

## Full Mouth Rehabilitation of a Severely Worn Dentition to Functional Harmony: A Case Report

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### ABSTRACT

**Background:** Patients with severe wear may require extensive restorative procedure to achieve appropriate function, esthetics and comfort. Occlusal rehabilitation requires a correlation of biologic factors, mechanical principles and esthetic requirements with treatment procedures. This clinical report describes the full mouth rehabilitation of a severely worn out dentition in functional harmony with the stomatognathic system. Twin stage procedure was adopted to produce definite amount of disocclusion during eccentric movements.

**Keywords:** Anterior guidance, Centric relation, Occlusion, Disocclusion, Effective cusp angle.

### INTRODUCTION

Restorative dentistry has created new dimensions in providing esthetic and functional rehabilitation for patients with severely worn out dentition. A combination of new generation materials, along with improved clinical procedures, works in tandem to produce an esthetic, long-lasting, and functional outcome, satisfying both the clinician as well as the patient. This clinical report demonstrates successful multidisciplinary approach to a full mouth rehabilitation of a patient whose dentition has been esthetically and functionally compromised.

### CASE REPORT

A healthy 50 year old male patient reported to the department of prosthetic dentistry, Panineeya institute of dental sciences, Hyderabad with a chief complaint of unpleasant smile, generalized sensitivity and difficulty in chewing. The patient gave a medical history of mild hypertension. The patient's dental history indicated periodic dental examinations, oral prophylaxis and extraction of 36. The patient denied any symptoms

of temporomandibular joint disorder or myofascial pain dysfunction.

### CLINICAL FINDINGS

**Extraoral Findings:** The patient had no facial asymmetry, or muscle tenderness. Mandibular range of motion was within normal limits. The temporomandibular joints, the muscles of mastication and facial expression were asymptomatic.

**Intraoral Findings:** The maxillary arch was fully dentate and mandibular arch 36 was missing. No gross abnormalities were detected in the overall soft tissues. Generalized attrition, abrasion and erosion were noted.

**Occlusal Findings:** The patient presented with a bilateral class I molar and canine relationship. Freeway space of 2mm was recorded. The patient was comfortable with existing vertical dimension of occlusion. There was a high smile line with moderate gingival display of 2mm. Maxillary midline was 1.5 mm to the right and mandibular midline was 1mm to the left of the midfacial vertical plane.

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Fig 1: Pre operative view.



Fig 2: Occlusal plan analyser.



Fig 3: Metal Try in.



Fig 4: Permanent cementation.



Fig 5: Satisfied patient.

### TREATMENT GOALS

1. To rehabilitate the entire severely worn out dentition in functional harmony with the stomatognathic system.
2. Full coverage metal crowns with porcelain facings.
3. Centric relation occlusion with maximum number of tooth contacts with no
4. To develop a mutually protected occlusion.
5. Twin stage procedure to produce definite amount of disocclusion during eccentric movements.

### TREATMENT PROCEDURE

The patient received oral prophylaxis and proper oral hygiene instructions. The patient was advised root canal treatment for 31,32,41 and 42. Maxillary and mandibular impressions were made and diagnostic casts were obtained. Maxillary cast was mounted using a ear piece face bow (Hanau springbow, no 0103280) onto a hanau arcon articulator and mandibular cast mounted using inter- occlusal Aluwax record. Mandibular posterior occlusal plane was analysed using occlusal plane analyzer. On analysis all mandibular teeth followed the curve of spee. Maxillary left first molar was supra erupted due to absence of opposing tooth, which required occlusal correction. Maxillary occlusal wax-up was done to maximum intercuspation. Anterior wax-up was checked for proper anterior guidance to achieve disocclusion in eccentric movements.

Tooth preparations for full coverage metal ceramic crowns were completed for the entire dentition. A final full arch impression for maxillary and mandibular teeth was made using polyvinyl

siloxane( Aquasil, Dentsply) impression material with double mix single impression technique and casts were poured in die stone which was later secured to a die lock tray. This assembly was mounted on a hanau arcon articulator using a face bow and inter- occlusal record made in Aluwax at previously determined vertical dimension. Provisional restorations were made from the diagnostic wax up template with autopolymerizing acrylic resin and esthetics and occlusion were evaluated. Articulator was programmed to condition I of twin stage procedure and posterior teeth wax build up was completed to achieve balanced articulation which helped in achieving a standard effective cusp angle of 25 degree. Then anterior wax build up was carried out after the values had been adjusted to condition II twin stage procedure to achieve an incisal guidance of 40 degree which produced a standard amount of disocclusion. All the wax patterns were cast and all metal units were tried in and adjusted as needed for proximal contact and occlusion. Definite restorations with porcelain fused to metal crowns exhibiting a vital and a natural appearance with proper contour, shade and optimal incisal translucency were designed. Permanent cementation was done with glass ionomer type I luting cement. Oral hygiene instructions were given to the patient.

## DISCUSSION

The treatment goal was to provide proper restorative treatment to restore the centric relation occlusion, eliminate posterior interferences, restore the worn out surfaces to enhance mastication and to improve the esthetic appearance. D'Amico stated that cuspid protected occlusion and disocclusion were natural adaptations for preventing destructive occlusion[1,2]. Stuart and Stallard in 1957 proposed the scheme of mutually protected occlusion, which has been widely accepted today.[3]

Hobo and Takayama studied the influence of condylar path, incisal path and the cusp angle on the amount of disocclusion. They concluded that cusp angle was the most reliable and was used as a

new determinant of occlusion. Twin – stage procedure proposed by Hobo and Takayama was adopted for wax build up because studies have proved that it is possible to accurately control the amount of disocclusion on the restoration without measuring the condylar path.[4] Twin stage procedure helps in achieving a standard disocclusion of 1mm on protrusion, 1 mm on nonworking , and 0.5mm on working side in eccentric movements at 3mm protrusion from centric relation. Returning condyle path always passed above the eccentric condyle path in sagittal plane. This procedure also aimed in achieving disocclusion in both eccentric path and returning path.[5]

## CONCLUSION

Full Mouth Rehabilitation is very useful in correcting improper bite positions and also in augmenting the smile. Generally speaking the recovery stage is one of the most important stages in this procedure. Patients need to be constantly monitored for at least 12 months after the procedure in order to ensure that they do not accidentally revert to the previous jaw positions.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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