Management of worn off dentition – Case Report

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Abstract:

Restoration of occlusion in patients with severely worn dentition is a challenging situation as every case is unique in itself. There is great apprehension involved in reconstructing debilitated dentition due to widely divergent views concerning the choice of an appropriate occlusal scheme for successful full mouth rehabilitation. This case report describes step by step treatment protocol for full mouth rehabilitation of a 45-year-old male patient who had severely worn teeth combined with an anterior deep bite.

Key word: *Full mouth rehabilitation, anterior guidance, condylar guidance, Pankey-Mann schuyler technique*

Introduction

The objective of full mouth rehabilitation is not only the reconstruction and restoration of the worn out dentition, but also maintenance of healthly stomatognathic system. Full mouth rehabilitation should re-establish a state of functional as well as biological efficiency where teeth and their periodontal structures, the muscles of mastication, and the temporomandibular joint (TMJ) mechanisms all function together in synchronous harmony. [1]

Proper evaluation followed by definitive diagnosis is mandatory as the etiology of severe occlusal tooth wear is multifactorial and variable. Careful assessment of the patient's diet, eating habits and/or gastric disorders, along with the present state of occlusion is essential for appropriate treatment planning. Various classifications have been proposed to classify patients requiring full mouth rehabilitation, however, the classification most widely adopted is the one given by Turner and Missirlian.[2]According to Turner and Missirlian, patients with occlusal wear can be broadly classified as follows:

Category-1: Excessive wear with loss of vertical dimension of occlusion (VDO)

Category-2: Excessive wear without loss of VDO but with space available

Category-3: Excessive wear without loss of VDO but with limited space of VDO

After evaluating and classifying the patient's existing clinical situation and before beginning the reconstruction procedure, the clinician must decide upon the occlusal approach and choose an appropriate occlusal scheme.

Occlusal Approach

Occlusal approach for restorative therapy can be either conformative approach (often advisable) or a reorganized approach. In conformative approach, occlusion is reconstructed according to the patient's existing intercuspal position. [3] It is adopted when small amount of restorative treatment is undertaken. In reorganized approach, new occlusal scheme is established around a suitable condylar position which is the centric relation position. The patient's occlusion may be reorganized if the existing intercuspal position is unacceptable and needs to be changed or when extensive treatment is to be undertaken to optimize patient's occlusion.

Occlusion scheme

The ideal occlusion for eccentric movements can be classified by three schemes, according to the tooth contact condition; mutually protected articulation, group function, and balanced articulation. The balanced occlusion concept is applied to complete denture patients while mutually protected occlusion and group function are applied for natural dentition.

Choice of Occlusal Concepts and Philosophies

There has been a search for the ideal occlusal scheme to be followed during full mouth rehabilitation that would provide optimal muscle and joint function besides aiming at restoring the occlusal surfaces of teeth. Many concepts and techniques have been discussed till now in order to rehabilitate dentition with fixed prosthodontics.

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An organized approach to oral rehabilitation was introduced by Pankey utilizing the principles of occlusion advocated by Schuyler, known as the Pankey–Mann–Schuyler (PMS) philosophy of Oral Rehabilitation. [4] Their philosophy was pertinently based on the spherical theory of occlusion. This case report describes a full mouth occlusal rehabilitation done using Pankey Mann Schuyler philosophy.

Case presentation:

This clinical case report describes the rehabilitation of 45 years old male patient complaining difficulty in chewing and sensitivity with lower anterior. Examination revealed severe attrition with 31, 32, 33,41,42,43 and anterior deep bite and loss of vertical dimension. (Fig.1). Treatment plan included endodontic treatment with 31, 32, 33, 41, 42, 43 followed by crown lengthening procedures and restoration of lost vertical dimension an rehabilitation of occlusion by Pankeyman Schuyler technique. The lost vertical dimension was determined following three methods Niswonger's method, Silverman closest speaking method and facial measurement method and found it as 5mm. Patient was given occlusal splint with increase VDO of 3mm for two months. Meanwhile endodontic treatments and crown lengthening procedure with 31, 32, 33, 41, 42, 43 was completed. The subject was reviewed weekly for any discomfort and pain due to increased VDO.

According to (PMS) philosophy, treatment is divided into 4 stages. Step 1: Examination, diagnosis, treatment planning and prognosis. Step 2: Harmonization of anterior guidance for the best possible esthetics, function and comfort. Step 3: Selection of acceptable occlusal plane and restoration of lower posterior occlusion in harmony with anterior guidance in a manner that will not interfere with condylar guidance. Step 4: Restoration of occlusion in harmony with anterior guidance and condylar guidance.

Once the patient was comfortable with restored vertical dimension with the help of splint anterior temporary crowns were fabricated and anterior guidance was established. Maxillary and mandibular anterior were restored and temporary crowns and esthetics, function and comfort of the patient were assessed. The occlusal plane analysis was done using Broadrick occlusal plane analyzer [6] (Fig. 2). The caliper was set at a radius of 4 inch from needle point to pencil point. Needle point of the caliper is placed against the selected point on canine and an arc was scribed on the flag (anterior survey line). Caliper point was held against the condyle ball of the articulator and another arc was made in flag (condylar survey line). From the intersect point a line was drawn from molar to canine which determine the acceptable occlusal plane for the lower posteriors. To transfer this to mouth a wax guide is made and held against the teeth and preparation line 5 mm below the plane is marked on the teeth, giving space for the restoration.

After determining the occlusal plane temporization of mandibular and maxillary posteriors was given in harmony with anterior guidance and condylar guidance. Temporization period was two month and patient was reviewed weekly. Once the subject was comfortable with new bite, permanent crowns with maxillary and mandibular anterior were given first followed by maxillary and mandibular posteriors. Patient did not complain of any pain during chewing and was satisfied with esthetics.

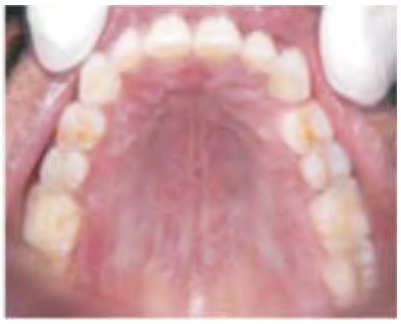

Fig 1 Maxillary

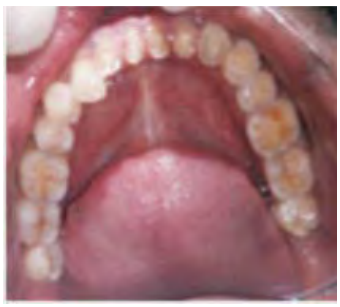

Fig 2 Mandibular arch

Fig 3 Mock wax up and occlusal plane analysis using broadwigs flag

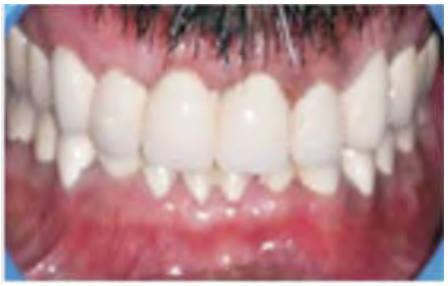

Fig 4 Final prosthesis in occlusion

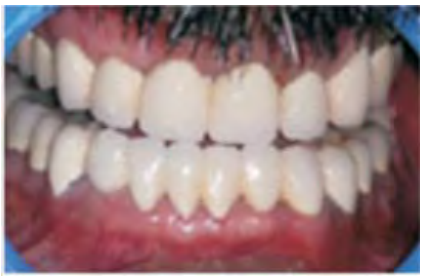

Fig 5 Final Prosthesis in protrusive

Discussion

Full Mouth rehabilitation seeks to convert all unfavorable forces on the teeth which inevitably induce pathologic conditions, into favorable forces which permit normal function and therefore induce healthy conditions.[5] In this case subject had severe attrition and lost vertical height and difficulty in chewing. After the full mouth occlusal rehabilitation, patient got good functional occlusion with no further problems during two years follow up. There are many philosophies to follow for an occlusal rehabilitation; most important among them is Hobo's philosophy and Pankey Mann Schuyler philosophy. PMS philosophy is one of the most practical philosophies for occlusal rehabilitation. Optimum oral health should be prime objective of the rehabilitation procedures, because the ultimate goal will always be to restore the mouth to a healthy state and preserve this status throughout life of a patient. Pankey and Mann introduced an instrument for occlusal plane analysis, in this case lost vertical height was regained using occlusal splint followed by use of simplified version of the instrument i.e. customized broad rick flag analyzer for occlusal plane analysis. This assists in the reproduction of tooth morphology that is commensurate with the curve of Spee when posterior restorations are designed. [4]

Conclusion

Occlusal rehabilitation is a radical procedure and should be carried out in accordance with the dentist's choice of treatment based on his knowledge of various philosophies followed and clinical skills. Regaining lost vertical height using occlusal splint and following Pankey Mann Schuyler philosophy for full mouth rehabilitation can be the treatment of choice for the patient with severe attrition and loss of vertical dimension so that they can enjoy the oral health, comfort, functional efficiency and esthetics which are prime objectives of oral rehabilitation.

References

1. Kazis H, Kazis AJ. Complete mouth rehabilitation through fixed partial denture prosthodontics. J Prosthet Dent. 1960;10:296–303.
2. Jones SSM (1963) The principles of obtaining occlusion inocclusal rehabilitation. J Prosthet Dent 13:706–713.
3. Celenza FV, Litvak H Occlusal management in conformative dentistry. J Prosthet Dent 1976; 36 : 164 –70.
4. Mann AW, Pankey LD Oral rehabilitation: part I. Use of the P-M instrument in treatment planning and in restoring lower posterior teeth. J Prosthet Dent 1960 ; 10 : 135 – 50
5. Irving Goldman. The goal of full mouth rehabilitation. J prosthet Dent 1952; 2 : 246 -51.
6. Christopher D Lynch, Robert J Mc Connell. Prosthodontic management of the curve of spee: use of the broadrick flag. J Prosthet Dent 2002 ; 87 : 593 - 97.