



Case Report

Restoring function and aesthetics: Full mouth rehabilitation of severely worn dentition using the pankey-mann-schuyler approach: A case report

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Abstract

This clinical case report presents the restoring of function and aesthetics of a 57-year-old male patient with partial edentulism and severely worn-out dentition, this clinical situation was Grade 2 attritions on the ordinal scale for grading severity of occlusal wear. This describes the full mouth rehabilitation, following the Pankey Mann Schuyler (PMS) philosophy, of the patient with severely worn-out dentition. This full mouth rehabilitation was planned to restore function and aesthetics.

Keywords: PMS (Pankey-Mann Schulyer) philosophy, Aesthetics, VD.

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1. Introduction

Severe dental attrition can significantly impact a patient's function, aesthetics, and overall oral health. Excessive wear of the dentition often results in loss of vertical dimension, compromised occlusion, and functional discomfort, requiring a comprehensive approach to rehabilitation. Full mouth reconstruction aims to restore lost tooth structure, re-establish proper occlusal harmony, and enhance the patient's quality of life.¹

Attrition grade is characterized by dentin exposure on occlusal or incisal surfaces, accompanied by a change in the tooth's shape and a reduction in crown height.²

Several schemes are available, including PMS, Hobo's twin table, and Hobo's twin stage. PMS and Hobo's twin stages are among the most common.³ The PMS technique was chosen over Hobo's because it is more organized and logical, resulting in a smoother process for the operator, patient, and technician. The operation was divided into separate appointments: first for permanent prosthetic rehabilitation of anterior teeth, then for posterior tooth rehabilitation.⁴ Laboratory procedures are brief and

straightforward, with no need for time-consuming techniques or complex instruments as in other complete mouth rehabilitation schemes.⁵

This case report presents the successful rehabilitation of a patient with severely attrited dentition using the Pankey-Mann-Schuyler technique, highlighting the step-by-step clinical approach, challenges encountered, and final treatment outcomes.

2. Case Report

This clinical case report presents restoration of function and aesthetics of a 57-year-old male patient with partial edentulism and severely worn-out dentition (**Figure 1**). Patient had chief complaint of difficulty in chewing and aesthetics. Patient had no significant medical history. On extraoral examination no facial and bony deformities were present. On clinical examination, TMJ was well coordinated with no deviation and no crepitus was present. On intraoral examination, patient presented faulty restoration with respect to 17, implant with respect to 46, missing with respect to 26 and root stumps with respect to 12 and 22, generalized attrition was present with reduced VD (freeway space of

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6mm). Patient was suggested with full mouth rehabilitation following the Pankey-Mann-Schuyler (PMS) philosophy with a multidisciplinary approach. Oral prophylaxis, extraction irt 12, 22 and pulp therapy for all remaining teeth preceded the prosthetic rehabilitation.



Figure 1: Pre-operative intraoral view

Diagnostic Mounting was done on semi-adjustable articulator with Hanau Springbow earpiece face-bow (**Figure 2**). A Lucia Jig was made of impression compound which was used as muscle deprogrammer to record centric relation (**Figure 3**) and bite registration was done using Alu wax.⁶ (**Figure 4**). VD was increased by 2mm to restore natural freeway space of 4mm by doing a diagnostic wax mock-up on the semi-adjustable articulator (Hanau wide-vue) by using Broadrick's Occlusal Plane Analyzer (**Figure 5**).



Figure 2: Facebow record

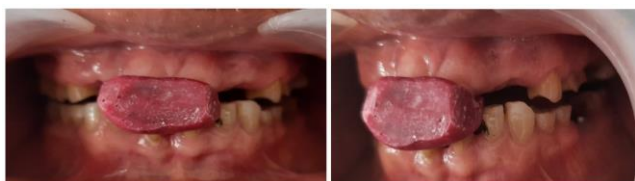


Figure 3: Intraoral view with Lucia jig



Figure 4: Recording centric relation with Alu Wax and Lucia Jig

Complete posterior tooth disclusion on mandibular protrusion is made possible by the Broadrick Flag, which aids in the development of an acceptable curve of occlusion by facilitating the building and evaluation of the Curve of Spee and Wilson in perfect harmony with the anterior condylar guidance.⁵

The treatment plan was carried out in different steps firstly after determining the VD. Occlusal splint was fabricated with 2 mm of thickness and patient was asked to wear the splint for 21 days for at least 13 hours a day (**Figure 6**).

After 21 day, next step of mandibular tooth preparation was done followed by temporization of mandibular anteriors, followed by maxillary anterior tooth preparation and their temporization (**Figure 7**).

After one week patient was called for metal try-in and then patient posterior teeth were prepared followed by temporization of the teeth (**Figure 8**). Maxillary permanents crowns were cemented with temporary cement (zinc oxide eugenol cement). After 24 hours of observation patient's all permanent crowns were cemented permanently. Patient was recalled for periodic follow-up after 1 month (**Figure 9**). Post-operative maintenance instruction was given to the patient.

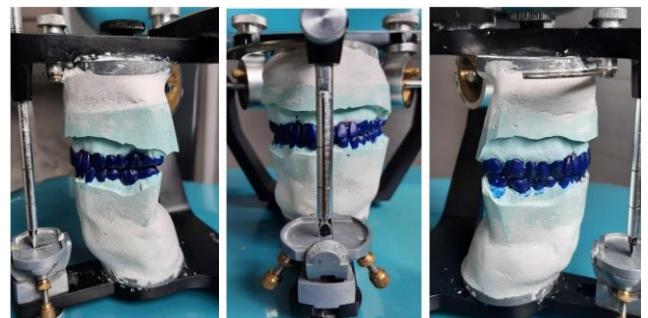


Figure 5: Diagnostic wax mock-up at an increased VD of 2 mm following broadrick's occlusal plane analyser



Figure 6: Occlusal splint with 2mm of thickness



Figure 7: Mandibular anterior temporization followed by maxillary anterior temporization



Figure 8: Temporization of all teeth



Figure 9: Final prosthesis after 1 month follow-up

3. Discussion

Full mouth rehabilitation (FMR) is a comprehensive and intricate dental treatment modality aimed at restoring optimal function, esthetics, and health to patients with extensive dental issues.⁷ The complexity of such procedures necessitates a multidisciplinary approach, integrating various dental specialties to achieve a harmonious and sustainable outcome.⁸

Successful FMR requires collaboration among prosthodontists, periodontists, orthodontists, endodontists, and oral surgeons. This team-based approach ensures that all aspects of the patient's oral health are addressed, leading to a balanced and efficient prosthodontic treatment with acceptable aesthetics.⁹ Central to the success of FMR is the establishment of a harmonious occlusal scheme that ensures efficient function and patient comfort.¹⁰ For instance, Nidawani et al. highlighted the importance of integrating multiple treatment modalities to achieve biomechanically successful outcomes in FMR cases.¹¹

Abnormalities in the occlusal plane often develop due to tooth loss, leading to supra-eruption, migration, rotation, or malposition of remaining teeth. Correcting these discrepancies is essential for restoring functional occlusion.¹²

Mattoo and Darraj emphasized the necessity of occlusal plane correction in FMR, discussing the use of a custom-made Broadrick occlusal plane analyzer to achieve desired results.¹³

Increasing the VDO can be achieved through various methods, including the use of direct composite resin restorations. Elsayyad demonstrated that using composite restorations guided by digital smile design serves as an effective tool for VDO increase, offering advantages over removable occlusal splints in terms of patient adaptation, esthetics, and masticatory performance.¹⁴

Moslehifard E did a clinical case report which highlights that with meticulous planning, precise occlusal adjustments, and a collaborative approach, successful full-mouth rehabilitation of patients with severely worn dentition and uneven occlusal planes is achievable, leading to improved function and esthetics.¹⁵

4. Limitation

1. The PMS philosophy requires meticulous diagnostic procedures, occlusal analysis, and phased treatment planning, which can be time-intensive for both the dentist and the patient. The treatment has high cost also.
2. Successful implementation requires advanced skills in occlusion, prosthodontics, and restorative dentistry. Not all practitioners may have the necessary expertise, leading to potential variations in outcomes.
3. Full-mouth rehabilitation often necessitates significant changes in occlusion and bite. Some patients may struggle to adapt to the new occlusal scheme, leading to discomfort or dissatisfaction.
4. The philosophy primarily focuses on occlusion-driven treatment planning, which may not be ideal for all cases, such as those requiring extensive periodontal or orthodontic interventions before rehabilitation. Any errors in diagnostic steps can compromise treatment outcomes.
5. Restored occlusion and prostheses require regular maintenance, follow-ups, and possible adjustments over time. Patients who do not adhere to maintenance protocols may experience complications.

5. Conclusion

Full mouth rehabilitation is a multifaceted process that demands meticulous planning and execution. A multidisciplinary approach, precise occlusal plane correction, appropriate restoration of VDO, and the use of implant-supported prostheses when indicated are essential components for achieving functional and esthetic success. Each case should be evaluated individually, considering the patient's unique clinical situation to devise a tailored

treatment plan that ensures long-term oral health and patient satisfaction.

6. Source of Funding

None.

7. Conflict of Interest

None.

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