CASE REPORT

“AESTHETIC REHABILITATION”: REATTACHMENT OF A FRACTURED CROWN SEGMENT

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ABSTRACT: Fracture of anterior teeth is common in childhood due to many factors including sports. Reattachment is now a routine option for dental professionals whenever patients walk in with the fractured segment. It is now considered to be the priority instead of a composite resin build-up for better aesthetics. The success of this treatment modality depends on various factors. This case report discusses a situation where the fractured maxillary lateral incisor in a 9 year old patient is reattached. The root formation was not complete and the fracture was not involving the pulp. Hence it was important to protect the pulp as well as allow the root formation to complete naturally. No evidence of pulp exposure was found on clinical examination. Reattachment of the fractured segment was done with a seventh generation bonding agent and resin composite to restore aesthetics. Patient will be under long term follow up. The primary motto is to restore aesthetics and wait for root completion.

KEYWORDS: Reattachment, Aesthetic rehabilitation, Tooth fracture.

INTRODUCTION: A fractured anterior tooth can have major psychological effect on children. It may lead to depression and isolation from similar age groups because of aesthetic reasons. Hence it is important to restore aesthetics and function in such patients to give them confidence in order to accept the problem.¹ It also helps in modifying willingness of the patients for such treatment modalities. Reattachment of a fractured segment back to the crown will ensure natural aesthetics and improved patient acceptability. Various factors like the age of the patient, root formation, type of trauma, type of fracture and time lapsed after the trauma should be considered before drawing a treatment plan.²

INVESTIGATIONS:

1. IOPA X-rays in relation to the central and lateral incisors (figure-1 A).
2. Pulp vitality tests (done after 3 days after the trauma).

Clinical and radiological examinations were done. The fracture was an Ellis class-II without involvement of the pulp. The tooth had fractured mesio-distally and without any loss of tooth structure either from the intact or the fractured segment. The patient reported to the department carrying the fractured segment in a bottle of water. She reported with her parent within 3 hours of the unfortunate event. They however did not have any prior knowledge of how to carry a broken tooth to the dentist.

TREATMENT: A treatment plan was formulated after careful evaluation of the anterior teeth. Further complications and any involvement of the adjacent teeth and hard tissue structures were ruled out

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before initiating the treatment. Reattachment of the fractured segment with a sandwich technique was planned due to proximity of the large pulp chamber to the fracture line.

The tooth had fractured mesio-distally and without any loss of tooth structure either from the intact or the fractured segment. The fractured segment was thoroughly cleaned before attempting reattachment. After complete isolation of the involved tooth, it was air dried and a calcium hydroxide based fast setting cement (Dycal) was used to cap the pulp indirectly (figure-2 b). A glass ionomer restoration was done over the dycal placed and within the confines of the exposed dentinal surface of the tooth.

This gave enough dentinal as well as complete enamel thickness for reattachment; of the fragment to the tooth. In addition, a 2mm circumferential bevel was given both to the tooth and the fractured segment. After shade selection reattachment was done by etching and bonding using a seventh generation bonding agent with resin composite (figure-1, figure-2). Patient was recalled for vitality tests after 3 days. Electric pulp testing and thermal testing confirmed the tooth vitality which ruled out further need for any treatment.

However, the long term consequence of such a treatment option is debatable. This treatment option definitely improves the patient confidence. From the dentist's point of view, it is important to keep the patient under observation to ensure completion of the root formation and to restore aesthetics. Patient should be educated about how to care for the treated tooth.

DISCUSSION: Reattachment of a fractured segment should be the first choice of clinicians especially when the patient brings it along ¹. Reattachment has many advantages post operatively. The fractured segment is part of the natural tooth and hence has translucency similar to that of the tooth.²

No material used to restore the lost tooth structure provides aesthetic acceptability more than the natural tooth fragment. In addition, both aesthetics and functionality are restored to a reasonable period of time if maintained properly. Post-operative care is of prime importance in such cases. Patients and guardians in case of young patients should be educated properly to maintain and to protect the dentition. Mouth guards play an important role in young patients and should be custom made for each such patient. Repetitive trauma should be avoided so as to protect the treated tooth.³

A sandwich technique was opted to treat the patient before the reattachment of fractured segment of the crown.⁴ It was because of the age of the patient (9 years); and the root formation was not complete. The use of glass ionomer cement over the Dycal placed has two main advantages. Dycal is a therapeutic, calcium hydroxide containing material which helps in re-mineralization of dentin.⁵

Glass ionomer cement would help by protecting the medicament placed for re-mineralization. And more importantly it would protect the pulp acting as a barrier for the monomer leaching from the composite resin.⁶ After shade selection, reattachment was done by etching and bonding using a seventh generation bonding agent with resin composite.⁷ Circumferential beveling of the tooth and fractured segment joint was done in order to mask the fracture line with resin composite.⁸

It was important to protect the vitality of the tooth in order to allow natural course of time for completion of root formation. Considering was given to the ugly duckling stage where the permanent canines and premolars to erupt in natural sequence before taking a final decision on treatment plan. All alternative plans to build up the tooth were discarded since the fractured fragment was available which approximated well to the tooth. Long term success of the reattachment depends on many factors like absolute isolation during the procedure, bond strength of resin composite to the tooth

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and avoidance of repeated trauma ⁹. Various studies have shown that rehydration of the fractured segment is possible through saliva to maintain the translucency.¹⁰

CONCLUSION: Restoring aesthetics immediately; helps in gaining immense confidence, especially in children. Reattachment of the fractured segment of tooth is the best option to regain natural aesthetics. It should be the primary option whenever patients come with the fractured segment.

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Figure 1

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Figure 2

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