

Rehabilitation of a patient with severely attrited dentition– A case report

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Abstract

A patient with severely attrited dentition suffers from generalized sensitivity, mobility of teeth, compromised esthetics and decreased vertical dimension of occlusion which results in a dentition compromised in form, function and esthetics due to which the patient suffers from lack of confidence. The objectives of the treatment for such case should be preservation of the remaining tooth structure, restoration of optimum function, esthetics with least invasive procedures, cost effective treatment, and shorter treatment time.

Keyword: Rehabilitation, Severely attrited, Diagnostic wax up, Vertical dimension, Occlusal wear

Introduction

The gradual wear of the occlusal surfaces of teeth is a normal process during the lifetime of a patient.⁽¹⁾ However; extreme occlusal wear can result in pulpal pathology, occlusal disharmony, impaired function and esthetic disfigurement. The dentist has to analyze the indispensable elements like vertical dimension, centric relation and speech with regard to the present natural dentition.⁽²⁾

The vertical dimension of occlusion is constant throughout an individual's life, and any alteration in this distance will interfere with the physiology of the masticatory system, although many authors assume that patients can adapt to such changes. Multiple techniques have been proposed to quantify the VDO, including the use of pretreatment records, incisor height measurements, phonetic evaluation, relaxation of patient and assessment of facial appearance, radiographic and neuromuscular evaluation and each of these techniques has demonstrated helpful.^(3,4) This report describes a case of severely worn dentition, which resulted in restricted restorative space.

Case Presentation

A 55-year-old male patient reported to the dental clinic with the chief complaint of restricted ability to eat food properly due to wear of teeth. He gave history of pain and generalized sensitivity of teeth due to which some of his teeth were root canal treated. He was a tobacco chewer since 30 years. The patient had no facial asymmetry or muscle tenderness. The mandibular range of motion was within normal limits. The TMJ, muscles of mastication and facial expression were asymptomatic. No gross abnormality was noted in the overall soft tissues of the lips, cheeks, tongue, oral mucosa, and pharynx.

Intraorally, the patient presented with mild-to-moderate generalized attrition of dentition with

moderate loss of vertical dimension. Bilaterally, molar and canine relationship was class I. The patient demonstrated a slide from centric relation to maximum intercuspation position. There was generalized discoloration of the whole dentition with fair oral hygiene. There was an alteration in occlusal plane with unaesthetic appearance of teeth, and patient had no sign of pocket and bone loss. 13 and 35 were missing and 43 was supraerupted. Radiographic examination revealed generalized severe attrition and endodontic treatment w.r.t 21, 31, 32, 33, 34, 41, 42, 44 with adequate bone support (Fig. 1).



Fig. 1: Pre-operative intra oral view and OPG

Treatment plan: Full mouth rehabilitation with PFM crown and bridges to restore vertical dimension and esthetics was planned. The rehabilitation was carried out as follows:

1. Maxillary and mandibular impressions were made with the alginate impression material and diagnostic casts were poured.
2. Based on patient's moderate loss of vertical dimension, a hypothetical increase of 3 mm in the vertical dimension of occlusion was carried out using a Lucia jig and interocclusal record based on the evaluation of the mounted diagnostic cast in centric relation.⁽⁵⁾ Then the maxillary cast was mounted using face-bow transfer onto a semi-adjustable articulator and the mandibular cast mounted using the Lucia jig and centric relation record. Occlusal plane was determined using

Broadrig's Flag Method (Fig. 2).⁽⁶⁾ Diagnostic mounting was done at increased vertical dimension using occlusal splint(Fig. 3)



Fig. 2: Face bow transfer and determination of occlusal plane with Broadrig's flag method



Fig. 3: Diagnostic mounting at increased vertical dimension using occlusal splint

- Following this, diagnostic wax-up was done at the established new vertical to check the outcomes (Fig. 4). Diagnostic wax-up was carried out keeping in mind the anterior guidance, existing occlusal scheme, vertical dimension and mutilated dentition.^(7,8) Then an occlusal splint was provided to the patient as part of reversible interventional modalities to evaluate adaptation of the patient to altered VDO. The patient was kept on diagnostic and observational period of 6 weeks before the definitive restorative phase of rehabilitation was started.⁽⁹⁾ The teeth were prepared and Stage I provisional restorations were fabricated chairside, segment by segment during several appointments to minimize patient discomfort and efficiently use the appointment time. The patient's vertical dimension of occlusion was maintained by using unprepared teeth as occlusal vertical stops. Minimal occlusal reduction is generally indicated for patients scheduled for rehabilitation at an altered vertical dimension of occlusion. The definitive phase for full coverage metal–ceramic tooth preparations was completed for the entire dentition with minimal occlusal reduction and final elastomeric impression were made (Fig. 5); Stage II provisionals were fabricated using the putty index of the diagnostic wax-up and cemented with noneugenol ZnO cement (Fig. 6). The final impressions were poured and the

models were mounted on semi adjustable articulator.



Fig. 4: Completed diagnostic wax-up



Fig. 5: Tooth preparations and final impression



Fig. 6: Provisional restorations: frontal and lateral view

The casts were then die cut and wax patterns were fabricated and casted. Following which all metal copings were tried intraorally to evaluate internal fit and stability (Fig. 7). Definite restorations with PFM crowns exhibiting a vital and natural appearance with proper contour, shade and optimal incisal translucency were fabricated (Fig. 8, 9). Permanent cementation was done with GIC type I luting cement.



Fig. 7: Metal try in



Fig. 8: Post op- intraoral: frontal and occlusal view



Fig. 9: Post op- intraoral: right and left lateral view

Outcome and follow up: Oral hygiene instructions were given, emphasizing on brushing habits and the use of floss threaders and dental floss. Follow-up was carried out at regular intervals and the patient's post-operative condition was found satisfactory. The patient pre and post operative views are shown in Fig. 10.



Fig. 10: Extra oral: Pre and Post- op view

Discussion

Severe wear cases present many challenges to the restorative dentist, including gaining the space to create restorations to satisfy the patient's aesthetic desires, and fulfilling occlusal and functional parameters that are vital for long-standing success.⁽¹⁰⁾ The case presented has demonstrated that the necessary space may be obtained by seating the condyles in centric relation position. The maintenance of severe wear cases can be ensured by the development of proper anterior guidance that allows for posterior disocclusion within the patient's envelope of function. Considering this guidance during provisionalization ensures minimal adjustments in the definitive restorations and a better long-term predictability of the case.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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