View Point

DOI: 10.7860/JCDR/2022/56881.16840

Dentistry Section

Tamil Syllable to Record Vertical Dimension in Edentulous Patients- A Phonetic Technique

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ABSTRACT

In edentulous patients, an accurate recording of vertical dimension is always a prime consideration for any dentist. Though there have been many advances in techniques and materials for recording vertical dimension, there is still a lack in describing an accurate method of evaluation in edentulous patients. This article describes a quick and easy phonetic technique using Tamil syllables to record the vertical dimension in edentulous patients. Vertical dimension was assessed by asking them to pronounce Tamil syllables. The phonetic method described in this article reduces the chair side time and use of other equipment, ensuring comfort for both the patient and clinician while determining vertical dimension in edentulous patients.

Keywords: Edentulism, Jaw relation, Prosthodontics

INTRODUCTION

The Vertical Dimension of Occlusion (VDO) is critical for proper reconstruction of relationship between the jaws [1]. According to the Glossary of Prosthodontic Terms, VDO is defined as the distance measured between two points when the occluding members are in contact [2,3]. Vertical Dimension at Rest (VDR) is the height of the lower part of the face measured between the two reference points when the mandible is in physiological rest position [1]. Occlusal Rest Space (ORS) is the distance between the occlusal surfaces of antagonistic teeth when the jaw is in the position of physiological rest [4]. This is the difference between VDR and VDO [1].

A major issue that several clinicians foresee leading to complete denture failure is the error in determining the VDO. Methods for determining VDO mostly date back to the early 20th century. However, it was Niswonger's method which gained popularity and became the most commonly used method of determining VDO (VDR-freeway space). The most popular phonetic aid in determining rest position was the labial 'M' sound. Alternatively, patients could be engaged in conversation and measurement made when the patient pauses during dialogue [2]. Silverman identified that it was easier and accurate to record a measurement, which was based on muscular phonetic enunciation as the patient loses voluntary muscular control of the mandible rather than recording a measurement, which was based on relaxation [4]. Thus, this article aimed to describe a phonetic technique, which could help in easy and accurate recording of VDO in edentulous patients.

Technique

On clinically assessing and treating patients over a period of 10 years, a simple yet clinically accurate phonetic method was identified to establish vertical dimension in edentulous patients. The patients were seated upright with the head unsupported as the force of gravity adds to the force applied by the jaw opening muscles. If the patient is reclined, gravity does not pull the mandible down and the distance between the jaws is lesser than when the head is upright [5].

It was ensured that the occlusal rims were stable and in cases where they lacked stability, adhesives were used to enable an accurate recording. Additionally, it is recommended to either exactly locate the borders or slightly underextend the borders of the record bases to reduce the influence of muscles acting and displacing the bases as the phonetic method was employed. During jaw relation, the anterior level of maxillary occlusal rim was adjusted according to patient's aesthetics. 1-2 mm of the occlusal rim was visualised below the level of the upper lip when the patient was at rest. Fullness was set after checking the columella angle and the nasolabial fold. The anterior plane was established parallel to the interpupillary line and posterior plane was made parallel to the camper's plane. The patient was then trained to assume rest position, either by using the swallowing, tactile or the phonetic method. Following this, the mandibular rim was inserted into the patient's mouth. The occlusal plane was below the dorsum of the tongue anteriorly and about two-thirds the height of the retromolar pad posteriorly. Once this was achieved, the plane was adjusted to make even contact with the maxillary rim. The patient was asked to pronounce two words namely 'NAALU' and 'ANJU' in Tamil and as the patient did so, the upper and the lower occlusal rims should not touch. At this point, the lips were retracted to evaluate the space between the rims, and a space of 1-2 mm was considered ideal. This provided the adequate freeway space, thus establishing the VDO. If the space between the rims was <2 mm, the lower occlusal rim was reduced in height. Likewise, if >2 mm of space existed, wax should be added to the lower occlusal rim to obtain an adequate space of 2 mm. Other parameters like the midline, canine line, smile line was then marked on the maxillary occlusal rim, extended onto the lower rim and the patient was made to close in centric either using the passive methods (mandible retruded by the patients themselves) or active methods (with physical assistance from the dentist). This completed the recording of the jaw relation without the need to manually record measurements.

DISCUSSION

One of the most important variables without diminishing the importance of others in fabricating complete dentures is an accurate determination of VDO [1,6,7]. There are many methods of determination, some based on fact and others on opinion. All have an element of clinical judgment and therefore are open to errors [8]. Thus, an accurate scientific method of assessing VDO clinically was a pressing need.

Phonetics can help determine a patient's existing vertical dimension and guide in proper placement of anterior artificial teeth, location of neutral zone, posterior palatal seal, and other limiting areas of the complete denture [2]. Thus, in this study, the phonetic technique using Tamil syllables 'NAALU' and 'ANJU' to assess the vertical dimension in edentulous patients. It was found to be an easy and

quick chair side method. Complete dentures fabricated using this technique had good functional and aesthetic acceptance by patients [1,9,10]. The observations of our study were in accordance with previous studies. Morrison ML put forth the use of English words "sixty-six" (66) and "Mississippi" to measure the VDO in edentulous people [11]. Sharry JJ determined VDO by phonetic method using Arabic words [12]. Suvin M stated that the consonants apt for testing were "M", "F" and "S", and the vowels "O" and "I" [13]. Pouysségur V et al. proposed the use of the letter "S", surrounded by a neutral vowel ("E", "EU") as an ideal phonetic instrument for determining the vertical dimension [14]. A survey was conducted by Willie RG to determine the most common methods of establishing VDO [15]. Phonetic and aesthetic appearance were found to be the most common methods. Methods relying on deglutition and tactile muscle sense of the patient were next in popularity. Those relying on the use of the Willis measurement and Boos bimeter were in the minority. Employing phonetics, aesthetic appearance, and deglutition were the most popular combination of methods [9]. Similarly, Basler FL et al., evaluated the accuracy of phonetics in conjunction with aesthetics, tactile sense, and deglutition and found all three methods to be equally reliable in determining vertical dimension [16]. Although, Ismail WH and George WA concluded that the phonetic method was questionable, it is a fundamental feature of prosthetic rehabilitation. If phonetics is not considered in the treatment plan, adequate results cannot be obtained [17]. The technique put forth relying on phonetics, comfort of the patient coupled with the dentist's skill proves to be quick and accurate in determining vertical dimension in edentulous patients.

Limitation(s)

In patients with medical complications impairing speech, this technique cannot be used, and physiologic rest position can be alternatively used to determine the vertical dimension.

CONCLUSION(S)

The methods available to determine vertical dimension are factual in nature and a universally accepted method for precise determination is lacking. Irrespective of the method used, the clinician should be mindful of its merits and demerits. With the phonetic methodology put forth, a good level of accuracy can be reached in determining the vertical dimension in prosthodontics. It proves to be an easy and viable approach. Additionally, the use of words familiar to patients enables them to be at ease and help obtain satisfactory results.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: May 02, 2022
- Manual Googling: May 09, 2022
- iThenticate Software: Aug 17, 2022 (20%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? NA
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Apr 05, 2022**
Date of Peer Review: **May 07, 2022**
Date of Acceptance: **Jun 20, 2022**
Date of Publishing: **Oct 01, 2022**