operative instructions were given. Clinical and radiographic examinations were carried out after 1 month, 3, 6months and the tooth responded favorably. (Figure 4)

DISCUSSION

For fractured crown, various classification systems are given such as Andreasen and Andreasen's classification; Spinass and Altana's classification. In the above mentioned case, the fracture was complicated crown fractures i.e. fracture of the crown involving pulp.⁶ Endodontic therapy provides pain relief and space for post placement. Various materials such as composite, dual cure resin, light cured GIC, can be used for reattachment purpose.^[7,8,9] Treatment decisions have to

be made case by case for the individual patient. Tooth reattachment technique produces good esthetic and functional result. Moreover patient's self esteem remains positive due to maintaining natural tooth appearance. Important factors for tooth reattachment are: the degree of the fragment's adaptation to the remaining structure; fragment retention; fracture location; and pattern.^[10,11,12] The quality of fit between the segments is clinically important factor for the longevity of the reattached crown. Use of prefabricated post provides the increased retention as well as the distribution of forces along the root.^[13,14,15] According to the amount of the restoration, screw posts, cast posts or dentin pins could be used for supporting the fragment^[3]. Cavaller et al^[16] reported that reattachment of the crown fragment appeared to have a better long term prognosis than composite resin restoration.^[17,18] During the procedure the fragment must be stored in sterile saline or distilled water to avoid dehydration^[5]. A lasting dehydration of tooth's fragment can cause disturbance of the esthetics as the longer dehydration of the fragment is, the greater probability for not matching the original tooth's color will be. In most cases dehydrated fragment is lighter than

the remained after the fracture remnant. Return of the natural color may need time or may never occur.^[19] Assessment of occlusion after reattachment is essential as occlusal forces, generated at protrusive movements of the mandible are extremely destructive to the relation tooth fragment – bonding agent.^[20] The possible afterwards complications include discoloration of the attached fragment and fractured reattached teeth show a high degree of failure to labial horizontal forces with new trauma. Regular follow-up is necessary.

CONCLUSION

Successful reattachment of the natural tooth fragment as a treatment modality has become possible with the improvement of adhesive techniques and restorative materials. Use of fiber post allow not only creation of esthetic restorations but also facilitates the preservation and reinforcement of tooth structure. So reattachment of a tooth fragment by using fiber post have a conservative, safe, fast & esthetically pleasing result. However before recommending a similar treatment on a regular basis, a longer follow- up period is required.

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FIGURES:



Figure 1- crown fracture with right maxillary incisor in the cervical third



Figure 3 - The post was luted in the root canal using dual cured resin luting cement



Figure 2- Preoperative radiograph showing horizontal fracture with exposure of the pulp



Figure 4 - Post operative 6 months follow-up