

# A 9 year follow-up of a fractured tooth fragment reattachment

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## Abstract

Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects children and adolescents. One of the options for managing coronal tooth fractures, when the tooth fragment is available, is reattachment of the dental fragment. Reattachment of fractured fragment can provide good and long lasting esthetics. This is a report of a 9-year follow-up of a coronal fracture case successfully treated using tooth fragment reattachment.

**Keywords:** Composite resins, coronal fracture, fragment reattachment

## Introduction

Tooth trauma has been and continues to be a common occurrence that every dental professional must be prepared to assess and treat when necessary. It has no predictable pattern of intensity or extensiveness and has the uncanny knack of accruing at times when the dentists are least prepared. It may leave not only physical scars but also a psychological impact on the victim. Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects children and adolescents.<sup>[1]</sup> Accidental fall and blows or trauma during sports activities are the main reasons for injury in more than 40% and 20% of cases, respectively. The maxillary central incisors are most often injured in the accidents.<sup>[2]</sup>

Several factors influence the management coronal teeth fractures, including extent of fracture, endodontic involvement, alveolar bone fracture, pattern of fracture restorability of fractured tooth, secondary traumatic injuries, presence/absence of fractured tooth fragment and the fit between the fragment and remaining tooth occlusion esthetics, finances and prognosis.<sup>[3,4]</sup>

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One of the options for managing coronal tooth fracture is reattachment of the tooth fragment when it is available.

Tooth fragment reattachment offers a conservative esthetic and cost-effective restoration option that has been shown to be an acceptable alternative to the restoration of the fractured tooth with resin-based composite as full coverage crown.<sup>[4,5]</sup> Reattachment of a fragment to the fractured tooth can provide good and long-lasting esthetics (as the original tooth anatomic form, colour, and surface texture are maintained), can restore function, can result in a positive psychological response and is a reasonably simple procedure.<sup>[6]</sup>

## Case Report

A 9-year-old female patient reported to the Department of Pedodontics and Preventive Dentistry, Yenepoya Dental College, Mangalore, after sustaining an uncomplicated crown fracture to her maxillary left central incisor while playing about 24 hours ago.

The fractured tooth fragment was recovered by the patient at the site of the injury and she had kept it in an empty box.



**Figure 1:** Ellis class 2 fracture of maxillary left central incisor

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**Figure 2:** Fractured tooth fragment



**Figure 3:** Labial view after tooth fragment reattachment



**Figure 4:** Lingual view after tooth fragment reattachment



**Figure 5:** Nine years after fractured tooth fragment Reattachment



**Figure 6:** Nine years after fractured tooth fragment reattachment.

Clinical examination revealed that the teeth had fracture of the incisal angle involving the enamel and dentin [Figure 1]. The fractured part of the tooth was intact, with some crack and craze lines [Figure 2]. No abnormal mobility of the injured tooth was recorded and the surrounding tissues were healthy.

A periapical radiograph showed that the root formation was complete and there were no other injuries. The tooth fragment was checked for the fit with the tooth and immediately maintained in normal saline.

The treatment options were presented to the patient and her parents, which included a) no treatment; b) crown build up with composite; c) reattachment of the fractured fragments. After some deliberation about the advantages, disadvantages and prognosis, the patient opted to have tooth fragment reattached.

The tooth fragment was analyzed and tried intraorally to check for proper positioning and fit with the fractured coronal structure. The operating field was isolated with rubber dam; the fractured fragment and the tooth surface was treated with 37% phosphoric acid, followed by rinsing. The adhesive system Excite (Vivadent, Liechtenstein) was applied to the fragment and the tooth, followed by placement of a small increment of flowable composite resin, Tetric flow (Vivadent). The fragment was properly positioned on the fractured tooth surface, excess resin was removed and the area was light cured for 60 seconds while the fragment was held in place under pressure.

Margins were properly finished with diamond finishing burs and polished with a series of soflex disks. The immediate postoperative view [Figures 3 and 4] showed adequate esthetic results with restored functionality by the use of a very conservative and cost-effective approach.

Clinical and radiographic examinations were carried out

regularly over a period of 9 years. During this period, the reattached fragment was intact without any distortion. Occasionally, it required polishing to remove some mild stains. Nine years follow-up showed a predictable outcome of the reattached fragment [Figures 5 and 6].

## Discussion

Fracture of a tooth may be a most traumatic incident for a young patient, but it has been found that there is a positive emotional and social response from the patient to the preservation of natural tooth structure.<sup>[1]</sup>

Reports and clinical experience indicate that the reattachment of the fractured coronal fragments using modern adhesive systems results in successful short- and medium-term outcomes.<sup>[7,8]</sup>

Crown fractures comprise 26-76% in the permanent dentition.<sup>[2]</sup> If an intact tooth fragment is present after trauma, the reattachment procedure presents a conservative, simple and esthetic treatment option. The procedure is reasonably economical, while restoring function and esthetics with a very conservative approach.

In addition, tooth fracture reattachment allows restoration of the tooth with minimal sacrifice of the remaining tooth structure. Furthermore, this technique is less time consuming and provides a more predictable long-term outcome than when direct composite is used.<sup>[9]</sup>

## Conclusion

With the materials available today in conjunction with an appropriate technique, esthetic results can be achieved with

predictable outcomes. Thus, the reattachment of a tooth fragment is a viable technique that restores function and esthetics with a very conservative approach.<sup>[10]</sup>

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