Management of Complex Crown Fracture using Fiber Post and Strip crowns: A Case Report

Rouaa Hassan¹, Marwan Al Akkad², and Chaza Kouchaji³,⁴

¹ Ongoing Master Degree, Pedodontic Department, Faculty of Dental Medicine, Damascus University, Damascus, Syria
² PhD student, Institute of Dentistry and Oral Sciences, Palacky University Olomouc, Olomouc, Czech Republic
³ Head of Syrian Pedodontic Association, Damascus, Syria
⁴ Professor, Pedodontic Department, Faculty of Dental Medicine, Damascus University, Damascus, Syria

Abstract

Traumatic dental injuries with enamel-dentin fracture had an impact on oral symptoms and quality of life in children independent of the other variables such as the age and gender of the children, caregivers’ schooling, monthly family income, dental caries, dental aesthetics and overjet.

The purpose of this paper was to present an esthetic solution with a glass fiber post and composite strip crowns in a complicated crown fracture.

Introduction

A fracture involving enamel and dentin with loss of tooth structure and exposure of the pulp (complicated crown fracture) [1].

In contrast to the primary dentition, permanent teeth suffer crown fractures more frequently than luxation injuries. The lower crown/root ratio and denser alveolar bone in the permanent dentition contribute to this phenomenon. Maxillary central incisors are again most commonly injured, and protruding incisors are at greatest risk [2].

Crown traumatic injuries to the permanent dentition (between fractures account for the highest percentage of all 26% and 76% of the dental injuries that have been reported in the dental literature [3].

Case report

A 9-year-old male patient reported to the Department of pediatric dentistry, Damascus University, with the complaint of trauma in the central incisors from 22 days. In oral examination (Figure 1), there was a pulp hyperplasia, the fracture line was in the cervical third, Vitality test was negative and percussion test was positive. Therefore, the tooth was non-vital. After examination and diagnosis, treatment was decided to restore the complex crown fracture with fiber post and composite strip crown.

Figure 1: Intraoral Photography

Local Anesthesia (lidocaine 2% with adrenaline 1/100.000) was given. Access was gained with 330 and Endo–z diamond bur. An electronic apex locator was used to...
determine the working length and was confirmed with radiography. The entire pulp tissue of the tooth was removed in one piece by the endodontic file (Figure 2). Enlargement of the root canal to ISO size 80 working length. During the biomechanical preparation Sodium hypochlorite gel (5.25 %) was used followed by final irrigation with saline. Paper points were used to dry the root canal, then obturated with zinc oxide eugenol sealer, and laterally condensed with gutta-percha (Figure 3).

The post spaces were prepared by peeso reamers drills. The fiber post was checked for the fit. Etch and bond (Tetric in ceram, Ivoclar Vivadent) the fiber post and the canal.

Core build up was done with dentine composite (coltene whaledent, inc). Dual cure cement was used for post cementation. The post was seated and excess material removed before light curing (Figure 4).

Celluloid strip crowns were used to build up the teeth. The celluloid crowns have been previously selected based on the mesial-distal width of the teeth, filled with shade A2 resin composite resin (coltene whaledent, inc) and inserted with pressure onto the incisor. After polymerization on the buccal and palatal surfaces, a sharp tip of the explorer was inserted at the gingival margin between the celluloid crown form and the polymerized resin composite to remove the crown form. Finishing, polishing, and occlusal adjustments were performed (Figure 5).

A radiographically follow-up after 3 months revealed the integrity of the periapical teeth (Figure 6).

**Discussion**

According to Andreasen, in 1972, dental injuries were classified as complicated and uncomplicated. The author explained that a justifiable reason for allotting these injuries...
into two main groups was the applicability in studies with a clinical therapeutic approach. This system comprises 19 categories, including injuries to the hard dental tissue and the pulp, to the supporting bone, to gingiva or oral mucosa [4].

Violence, traffic accidents and sports activities, have been identified as some of the major causes that contribute to dental trauma [4].

The management of crown fractures that expose the pulp is particularly challenging [2]. Pulp hyperplasia almost exclusively occurs in young teeth with an abundant blood supply and a large carious lesion. It is essentially an overgrowth of granulation tissue and it appears as a polyp arising from the pulp [5].

A pulpectomy involves complete pulp tissue removal from the crown and root and is indicated when no vital tissue remains. It is also indicated when root maturation is complete and the permanent restoration requires a post buildup [2].

Traumatized anterior teeth require quick functional and esthetic repair [6] using a strip crown as a mold for direct resin composite restoration. This provides a cost-effective treatment with operator friendly approach where most outstanding advantage is the minimum chair-side time with a single visit that is very important for young trauma patients. [7]. Because of the poor mechanical resistance of these materials, different approaches to strengthening composite materials have included glass fiber posts [6]. Traumatic dental injuries with enamel-dentin fracture had an impact on oral symptoms and quality of life in children independent of the other variables such as the age and gender of the children, caregivers’ schooling, monthly family income, dental caries, dental aesthetics and overjet [8].

Acknowledgement: None

Conflict of Interest: No conflict of interest.

References

Copyright: © 2021 Hassan R. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.