

Full Mouth Rehabilitation of a Patient with Severely Worn Molars: A Case Report

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Abstract

The severe wear of mandibular molar teeth with loss of few teeth, resulting in collapse of vertical dimension at occlusion and also, change in normal occlusal plane. This case report describes a 45yr old female patient who had severely attrited lower molars and loss of vertical dimension. Provisional crown and bridge was used for 4 months with increased vertical dimension, after, taking into consideration of anatomical landmark, facial and physiologic measurement. Once compatibility of stomatognathic system confirmed permanent restoration was initiated. This case reports that a satisfactory clinical result can be achieved by restoring vertical dimension to restore esthetics and function.

KEYWORDS: worn dentition, full mouth rehabilitation, full mouth reconstruction, PFM restoration

Introduction

Wearing out of natural enamel is a common phenomenon in the dentulous population, although it is seen in aged people but has become common among relatively young patients. The aetiology may be attributed to so many factors like food habits, bruxism, attrition, erosion, abrasion. The resultant wearing out of teeth leading to loss of vertical dimension could be because of one or combination of factors¹⁶. Stomato-gnathic system tries to compensate the loss of vertical dimension to certain extent by tooth eruption along with alveolar bone growth and remodelling^{6,12}. In spite of natural adaptive response of teeth and alveolar tissue patients will come with severe loss of tooth structure and also decreased vertical dimension at occlusion (VDO). It is important to assess the factors contributing for excessive wear and evaluate alteration of the VDO of dentition¹⁴.

Aesthetic and functional restoration of the severely worn dentition represents a significant clinical challenge to dentist. One of the most demanding aspects of such cases involves the development of sufficient restorative space, while simultaneously fulfilling aesthetic, occlusal and functional parameters essential to long term success when evaluating and diagnosing a patient with severely worn dentition, emphasis must be placed on the occlusal prematurities preventing condylar seating into the centric relation position. Success in maintaining severe wear cases depends on the development of proper anterior guidance to allow for posterior disocclusion within the patient's envelope of function.

The rehabilitation of severely worn dentition with fixed or removable prosthesis is complex and most difficult. Maintaining a stiff balance between functionality, aesthetics and health of teeth & periodontal structure is the key for successful treatment¹⁷. the first step in restoring the worn dentition will be assessment of VDO,

any pulpal pathology, occlusal disharmony, functional impairment, and aesthetic requirement of the patient. After careful evaluation of these factors a comprehensive treatment plan should be decided for that particular patient. Articulated study casts and diagnostic wax up will provide information which is helpful in evaluating treatment options. The requirement for increasing vertical dimension will be confirmed, and tissue tolerance for change in vertical dimension will be determined by giving occlusal splints or provisional prosthesis⁹. In this clinical report provisional occlusal splint was given for three months and observed for any reaction to increase in VDO.

Case Report

A 45yr old lady was referred for the treatment of multiple missing teeth with worn out posterior dentition. Patient mainly complained of inability to chew and facial appearance due to too much wearing out of posterior teeth. The general medical condition was satisfactory, intraoral examination revealed generalised attrition in mandibular left first molar & second premolar and also on the lingual aspects of anteriors. The first premolar on both side of lower arch missing along with right first molar and second molar on the left side. In the upper arch first premolar and second molar on right side. Second premolar and second molar on left side were missing. The lower first premolar and molar were attrited to the gingival level with only 2mm of tooth structure without pulpal exposure, anteriorly both upper and lower teeth were attrited to certain extent due to collapse in posterior vertical dimension, previously patient was given RPD for missing posterior teeth but she was not comfortable and she didn't use it for long time resulting loss of posterior support. On guiding the mandible by Dawson's bimanual technique to centric relation there was discrepancy in centric occlusion and maximum intercuspation. In spite of this there was no temporomandibular disorder and no soreness in the muscles of mastication (fig 1a,b,c).



fig 1b. Maxillary arch with attrition in molars, fractured and wearing pattern on lingual aspect of anteriors



fig 1c. The mandibular arch with severely worn molar and premolar teeth and also on incisal aspect of incisors.

The loss of VDO was assessed by evaluation phonetics and interocclusal space^{12,15,17}. Patient was asked to pronounce the letter 'S' it sounded like 'SS' whenever there is increased distance between mandibular incisors and lingual surface of maxillary incisors the letter 'S' will be heard like hissing sound. Ideally it should be 1mm.

The interocclusal rest space was measured between tip of the nose to chin tip it was 6-7mm ideally should be 2-4mm. Wrinkles and accentuated angle of the mouth suggested severe loss of VDO.

The possible cause of worn dentition may be due to loss of posterior teeth, eating habit, possibility of dental negligence. The physiologic wear will be compensated by eruption of teeth but the accelerated wear may exceed rate of eruption resulting in loss of tooth structure to gingival level and collapse of posterior bite. The treatment options in such situation will be implants or removable partial denture in edentulous posterior region. Since the implant placement required minor surgery patient was not willing for it, and also she was not ready for posterior RPD as she was not comfortable with removable prosthesis. The only option was to do full mouth rehabilitation with metal ceramic restoration involving posterior teeth. Even though the lower posterior required crown lengthening she was adamant to undergo for the scare of any type of surgery. On radiographic analysis none of the teeth required endodontic treatment but any further reduction of



fig 1a. Front view showing loss of vertical dimension, the supra eruption of maxillary molar.

occlusal height warranted for root canal treatment. Hence we planned for metal ceramic bridge and crowns from canine to molars on all the side with increased vertical dimension. Since patient molar teeth were attrited to large extent it was decided to do preparation of teeth and giving temporary bridge in methyl methacrylate resin with increased vertical dimension of about 2-3mm in the premolar region, patient was asked to continue with provisional crown for 4months and patient was observed periodically for any TMJ problems or muscle soreness and comfort.

Procedure

The diagnostic casts were mounted on an semi adjustable articulator(Hanau H2 articulator) using face bow record and interocclusal record in a pre-centric position with the help of Lucia jig. The occlusion was evaluated and the amount of vertical preparation of teeth was determined with proposed change in vertical height in mind. After the evaluation of diagnostic cast, patient was called for teeth preparation and centric relation was recorded using Lucia jig with wax rim. The provisional bridge was constructed with methyl methacrylate resin with increased vertical height of about 3mm in premolar region. The steep anterior guidance was maintained so that posterior teeth disoccluded in all excursive movement of mandible. The provisional bridge was cemented using temporary cement (freegenol temporary cement).

posterior teeth were disoccluded in excursive movement of mandible avoiding excessive par functional force on the posteriors maintaining mutually protected occlusion. Patient was educated on proper oral hygiene instruction and emphasised on regular checkups.



Fig 3, The final prosthesis in place.



fig 2. The metal try in

Patient was recalled once in 10 days and observed for any muscle tenderness, discomfort in TMJ and any change in the function of mastication, speech, swallowing. Any adjustment needed were done for the betterment of mastication, facial aesthetics were carried out. The provisional bridge was maintained for 4 months and patient's tolerance for new mandibular position and increase in VDO was confirmed. Final preparation was performed and definitive impressions were made with poly vinyl siloxane impression material. Bite registration was taken using provisional bridge. Porcelain fused to metal restoration was made with try in of metal frame work and final restoration was cemented using glass ionomer cement. Since the acute anterior guidance was maintained even in final restoration the

Discussion

In this patient report we followed raising of vertical dimension by using provisional crown and bridge in auto polymerizing resin for 4months so that patient stomato gnathic system was given time to adjust to the new vertical condition. The patient's acceptance of aesthetics & comfort were evaluated over a period of time and adjusted to the desired level.

In the literature wearing time of overlay splint or provisional crowns varies. The trial period of overlay prosthesis which will be reversible and conservative is between 1 to 5months, and that of intensive fixed provisional prosthesis is 2to 6 months^{1,8,12,15,17}, but in our case report we used directly fixed provisional prosthesis for 4 months due to the patients posterior teeth condition. During this period patient adaptation to the new crowns was good and no discomfort, or muscle fatigue was reported. The increase of vertical dimension was determined not by standardized esthetic golden proportion of anterior teeth but by patients physiologic factor like interocclusal rest space and speech.

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