

Prosthodontic Management of Severe Tooth Wear: A Case Report

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DOI: <https://doi.org/10.52403/ijhsr.20250217>

ABSTRACT

Full mouth rehabilitation is a comprehensive treatment approach designed to restore both the functional and aesthetic aspects of compromised dentition. This process integrates multiple dental disciplines, including prosthodontics, periodontics, endodontics, and orthodontics, to address conditions such as severe tooth wear, malocclusion, missing teeth, and periodontal disease. This case report details the step-by-step planning and execution of full mouth rehabilitation for a 64-year-old man referred for the restoration of his worn and missing teeth. Following a diagnostic work-up, provisional removable prostheses were fabricated for both jaws and evaluated clinically. Adjustments were made based on esthetic, phonetic, and vertical dimension criteria. Subsequently, metal ceramic restorations and cast partial dentures for both jaws were fabricated. The outcomes highlight the critical role of a multidisciplinary approach in achieving successful results in complex dental cases.

Keywords: Rehabilitation; Prosthodontic; Tooth wear; areca nut chewing

INTRODUCTION

Full mouth rehabilitation involves a comprehensive treatment plan to restore the functional efficiency, structural integrity, and aesthetic appeal of a compromised dentition. It is essential in managing patients with extensive dental wear, malocclusion, missing teeth, or periodontal disease, where routine dental procedures alone may not suffice. This multidisciplinary approach combines prosthodontics, periodontics, endodontics, and orthodontics to address complex dental needs holistically.

This case report focuses on the full mouth rehabilitation of a 64-year-old male patient

presenting with severely worn and missing teeth. The treatment aimed to restore the patient's oral function, aesthetics, and overall quality of life. Through meticulous planning and execution, including the use of provisional prostheses and final restorations, the case exemplifies the effectiveness of a collaborative dental approach in resolving severe dental conditions.

CASE REPORT

A 64-year-old male patient presented to the dental clinic with severely worn maxillary and mandibular teeth and multiple missing teeth. The intraoral examination revealed

severe attrition with brown discoloration of all teeth (Fig:1), attributed to a 30-year habit of areca nut chewing. Extraoral examination showed signs of a lost occlusal vertical dimension (OVD). The patient's chief complaint was the restoration of worn teeth and the replacement of missing teeth. Clinical and radiographic examination

(Fig:3) confirmed severe attrition, missing teeth in the maxillary posterior and mandibular anterior regions, and an impacted tooth in the mandibular anterior region. Due to the patient's systemic health, advanced age, and lack of discomfort, extensive surgical procedures to remove the impacted tooth were excluded.



Figure 1: Pre-operative view



Figure 2: Facebow transfer

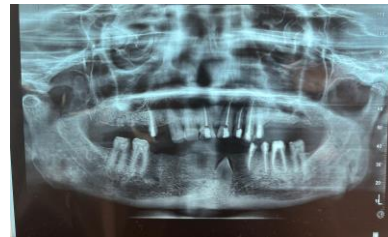


Figure 3: OPG



Figure 4: Insertion of RPD



Figure 5: Diagnostic wax up



Figure 6: Teeth preparation

The occlusal vertical dimension and interocclusal rest space (IRS) were recorded. The IRS measured 4-5 mm, which exceeded the normal range of 2-4 mm, indicating sufficient space to increase the OVD. Full mouth rehabilitation was planned, incorporating porcelain-fused-to-

metal (PFM) crowns and cast partial dentures (CPDs) to restore the OVD. Maxillary and mandibular irreversible hydrocolloid impressions were taken, and diagnostic casts were mounted on a semi-adjustable articulator. (Fig 2) Surveying and CPD designing were performed on the casts.



Figure 7: Final PFM crowns

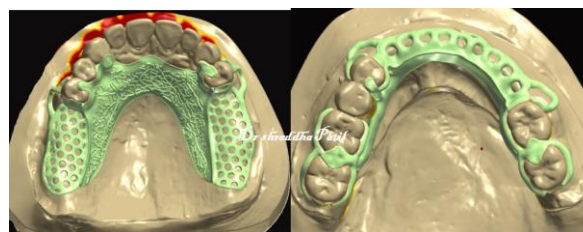


Figure 8: CPD metal framework design

A removable partial denture was fabricated for the maxillary posterior and mandibular anterior regions at the increased OVD. (Fig 4) The patient's adaptation to the raised OVD was evaluated after one month. No muscle tenderness or temporomandibular discomfort was observed. A centric bite was

recorded using the removable partial denture, and remounting was performed. A diagnostic wax-up was done on the mounted casts. (Fig 5) Root canal therapy (RCT) was performed on three lower teeth (34, 35, 36) and upper anterior teeth (11,15,21,22, 23,24). A post-and-core restoration was

completed for tooth (22). After tooth preparation, (Fig 6) final impressions were made using the putty-wash impression

technique, and temporization was carried out.



Figure 9: Bite registration



Figure 10: Try in



Figure 11: Insertion of CPD

PFM crowns with rest seats and guide planes, as well as a CPD metal framework, were designed using Exocad software. (Fig 8) A metal try-in was conducted for the PFM crowns, followed by bisque try-in and final cementation with glass ionomer cement.(Fig 7) Border molding and final pick-up impressions were performed. Denture bases and occlusal rims were fabricated for bite registration at the increased OVD, (Fig 9) followed by the CPD metal framework try-in. The aesthetics, phonetics, and occlusion were evaluated during the wax try-in. (Fig 10) The final insertion of the finished and polished cast partial dentures was completed.(Fig 11) The patient was instructed on maintaining good oral hygiene and advised to avoid areca nut chewing. A two-month follow-up revealed no issues with the teeth, restorations, or temporomandibular joints.

DISCUSSION

Full mouth rehabilitation is a complex dental procedure requiring meticulous planning and multidisciplinary coordination to address functional, aesthetic, and structural challenges. In this case, severe dental attrition, loss of occlusal vertical dimension (OVD), and missing teeth necessitated a systematic approach. The patient's long-standing habit of areca nut chewing contributed to the extensive tooth wear and discoloration observed. Areca nut chewing has been widely documented as a risk factor for dental erosion, attrition, and oral health issues, which underscores the

need for behavioral modification as part of treatment.^{1,2}

The restoration of worn dentition is a challenging clinical scenario. The principles for restoring worn dentition, as suggested by Turner and Missirlian, emphasize the importance of a thorough diagnostic approach, including assessing occlusal vertical dimension, interocclusal rest space, and functional harmony.⁶ A systematic approach, as outlined by Thimmappa et al., underscores the need for comprehensive treatment planning, including removable and fixed prosthetic solutions.⁷

The primary goal of the treatment was to restore the OVD while addressing the patient's chief complaints. The increase in OVD was carefully planned and executed. Research has shown that a controlled increase in OVD can be successfully achieved with minimal complications.³ Diagnostic tools such as mounted casts and a semi-adjustable articulator ensured proper restoration planning. Removable partial dentures were used initially to evaluate the patient's adaptation to the increased OVD, reducing the risk of temporomandibular joint (TMJ) discomfort or muscle tenderness.^{4,5}

Interocclusal rest space can be generated by the following methods: 1. Occlusal adjustment if necessary. 2. Reduction of the opposing teeth. Periodontal crown lengthening surgery can increase the clinical crown height, thereby allowing further tooth reduction. 3. Increasing the OVD by restoring the posterior teeth in one or both jaws. 4. Elective endodontic treatment, followed by dowel retained restorations. 5.

Orthodontic movement of teeth to create interocclusal space.⁸ It is obligatory that two principles have to be pursued during the increase of OVD: (1) Starting point for reconstruction/increase in OVD must be within centric relation. (2) Reconstruction to be within the range of the patient's neuromuscular adaptation.^{9,11}

Modern advancements in CAD/CAM technology, such as Exocad software, were used to streamline the design and ensure precise fabrication of the prosthetic restorations. The integration of porcelain-fused-to-metal (PFM) crowns and cast partial dentures (CPDs) provided a balance between durability and aesthetics. Studies by Moslehifard et al. and Ergun et al. have demonstrated similar successful outcomes using a multidisciplinary approach and advanced technologies.^{8, 10}

Behavioral counseling and oral hygiene instructions were critical in reducing the risk of recurrence. The patient's successful adaptation to the increased OVD and the absence of muscle tenderness or TMJ issues during follow-up highlight the effectiveness of this staged, patient-centered approach.¹²

CONCLUSION

This case demonstrates the successful full mouth rehabilitation of a 64-year-old male patient with severe dental attrition and missing teeth caused by prolonged areca nut chewing and poor oral health. The treatment, which included increasing the occlusal vertical dimension using PFM crowns and cast partial dentures, was successfully planned and executed. The staged approach ensured the patient's comfort and functionality while restoring aesthetics, function and oral health. The two-month follow-up confirmed the effectiveness of the treatment, with no complications observed.

This report highlights the critical role of comprehensive diagnosis, multidisciplinary approach, and patient education in achieving long-term success in complex dental rehabilitation cases.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Dawson, P. E. (2007). Functional Occlusion: From TMJ to Smile Design. Mosby.
2. Kannan, K. S., & Saraswathi, T. R. (2010). Effects of areca nut on oral health. Indian Journal of Medical and Paediatric Oncology, 31(4), 149–153.
3. Christensen, G. J. (2006). The importance of increasing occlusal vertical dimension. Journal of the American Dental Association, 137(8), 1168–1170.
4. Donovan, T. E., & Cho, G. C. (2012). Contemporary clinical approaches to restoring severely worn dentition. Journal of the California Dental Association, 40(6), 441–447.
5. Shillingburg, H. T., Hobo, S., & Whitsett, L. D. (1997). Fundamentals of Fixed Prosthodontics. Quintessence Publishing.
6. Turner KA, Missirlian DM. Restoration of the extremely worn dentition. The Journal of prosthetic dentistry. 1984 Oct 1;52(4):467-74.
7. Thimmappa M, Katarya V, Parekh I. Philosophies of full mouth rehabilitation: A systematic review of clinical studies. The Journal of Indian Prosthodontic Society. 2021 Jan 1;21(1):19-27.
8. Moslehifard E, Nikzad S, Geraminpanah F, Mahboub F. Full-mouth rehabilitation of a patient with severely worn dentition and uneven occlusal plane: a clinical report. Journal of Prosthodontics on Complex Restorations. 2016 Sep 13;63-72.
9. Gopi Chander N, Venkat R. An appraisal on increasing the occlusal vertical dimension in full occlusal rehabilitation and its outcome. The Journal of Indian Prosthodontic Society. 2011 Jun;11:77-81.
10. Ergun G, Yucel AS. Full-mouth rehabilitation of a patient with severe deep bite: A clinical report. Journal of Prosthodontics. 2014 Jul;23(5):406-11.

11. Tantray MA, Javed B. Closest Speaking Space in Relation to Different Occlusions an in vivo Clinical Study. 2022 July-Aug; 4:4: 296-299.
12. Abduo J, Lyons K. Clinical considerations for increasing occlusal vertical dimension: a review. Australian dental journal. 2012 Mar;57(1):2-10.

How to cite this article: Patil Shraddha M, Khinnavar Poonam K, Nandeeshwar D B. Prosthodontic management of severe tooth wear: a case report. *Int J Health Sci Res.* 2025; 15(2):131-135. DOI: [10.52403/ijhsr.20250217](https://doi.org/10.52403/ijhsr.20250217)
