“Flangeless cast partial denture” - A simplified approach for a better emergence profile with improved masticatory efficiency.

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Abstract

Restoration of partially edentulous arches is not an challenging task for a clinician where the clinician has to give due consideration in fulfilling the necessary requirement of the patients. In most of the circumstances, partial dentures may not contribute greatly to mastication; masticatory efficiency of the fixed partial dentures will be considerably superior compared to the removable partial dentures. The patient was visited to the dental college requiring treatment was effectively treated by flangeless cast partial denture which provided better emergence profile. Inbuilt metal pontics were used to fulfill the patients superior masticatory needs. The technique described is an innovative, simple procedure in which tedious laborious procedures are not involved.

Key words: Flangeless cast partial denture, Inbuilt metal pontic, Emergence profile.
Introduction

Restoration of the lost or missing tooth/teeth is one of the challenging tasks for a clinician among the various possible treatment modalities. The optimum restoration should fulfill the basic requirements of any prosthesis. Restoration of partially edentulous arches is not an easy task for a clinician where the clinician has to give due consideration in fulfilling the necessary requirement of the patients. Restoration of partially edentulous arches by fixed partial dentures is the treatment of choice by any patient but may not be the desirable option in most of the situations. In most of the circumstances, partial dentures may not contribute greatly to mastication; masticatory efficiency of the fixed partial dentures will be considerably superior compared to the removable partial dentures. Most of the partially edentulous arches exhibit tipped, rotated and extruded teeth, less space between the edentulous area and the remaining natural teeth, attrited teeth, teeth with short clinical crowns which requires an extensive knowledgeable planning and fore-thought so vital to a successful outcome as it is in the practice of removable partial Prosthodontics.

This case report describes an simple but yet an effective method of restoration of partially edentulous arches with removable cast partial denture but it includes the metallic pontics which helps in improved masticatory efficiency of an individual.

Case report:

A female patient aged 34 years reported to the department of Prosthodontics including crown & Bridge and implantology, Sri Siddhartha Dental College & Hospital, Agalakote, Tumkur, Karnataka requiring the treatment for her missing teeth. The patient was a mixed diet consumer and demanded a restoration which improves the masticatory efficiency. On clinical examination and analysis of the mounted diagnostic models, the patient exhibit with missing right maxillary first and second premolars, left maxillary second premolar and first molar. The teeth generalized attrition and presented with short clinical crowns (Fig 1).
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The intra oral picture and mounted diagnosed casts showed minimum space between the edentulous space and the opposing remaining natural teeth due to generalized posterior short clinical crowns. Patient was planned to rehabilitate with maxillary cast partial denture with inbuilt metal pontic which provides superior masticatory efficiency.

Diagnostic models were analyzed and were surveyed. Mockup mouth preparations were done on the diagnostic models and the desired preparations were executed on the teeth intraorally in the patient’s mouth. A check model was fabricated to analyze the mock up preparation. Final mouth preparations were made in the patients mouth and final impressions were made using polyether elastomeric impression material. Master cast fabricated using high strength stone. Master cast surveying procedure was carried out to block the undercuts and refractory casts were made using phosphate bonded investment material. Wax pattern were contoured using preformed was patterns (Fig 2). Pontics were carved using inlay casting wax in the edentulous area (Fig 2). Occlusal surface was contoured in the anatomical form and the buccal surface was contoured with retentive beads providing space for the facing material.

The refractory model with the wax pattern was invested and casting procedure was carried out. The casted cast partial denture was finished and polished in the conventional manner. The metal framework was tried in the patients mouth for proper seating. The buccal surface of the metal pontic with the metal mechanical retentive beads was air abraded with 50micrometer aluminum oxide powder and etching with hydrofluoric acid. Pulpdent Embrace Restoration kit was used to veneer the buccal surface of the pontic. Initially Embrace first-coat, a light cured resin primer was light
cured which also served the purpose of opaque layer for the composite material. The composite resin was cured layer by layer till the adequate thickness and proper emergence profile was obtained. The finished flangeless cast partial denture was tried in the patient’s mouth and adjustments were made for lateral excursions (Fig 4, 5 & 6). Satisfactory consent was obtained from the patient and the cast partial denture was delivered to the patient.

**Fig 3 – final restoration on master cast**

**Fig 4 – right lateral view of the prosthesis showing good emergence profile**

**Fig 5 – left lateral view of the prosthesis showing good emergence profile**

**Fig 6 – frontal view of the final restorations**

**Discussion.**

The procedure explained in the rehabilitation of this patient is an innovative way of restoration of partially edentulous arches with increased masticatory efficiency. In the conventional cast partial denture fabrication metal framework will be trained in the patient mouth and will be subjected to acrylization. But in the current technique instead of acrylic teeth and denture base inbuilt metal pontics were used to satisfy the patient with increased
masticatory efficiency. The impact strength, compressive strength of the alloys stands superior in comparison with the high impact and highly cross linked acrylic teeth and mainly this will enable the patient to The inbuilt metal pontics were buccally veneered by the composite resin material since the composite exhibits superior bonding properties over the conventional heat cure or chemical cure tooth color acrylic resins. The cast partial denture was not subjected to acrylization since the space available for the placement of acrylic teeth was less, but the flangeless cast partial denture exhibited with better emergence profile than the conventional cast partial denture with buccal acrylic flange.

**Conclusion**

The meticulous restoration of the partially edentulous exhibits a challenging decision making in planning the treatment without compromising the patient’s needs. The technique followed in the treatment of this patient is a simple but yet effective treatment plan for providing an optimum treatment plan for an individual. The flangeless cast partial denture has got various advantages since many tedious laboratory steps were eliminated but provided better emergence profile and superior masticatory efficiency.

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