



RESEARCH ARTICLE

A MULTIDISCIPLINARY APPROACH TO CORRECT LOSS OF VDO BY FULL MOUTH
REHABILITATION

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ABSTRACT

Careful attention and meticulous treatment planning are the most important factors in full mouth rehabilitation. It is a biggest challenge to restorative clinicians. Efficient diagnosis and elaborate treatment planning is required to develop ordered occlusal contacts and harmonious articulation in order to optimize stomathognathic function, health and esthetics which then translates to patient's comfort and satisfaction. With early loss of posterior teeth and the collapse of occlusion results in the loss of normal occlusal plane and the reduction of the vertical dimension of occlusion. This case report is of full mouth rehabilitation of a 55 years old patient with multiple decayed and long time loss of posterior teeth with loss of vertical dimension. The patient's chief complaints were poor chewing function and esthetic appearance. To create sufficient restorative space and provide an improved appearance, we used a removable appliance to test an increased vertical dimension. During the provisional stage, the patient adapted smoothly, and no muscles or temporomandibular joint related symptoms or signs were noted. Finally, we met the treatment goal of rehabilitation of the chewing function, and a satisfying smiling appearance

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INTRODUCTION

Full mouth rehabilitation employs all diagnostic, therapeutic and restorative procedures for the replacement of lost oral structure. A common complaint of these patients is difficulty in chewing and poor esthetics (Tench, 1938). The face has been found to be the central feature taken into account in making overall esthetic judgement (Abduo, 2012). The vertical dimension of occlusion (VDO) is constant throughout an individual's life, and any alteration in this distance will interfere with the physiology of the masticatory system, although many authors assume that patients can adapt to such changes (Tench, 1938 and Abduo, 2012). Multiple techniques have been proposed to quantify the VDO, including the use of pre-treatment records, incisor height measurements, phonetic evaluation, patient relaxation, assessment of facial appearance, radiographic evaluation, and neuromuscular evaluation (Rivera-Morales, 1991). Each of these techniques has proven useful; however, there have been no scientific assessments of the accuracy of these methods (Pary Dua, 2011). Planning & executing the restorative rehabilitation of a decimated occlusion is probably one of the most intellectually and technically demanding tasks facing a dentist.

Successful bio-esthetic rehabilitation depends on our understanding of interdisciplinary concepts (Pary Dua, 2011). While treating patients of different age group, representing special blend of personality characteristics as well as expectations, knowledge of interdisciplinary concepts can open a whole range of treatment options and outcomes. In present era, every dentist must have a basic knowledge of the roles of these different disciplines in producing an esthetic make over with the conservative and biologically sound interdisciplinary treatment plan (Niswonger, 1934).

Case report

A 54 year old Female patient by name Mrs. Fahamida reported to the Department of Conservative Dentistry and Endodontics, Dayanandasagar College of dental sciences with a chief complaint of pain in relation to lower front teeth region since a week. Also she complained difficulty in chewing and wanted an improvement in her smile. Pain is continuous, dull aching aggravating on chewing food. She gives history of loss of her lower left back teeth very early and she has difficulty in chewing. Medical history was noncontributory, and a long-span ill-fitting fixed partial denture in the maxilla was restored with tooth numbers 12, 11, 21, 22, Extra oral examination revealed prognathism of the mandible, with Concave facial profile because of anterior cross bite. The patient's inter-

occlusal rest space that was measured between nose tip and chin tip was 5 -6 mm that was greater than the normal value, 2 -4 mm. Intraoral examination- Missing: 18, 17,22,23,24, 28 36,37,38,46 & 48 Supra eruption of 25, 26. Dental caries in relation to 13, 31, 32, 33, 41, 42, 43. Sinus tract wrt 31 and 32, chronic generalized gingivitis was present. On evaluating Occlusion – Class 3 canine relation with anterior cross bite was present. Long term loss of posterior mandibular teeth on left side, led to supraeruption of posterior maxillary teeth and an uneven occlusal plane. Radiographic examination revealed generalized horizontal bony destruction. Rehabilitation of the chewing function and acceptable aesthetics by increasing the lost vertical dimension were the major treatment goals. Based on the treatment objectives and patient perspectives the Treatment Plan was done in 2 phases;

Phase 1:

- Caries control; Diet counseling, Oral hygiene instructions.
- Caries removal & interim restorations
- Oral prophylaxis
- Extraction of root stump wrt 23
- Jaw relation recording and articulating.
- Interim removable partial denture with increased vertical dimension- 4 weeks, -patient was recalled every week for check up.

Phase 2:

- Evaluation of vertical dimension.
- RCT wrt 13, 12, 11, 21, 31, 32, 41 & 42.
- Surgical crown lengthening wrt 12, 11, 21
- Post and core wrt 12, 11, 21, 31, 32, 41, 42
- Temporization.
- Final restorations: All ceramic crowns wrt 13, 12, 11, 21, 31, 32, 41, 42

Implants wrt 36, 37,22,23,24,46 or PFM crowns and CPD/Flexi denture.



Fig. 1. Pre-Operative

Treatment was initiated after explaining the treatment strategies, prognosis to the patient and consent was taken. All the caries was removed and interim restorations were placed using glass ionomer cements. In the next step oral prophylaxis was done and patient was assessed for caries risk, diet counseling done and oral hygiene instructions given. Impressions were taken & models were constructed. Patients vertical dimensions were measured; face bow transfer carried out and models were mounted on semi adjustable articulator.



Fig. 2. Jaw relations & facebow transfer



Fig. 3. Increased Vdo



Fig. 4. Pfm Crowns Cemented



Fig. 5. Post-Operative

Initially the VDO, occlusal plane, and aesthetics of the anterior teeth were determined and transferred to diagnostic wax up. Patient was instructed to relax the masticatory muscles; the models were articulated in semi adjustable articulator after face bow transfer. 4mm of vertical dimension was planned and accordingly temporary's were fabricated with 2mm increase as first installment and inserted in patient's mouth. The patient was told that she should wear the temporary's during daytime and remove it in the evenings. After one month, the patient was recalled for clinical examination.

She reported no temporomandibular joint discomfort; a little muscle tenderness resolved during the first week. The VDO was determined by techniques including assessment of facial appearance and phonetic evaluation. Again 2mm of increase in height of partial denture was done & inserted in patients mouth. Follow up was done every week for a month and patient was comfortable. Mean time extraction of root stump wrt 23 was done, root canal treatments were performed in relation to 13,12,11,21, 31, 32,41,42,45 and 47. Surgical extrusion was done wrt 22, 21, and 11. Fixed partial denture was given wrt 45, 46, and 47. Post space preparation was done for fiber post cementation wrt 12,11,21,31,32,41,42 and fiber post and core was done. Tooth preparation was done for porcelain fused to metal crowns in relation to 12,11,21,31,32,41,42 and temporary crowns were fabricated and fixed. Occlusion was re-evaluated again for good anterior canine guidance and posterior occlusal support. Permanent PFM crowns were fabricated and cemented wrt 12,11,21,31,32,41,42. Patient was followed up every 2 weeks. During the follow up the occlusion and vertical dimension remained stable, and the patient adapted smoothly. The patient expressed satisfaction with the significant improvement in chewing function, denture stability, and excellent appearance.

DISCUSSION

The Vertical Dimension of Occlusion is constant and does not change throughout an individual's life.^{1,2,8} There are several procedures for determination of the VDO, and measurement of the freeway space when the mandible is at rest is the common way that is employed. Niswonger²² reported that the freeway space was 4/32" (3 mm) in 87% of patients; the remaining 13% varied from 1/32" to 11/32". Thompson²³ pointed out the stability of the rest position in normal dentition, but that it may be greater than 10 mm in abnormal dentition patients. However, Atwood considered that each physiologic process has a range of variability. Thus, it may be true that the inter-occlusal distance is very often 2~3 mm, but there is a range of variation from one patient to another, and even in the same patient from one time to another. The loss of teeth or wear are potential factors for changes the dynamic nature of the stomatognathic system.

This case report describes full-mouth rehabilitation in a patient with loss of VDO due to early loss of posterior mandibular teeth. We used partial denture to temporarily increase the VDO and observe the patient's adaptation before any restorative treatment was begun. This approach provided a safe and conservative route to meet the patient's requirement. During the one-year follow up, there were no clinical complications or symptoms, or signs of temporomandibular disorder. We successfully met the treatment goals of rehabilitation of chewing function and improved smiling appearance.

Conclusion

In this clinical report, raising vertical dimension of occlusion using removable acrylic partial dentures and following with fixed porcelain fused to metal Crowns based on accurate diagnosis showed successful full mouth rehabilitation for the patient with multiple decayed and early loss of posterior teeth.

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