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Oral Stereognostic Abitlity- Sensory Perception In Complete Denture Patients

Dr. Divya Dahiya[1], Dr. Harleen Thukral[2], Dr. Rangesing Rathwa[3]

[1](Professor), Dept. Of Prosthodontics, PGIDS, Rohtak)
[2,3] (Post-graduate student, Dept. of Prosthodontics, PGIDS, Rohtak)

ABSTRACT

Stereo gnosis, in general, is a tactile discrimination of the shape of an object by means of manual palpation, without the use of eye-sight. It is a common diagnostic procedure for neurological functions.[(1,8)] Oral stereognostic ability (OSA) is a method to evaluate the oral perception. It involves identification of shae of the object being placed the objects in the mouth using tongue and the palate. Main changes in oral status with advancing age are loss of teeth and consequent removable complete denture wearing. The identification of objects aids in interpreting the adaptation and adjustment to the removable complete denture.[(2)]

Key Words: complete denture patients, oral stereognosis, sensory perception

INTRODUCTION

Stereognosis, in general, is a tactile discrimination of the shape of an object by means of manual palpation, without the use of eye-sight. It is a common diagnostic procedure for neurological functions.[(1,8)] It is generally found that edentulous subjects show decreased oral stereognostic ability, depending on the rehabilitation form. The present study was planned to find out the relationship of stereognostic ability of patient with and without complete denture and association with the age.

MATERIALS AND METHODOLOGY

A total of 55 edentulous patients will be selected from the OPD of Department of Prosthodontics and Crown & Bridge, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India. Subjects were included with inclusion and exclusion criteria

Inclusion criteria:

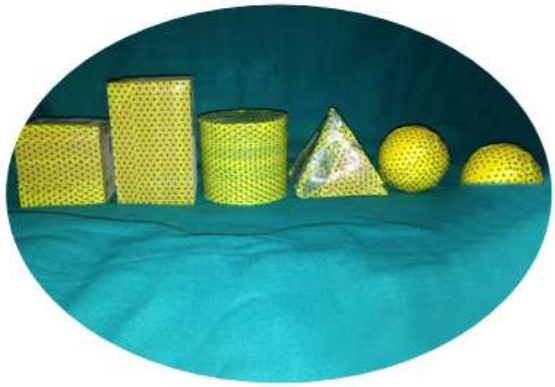
1. First time denture wearers.
2. Subjects rehabilitated with maxillary and mandibular mucosa supported removable complete denture.
3. Subjects reported immediately after 1month follow up period.
4. Edentulous subjects who consented to participate.

Exclusion criteria:

1. Subjects reported with denture misfit and indicated for repair, relining and rebasing.
2. Subjects presented with inappropriate vertical dimension with unsatisfactory occlusion.

Subjects were evaluated with the aims and objectives: To compare oral stereognosis in edentulous subjects with and without complete denture and to evaluate the effect of full palatal coverage with acrylic resin on the oral stereognostic ability of edentulous subjects.

The 6 test specimens of different shapes were fabricated from heat cure acrylic resin with dimensions 8 x 8 x 2mm. The acrylic resin test specimens were finished & polished and a hole was provided in the test specimens to attach a dental floss which was kept protruded from patients mouth. The specimens of shapes such as circle & ellipses, semicircle & triangle, rectangular & square were fabricated. Similar shapes of bigger sizes were also made from wood and kept as visual aids.



METHODOLOGY

Each subject was recalled after 1 month of denture insertion and oral stereognostic ability test was done as follows: The Oral Stereognostic Ability test was carried out in a quiet environment where the subject was asked to seat comfortably in an upright position.

Larger replica of all six test specimens was placed in front of the subject and sufficient time was given to get familiarized with the shape. No practice trial was allowed to avoid learning.

The subject was then informed that he/she should indicate the identifying shapes by pointing out at the larger replica of same shape when the smaller counterpart was placed in the mouth. The test specimens was kept out of the subject's sight during this phase. Subjects were informed about the test procedure of introduction of varying shapes on mid dorsum of tongue in the oral cavity. Each subject was strictly informed to use only tongue and palate to identify the shape. They were also instructed to respond as quickly as possible and to avoid biting on the test pieces. Test was carried out with and without complete removable denture in place. Time of identification was noted using a stopwatch.

6 shapes were categorized into 3 subgroups:

Sub group 1: Sphere & Semisphere

Sub group 2: Cube and Rectangular cube

Sub group 3: Pyramid and Cylinder

If all answers were correct, score of full 12 points was obtained. Score of the response was analysed as OST score.

RESULTS

The data on OSA score and response time was statistical analysis using t-test on SPSS version 20 software. The differences within the groups and among the groups was compared using ANOVA (statistical significance <.05) and other necessary statistical tests were also used for analysis.

Results obtained were as follows:

1. **Total score in two groups (table i)**

GROUPS	MEAN	p-VALUE
WITH DENTURE (GROUP 1)	10.02	0.004
WITHOUT DENTURE (GROUP 2)	9.04	

2. **Correlation between age and OST score (table ii)**

AGE GROUPS	GROUP 1	GROUP 2	p-VALUE
>65(CODE 1)	8.88	7.35	0.014
55-65(CODE 2)	10.16	9.22	0.139
45-55(CODE 3)	10.94	10.26	0.066
p-VALUE	0.001	0.001	

DISCUSSION

In order to compare the OSA of the participants under the similar conditions as possible, instructions were given to all participants

- To use only their tongue & palate but not their dentition when identifying.
- The examiner in this study ascertained that the participants did not use their teeth by observing the lack of vertical jaw movement
- A study has proved that main intraoral site for the detection of a food particle or bolus is not between the teeth but on the oral mucous membrane.[3,4]

Various other methods/tests for determining oral stereognostic ability are: Oral form recognition, Interdental size, Weight-discrimination tests, intra-oral size judgments of small holes, Two -point discrimination, Thermal discrimination test.[5,6,7] As per our study, table i shows that oral stereognostic ability is improved after restoring the masticatory efficiency i.e. with complete dentures with significant p value. Also as the age increases, OSA tends to decrease significantly with maximum OSA in age group 45-55years as per the test age groups taken.

CONCLUSION

Within the limitations of the study, it has been seen that patients satisfied with complete dentures have better sensory ability and the loss of stereognostic ability related to age may correlate with the willingness of elderly subjects to swallow larger food boluses, implying that they cannot accurately estimate bolus size.

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