Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(1), 3188-3192 | ISSN:2251-6727

Tooth Replacement Using Natural Tooth Pontic with Fibre Reinforced Composite- A case Report

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(Received: 27 October 2023 Revised: 22 November Accepted: 26 December)

KEYWORDS

Tooth Replacement, Tooth Pontic, Fibre Reinforced

ABSTRACT:

Loss of anterior tooth may be a catastrophic event for the patient. An immediate replacement is important, to provide a positive psychological approach and to maintain the facial aesthetics and phonetics. The resin-bonded Fixed Partial Denture (FPD) is a valid treatment option in selected cases. A 43 years old male patient reported to the Department of Prosthodontics, Crown and Bridge and Implantology at Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India with a chief complaint of extremely mobile tooth in the upper front region. Retrograde cavity preparation was done to remove the coronal pulp. Then the crown and the root of the tooth were separated and pontic was hprepared. Followed by this, the fibre was reinforced in between the teeth adjacent to the extracted tooth and was cured. In the end, the extracted tooth that was prepared as the pontic was placed back to its original position and the aesthetics were maintained.

Introduction

Loss of anterior tooth may be a catastrophic event for the patient. An immediate replacement is important, to provide a positive psychological approach and to maintain the facial aesthetics and phonetics. Conservation, natural preservation, minimal invasion, aesthetics and cost are some of the important factors that are considered when a missing tooth is replaced.[1] A conventional PFM bridge is the most invasive treatment in terms of the tooth reduction. The resin-bonded Fixed Partial Denture (FPD) is a valid treatment option in selected cases.[2,3] Traditionally, metal alloy has been used as the material for the framework, but Fiber-Reinforced Composite (FRC) is advocated today for their favourable elastic modulus as compared to metals and because of the better adhesion of the composite luting agent to the framework.[2,3]

Resin-bonded bridge (RBB) is a conservative fixed partial prosthesis that provides esthetic and some functional demands, such as speaking, space maintenance, and lip support in anterior regions.[4] RBBs are used to replace a single missed tooth, whereas the adjacent abutment teeth are sound and have enough enamel available for adhesion.[5] In comparison to conventional FPD, RRBs need minimally invasive preparations and consequently cause less tooth sensitivity and less caries susceptibility. They also need fewer visits and have lower costs. In addition, RBBs can splint the mobile teeth where indicated, to improve patient comfort and spread occlusal forces across multiple abutment teeth.[5]

With recent advances in adhesive materials as well as composite resins, an RBB may be fabricated with fiber-reinforced composite (FRC) resin instead of older metal frameworks and can provide better adhesion of the luting agent to the framework, less total expenses, and more esthetic.[6]

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JCHR (2024) 14(1), 3188-3192 | ISSN:2251-6727

Case report

A 43 years old male patient reported to the Department of Prosthodontics, Crown and Bridge and Implantology at Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India with a chief complaint of extremely mobile tooth in the upper front region. No relevant medical or habit history was recorded. There was a history of trauma with respect to tooth 21. Pre-operative extraoral photographs of the patients were clicked. The patient showed Convex Profile. There were no abnormalities with respect to the TMJ and lymph nodes. Patient's face showed no asymmetry. Later, pre-operative intraoral photographs were clicked as well. The occlusal view of the maxillary and mandibular teeth was carefully examined. Grade III mobility with respect to 21 was observed along with mild crowding with respect to lower anteriors. Pit and fissure caries with respect to 17, 27, 37, 47, 35 were noticed along with grade I stains and calculus. The dentist concluded the diagnosis to be Grade III mobile non vital tooth with respect to 21. Multiple treatment options were considered such as dental implant, fixed partial denture and removable partial denture. Since the patient wanted to attend a important function in the evening so he wanted a immediate esthetic treatment so he opted for Natural Tooth Pontic with Fibre Reinforced Composite. The tooth 21 was atraumatically extracted. Retrograde cavity preparation was done to remove the coronal pulp. Then the crown and the root of the tooth were separated and pontic was hprepared. Followed by this, the fibre was reinforced in between the teeth adjacent to the extracted tooth and was cured. In the end, the extracted tooth that was prepared as the pontic was placed back to its original position and the aesthetics were maintained.

Figure 1: Pre-operative extraoral view

Figure 2: Pre-operative intraoral view

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Figure 3: Occlusal View

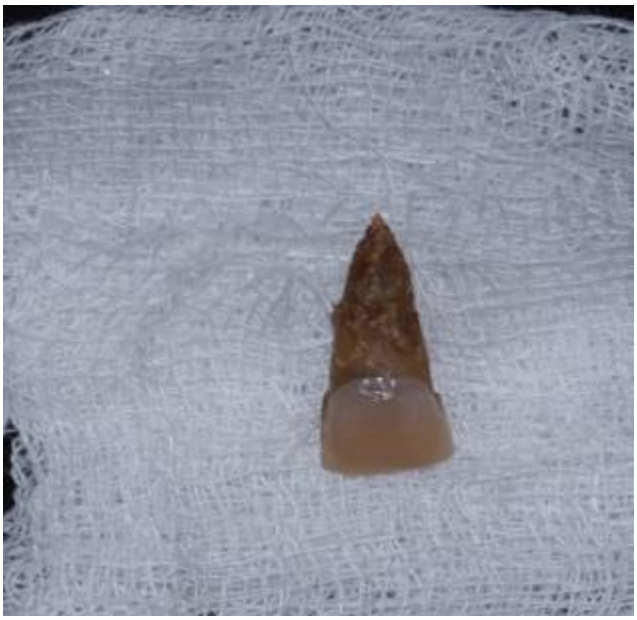

Figure 4: Atraumatically extracted tooth

Figure 5: Preparation of pontic site

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JCHR (2024) 14(1), 3188-3192 | ISSN:2251-6727

Figure 6: Same day treatment

Figure 7: Pre-operative and post-operative extraoral view

Discussion

The replacement of a single missing or failing tooth presents one of the greatest challenges in restorative dentistry, especially when the esthetic zone is considered.[7] Nowadays, the main available treatment options to this clinical problem include the use of traditional fixed dental prostheses (FDPs), implant-supported single crowns (SCI), and resin-bonded FDPs (RBFPDs).[8,9]

Resin-bonded fixed partial dentures (RBFPDs) were first introduced into dentistry in the 1970s[10]: their primary objective was to splint periodontally compromised teeth along with substitution of one or more missing anterior teeth. The application of RBFPDs was extended to posterior areas about ten years later.[11] Compared to implant-supported solutions, RBFPDs are linked to short treatment times and lower postoperative morbidity and costs; surgical procedures are also avoided.[12]

Various treatment options are available for the replacement of a single tooth, such as an implant, FPD, and RPD. However, the lack of enough supporting tissue may limit the treatment options or decrease their success rate significantly. Implant-supported crown has been proven to be a successful treatment to replace a single tooth.[13] However, there may be some limitations, especially in cases where severe bone loss has led to tooth extraction. In these situations, there would be a need for regenerative surgery to provide sufficient bone for fixture placement and an ideal or acceptable appearance of the supported crown.[14] It should be considered that localized bone augmentation in the vertical defect is one of the most challenging procedures with a significant complication rate, and its outcome is questionable.[15]

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Tavangar MS et al[16] reported a fiber-reinforced composite (FRC) resin bridge using natural tooth pontic in a patient with severe periodontitis. A 60-year-old lady complaining of teeth mobility was diagnosed with severe periodontitis, recession, bone loss, and crowding in the anterior maxillary teeth. Due to a hopeless periodontal prognosis, lateral incisors were extracted and sectioned using a cylindrical diamond bur. The pulp chamber was debrided and filled with self-adhesive flowable composite resin. After three weeks, the pontics were fixed in proximal contact areas, and the FRC bridge was fabricated directly using the resin fiber strip followed by occlusion adjustment, finishing, and polishing. Esthetic, occlusion, and periodontal status were re-evaluated after six months. Here, FRC using natural pontic could successfully reconstruct a natural smile, splint the adjacent teeth, eliminate crowding, and provide stable occlusion. Therefore, this method may be considered for similar cases.

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