

Biological and Esthetic Considerations in Coronal Fragment Re-attachment of a Fractured Tooth : A Report of Two Cases

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Abstract

Anterior crown fracture is a common finding of traumatic dental injuries affecting children and adolescents. Immediate restoration of available tooth fragment is the therapeutic choice of treatment in these cases. Two case reports are presented here with complicated crown- root fracture of maxillary central incisor by fragment re-attachment. It allows the restoration of original tooth color, contour, and esthetics that brings back smile of the patient.

Key Words: Biological Restoration, Anterior tooth fracture, reattachment, tooth fragment.

Introduction

Traumatic injuries most commonly affect maxillary central incisors due to their anterior position and protrusion caused by the eruptive process¹. Males are most frequently affected than females because of an increase in participation of children in dangerous sports and activities². Frontal and horizontal impacts can result in fracture line starting at some point on the crown and extend longitudinally with or without involving pulp reaching distal or mesial sub-gingival level³.

With the latest advances in the restorative dentistry, re-attachment of the fractured fragment is the treatment of choice for restoring fractured tooth. There are several advantages such as being more conservative, obtaining healthy periodontal attachment, and maintaining original tooth color, contour, and translucency⁴.

Presented here is a report of two cases showing the utility of restorative materials in the preservation of the esthetics and biological width of maxillary incisors with complicated crown fracture.

Case Reports

Case 1

A 10 year old boy presented to the department with a complaint of history of fall in the school one hour back. The fracture line was oblique extending from the mesio-incisal aspect to the sub-gingival disto cervical aspect of left maxillary central incisor (Fig. 1). Patient had brought the fragment along with him (Fig. 2). Laboratory investigations were carried out and were found to be in normal limits. Mucoperiosteal flap was

raised under local anesthesia (Fig. 3). The tooth fragment was beveled and attached with flowable composite(X-flow, Dentsply) and the flap was sutured (Fig. 4). Endodontic intervention was initiated immediately and completed after one week of calcium hydroxide dressing at the time of suture removal (Fig. 5). Tooth was restored with laminate veneer (Fig. 6).

Case 2

A 12-year-old boy reported to the department with a history of fall in the playground two hour back. He was very apprehensive for his appearance. He had brought the fracture fragment along with him. On intraoral examination, it was found that the fracture was of both maxillary central incisors. There was vertical crown fracture with 21 extending to subgingival level and a slight incisal chip off of 11 (Fig. 7). The fracture fragment was also present (Fig. 8). Mucoperiosteal flap was raised and the fragment was attached using flowable composite (Fig. 9, 10). Endodontic intervention was carried out and the patient reported back after two weeks showing normal healing (Fig. 11). The composite build up was carried out (Fig. 12).

Discussion

Patients expect adequate esthetics and smile immediately after the first appointment. In addition, they require adequate esthetics be maintained during the definitive phases as well.

Using the remaining tooth structure instead of using temporary resin crown provides many advantages such as shade, translucency, physiochemical properties, patient acceptance and financial considerations⁵.

An approach has been quoted for managing crown root fractures which involves removal of fracture segment, raising of gingival flap, immediate endodontic treatment and fragment bonding³. Our approach was also similar except the fragment re-attachment by flowable composite. This method provides immediate esthetics, biologic and prosthetic protocol by minimal invasion of biological width.

Esthetic, biological and restorative problems may occur as a result of sub-gingival fractures and impinging on

biological width. Attachment of the coronal fragment to the root structure can be a permanent solution as was done in this case.⁵

Prefabricated post can be used in these types of cases if the fracture fragment is not available. Re-attachment of the intact tooth fragment is economical, less time consuming, restores original form, contour and margin and more compatible to the gingiva.⁶ The psychological trauma caused to the individual due to loss of esthetics can be managed by this procedure as was done in this case.

Conclusion

Re-attachment of the intact fractured fragment can be considered as an ultraconservative method for esthetic rehabilitation. This procedure helps us to maintain maximum tooth structure thus preserving biological width. The population should be educated to preserve the fracture fragment and seek immediate dental treatment.

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Legends

Case 1

- Complicated crown-root fracture extending from mesio-incisal to the root
- Fracture fragment
- Raising of mucoperiosteal flap
- Attaching the fractured fragment and flap sutured
- After 2 weeks, healed periodontium
- Laminate veneer attached to 21

Case 2

- Longitudinal fracture extending to root
- Fractured fragment
- Raising of the Flap
- Fragment attachment and suturing
- After 2 weeks, healed Periodontium
- Restoration of 21 and 11

