

Diagnostic Occlusal Prosthesis for Treatment of Patient with Severe Loss of Vertical Dimension of Occlusion: A Case Report

A Gautam Kumar^{1*} Sandhya Jadhav² M Praveen³ Jothirathinam V⁴

¹Professor, Department of Prosthodontics, Panineeya Institute of Dental Sciences, Hyderabad, Telangana, India.

²Reader, Department of Orthodontics, Vananchal Dental College, Garwa, Jharkhand, India.

³Professor, Department of Prosthodontics, Panineeya Institute of Dental Sciences, Hyderabad, Telangana, India.

⁴Senior Lecturer, Department of Prosthodontics, Panineeya Institute of Dental Sciences, Hyderabad, Telangana, India.

ABSTRACT

Background: Vertical dimension is maintained either by the occlusion of the teeth or the balanced tonic contraction of the opening and closing muscles of mastication. Mechanical and physiological methods of recording vertical dimension are suggested in the literature. Vertical dimension can be recorded starting with mechanical methods and then verifying with one or more physiologic methods. If vertical dimensions are not recorded accurately, it may lead to failure of complete denture treatment and cause detrimental effect on the supporting orofacial structures. This case report explains the treatment option for establishing vertical dimension of occlusion for a patient with excessive loss of vertical dimension of occlusion and temporomandibular joint disorder.

Keywords: Vertical dimension of occlusion, diagnostic occlusal prosthesis, temporomandibular joint, residual ridge resorption.

INTRODUCTION

A successful prosthesis is majorly dependent on the accuracy of diagnosis of the condition by the clinician and a multi directional approach to resolve the problem. Vertical dimension of occlusion is the superior-inferior relationship of the maxilla and the mandible when the teeth are situated in maximum intercuspation [1]. For the success of any complete denture prosthesis establishing the correct vertical dimension is one of the very important clinical procedure. If there is increased vertical dimension, the patient complains soreness, tightness of the muscles and clicking sound while chewing. In cases of decreased vertical dimension there may be loss of esthetics, creases at the corner of the mouth, tenderness in the temporomandibular joints, problems in speech, cheek biting, difficulty in mastication [2].

CASE REPORT

A 78 year old male patient reported to the department of prosthodontics with a complaint of pain in the right temporomandibular joint since three months and difficulty in chewing. The patient was an existing denture wearer for past eight years. After thorough extra oral, intraoral examination it was seen that the patient had pain in the right temporomandibular joint (TMJ) with crepitus. There was no bone pathology seen on the radiograph. The maxillary arch had anterior flabby tissue Fig.1 and the mandibular arch showed severe alveolar ridge resorption Fig.2. The examination of the existing dentures revealed extremely worn out teeth on the occlusal surface.

The vertical dimension at rest (VDR) and occlusal vertical dimension (VDO) with the existing dentures was recorded. A discrepancy of 6mm was

Received: June. 14, 2015; Accepted: Oct. 4, 2015

*Correspondence Dr. A Gautam Kumar.

Department of Prosthodontics, Panineeya Institute of Dental Sciences, Hyderabad, Telangana, India.

Email: gautama121@yahoo.com



Fig 1: Maxillary anterior flabby ridge.



Fig 2: Severely resorbed mandibular ridge.



Fig 3: Vertical dimension at rest.



Fig 4: Vertical dimension of occlusion with old dentures.



Fig 5: Autopolymerizing resin on occlusal surface of mandibular posterior teeth.



Fig 6: New Dentures at corrected vertical dimension of occlusion.

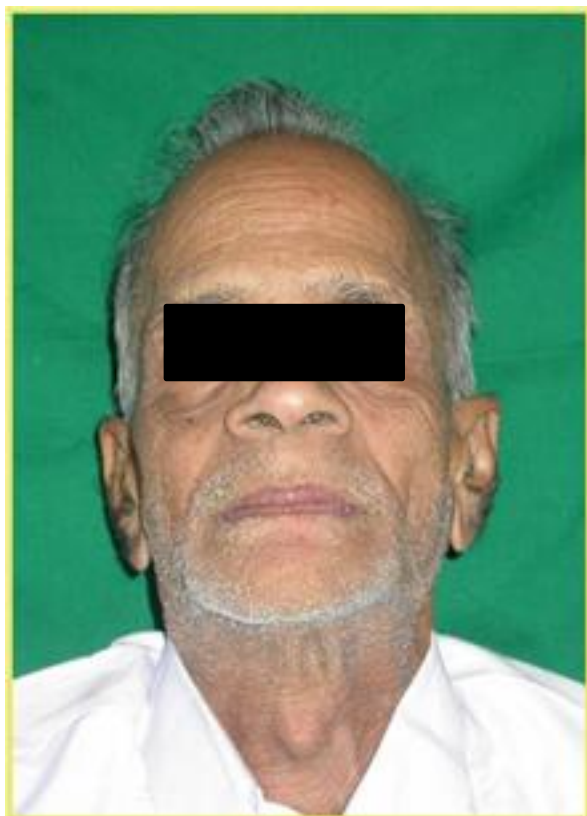


Fig 7: Patient with new Dentures.

noted between VDR Fig.3 and VDO with existing dentures Fig.4. After careful assessment of the presenting signs and symptoms a decision was made to give a diagnostic occlusal prosthesis for correcting the lost vertical dimension. A diagnostic occlusal prosthesis is a removable dental prosthesis, usually made of acrylic resin, that includes an overlay of the occlusal surfaces, designed to evaluate a patient's response to extensive restorative intervention [3]. The patient's existing dentures were used as diagnostic occlusal prosthesis. To correct the lost vertical dimension tooth coloured self-polymerising resin was placed on the occlusal surface of the mandibular posterior teeth to increase of 3mm in the vertical height Fig 5. The height was increased gradually at 3mm per month for the patient to get accustomed to the new vertical height. The mandibular denture was used to increase the vertical dimension as mandibular ridge resorbs faster when compared to the maxilla[4]. The mandibular denture was relined with tissue conditioning material to restore the health of the tissues. The patient was recalled every fifteen days to check the progress.

The patient was recalled after about three months, when the pain was completely relieved and showed no tenderness in the joint. A new denture was fabricated with new vertical dimension with the correct vertical dimension.

DISCUSSION

Complete dentures replace the natural dentition in completely edentulous individuals and fulfil the functions of mastication, speech and appearance. The accurate transfer of the vertical and horizontal relations to an articulator is of great importance. Occlusal wear of denture teeth along with residual ridge resorption leads to reduction of vertical dimension of occlusion followed by over closure, impaired masticatory performance and unsatisfactory esthetics. Overclosure of the mandible leads to excessive muscle fatigue which over time may lead to temporomandibular joint disorders. To prevent temporomandibular joint problems in such patient's diagnostic occlusal prosthesis can be utilized to restore the vertical dimension. Various methods for fabrication of this diagnostic prosthesis have been suggested like Interim new dentures can be fabricated with no mandibular posterior teeth but acrylic stops with increased vertical dimensions are to be placed in the posterior region or entire surface of the existing old mandibular dentures of the patient may be covered with tooth coloured acrylic material.

CONCLUSION

In spite of technological advancement there is no accurate method of assessing the vertical dimension is available. Recording the exact vertical dimension depends to a great extent on the ability of the clinician and is prone to errors. The use of more than one method for determining the vertical dimension is suggested. Functional techniques are more likely to restore the vertical dimensions accurately[5]. A periodic recall of the patient to check the wear and assess any other problems would help us in preventing complicated Temporomandibular joint problems. In patients with decreased vertical dimension a calculated approach to gradually restore the vertical dimension with diagnostic prosthesis can prove beneficial.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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