

## CASE REPORT

# Full Mouth Rehabilitation of a Worn Out Dentition using Multidisciplinary Approach

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## ABSTRACT

Restoration of a badly mutilated dentition has been a challenge to a dentist's skills and capabilities. Principles of occlusion have to be applied keeping the esthetic factor in mind to improve the psychological aspect of the patient and his social acceptance. A combination of mechanical, biological and esthetic factors is mandatory for occlusal rehabilitation. This clinical report describes the prosthodontic management of a 46-year-old male patient with attrition of natural dentition.

**Keywords:** Vertical dimension of occlusion, Anterior guidance, Centric relation.

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## INTRODUCTION

Full mouth rehabilitation is a demanding treatment modality that enhances the esthetics and the quality of life of the patient. It should include the preservation of the remaining tooth structure, restoration of optimum function and short treatment time with cost-effective procedures. The mutilated dentition because of caries, attrition leads to loss of vertical dimension resulting in a compromised appearance, difficulty in mastication and alteration in phonetics. The dentist has to consider the essential elements like vertical dimension, centric relation, speech and analyze them with regard to the present natural dentition. Patients with extreme tooth wear require unique treatment.<sup>1</sup> This clinical report demonstrates a multidisciplinary approach to full mouth rehabilitation of a patient whose dentition was compromised functionally and esthetically.

## CASE REPORT

A 46-year-old, male patient reported to the Department of Prosthodontics, Sri Ramachandra University, Chennai, with a chief complaint of missing teeth in relation to upper and lowers posterior region and wanted to rehabilitate his mouth. Complete medical and dental history was collected in the form of personal history, clinical examinations, radiographs and photographs. Extraoral examination revealed no facial asymmetry or muscle tenderness. Patient did not have any symptoms of temporomandibular joint (TMJ) disorder.

On intraoral examination, generalized attrition of the present dentition was seen. Missing teeth included the first premolar up to the second molar in relation to the first quadrant, the second premolar up to the second molar in the third quadrant and both the molars on the fourth quadrant, along with a retained root stump in relation to second premolar of the second quadrant. The patient's intraoral examination demonstrated a collapsed vertical dimension (Fig. 1). The treatment plan was explained to the patient before the commencement of treatment.

## TREATMENT PROCEDURE

The patient was treated with the oral prophylaxis and the removal of the retained root stump of 25. After the healing of the extracted site, patient was taken for the prosthodontic procedures. Maxillary and mandibular impressions were made with irreversible hydrocolloid impression material and diagnostic casts were made for execution of the treatment plan. Maxillary cast was mounted on a semiadjustable Hanau Wide-View articulator, using a face bow transfer and mandibular cast was mounted using the interocclusal bite record. On clinical examination of the wear facets on the teeth and examination of patients facial muscle tone, the vertical dimension was found to be reduced by 3 to 4 mm. An occlusal splint using self-cure acrylic resin was inserted into the mouth with an increase of 3 mm vertical dimension and it was constructed in such a way that only the palatal cusps of the maxillary teeth contacted the plate in order to



Fig. 1: Preoperative view

prevent interferences during all excursive movements. The patient was advised to wear this splint for a period of 2 weeks. The patient was recalled for a review after a week and was examined for his adaptability to the increased vertical dimension. The patient denied complaints of any problems with regards to the splint inserted and he was instructed to report after 1 week.

Centric relation records were obtained using Lucia Jig. The Lucia jig was made 3 mm thick, in order to compensate for the lost vertical dimension. An interocclusal record was made at the recorded centric relation and the casts were articulated (Fig. 2). Diagnostic wax up was done till the maximum intercuspation was achieved. All the mandibular teeth were prepared for metal ceramic restorations. In the maxillary arch, the first premolar and molar were prepared in the second quadrant for metal-ceramic restorations and the canine and premolar were prepared in the first quadrant in order to receive a crown with an extracoronal ball attachment in relation to the distal of the premolar. Gingival retraction was carried out and a full arch impression was made for the maxillary and mandibular teeth using polyvinyl siloxane impression material. The obtained impressions were poured in die stone.

The provisional restorations were fabricated with the help of diagnostic wax up. It was checked for esthetics and occlusal interferences. Temporary restorations were cemented with eugenol free zinc oxide cement. One week later the patient was recalled to check his adaptability to the provisional restorations. Another week later another Lucia jig tracing was done and the master casts were articulated on the obtained centric relation. The final prosthesis that was made included a full arch fixed partial denture in relation to the mandibular arch which included two cantilevered pontics 35 and 36. The maxillary prosthesis included a three unit fixed partial denture in the second

quadrant replacing the missing second premolar, and cast partial denture retained with the help of a ball attachment in relation to the distal of the premolar 14. Metal units were tried in and modified for marginal adaptation, proximal contacts and stability of the prosthesis. Final restoration was cemented with zinc polycarboxylate cement and the occlusion scheme chosen was group function occlusion (Fig. 3). The patient was given instructions regarding his oral hygiene maintenance and to report for follow-up yearly twice.

## DISCUSSION

The three important requirements to be considered in occlusal rehabilitation are TMJ with no disorders, harmonious anterior guidance and no posterior interferences.<sup>2</sup> The patient exhibited generalized attrition with a collapsed vertical occlusion. Excessive occlusal wear results in the reduction of vertical dimension of occlusion.<sup>3</sup> Full mouth rehabilitation is one of the options in restoring the lost vertical dimension for such patients.<sup>4</sup>

Incisal guidance is of prime importance in the execution of full mouth rehabilitation treatment plan, as unfavorable incisal guidance may result in abnormal functional movements of the condyles.<sup>5</sup> The occlusal vertical dimension has been increased by 3 mm to eliminate all contact of the anterior teeth in centric occlusion and to possible extent in eccentric occlusions. Thereby this avoids an unfavorable incisal guidance.<sup>6</sup>

Temporary restoration not only serves to improve and maintain the prepared tooth condition but also the patient's mental well being. The provisional restoration serves as a medium of communication of many of the patient's fears, anxieties and deep concerns about the loss of facial appearance.



**Fig. 2:** Lucia Jig tracing done at increased vertical dimension and interocclusal record made



**Fig. 3:** Postoperative view

The re-establishment of vertical occlusion should be done such that the altered vertical dimension does not interfere with the neuromuscular control of TMJ. Group function, as observed by Beyron<sup>7</sup> on Australian Aborigines, implies that there is contact and stress on several teeth in lateral occlusion. In accordance group function scheme was chosen as flat multiple occlusal guidance's promoted attrition, which increased the distribution of occlusal stress and directed the stress in a more axial direction.<sup>8</sup> Moreover, the presence of excessive wear of the mandibular anteriors favored the use of group function occlusion.

## CONCLUSION

Prosthodontists are often faced with the difficult challenge of managing mutilated teeth, which presents with variable clinical findings and multifactorial etiology. Full mouth rehabilitation entails the performance of all the procedures necessary to produce a healthy, esthetic, well-functioning and self-maintaining masticatory system. Proper diagnosis and execution of the treatment plan is a key success factor in the above-mentioned procedures.

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