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## Research Article

### REATTACHMENT OF COMPLICATED ANTERIOR TOOTH FRACTURE: A CASE REPORT

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#### ABSTRACT

Reattachment of fractured tooth fragment is a conservative technique for managing crown fracture especially when the fractured fragment is available. Depending upon the extension of the fracture, the fragment can be bonded using composite, root canal treatment followed by post can be planned or surgical approach can be taken into account. The remarkable advances in the adhesive have made reattachment a promising treatment option, results of which as fast and aesthetically pleasing. This article reports management of complicated crown fracture using an endodontic approach followed by fiber post and core.

##### Key Words:

Reattachment, Fractured tooth, Fiber Post

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#### INTRODUCTION

Trauma of the oral and maxillofacial area comprises of total 5% of all injuries<sup>1</sup>. Among all facial injuries, dental injuries are most common, of which crown fracture occur more frequently. Traumatic injuries to the teeth can occur at any age, however commonly seen in children and adolescent, a missing tooth structure can cause emotional trauma. Since, the maxillary incisors are commonly affected, accounting for 96% of all crown fractures giving an esthetic dislike<sup>2</sup>. Thus, the principle objective of management in such cases is rehabilitation of both function and esthetics.

Complicated crown fracture occurs in 2 to 13 % of all injuries<sup>3,4</sup>. The extents of fracture, stage of the root maturation are imperative in deciding the treatment plan. If no pulp exposure is present, the fragment can be bonded, if pulpal exposure had occurred depending upon the condition of tooth endodontic treatment, post or surgical repositioning can be done. If the fractured fragment is available reattachment is the most appropriate treatment<sup>5</sup>. The technique of reattachment was first reported by Chosack and Eildeman, where they treated a complicated crown fracture with root canal followed by cast post and core<sup>6</sup>. Tennery reported the use of acid etch and bond technique for reattachment<sup>6</sup>.

Several methods such as circumferential bevelling, placement of chamfer, placement of V shaped notch, placement of internal groove and superficial over contouring can be done to enhance the adhesion between fracture and remaining tooth fragment<sup>7</sup>.

This case report describes management of case of complicated crown fracture of maxillary central incisor by reattachment of fractured tooth fragment using glass fiber post, internal groove and circumferential bevelling to improve retention.

##### Case Report

A 21 years old male patient reported to the department of conservative dentistry and endodontics M.A.Rangoonwala dental college Pune, with complaint of broken tooth in maxillary anterior region. He had a history of accident 1 day prior, his medical history was non contributory. On extraoral examination, there was no soft tissue trauma. On intraoral examination Ellis class III fracture in the coronal portion of 11 was present. Which extended from middle 1/3<sup>rd</sup> of crown labially to 2mm subgingivally on the lingual aspect. The fragment was loosely attached. The radiographic examination showed complete root formation with no extrusion and no periapical change.

The entire treatment plan was explained to the patient and an informed consent was taken prior to the beginning of treatment. Local anaesthesia was administered; the loosely attached tooth

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fragment was removed using twizzer. The fragment was then verified for adaptation and was stored in normal saline to prevent dehydration and discolouration. Endodontic treatment was initiated, working length was determined using electronic apex locator (Root ZX, J Morita Corp, Japan). The canal was prepared using Protaper universal (Dentsply, Sirona USA) to size 40. The canal was continuously irrigated with 5.25% sodium hypochlorite and normal saline.

The root canal was dried with paper points (Diadent, Korea) and Obturated using gutta percha (Diadent, Korea) with endodontic sealer (Sealapex, Kerr, USA) using lateral compaction technique. Post space preparation was done using peesoreamers. The fiber post (FIBRA POST, Switzerland) was used. An internal groove placement was done in the fractured fragment of receive post. The root canal was etched with 37% phosphoric acid, blot dried and single bond universal adhesive (3M, USA) was applied. The post was luted using dual cured resin luting cement (Luxacore, DMG America). The incisor portion of the tooth and fractured fragment was etched and bonded using Luxacore (DMG, USA) followed by a composite overlay with appropriate shade match (B2 Filtex, 3M USA).



**Figure 1** From left to right : Preoperative image, Access opening, Working length determination, Obturation and post space preparation, Post cementation, Fragment attachment, Postoperative image

## DISCUSSION

Complicated crown fracture occurs in 2 to 13 % amongst all dental injuries<sup>17/8</sup>. Conventionally, the treatment of choice was a custom made cast post followed by crown. However, with the advent of new generation more improved dentin bonding agents, the scope of adhesive dentistry has increased<sup>8</sup>. When compared with cast post, reattachment of fractured tooth fragment is more promising in terms of restoring contact, contour, colour, incisal translucency and preservation of natural tooth<sup>8</sup>.

A reattached tooth is resistant to shear stresses, similar to intact tooth<sup>8</sup>. Reis *et al* compared the effect of different techniques and their fracture resistance, they found that simple reattachment without fragment preparation showed 37.1% fracture resistance, buccal chamfer 60.6%, superficial overcontouring 97.2% and internal groove placement restored 90.5% of fracture resistance<sup>8/10</sup>. However, literature suggests overcontouring and internal groove placement as best

techniques. In this case internal groove placement was done to increase the fracture resistance of restored tooth, followed by circumferential bevelling of the fractured fragment to increase surface area for bonding<sup>10</sup>.

The size of fractured part, pulpal involvement, the status of root formation, the type of post as well as the material used for reattachment are the key factors deciding success<sup>11</sup>. Fiber reinforced posts have several advantages over metal posts. They are passive, tooth coloured, more flexible than metal posts<sup>12</sup>. They need minimum preparation since resin cement uses the surface irregularities for retention. In this case dual cure resin was used which is a self etching self adhesive system. The dual cure resin cement has a good strength ensures complete curing and reduces microleakage.

## CONCLUSION

Reattachment of tooth fragment using fiber post is a effective, less invasive technique and efficiently restore the natural tooth anatomy and hence reattachment should be emphasized at the initial followed by other treatment options.

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