



Dental Transfixation: Clinical Case Report

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Summary

This study aimed to report a clinical case, demonstrating the transfixation of a root fracture on tooth 11 due to trauma by contact sport, using glass fiber post and composite resin. The results obtained were quite satisfactory, restoring tooth function and esthetics, recovering the patient's oral health.

Keywords: glass fiber post, composite resin, Operative Dentistry.

Introduction

Modern dentistry has been through major progress regarding dental materials and restorative techniques. Clinical procedures that prioritize return and rehabilitate teeth esthetics have been very requested by patients, requiring a more natural reproduction.

Root fractures are observed more frequently in anterior teeth. Thus, it can compromise the esthetics of the smile as well as the patient's masticatory function, phonetics and social interactions [1].

For restoration of teeth with endodontic treatment, intra radicular posts combined with resin materials represent a clinical alternative strengthening the remaining tooth structure. Glass fiber posts have

a modulus of elasticity similar to teeth, are esthetic and also have chemical adhesion to tooth remainders. These posts are used in different clinical situations: dental transfixation, root canal filling, contentions and as a coronary reinforcement structure for cores [3-6, 11-13].

Dental trauma, for many years, was one of the main reasons for tooth extractions. This clinical situation, whenever possible, should be fixed in anterior teeth, which have a high degree of complexity in the patient's smile esthetics. Therefore, transfixation is a method that can be used to keep the fractured tooth in the patient's mouth. Transfixation, with the help of prefabricated glass fiber posts is a feasible alternative, as they provide esthetics and have a modulus of elasticity similar to the teeth [9].

This study aims to report a clinical case, demonstrating the transfixation of a root fracture using glass fiber posts and composite resin.

Materials and Methods

Male patient, 26 years old, arrived at the Dental Clinic of the Dentistry Course at Universidade Severino Sombra, in Vassouras/RJ-Brazil, complaining of pain. The patient reported that he was an MMA (mixed martial arts) fighter and was looking routine care. After a radiographic examination, a vertical fracture was diagnosed on the root of tooth 21. Clinical examination showed an aspect of normality in the clinical crown and gum tissue (Figures 1 and 2).

A tooth transfixation procedure with glass fiber post and composite resin was proposed to the patient. It was also reported to the patient that it would be necessary to perform an endodontic treatment. The patient agreed to the terms of the treatment plan.

In the following clinical session, the endodontic treatment was conducted with the help of an operative microscope. Seven days later, the transfixation procedure with a prefabricated glass fiber post (Tampered Exacto, Angelus, Brazil) was performed. The canal was prepared, clearing two thirds of the endodontic treatment (Figure 6). The post #2 was selected and cut so the crown portion of the tooth could be filled (Figures 3, 4 and 5).

After cutting the post, silane agent (Angelus, Brazil) and BISGMA adhesive (Fusion Duralink, Angelus, Brazil) were applied. In the canal, Phosphoric Acid 37% (Angelus, Brazil) was applied for 30 seconds, rinsed and dried with help of paper cones and the adhesive system (Fusion Duralink, Angelus, Brasil) was applied. Resin sealer was prepared (Cement Post, Angelus, Brazil) and inserted into the radicular canal with a Centrix syringe. The post was adapted to the canal, after insertion of the sealer, waiting for chemical polymerization of the sealer. Finally, the tooth crown portion was filled with micro hybrid composite resin (Charisma Diamond, Heraeus, Germany) in color A2 and light cured for 20 seconds (figures 4, 5 and 6).

Then, occlusal adjustments were performed and subsequent finishing of the restoration. A final x-ray was taken, observing the success of the treatment and the patient was instructed to return every six months for treatment maintenance (Figure 7).

Figure 1 - Initial clinical aspect



Figure 2 – Vertical fracture in the middle third on root of tooth 21

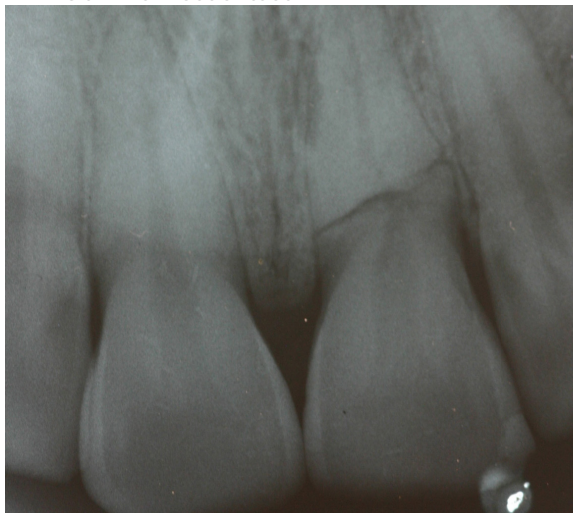


Figure 3 – Canal treated and prepared for the post sealing



Figures 4 and 5 – Test and cutting of post



Figure 6 – Filling with composite resin

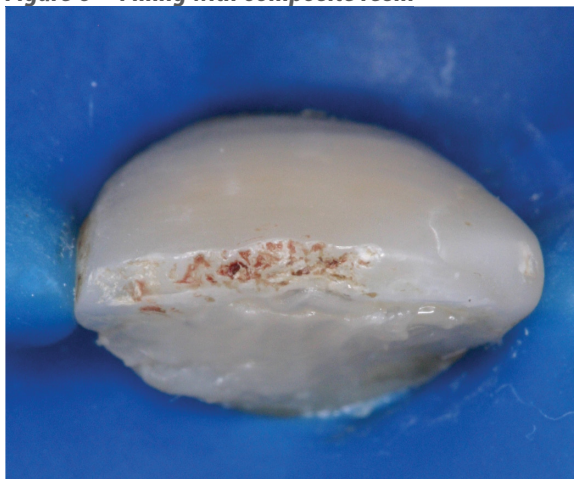
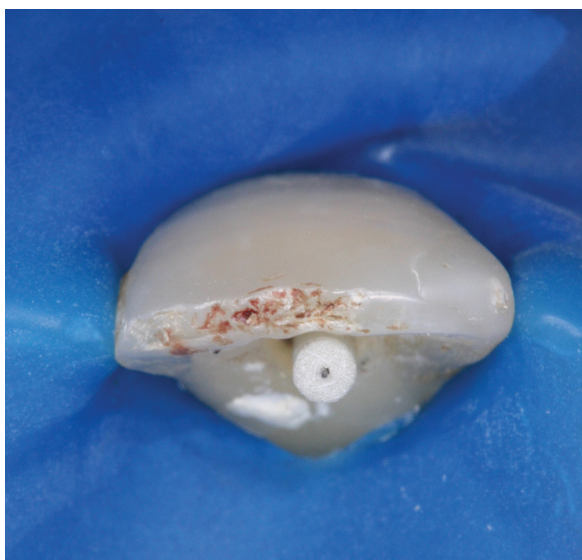


Figure 7 and 8 - Smile aspects and final x-ray



Results and Discussion

Success of adhesive restorative treatments increased their demand from patients, especially in esthetic procedures on anterior teeth. The risk of dental fracture is directly related to the quality and quantity of the dental remainder.

Restorations in endodontically treated teeth will promote esthetics, strength, capacity with the goal of preventing marginal microleakage; in cases of dental fractures, they must restore the fracture line [12], which was performed in this clinical case report.

The crown fracture mechanically compromises the tooth, making it more susceptible to masticatory forces. Thus, temporary restoration must protect the tooth during the endodontic treatment and the adhesive restorations, especially those reinforced with fiberglass posts, as they should be the therapy of choice. Glass fiber acts as a rigid band that when stretched over the dental surface provides resistance, creating a strong bridge between the fractured fragments [2, 7, 14]. This philosophy was decisive to set the restorative treatment for this clinical case report.

Glass fiber posts feature excellent bending and elasticity modulus similar to teeth, restoring and minimizing the spread of radicular fractures. They are constantly used on teeth with endodontic treatment and compromised crown structures [8].

In the market, there are many adhesives systems and resin sealers, so learning about the compatibility between sealers and adhesive systems is important for a successful treatment [10]. In this study, we used chemical polymerization resin-based sealer combined with a multi-purpose adhesive system, with primer and adhesive applied separately.

The latest advances in adhesive techniques provide more efficient clinical treatments to professionals, which stand out by reinforcing the remaining tooth structure [7]. It is up to the DDS to perform the correct diagnosis and plan the best restorative treatment.

Final considerations

Prefabricated glass fiber posts, due to their biomechanical features, are the method of choice for this clinical situation, as it is an effective procedure with simple handling.

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