CASE REPORT

REATTACHMENT OF CORONAL FRAGMENT WITH INTRA-RADICULAR SPLINTING: A CASE REPORT IN ENDODONTICS

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ABSTRACT: The immediate fragment reattachment is a very conservative treatment. It allows the restoration of the original dental anatomy thus rehabilitating function and aesthetics in a short time by preserving dental tissues. An immediate restorative technique resolving the acute problem of traumatic tooth fracture with pulpal realignable. Fracture reattachment possess challenging conservative and economically viable procedure within the compass of a single visit.

KEYWORDS: Fragment Reattachment, Tooth Fracture, traumatic tooth, intra-radicular splinting, laser.

INTRODUCTION: Traumatic dental injuries are everyday occurrences and their prevalence has been continuously rising. Trauma has been one of the main etiological factor for numerous restorative and endodontic procedures. The incidence of dental trauma is on the rise due to an increase in dangerous activities and sports that involve children. Anterior crown fractures are a common form of injury that mainly affects children and adolescents. The upper central incisors are the teeth most frequently affected by this type of dental injury (80%). The position of maxillary incisors and their eruptive pattern carries a significant risk for trauma.

Depending on different clinical situations, anterior teeth with enamel-dentin fractures can be treated using various techniques and materials. Direct or indirect restorations can be used when the fractured fragment is not available.

CLINICAL CASE: A 28 Year old male patient reported to the Department of Conservative Dentistry and Endodontics, Rajarajeshwari Dental College and Hospital, Bangalore, Karnataka, India. With the chief complaint of broken upper front tooth following trauma due to road accident, 3 hours back. In the initial examination it was revealed that ellis class III fracture in left maxillary lateral incisor that is fracture with pulp involvement (Fig. 1), fracture was evident palatally. Laceration on the Upper lip on the left side was observed. Radiographic examination was done, which revealed oblique fracture labio- palatally. (Fig. 2) After routine detailed history taking and examination, a treatment plan was made to immediately reattach the dental fragment of the teeth.

Anesthesia was administered that is Lignocaine 2%, buccal and palatal infiltration. The fracture segment was removed& preserved in normal saline in order to prevent dehydration of the tooth fragment. Ellis class III fracture was observed, mesial to distal angulated incisally from labial to palatal was evident. (Fig. 3).

Crown lengthening procedure was carried out using soft tissue laser in department of periodontology Rajarajeshwari Dental College Bangalore. (Fig. 4, 5, 6).

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Root canal treatment was done in single sitting and post space preparation was carried out. (Fig. 8). The root canal was then prepared with parapost drill (3M). A corresponding pre- fabricated fiber post was cut to size 3-4 mm. for coronal fixation (Fig. 10). Coronal fragment was prepared to receive the fiber post. (Fig. 9). The both surfaces were etched with 37% phosphoric acid and a dent in bonding agent applied. Dual cure resin (Rely-X) placed in the canal and a fiber post was placed upto proper length. Simultaneously the coronal tooth fragment was placed in to the post, it's bonding surface and pulp cavity loaded with dual cure resin composite, this was placed in to position and finger pressure was applied until the composite was light cured set. A check radiograph was then recorded to confirm apposition of the two tooth portions. The occlusion corrections were made. Enamel beveling of the fragment and the remaining crown and 'V' shaped notch is placed (Fig. 13). This technique has claimed to improve fragment retention since enamel beveling alters the enamel prisms orientation, allowing for achievement of a more effective acid etching pattern. This technique also improves short-term esthetics. Final result showed more than satisfying esthetic results. (Fig. 14) COE pack was placed for healing was the tissue.

The follow- up was carried out for 1month and 6months with no post-operative problems. (Fig. 17 & 18). The healing during the follow up period was uneventful.

Fig. 1: Pre-operative Photograph (labial)

Fig. 2: Pre-operative Radiograph

Fig. 3: Pre-Operative photograph after removing the fragment

Fig. 4: Soft tissue laser

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Fig. 5: Laser application

Fig. 6: 2hrs after laser application

Fig. 7: Fracture Segment

Fig. 8: Obturation and Post Space preparation

Fig. 9: Preparation of the Fracture segment

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**Fig. 10: Post Placement
Fragment reattachment**

Fig. 11: Radiograph after

**Fig. 13: Fragment attached
Using 'v' shaped notch**

**Fig. 14: Composite restoration
on fracture line**

**Fig. 15: Post-operative
(palatal)**

Fig. 16: Coe pack placed

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Fig. 17: Follow Up Radiographs 1month

Fig. 18: Follow up Radiograph 6months

DISCUSSION: The concept of reattachment begun in 1964 when Chosak and Eidelman used a cast post and conventional cement to reattach an anterior crown segment. When the fractured portion is intact, with adequate and correctly preserved margins, the adhesive reattachment to the residual tooth structure represents the first choice treatment. The reattachment technique is also appropriate in dental fractures where the detached fragment does not match completely with the remaining tooth structure. In this case it is crucial to perform a pre-operative analysis of the margins in order to choose the best technique required to fill the gap between the tooth and the fragment thus improving the adhesion.

The incisal edge reattachment technique compared with the traditional restorative procedures offers the possibility to re-establish the contour, the architecture and the original brightness of tooth easily, and with a positive emotional response and greater acceptance from the patient

Many operative procedures have been suggested by literature, from no additional tooth preparation to various preparation options such as: circumferential bevel, internal groove, external chamfer and superficial over contour of composite on the fracture line.

Several experimental models have proved that if during tooth preparation 90% of the original tooth structure is maintained, the limit of the fracture strength of the tooth remains the same.

CONCLUSION: According to our clinical evaluation, the restoration of a fractured crown using the adhesive reattachment is the optimal treatment for an enamel-dentin fracture when the tooth fragment is available, intact and well preserved.

The clinical results appear to be positive and they show that this technique is easy to perform and standardize, inexpensive, and that it allows both functional and aesthetic recovery.

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