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FULL MOUTH REHABILITATION OF A WORN OUT DENTITION USING PMS PHILOSOPHY- A CASE REPORT

Prosthodontics

Dr. Joel Koshy Joseph*	MDS, Senior Lecturer, Department of Prosthodontics, Yogita Dental College and Hospital *Corresponding Author
Dr. Chetan Modgi	MDS, Reader, Department of Prosthodontics, Yogita Dental College and Hospital
Dr. Premraj Jadhav	MDS, Prof. & HOD, Department of Prosthodontics, Yogita Dental College and Hospital
Dr. Milind Limaye	MDS, Professor, Department of Prosthodontics, Yogita Dental College and Hospital
Dr. Pradeep Taide	MDS, Reader, Department of Prosthodontics, Yogita Dental College and Hospital
Dr. Varunraj Jadhav	MDS, Senior Lecturer, Department of Prosthodontics, Yogita Dental College and Hospital
Dr. Chandan Sengupta	MDS, Senior Lecturer, Department of Prosthodontics, Yogita Dental College and Hospital

ABSTRACT

A severely mutilated dentition itself poses a huge challenge for specialists, right from its diagnosis, treatment planning till its treatment. Since its etiology is multifactorial, therefore it is essential for the dentist to diagnose it and treat them so that it doesn't affect the restoration again. This case report describes a 46 year old male patient who is suffering from severe generalized attrition and reduction in vertical dimension of occlusion. Occlusal full coverage acrylic crowns were used as provisional restoration for raising the reduced occlusal vertical dimension (OVD). Once the compatibility of the new vertical dimension was confirmed, final Prosthesis of choice was Porcelain Fused to Metal (PFM) Crowns with occlusal metal coverage.

KEYWORDS

Full Mouth Rehabilitation, Occlusal Vertical Dimension (OVD),

INTRODUCTION:

Full mouth rehabilitation refers to the reconstruction and restoration of the worn out dentition along with maintenance of the health of the entire stomatognathic system[1]. It re-establishes a state where the periodontium, muscles of mastication, temporomandibular joint; all the components of Stomatognathic System function in harmony[2]

It is at most mandatory to investigate the root cause of the problem resulting in mutilated dentition. It could be because of occlusal interferences, developmental tooth deformity, stress, diet or presence of para functional habits[3]. Once the cause is identified, careful assessment along with the present state of occlusion should be made for appropriate treatment planning.

In this case, Bruxism was the chief cause of loss of OVD. Severe tooth attrition resulted in loss of OVD and subsequent aesthetic and functional sequelae.

CASE REPORT:

56 year old male patient reported to the Department of Prosthodontics, Yogita Dental College and Hospital, Khed, with pain in lower front tooth region. He complained of muscle tenderness on waking up from 5 years. His pain was spontaneous and continuous in nature but relieved on medications. His meals were majorly non-vegetarian food and brushed twice daily with hard bristled brush and powdered dentifrices. He was diagnosed with sleep bruxism which was rooted to his stressful lifestyle.

Fig 1: Pre-operative view

As a result, he had generalized attrition, resulting in loss of vertical dimension of occlusion as was assessed with various methods of establishing OVD. Full mouth rehabilitation was thus planned with increase in vertical dimension of occlusion for aesthetic and functional correction of occlusion of the patient.

Phase 1: Initial education and motivation of the patient, psychological counselling

The patient was informed about the diagnosis, treatment procedure & protocol and expense of the treatment. Once the consent was obtained, the treatment was initiated as planned.

Phase II: Periodontal prophylaxis and maintenance, oral hygiene instruction, crown lengthening:

Intentional root canal treatment was completed with respect to the lower anterior, followed by post and core to increase its crown height space.

Phase III: Impression, jaw relation record, mock wax-up at increased vertical dimension and occlusal splint at increased vertical dimension:
On clinical and radiographic assessment, he was categorized under

Type I given by Turner and Missirlian classification[4]. Restoration of the vertical dimension was the first clinical step in the occlusal rehabilitation of the patient. Facebow transfer was done and the casts were articulated in Hanau™ Wide-Vue (Whipmix, Louisville, KY, USA) articulator. Customised Broadrick's plane analyser was used for assessing the existing occlusal plane of the patient; which revealed that compensatory curves were compromised. Curve of Spee and Monsoon were adjusted such that occlusal scheme given was that of a group function with long centric contacts.

Fig 2: Customised Boardrick's plane analyser

Articulator was programmed and diagnostic mock-up was done accordingly. It was seen that 3mm increase in OVD was required to achieve function occlusal height of the posterior component of the teeth. Anterior guidance was established to protect the posterior teeth in eccentric movements with Customised anterior guide table.

Fig 3: Anterior Guidance established

Wax Mock Up was done on the articulated diagnostic casts at increased vertical dimension for the functional and aesthetic assessment in the patients by the virtue of trial of the temporaries duplicated from the same Wax Up.

A clear matrix of the mock-up was fabricated using Bio-star sheet®. Using the matrix as a template, full coverage provisional crowns were fabricated over the posterior teeth which would serve as long term temporaries.

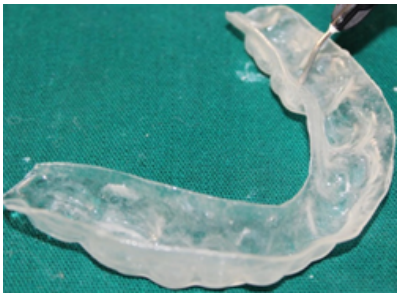
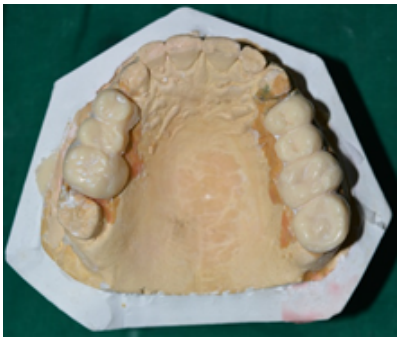


Fig 4: Bio-star sheet template



The patient was asked to report every alternate week for six weeks. After 2months of evaluation, the patient had comfortably accepted his restored vertical dimension of 3mm.

Fig 6: Bite raised by 3mm.

Phase IV: Tooth preparations, impression, jaw relation recording:
Tooth preparations were completed with respect to upper and lower anteriors. Definitive restoration of porcelain fused to metal full coverage crowns were fabricated and were cemented.

Following that tooth preparation for full coverage Porcelain fused to metal (PFM) crowns was done for upper posterior teeth. During this procedure, the anterior guidance was maintained by the anterior restorations. Elastomeric impressions were made for crown fabrication and jet bite registration was taken to delineate the available inter-occlusal space.

Phase V: Definitive restoration:
With the use functionally generated path records occlusal interferences were eliminate and restorations were equilibrated to group function and long centric contacts positions based on the postulates of Pankey Mann Schuyler philosophy.

The final restorations were re-examined for harmonious contacts and were then cemented. In the final appointment, bite guard was fabricated and delivered to the patient.

Fig 7: Pre and Post operative

Phase VI: Post-operative follow-up:
Instructions were given and the patient was followed up after one week. The patient was very pleased with the aesthetics and was comfortable in function and speech.

DISCUSSION

The science of full mouth rehabilitation hinges on three accepted principles: existence of physiological rest position of the mandible which is always constant, presence of variable vertical dimension and lastly the acceptance of a dynamic, functional centric occlusion[5].

The correct vertical dimension is determined by the muscular relationships and the vertical height of the face which can be measured or calibrated using physiological rest position of the mandible as the guiding factor.[6] Vertical dimension is compromised or lost primarily because of loss of tooth structure, resulting to a closed or collapsed bite[7].

Since, the vertical dimension of the face is established early in life and remains proportionately constant[8], therefore the treatment of closed bite / collapsed bite is not designed to increase the vertical dimension beyond the normal limits instead it only intends to restore the lost amount of vertical dimension of occlusion.[9] In order to restore the lost OVD, the whole occlusion needs to be re positioned in a new height. This would involve a perspective adaptation of temporomandibular joint and muscles, without which the procedures can fail.[10] Thus through Full mouth rehabilitation, a harmonious relation between the components of stomatognathic system can be achieved.[11]

There are various occlusal concepts/ philosophy proposed by various authors[12], namely:

1. Gnathological concept (McCollum, Stuart, Stallard)
2. Freedon in Centric concept (Schuyler)
3. Simplified occlusal design (Wiskott and Belser)
4. Pankey, Mann and Schuyler Philosophy
5. Twin Table Technique (Sumia Hobo)
6. Twin Stage Procedure (Sumia Hobo and Takayama)
7. Youdelis Scheme
8. Nyman and Lindhe Scheme

Pankey Mann and Schuyler philosophy aims to achieve the principles of occlusion advocated by Schuyler.[13] This includes:

1. Co-ordinated and static contacts of maximum number of posterior teeth in centric relation.
2. Harmonious functional anterior guidance in Lateral excursive movements
3. Disclusion of posterior teeth during protrusion
4. Group function in working side and no contacts in non-working side during lateral excursions.

Pankey Mann Schuyler philosophy was chosen for this case because it is well organized, logical procedure where anterior guidance is established first followed by restoration of the posterior teeth. Unlike in other philosophies, the vertical dimension established is not lost during any phase of the treatment[14].

CONCLUSION:

Each tooth functions both as an individual and as a collective unit. If

the function of one tooth is lost, it also compromises the integrity of the other teeth, resulting to a crippled dentition. In extremely worn dentition, because of the adaptive mechanisms of alveolus, periodontium, TMJ and dentition, the compromised OVD can be increased within the physiologic limits without any unfavourable symptoms. The key factor for success in full mouth rehabilitation cases is to obtain an anterior guidance established in harmony with posterior teeth in centric and eccentric jaw movements.

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