



CASE STUDY

ALTERED CAST IMPRESSION TECHNIQUE

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ABSTRACT

Free end saddles are liable to be displaced under occlusal pressure. This can be because of displaceability of mucosa. The altered cast technique is employed to try and prevent this by making an impression of mucosa under controlled pressure.

Key words:

Free end saddle, Altered cast technique,
Stable denture, Distal extension base.

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INTRODUCTION

Free end saddles are liable to be displaced under occlusal pressure. This can be because of displaceability of mucosa. (Saijan, 2010) With removable partial dentures that are completely tooth supported as in Kennedy's class III and many class IV partially edentulous arches the occlusal forces are transmitted to the abutment teeth are directed vertically down the long axes of the teeth through the occlusal, incisal or lingual rests. The edentulous ridges will not contribute to the support of partial denture because the teeth absorb these forces before the forces are transmitted to the residual ridge. A tooth supported removable partial denture can be constructed on a master cast made from a single, pressure free impression that records the teeth and ridge in their anatomic form. A tooth-tissue supported removable partial denture constructed on such a cast however, will exert excess pressure on the teeth that help to support the denture as the soft tissue under the denture base compresses. (Kenneth 2nd edition) An altered cast impression technique is routinely used for fabricating distal extension partial dentures. The advantages of altered cast impression technique are that it evenly distributes stresses between hard and soft tissues and reduces stresses of the abutment teeth. (Prasad and Monaco Jr, 2010) This article presents a procedure for making distal extension cast partial denture by using altered cast impression technique.

Case Report

A 35 years old patient presented with missing 36 and 37. Replacement of missing teeth by cast removable partial denture using altered cast impression technique was planned. Cast removable partial denture with lingual bar major connector, embrasure clasps with 46 and 47, reverse circlet clasp with mesial occlusal rest on 35 and mesial occlusal rest as an indirect retainer on 44 was planned. Before mouth preparation radiographic evaluation was conducted to ensure that the designated abutment had adequate periodontal health and root support. After surveying cast, the metal framework was constructed on a cast produced by a mucostatic impression material (Fig.1). The close fitting tray was constructed in tray material on the framework in the saddle area (Fig.2). Border molding was carried out and impression was made with zinc oxide eugenol impression paste (Fig.3). Area of the cast that will be replaced by corrected cast impression was outlined. Line was drawn 1mm. Posterior to distal abutment tooth at right angle to the long axis of ridge down both sides of ridge. Second line is drawn at right angle to first, beginning mesial to lingual sulcus. (Kenneth 2nd edition) In the laboratory the outlined area on the cast was removed with hand saw and longitudinal retention grooves were made on the cut surface of the cast to provide mechanical retention for new portion of the cast to be poured. The metal framework with zinc oxide eugenol impression of saddle area was positioned on the model. After beading and boxing saddle area was poured (Fig.4).

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The resulting model represents the free end saddle area recorded under functional load (Fig.5). Denture construction was then continues as normal.



Fig.1. Cast partial denture metal framework

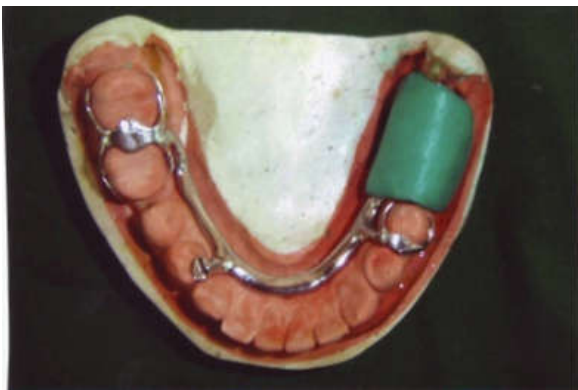


Fig.2. Tray prepared over saddle area of framework



Fig.3. Functional Impression

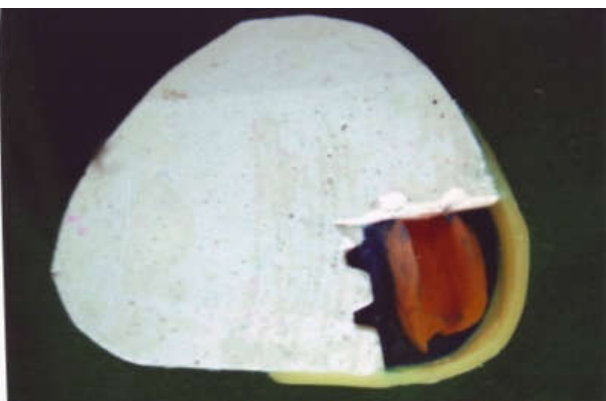


Fig.4. Beading in and boxing of functional impression

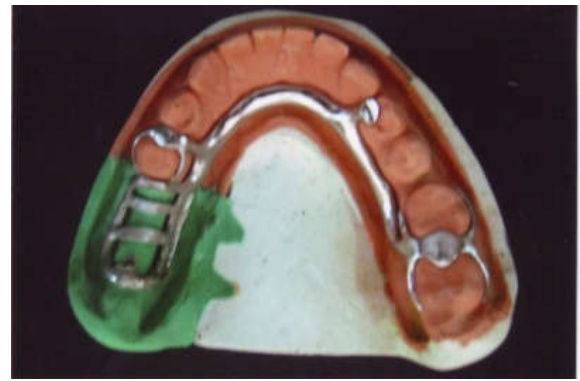


Fig.5. Altered cast with metal framework

DISCUSSION

The distal extension removable partial denture has inherent problems of retention and stability, affecting not only the integrity of denture bearing tissue and associated structures but also patients acceptance and compliance. (Preston, 2007) The distal extension partial denture not only must depend on the residual ridge for some support but also should obtain some retention from its base, aided by indirect retention to prevent the denture lifting away from the residual ridge, whereas the tooth supported base is secured at either end by the action of a direct retainer and supported at either end by a rest, this degree of support and direct retention is lacking in the distal extension restoration. (Glen 8th edition) Although the corrected or altered cast impression technique is widely taught, it seems to be used very little in past because it requires separate appointments for framework tryin, corrected cast impression and occlusal registration. (Feit, 1999) The altered cast impression technique of fabricating removable partial denture originally described more than 60 years ago, improves the residual ridge to dentition relationship of the prosthesis. This potentially increases patients satisfaction while preserving the remaining supporting structures. (Walton, 1993)

Summary

This article presents simple, predictable, clinically effective and readily learned altered cast impression technique that will allow the dentist to make an anatomically and functionally supported distal extension removable partial denture.

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