



**FRAGMENT REATTACHMENT – SIMPLE APPROACH TO A COMPLICATED
CROWN FRACTURE – A CASE REPORT**

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ABSTRACT

Trauma to the oral and maxillofacial region is frequent, of which trauma to dental tissue is commonly observed [1]. Traumatic dental injuries present a challenge to clinicians. Most of the times, trauma occurs at the coronal level and are usually asymptomatic unless there is significant dentin involvement [1, 2, 5, 6]. A 16 year old male patient reported with the chief complaint of severe pain and fracture in the upper front tooth while playing kabbadi. The fragment was reattached to the remaining tooth structure and the fiber post (angelus) extending into the coronal fragment through the access cavity using dual cure self-etch adhesive resin cement(3M ESPE RelyX™ U200). The excessive cement was removed and excessive protruding fiber post was trimmed. Access restoration was done using the composite resin. On one year follow up patient was completely asymptomatic. In the present case, a more simple and conservative treatment approach has been considered.

KEYWORDS: Fragment reattachment, Prefabricated fibre post, traumatic injuries

INTRODUCTION

Trauma to the oral and maxillofacial region is frequent, of which trauma to dental tissue is commonly observed.¹ Such injuries present a challenge to the clinicians. Traumatic dental injury may involve from a simple fracture of enamel to complete displacement of the tooth out of the socket. Aim for the treatment of traumatic injury is to relieve the patient from pain and facilitate reduction of displaced teeth. The incidence of these injuries is in children of age between 10-12 years [2, 3, 4].

Most of the times, trauma occurs at the coronal level and are usually asymptomatic unless there is significant dentin involvement [1, 2, 5, 6]. In the present case, a more simple and conservative treatment approach has been considered.

CASE REPORT

A 16 year old male patient reported to The Department of Conservative dentistry and Endodontics, D.A.P.M RV Dental College with the chief complaint of severe pain and fracture in the upper front tooth while playing kabbadi sport.

Patient's history revealed, trauma in the upper front tooth region and initiation of endodontic treatment for the same. Pain in the affected tooth increased severely 2 days before the patient reported to the department. On extra oral examination, patient presented small lacerations on both the lips. On intra-oral examination, fracture of clinical crown of the upper left lateral incisor was noted. The fracture line was present in the cervical region on the labial surface extending subgingivally on the palatal surface. The fractured fragment was mobile and was held in position by its attachment to the gingival tissue. The adjacent soft and hard tissues appeared normal.

On examination of the pre-operative intra-oral periapical radiograph, a radiolucent line was seen near the cervical area of the crown suggestive of Ellis class III fracture. The periapical tissues and other hard tissue structures appeared normal. The previously done access opening was good to provide straight line access to the root canal.



Pre-operative photograph: A) visible fracture line near the cervical area of the lateral incisor when teeth are not in occlusion. B) no fracture line is observed when the tooth is under occlusion



Pre-operative radiograph

After recording the detailed medical and dental history, it was decided for detachment of the fragment and storage in the normal saline, followed by single visit root canal treatment of the affected tooth and reattachment of the fragment with help of fiber post and resin cement was planned. The treatment plan was explained to the patient and his parents and informed consent was taken from the parents before initiating the treatment.

After the administration of local anesthesia, as planned-the fragment was detached from the gingival

tissue. The bleeding from the surrounding soft tissues and the canal was controlled, before initiating the treatment. Fragment was washed gently with the normal saline to clear the tissue debris. The fragment was stored in normal saline under room temperature.

Single visit root canal treatment was done with copious amount of irrigation with saline and 3% sodium hypochlorite. The apical enlargement was done upto #40(0.6) and obturated using cold lateral condensation technique.

The stored fragment was then washed; fit of the fragment was checked. Mild contouring was done in the cervical area to get a better adaptation to the remaining portion of the tooth. Then the bonding surface of the fragment was etched with 37% phosphoric acid. The adhesive (3M ESPE Adper™ Single bond 2) was applied and light-cured.

The fragment was reattached to the remaining tooth structure and the fiber post (angelus) extending into the coronal fragment through the access cavity using dual cure self-etch adhesive resin cement(3M ESPE RelyX™ U200). The excessive cement was removed and excessive protruding fiber post was trimmed. Access restoration was done using the composite resin.

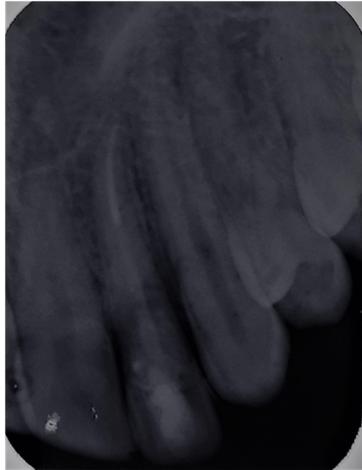


Clinical photograph showing the fragment reattachment



Post operative radiograph showing the fibrepost and reattached fragment

On one year follow up patient was completely asymptomatic. The radiographs taken during one year follow up also shows no abnormal changes in the hard tissue structure.



1 Year follow up radiograph

DISCUSSION

Trauma to the maxillary anterior teeth necessitates an immediate attention restoring back the form, function and aesthetics specially in younger age group patients in whom it may also pose a psychological stress [1, 7-10].

There are various options available for treating fractured anterior teeth. These include restoration of fractured segment with composite resin, laminate veneers and post-retained crown restoration after endodontic treatment. The choice of treatment plan however, depends on pattern of fracture, restorability of the fractured segment, associated alveolar fracture, degree of pulpal involvement, level of eruption, apex formation, associated soft tissue injuries, condition of the

fractured segment to be reused, occlusion, aesthetic need of the patient and economic conditions [1, 2, 7, 11, 12, 13].

Fragment reattachment technique for anterior trauma cases has been used widely and extensively as it is a simpler method, better aesthetic, less patient visits compared to other methods. The first reported case of reattachment was by Chosack and Eildeman (two Hebrew pedodontists) in 1964, where they made use of cast post to support the reattachment to fractured tooth [1, 21, 22]. Tenerry was reported [4] to be the first to use acid-etch technique for reattachment of fractured tooth in 1988. Ever since then there have been several other documented cases of reattachment

following improvement in adhesive dentistry and fragment modification techniques.

In case of pulpal involvement, there may be need to use post after endodontic treatment to provide mechanical support for the fractured segment. The use of custom cast post [1, 21, 22], as well as prefabricated post [3, 7, 10, 20, 22, 23] have been documented with the prefabricated posts eliminating laboratory stage of post fabrication and thus, making the procedure easier and faster. The two fragments get interlocked by the post, minimizing stress on the tooth structure that is reattached. Reattachment technique have been improved over time with many modifications like use of bevel designs, chamfers, dentinal and enamel grooves, and choices of resin composite material and techniques for the reattachment of tooth fragments [1, 23].

In the present case prefabricated post has been luted to the canal before the fragment reattachment and later the fragment has been reattached. The fragment has been reattached to the tooth through the post which anchors

and also provides an extra retension to the fragment. Prefabricated post used in this case provides an extra advantage over traditional metal post because of getting bonded to the canal walls. The factors like time duration between the trauma and reporting of the patient to the clinician, extraoral time, storage media, pretreatment before reattachment, change in the chemical composition of the fragment, material used for reattachment, bonding surface modifications etc., also affects the long term success of the treatment.

CONCLUSION

In the present case, success can be predicted as the patient's reporting time and preservation of fragment were followed according to the standard protocols. And also the fiber post placed adds extra retentive feature to the reattached fragment. Furthermore, the patient needs to be kept under follow up to evaluate the prognosis, as the patient is 16yrs old. Further, a more definitive treatment needs to be planned to provide better function as this treatment majorly provides aesthetic requirement rather

than functional requirement of the patient.

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