

An Appraisal on Increasing the Occlusal Vertical Dimension in Full Mouth Rehabilitations and its Results

Kubra Yıldız* and Yasemin Ozkan

Assistant Professor, University of Marmara, Turkey

***Corresponding Author:** Kubra Yıldız, Assistant Professor, University of Marmara, Turkey.

Received: May 04, 2017; **Published:** May 13, 2017

Abstract

There are basic uncertainties and existing mistaken thoughts regarding the perception of increasing the occlusal vertical dimension.

Tooth wear is a physiological process of a lifetime. It occurs as a natural consequence of aging. Excessive occlusal wear, causes loss of vertical dimension of occlusion. Wearing a result of the dentin surface evolution, thereby causing the hot - cold sensitivity and created by surface irregularities with the bacteria easily invasion and pulp reaction. Worn teeth with the cause of tooth wear to make a successful restoration in patients, it is important to determine the location and severity of the determination of the most appropriate treatment approach. The expectations of the patient should be taken into consideration.

The rehabilitation of the occlusal vertical dimension with severe loss; first of all occlusal appliances are recommended then it has to be followed by the preparation of a permanent restorations.

All treatment procedures in dentistry bounding around a few basic set of principles. This presentation will give the indications, methods, functional adaptation and the effects of rehabilitation of the OVD.

By evaluating the various dilemmas regarding vertical dimension and its alteration, discarding the mistaken beliefs and accepting the essentials, two logical hypotheses can be reached, they are:

1. OVD is not altered following tooth wear (except in case of amelogenesis/dentinogenesis imperfecta). Any method to restore OVD will result in increased OVD.
2. Freeway space can be manipulated and new Vertical Dimension at Rest will get established if OVD is not increased beyond pre-existing rest position.

The decisive statement that can be made from the above results is that OVD is almost always preserved. For better result, it is advisable to proceed with the existing OVD in excessively worn dentitions.

Keywords: *Vertical Dimension; Full Mouth Rehabilitation; Occlusal Space*

Understanding vertical dimension and why and when it can be changed has always been a challenging prospect for the clinician. Loss of tooth structure does not necessarily mean loss of vertical dimension of occlusion (VDO).

Physiologic tooth wear is usually compensated by continuous tooth eruption and alveolar bone growth. In situations where tooth wear exceeds compensatory mechanism, loss of Vertical Dimension of Occlusion occurs. Dawson and Thompson stated that loss of vertical dimension is compensated by tooth eruption, alveolar bone expansion and muscle action [1,2]. After loss or alteration of VDO, muscles tend to restore VDO to its original level by tooth intrusion or extrusion. Ramford showed that VDO will return to the pre-treatment levels by intrusion of the posterior teeth and anterior teeth extrusion [3]. It can be affirmed from the above interpretations that VDO is preserved by the adaptive mechanism of stomatognathic system. Silverman concluded that as the teeth wear or become abraded, the teeth and alveolar bone elongate through growth to maintain the original vertical dimension with the maintenance of the same closest speaking space. However, occlusal wear may occur more rapidly than continuous eruption depending upon the etiology of the wear.

Decreased vertical dimension occurs due to grinding and clenching of teeth and loss of posterior teeth. The clinician face with the loss of vertical dimension with decreased crown height and deep anterior overbite in the clinic. The loss of dental tissue brings about a common situation that brings about a series of dental movements, which can result in aesthetic dissatisfaction and functional problems. In patients who clench their teeth or those with a bad occlusion, repetitive friction between the upper and lower teeth can result in significant wear of the teeth. The same situation can be the result of time. This wear brings about what is called a diminishing of the vertical dimension, which, in term, modifies considerably the smile of a person. The teeth being shorter, the soft tissue around the mouth will sustain a certain sagging. The face will appear shorter. The appearance of wrinkles on each side of the chin will emphasize the appearance of aging on the face.

If the clinician determined the vertical dimension loss and tooth wear existence extraoral and intraoral examinations should be made before the treatment:

- Extraoral considerations
- Magnitude of VDO loss
- Facial aesthetics
- Temporomandibular joint status
- Intraoral considerations
- Remaining tooth structure
- Occlusion

There is possible clinical concerns behind changing vertical dimension:

Joint or muscle pain

As altering Vertical Dimension does not produce pain of more than one to two weeks duration; any pain is a result of increased temporary muscle awareness.

Stability

When opening the Vertical Dimension some patients can remain stable, others can relapse a little, and others a lot, but again this may go unnoticed dentally.

Muscle activity

This is short lived, as if readings are taken two to three months later they will have returned to base line values.

Phonetics

This can sometimes be a problem for the 'S' sounds. Initially wait for one month to see if the patient can adapt before considering any changes.

There is myths and mistaken thoughts about increasing vertical dimension:

- **'Unloading' of Condyles**

It is a wrong perception that increasing VDO will result in 'unloading' of condyles and is helpful in managing TMJ disorders.

- **Muscular Dysfunction**

Increasing VDO up to vertical dimension at rest reduces muscle activity and was previously thought to be a treatment option for muscle dysfunction. Manns., *et al.* [4] and Kovalski [5] showed that increase in VDO by splint therapy up to vertical dimension at rest reduces muscle activity and relieves symptoms of muscle dysfunction syndromes.

- **Condylar Access to Centric**

It was hypothesized that condylar access to centric relation is dependent on VDO and any alteration in VDO diminishes this access. Dawson stated that as far as the starting point of centric relation is maintained during bite raising, condylar access to this position is not disturbed.

If the teeth are severely worn, display of the anterior teeth in function when smiling is not satisfying for the patient.

The average maxillary central is about eleven twelve mm long.

And when the clinician come to the facial appearance issue, the incisal plane to be parallel to the pupillary line and Upper incisors plane should mirroring the lower lip.

And the clinician want a line drone from the incisal edge of the cusped tooth to the other cusped tooth look like a banana.

The other indications are due to the loss of tooth structure like disharmony in occlusion and inadequate space for restorative materials.

There are two basic modalities of bite raising:

- Occlusal splints are made in mutually protected occlusion antero-posteriorly and canine protected occlusion in lateral movements.
- And the second option Temporary restorations can be used for 7 - 8 weeks as a trial for testing patient acceptance to increased VDO.

But before start bite raising cases the clinician have to consider these main points of treatment:

1. Centric relation
2. Incisal edge position
3. Occlusal plane
4. Adequate space for the restoration

5. Increasing Vertical Dimension and periodontal crown lengthening and endodontics if need
6. Adequate freeway space
7. Teeth length

When the clinician increase someone's vertical dimension the clinician totally lose the existing occlusion and intercuspal position.

Recreating an intercuspal position repeatable reproducible position it's the centric relation.

Most people function down and forward of seated condylar position.

When the clinician seat the condyles, they go up and back therefore the mandible goes down and forward.

When the clinician open someone's vertical the clinician re actually out of rotating the mandible.

So, the clinician re increasing over jet as the clinician re decreasing over bite.

Once the clinician have adequate space the clinician need to go back to look at the anterior relationships to optimize the occlusion for finishing.

The literature reflects the safety of increasing the VDO permanently, and although signs and symptoms may develop, these are usually of an interim nature.

Whenever indicated, the increase in VDO should be achieved with fixed restorations rather than a removable appliance, due to the predictable patient adaptation.

Vertical dimension always has to work in harmony with aesthetics, function and biology.

Treatment of patients who have worn dentition is difficult. Accurate clinical and radiographic examinations, and determining VDO are important [6-12].

Bibliography

1. Dawson PE. "Evaluation, diagnosis and treatment of occlusal problems, 2nd edition". Mosby, St. Louis (1989).
2. Thompson JR. "The rest position of mandible and its significance to dental science". *Journal of the American Dental Association* 33 (1946): 151-180.
3. Ramford S and Blankenship J. "Increased occlusal vertical dimension in adult monkeys". *Journal of Prosthetic Dentistry* 45.1 (1981): 74-83.
4. Manns A, et al. "Influence of VD in the treatment of MPDS". *Journal of Prosthetic Dentistry* 50.5 (1983): 700-709.
5. Kovaleski WC and De Boever J. "Influence of occlusal splints on jaw position and musculature in patients with TMJ dysfunction". *Journal of Prosthetic Dentistry* 33.3 (1975): 321-327.
6. Bloom DR. "Increasing occlusal vertical dimension - Why, when and how". *British Dental Journal* 200.5 (2006): 251-256.
7. Brunton PA and McCord JF. "Guidelines to lip position in the construction of complete dentures". *Quintessence International* 25.2 (1994): 121-124.

8. Davies SJ, *et al.* "Management of tooth surface loss". *British Dental Journal* 192.1 (2002): 11-23.
9. Dietschi D and Argente A. "A comprehensive and conservative approach for the restoration of abrasion and erosion. Part I: concepts and clinical rationale for early intervention using adhesive techniques". *European Journal of Esthetic Dentistry* 6.1 (2011): 20-33.
10. Johansson A, *et al.* "Rehabilitation of the worn dentition". *Journal of Oral Rehabilitation* 35.7 (2008): 548-566.
11. Latta GH. "The midline and its relation to anatomic landmarks in the edentulous patient". *Journal of Prosthetic Dentistry* 59.6 (1988): 681-683.
12. Lawrence AW. "Vertical dimension: a research and clinical analysis". *Journal of Prosthetic Dentistry* 47.3 (1982): 290-302.

Volume 10 Issue 3 May 2017

© All rights reserved by Kubra Yıldız and Yasemin Ozkan.