

CASE REPORT

UNCONVENTIONAL SINGLE - VISIT INTERIM PROSTHESIS – A CASE REPORT

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ABSTRACT

Replacement of missing anterior teeth is of utmost importance for esthetics and function. Fixed partial dentures (FPDs) are the most commonly used prostheses but are usually associated with failure either due to faulty fabrication, inadequate retention, or negligence in maintenance by the patient. During fabrication of new FPDs, transitional prostheses have an important role in providing esthetics and function to the patient. The aim of the current work was to provide adequate esthetics to a patient during the treatment period. During the transition phase of fabrication, a new fixed partial denture, patients should be provided with an interim prosthesis. In this case report, interim prosthesis was fabricated using acrylic resin. The contours of existing fixed prosthesis were duplicated, and an unconventional interim prosthesis was fabricated in single-visit for a young adult female patient with failed anterior fixed partial dentures. Step by step treatment was carried out to fabricate the interim prosthesis for the patient. The interim prosthesis fabricated was clinically acceptable. After insertion of the prosthesis, the patient and her family were satisfied with the esthetics. During follow-up as well, the patient was satisfied with the prosthesis and did not show any discomfort. The unconventional approach for the fabrication of an interim prosthesis used herein for a young adult female patient fulfilled the requirements of the patient and successfully protected the tissues during the fabrication of the final prosthesis.

Keywords: Fixed partial denture, FPD failure, Interim Prosthesis, Esthetics, Non-vital abutments.

INTRODUCTION

Esthetics is one of the strategic goals in the replacement of missing anterior teeth.¹ Failure of an

anterior fixed partial denture (FPD) by de-bonding associated with or without cracking or loss of porcelain veneer is not uncommon.^{2,3}

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This failure could be due to a gross decay of the abutment teeth under an existing restoration.⁴ Failure to provide a provisional restoration could result in a negative psychological impact on the patient and on the health of the periodontium, thus complicating the treatment plan.^{5,6}

This case report describes a unique unconventional single-visit fabrication of an interim prosthesis with the objective of providing esthetics to a young adult female patient during a treatment period of 3 months for her failed anterior fixed partial dentures. Such an unconventional way of fabricating an interim prosthesis from a failed anterior fixed partial denture has not been previously reported in the literature. However, some authors have described interim removable partial⁷ and complete dentures⁸ in patients with severe labial undercuts and bulbous cortical plates.

CASE REPORT

A 27-year-old female patient reported to the outpatient clinic of the Department of Prosthetic Dentistry, College of Dentistry, King Khalid University, Abha, Saudi Arabia, seeking esthetic treatment of a failed upper front fixed bridge. She complained of frequent loosening followed by a complete dislodgement of the FPD bridge with chipped porcelain. (Fig. 1a, b)

Her medical history revealed that she received this treatment in a private dental clinic 8-9 months prior during which one front tooth was removed, and this fixed bridge was cemented.

Intra oral examination revealed poor oral hygiene with a missing # 12 tooth, while # 13 was fractured (Ellis class IV fracture) and #21 and 22 had restorations with secondary caries. All the abutment teeth of the FPD (# 13,11,21,22,23) were over prepared with severe incisal convergence. The vitality test was negative for teeth # 13 and 23.



Figure 1: A - Clinical frontal intraoral view showing the dislodged FPD. B - Re-seated FPD without cementation (for case-presentation)

Radiographic investigation (Fig. 2) disclosed a failed root canal treatment (RCT) for teeth # 11, 21, and 22 and pulp involvement with caries in # 13 and 23 with very limited residual tooth structure. Apart from these, teeth # 36, 37, and 45 were missing and #15, 24, 26, 27, 35, 31 were endodontically treated teeth.



Figure 2: Panoramic radiograph of the case

Ethical Approval to report this case was obtained from the institute's scientific research committee (SRC/ETH/2018-19/035) and informed written consent was obtained from the patient for treatment and publication of the case through the institutional patient consent form.

Treatment Plan

Based on clinical and radiographic examinations, a definitive treatment plan for the case was formulated, which included root canal re-treatment of # 11,22, and 23, and RCT of # 13 with surgical crown lengthening followed by post and core build-up for # 13, re-restoration of all the present abutments and reconstruction of the definitive FPD were also performed.

The patient and her family were very concerned about her esthetics and were not ready to leave without a restoration. Therefore, an unconventional approach was planned to rehabilitate the patient with satisfactory esthetics during the fabrication period of her final prosthesis. It was therefore decided to fabricate a transitional removable partial overdenture from her own failed anterior FPD before referring her for the RCT.

The steps necessary for the construction of the transitional unconventional removable partial overdenture were as follows:

1. An alginate over impression (Cavex CA37, Cavex Holland BV, Haarlem, Netherlands) was prepared for the maxillary arch with the patient's FPD placed on the abutment teeth without cementation (Fig. 3).



Figure 3: Pick up over impression prepared with alginate.

2. This impression was a pick-up impression for the FPD and the cast was poured in dental stone (GC Fujirock EP; GC, Leuven, Belgium) with blocked out retainers of the FPD (with modeling wax).
3. Two wrought wire (0.7 mm) circumferential-clasps (Wironit-Klammerdraht 0.7mm BEGO,

Germany) were made on teeth # 15 and 25 and were fixed to the stone cast with modeling wax from the buccal side (Fig. 4).



Figure 4: The stone cast with two wrought wire clasps on teeth # 15 and 25 buccally fixed with wax

Tin foil substitute separating medium (ISOLMAJOR, Major Prodotti Dentari S.P.A., Torino, Italy) was spread on the palatal surface of the cast and an acrylic palatal plate was constructed with an auto polymerizing acrylic resin (Triplex Cold, IvoclarVivadent, Schaan, Liechtenstein). Care was taken to prevent any connection between the FPD and the palatal plate.

4. After complete polymerization of the acrylic resin, the finishing was completed, and the prosthesis was placed in the patient's mouth for the determination of a proper path of insertion and for removal with adequate retention. (Fig. 5). Polishing of the acrylic plate was done after completion of the final prosthesis.



Figure 5: The try-in of the palatal plate in the patient's mouth

- The failed anterior FPD and the acrylic palatal plate were placed in the patient's mouth and a putty index with a rubber base impression material (Exafast™ Putty, GC America Inc, Alsip, IL 60803, Japan) was prepared for the anterior region (Fig. 6). This ascertained that the index was able to cover the palatal plate.



Figure 6. Putty rubber impression for the anterior region with the fixed restoration and the palatal plate in situ

- After complete polymerization of the rubber base impression material, it was removed from the patient's mouth. The FPD, which was picked with putty index was removed and the acrylic palatal plate was left in situ.
- The putty index, now filled with tooth colored acrylic resin (Lang Dental Manufacturing Co., Inc., Wheeling, IL, USA) was used to make the provisional crown and placed into the patient's mouth.
- After polymerization of the tooth colored acrylic, the putty index was removed along with the entire removable appliance. The entire appliance was removed from the patient's mouth (Fig. 7).



Figure 7. Anterior teeth in the tooth colored acrylic resin and the palatal plate with clasps

- The removable partial overdenture prosthesis was finished and polished and re-inserted into the patient's mouth as a provisional restoration in the form of a transitional removable partial overdenture. This transitional prosthesis provided the patient with a temporary restoration with reasonable esthetics and retention until the completion of the treatment plan (Fig. 8 and 9).

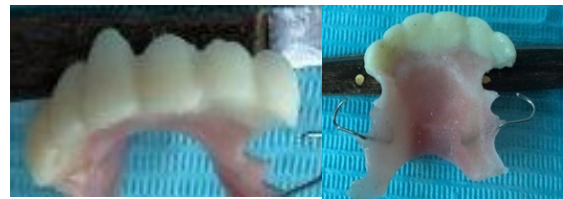


Figure 8. Labial and palatal aspects of the transitional removable partial overdenture after finishing



Figure 9. The removable appliance in the patient's mouth

- The tooth colored acrylic resin part of the removable appliance was subjected to several modifications and was re-aligned to fit every reconstructed abutment tooth during implementation of the treatment plan until the cementation of the final fixed restoration.

RESULTS

Laboratory outcomes: The interim prosthesis fabricated using this technique was clinically acceptable. Shade matching was adequate with

satisfactory esthetics and finishing and polishing was performed to make the prosthesis tissue friendly.

Patient satisfaction: After the insertion of the prosthesis, the patient and her family were satisfied with the overall esthetics. Since the prosthesis was retained in its position via a clasp, the patient was able to perform all functions with satisfactory phonetics.

Overall, the interim prosthesis fulfilled the requirements of the patient and was able to protect the tissues during the fabrication of the final prosthesis. Fabrication of the prosthesis was simple and was completed chair-side in a single visit.

During the follow-up, the patient was satisfied with the prosthesis and did not show any discomfort.

DISCUSSION

Fabrication of a clinically efficient interim prosthesis with satisfaction of the patient is of the utmost importance for the success of any treatment. In the present case report, an unconventional approach for the fabrication of a transitional removable partial overdenture from the patient's own failed anterior FPD is described. The interim prosthesis fabricated using this technique fulfilled provided esthetics and function during the 3 months necessary to complete the treatment and required for the fabrication of the final prosthesis.

Patients with a failed anterior FPD due to loosening, chipping of the ceramic veneer, recurrent caries, and/or endodontic involvement of an FPD abutment require replacement with a new FPD. The transition period during the fabrication of a new FPD is often long and requires a transitional esthetic replacement. Depending on the clinical situation, conventional fabrication of provisional restorations can sometimes be time consuming.

Therefore, clinicians often use an unconventional approach to provide an interim prosthesis during the period required to complete the treatment and fabricate the final prosthesis.^{7,8}

Pleasant esthetics is one of the most important objectives of provisional restorations during

construction of any prosthesis.⁵ Management of the present case could also have been achieved by using individual crown restorations with or without a cantilever from #13. However, this approach requires more time and the patient was unwilling to follow this treatment plan.

Therefore, the present unconventional approach and an innovative prosthetic design were aimed at providing the patient with an esthetically adequate as well as a retentive provisional. Such a provisional restoration may also allow frequent removal and insertion during the relatively long time required for the reconstruction of the damaged abutments and the completion of the definitive prosthesis.

Due to different clinical situations, other clinicians have also had to fabricate unconventional prostheses. Bhandari et al.⁷ described the fabrication of an unconventional interim labial partial denture because the premaxilla was inclined labially with an accompanying severe labial undercut with a deep bite. In 2013, Chaturvedi et al.⁸ fabricated an unconventional prong denture for the rehabilitation of an edentulous patient with a severe labial undercut, and with a bulbous labial cortical plate. The present unconventional approach described in this case report is very simple, cost effective, and time efficient and was constructed in just one chair-side visit.

During fabrication, the prosthesis was placed on the cast before construction of the acrylic plate to limit the anterior extension of the plate. Moreover, the acrylic palatal plate was left with an unpolished and rough surface to enhance the bonding strength with the tooth colored acrylic resin⁶. The putty index was acquired for the old prosthesis with the acrylic plate in the patient's mouth to orient the colored part of the restoration to the acrylic plate in the right location relative to the remaining teeth and palate. Finally, the produced prosthesis was polished and inserted into the patient's mouth.

The patient's satisfaction with the transitional removable partial overdenture, as a provisional restoration, reflected the success of this design in overcoming the problems associated with the retention and frequent removal of the prosthesis and esthetics during reconstruction of damaged teeth.

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