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CASE REPORT

ESTHETIC REESTABLISHMENT OF TRAUMATIZE TOOTH - A CASE REPORT

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ABSTRACT:
Most common traumatic tooth injury occurs in anterior maxillary teeth and it is widely seen in all age groups. Traumatized tooth make the patient social, psychological and esthetically disturb. There are various factors that determine treatment plan and prognosis like extent of fracture, endodontic involvement, periodontal status, biological width invasion, restorability of fractured tooth, presence/absence of fractured tooth fragment and the fit between the fragment and remaining tooth, esthetics. If the fracture is simple involving enamel and dentin only composite restoration is recommended, but if fracture is complex involving enamel, dentin and pulp and fracture line extending above the alveolar crest but below cervical margin and if fragment are available then reattachment of the fractured segment with fiber post reinforcement is best feasible option as it takes less chair side time, inexpensive , provides good and long-lasting esthetics, because the original morphology, color, and surface texture are maintained. This case reports on coronal tooth fracture case that was successfully treated using adhesive reattachment technique.
Key words: Esthetics, Fibre post, Dual cure resin, Fragment Reattachment.

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INTRODUCTION

Traumatic coronal fracture of permanent anterior teeth are the most common sequel of dental injury.[1,2] Falls, sport injury, fighting and road traffic accidents are the main causes of the tooth fracture. It causes esthetic, functional, phonetic and psychological problem.[3,4] Management of complicated crown fractures require a accurate diagnosis and t/t plan. Treatment approach is prejudiced by the extent and pattern of fracture (biological width violation, endodontic involvement, alveolar bone fracture), restorability of fractured tooth, presence/absence of fractured tooth fragment and itscondition for use,type of occlusion, esthetics,and prognosis.[3] If the fracture segment are present , it can be reattached to the remaining fractured tooth using dental adhesive material but it requires immediate clinical intervention otherwise it can damage the tooth and esthetic of the patient and may causes physiologic impairment. Reattachment of the fractured segment offers various advantages like it has a natural translucency,shape, contour, color hence provide better esthetics, it takes less chair sidetime,relatively cheap, minimal or without violation of biologic width,and established a positive emotional and social response of the patient[5.] If the fractured segment are available and are in close approximation to the fractured tooth then root canal treatmentfollowed by reattachment of the segment using fibre post is the best option it interlocks the two fragments,increases retention ,minimizes the stresses and offer mono block outcome.[6]

This article reports case of a reattachment of complicated coronal tooth segment using fiberpost technique.

CASE REPORT

A patient of age 26 yr was reported to department of conservative dentistry and endodontic,ZIAUDDIN DENTAL COLLEGE AND HOSPITAL,AMU,UP,after sustaining a crown fracture to his maxillary left lateral incisor following trauma.Clinical examination revealed fracture line present at the cervical portion of left lateral incisor. Fractured segment was mobile but was being held in place by the gingival attachment.Tooth was mobile and tender on percussion.(Figure 1a,1b) On intraoral radiograph examination a fracture line was present at the cervical area of 22,lamina dura was intact, no periodontal widening was seen,complete root formation was found w.r.t upper left lateral incisor.(Figure 2)It was diagnosed by

transillumination test. Prior to treatment, detailed dental, medical history were obtained and was noncontributory. Diagnosis of Ellis class III fracture was made as the pulp was involved.It was planned for single visit root canal treatment and reattachment of fractured fragment to the same tooth. Treatment plan was discussed with the patient and, informed consent was signed.

Fig 1a: Preoperative labial view

Fig 1a: Preoperative palatal view

Fig 2: Preoperative Radiograph

After administration of local anesthesia, mobile fracture segment was removed (Fig 3a, 3b) and to prevent discoloration and dehydration it was stored in sterile distilled water. Using endo access bur (DENTSPLY maillefer, Switzerland) access opening was done on the tooth no.22,working length was determined using apex locator and was confirmed by radiograph, root canal was enlarged to ISO size 60 at working length ,complete biomechanical preparation was performed using step back technique, and thorough irrigation was done with 2.5% Sodium hypochlorite during the preparation,master cone was confirmed by radiograph and obturation was done using lateral condensation technique. Post obturation radiograph was taken.(fig:4) After completion of the root canal treatment post space preparation was done by using paeso reamer and removed gutta percha from the coronal two third of the canal leaving 5mmguttapercha apically undisturbed. As the fracture line was below the gingival level palatally, it was decided to raise palatal full thickness mucoperiosteal flaps to gain access, incision was made mesial to 21and distal to 23(fig:5). Hemostasis was achieved. A prefabricated fibre post 1.1mm (Parapost-Fibre lux, Coltene Whaledent) was selected and tried to place in the post space and access was made on the fragment to receive the post(fig:6a ,6b). Canal was irrigated with 17% EDTA (PrevestDenpro), and saline and was dried with paper points. Canal, fragment and the post were etched with 37% phosphoric acid for 15 seconds and then rinsed with water and was dried using cotton pellet and paper point, Bonding agent (ADPER SINGLE BOND2, 3M ESPE) was applied to canal as well as post and light cured. The post was then luted with dual cure resin cement (Multilink, Ivoclar, Vivadent) with 2mm of its coronal portion extending into the chamber to fit the fracture segment. Coronal portion of the fiber post was cut to fit into the fractured fragment .The inner surface of the coronal fragment was similarly etched and bonded to the tooth with dual cure resin composite (fig6c). Excess material was removed. Suture was given using 4-0 black silk. Postoperative radiograph was taken. Composite resin was used to mask the fracture line. Occlusion was checked. The fracture line was examined and finishing and polished was done. Postoperative instruction to the patient was given to avoid loading of anterior teeth. After one week, patient was recalled for removal of suture (fig7) At the 1-year follow up, the tooth was clinically and radio graphically healthy and the crown was esthetically satisfactory.

Fig 3 a: Mobile fragment removed

Fig 3b: Retrieved fractured segment

Fig 4: PostObturation Radiograph

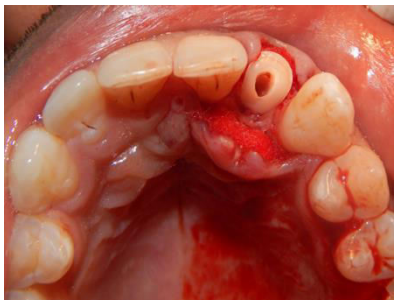

Fig 5: Palatal flap raised

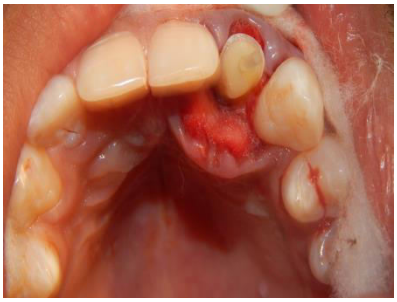

Fig 6a: Fitting of Post into the post space

Fig 6b: Access preparation

Fig 6c: Fragment reattached

Fig 7a: Postoperative labial view

Fig7b: Postoperative Palatal View

Fig 7c: Postoperative Radiograph

DISCUSSION

Patients with fractured tooth suffer from emotion, psychological and physical problem. Protection of mechanical and functional and esthetic integrity of the traumatized tooth is a challenge for dentist. Many conventional treatments like composite resin, laminate veneer, partial or full coverage crowns are time consuming, high priced and not conservative for a fractured tooth treatment[7]. There are various factor for determining the treatment plan and prognosis like the extent of fracture, endodontic involvement, periodontal status, maturity of root, biological width invasion, pattern of alveolar bone fracture, restorability of fractured tooth, secondary traumatic injuries, presence/absence of fractured tooth fragment and the fit between the fragment and remaining tooth, occlusion, esthetics, and finances[8,9].

Treatment options are composite restorations, orthodontic extrusion, surgical extrusion or crown lengthening followed by post and core supported restorations and reattachment of fractured fragment. Composite restoration is recommended in if there is less extensive fracture of enamel and dentine. Orthodontic extrusion or surgical extrusion is recommended before restoration in case if the fracture line is extending below the alveolar crest. Reattachment is recommended in case if the fracture fragment is available and fracture line extends above the alveolar crest but below cervical margin [8,9,10.]

In the above describe case, fracture line was present above the alveolar crest and below the gingival margin so composite restoration was not possible ,as proper isolation could not be achieved and fracture fragment was intact with slight mobility so we decided to do reattachment with the use of fiber post.

To re-establise the natural shape, contour, surface texture, occlusion alignment, and color of the fragment,reattachment is the best option as first described by Chosack and Eidelman in 1964[11].It is a procedure with minimal sacrifice of the remaining tooth structure it is less time taking and less expensive .Important point to be consider before reattachment is hydration of the fragment whenever it is outside the mouth, as it is necessary to maintain vitality and esthetic of the tooth and ensure adequate bond strength between the traumatized tooth and fragment .In this case tooth fragment was attached with the tooth so there was no problem of hydration.[12]

Reattachment of tooth fractured at the cervical level can be reinforced with the use of post as it interlocks the two fragments and minimizes the stresses on the reattached tooth fragment offer monoblock outcome ·With the recent improvements in resin based restorative materials, tooth colored fiber posts along with resin luting cement are of choice because of several advantages such as esthetics, bonding to tooth structure and low modulus of elasticity similar to that of dentin.[13,14]This case report was based on Ellis class III fracture, pulp was involved so root canal treatment of the tooth was decided to perform, followed by reattachment of fractured fragment with the use of fiber post

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