Original Research Article

EVALUATION OF CLOSEST SPEAKING SPACE IN DIFFERENT ANGLE'S CLASSIFICATION

ABSTRACT

Aim: The purpose of this study was to determine closest speaking space in different Angle's malocclusion classes.
Study design: Descriptive Cross Sectional
Place and Duration of Study: Department of Prosthodontics, Liaquat Medical University Hospital from JULY 2021 TO DECEMBER 2021
Methodology: This descriptive study was conducted at department of Prosthodontics, Liaquat University of medical and Health Sciences Hospital during period of July 2021 - Dec 2021. Total 111 Patients from both genders with age range 18-45 with intact 1st and 2nd premolars were alginate impressions were taken. Polysiloxane Elastomeric impression material bites in 1.5cm thickness were placed bilaterally on occlusal surfaces of mandibular premolars and molar teeth in patients oral cavity. Patients were instructed to swallow and repeat the Sindhi Language word "SASSI" The elastomeric material bite blocks were removed and thickeness was noted down for each patient at premolar region using digital vernier calliper. The measurements were recorded in millimetres.

Results: A total of 111 patients were examined, with an average age of 35 years and a range of 18 to 45 years (Table 1). Males made up 56 % of the population, while females consists of 44 % (Figure 1). According to occlusion, the majority of patients had class I 50 (45 %), class III 29 (26.1 %), and class II div I and II 16 (14.4 %) correspondingly (Table 2). According to the mean closest speaking space, it was highest in class II div II 7.05$\pm$2.38 mm and in class II div I 4.81$\pm$3.47 mm, with 2.02$\pm$0.75 mm in class I and 1.20$\pm$1.08 mm in class III (Table 3).

Conclusion: It was concluded that closest speaking space was significantly increased in angles class II patients whereas decreased in angles class III

Keywords: closest speaking space, occlusion, angles classification, OVD

1. INTRODUCTION

OVD is the maxillary contact with mandibular occlusal teeth surface at recurrent contractile distance of elevator muscles [1]. Several approaches have been used to determine OVD, the most frequent of which are clinical rest position and phonetics. [,2,3,4] Silverman proposed that the production of sibilant sound during phonetics necessitates a 1-2mm space between the maxillary and mandibular teeth, which he refers to as Closest speaking space CSS.[,3,5] Its determination is critical in the fabrication of all restorations, with CSS being used to measure correct vertical dimensions of occlusion.[6] It varies between occlusion classes, depending on anatomic and morphologic factors.[7]

According to a study conducted by Pounds, the value of CSS varies between 1.5 and 3mm in class I, less than 2mm in class III, and up to 10mm in class II occlusion, but Burnett and Clifford contradicted the above study by finding only fluctuation in class III with the lowest most values.[1,4,5]Given the disparity in finding and importance of CSS in the fabrication of all restorations, it was necessary to evaluate CSS in different occlusions in local populations, as ethnicity may have a effect in different occlusions, and it will also aid practitioners in establishing proper vertical dimension in local populations during prosthesis fabrication.

2. MATERIAL AND METHODS

This descriptive study was conducted at department of Prosthodontics, Liaquat University of medical and Health Sciences Hospital during period of July 2021 - Dec 2021. Total 111 Patients from both genders with age range 18-45 with intact 1st and 2nd premolars were included using non -probability consecutive sampling technique were included in this study. All the patients were pre informed regarding nature and purpose of study and inform consents were taken from each patients in their mode of language. Patients were seated in dental chairs in an upright position with head unsupported and alginate impressions were taken in order to make casts and evaluate the Angle's classification of occlusion. Polysiloxane Elastomeric impression material bites in 1.5cm thickness were placed bilaterally on occlusal surfaces of mandibular premolars and molar teeth in patients oral cavity. Patients were instructed to swallow and repeat the Sindhi Language word "SASSI" 10 times, first load and then with normal conversational speed and volume and hold the mandible with our closing for 30 seconds to let material polymerise completely. The elastomeric material bites were then removed from oral cavity and thickeness of both right and left side was noted down for each patient at premolar region using digital verniercalliper as suggested by Rizzatti et al method. In order to reduce the dimensional changes, the measurements were recorded within one hr and recorded values of closest speaking space were noted in millimetres.

3. RESULTS

A total of 111 patients were examined, with an average age of 35 years and a range of 18 to 45 years (Table 1). Males made up 56 % of the population, while females consists of 44 % (Figure 1). According to occlusion, the majority of patients had class I 50 (45 %), class III 29 (26.1 %), and class II div I and II 16 (14.4 %) correspondingly (Table 2). According to the mean closest speaking space, it was highest in class II div II 7.05$\pm$2.38 mm and in class II div I 4.81$\pm$3.47 mm, with 2.02$\pm$0.75 mm in class I and 1.20$\pm$1.08 mm in class III (Table 3).

TABLE 1

DISTRIBUTION OF AGE

AGE	
MEAN	35 YRS
MINIMUM	18 YRS
MAXIMUM	45 YRS

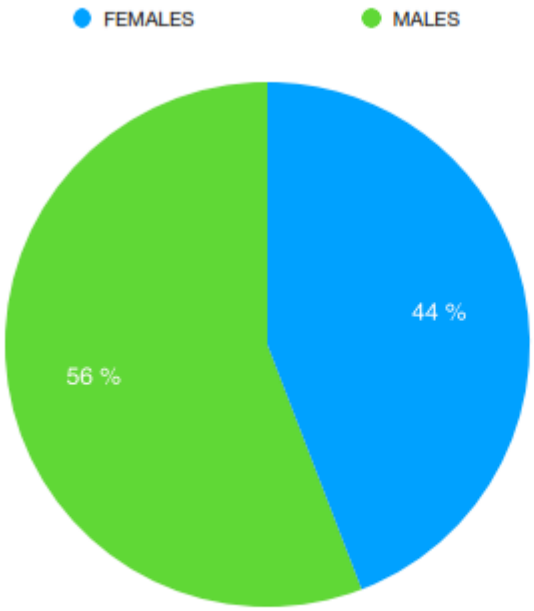

FIGURE 1

DISTRIBUTION OF GENDER

TABLE :2

DISTRIBUTION ACCORDING TO OCCLUSION

OCCLUSION	FREQUENCY	PERCENTAGE
CLASS 1	50	45 %
CLASS 2 DIV 1	16	14,4 %
CLASS 2 DIV 2	16	14,4 %
CLASS 3	29	26,1 %

TABLE 3

DISTRIBUTION ACCORDING TO CLOSEST SPEAKING SPACE

OCCLUSION	MEAN
CLASS 1	2.02 ± 0.75
CLASS 2 DIVISION 1	4.81 ± 3.47
CLASS 2 DIVISION 2	7.05 ± 2.38
CLASS 3	1.20 ± 1.08

4. Discussion:

According to the current study, the average age of the entire population was 35 years old (table 1), with males being dominant group 56% while females 44% (fig 1). According to distribution of occlusion, majority of patients had Angles class I, 50%, followed by class III 26%, and class II div I and div II 14.4% respectively (table 2). Similar to our results, Mohammad AN and colleagues[10] reported highest frequency of Angles class I malocclusion 67.3% followed by class II div
I 14.53% , class II div II 10.7% and class III 7.61% [8.] However studies done by Gul-e-Erum and Fida et al[8] reported highest percentage of patients having Angles class II malocclusion ,70.5%.According to the mean closest speaking space, it was highest in class II div II 7.05±2.38 mm and in class II div I 4.81±3.47 mm, with 2.02±0.75 mm in class I and 1.20±1.08
mm in class III (Table 3). A study done by Sakar O and colleagues[3] found that the only significant differences were found between Angle's class II div II and Angle's class III (0.034). Another study done by Hajimahmoudi M et al[9] on students reported that highest value of closest speaking space was found in Angle's Class II while lowest value in Angle's class III.

5. Conclusion:

It was concluded that closest speaking was significantly higher in angles class II whereas lower in Angles class III

REFERENCES

1. Souza RFD, Compagnoni MA. Relation between speaking of the /S/ sound and freeway space in dentate and edentate subjects. Braz Oral Res. 2004;18(4):333-7.
2. Souza RFD, Compagnoni MA, Leles CR, Sadalla KB. Association between the speaking space of /S/ sound and incised overlaps in dentate and edentate subjects. J Appl Oral Sci. 2005 Dec;13(4):413-7.
3. Meier B, Luck O, Harzer W. Interocclusal clearance during speech and in mandibular rest position. J Orofac Orthop.
   2003 Mar;64(2):121-34.
4. Sarkar O, Bural C, Sulun T, Oztas E, Marsan G. Evaluation of the closest speaking space in different dental and skeletal occlusion. J Prosthet Dent. 2013 Apr;109(4):222-6.
5. Schierano G, Mozzati M, Bassi F, Preti G. Influence of the thickness of resin palatal vault on closest speaking space in complete dentures. J Oral Rehabil. 2001 Oct;28(10):903-8.
6. Warreth A. Fundamentals of occlusion and restorative dentistry. Part II. Occlusal contacts, interferences and occlusal considerations in implant patients. J Ir Dent Assoc. 2015 Oct-Nov;61(5):252-9.
7. Silverman MM. The speaking method in measuring vertical dimension. 1952. J Prosthet Dent. 2001 May;85(5):427-31.
8. Gul -e- Erum, Fida M. Pattern of malocclusion in orthodontic patients: A hospital based study. J Ayub Med Coll Abbottabad. 2008 Jan-Mar;20(1):43-7.
9. Hajimahmoudi M, Bahrami M, Nozarpoor S. Comparative Evaluation of the Inter-Occlusal-Distance and Closest Speaking Space in Different Angle's Occlusion Classes. Dentistry Adv Res. 2018;18(2):1-10.
10. Mohammed AN, Mohammad EH. Prevalence of different types of malocclusion among school children in Makkah Governorate of Saudi Arabia. Int J Dentistry Oral Sci. 2018;5(6):645-8.