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Reattachment of anterior teeth fragments: A case report

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Abstract

Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects children and adolescents. One of the options for managing coronal tooth fractures when the tooth fragment is available and there is no or minimal violation of the biological width is the reattachment of the dental fragment. Reattachment of fractured tooth fragments can provide good and long-lasting esthetics. It also restores function, provides a positive psychological response, and is a relatively simple procedure. Patient cooperation and understanding of the limitations of the treatment is of utmost importance for good prognosis. This article reports on coronal tooth fracture case that were successfully treated using tooth fragment reattachment.

Keywords: anterior teeth fragments, dental trauma, children, adolescents

1. Introduction

Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects children and adolescents ^[1]. The majority of dental injuries involves the anterior teeth, especially the maxillary incisors because of its position in the arch, whereas the mandibular central incisors and the maxillary lateral incisors are less frequently involved. Dental injuries usually affect only a single tooth; however, certain trauma types such as automobile accidents and sports injuries involve multiple tooth injuries¹ Several factors influence the management of coronal tooth fractures, including extent of fracture, biological width, violation, endodontic involvement, alveolar bone fracture, pattern of fracture and restorability of fractured tooth associated root fracture, secondary trauma injuries soft tissue status, presence/absence of fractured tooth fragment and its condition for use fit between fragment and the remaining tooth structure, occlusion, esthetics, finances, and prognosis. Patient cooperation and understanding of the limitations of the treatment is of utmost importance for good prognosis.

When there is a substantial associated periodontal injury and/or invasion of the biological width, the restorative management of the coronal fracture should follow the proper management of those associated issues. Coronal fractures must be approached in a systematic way to achieve a successful restoration ^[2].

2. Case Report

A 34 years old male patient reported to the department of Conservative Dentistry and Endodontics, MIDSR Dental College and Hospital, India following trauma in upper anterior teeth due to fall from bike. On intraoral examination Ellis Class III fracture was seen with 11 which extended obliquely from incisal edge to the middle 3rd of tooth (Fig 1 a).



Fig 1: Fractured Fragment a) Intra Oral b) Radiograph

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On radiographic examination, fracture extension was confirmed and treatment plan was decided (Fig 1 b). Root Canal Treatment was started after rubber dam application (Fig

2) and completed in single sitting with sectional obturation (Fig 3 a b & c).



Fig 2: Rubber Dam Isolation Fragment



(a) Working Length

(b) Master Cone

(c) Obturation

A bevel is created on labial surface of tooth and Fracture fragment is attached using flow-able composite (Fig 4). Post-operative instructions were given. And Patient was kept

under medication. Patient was recalled for regular check up to 1 year [Fig 5].



Fig 4: Reattachment of Fragment



Fig 5: IOPA after attachment



Before

After

3. Discussion

Traumatic injuries involving tooth fracture can be treated by reattachment of the tooth fragment using an adhesive system acting as dental super glue ^[1]. The reattached tooth is restored to its original form, contour and margins and tends to be more compatible with the gingiva. The psychological trauma caused to the individual due loss of aesthetics can be managed by this procedure successfully ^[4].

In the present cases reattachment of the fractured fragment were possible due to advancements in dentin bonding technology and fiber post systems. As the fractured fragments were intact, use of natural tooth substance clearly eliminated problems of differential wear of restorative material, unmatched shades and difficulty of contour and texture reproduction associated with other restorative techniques ^[5, 6]. Band Pinching was introduced by Louis I. Grossman in 1988. It acts as a splint. Fracture reattachment by band pinching and fiber post is simple, economical and less time consuming and provides excellent results. Factor influencing the extent and feasibility of such repair include the site of fracture, size of fractured remnants, periodontal status, pulpal involvement, maturity of root formation, biological width invasion, occlusion, time and resources of the patient ^[7, 8]. Extensive damage of the tooth structure and missing fragment warrants reinforcement using fiber posts ^[2]. Tooth colored fiber posts have several advantages. They are more aesthetic when bonded to tooth tissue, modulus of elasticity similar to that of dentin and less chances of fracture ^[2]. Historically cast metal post and core were used for fracture reattachment ^[2]. The newer variety of non-metallic posts is made of either ceramic or fiber reinforced materials like carbon, quartz or glass in an epoxy matrix ^[2]. By using glass fiber post with composite core and with recent advances in adhesive techniques and materials one can create a Monobloc, a multi-layered structure with no inherent weak inter-layer interfaces ^[2]. Trope *et al* in 1985 showed that endodontically treated teeth can be reinforced with the use of resin composite restoration. The flowable composite reinforces the tooth, helps in achieving higher bond strengths and the materials available today, in conjunction with an appropriate technique, aesthetic results can be achieved with predictable outcomes ^[2].

4. Conclusion

Tooth fragment reattachment procedure offers ultraconservative, cost effective, safe, fast and esthetically pleasing results when fragment is available. Every attempt should be made to locate the missing tooth structure through a detailed history of the accident, careful examination and roentgenograms. The reattachment of the tooth fragment as a restorative procedure becomes possible only when it is available. This can be improved with different adhesive techniques and restorative materials.

5. Conflict of Interest Statement

The authors declared no conflict of interest in the present manuscript.

6. Informed Consent Statement

The patients signed an informed consent, kept in the records, in the archives of the MIDSR Dental College and hospital Latur.

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