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Reattachment of Fractured Tooth: A Case Report

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ABSTRACT

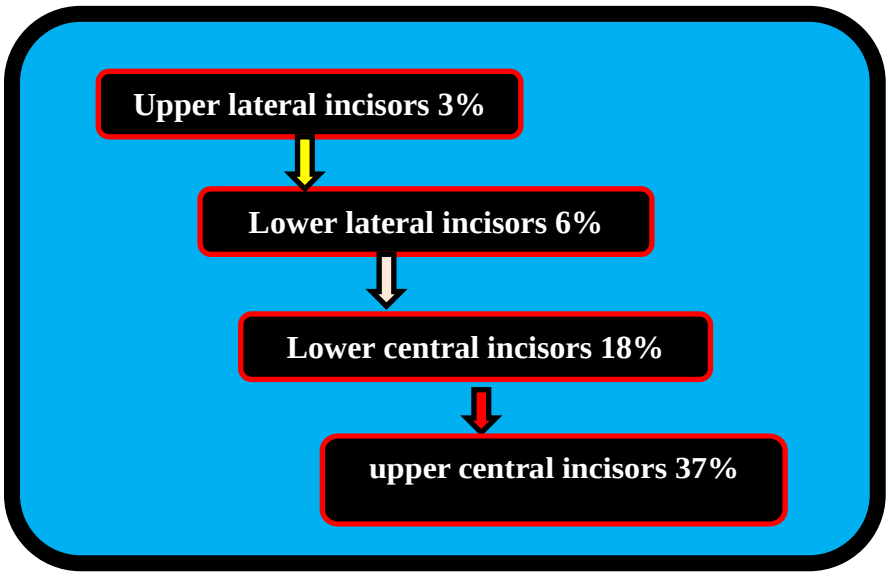
Traumatic dental injuries are very common and mainly affect children and adolescents. Maxillary incisors are more prone to fracture and affect the facial appearance of the patient. Reattachment of fractured fragment provides immediate treatment with better esthetics in a short time by preserving dental tissues and conserves sound tooth structure, maintaining the original anatomy and translucency of tooth structure. The present case report describes management of an Ellis class III fracture of maxillary right central incisor treated endodontically followed by reattachment of the same fragment.

Keywords: Traumatic Dental Injuries, Crown fracture, Intra-enamel bevel, Bonding, Endodontic treatment, Resin composite, Reattachment.

INTRODUCTION

An attractive dentition and smile is an essential feature for children and adults. Accidental Trauma to the anterior teeth is relatively a common occurrence. The average[1] prevalence reported in literature ranges from 4 to 46% with 11 to 30% in primary dentition and 6 to 29% in the permanent dentition and it has been reported that prevalence of trauma involving upper central incisors is 37%.[2]

Teeth commonly involved in traumatic injuries:



Andreasen[1] has classified crown fractures as enamel infractions, enamel fractures with little or no dentin involvement, enamel-dentin fractures with no pulp involvement (uncomplicated crown fractures), and enamel-dentin fractures with pulpal

involvement (complicated crown fractures). Trauma to the anterior teeth resulting in fracture fragment requires immediate attention and the treatment involves simple to complex restorative intervention depending on the severity of the fracture and its extent.[3] Tennery[4] was the first to report the reattachment of a fractured fragment using acid-etch technique and Subsequently, Starkey and Simonsen have reported similar cases.[5,6] The tooth fragment reattachment[7] is preferred over full coverage crowns or composite resin restoration because it conserves sound tooth structure, and is more esthetic, maintaining the original anatomy and translucency, and the rate of incisal wear also matches that of original tooth structure. The present case report describes management of a fractured (Ellis class III in 11) maxillary right central incisor treated endodontically, followed by reattachment of the same fragment.

CASE REPORT

A 9-year-old male patient reported to our clinic with coronal fracture in right maxillary central incisor due to a fall while playing cricket as shown in figure 1.

Figure 1: Pre-operative

After administration of local anesthesia, the tooth was treated endodontically by Cvek pulpotomy in 11 followed by reattachment of the same fragment. The fractured tooth surface and the fragment were subjected to acid etching with 37% orthophosphoric acid for15 seconds, then rinsed thoroughly with water and air dried. Next, the fractured ends and the fragments were then treated with a single-step bonding agent and light-cured for 15-20 seconds as per the manufacturer's instructions. The restored surface was finished and polished as shown in figure 2. Final evaluation for occlusion and esthetics was done. Postoperative instruction regarding preventing loading of the anterior teeth was given to the patient and was scheduled for recall after 1 month. Postoperative period was uneventful.

Figure 2: Post-operative

DISCUSSION

Anterior crown fractures are a common form of injury that mainly affects

children and adolescents. The maxillary central incisors are the most commonly affected teeth (37%); followed by the lower central incisors (18%).[1] The position of maxillary incisors and their eruptive pattern carries a significant risk for trauma. The most prevalent age of trauma to primary dentition is 10-24 months[3] the age when the child learns to walk, and to the permanent dentition is 9-15 years.[5] The major cause for dental trauma to the deciduous dentition has been found to be accidents within and around the home, and in case of permanent dentition; most injuries were due to accidents in school and at home.[8] The other common causes of dental trauma are sports injuries, violence, and road traffic accidents. The most common dental injury to the permanent dentition is uncomplicated crown fracture without any pulp exposure.[3,6]

Reattachment[9] of fractured fragments has been reported in the literature since 1960s, with the first study published in 1964, where the authors had reattached the fractured fragment using post and core. Many methods have been suggested in the literature.[10] These retentive features are incorporated in the tooth or the fractured fragments or both. These include the following: [11,12]

- Enamel beveling
- V-shaped internal enamel groove
- Internal dentinal groove
- External chamfer
- Overcontour
- Simple attachment[13,14]

The most commonly employed are the dentin-bonding agents with the flowable resin composite materials, dual or self-cured luting cements[15] light-cured luting cements and light-cure hybrid or microfilled resin composites.[16,17] The development of adhesive dentistry[18] has allowed dentists to use the patient's own fragment to restore the fractured tooth. This is considered to be the most conservative method of treatment of crown fracture allowing restoration of original anatomy, function and esthetics of the tooth.

CONCLUSION

Traumatic injuries to anterior teeth in children are fairly common and are on the rise. Management of such injuries need proper planning which should be based on knowledge of the techniques available and their indications. Fragment reattachment restores the morphological, functional and esthetic aspects of the tooth and maintains its shape, colour, contour and alignment of the natural tooth.

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