MDJ

Occlusal Vertical Dimension and its Correlation with Lingual Frenum.

Dr. Hanan Abdul – Rahman, B.D.S, M.S.C *
Dr. Zainab Salih Abdullah, B.D.S, M.S.C **

Abstract

This study was used to evaluate the use of lingual frenum as pre – extraction record in determination of occlusal vertical dimension in edentulous patients.

The sample consisted of twenty subjects, impression of lower arch, stock trays, stone, surveyor and vernia for measurements.

The results of this study indicate that the distance between anterior attachment of lingual frenum and incisal edges of mandibular central incisors may be used as a reliable landmark when the frenum was recorded during function.

The lingual frenum of the mandible is used as are liable land mark to determine the occlusal vertical dimension.

Introduction

The determination of vertical dimension in edentulous patients is a procedure based principally on the judgment of the dentist rendering this service.

Vertical dimension is the length of the face as determined by the amount of separation of the jaws [1].

Also the vertical dimension is the vertical distance between the upper lower ridges it also may be considered

To make a functionally and esthetically pleasing a denture the (VDO)should be measured and established correctly because there is no rigid rules to determine the (VDO) due to a wide variation in the physical characteristics of the patients.[3]

Some methods are used to determine the (VDO) include the use of pre – extraction records [4], maximum biting force [5], patients Judgment with many trials [6,7] to be the vertical distance between 2 points on the face (the nasal spine and the base of the chin) [2].

There are two vertical dimensions for any patient one with the jaws in the rest position rest – vertical dimension (VDR) when the teeth are separated and the mandible is in the physiologic rest position the second is the occlusal vertical dimension (VDO) this occurred when the teeth of the upper lower jaws are in centric occlusion.

functional factor of phonetics when pronouncing f, v and s [8], Cephalometric radiograph [9] lip length and amount of coverage of the maxillary central incisor[3].

Bissasu [10] copied the shape, size and position of the maxillary natural teeth in a maxillary complete denture and determined precisely the patients (VDO) in which the mandibular anterior teeth were present.

* Lecturer, Department of Prosthetic, College of Dentistry, Baghdad University
** Assistant lecturer, Department of Prosthetic, College of Dentistry, Baghdad University

Material and method

Twenty dentate subjects (10men, 10women), average age is 33 years old, were selected they had all their natural anterior teeth, a few had one or two posterior teeth missing but all had a posterior occlusal stop and with out anterior teeth shifting.

Three impressions were taken for each subject using irreversible hydrocolloid material, after the material had set, the impression was removed and poured with dental stone the stone casts were separated after the stone had set and placed on the survey table (tilt top and model clamp on ney surveyor) the tilt of the casts was adjusted unit the teeth contacted the metal plate in at least 3widely divergent points. The surveying arm of the surveyor was lowered until the tip of the analyzing rod contacted the lower pencil mark which indicates the anterior attachment of the lingual frenum (AALF) then horizontal mark made with a pen where the surveying arm of the surveyor met the horizontal arm similarly a second horizontal mark was placed on the surveying arm of the surveyor when the tip of the analyzing rod contacted the upper pencil mark which indicate the incisal edge of the mandibular central incisor (right central incisor), the distance between the 2 horizontal marks was measured by using the vernia gauge to 0.5mm. Standard (SD) of the measurement for all subjects were calculated.

Results

The measurements means and SD of all the subjects are presented in table1. ean, SD of the distance between AALF and incisal edges of mandibular incisors among the 20 subjects was 0.132 mm, the coefficient of variation was 1.292% the standard deviation of subject 3 is the highest all means of the measurements were not similar.

Discussion

Correct registration of the VDO is essential in the fabrication of complete dentures. Alteration of the VDO can affect esthetics of the soft facial tissues and can induce speech difficulties and muscle discomfort [(11)].

Unfortunately, there is no precise method for determining the correct VDO, thus the only way to record the VDO of an edentulous patient more accurately would be to record the VDO before the extraction of the remaining teeth [(11)].

The results of this study revealed that the mean SD of the distance between the AALF and the incisal edges of the mandibular central incisors among 20 subjects was 0.132mm and the coefficient of variation was 1.292% this result is clinically in significant.

The low results may be due to several factors like AALF is resistant during function and most subjects strictly followed the instructions given to them regarding tongue movement during impression fabrication the high results of SD may be due to the subjects did not strictly follow the instructions related to tongue movement during taking the impressions and also may be related to low attachment of lingual frenum.

The results of this study indicate that the distance between AALF and the incisal edges of central incisors was reliable when the frenum was recorded during function. Because the position of the incisal edges of mandibular incisor was stable, the position of the AALF can be considered relatively stable.

When the frenum was recoded during function so that the vertical height of mandibular wax occlusion

rims are adjusted anteniorly to correspond the measurement and the vertical position of mandibular incisors can then be copied in the complete dentures. Thus the VDO of the edentulous patient can be preserved.

This procedure allows for a preliminary arrangement of the teeth.

The final determination of the correct tooth position and the VDO must be made at the try – in appointment when the functional factors of phonetics and esthetics are individualized for each patient.

Conclusions

1-The measurement of the distance between AALF and the incisal edges of mandibular central incisors is reliable when the frenum is recorded during function

2-The position of the AALF can be considered relatively stable anatomic land mark when the frenum is recorded during function.

3-The distance between the AALF and the incisal edges of the mandibular central incisors can be used on pre – extraction diagnostic ostas.

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Table (1) measurements, means, standard deviation in millimeters

Patient no.	Cast (1)	Cast (2)	Cast (3)	Mean	Standard Deviation SD.
1	10.5	10.3	10.4	10.4	0.27
2	11.3	11.1	11.2	11.2	0.29
3	10.9	12	11.5	11.4	0.37
4	10.8	10.8	10.8	10.8	0.11
5	11.9	11.5	12.0	11.8	0.17
6	12.4	12.0	11.5	11.9	0.1
7	11.5	10.5	10.9	10.9	0.21
8	10.4	10.4	10.4	10.4	0.02
9	8.2	9.4	9.5	8.9	0.2
10	6.6	7.0	7.2	6.9	0.09
11	12.2	12.5	12.8	12.5	0.08
12	9.5	10.0	10.5	10.0	0.28
13	8.5	9.0	9.5	9.0	0.1
14	10.3	10.8	11.0	10.7	0.0
15	10.1	10.9	11.0	10.6	0.06
16	10.8	11.0	11.5	11.1	0.0
17	9.3	10.0	10.5	9.9	0.1
18	10.7	11.0	11.5	11.0	0.17
19	11.2	11.8	12.0	11.6	0.21
20	11.5	12.0	13.0	12.1	0.07