



## RELATION BETWEEN EDENTULOUS REST POSITION AND COMPLETE DENTURE INTERCUSPAL POSITION

Dental Science

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### ABSTRACT

**Aim:** The aim of this study was to investigate the relationship between edentulous est face height and complete denture intercuspal position.

**Materials and methods:** complete dentures were fabricated for 40 edentulous patients. Two standard lateral cephalograms were made of the patient at the second recall visit. The paired radiographs were then traces on acetate paper and the distance between the reference points was measured to the nearest of 0.5mm.

**Results:** by the application of paired't' test, it was concluded that there is no statistical difference between the two variables with  $p=0.1424$ , thus the null hypothesis regarding the differences between the vertical dimension of rest and occlusion cannot be rejected.

**Conclusion:** from the results of study it can be concluded that'

1. There is no statistical difference between vertical dimension at rest and vertical dimension of occlusion.
2. Results agree with recent observation n variability of rest position.
3. Clinical judgment plays a major role in the assessment of vertical height of occlusion

### KEYWORDS

Rest vertical dimension, occlusal vertical height, interocclusal space

#### Introduction:

One of the objectives of the prosthetic dentistry is to restore and maintain the vertical height of the face by reinstating missing dental and oral structures in a way that there is harmonious relationship between teeth, bones, joints and muscles. In order to register vertical dimension, cephalometrics, gnathodynamometry, central bearing devices, neuromuscular perception, electronics, electromyography, and clinical judgment have been used. In spite of this impressive armamentarium, it has been stated that there is no procedure for exactly determining occlusal vertical dimensions.<sup>1</sup> one of the determinants is physiological rest position which is mandibular position assumed when the head is in upright position and the involved muscles are in equilibrium in tonic contraction, and the condyles are in neutral unrestrained position.<sup>2</sup> State of health, body posture, respiratory rate, the tongue, neuromuscular control, emotional response, gravity and anatomic variations are among the very variables that influence the recording of the rest position. At present no scientific mechanical methods of proven validity are available for extensive use in recording rest position.<sup>3</sup> hence this study was undertaken to investigate the relationship between edentulous rest position and complete denture intercuspal position.

#### Materials and methods:

This study was undertaken at Department of prosthodontics, IGGDC Jammu, to compare the vertical dimension at rest and at occlusion in edentulous patients. Forty edentulous patients in the age group of 50-70 years were selected. Exclusion criteria includes patients with gross facial asymmetry, musculo-skeletal disorders, history of facial or spinal trauma, deviation of mandible. Complete dentures were made for 40 patients by conventional methods. Rest position was established by having patient say m, and this positioned was checked against the position of mandible after swallowing. Measurements were made using Niswongers method. Two standard lateral cephalograms were made at recall visit. First radiograph was made with the upper denture in mouth and patient relaxed in rest position, with lips touching lightly, while second radiograph was made with complete denture in centric occlusion. The radiographs were traced on the acetate paper and the distance between the reference points was measured to the nearest of 0.5mm. Mean and standard deviations for both vertical dimension of occlusion and that for the rest were calculated. Paired t test was applied to test the null hypothesis.

#### Results:

Table 1 shows the values of vertical dimension at rest and vertical; dimension at occlusion. Table 2 shows the comparison of two variables. Table 3 shows mean values and standard deviation for vertical dimension of rest, vertical dimension at occlusion, interocclusal space. Application of pared t tests the null hypothesis

regarding the differences between two variables. The mean of measurement of vertical dimension at rest was 120.50mm and for vertical dimension of occlusion was 113.32mm. The standard deviation for vertical dimension at rest was 9.26 and for vertical for occlusion were 8.81. The paired t- test value was 1.49, which indicated that there is no statistical difference between two vertical dimensions with  $p=0.14$ .

#### Discussion:

One of the important yet elusive step in the fabrication of complete denture is correct establishment of vertical dimension, which has been called as an indefinite procedure. <sup>4</sup> till date establishment of vertical dimension remain empirical and arbitrary because there is no scientific or absolutely reliable technique. Clinical measurements of vertical dimension of occlusion often rely on determination of rest position of mandible, but problem was that the measurements were unreliable and rest position is not constant. Therefore this study was undertaken to reevaluate the traditional method of using rest vertical dimension as the starting point in denture fabrication.

In this study measurements were made using Niswongwer's method. The validity of the observation that stem from this type of study depends on the correctness of vertical dimension of occlusion established in new dentures, as the assessment of this height is subjective and relies on clinical experience, dentures were included only if the vertical height of occlusion appeared to be satisfactory and patient was experience on denture problem. Comparing statistically analyzed values obtained from unpaired t test., it was found that there is no significant difference between starting point and the goal.

The use of the edentulous mandibular resting position as a baseline for the determination of vertical dimension of occlusion seems to present several problems. The mandible itself is a moving structure and it seems unlikely that it will maintain precise rest position.

Additionally Khinman and Sheppard in 1972 concluded that when edentulous rest position is used as baseline for vertical dimension of occlusion, it appears that an error of increasing the occlusal vertical dimension too far will occur in more than half of the patients. <sup>5</sup>

In present study it was observed that because of the variability of rest position (inter occlusal space ranging from 0.44 to 6.44) no statistically significant difference was seen between the rest vertical height and the occlusal vertical height. One of the earliest studies conducted on the instability of rest position, resulted in discrepancies in the restoration of the pre extraction vertical dimension with the prosthesis. The difference was of such a magnitude that the rest position was concluded to be a poor guide in establishing pre extraction vertical

dimension.<sup>6</sup> Similar conclusions of unsuitability of rest position for determination of vertical dimension of occlusion were drawn by Sheppard in 1975,<sup>7</sup> Niekerk in 1984<sup>8</sup>. However pleasure found physiological rest position to be stable reference position to correct vertical dimension of occlusion.<sup>9</sup>

**Conclusion:**

Within the limits of the study following conclusion can be drawn:

1. There is no statistical difference between vertical dimension at rest and vertical dimension of occlusion.
2. Results agree with recent observation n variability of rest position.
3. Clinical judgment plays a major role in the assessment of vertical height of occlusion

Denture making is a subjective matter and cannot be guided by unbending rules and clinical judgment plays an important role. Other methods to establish vertical dimension should also be considered.

**TABLE 1**

S.NO	VERTICAL DIMENSION AT REST	VERTICAL DIMENSION AT OCCLUSION
1.	132.82	130.82
2.	113.74	111.97
3.	110.89	109.67
4.	128.66	127.66
5.	123.34	121.14
6.	93.88	92.83
7.	122.71	119.52
8.	123.54	120.46
9.	124.71	123.5
10.	117.79	116.14
11.	116.13	117.03
12.	110.11	108.35
13.	110.92	108.41
14.	115.83	111.71
15.	115.8	114.63
16.	127.8	125.76
17.	122.69	120.87
18.	104.99	104.15
19.	112.71	111.58
20.	131.44	125
21.	127.89	125.99
22.	120.07	118.7
23.	130.36	129.12
24.	132.78	128.89
25.	100.4	99.69
26.	112.82	110.53
27.	127.3	125.23
28.	118.39	116.32
29.	135.44	132.86
30.	119.12	114.98
31.	119.67	115.2
32.	127.11	125.2
33.	119.8	117.2
34.	136.28	132.72
35.	126.61	123.54
36.	116.59	114.06
37.	120.67	118
38.	129.46	126.62
39.	122.76	121.61
40.	116.24	115.48

**TABLE 2**

S. NO	VERTICAL DIMENSION AT REST	VERTICAL DIMENSION AT OCCLUSION	INTEROCCLUSAL DISTANCE
1.	132.82	130.82	2
2.	113.74	111.9	1.77
3.	110.89	109.67	1.22
4.	128.66	127.66	1
5.	123.34	121.14	2.2
6.	93.88	92.83	1.05
7.	122.71	119.52	3.19
8.	123.54	120.46	3.08
9.	124.71	123.5	1.21

10.	117.79	116.14	1.65
11.	116.13	117.03	0.8
12.	110.11	108.35	1.76
13.	110.92	108.41	2.51
14.	115.83	111.71	4.12
15.	115.8	114.63	1.17
16.	127.8	125.76	2.14
17.	122.69	120.87	1.82
18.	104.99	104.15	0.44
19.	112.71	111.58	1.13
20.	131.44	125	6.44
21.	127.89	125.99	2.4
22.	120.07	118.7	1.37
23.	130.36	129.12	1.24
24.	132.78	128.89	3.89
25.	100.4	99.69	0.71
26.	112.82	110.53	2.29
27.	127.3	125.23	2.07
28.	118.39	116.32	2.17
29.	135.44	132.86	2.58
30.	119.12	114.98	4.14
31.	119.67	115.2	4.47
32.	127.11	125.2	1.91
33.	119.8	117.2	2.6
34.	136.28	132.72	3.56
35.	126.61	123.54	3.07
36.	116.59	114.06	2.53
37.	120.67	118	2.67
38.	129.46	126.62	2.84
39.	122.76	121.61	1.15
40.	116.24	115.48	0.76

**TABLE 3**

	VERTICAL DIMENSION AT REST	VERTICAL DIMENSION AT OCCLUSION	INTEROCCLUSAL DISTANCE
MEAN	120.50	118.32	2.22
S.D.	9.26	8.81	1.22
t-value	1.49		

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