

# Reattachment of Fractured Anterior Tooth: A Case Report

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## ABSTRACT

Anterior teeth fractures are common forms of dental trauma that mainly affects children and adolescents. There are various modalities of management of fractured anterior teeth. Reattachment of fractured tooth fragment offers a conservative, esthetic, 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. This relatively simple procedure can provide good and long-lasting esthetics as the procedure maintains the tooth's original anatomic form, colour, and surface texture. Reattachment restores function and provides a positive psychological response. This article reports on a coronal tooth fracture case that was successfully treated using tooth fragment reattachment.

**KEYWORDS:** Tooth fracture, Reattachment, Composite resin

## INTRODUCTION

Anterior teeth fractures are common forms of dental trauma that mainly affects children and adolescents. Most dental injuries occur between 2 and 3 years and between 8 and 12 years of age. It has been seen that prevalence of dental fracture occur more in boys than in girls because of their active involvement in contact sport and physical activities.<sup>1</sup> The main challenge for a clinician while managing such patients is to choose a treatment program that will return the tooth to its original condition as far as possible. There are various modalities of management of fractured anterior teeth. Reattachment of fractured tooth fragment when the fractured fragment is available, offers a conservative, esthetic, 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.

Reattaching the fractured tooth fragment back to its original position enhances the durability of the restoration, since the fragment wears at the same rate as that of the remaining portion of the same tooth. Also, the natural enamel translucency and surface finish of the fragment provides better aesthetics. Chosack and Eidelman were the pioneer of such procedure in dentistry. They used a cast post and conventional cement to reattach an anterior crown segment on a 12-year-old boy.<sup>2</sup>

Anterior tooth fragments have since been reattached using composite, interlocking minipins and light-cured resins.<sup>3</sup> Tennery used acid etch technique for the reattachment of fractured fragment.<sup>4</sup> Similar cases were also reported by Starkey and Simonsen.<sup>5,6</sup> The success of reattachment depends on certain factors like the site of

fracture, size of fractured fragment, periodontal status, pulpal involvement, status of the root formation, biological width invasion, occlusion, time passed since trauma and materials used for reattachment.<sup>7</sup>

Reattachment is an effective, economical and conservative procedure to restore the natural and original shape, contour, translucency, surface texture, occlusal alignment, and colour of the fractured tooth that results in positive emotional and social response from a patient.<sup>8,9</sup>

## CASE REPORT

An eight year-old male patient reported to the Out Patient Department of Pedodontics & Preventive Dentistry, Guru Nanak Institute of Dental Science And Research, Kolkata, West Bengal, India, with the chief complaint of broken upper front tooth region due to trauma which occurred one day back [fig.1]. The fractured tooth fragment was recovered at the site of the injury. Patient's medical and past dental history were non significant. Intraoral clinical examination revealed Ellies class II horizontal fracture at the level of incisal third of 11. 11 was not tender on percussion and palpation and no sign of pathological mobility was noted. Pulp vitality test in 11 with Electric Pulp Tester (Parkell Digitest II) revealed 11 to be vital. An Intra oral periapical radiographic of 11 revealed complete root formation without any pathological displacement of the tooth in the socket (Figure 2). A detailed explanation about the treatment plan was given to the parents and also to the child patient and consent was obtained.

Fractured segment was preserved in physiological saline

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solution in order to prevent dehydration and discoloration of the tooth fragment. The fit of the fragment was checked on the tooth. Bevels were placed on the tooth and the fractured fragment, in order to enhance the retention [Figure 3]. The coronal fragment and fractured



Fig.1:Preoperative frontal view



Fig.2 Preoperative IOPAR of 11



Fig.3: Retentive grooves on tooth fragment prepared

tooth were etched with 37% Orthophosphoric acid separately, and then rinsed, dried and 5th generation bonding agent (Ivoclar Vivadent) was applied and light curing was done according to the manufacturer's instruction. Further, coronal fragment was bonded to the tooth using flowable light cure composite resin (Ivoclar Vivadent) [Figure 4] after proper shade matching. The tooth was finished and polished with finishing instruments and polishing discs (Ivoclar Vivadent).

Occlusion was checked and postoperative instructions were given to the patient. The patient and his parents were instructed to avoid heavy occlusal loading on the fractured site. Regular follow ups were done after one week, one month, six month and one year. Clinical and radiographic examinations carried out after 1 year showed positive response. [Figure 5 and Figure 6].



Fig.4: reattaching the fragment to tooth with flowable composite and then light curing was done.



Fig5: Postoperative frontal view (after finishing & polishing)



Fig.6:Postoperative IOPAR of 11

## DISCUSSION

Anterior teeth fracture of a growing child requires immediate attention, not only because of damage to the dentition but also due to psychological effects of the trauma to the child and his parents. Thus management of

anterior tooth fracture has been one of the most important aspects of Dentistry. The majority of anterior tooth fractures involve maxillary anterior teeth.

There are various options for treating fractured anterior teeth. These include restoration of fractured fragment with composite resin, prefabricated crown restoration, laminate veneers and post retained crown restoration after endodontic treatment. The choice of an option depends on pattern of fracture, size of fractured fragment, restorability of fractured tooth (any associated root fracture), the relationship of the fracture to the alveolar crest (if the biological width is not violated), degree of pulpal involvement, level of eruption of the fractured tooth, degree of root closure, associated soft tissue injuries, time passed since trauma, occlusal status, materials used for bonding of fractured fragment with remaining tooth structure, esthetic requirement and financial capability of the patient.<sup>10</sup> Conventional composite resin restoration may result in less than ideal contours, colour matching and translucency and Prosthodontic restoration in younger patients may have confounding variables such as large pulp chambers, progressive eruption and gingival margin instability.<sup>11</sup>

Tooth reattachment technique produces good esthetic and functional result. Moreover patient's self esteem remains positive due to maintaining natural tooth appearance.

The quality of fit between the segments is clinically important factor for the longevity of the reattached crown. So the fitting of fractured fragment to the remaining tooth structure should always be thoroughly checked. During the procedure the fragment must be stored in sterile saline or distilled water to avoid dehydration as dehydration of tooth's fragment can cause disturbance of the esthetics.<sup>12</sup> 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.<sup>12</sup> In this case as the fractured fragment properly fitted to the remaining tooth portion, presence of no occlusal interference and relatively juvenile age of the patient a clinical decision of reattachment of the fractured fragment to the remaining portion of the fractured tooth was made for preservation of natural tooth structure and achievement of better esthetics.

The possible post-operative complications include discolouration of the reattached fragment and fracture to labial horizontal forces with new trauma. Hence, regular follow-up is necessary.

## CONCLUSION

The reattachment of a fractured tooth fragment is a viable technique that restores function and esthetics with a very conservative approach and this procedure should be

especially considered while treating fracture of anterior teeth of younger children whenever the fractured fragments are available.

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