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Case Report

Single visit reattachment of fractured incisal edges using different post systems



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Introduction

Fracture of maxillary permanent anterior teeth in young and adolescents is the most common traumatic injury.¹ 80% of the injury occurs to maxillary central incisors because of the anterior anatomical position and the protrusion caused by the eruptive process.² The manifestations may range from simple enamel-dentin fracture to complicated crown-root fracture or root fracture, but the most common one is the crown fracture.³ Individuals with Class 2 Div 1 malocclusion (central incisors more labially placed) commonly suffer with traumatic injuries of teeth.² 5–8% of traumatic injuries involve

crown and root with pulpal exposure.^{2,4} Uncomplicated enamel-dentin fracture is also common. Prior studies have estimated that one out of every four persons under the age of 18 will sustain a traumatic dental injury in the form of anterior crown fracture.^{5,6} These reports confirm that dentists are confronted with managing dental trauma and restoring fractured teeth on a regular basis. Numerous modalities of treatment have emerged in the recent years for esthetic and functional restoration of fractured anterior teeth. If the fractured fragment is not available direct or indirect restorations can be done.⁷ If the fractured portion is intact with correctly preserved margins then adhesive reattachment should be the first line of treatment.⁷ Tennery was the first to report the reattachment of a fractured fragment using acid etch technique.⁸ Reattachment of fragment helps to achieve better esthetics, lifelike translucency, immediate rehabilitation for the patient and a positive emotional and social response from the patient. Recent advancements in the restorative dentistry include introduction of glass fiber posts which offer better esthetics and dual cure resin luting cements for cementation of posts.⁹

A review of literature of reattachment procedures discusses no additional tooth preparation to various preparation options such as circumferential bevel, internal groove, external chamfer and superficial overcontour of composite of fracture line.¹⁰ Rais and Pusnam^{11,12} have stated that the minimum strength for ensuring long term clinical success of the reattachment is still unknown. With improvements in adhesives and newer materials that offer high bond strength

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values, some investigators have attempted to reattach fragments using these materials without an additional retentive preparation.^{13,14} Patients having undergone reattachment procedures for fractured anterior teeth have to undergo regular follow-ups to check the stability of the tooth-adhesive-fragment complex over time with the help of intraoral radiographs and clinical assessment after the treatment.

This article elucidates immediate esthetic rehabilitation of two clinical cases with fractured central incisors. Reattachment of fractured incisal edges was done using two different glass fiber post systems. Dual cure resin cement was used for luting of the posts to the teeth.

Case reports

Two case reports will be discussed with fractured maxillary anterior teeth. The first one describes a 13-year-old boy who reported to Military Dental Centre Secunderabad, following fracture of maxillary right and left central incisors [Fig. 1]. Trauma had occurred while the child was playing football in the school. The patient's medical history was not significant. Intraoral examination revealed a Ellis class III fracture of both maxillary central incisors. Patient had stored the fractured segments in a plastic cover containing water. Patient reported within the first hour of injury. Immediately the fractured segments [Fig. 2] were placed in a bowl containing normal saline to prevent discoloration and dehydration. A periapical radiograph showed that the root formation was complete. The parent of the patient was in a state of trauma and very apprehensive and requested for the possibility of immediate reattachment of the broken fragment. Both the patient and the parent were calmed and a detailed treatment plan was given to them. The treatment plan included single visit root canal treatment followed by reattachment of the tooth using a fiber post.

Local anesthesia {2% Lignospan, Septodont®} was administered. Before starting with the invasive procedure the fractured segments of both the incisors were checked for the continuity, both the fragments adapted well to the fractured tooth. Access cavity preparation was done and the working length determined. The root canals were enlarged to ISO size



Fig. 1 – Preoperative intraoral photograph showing fractured maxillary central incisors.

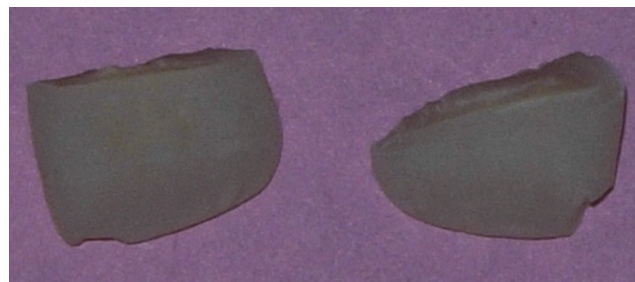


Fig. 2 – Photograph showing fractured segments.

80. Thorough irrigation was done with 2.5% sodium hypochlorite and normal saline. The canals were dried with paper points and obturated using lateral condensation technique with gutta percha and resin sealer [Fig. 3]. The gutta percha was removed from the coronal two third of the canals [Fig. 4] using the drill provided in the fiber post kit {Para Post Fiber Lux System, Coltene Whaledent®}. Different diameter posts are available in the kit. In our case size 6 posts from the kit were used for both the central incisors. The fiber post was tried in the canal and adjusted to the desired length [Figs. 5 and 6]. The fractured portions were disinfected with 0.2% chlorhexidine. Space was prepared on the palatal aspect of the fractured incisors to receive the coronal portion of the post [Fig. 7]. The position of the fractured segments was assessed. Root canals were etched with 37% ortho phosphoric acid and rinsed after 30 s. Bonding agent {Scotchbond MP®} was applied and the post was luted in the canal using dual cured resin luting cement {Voco dual cured LC®}. The inner portion of the coronal fragments were similarly etched and bonded to the tooth using dual cure flowable core build-up material {Voco dual cure core build-up, Rebuilda®} [Fig. 8]. The fracture line labially



Fig. 3 – Radiograph showing RCT of both maxillary central incisors'.

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