Prosthetic Rehabilitation of a Patient with Avulsed Anterior Teeth

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ABSTRACT

Anterior dental avulsion developed after trauma have a special importance, because besides causing lose of function or poor esthetics seen, they may also lead to psychological problems in patient life. To overcome the lack of teeth, there are many prosthetic treatment options. Fiber-assisted resin bridges are the most conservative one among these options. In this case report, prosthetic rehabilitation with fiber-reinforced composite bridge and follow-up period of a patient with post-traumatic teeth avulsion is described.

Keywords: Avulsion, Fiber-reinforced composite bridge, Trauma.

INTRODUCTION

Edentulism is a problem which has functional, phonetic, esthetic and psychological effects on patients. To overcome this problem, there are various type of prosthetic treatments. Fiber-assisted resin bridges are the most conservative one of them. Especially, it is a good treatment option for restoration of mobile teeth that is following up periodontal treatment, before the complex restorations and after dental implant surgery and before loading implants.

Fiber supported bridges are also cheaper than other treatments and takes short duration of time. As well as rehabilitation of the edentulous area it serves as a support splint to the teeth. Fibre-supported bridges are hygienic and nonallergenic. The implementation of body part of fiber-reinforced composite resin bridge can fixed by using direct or indirect method, applying preparing the ceramic, composite, acrylic teeth or extracted teeth.

In this case report, prosthetic rehabilitation with fiber-reinforced composite bridge and follow-up period of a patient with post-traumatic teeth avulsion is described.

CASE REPORT

A-20-year-old patient was referred to Suleyman Demirel University, Department of Emergency Medicine in May, 2009, for the replacement of two avulsed central teeth after trauma and the avulsed teeth were reimplemented immediately in emergency medicine. But unfortunately, teeth were reimplemented into the alveolar socket incorrectly; the 11 was replaced to alveolar socket of 21 and also the 21 was replaced to the alveolar socket of 11 (Fig. 1).

The patient’s central teeth were endodontically treated in June 2009. Two years after the endodontic treatment, patient was referred to our hospital with pain in his left central tooth in June of 2011. On examination, it was found that both of the reimplemented teeth are extremely mobile. Due to the patient’s request and mobility of the teeth, we decided to extract both of the central teeth and solve the esthetic and functional problem caused by the extraction with prosthodontic treatment.

The treatment options were discussed with the patient and, with the consideration of financial status of the patients, large bone defects and age, the treatment plan was constructing composite laminate veneer for lateral incisors and fiber-assisted resin bridge for the missing central teeth.

Dental cross-bite of upper lateral incisors are diagnosed, so the patient was referred to an orthodontist. After 2 months of orthodontic treatment, cross-bite was corrected and patient’s brackets were debonded for prosthodontic treatment (Figs 2A to C).

Impressions were taken after minimal preparations of upper lateral incisors for composite laminate veneer. After the preparation of composite laminates for prepared lateral teeth on the model, acrylic teeth for missing central teeth were prepared to fit the remaining space. The acrylic teeth with palatal grooves were polymerized (Everstick C&B, Stick, Tech Ltd, Finlandiya) with fiber via flowable composite on the model (3M Filtek Flow; 3M ESPE, St Paul, USA) and made ready for the replacement to the patient.

Fig. 1: Patient’s first referred appearance to our clinic
The dental plaque on support teeth was removed by tooth polishing. Lip retractor and cotton rolls were placed for the isolation. Thirty-seven percent orthophosphoric acid was applied for 15 s to palatal, proximal and labial surfaces of adjacent teeth for etching process (3M ESPE, St Paul, USA) and beam polymerization was achieved by applying adhesive bonding agent for 10 seconds (3M Single Bond Adhesive, 3M ESPE, St Paul, USA).

The composite laminates that were prepared on the model coated with lightcure resin cement and placed onto the buccal surfaces of supporting teeth. After 2 seconds polymerization of the resin, the cement debris was removed with probe, and polymerization process was completed by applying LED light from buccal and lingual surfaces each tooth for 40 seconds.

Flowable composite was applied to the lingual surfaces of support teeth and the arms of fiber reinforced composite bridge, and the bridge was placed by the finger pressure. LED device was applied for 40 seconds from the buccal and lingual surfaces of each tooth. The fiber surface, which is open to the oral environment after polymerization, was covered with a thin layer of fluid composite was polymerized for 40 seconds. After checking centric and eccentric occlusal contacts, composite debris was removed, and the teeth were polished (Figs 3A to D).

DISCUSSION

Patients who will be treated with FRC bridge restoration should be chosen carefully. Localization of the teeth, the length of the edentulous space and dental occlusion should
be considered. Preparation should be done in areas with inadequate mechanical resistance. These bridges should be used in the areas which are under excessive stress and peak load force and patients with deep bite carefully.\textsuperscript{11-13} Premature occlusal contacts should be avoided for centric and eccentric movements of FRC bridge restorations.\textsuperscript{14} Cementation of the prosthesis should be done carefully and in accordance with the procedure. Because, the success of cementation depends on the adhesion of resin cements. Ceramic, acrylic or composite teeth can be selected for the body of the dental prosthesis. Although ceramic teeth have esthetically superior modulus of elasticity, choosing acrylic teeth is more suitable because of acrylic has closer modulus of elasticity to the teeth\textsuperscript{15} is esthetically adequate and can create cross-linkings with composite. Also, selection of acrylic teeth is a easier and faster method than direct composite body preparing.\textsuperscript{16}

Fiber-reinforced composite (FRC) bridges can show good long-term and esthetic results with appropriate case selection, design and adhesion conditions.\textsuperscript{17} Clinical studies showed that FRC bridges can be used successfully in a period of 5 to 10 years.\textsuperscript{18-21} Also sensitivity in the construction phase of restoration directly affects the life of the restoration.

It is indicated for patients who rejecting comprehensive treatment on financial grounds and has difficulty to tolerate prolonged therapy procedures. This treatment method stands out among other prosthodontics procedures because it doesn’t require long time and tooth preparation.

REFERENCES


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