ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 5, Issue, 04, pp. 4137-4139, April, 2015

International Journal of
DEVELOPMENT RESEARCH

CASE REPORT

AN INNOVATIVE PROSTHETIC TECHNIQUE FOR SPACE CLOSURE IN MANDIBULAR ANTERIOR REGION

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ARTICLE INFO

Article History:

Received 21st January, 2015
Received in revised form
25th February, 2015
Accepted 11th March, 2015
Published online 29th April, 2015

Key words:

Space closure,
Aesthetics,
Replacement

ABSTRACT

The dental patient with a missing anterior tooth has several fixed treatment options such as implant prosthesis, resin bonded prosthesis, fibre-reinforced composite restoration, metal-ceramic fixed partial denture (FPD) and metal-free FPDs. The laboratory procedures related to these modalities necessitate additional time and cost. However, the clinician is often posed with the problem of rehabilitating a patient with suitable alternative on an urgent basis. This is a case report presenting a low cost alternative for space closure in mandibular anterior region, on an immediate, interim basis in a single visit.

INTRODUCTION

The dental profession is witnessing an exponential growth in material research, technology and techniques leading to improved aesthetics and function. The dental patient with a missing anterior tooth has several fixed treatment options. However, the laboratory procedures involved necessitate additional time and cost. The clinician is often posed with the problem of rehabilitating a patient with suitable alternative on an urgent basis. This report presents a case of a young adult with spacing in mandibular anterior region, which was treated with a low cost alternative on an immediate, interim basis in a single visit.

MATERIALS AND METHODS

Acryrock teeth, Ruthinium,Italy, Shade A2
Carbide bur no.2 (ADA)
Methyl methacrylate (MMA)-DPI, India
Diamond abrasive (SF11, Mani, Japan)
LED light cure (Gnatus)
SDI super etch 37% phosphoric acid (LOT no.090498)
Stae -bonding agent (LOT no.080548)
SDI wave -composite resin (flowable) shade A2 (LOT no.081043N)
SDI ice -composite resin shade A2 (LOT no.08059)
Astropol composite finishing kit-Ivoclar Vivadent (LOT no.LL0767)

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CASE REPORT

A 30 year male reported with spacing (4.5mm) in between the mandibular central incisors desiring rehabilitation of the condition for better appearance (Fig.1). The patient desired temporary closure of space on an urgent basis. Hence, a single visit procedure was devised to meet the conditional requirements. The patient exhibited group function occlusion bilaterally with several interferences in lateral excursion on both sides leading to mild generalized attrition. The periodontal condition and oral hygiene was good. The sequential steps in the procedure included making of diagnostic study models, determination and elimination of interferences, selection and modification of prosthetic tooth, preparation of adjacent teeth, bonding of the complex using composite resin and finishing and polishing of the restoration.

Making of diagnostic study models

Irreversible hydrocolloid impressions were made to study abutment inclination, occlusion and selection and modification

of the prosthetic tooth. The interferences in lateral excursion were eliminated in the mouth.

Fig.1. Preoperative occlusal view

Selection and modification of prosthetic tooth

A prosthetic mandibular central incisor (Acryrock) was selected to the closest possible shade recorded in the patient. The tooth was minimally altered buccolingually to mimic tooth number 25. A hole was made mesiodistally within the tooth in the contact area using carbide bur no.2. Methyl methacrylate was applied for 180 seconds using a micro-applicator in the contact region, within the hole and undersurface of tooth so as to soften the surface of acrylic resin (Vergani *et al*., 2000 and Yanikoglu *et al*., 2002) and bonding agent was applied and light-cured for better bonding with composite resin (Papazoglou and Vasilas, 1999). Composite resin was applied on undersurface of the tooth, contoured and verified on the model, subsequently light cured for 30 seconds using LED and finished and polished using Astropol system. The hole made within the tooth was slightly underfilled with flowable composite resin and light cured.

Preparation of adjacent teeth

The hypermineralized zone of enamel on the surfaces adjacent to the edentulous area was removed with diamond abrasive (SF11). The region was isolated using cotton rolls and saliva ejector. The surfaces were etched using 37% phosphoric acid for 15 seconds (Fig.2) and air dried followed by application of bonding agent and cured for 10 seconds.

Fig.2. Etching of the adjacent teeth

Restoration

Composite resin was adapted on the surface of the prepared teeth as well as the prosthetic tooth and the tooth was placed in the designated position. Excess resin was removed followed by curing. Occlusion was checked to avoid any interferences on the concerned pontic. The restoration was then finished and polished using conventional procedure (Fig.3 and Fig.4). The patient was instructed regarding oral hygiene maintenance and advised definitive treatment at a subsequent stage. Oral prophylaxis was performed when the patient reported after 8 months. The restoration was found to be satisfactory.

Fig.3. Postoperative occlusal view

Fig.4. Postoperative lingual view

Summary and Conclusion

This case report presents a chairside, inexpensive way of using an acrylic tooth for space closure in mandibular anterior region on a short term basis. This procedure provided remarkably good aesthetics and satisfied the patient requirements in a single visit. The main advantage is that any definitive treatment modality is possible since natural teeth are not irreversibly altered. Appropriate case selection, correct technique, occlusal consideration and post-replacement maintenance determine the longevity of this type of restoration. Although the limitations of composite discoloration and weak bonding of acrylic to composite resin demand that the restoration be replaced with a definitive prosthesis at a later stage, the treatment option presented could well be explored as a viable option in similar cases.

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