

Mandibular Distal Extension Cast Partial Denture Using Corrective Cast Technique V/S Maxillary Tooth Supported Overdenture: A Case Report

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Case Report

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ABSTRACT

Dentures requiring support from teeth, mucosa, and the underlying alveolar ridges are liable to be displaced under occlusal forces that adversely affect the abutments and residual ridge during function and parafunction. In the case of free end saddles like Kennedy's class I and Kennedy's class II treatment and maintenance it is a very common challenge for the clinician as mucosa gets displaced under load and distal extension. These dentures only have partial support from teeth as their bases act as extensions and cover ridge distal to the last abutment tooth and the residual ridge provides main support, stability, and retention. So, altered cast technique was employed for mandibular distal extension partially edentulous arches to prevent this by making an impression of mucosa under controlled pressure. Border molding was carried out on base plate made in self-cured resins, Impression was made and during lab procedures, free saddle areas were altered in the master cast. The denture was positioned on the model and the final impression was poured. The resulting model represents a corrected cast with free end saddle areas recorded under functional load. Denture construction then follows the conventional technique.

Keywords: Altered Cast Technique, Distal Extension Bases, Corrected Cast Technique, Free End Saddles, Stable Denture.

Introduction

Treatment and maintenance of patients with distal extension rpd are very critical as they are not totally tooth-supported and derive their support from residual ridge tissues in varying degrees. As soft tissue is 250 times more displaceable than tooth structure.¹ So the abutments often undergoes non-axial forces which lead to mobility and damage of abutment and eventually prosthesis fails.²

Cast partial denture made with altered cast techniques helps to generalize the forces on the soft tissue of residual ridge and abutments and hence, results in a more stable CPD.² Other factors should also be considered as proper placement and use of direct retained and other components.

Beakers and colleagues outlined six main principles in successful CPD design.³ These principles are- rigid major connector, indirect retainers, multiple rest seats, parallel guide planes, I-bar, and altered cast technique.⁴

Following paper outlines the basic concept of altered cast in case of distal extension RPD verses maxillary tooth supported over denture.^{6,7}

Case Report

An 87 years old patient came in the O.P.D of Himachal Institute of Dental Sciences, Paonta Sahib in the Department Of Prosthodontics Including Crown, Bridge and Implantology with chief complains of missing teeth in upper and lower jaws, inability to masticate, and unaesthetic facial appearance. On clinical examination, there were carious root stumps wrt 11,12,13,21,22 (Figure1) broken bridge wrt 31,32,33,34 and attrition of 41,42,43,44,45 was present(Figure2). In mandibular teeth, there was no sign of caries and periodontal condition was also good. Radiographic evaluation showed adequate bone support around the teeth present.



Figure 1. Maxillary Carious Roots and Faulty Bridge



Figure 2. Mandibular Faulty Bridge

After clinical examination, the diagnostic casts have studied the option for implants was ruled out because of the patient's poor health and economic reasons. Lower distal extension CPD and upper tooth-supported overdenture were planned. The faulty bridge was removed wrt 31,32,33,34. Treatment included root canal treatment of all the teeth as well as root stumps present. After endodontics treatment core build-up of attrited teeth and tooth preparation was done wrt 31,32,33,34,41,42,43,44,45 (Figure-3) and in maxilla caries and faulty bridge was removed and core build-up was done wrt 11,12,13,21,22,24,25 (Figure-4). Gingival displacement was done and a definitive impression was made using additional silicon light body and putty (Fig 5,6). PFM Crowns were fabricated wrt 31,32,33,34,41,42,43,44,45 and luted (Figure-7). The secondary cast obtained was surveyed for examination and designing of cast partial framework.



Figure 3. Tooth Preparation Done



Figure 4. Maxillary Caries Removed and Core Buildup



Figure 5. Mandibular Impression



Figure 6. Maxillary Impression



Figure 7. PFM Crowns



Figure 8. Metal Framework

The master cast and refractory cast were fabricated and the design was transferred from master cast to refractory cast, after casting the whole framework was checked for proper seating on the cast and in the

patient's mouth (Figure8). An acrylic custom tray was fabricated (Figure9) and border molding was done by conventional methods for the desired distal extension. The final impression was made by using medium body elastomers (Figure10).



Figure 9. Acrylic Custom Tray



Figure10. Secondary Impression

The cast was altered in the laboratory by using a saw, both cuts were made 0.5 to 1mm distal to the most distal remaining abutments and perpendicular to the ridge⁵ (Fig-11). In the cut section of the cast, grooves were made to enhance retention with newly poured part of the altered cast. The final impression was seated on that cast (Fig-12) and proper beading and boxing were done using sticky wax (Fig-13). Impression was poured and an altered cast was obtained (Fig-14). Finally, conventional methods of fabrication of RPD were carried out. CPD was delivered and post-operative instructions were given. (Fig15,16)



Figure 11. Sectioned Cast



Figure 12. Final Impression On Cast



Figure 11. Sectioned Cast



Figure 12. Final Impression On Cast

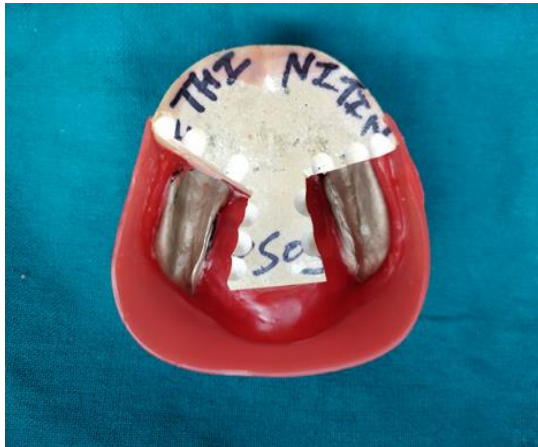


Figure 13. Beading and Boxing Done



Figure 14. Altered Cast



Figure 15. Final Prosthesis



Figure 16. Denture Delivered

Conclusion

Although, altered cast procedure is technique sensitive and requires extra laboratory work it allows the ridge to be recorded in functional form in relation to teeth or abutments present. So, when the final prosthesis is seated it derives support from both teeth and denture base.

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