Reattachment of Tooth Fragment: A Case Report

Shilpa Shah*, Nishtha Patel*, Mahendra Patel, Krushnangi Yagnik*****

*Reader, **Professor & HOD, ***P.G. Resident, Department of Conservative Dentistry And Endodontics,
College of Dental Sciences &Research Centre, Ahmedabad, Gujarat, India

Abstracts: Coronal fractures of permanent dentition are the most frequent types of dental injuries. One of the options for managing these fractures, when the tooth fragment is available and there is minimal violation of the biological width, is reattachment of the dental fragment. Recent developments in restorative material, placement techniques, preparation designs, and an adhesive protocol allow clinicians to predictably restore fractured teeth. Reattachment of a fractured fragment to the remaining tooth can provide better and long lasting esthetics, improved function, a positive psychological response and is a faster and less complicated procedure. [S Shah Natl J Integr Res Med, 2018; 9(1):133-135]

Key Words: Teeth fractures, Fragment reattachment, RelyX.

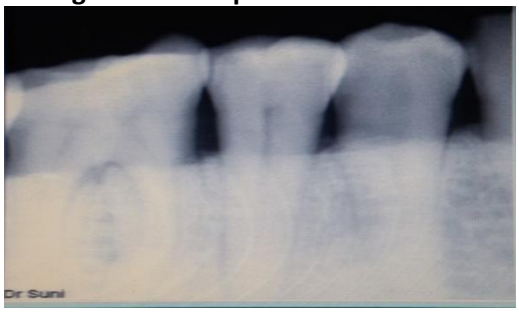
Author for correspondence: KrushnangiYagnik, B/42, Tirthbhoomi Appts, B/H Gajjar Hall, Law Garden, Ellisbridge, Ahmadabad– 380006. E-Mail: krushnangi_yagnik@yahoo.co.in M: 9714442345

Introduction: Uncomplicated crown fractures are a frequent form of dental injuries encountered in a dental clinic requiring immediate management. Till date, a lot of different approaches have been proposed for treatment of fractured teeth depending on location of the fracture.[1]

The incisal fragment reattachment procedure may offer a conservative, cost-effective. An aesthetic restorative option when patients present with partially/ fully separated incisal edge fragments. The use of fourth or fifth generation dentine bonding agents without additional retentive features has been shown to provide clinical restorative success.[3,4]

Case Report: A 29 year old male patient reported to the Department of Endodontics, College Of Dental Science And Research Centre, seeking an emergency treatment for his fractured lower right second premolar following a road accident the previous day. On intraoral examination, there was fractured lower right second premolar with the fracture line extending buccally. The fractured fragment was adhering to the soft tissues. (Figure 1) The patient had pain during breathing and chewing. Remaining tooth was not mobile and surrounding tissues were healthy.

Figure 1 – PreoperativeTreatment



Local anesthesia was administered and mobile coronal tooth fragment was removed.(Figure 2) To prevent dehydration the removed fragment was kept in saline till the completion of root canal treatment. (Figure 3a, 3b) Access cavity was prepared and working length was determined with apex locator (Raypex) using #15 K file. Pulp was extirpated using barbed broach. Canal instrumentation was done with Protaper Rotary Files (Dentsply) as crown down technique. 5.25% NaOCl was used to irrigate the canal. Canal was dried with paper point (Dentsply) and sectional obturation is done using AH Plus root canal sealer.

Figure 2 – Fracture fragment

Figure 3 a - Fragment placed in normal saline

Figure 3 b – Fragment placed in normal saline

As the missing tooth structure was more than 50%, a post space preparation was done for No. 2 fiber post using the drill recommended by the manufacturer.

Etching was done on the fractured surface of the tooth as well as the fractured tooth fragment for 20 seconds. After rinsing, bonding agent was applied on the etched surfaces the root canal walls and light cured for 20 seconds. (Figure 4, Figure 5)

Figure 4 – Acid etching done

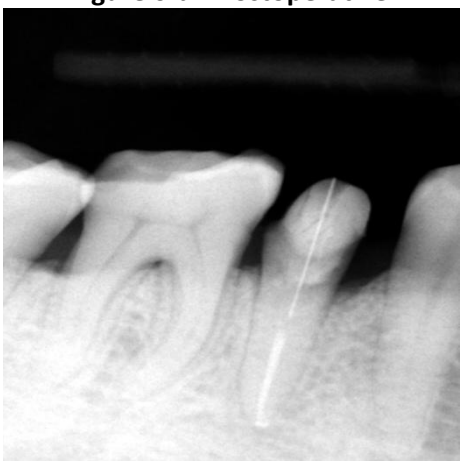
Figure 5 –Bonding application

Resin cement (RelyX) was mixed according to manufacturer's recommendations, and applied on the walls of root canal, fractured surface of tooth, tooth fragment and fiber post. The fiber post was introduced in the root canal and fractured fragment was then accurately placed back on to the tooth and was reapproximated to the original position. The whole unit was light cured with LED from buccal, occlusal and lingual directions for 40 seconds.

For further reinforcement two occlusal grooves were made over the reattached tooth, across the fracture line and composite was applied and light cured for 40 seconds. Subsequently, finishing and polishing of the composite was done using polished using discs and rubber points. (Figure 6a, 6b)

Figure 6 a – Postoperative

Figure 6 b – Postoperative



Discussion: Coronal fracture by trauma has been reported to account for up to 92% of all traumatic injuries in permanent dentition. The most affected teeth are maxillary incisors. It has been reported that males are more frequently affected than females, particularly in the maxillary incisors.[1]

Several treatment modalities have been suggested for the treatment of such cases depending upon the location and extent of the fracture line.[2] Earlier the

fractured tooth fragment was removed and residual tooth structure was treated by

- Restoration followed by crown
- Post and core restoration followed by crown
- Gingivectomy or alveoloplasty was advocated, if fracture line was extending subgingivally.
- Extraction followed by RPD/ FPD.

With the advent of new bonding materials and techniques, reattachment of the fractured fragment has now become quite popular.

Reattachment of fragment may offer following advantages[5].

- Better aesthetics, as shade match and translucency will be perfect.
- Incisal edge will wear at a rate similar to that of the adjacent teeth.
- Replacement of fractured portion may be less time consuming than time needed for completion of a provisional restoration.
- A positive emotional and social response from the patient as psychological trauma to the pt is decreased and preservation of natural tooth structure is observed.

Dual cure resin adhesives (RelyX) and resin post systems that allow strong durable bonds to dentin enhance this option. Demarco, Flavio Fernando found that RelyX produced lower failure load than the restorative composites.[6]

Dual cure resin adhesive (RelyX) was used because of its high fracture toughness, strength and durability. Reis et al in 2002 showed improved fracture resistance with this additional procedure. Since light cured resins are more color stable they are recommended in areas of aesthetic concern.[10]

Conclusion: Reattaching a tooth fragment with dual cure adhesives may be successfully used to restore fractured teeth with adequate strength, but long term follow up is necessary in order to predict the durability of the tooth-adhesive-fragment complex.

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