

THE RESTORATION OF AN AESTHETIC AND FUNCTIONAL ABUTMENT UNDER AN EXISTING CAST PARTIAL DENTURE - A SIMPLE TECHNIQUE.

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Abstract:

The restoration of edentulism through cast partial denture is one of the important goals of prosthodontics. The caries destruction of an abutment tooth supporting a Cast Partial Denture (CPD) is commonly associated with the loss of retention of the prosthesis, making it non-functional. Even though the literature discusses many techniques for the prosthodontic restoration of destroyed abutment tooth supporting a CPD, none of them explains a simple method which incorporates the retentive features as well as aesthetics on the definitive restoration. This article discusses an innovative yet simple technique for the fabrication of a provisional crown as well as a definitive porcelain fused to metal restoration, which can maintain the aesthetics and retentive features of the abutment. This technique enables the patient to continue wearing the existing prosthesis.

Key words: Cast partial denture abutment, Rest seat restoration, Direct retainer, Cast partial denture retention.

Introduction

The necessity to restore a Cast Partial denture (CPD) abutment arise frequently when it loses its retentive property. This can be mainly due to dental caries, cusp fracture or due to the destruction of its retentive form¹. The absence of the prosthesis may affect the functional as well as the psychological well-being of the patient^{2,3}. In this scenario, the challenge is to recreate the retentive features of crown in accordance with clasps and minor connector of an existing partial denture without compromising aesthetics. Aesthetics of the restoration has an important role in the psychological acceptance of the prosthesis by the patient^{4,5}. The literature is abundant on the retrofitting of a crown under an existing CPD clasp assembly⁶⁻²⁰. This includes the use of technique sensitive methods like direct wax up to expensive options like CAD-CAM technology. But none of these articles report a technique to fabricate a crown which can reproduce the retentive elements of the original abutment tooth as well as the aesthetics. In this article a simple

and innovative technique to restore an abutment tooth, maintaining the morphology and aesthetics, with the preservation of the retentive elements of the existing cast partial denture is discussed.

Technique

For demonstration purpose, a dental education model (PE-PRO002, Nissin dental products, Japan) comprising of a cast partial denture with abutment having rest and circumferential clasp on a metal crown on maxillary left first molar was selected. The existing metal crown in relation to maxillary left first molar from the model was removed to simulate a clinical situation of tooth preparation done to receive a crown under an existing CPD.

1. The existing prosthesis was kept over the prepared tooth to ensure adequate clearance between the prepared tooth and the prosthesis.

(Figure 1. Adequate clearance ensured between the prepared tooth and rest seat.)

2. Petroleum jelly (Bioline, Biopharm, Bangalore) was applied over the prepared tooth and surroundings. Tooth coloured auto polymerizing resin (DPI-RR Cold cure, Mumbai) was mixed and adapted over the prepared tooth, followed by the placement of existing prosthesis. It was made sure that the indentation of the occlusal rest and circumferential clasp on the prosthesis was registered on acrylic.

3. The acrylic was then moulded in the shape



Figure 1. CPD placed after tooth preparation.



Figure 2. Self cure temporary with CPD.



Figure 3. Sprue attached to the temporary

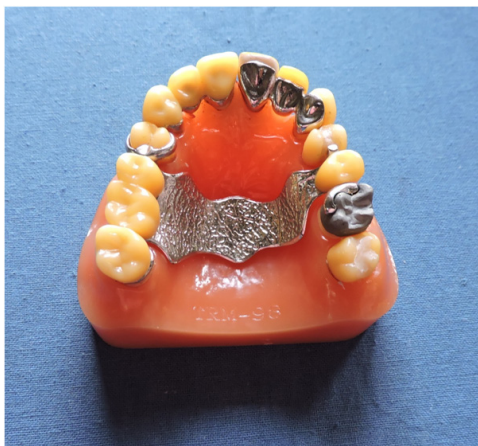
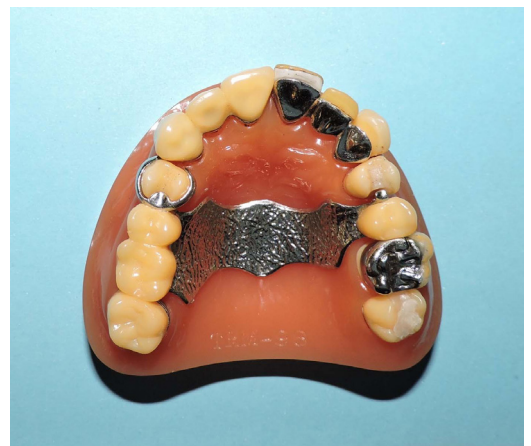


Figure 4. Metal try in .



Figure 5. ceramic build up using index as guide.



6. Final

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of the desired tooth morphology with the help of hand instruments.

(Figure 2. Acrylic resin moulded in the shape of the desired tooth morphology with the help of hand instrument.).

4. The finished acrylic crown was checked for fit on the tooth and then the cast partial denture was seated in position.

5. A pick up impression of the region was made along with the temporary crown and the cast partial denture.

6. Once the cast was poured, a putty index was made.

7. A second temporary crown was made by duplication and this duplicated crown was cemented for temporization.

8. Cut back was done on the acrylic temporary crown made by direct method to create space for the ceramic.

9. This acrylic crown prepared by direct method was then sprued (Renfert, Germany) invested and was kept in the burn out furnace at 700°C to eliminate the acrylic part and casting was done⁷.

(Figure 3. Sprue attached to the temporary)

10. The casting was divested, finished, and checked for accuracy on the working cast

(Figure 4. Metal try in).

11. Ceramic was added on the labial aspect using the putty index made earlier as a guide and firing was done.

(Figure 5 Ceramic build-up using the putty index as the guide).

12. After the bisque try in, the definitive prosthesis was glazed and cemented with type I Glass Ionomer cement.

(Figure 6 Definitive prosthesis.)

Discussion

The discontinuation of the use of existing removable prosthesis can affect the patient's quality of life^{2,3,21}. The financial, functional and psychological well-being of the patient can be safe guarded, if the existing prosthesis can be made functional again. This situation demands the retrofitting of the crown without compromising the retentive features of the original abutment.

Aesthetics plays an important role in the success of a prosthesis. A prosthesis that is highly aesthetic will improve patient's motivation and acceptance^{4,5}. Ample literature is available on the fabrication of metal crowns, but the information available on the fabrication of aesthetic crowns are very limited or scarce¹⁹. Therefore, this technique will be a valuable addition to literature base and can be of interest to clinicians working in dental rehabilitation.

Even though pattern resin is the material of choice, autopolymerising resin was used as pattern for fabrication of a metal substructure. This is because, the dimensional stability of the resin in comparison with the other materials used for the pattern preparation is within the acceptable clinical limits²²⁻²⁴. The percentage of solid residue left after burning out of thermoplastic resin or cold cure resin during the burn out process was not reported to be clinically significant^{23,24}. These properties enable the use of cold cure resin as a pattern material.

The technique described here saves considerable time and financial burden to the patient. The contour of the crown can be maintained reasonably without challenging the aesthetics and function of the partial denture.

Summary

A direct technique for making metal ceramic crown

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for teeth which carry partial denture rest and clasps has been described. This is a simple technique which uses autopolymerising resin as a pattern to fabricate a crown, supporting a CPD with the incorporation of retentive features of the existing denture. The laboratory procedures are described in detail to be replicated in clinical practice.

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