



RE -ATTACHMENT OF ORIGINAL CROWN TO RECREATE THE BROKEN SMILE AN ESTHETIC CORRECTION :A CASE REPORT

Dental Science

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ABSTRACT

Traumatic dental injuries are becoming a major problem today. Trauma to the oral region becomes very frequent and it accounts for the 5% for which the person turns towards the dental clinic in a country. Main concerning thing about traumatic dental injuries is that they tend to occur at an early age of persons life during which the growth and development is taking place. This case report presents a easy simple and cost effective method to rehabilitate the fractured crown portion.

KEYWORDS

Re attachment, fractured tooth, traumatic injuries, Esthetics, Tooth Fragment

INTRODUCTION

Face of a person is the mirror of body's inner capacity and smile is the way to prove it. But this smile can easily be tampered or destroyed if an individual suffers from traumatic injury at an early age. In pre-school children the rate of injuries are very high around 18%, treating these kind of trauma is often expensive and requires various specialists of different disciplinary¹. According to Christensen GJ et al², Oral injuries are the *second* most common body injury in pre-school age children and the *sixth* most common body injury among 7-30 year-olds. The prevalence of these injuries has increased in the last 10-20 years³.

Several circumstances influence the management of coronal tooth fractures, including extent of fracture (biological width violation, endodontic involvement, alveolar bone fracture), pattern of fracture and restorability of fractured tooth (if there is presence of any root fracture), secondary trauma injuries (any injuries to tongue, lips and other soft tissues), availability (presence/absence) of fractured tooth fragment and its condition for use (fit between fragment and the remaining tooth structure), occlusion, esthetics, finances, and prognosis.^{4,5,6}

Several thoughts have been provided to think upon this condition and for treating such kind of trauma through several techniques such as porcelain veneers or, full coverage crowns- resin crowns, steel crowns, ceramic crowns, resin composite build-up with or without pins.; however, such treatments require substantial sacrifice of dental structure and sometimes even endodontic treatment. However, there are two simple methods that have become possible due to the development of adhesive techniques. The first one consist of restoring the coronal part of the tooth with composite resin and the second involves reattachment of the fractured tooth fragment with adhesives or with adhesives and composites.

This case report presents a Re attachment of fractured coronal fragments using adhesives and composite material.

CASE REPORT

A 23-year-old male presented to the department of conservative dentistry and endodontics in emergency after sustaining complicated coronal fracture in lower left central incisor. He has suffered a traumatic injury due to fall from a vehicle. Facial inspection did not reveal any pathologic signs apart from some bruises in upper lip. Clinical examination revealed a fractured lower central incisor from its coronal portion. The fractured fragment was recovered from the site and carried in the saliva. The preoperative clinical image of involved tooth (Fig 1).



Fig. 1

Upon examination, the treatment options were presented to the patient, including (1) No treatment, (2) Post and-Core and Crown, (3) Crown buildup restoration with a resinbased composite, and (4) Re-attachment of the tooth fragment. After some deliberation about the advantages, disadvantages, prognosis, and cost of every treatment option, the patient and the patient's mother opted to have the tooth fragment reattached. It is important to note that the reattachment option was presented only after confirming that the fragment was in good condition and that it fit reasonably well on the fractured tooth.

So endodontic treatment was started and sectional obturation was done in order to receive the post in it.

Radiographic image of sectional obturation. (Fig 2)

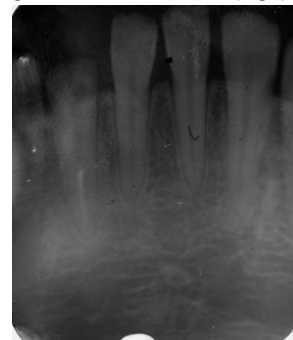


Fig 2

After that a ditch was created with the round bur in the fractured fragment, that was acid etched with 37% phosphoric acid gel rinsed and washed and coated with an ethanol-based adhesive system (Adper Single Bond Plus, 3M ESPE) and into that groove glass fiber post was attached to form a single assembly of glass fiber post and fractured

crowns(Fig 3, Fig 4 and Fig 5).

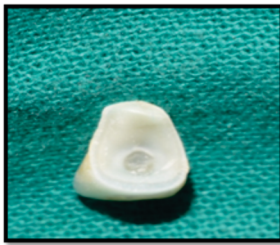


Fig 3

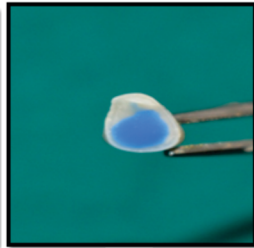


Fig 4



Fig 5

The surface of post was also treated with acid etching and bonding. Composite resin (FILTEK Z350 XT (3M ESPE) was applied to both fragment and tooth surfaces. The fractured segment was then accurately placed on the tooth, paying special attention to the fit between the segments. When the original position had been reestablished, excess resin was removed and the area was lightcured for 40 seconds on each surface, making sure that no displacement of the fragment occurred before adhesive/resin polymerization was complete. The margins were properly finished with diamond burs and polished with a series of Sof-Lex disks (3M ESPE) and polishing paste (Fig 6)



Fig 6 Immediate post operative picture

The occlusion was carefully checked and adjusted, and the patient was dismissed after receiving instructions to avoid exerting heavy function on this tooth and to follow regular home care procedures relative to oral hygiene. The patient was informed that the reattachment line might be visible, and, if necessary, this could be managed in future visits. Follow up was done at 1 and 6 months and both endodontic and restorative treatments remained clinically acceptable for the entire time. (Fig 6 and 7 and 8)



Fig 6 : one month follow up



Fig 7 6 months follow up



fig 8 lingual view

Although the reattachment line can be noted in a close-up view, the patient was very satisfied with the results and opted not to have the line masked with a partial composite veneer.

DISCUSSION

We as human beings could not replace what is bestowed on us by god, but rather we could try to mimic it. With the availability of new techniques and advancements in materials in field of dentistry, we are yet trying to mimic the natural tooth's form, function and esthetics.

The process of reattachment is not new in dentistry, The fracture Re-attachment procedures blossoms in the late 1970'S with some good works being done by **Tennery⁷(1978)**, and **Simonsen⁸(1979)** with the use of acid etching and composites as a restorative material.

The choice of Re-attachment should always come first in mind when fractured fragment is available for broken tooth rehabilitation. The advantages that this technique offers over other techniques are: **Simonsen RJ et al 1982, Diangelis AJ et al 1992^{9,10}**

- Tooth maintains its original color and size,
- Being worn away in a similar proportion to adjacent tooth without trauma,
- Giving an emotionally and socially positive response due to the protection of natural tooth structure,
- Rapid and conservative nature of the treatment,
- Economical aspect of a single-visit treatment.

This was well supported by **Andreasen et al (1993)¹¹** who studied and concluded that good aesthetics, acceptable fragment retention can be achieved and this could be the more naturalistic approach in Re-attachments and it could be a good alternative to the conventional resin composite build ups.

The techniques described in this study are reasonably simple, while restoring function and esthetics with a very conservative approach. However a professional has to keep in mind that a dry and clean working field and the proper use of bonding protocols and materials is the key for achieving success in esthetic dentistry.

CONCLUSION

One of the most challenging procedures in dentistry is to rehabilitate the anterior tooth's esthetic form, and function. Because of its location it constantly comes under scrutiny of the observer, and hence makes the dentist life difficult. An advantage of the incisal edge Re-attachment procedure is that it does not alter any future treatment and therefore, in cases where it need to change the treatment plan, nothing is harmed, and that's why represents a viable first treatment option. Re-attachment procedure may importantly serve as an intermediate treatment alternative for pre-teens or teenage patients to postpone definitive treatment until an age where gingival margin contours are relatively stable.

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