

FIBER POST APPLICATION

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ABSTRACT:

Traumatic dental injuries occurring to the anterior teeth is a condition frequently encountered. Due to trauma patients are affected both physically and psychologically. Traumatized teeth are being treated with fiber posts, composite build up and crown restoration techniques usually after endodontic treatment. In such cases treatment alone is not enough, should be approached in a multidisciplinary manner. In this case report, fiber post applications and its restoration with composite resin after root canal treatment of crown fracture containing pulp are described.

Key words: Trauma, Fiber Posts, Composite Restorations, Trauma Classifications



INTRODUCTION:

The fractures in the teeth can be observed due to excessive stress after traffic accidents, sports activities, fight and occlusal function.

Clinical examination is one of the most important steps in the diagnostic phase. Dental injuries may be associated with injuries to the head and neck. In clinical examinations, dentists should not only focus on dentoalveolar region. Except for the major complaint of the patient, the extraoral examination, intraoral soft tissue examination, radiographic examination should be done in a careful manner^[1].

Trauma are classified in different ways with the aim of providing ease in the assessment and treatment planning stage. Among them, the most used ones are Ellis, Andreasen and WHO^[2].

1.1. Ellis classification (Tooth fractures)

Class 1 – Simple fracture of the crown not involving dentin

Class 2 – Extensive fracture of the crown involving dentin

Class 3 – Extensive fracture of the crown involving dentin and pulp exposure

Class 4 – Traumatized tooth that has become non-vital

Class 5 – The effect on the tooth that tends to dislocate the tooth from the alveolus.

Class 6 – Avulsion: The complete separation of a tooth from its alveolus

Class 7 – Displacement of tooth (without fracture of crown or root

Class 8 – Fracture of the crown en masse and its replacement.

2.1. Andreasen classification

Grouping is made according to the tissue trauma affects.

2.1.1. Hard dental tissues and pulp injury

- a) Cracks in Enamel
- b) Enamel Fractures (Uncomplicated Crown Fracture)
- c) Enamel And Dentine Fractures (Uncomplicated Crown Fracture)
- d) Fractures Which Contains Enamel, Dentine And Pulp (Complicated Crown Fracture)
- e) Fractures Which Contains Enamel, Dentine And Cementum (Uncomplicated Crown Fracture)
- f) Fractures Which Contains Enamel, Dentine, Cementum And Pulp (Complicated Crown Fracture)
- g) Fractures Which Contains Dentine, Cementum And Pulp

2.1.2. Periodontal tissue injuries

- a) Concussion
- b) Subluxation
- c) Lateral Subluxation
- d) Intrusion
- e) Extrusion
- f) Avulsion

3. Who classification

- a) Enamel Cracks
- b) Uncomplicated Crown Fracture
- c) Complicated Crown Fractures
- d) Uncomplicated Crown-Root Fractures

- e) Complicated Crown-Root Fracture
- f) Root Fractures
- g) Concussion
- h) Subluxation
- i) Intrusion
- j) Extrusion
- k) Lateral Luxation
- l) Avulsion

CASE DETAIL:

In this case report, a high school student consulted Inonu University, Faculty of Dentistry, Department of Restorative Dentistry owing to fractures and pain related to trauma occurring on upper central teeth. After the anamnesis, it was determined that the fractures were lost and the patient came to the clinic just after the trauma and the patient was found not to be of any systemic disorders. Not any pathology was found in extraoral examination. In radiographs taken from the patient was observed thickening in the lamina dura and perforation in pulp.(Figure 1-B1) The patient was diagnosed with complicated crown fracture. Following root canal therapy of the two top central tooth (Figure 1-B2), these teeth were restored by fiber supported Postle and reintegrated aesthetics and function (Figure 1-H).

According to the classification ellis, case was grouped as class 3 (Extensive fracture of the crown involving dentin and pulp exposure). According to the Andreasen classification, Hard dental tissues and pulp injury were grouped class

d. (fractures which contains enamel, dentine and pulp (complicated crown fracture)). When it comes to the Periodontal tissue injuries, case was grouped in class c (lateral subluxation). And lastly, according to the Who classification, case was grouped in class c (complicated crown fracture).

After inserting the posts into the pulpal canal, the transparent matrix band has been located on the mesial and distal ridges and has been fastened with appropriate wedges. Then, it was restored using composite resin by layering. At last, the restoration surfaces were polished with finishing discs (Sof-lex, 3M ESPE, USA). The patients were evaluated after nine months and aesthetically not any broken or decaying teeth were determined.

DISCUSSION:

While dental injuries cause a slight effect in the mouth and on the surrounding soft tissue and in teeth as to the severity of trauma, it usually emerges as a serious problem affecting the patients in many aspects like pain, function, aesthetics and psychologically [2].

In the conservative treatment of the teeth treated posttraumatic endodontically and with an excessive amount of material loss, a root support is needed in order to support the restoration [3]. The general objectives of the post core construction is to support the teeth with the support of root canal [4]. However, post placed in the teeth and the operations done affect the mechanical strength of the tooth after endodontic treatment [5].

One of the biggest problems that leads to fail in treatment during the Post core applications is the root perforations that may arise during the preparation of post space [6,7]. In the retrospective study, while the failure rate in teeth treated with the posts which are equal to the height of the crowns in length is % 2.5, this rate is % 25 in teeth treated with the posts of one fourth of the length of the crown [8].

Fiber post systems are used routinely today. Core structure of fiber post placed into the root canal can be finished with composite. Thus, as fiber reinforced posts have a hardness close to dentin, it is able to minimize the risk of root fracture [9-16]. The biggest drawback of the post system bonded with adhesive resin and resin cements is that the difficulties may be encountered in cases where the root canal is needed to be removed [17-19].

CONCLUSION:

In patients who have traumatic fractures as a result of pre-dental crowns and require root canal treatment, the use of fiber-post system is deemed appropriate to strengthen the root structure and to fulfill aesthetic appearance and function. Composites are applied by lamination methods during the tooth and core forming in order to minimize polymerization shrinkage and patients would be able to use their teeth for a long time if the composite resins are applied according to the instructions recommended by the manufacturers and if the occlusion is finally checked. Resumption of patients to periodically done controls and be given

the necessary treatment and oral hygiene

affects the long-term success.

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FIGURES:



Figure 1. A: The intraoral clinical picture of patient, B: clinical appearance of patient's teeth, B1: Posttraumatic radiographs and the expansion in lamina dura, B2: The radiographs taken after root canal therapy, C: The view from the palatal teeth, D: the root canal treatment was extracted with drills which are equal to the diameter and length of fiber post. E. and F. : Fiber posts were inserted into the slots opened with Driller. G: The around of fiber post was enclosed with flowable composite them. H: Fibers which were closed with fluent composite were restored with condensed composite using layering techniques.