

Full-mouth rehabilitation of a patient with severely worn dentition for function and esthetics

Sunil Kumar Mishra, Srinivasa B. Rao¹, Ramesh Chowdhary², P.S. Patil³

Department of Maxillofacial Prosthodontics and Implantology, Peoples College of Dental Sciences & Research Centre, Bhopal, Madhya Pradesh, ¹Department of Maxillofacial Prosthodontics and Implantology, Gitam Dental College, Visakhapatnam, Andhra Pradesh, ²Department of Maxillofacial Prosthodontics and Implantology, Rajarajeswari Dental College and Hospital, Bengaluru, Karnataka, ³Department of Maxillofacial Prosthodontics and Implantology, Nanded Rural Dental College & Research Centre, Nanded, Maharashtra, India

ABSTRACT

Management of patients with worn dentition is complex and difficult. The management of tooth wear, especially attrition, is becoming a subject of increasing interest in the prosthodontic literature. The specific objectives of this treatment were to restore the masticatory functions by prosthetic rehabilitation of missing teeth, and then treating the periodontally and endodontically involved teeth. This case report presents a 65-year-old woman who was referred for restoration of her worn and missing teeth. Full-mouth rehabilitation of the patient with severely worn dentition and an uneven occlusal plane was done and also the collapse bite was regained by raising the vertical dimension of occlusion by 2 mm within the limit of free-way space. In this case report, the vertical dimension was regained, missing teeth were replaced which enhance esthetics. With better treatment planning and patient's psychological counseling, dentists can improve patient's quality of life.

Key words: collapsed bite, full-mouth rehabilitation, vertical dimension of occlusion, worn dentition

INTRODUCTION

The management of tooth wear, especially attrition, is becoming a subject of increasing interest in the prosthodontic literature, both from a preventive and a restorative point of view.^[1] Tooth wear can be classified as attrition, abrasion, and erosion, and leads to an alteration of the vertical dimension of occlusion (VDO).^[2] It is utmost essential to identify the

factors causing excessive occlusal wear and to analyze the loss of VDO.^[3] Articulated study casts, together with a diagnostic wax-up, provide the necessary information required for evaluating the treatment options, and tolerance of changes to the OVD is usually confirmed with a diagnostic splint or prosthesis.^[4,5] The rationales for altering vertical dimension include aesthetic, correcting occlusal relationship, and allowing space for restorations for prosthetic convenience.^[6] This case report highlights the procedure for rehabilitation of a patient with severe tooth wear, resulting in reduced VDO. In the present case, the bite was collapsed because

Address for correspondence:

Dr. Sunil Kumar Mishra
Department of Maxillofacial Prosthodontics and Implantology,
People's College of Dental Sciences & Research Centre, Bhopal,
Madhya Pradesh, India.
E-mail: sunilmsr200@yahoo.co.in

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of loss of numerous posterior teeth, and attrition of lower anterior teeth. The procedure of rehabilitating this patient includes the restoration of missing and attrited teeth with metal ceramic restorations, a removable partial denture (RPD) and by increasing the vertical dimension according to Pankey Mann Schuyler (PMS) philosophy. The patients consent had been taken for the study.

CLINICAL REPORT

A 65-year-old female patient came to the Department of Prosthodontics, HKE'S S.N. Institute of Dental Sciences, Gulbarga, Karnataka, India, for prosthetic restoration of her worn anterior teeth, as well as replacement of missing teeth. The patient was in good general health, and the medical and dental history indicated no contraindications for dental treatment. Clinical and radiographic examinations revealed severe tooth surface loss on the mandibular anterior teeth [Figure 1]. Uneven occlusal plane were observed. No signs and symptoms were found in the temporomandibular joints, and the patient reported no parafunctional habits. A periodontal examination revealed that the attached gingiva around the mandibular right anteriors were inadequate, mobility was noted with left mandibular first and second premolars. Teeth missing were maxillary left first and second molars, mandibular left central and lateral incisors, canine, second molar, and mandibular right first molar. A careful evaluation of the existing occlusal vertical dimension (OVD) was taken. The vertical dimension was assessed clinically. Physiologic rest position was determined by facial measurements and confirmed by phonetics. The interocclusal distance was judged to be approximately 5 mm, and the OVD could be restored by increasing it approximately 2 mm

The ethical clearance was taken from ethics committee HKE'S S.N Institute of Dental Sciences and Research. Prior to definitive treatment, diagnostic casts were obtained from primary impressions (Alginate, Tropicalgin, Zhermack, Rovigo, Italy). Tentative jaw relation was recorded by using face-bow [Figure 2] and centric records and then mounting was done on semiadjustable articulator (Artex articulator, Amann Girrbach, Koblach, Austria). Based on amount of

freeway space and for convenience of restoration, VDO was raised by 2 mm on the articulator itself, and an anterior jig with this increased vertical dimension was fabricated. Occlusal plane was determined by Broadrick's flag analysis. Wax-up of diagnostic casts with increase VDO was done and an occlusal template was fabricated with self-cure acrylic resin [Figure 3]. Patient was allowed to wear this template for a period of 2 months according to standard protocol, and no relevant signs and symptoms reported during this period.

A treatment plan was developed with the aim of improving occlusion, restoring masticatory function, and improving the patient's appearance. During the following visit, treatment options were discussed with the patient, including extraction of the 34,35, crown lengthening, root canal treatment (RCT) and post and core with 41,42, implant placement in suitable areas, prosthetic treatment with metal ceramic restorations, and a RPD for better esthetic results. Because of close proximity of the left maxillary sinus, sinus lifting surgery was needed in this area for fixed prosthetic rehabilitation with 27, but the patient did not accept this surgery, a option of RPD was given, patient was not ready for that also in maxillary arch. A RPD was planned for 31, 32, 33, 34, 35 as patient is not ready for implant placement and surgical procedure in this region also.



Figure 2: Face-bow assessment for the upper model mounting in a semiadjustable articulator.



Figure 1: Frontal view of the dentition before treatment



Figure 3: An occlusal template.

The left mandibular first and second premolars were extracted. The crown lengthening was done with 41 and 42 followed by RCT, fiber post and composite build up. The rehabilitation was done with PMS philosophy, where in restoration of lower anterior dentition was done first, then upper anteriors followed by lower posterior and at last upper posteriors. Tooth preparation with shoulder-bevel margins in the buccal and chamfer margin in the lingual aspects was performed on the mandibular anterior teeth. Interim prostheses were fabricated and cemented with non eugenol zinc oxide cement (Temp Bond NE; Kerr Corp, Orange CA.). Next, maxillary anterior tooth preparation was performed. Provisionals were fabricated according to diagnostic wax-up with proper anterior guidance during protrusion and unilateral group function during lateral excursions and were cemented [Figure 4], which was later replaced with crown with porcelain fused to metal (PFM) restorations. The preparation of mandibular posterior teeth and maxillary posterior teeth was performed with shoulder-bevel margins in the buccal and chamfer margin in the lingual/palatal aspects. Interim prostheses were fabricated and cemented with non eugenol zinc oxide cement (Temp Bond NE; Kerr Corp.) which was later replaced with crown with PFM restorations and the OVD restored by approximately 2 mm [Figure 5]

To begin the RPD phase of treatment, an impression of the mandibular arch was made, poured with dental stone



Figure 4: Interim prostheses.



Figure 5: Re-establishment of occlusal vertical dimension.

(Kalrock, Kalabhai, Mumbai, India). The RPD was fabricated and inserted in patient's mouth, occlusal contacts were adjusted, and the RPD delivered to the patient [Figure 6]. Minor adjustments were required at four post-insertion visits.

After 2 months, the temporary cement was changed with zinc phosphate cement and the patient was placed on a 6-month recall for evaluation of the esthetics and function of the restorations and also if there was any evidence of temporomandibular joint problems, fractures in the teeth, or PFM restorations

DISCUSSION

The case report presented in this article describes a patient with severely worn dentition and decreased VDO. The management of the worn mandibular anterior dentition is a restorative challenge, and often presents in association with reduced OVD, which further complicates the rehabilitation procedures.^[7] Inadequate or unstable posterior support has been identified as a factor in severe anterior attrition and decreased OVD.^[8] As the patient cannot afford dental implants and the dental status permits the treatment plan was done on a simplified and efficient rehabilitation technique so that low-cost rehabilitation can be done with great possibility of longevity.

Oral health, function, esthetics, and comfort are very important in decision making for the treatment of patients for full mouth rehabilitation.^[9] In treating such patients a planned and systematic approach is required, so that a favorable treatment outcome can result.^[10] After re-establishing a new vertical dimension and making sure that it is stable and comfortable for the patient, an aesthetic restorative treatment is needed, so same was followed in the treatment of this patient.^[11,12] In this case report, treatment was done to regain vertical dimension, replacement of missing teeth were done, and crowns were given on attrited teeth to enhance function and esthetics. All the measures were taken to preserve the remaining teeth by doing periodontal treatment, root canal treatment, post and core and prosthodontic rehabilitation.



Figure 6: Teeth in occlusion after treatment

CONCLUSION

The treatment of patient with attrition and decreased VDO is of increasing interest. The objective of full mouth rehabilitation must be the reconstruction, restoration, and maintenance of the health of the entire oral mechanism. For a good treatment outcome, psychological counseling of patient is a very important aspect of treatment planning. With better treatment planning and patient's psychological counseling, dentists can improve patient's quality of life.

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Conflicts of interest

There are no conflicts of interest.

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