

FRACTURE TOOTH REATTACHMENT: A CASE REPORT

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ABSTRACT

Coronal fractures of permanent dentition are the most frequent type of dental injury. The immediate restorative technique resolving the acute problem of traumatic tooth fracture with pulpal involvement. Fracture reattachment poses challenging conservative and economically viable procedure within the compass of a single visit. It can provide better and long lasting esthetics, improved function, and a positive psychological response and is a faster and less complicated procedure.

Key Words: Fragment reattachment, Tooth fracture, acid etch, orthophosphoric acid, dentin bonding agent, resin composite restoration,

INTRODUCTION

Uncomplicated crown fractures are frequent in dental injuries, especially in young patients. It is beneficial to quickly restore the function and the esthetics of the traumatized tooth. Immediate fragment reattachment is a therapeutic choice for uncomplicated anterior crown fractures, when the tooth is not luxated and the fragment is correctly stored. The immediate fragment reattachment is a very conservative treatment: it allows the restoration of the original dental anatomy, thus rehabilitating function and aesthetics in a short time, by preserving dental tissues.

Aim: The aim of this article is to present the clinical procedures for the immediate

fragment reattachment by accurate bonding procedures.

CASE REPORT:

A 16 yr old patient was injured during sports activity and sustained an uncomplicated crown fracture to the maxillary central incisors. (Figure.1) The fractured tooth segments were recovered at the site of the injury and placed in water and the patient came immediately to the dental clinic. After routine history taking and examination, a treatment plan was formulated to immediately reattach the dental fragment of the teeth. The operating field was isolated with rubber dam in order to prevent saliva or gingival fluids negatively affecting the adhesive procedures for reattachment. The vestibular surface of the fractured segments was

glued to a hand tool using gluing wax in order to facilitate the handling of the segment, and the fractured surface was treated with 37% phosphoric acid gel for 30 secs followed by delicate rinsing. The adhesive system was then placed on the etched surface and the fragment was kept away from the light until the fragment was to be reattached. In the oral cavity, the fractured tooth was treated with a 'total etch technique', that is, 30 secs of etching for enamel and 15 secs for dentine, using the 37% orthophosphoric acid gel and the adhesive system was applied. The fractured segment was then accurately placed on the tooth, paying special attention to fit between the segments. When it was felt that the original position had been reapproximated it was photopolymerized for forty secs making sure that minimal displacement of the fragment occurred before adhesive polymerization was complete. For esthetic purposes for both the left and right maxillary incisors a groove was made with an adamantine cutter over the fracture line. The groove was etched and retouched with resin after the adhesive resin was placed, a compound resin of transparent dye was applied to cover the demarcation line between the glued surfaces. The final touch was applied by using a fine grain adamantine cutter and by polishing it with decreasing grain adamantine pastes applied with special rotating felts. The final result (Figure.2) shows a more than satisfying aesthetic result with restored functionality.

DISCUSSION

Fragment reattachment is a conservative and economical approach in crown fracture cases compared to other options such as ceramic crowns and composite

build up. The techniques described in these case reports are reasonably simple, while restoring function and esthetics with a very conservative approach. Reports and clinical experience indicate that the reattachment of fractured coronal fragments results in successful short- and medium-term outcomes. Over time numerous techniques and materials have evolved for the reconstruction of injured teeth: resin crowns, steel crowns, orthodontic bands, ceramic crowns and resin composite restorations with and without pins. With the advent of adhesive dentistry the process of fragment reattachment has become simplified and more reliable. In this case series, innovative techniques of fracture reattachment depending on the complexity of the case have been discussed. Today, we have a lot of different approaches in treatment of fractured teeth depending on the location of the fracture.¹ Hayashi et al² indicated that, the best restorative methods needed to be identified for teeth with extensive loss of structure, and reinforcing pulpless teeth. However, when a tooth has more than 50% of its coronal structure missing, the use of a post-and-core foundation is recommended prior to restoration.³ In recent literature reviews, it has become clear that posts do not strengthen endodontically treated teeth, and their use is justified only for retention of the coronal restoration.⁴ The most common complication in post and core system is debonding.⁵ Root fracture is another reason for failure of the post-and-core system.⁶ Restoration with cast metal posts can cause wedging forces coronally that may result in irreversible failure because of fracture of an already weakened root.⁷

CONCLUSION

Because of larger incidence of trauma to dental tissues and their supporting structures, it is important to have proper knowledge of the techniques available and their indications, along with risk benefit ratio. The reattachment of the tooth fragment is possible only when the fragment is available and can be improved

with different adhesive techniques and restorative materials. The main concern is to educate the population to preserve the fractured fragment and seek immediate dental care.

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FIGURES:

Figure 1: Fracture Tooth



Figure 2: Postoperative photograph

