Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 29s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Full Mouth Rehabilitation Maintaining the Existing Vertical Dimension- A Novel Case Report

Dr. Roshini Rajagopal[1], Dr. Lakshmi Narayanan S[2], Dr. Amuthan S[3], Dr. Ilangkumaran Rajakumaran[4], Dr. Srilekha Jayakumar[5], Dr. Manoj Margabandhu[6]

[1]Senior Lecturer, Department of Prosthodontics, Sri Venkateshwaraa Dental College, Puducherry
Email ID: sowmyasridhar9@gmail.com

[2]Assistant Professor, Department of Periodontics, Mahatma Gandhi Postgraduate Institute of Dental Sciences, Puducherry
Email ID: drlakshminarayanan31@gmail.com

[3]Senior Lecturer, Department of Prosthodontics, Sri Venkateshwaraa Dental College, Puducherry
Email ID: amuthans007@gmail.com

[4]Assistant Professor, Department of Prosthodontics, Mahatma Gandhi Postgraduate Institute of Dental Sciences, Puducherry
Email ID: ilangkumaran1989@gmail.com

[5]Reader, Department of Conservative Dentistry and Endodontics, Chettinad Dental College and Research Institute, Kelambakkam
Email ID: srilekhajayakumar@gmail.com

[6]Assistant Professor, Department of Periodontics, Mahatma Gandhi Postgraduate Institute of Dental Sciences, Puducherry
Email ID: manojm_10@yahoo.com

Cite this paper as: Dr. Roshini Rajagopal, Dr. Lakshmi Narayanan S, Dr. Amuthan S, Dr. Ilangkumaran Rajakumaran, Dr. Srilekha Jayakumar, Dr. Manoj Margabandhu, (2025) Full Mouth Rehabilitation Maintaining the Existing Vertical Dimension- A Novel Case Report, *Journal of Neonatal Surgery*, 14 (29s), 989-993

ABSTRACT

Patients requiring full mouth rehabilitation usually present with completely worn out dentition or with developmental defects of enamel, dentin or both. These cases require establishing original vertical dimension as the patients present to us with vertical dimension collapse. But in some special scenarios of extremely mutilated dentition with caries and missing tooth requiring a full mouth rehabilitation, where at least one posterior tooth acts as a vertical stop for maintaining vertical dimension, entire rehabilitation can be done preserving the patient's original vertical dimension of occlusion till the end of the rehabilitation procedure. This case report presents such a clinical situation of a patient with multiple caries and missing tooth who was rehabilitated by preserving patient's original vertical dimension without any increase or decrease of the same. Also this case report describes the nuances and critical techniques which are to be followed sequentially when we attempt to preserve vertical dimension

Keywords: *full mouth rehabilitation, vertical dimension, precision attachments, temporomandibular joint, occlusion*

1. INTRODUCTION

Preservation of original vertical dimension which was present before rehabilitation is one of the challenges reported in Literature **[1].** Full mouth rehabilitation aims to bring back a state of healthy function where the teeth, their surrounding structures, the muscles used for chewing, and the temporomandibular joints operate in a synchronized and efficient manner **[2].** Patient in this case, presented with multiple carious and missing tooth.

The dentition though mutilated, had posterior vertical stop and sufficient inter arch space for planning fixed type of replacement. Maxillary Arch consisted of distal abutment tooth and hence was planned for tooth supported fixed partial denture whereas mandibular arch was a Kennedy's class 1 distal extension case. Patient also had periapical pathology in the remaining root stumps which excluded the possibility of immediate implant placement. Since the patient wanted an immediate fixed treatment option, without any waiting period, conventional implant placement was also denied by the patient. On examination of inter arch distance, space was sufficient for precision attachment. Since the patient wanted fixed type of replacement, with an immediate restoration of function, patient was planned for maxillary tooth supported full fixed rehabilitation and mandibular posterior precision attachment.

As the patient had good posterior vertical stop for maintenance of vertical dimension, rehabilitation had been done without altering patient's existing vertical dimension.

PATIENT INFORMATION

A female patient aged 54 years reported with the chief complaint of multiple caries and missing tooth and inability to chew for the past 2-3yrs **[Fig:1].** Patient does not have any relevant medical history. On physical examination, patient was a tall ectomorphic individual and intraoral findings also correlated with long clinical crowns and radiographically long root lengths. The patient was subjected to diagnostic impression and mounting with tentative jaw relation to assess the available treatment options. Because of the good clinical crown height, on diagnostic mounting, sufficient interarch space was present for the fixed rehabilitation**.**

On examination of diagnostic cast, the patient was planned for fixed rehabilitation based on the available interarch space and tooth support. The patient was planned for tooth supported fixed prosthesis in the maxillary arch after removal of hopeless teeth and endodontic treatment in the remaining natural tooth.

Fig:1- Preoperative image of a 54 year old female patient with intraoral findings

THERAPEUTIC INTERVENTION

The patient was first subjected to extraction of hopeless teeth like root stumps and grossly decayed teeth. The patient was then subjected to oral prophylaxis and root canal treatment in remaining maxillary teeth.

Tooth preparation was planned in segments, in order to maintain the patient's vertical dimension**.** Initially, VDR was measured and recorded. VDO was measured with bilateral premolar contact. Adequate freeway space present when VDO was maintained at premolar contact position. Hence segmented preparation followed by immediate temporization was done to maintain patient's existing vertical dimension **[Fig:2].**

Fig:2- Segmented preparation was done in first quadrant followed by immediate temporization was done to maintain patient's existing vertical dimension

After rehabilitation of maxillary arch, the treatment for mandibular bilateral distal extension was initiated. Tentative jaw relation was done and mounted in order to check for available interarch space for attachment near the second premolar region.

Since the space available was greater than 9mm, patient was planned for tooth preparation in 34,35,44 and 45. After preparation and temporization, patient was subjected to metal try in with copings and distal male component. The fit, marginal accuracy and positing of rhein 83 male component was checked **[Fig:3]**.

The seating, parallelism was rectified and then wax try in of the distal removable component was done. Here, the occlusion, fit of O ring with male component, extension of denture base was verified **[Fig:4]**. Once satisfied, the wax try in was subjected to processing. Firstly, metalceramic crowns were luted and then the fit of the denture was confirmed again after luting. The vertical dimension at this contact position coincided with the previous vertical dimension of occlusion before rehabilitation **[Fig:5]**.

Fig:3- Mandibular bilateral distal extension initiated with tooth preparation in 34,35,44 and 45 followed by metal try in with distal male components and Pick up impression of metal coping made.

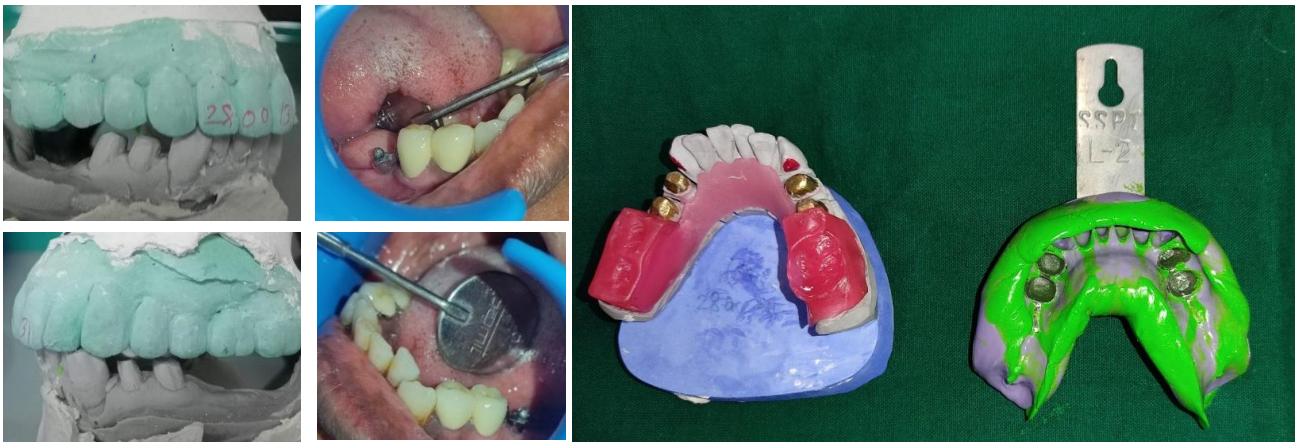

Fig:4- Wax try in of the distal removable component was done. The occlusion, fit of O ring with male component, extension of denture base was verified.

Fig:5- Postoperative image showing the final cementation of metal ceramic crowns with distal extension base attached over the distal male components.

FOLLOW UP AND OUTCOMES

The patient was subjected to immediate postoperative, 15 days, one month and 6months follow up. The masticatory efficiency had greatly increased and the patient had no pain /tenderness in joints as the vertical dimension was maintained.

2. DISCUSSION

Cases of full mouth rehabilitation in extremely worn dentition usually becomes difficult when it comes to titrating the vertical dimension that is compatible with TMJ **[3].** But those cases presenting with the clinical scenario as mentioned in this case can be maintained with the patients original VDO. Tentative diagnosis, sequential treatment planning with proper protocol has to be followed in rehabilitating these cases.

Gopi chander and Venkat suggested an appraisal on increasing vertical dimension in full mouth rehabilitation **[4].** According to them, the Occlusal Vertical Dimension is preserved in all situations by the adaptive mechanisms of alveolus, periodontium, TMJ and teeth. Bite raising can be done to rehabilitate an extremely worn dentition with lack of space for restoration. This is in harmony with this case report where existing vertical dimension was preserved.

Jain et al also suggested that an alternative approach to the full-mouth simultaneous reconstruction is to complete one quadrant before beginning another **[5].** The advantages of this approach are that it is primarily chairside and includes preparation and final impressions of selected teeth, maintenance of vertical dimension, quadrant anesthesia and shorter, predictable appointments. The same technique was followed in this patient for maintaining vertical dimension.

Ozlem ozsi ci et al also stated that severe wear does not necessarily result in decreased OVD before treating a patient full mouth rehabilitation **[6].** Patients with excessive and ongoing occlusal wear can be complicated and difficult to treat, making it one of the challenging issues to deal with. If VDO is increased without careful consideration, it might cause several problems. The transition period can shorten the overall treatment time depending on the patient's condition and ability to adjust **[7].** There is always a risk that the patient might be unable adapt to a new vertical dimension condition if re-establishment of the occlusal vertical dimension (OVD) is suddenly made to the new prosthesis **[8, 9].** Therefore, the rehabilitation of OVD should be done gradually through a comprehensive treatment plan. So in coherent with this concept, always try to maintain the existing vertical dimension of occlusion when there is enough restorative space.

However, Jain et al described the disadvantages of the quadrant reconstruction including restrictions for achieving ideal occlusion when altering the vertical dimension and occlusal plane development. The existing opposing dentition limits the reconstruction of an isolated quadrant. This disadvantage was combated in this case by maintaining vertical dimension with immediate temporizations on the same day of quadrant preparation. Occlusal plane was established with jaw relation using bite blocks in the opposing missing dentition **[10].**

Hence, the primary take away lesson from this case report is that careful titration of techniques in quadrant preparation to maintain the vertical dimension, if followed meticulously will result in a restoration that is harmonious to TMJ and associated structures. All full mouth rehabilitations do not require a subsequent VD rise. Conditions which have adequate restorative space, can be proceeded with the technique and sequence mentioned in this case for appropriate results.

3. CONCLUSION

Even though the patients concern is these cases would demand esthetics as the primary factor during rehabilitation, the goal of a prosthodontist is to restore function, harmony and esthetics in balance during the process of rehabilitation. The restoration of masticatory function, comfort of the patient with hybrid prosthesis, harmony of occlusion compatible with TMJ and esthetics re-establishment all have been comprehensively achieved in this case. Integrity of these factors results in restoring successful smiles

REFERENCES

[1] Debbarma L, Sharma V. Full Mouth Rehabilitation for a Patient With Generalized Attrition: The Hobo Technique in Action. Cureus. 2024 Jan 9;16(1):e51933.

[2] Tiwari B, Ladha K, Lalit A, Dwarakananda Naik B. Occlusal concepts in full mouth rehabilitation: an overview. J Indian Prosthodont Soc. 2014 Dec;14(4):344-51.

[3] Song MY, Park JM, Park EJ. Full mouth rehabilitation of the patient with severely worn dentition: a case report. J Adv Prosthodont. 2010 Sep;2(3):106-10.

[4] Gopi Chander N, Venkat R. An appraisal on increasing the occlusal vertical dimension in full occlusal rehabilitation and its outcome. J Indian Prosthodont Soc. 2011 Jun;11(2):77-81.

[5] Jain AR, Nallaswamy D, Ariga P, Philip JM. Full mouth rehabilitation of a patient with reduced vertical dimension using multiple metal ce ramic restorations. Contemp Clin Dent. 2013 Oct;4(4):531-5.

[6] Özişçi Ö.Aesthetic and Functional Rehabilitation with Prosthetic Approach and Vertical Dimension Occlusion Increase: A Case ReportJ Clin of Diagn Res.2022; 16(11):ZD04-ZD07.

[7] 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. J Prosthodont. 2012, 21:56-64.

[8] Chu SB. Full mouth rehabilitation for severely worn dentition using fixed prostheses and tooth-supported partial overdenture: a case report. IJOHS. 2021 Jul. 31 [cited 2024 Aug. 14];2(2):54-63.

[9] Turner KA, Missirlian DM: Restoration of the extremely worn dentition . J Prosthet Dent. 1984, 52:467-74.

[10] Storey AT (1962) Physiology of a changing vertical dimension. J Prosthet Dent 12:912–921..