

FİBERLE GÜÇLENDİRİLMİŞ ADEZİV KÖPRÜLER: BİR VAKA RAPORU

FIBER REINFORCED RESIN BONDED FIXED PARTIAL DENTURES: A CASE REPORT

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Özet

Son yıllarda fiberle güçlendirilmiş kompozitler molar dişlerde bile adeziv, estetik ve metal içermeyen restorasyonların yapımını gündeme getirmiştir. Fiberle güçlendirilmiş kompozitlerle yapılan adeziv köprüler geleneksel metal destekli seramik restorasyonlara göre daha ucuz bir tedavi alternatifini sunmaktadır. Az miktarda diş preperasyonu istendiğinde veya özellikle kaybedilen dişin yerine konması için kısa bir zaman gerektiğinde fiberle güçlendirilmiş adeziv köprüler tercih edilebilir.

Bu vaka raporu direkt olarak hasta ağızına uygulanan fiberle güçlendirilmiş adeziv köprü restorasyonu anlatılmıştır.

Anahtar Kelimeler: Fiberle güçlendirilmiş kompozit, adeziv köprüler.

Abstract

Over the last few years, fiber-reinforced composite has offered the dental profession the possibility of fabricating adhesive, esthetic and metal-free tooth replacements even in case of molar teeth. Following advances in fiber-reinforcement technology, fiber-reinforced composite resin now represents a lower-cost alternative to traditional metal-ceramic for the construction of resin-bonded fixed partial dentures. When minimal tooth reduction is desired, or especially if the missing teeth need to be replaced in a short time period fiber reinforced resin-bonded fixed partial dentures may be a good solution for these patients. This case report presents the treatment of a patient restored with directly applied fiber-reinforced resin-bonded fixed partial denture.

Key words: Fiber reinforced composite, resin bonded fixed partial dentures.

Introduction

Resin bonded fixed partial dentures (RBFDP) luted with adhesive procedures offer an alternative for the restoration of single missing teeth in posterior quadrants. The development of dentin adhesive systems has led to simpler and minimally invasive preparations.¹ Fiber-reinforced composites (FRC) have added further advantages to these procedures, because of their easy handling, natural color matching, marginal integrity, and resistance to component wear and fracture.^{2,3}

Patient selection for an RBFDP technique is an essential requirement for clinical success.^{1,4} Each situation must be evaluated to determine whether the location-replacement of a single posterior tooth^{5,6}-, available room, a space of 20 mm or less

between remaining teeth,⁶ and the healthy clinical condition of remaining abutments are present.²

The occlusion of the intended treatment must be assessed on an individual basis, because a higher incidence of debonding has been observed in patients with parafunctional habits.^{7,8} Consequently, RBFDP approach may not be the first choice in such situations.

The RBFDPs have been noted to be useful when the preparation involves subgingival finish lines and impedes adequate rubber dam isolation.² The use of supragingival margins provides lower risk of periodontal inflammation and therefore increased health of supporting tissues.⁹

RBFDP prepared with FRC a treatment option deserving special consideration in view of its multiple advantages, particularly its conservative preparation approach.¹ There are not enough studies are presently available on the durability of these restorations, underscoring the importance of careful patient selection, adequate planning of the design, precision preparation, correct choice of materials, and meticulous bonding techniques as important factors that influence the success

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of this type of restoration. This clinical report presents a situation that illustrates the advantages of RBFPD.

CASE REPORT

A 25-year-old woman, who had missing maxillary right first premolar and mandibular right first molar, was referred to the Dicle University Faculty of Dentistry, Department of Prosthodontics (Figure 1a, b). On intraoral examination, it was seen that the patient had good periodontal health and stable intercuspal position with normal vertical and horizontal overlap, and canine guidance in lateral excursion (Figure 1c).

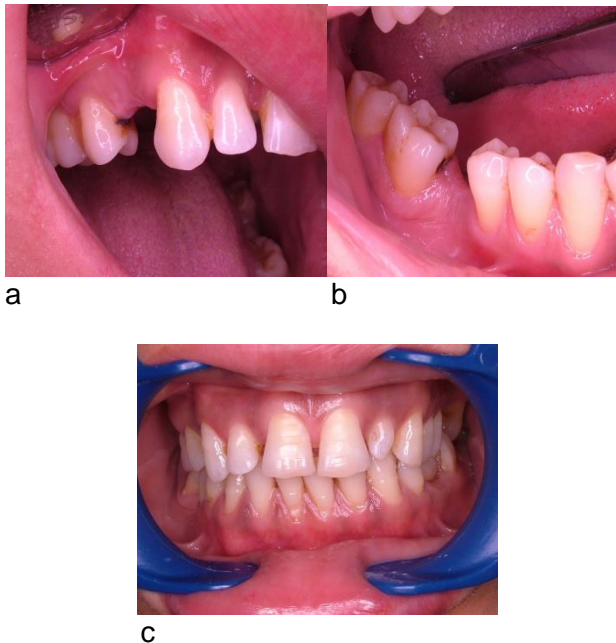


Figure 1: Initial clinical presentation.

After radiographic evaluation and occlusal analysis, different treatment options were suggested to the patient. The patient rejected the placement of a single-tooth implant for the missing teeth because of the duration of therapy and requirement for surgical intervention. Likewise, she refused a conventional FPD which would have required removal of healthy dental tissue and involved a higher risk of pulp exposure.

Because of the occlusal factors were favorable (absence of bruxism, good occlusal stability, and presence of all remaining teeth), the patient selected a conservative approach to have restored the missing maxillary right first

premolar and mandibular right first molar with polyethylene fiber-reinforced (Ribbond; Ribbond, Inc, Seattle, USA) The clinical procedures began with proximal cavity preparations for the inlays. The occlusal portion of the cavity preparation should allow for sufficient space to place the polyethylene fiber and composite to ensure a good esthetic result and adequate intracoronal resistance. This was achieved by preparing the isthmus to a width of 1.5 to 2.0 mm in premolars and 2.5 to 3.0 mm in molars, with reduction of the occlusal surface a width of 2.0 to 2.5 mm.³ The proximal boxes extended gingivally to improve the stability of the restoration, leaving the cervicoproximal cavity margin located in supragingival enamel.

After cavity preparation (Figure 2), one piece of reinforcement fiber, which had been coated with bonding agent (All Bond II Dental Adhesive System; Bisco Inc, Schaumburg, USA.), was packed into the inlay cavity of an abutment tooth and free end of fiber was extended to the inlay cavity of the other abutment tooth (Figure 3).



Figure 2: Cavity preparation



Figure 3: Ribbon placed

The bulk of the crown of the pontic and the inlay cavity restoration of the abutment

teeth were formed using a layer of hybrid resin composite (Z100 MP, 3 M Espe AG, Seefeld, Germany). The resin restoration had cured for 40 sec for each side with a resin composite-curing unit. Then, the restoration was given a final shape by finishing and polishing. (Figure 4, 5) At the clinical follow-up examination, 6 months later, the patient was doing well and had no problems with the restoration.

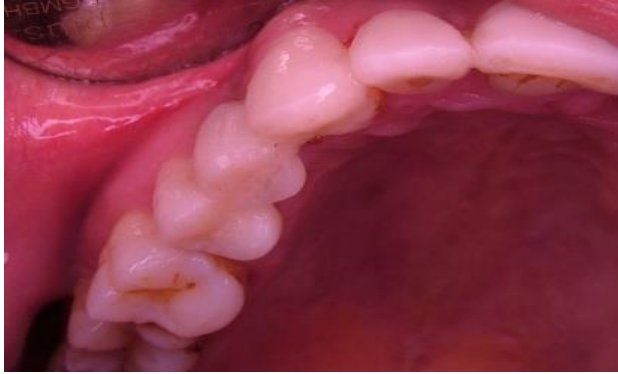


Figure 4: Occlusal view of definitive restoration



Figure 5: Buccal view of definitive restorations

DISCUSSION

Minimal or no tooth preparation of the abutment teeth is wished for the replacement of missing teeth with FRC RBFPD.¹⁰ Compared to metal RBFPDs, the favourable features of the FRC RBFPDs are the esthetic nature of the framework, low cost of restoration, the easier possibility of repair and adjustment of the construction.¹¹

It was reported that RBFPD showed a survival rate of 74% after 4 yr.¹² A difference was reported between survival rates of posterior RBFPD in the maxilla 81% and the mandible 56% after 2.5 yr.¹³ Clinical performance of RBFPD reinforced by an UHMWP has also reported a 91.3% survival at

the end of two years and 78.3% after a maximum of 3 years.¹⁴ Cenci et al¹⁵ concluded 81.8% survival rate after 84 months (7 years).

The potential advantages of direct technic as used in this study are self-evident. First, the procedure can be completed in one appointment and, apart from the fiber material, requires no unusual materials or equipment. Second, the periodontal apparatus of the abutment teeth is left entirely uninvaded. Third, the interdental spaces can be shaped to facilitate access for oral hygiene. Fourth, because this approach is relatively less invasive, it permits the patient the option of other, more traditional tooth replacement methods in the future. Fifth, repairs can be carried out directly, without the need for any complicated techniques. Also, a further advantage is the fact that control of the entire procedure remains with the operating dentist. Adjustments to the design, aesthetic details, and occlusal and soft-tissue relationships may be carried out immediately, or in a minimum of time, during follow-up appointments.¹⁶⁻¹⁹

CONCLUSION

Directly applied FRC RBFPDs are indicated for chairside tooth replacements. Compared to traditional treatments FRC RBFPDs permit low cost and esthetic restorations, the easier possibility of repair and adjustment of the construction.

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