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FRAGMENT REATTACHMENT IN FRACTURED ANTERIOR TOOTH: A CASE REPORT

Dental Science

Dr. Nidhi Agarwal BDS , MDS Head of the Department Dept . Of Pedodontics & Preventive Dentistry Institute Of Dental Studies And Technologies Kadrabad , Modinagar

Dr. Tanya Agarwal* Post Graduate Student ,Department Dept . Of Pedodontics & Preventive Dentistry Institute Of Dental Studies And Technologies Kadrabad , Modinagar *Corresponding Author

Dr Gundeep kaur madan Post Graduate Student ,Department Dept . Of Pedodontics & Preventive Dentistry Institute Of Dental Studies And Technologies Kadrabad , Modinagar

ABSTRACT

Crown fractures of the permanent dentition comprise the most frequent form of traumatic dental injuries and often require an immediate procedure for their treatment. Reattachment of the fractured fragment to its original position is an optimal approach to esthetic and functional rehabilitation and can provide better and long lasting aesthetics, improved function, a positive psychological response and is a faster and less complicated procedure. This paper reports the case of a permanent maxillary central incisor with crown (enamel and dentin) fracture treated by adhesive fragment reattachment.

KEYWORDS

INTRODUCTION

Crown Fractures in permanent anterior teeth are frequently encountered in children, the incidence being 18–22% of all trauma to dental hard tissues.[1-3] Out of these, 28–44% are simple fracture of enamel and dentine and about 96% of these involve maxillary central incisors .[4]

The goal of the treatment of a fractured tooth is to retain it effectively while maintaining its function and aesthetics.

There are many ways of treating a simple Ellis class I & II fracture of the crown like composite build up , PFM (porcelain fused to metal) crown etc.An alternative approach, which is becoming more attractive is the technology of new dentin bonding agents, is fragment bonding. The repositioning of fractured crown fragment using the bonding fragment technique offers several advantages like cost effectiveness, reduced treatment time along with maintaining occlusal function esthetics and the original contour of the tooth. [5]

This is a case of a permanent incisor, with a simple enamel dentin fracture of the crown i.e Ellis class II fracture treated using adhesive fragment reattachment .

CASE REPORT

A 7-year-old girl reported to the outpatient section of Department of Pedodontics and Preventive Dentistry with a chief complaint of broken upper tooth. The patient gave history of trauma to the maxillary right central incisor while playing in society ground one day back. There was no history of epistaxis, unconsciousness and laceration in and around the oral cavity after the trauma.

On intraoral examination maxillary right-central incisor was found to be fractured. Fractured tooth according to Ellis and Davey was of Class II type with the fracture line extending upto the junction of middle 3rd and incisal 3rd of the crown and involved the enamel and dentin. The direction of the fracture line was oblique. (Figure 1).

(**FIGURE 1:** Initial clinical aspect of the traumatized central incisor i.e 11)

The gingiva surrounding the tooth was healthy and non- inflamed. The patient reported of mild sensitivity in relation to the involved tooth. Pulp vitality testing was done for the involved tooth and it appeared that the pulp was vital and healthy. The fractured segment of the tooth was brought by the patient in a bag of water. The patient gave no history of any bleeding or swelling associated with the tooth. Thus a diagnosis of reversible pulpitis associated with Ellis class II was made.

TREATMENT

As the tooth at the time of preservation is appeared vital and healthy the treatment plan for the patient was decided as to reattaching the fragment with the broken tooth. (Figure 2).

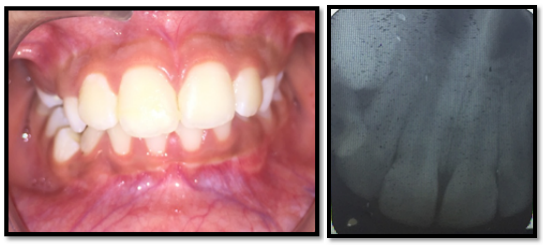
(**FIGURE 2:** Showing the broken tooth fragment)

The fractured fragment was sterilized by placing it in 2% digluconate chlorhexidine .The tooth was isolated and a mock placement of the fragment into position was done to evaluate the result. Minute grooves were made on broken incisal edge to increase the retention. Later the periphery of the retained portion of central incisor and the broken fragment both were etched with 37% phosphoric acid for 15 s and thoroughly rinsed off. A single adhesive bonding agent (Spectrum bond , nantechnology Dental Adhesive)was applied to both the fragments and cured .Composite was applied ,the excess composite was removed and the fit was reverified and polymerised from both buccal and palatal sides, light cured for 40 s. Reattachment was done by using restorative composite. (Unicorn Denmart , Hybrid , Visible light cure resin based dental restorative material). Finishing and polishing of the tooth was done. All instructions regarding precaution of treated tooth, diet and oral hygiene maintenance were given. The patient was kept under observation and initially follow-up at weekly intervals. (Figure 3)

(**FIGURE 3 :** Frontal appearance of the restoration after reattachment)

OUTCOME

Tooth was asymptomatic with no postoperative complications. (Figure 4a and b)



(a) (b)

FIGURE 4 (A): Clinical view after 3-months follow-up. (b) Radiographic follow-up after 3- Months

DISCUSSION

It is difficult most of the times to preserve a fractured fragment as usually under the stress of trauma , patients forget to find the broken part,but sometimes when they do bring the fractured fragment ,then reattachment of the two parts becomes the treatment of choice. In the present case the patient had brought the broken fragment and the anterior tooth involved had a normal overjet and overbite .Therefore reattachment became the treatment of choice in this case.

The application of dental adhesives in reattaching a fragment to the remaining tooth structure offers a number of advantages compared with the conventional methods for restoration of the fractured teeth . It preserves the vitality of the tooth as well as conserves the tooth structure. Reattachment using composite resin for the restoration of permanent incisors that have minimum or not very extensive crown fractures offers a conservative, time saving, and economical chairside treatment option.

Several factors which can affect the longevity of this type of restoration includes the extent of the crown fracture, associated periodontal injuries , the occlusion of the restored tooth, and the overall prognosis of the injured tooth.[6] The choice of resin should be focused on aspects related to the strength and aesthetics. In the present case nanohybrid resins was used due to its high percentage of inorganic filler which leads to less water adsorption and hence high color stability. It also provides high strength which allows long term satisfactory clinical outcome.[7]

The site and aspect of the fracture (non-complicated crown fracture) and the presence of a balanced occlusion favors the clinical success in the present case. The planning of the present treatment enabled clinical success with direct adhesive fragment reattachment.

CONCLUSION

Techniques for tooth fragment reattachment are not temporary procedures but require functional and esthetic adjustments over time to maintain the biomimetic characteristics of traumatized anterior teeth with a very conservative approach and predictable outcomes. It should be considered when treating patients with coronal fractures of the anterior teeth, especially younger patients.

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