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MANAGEMENT OF COMPLICATED OBLIQUE FRACTURE OF MAXILLARY RIGHT CENTRAL INCISOR BY FRAGMENT REATTACHMENT : A CASE REPORT

Dental Science

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ABSTRACT

The increased incidence of traumatic injuries to anterior teeth is a consequence of sports activities, where the most common injuries are crown fractures. Complicated crown fractures are not uncommon in cases of severe trauma or sports related injuries. Such patients report with pain because of exposed pulp and need emergency care. It is important to consider the biological, functional, esthetic and economic aspects. The purpose of this article is to report a case that shows the multidisciplinary approach required to successfully management of a maxillary central incisor with a complicated oblique crown fracture of maxillary right central incisor. Successful pain management with immediate restoration of function, esthetics, and phonetics should be the prime objective when handling such cases.

KEYWORDS

Tooth Fracture, Fragment Reattachment, Esthetics, Pain Management

INTRODUCTION:

Trauma to the facial area represents a public health problem involving children and adolescents; it generally involves the teeth and their supporting structures. Crown fractures are the most common consequences of traumatic injuries that mainly occur in the anterior permanent dentition. Most dental injuries occur during the first 2 decades of life, especially between 2 and 3 years and between 8 and 12 years of age, occurring more often in boys than in girls.[1-2] Prevalence of trauma to maxillary incisors accounts for about 37%. Crown-root fractures represent only 0.3% to 5% of these injuries and require a complex and multidisciplinary treatment. Most common cause are Falls from bicycle, motorcycle, Car accidents; sports activities[3-5], Fight with and physical assault, Anterior positioning, Protrusion caused by the eruptive pattern.[6]

Factors which influencing the management of coronal tooth fractures are Biologic width violation, Endodontic involvement, Alveolar bone fracture, Restorability of fractured tooth, Presence/absence of fractured tooth fragment and its condition for use, Fit between fragment, Remaining tooth structure, Occlusion, Aesthetics, Finances and prognosis, Secondary trauma injuries (soft tissue status).[7-8]

Various treatment options have been mentioned in the literature for fractured crown, such as: Fragment removal followed by restoration, Fragment reattachment, Gingivectomy and osteotomy (crown lengthening), Orthodontic extrusion with/without gingivoplasty, Forced surgical extrusion, Extraction followed by surgical implants or fixed partial denture. In view of the treatment modalities for no complex crown fractures, fragment reattachment might be considered an acceptable option to restore traumatized dental elements.[9] This paper reports an atypical dental trauma case in a maxillary central incisor of a young patient with oblique crown fracture. A conservative restorative treatment which consisted in the reattachment of the tooth fragment followed by endodontic treatment was performed in order to preserve the dental element and to obtain maximum aesthetics.

Case Report:

A 25 year old male patient came to Department of Conservative Dentistry and Endodontics, Himachal Dental College Sundernagar with a chief complaint of Fractured maxillary upper front teeth due to fall 1 days back. Mild sensitivity of tooth was there with no contributory Medical history. There was no bleeding from nose or ear, no proptosis of eyes and no laceration or injury in the scalp region indicating no sign of head injuries. There was no bleeding from nose or ear, no proptosis of eyes and no laceration or injury in the scalp region indicating no sign of head injuries.The patient was fully conscious, pupils normal, breathing continuous, B.P and heart rate was normal and the patient was responding to verbal communication.

Intra-oral clinical examination revealed Ellis Class III fracture involving enamel, dentin and pulp (fig. 1) The fracture line was supra-gingival, at the junction of the middle and cervical thirds of the crown.The tooth exhibited mobility within physiological limit. The soft tissue was not injured, while the alveolar bone remained unaffected.

Fig 1

Radiographically, no associated root fracture and no evidence of root resorption was observe (fig 2).Fragment reattachment can be considered a fast and low-cost treatment solution, creating a positive emotional and psychological response in the patient.

Fig 2

Diagnosis was based on history, clinical and radiographic examination , a diagnosis of " Complicated, oblique crown fracture of maxillary right central incisor with pulpal involvement" was made. The recommended treatment plan included: Reattachment of the fractured segment using dual cure resin cement followed by Endodontic treatment. The current case report describes the management of a complicated tooth fracture of a permanent maxillary central incisor.

TREATMENT

The fractured segment was repositioned and was checked for proper adaptation.Then the fractured surface of the fragment was treated with 37% phosphoric acid gel for 15 sec, followed by delicate rinsing. An ethanol-based adhesive system (Adper Single Bond Plus, 3M ESPE) was then applied to the etched surface and light cured for 20 seconds. A

flowable composite (Filtek Flow, 3M ESPE, U.S.A) was applied along the fracture line and the fractured segment was then carefully repositioned on the tooth, paying special attention to the fit between the segments. When the original position was reestablished, excess resin was removed with a sharp explorer and the tooth was light cured for 40 seconds(fig. 3)

Fig. 3

The rubber dam was avoided as there was chances for displacement of fracture segment and the tooth was finished with diamond points.Occlusion was checked and post operative instructions were given to patient. After fragment reattachment, access opening was done with a round carbide bur, and pulp extirpation was done using barbed broach, working length was determined using Apex Locator (Root ZX, J Mozrita)which was later confirmed with a radiograph (fig. 4).

Fig 4

Cleaning and shaping was done until ProTaper file F5 reached upto full working length. Irrigation was done with 3% NaOCl & Normal saline then a final rinse was done with 17%EDTA followed by Normal saline. Then obturation was done using gutta percha and sealer (AH Plus)(fig 5). After 3 month follow up patient was asymptomatic (fig. 6). Patient was under observation for any periapical and periodontal problem.

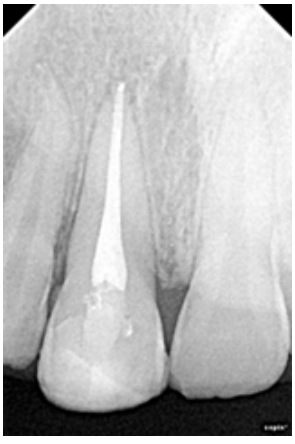

Fig 4

Fig 4

DISCUSSION:

The treatment performed in this clinical case report is one of the many possible options that could have been used to rehabilitate this patient. Reattachment of fractured fragment should be considered as a first treatment option whenever an intact fragment is available. Fragment reattachment becomes a fast, simple, and conservative technique that provides excellent rehabilitation of the esthetics and function. In addition, the treatment procedure is less time-consuming; thus, cutting the cost of the treatment[10] Reattachment of a fractured tooth fragment offers a viable option for the dental clinician. Function and esthetics may be restored with the use of this conservative and low cost approach. Fractures of the anterior teeth affect function and dental aesthetics and promote emotional problems for patients such as social isolation, depression, and feed abstinence, among other factors[11]. Restoration of fractured teeth with composite resin with the help of the acid etch technique is considered to be a highly aesthetic. Reattachment of the original tooth fragment gives an emotionally and socially positive response due to the protection of the natural tooth structure. The patient are more satisfied of the original fragment being used in the restoration of their fractured tooth and esthetically it is more pleasing to the patient[12]

CONCLUSION:

Reattachment of fractured tooth fragments appears as a valid alternative for conservative treatment in special situations involving the anterior teeth. The reattachment procedure can be improved with different adhesive techniques and restorative materials. Bearing in mind that it is a simple, fast, affordable, and esthetically predictable technique, tooth fragment reattachment can be a viable treatment alternative when the fragment is present and is in good condition, even if a perfect adaptation is not observable.

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