

**REHABILITATION OF BILATERAL DISTAL EXTENSION CASE WITH CPD
FABRICATED USING ALTERED CAST TECHNIQUE TO INCREASE TISSUE
SUPPORT: A CASE REPORT****Dr. Ann George*¹, Dr. George Francis², Dr. Paul kariyatty³ and Dr. Arun K. Joy⁴**¹Post Graduate Student, Department of Prosthodontics, St Gregorios Dental College, Kothamangalam.²Professor and HOD, Department of Prosthodontics, St Gregorios Dental College, Kothamangalam.^{3,4}Reader Department of Prosthodontics, St Gregorios Dental College, Kothamangalam.***Corresponding Author: Dr. Ann George**

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ABSTRACT

Replacing missing teeth distal to the last standing teeth with removable partial dentures is a very challenging situation to dentists. They are liable to be displaced under occlusal pressure as a result of the displaceability of the mucosa. In this article, we use a clinical case to illustrate the clinical procedures required for the fabrication of a distal extension denture with good retention, support, stability, aesthetics and masticatory function. The altered cast technique is employed to try and prevent this by making an impression of the mucosa under controlled pressure. The metal framework was constructed on a cast produced by a mucostatic impression material. Base plates were then constructed in self-cured acrylics on the framework in the distal extension areas, and these are close fitting. Border molding was carried out; impression was made with zinc oxide eugenol impression paste. In the laboratory, the distal extension areas on the master cast are sectioned off. The denture is then positioned on the model and the new distal extension areas are poured. The resulting model represents the free-end saddle areas under conditions, which mimic functional load. Denture construction then continues as normal. The distribution of loading of the free-end saddles is improved and denture is more stable.

KEYWORDS: Bilateral distal extension altered cast technique.**INTRODUCTION**

The construction of distal extension dentures poses great challenges to dentists because no abutment tooth is present distal to the edentulous area to provide retention, support or stability. The saddle area can rotate both away from and towards the mucosa.

The free-end saddle of a partial denture can rotate gingivally under functional loading. This rotational movement is harmful to the periodontium of the abutment tooth adjacent to the saddle. Kratochvil^[1] proposed a design consisting of a mesial occlusal rest, a proximal plate, and an I-bar to minimize this potential damage. Krol^[2] described a clasp design, the RPI clasp, with an I-bar and a proximal plate to minimize tooth surface coverage and a mesial rest to reduce stress on the abutment tooth. Eliason^[3] further proposed using an Akers' clasp, the RPA clasp, when I-bars are contraindicated. A number of other designs have also been proposed.^[4-6]

This article describes a case report primarily aimed at discussing the fabrication of a cast partial denture for a bilateral distal extension case with the concept of altered

cast technique as described by Applegate for good retention, stability, support, aesthetics and masticatory function.

CASE REPORT

A 53 years old male patient reported to the OPD of St Gregorios Dental Collage, Chelad with the chief complaint of repeated fracture of mandibular removable partial denture made of acrylic. Patient had lost mandibular posteriors since 5 years. Patient had two sets of removable partial dentures which was made earlier and with both the dentures, patient had the problem of instability of mandibular denture and also repeated fracture of the prosthesis.

The patient presented with missing 34,35,36,37,38,44,45,46,47,48. [Figure 1]. Critical examination of previous partial denture showed marks of fracture and repeated repair. Also the patient was not satisfied with the previous unstable dentures.

Maxillary preliminary impressions were made with irreversible hydrocolloid and diagnostic casts were obtained. Arbitrary design of the removable partial

denture was done.[Figure 2].

The study casts were placed on a surveyor for examination and design of the cast framework. Mouth preparation was done and final impression of the mandibular arch was made with putty wash technique using elastomeric impression material.Secondary casts obtained were placed on a surveyor for examination and design of the cast framework. [Figure 3].

Master casts were duplicated, refractory cast were

obtained, and wax pattern was made.[Figure4]. Investing and casting was completed.

The completed framework was examined to ensure that it fits the casts accurately[Figures 5].Once the cast framework was verified for acceptable fit orally [Figures 6] an acrylic resin custom tray was attached to the mandibular metal framework [Figure 7]. This tray was then border molded in the usual fashion for the desired extension, the fit of the metal framework to the teeth and soft tissues were checked [Figure 7].



Figure 1: Preoperative images of mandibular edentulous arch with distal extension.



Figure 2: Planned design.

The final impression was made using zinc oxide eugenol impression paste [Figure 7]. While making impression, finger pressure was applied only to the parts of the framework that comes incontact with the teeth. The cast was altered in the laboratory.

Apart from the conventional technique of altering the cast, only one saw cut was made 0.5 mm to 1.0 mm distal to the most distal remaining tooth and perpendicular to the edentulous ridge.

This cut was carried from the outer edge of the cast to

cross to the outer edge in the opposite side.

Complete seating of the framework on the cast was essential before it is fixed in place with sticky wax. The final impression was beaded in the usual manner, boxed using commercially available latch type detachable boxing frames and poured with die stone [Figure 8]. The altered cast was retrieved after removing beading and boxing.[Figure 11] Finally usual remaining steps in the fabrication of removable partial dentures like jaw

relation and try in procedures were carried out [Figure 9]. Cast partial denture insertion was done and post insertion instructions were given [Figure 10,11].

Patient was reviewed for a 6 month period and he reported that he is extremely satisfied and comfortable with the new distal extension cast partial denture that offered him good retention, support, stability, aesthetics and masticatory function.



Figure 3: Wash impression after mouth preparation and cast obtained.



Figure 4: Wax pattern in refractory cast.



Figure 5: Metal framework.



Fig. 6: Framework try in.



Figure 7: Special tray and secondary impression.



Figure 8: Altered cast technique.



Figure 9: Try in.



Figure 10: Final prosthesis.



Figure 11: Final prosthesis – intra oral.



Fig. 12: Preoperative and post operative images.

CONCLUSION

The altered cast technique allows the ridge, recorded in functional form, to be related to the teeth so that when the prosthesis is seated, it derives support simultaneously from the teeth and the denture base. However, the insertion of implants turns a free-end saddle into a bounded saddle. Still, patients may not be able to accept implant insertions due to financial reasons, systemic medical conditions, local anatomical factors or complicated treatments involving surgery. Hence, patients

with missing teeth often prefer to use removable partial dentures to improve their dental aesthetics and to restore their oral function. In this article, we use a clinical case to illustrate the clinical procedures required for the fabrication of a distal extension denture with good retention, support, stability, aesthetics and masticatory function

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