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CASE REPORT

An Aesthetic Alternative- Tooth Fragment Reattachment - A Case Report

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Introduction

Trauma to anterior teeth are more prone in children and in young adults. It has been reported that the percentages of simple (enamel + dentin) and complex (enamel + dentin + pulp exposure) coronal fractures that occur in children's teeth by traumas are 28-44% and 11-15% respectively[7], [8] The restoration of such kinds of fractures is aesthetically and functionally very important and such teeth have commonly been restored using resin composite. However, these materials have some disadvantages such as their being worn away more rapidly than tooth hard tissues and tooth discolouration in time [10]. Therefore, if a broken fragment is available, the restoration of a tooth with its own fragment has been suggested as an alternative treatment.[1],[4], [8],[12]

The advantages of this alternative treatment method include [5], [6], [8], [12].

- Regaining the colour and size of the original tooth.
- Being worn away in a similar proportion to the adjacent tooth without trauma.

- Giving an emotionally and socially positive response due to the protection of natural tooth structures.
- Rapid and conservative nature of the treatment.
- Economical aspect of a one- visit treatment.

The present case report describes the reattachment of a tooth fragment of the maxillary right central incisor in a 20 year old man with extensive coronal fracture involving the pulp, following trauma.

Case Report

A 20 year old male reported to the Dept. of Conservative Dentistry, Surendera Dental College and Research Institute, Sri GangaNagar; Rajasthan, for the treatment of the fractured fragment of the maxillary right central incisor which was labially fractured till pulp exposure and was palatally attached [Table/Fig 1]. History revealed trauma seven days back and medical history was non contributory. Intraoral clinical examination revealed a complicated crown fracture of the maxillary right central incisor. The fractured fragment was loosely attached to the respective tooth. No other injury was associated with the soft tissues or the alveolar bone. The periapical radiograph revealed that there was no associated root fracture and the apices were fully formed [Table/Fig 2].The fracture line was located above the gingival epithelial junction.



(Table/Fig 1) Pre-operative picture



(Table/Fig 2) Pre-operative radiograph

The fragment of 11 was found to be mobile, with the patient reporting slight pains at every attempt to touch the crown. The pulp exposure could be observed during the mobilization of the crown towards the palatal.

The complete endodontic therapy was carried out in a single session. Following the assessment, the fragments were reattached. Internal grooves were made on the fragments. [Table/Fig 3] .Phosphoric acid (35%) was applied to the fracture surface with the total etch technique. After 30 secs, the acid was removed with an air water spray and the surfaces were dried gently. The dentin bonding agent (Prime and Bond 2.1) was applied to the prepared surface and was allowed to remain there for

20 sec, was spread over delicately with an air spray for 3-5 secs and was cured with visible light for 10 secs. Utmost attention was paid to the dentin bonding agent so as not to cause any thickening on the surface. The flowable resin composite (Tetric Flow: Ivoclar vivadent) was applied to the fracture surface of both parts, was spread over the surface with a dental probe and the fragments were reattached to their places. The overflowing resin composite was removed and cured with visible light for 20 secs. A hybrid resin composite that is similar in colour to that of flowable resin composite bandages, was made using the incremental technique to obtain optimal aesthetics and function. Each layer was cured with visible light for 40 secs [Table/Fig 4]. The finishing and polishing were done with sof-lex discs (3M). Occlusion was checked. Oral hygiene training was given to the patient.



(Table/Fig 3) Internal groove preparation



(Table/Fig 4) Post-operative picture

Discussion

Anterior crown fracture is a common form of injury that mainly affects children and adolescents. The position of the maxillary incisor and their eruptive pattern carries a significant risk for trauma. In the pre-adhesive era, fractured teeth needed to be restored either with pin- retained inlays or cast restoration that sacrificed the healthy tooth structure and were a challenge for clinicians to match with adjacent teeth. The development of adhesive dentistry has allowed the dentist to use the patient's own fragment to restore the fractured tooth [2]. When the fractured part is still available, reattaching it to the remaining tooth in the mouth is an alternative treatment. In this study, the reattached tooth was evaluated with respect to the periodontal, pulpal, coronal, colour harmony, occlusion and parental-patient satisfaction levels. In the clinical examination of the patients, periodontal tissues at follow-up, swelling and discoloration in the vestibular gingival, abscess, sinus and loss of stippling were evaluated and none of these symptoms were observed in the patients. These results are in agreement with previous reports.[3], [6], [8],[11],[13]

At the follow-up, fragment detachment was not observed. The use of flowable resin composite in the reattachment of the detached part to the hard tissue and covering it with resin composite might have contributed to this end [14].

Yucel Yilmaz et al reattached the tooth fragment using a flowable resin composite and reported successful results after 2.5 years [14].

The quality of fit between the segments is an important factor to be considered. When the segments fit together with no discernible disruptions or defects, techniques that prevent the resin composite from being exposed to the oral environment, such as the placement of an internal groove, would be preferable, except for simple reattachment,

due to the low fracture strength recovery of this technique [2].

Conclusion

- Reattachment was periodontally found to be a successful treatment method.
- The combination of the flowable resin composite and the hybrid resin composite which were used to reattach the tooth's fractured incisal part was successful.
- The opaque appearance in the fractured incisal part decreased with time.
- The use of the original fragments of the fractured teeth was reported as 'Satisfied' and 'Very Satisfied' in terms of parental and patient satisfaction.

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