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ANALYSIS OF ORAL STEREOGNOSTIC SCORE IN EDENTULOUS PATIENTS IN PAKISTAN

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Abstract:

Introduction: *Stereognosis has been defined as the appreciation of the form of objects by palpation.* ***Aims and objectives:*** *The main objective of the study is to analyse the oral stereognostic score in edentulous patients in Pakistan.* ***Methodology of the study:*** *This descriptive study was conducted in Prosthodontics Department, Nishtar Institute of Dentistry, Multan during March 2019 September 2019. The data was collected from 50 patients through non-probability sampling technique. Data collection procedure consisted of a performa, which was filled and information regarding demographic data, telephone number, period of edentulism etc. was entered.* ***Results:*** *The data was collected from 50 patients. The mean OSA scores value before denture insertion was found to be 9.33 and it increased to 11.86 after 1 month of denture fabrication. The comparison of OSA scores before denture insertion and after denture insertion was found to be statistically highly significant. Further, Wilcoxon signed rank test was performed to compare OSA scores before denture insertion, after 30 min and 1 month post insertion of dentures.* ***Conclusion:*** *It is concluded that covering the palatal mucosa with a denture does not reduce oral stereognostic ability; oral stereognostic test is a reliable test to measure patients' oral stereognostic perception which would enable the patient to appreciate the functional limitations of the denture.*

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INTRODUCTION:

Stereognosis has been defined as the appreciation of the form of objects by palpation. This definition refers to manual exploration of objects, it is also possible to extend the tactile perception of objects intra orally which is referred to as Oral stereognosis (OS). It was first introduced by Berry and Mahood in 1966 [1]. Oral stereognosis is defined as the ability to sense the form or shape of an object in the mouth by means of touch. Oral perception can be evaluated by oral stereognostic ability (OSA) which is widely used in many studies reported in the literature. Grossman was probably the father of this concept and paved the way to assess oral perception by means of stereognosis tests [2].

OSA score is a good yardstick to infer the oral perception of the patients. It has a direct relationship with denture performance. High score in OSA indicates that the complete denture wearers could perceive full and accurate information about what is going on in his mouth and could exhibit more complaints in the postinsertion phase [3]. Most importantly, the patient knows where the foreign body and what is doing so that they can control it properly. Low score indicates their perception about anything to their mouth and patients have fewer or no complaints in the insertion phase [4].

In general, ageing is a risk factor for sensory and motor deterioration but the amount of deterioration is variable among individuals. The changes in the oral status due to edentulousness or rehabilitation with prosthesis may affect OSA in addition to the effect of aging itself. Oral function may be different from other ageing changes because of a remarkable change due to tooth loss [5].

However, OSA is not reduced by covering the palatal mucosa with a denture rather improvements have been found in presence of a prosthetic restoration. Disturbed sensorimotor coordination is manifested by tongue's impaired OSA and is connected with its incorrect position resulting in its action with reduced precision and markedly decreased vertical movement [6]. Furthermore, among experienced and non-experienced denture wearers, it is needed to determine the sensory adaptation patterns to new dentures. As compared to non-experienced patients, the discrimination of thickness is superior in experienced complete denture wearers [7].

Aims and objectives

The main objective of the study is to analyse the oral stereognostic score in edentulous patients in Pakistan.

METHODOLOGY OF THE STUDY:

This descriptive study was conducted in Prosthodontics Department, Nishtar Institute of Dentistry, Multan during March 2019 September 2019. The data was collected from 50 patients through non-probability sampling technique. Data collection procedure consisted of a performa, which was filled and information regarding demographic data, telephone number, period of edentulism etc. was entered. Oral Stereognosis was evaluated using an oral stereognostic (OSA) test. Oral stereognostic testing tool analogues of four different forms i.e. cube, cube with disk, ovoid with one end pointed/tear drop, ovoid with two ends pointed made in soft plaster of size 30mm x 30mm x 30mm were placed on the table of the dental unit/chair while the patient could observe each shape. The test was carried out in a quiet environment in the hospital where the subject was seated comfortably in an upright position. The test was conducted before denture insertion; 30 min after denture insertion and after 1 month of denture insertion.

Statistical analysis

The data gathered were analyzed by means of SPSS software (version 17). Initial analysis of mean and standard deviation involved the use of descriptive statistics. Comparison of OSA scores before and after rehabilitation with complete dentures was analyzed using Wilcoxon signed rank test.

RESULTS:

The data was collected from 50 patients. The mean OSA scores value before denture insertion was found to be 9.33 and it increased to 11.86 after 1 month of denture fabrication. The comparison of OSA scores before denture insertion and after denture insertion was found to be statistically highly significant. Further, Wilcoxon signed rank test was performed to compare OSA scores before denture insertion, after 30 min and 1 month post insertion of dentures. Results obtained were significant proving that edentulous individuals without dentures scored low when compared with 30 min of insertion and after 1 month post insertion of complete dentures.

Table 01: Comparison of time between groups using Wilcoxon signed rank test

Groups	Mean difference	*z* value	*p* value
TWO vs TWD	5.28	−5.686	0.001 HS
TWO vs TWD1	7.81	−7.156	0.001 HS
TWD vs TWD1	2.53	−6.830	0.001 HS

Results of Spearman's rank correlation were significant thus proving that as OSA scores increased the time taken to identify the shapes had decreased.

Table 02: Correlation of OSA scores with time taken to identify the objects

Groups	Correlation values	*p* value
OSA(WO)/TWO	−0.449	0.093
OSA(WD)/TWD	−0.342	0.212
OSA(WD1)/TWD1	−0.409	0.131

DISCUSSION:

Oral stereognosis involves some motor activity and manipulation of test pieces inserted into the oral cavity and their interactions with lips, tongue and teeth. The oral exploration phenomenon involves elaborate functions of the parietal cortex. Received sensations are synthesized in the cortex and compared with previous sensorial memories [8].

Oral cavity has a very high ratio of sensory innervations through trigeminal nerve and its innervations in the oral cavity has a very large representation in the cerebrum compared to the innervations of body peripheral areas [9]. The receptors present in the dentofacial region send information to CNS through afferent pathways, which could be information regarding the consistency of food to be masticated. Efferent impulses from CNS are conveyed to the muscles of mastication to bring about motor response masticatory activity in a co-ordinated manner [10]. A fundamental concern of sensory motor function coupled with a general interest in oral sensation and perception has led investigators to extend the exploration of tactile perception of form intra orally which is oral stereognosis [11]. The major change observed in the oral status of an edentulous individual is loss of teeth resulting in the complete loss of proprioception which has helped to program the masticatory system. The loss of sensory ability related to age may co-relate with the willingness of elderly patients to swallow larger food boluses implying that they cannot accurately estimate the bolus size and shape [12].

CONCLUSION:

It is concluded that covering the palatal mucosa with a denture does not reduce oral stereognostic ability; oral stereognostic test is a reliable test to measure patients' oral stereognostic perception which would enable the patient to appreciate the functional limitations of the denture. The dentist can be more aware of what he/she can expect in the form of patient response during and after treatment.

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