MDJ

Assessments of the width of upper central incisor as an aid for selection of full denture teeth

Dr. Widad AM. Al-Nakkash B.D.S, H.D.D, M.Sc
Dr. Hanan Abdul-Rahman B.D.S,M.Sc
Dr. Mayada Q. Al-Ani B.D.S, M.Sc

Abstract

This study was used to find out any correlation exists between the mesiodistal width of maxillary central incisor and the interpupillary distance also to find out if there is any relation between the sexual and racial differences in changing the measurement. The sample consisted of (108) students (53) male and (55) female, the width of 2 maxillary central incisors was measured by using a vamier caliper; the interpupillary distance was measured by using plastic ruler. The results of this study shows a relatively similar ratio between the mean interpupillary distance and the mean mesiodistal width of the central incisor for light colors male and female, dark colors women for both left and right sides. The interpupillary distance could be used reliably in selecting maxillary anterior teeth for prosthodontic.

Introduction

Artificial tooth selection is usually difficult to premise, so that teeth could be identical on both sides of the dental arch, which is not the case with natural dentition.

When there are no pre-extraction records available, then facial landmarks are usually used for selection of proper size of anterior teeth.

Maxillary central incisors are popularly considered the key teeth with respect to the esthetic and appearance, where the restoration of esthetic in completely edentulous persons presents a problem. They occupy a strategic position being at the center of the front of the upper arch [(l)]. Once the width of maxillary central incisors is known, the selection of other artificial teeth of maxillary anterior arch becomes easy for they usually harmonize esthetically with the proportion if edentulous face Facial measurement were suggested by several authors to be used as a guide for artificial denture teeth. [(2,3,4, 5, 6)]

Berry in 1905 used a biometric ratio method established by him based on the ratio of 1:16 maxillary incisor width to facial width9.

Lucas and Prvor, established the relative adult dimensions of eyes. They claimed that the adult interpupillary distance was reached by the fourteen years they also found that the mean values for adult men and women were the same. [(10)]

Young claimed that when anterior teeth are selected for prosthesis, the most important choice is the maxillary

central incisors [11].

Singh et al., in 1971 carried on a study to find out the relationship between the mesiodistal width of maxillary central incisors and the width of the philtrum. Results also shown that the sex factor has an influence on the size of teeth and width of philtrum [12].

And lastly, Al -Wazzan in 2001 proved that a significant relationship had existed between intercanthal dimension and the [4] maxillary teeth dimensions [13].

Materials and methods

(108) students, (53) male and (55) female having full complement of healthy teeth with normal anterior arch alignment were selected from the prosthetic department at the college of dentistry, Baghdad university. Students were divided into 4 categories light colors men, light women, dark color men and dark women. These are to be measured at 2 areas:

1st. the interpupillary distance: when the subject is sitting in an upright position looking forwards with opening his eyes opened. The distance was measured directly on the face from mid pupil to mid pupil by using plastic ruler.

2nd. The width of 2 maxillary central incisors at the bulge area of the tooth (height of contour). A vamier caliper was used and measurements were recorded to the nearest tenth of millimeters.

All measurements were carried on the selected sample directly.

Statistical analysis includes mean, standard deviation, over all mean and 95% confidence interval (lower and upper limit).

Results

The measurements suggested differences in both sex and race (Tables I and II).

The mesiodistal width of maxillary central incisor showed relatively the same mean values for male and female but different mean values for light and dark colors male and female as shown in table (I).

In three of the four groups, relatively similar measurements of interpupillary distance were found as shown in table (II). Dark colors men had a greater interpupillary distance than the dark colors women, but shriller incisor dimensions.

As shown in- table (III) a relatively similar ratio was found between the mean interpupillary distance and the mean mesiodistal width of the central incisor for light colors men and women, dark colors women for both left and right sides.

Discussion

When the anterior teeth are selected for prosthesis, the most important choice is the maxillary central incisor. There is a relatively no differences between the mesiodistal crown diameter for left and right incisors that was in agreement with the results obtained by Garn, Lewis and Wallengain, l968 [14] The mean mesiodistal intra oral measurement from this study (8.87mm) this was similar to a previous study (8.9mm) [8] and nearly similar to a previous study with extracted teeth (9mm) [16] The mean interpupillary distance (60.2mm) is nearly the same as that reported by Cesario and Latta (59.16mm) [16] and Lucas and prvor (58mm).[10]

Therefore these observations and the similar ratios between measurements indicate that the interpupillary distance could be used-reliably in selecting maxillary anterior teeth for prosthodontic.

Conclusions

1- In the three of the four groups studied, the ratio between the mesiodistal width of the maxillary central incisors and the interpupillary distance were statistically similar.
2- The measurement showed consistent relationships for sexual and racial differences. Dark colored men showed greater measurement than light colored men and women, while measurements for men in general larger than those for women.
3- There's no or little difference in ratio for left and right sides of central incisor for all arouos.

References

1- Frush and Fisher; How dentogenic interpretation the personality factor. J. Prosth. Dent. 6:441 -449, 1956.
2- Kem.B; Antrhopometric parameters of tooth selection. J. Prosth. Dent. 17:431,1967.
3- Craddock, W.F.; Prosthetic Dentistry. 3rd ed. London, 1956. Henry Kimpton. PI34. Marton, A.L.; Clinical application of functional anatomy and speech science to complete denture prosthesis. J. Prosth. Dent. 14:204, 1962.
4- Gehl, D.H. and Dresen, O.M.; Complete denture prosthesis 4[ed. Philadelphia, 1958, W.B. Saunders Co. P. 138.
5- Sears, V.H.: Selection of anterior teeth for artificial dentures J.Am. Dent Assoc. 28:929, 1941.
6- Nagie. R.J. and Sears V.H.; Denture Prosthetics. 2nd ed. St. Louis, 1962. The C,V Mosby Co. P.164.
7- Lec.John; H. Dental esthetics, 1962, Bristol and Bhn Wrighst of sons. P.48.
Berry, F.H. study of prosthetic art. Dentist's Mag 1:405.1905.
8- Lucas. W.D. and Pryor. H.B.: Range and standard deviations of eye physical measurements in healthy children J.Pediat. 6:533, 1935.
9- Young H.A; Denture esthetic, J. Prosth. Dent.6:748, 1956.
10- Singh, S., et al; Relationship between the width of maxillary central incisors and width of philtrum J. Dent. Assoc. 43;264, 1971.
11- A1- Wazzan, K.A. The relationship between intercanthal dimension and the widths of maxillary anterior teeth. J. Prosth. Dent.;86(6):608-12,2001.
12- Garn, S.M. Lewis, A.B and Wallenga, A.J.; Maximum confidence values for the mesiodistal crown dimension of human teeth. Arch oral Biol. B:841, 1968.
13- Mavroskoufis, F and Ritchie, G.M.; Variation in size and form between left and right maxillary central incisors teeth. J. Prosth. Dent. 43:254, 1980
14- Cesario V.A. and Latta G.H.: Relationship between the mesiodistal width of the maxillary central incisors and interpupillary distance.J. Prosth. Dent.52 (5), 1954.

Table (I) Analysis of measurement of interpupillary distance

	Light men	Light women	Dark women	Dark men
Mean of measurements	59.6	58.7	59.96	62.64
Standard deviation	4.1	2.23	3.02	3.36
95% confidence interval on mean (lower limit)	57.8	57.9	58.7	61.8
95% confidence interval on mean (upper limit)	61.3	59.4	61.14	63.8
Overall mean measurement	60.2			

Table (II) Analysis of measurement of mesiodistal width of central

	Light men		Light women		Dark women		Dark men	
	1⌋	⌊1	1⌋	⌊1	1⌋	⌊1	1⌋	⌊1
Mean of measurements	8.7	8.7	8.8	8.8	9.06	8.9	9.02	9.0
Standard deviation	0.5	0.51	0.7	0.5	0.54	0.57	0.58	0.62
95% confidence interval on mean (lower limit)	8.52	8.50	8.5	8.59	8.84	8.67	8.81	8.78
95% confidence interval on mean (upper limit)	8.87	8.86	9.09	9.0	9.27	9.12	9.22	9.21
Overall mean measurement	8.87							

Table (III) Ratio of mean value of inter pupillary distance to mesiodistal incisor width

Light men		Light women		Dark women		Dark men	
1⌋	⌊1	1⌋	⌊1	1⌋	⌊1	1⌋	⌊1
6.7	6.7	6.6	6.6	6.6	6.7	6.9	6.9