

## IMPROPER VERTICAL DIMENSION OF OCCLUSION CAUSE FOR TMJ PAIN

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### Abstract

Vertical jaw relations play an important role in success of complete dentures. Improper recording of vertical dimension of occlusion results in various consequences which hampers the health of oral musculature. This article presents a case report to emphasize the significance of recording proper vertical dimensions to improve function, comfort and esthetics.

### Key words

Occlusal Lesion. DIAGNOdent. Visual Inspection .Intraoral Camera.

### INTRODUCTION

The natural jaws bear a definite relation to each other, both at rest and during function. In natural dentition, presence of teeth makes it easy to determine the relationship of jaws to each other, but in edentulous patients absence of teeth makes it necessary for the dentist to determine and establish relationship between the jaws.

Boucher<sup>11</sup> classified jaw relations into three groups: orientation jaw relation, vertical jaw relations and horizontal relations. These three relations together help to determine the height of dentures and the way they are related to each other.

This article focuses on the importance of vertical jaw relations in edentulous patient. The vertical jaw relations are expressed as the amount of separation between maxillae and mandible under specified conditions. It depends on the TMJ and the tone of oral musculature. An increase or decrease in vertical dimension results in complications which leads to failure of prosthesis. Thus vertical jaw relations have to be established accurately for proper comfort, health of surrounding structures and functioning of the prosthesis<sup>11,12,13</sup>.

### CASE REPORT

A 65 year old female patient reported to the Department of Prosthodontics, PDM Dental College and Research Institute with the chief complaint of pain, difficulty in chewing and stiffness of face since 3-4 months. On history taking it was found that the patient was a denture wearer since past 20 years. During this duration patient changed three sets of dentures. Last denture was fabricated 4 years back. The complete dentures worn

by the patient were examined. Several authors claim that impaired dental efficiency resulting from partial tooth loss or incorrect prosthodontic treatment results in TMJ pain and dysfunction or even degenerative changes in the joints. Clinical examination revealed pain on palpation in TMJ region with pain referring to temporal region and base of skull. Oral musculature was found to be stiff and tender. A decreased facial height, loss of muscle tone, cheek biting, saliva drooping from the corners of mouth were observed (Fig: 1 and 2). OPG and TMJ radiographs were made to assess the condition of TMJs. However, X-rays did not reveal any significant disorder.



Fig 1: Pre-operative – Front view

Fig 2: Preoperative – Profile view

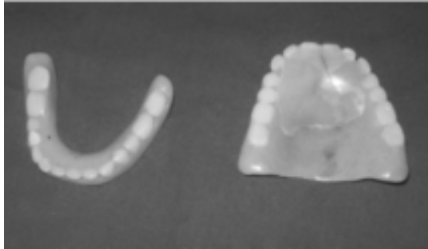
On examination of dentures, discrepancy of 10mm was found between vertical dimension of occlusion (VDO) and vertical dimension at rest (VDR) (that is VDR was 10mm more than VDO). This resulted in pseudo-prognathism (Fig: 3)

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with completely worn out teeth and denture bases (Fig: 4).



Diagnosis of loss of vertical dimension was made and fabrication of a new set of complete dentures were planned with improved vertical dimension.

#### PROCEDURE

Primary impression of maxillary and mandibular edentulous ridges were made using Pinnacle-impression compound and casts were poured in quick setting dental plaster.

Custom trays were fabricated using autopolymerizing acrylic resins (DPI self cure acrylic resin). Trays were checked in patient's mouth and adjusted so that the borders of tray are uniformly 2 mm short of the sulcus and freni are adequately relieved.

Border molding was done using low fusing compound (DPI) and secondary impressions were made using Zinc oxide eugenol impression paste (DPI Impression paste).

Master casts were made. Temporary denture bases were fabricated using autopolymerizing acrylic resins and occlusal rims were made using modeling wax.

Tentative jaw relations were recorded with improved vertical dimensions, face bow transfer was done and transferred on to the semi-adjustable articulator.

Try-in was accomplished and complete dentures with balanced occlusion were fabricated with improved vertical dimension of occlusion (Fig: 5, 6 and 7).



Patient was recalled after one week and then after every 15 days for three months continuously. Relief in pain, marked improvement in function and esthetics was observed.

#### DISCUSSION

During the fabrication of complete denture, determination of correct vertical dimension of rest and vertical dimension of occlusion plays an important role. According to Winkler<sup>13</sup>, if the vertical dimension is altered appreciably in either direction (overclosed or unduly opened), problem in speech and mastication as well as TMJ dysfunction may result. Hagag G and Miura H<sup>9</sup> stated that improper vertical dimension may lead to temporomandibular joint disorder.

Kois JC<sup>7</sup> stated that alteration in occlusal vertical dimension can improve dentofacial esthetics, create improved visual proportions in facial height and provide an important treatment modality for improved masticatory system.

Owen WD<sup>1</sup> conducted a study and concluded that no destruction of tissue was observed with immediate increase in vertical dimension and patient's acceptance was reported to be good.

The case report presented in this article focuses on importance of vertical dimension in fabrication of complete denture. A complete denture with improved vertical dimension was made. Patient was completely comfortable with newly fabricated prosthesis. Pain completely disappeared and facial muscles were relaxed.

Mazetto OM and Abrao W<sup>6</sup> stated that periodic visits to the dentist by such patients with improved vertical dimension are an important factor for success of treatment not only in terms of prosthesis duration but also in terms of comfort. Thus besides routine instruction, dentist should orient the patient for regular check up to evaluate occlusion, vertical dimension, stability of prosthesis and condition of supporting tissues.

#### SUMMARY

Denture wearer patients present with pain in oral musculature and TMJ which could be attributed to improperly recorded jaw relations. A complete denture with improved vertical dimension was fabricated which resulted in improvement in comfort, function and esthetics of the patient. Improvement in facial height, tone of facial muscles along with reduction in pain on palpation in TMJ region were observed.

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