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A Study on the Facial Outline Form As Related to the Shape of the Maxillary Central Incisor Tooth At A Teritiary Dental Health Care Centre

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Abstract: *The study was conducted to evaluate whether there is correlation between the face form and the shape of the maxillary central incisor as advocated by Leon William in the subjects of Kerala. The samples were selected from among the patients attending the op of Govt Dental College Thiruvananthapuram. A total of 500 subjects were selected of which 250 were males and 250 were females. The age group was between 15 to 35 years. The outline form of the face was determined by measuring the width and length of the face in a photograph. The width was measured in the zygomatic region and the length is determined by measuring the distance between the root of the nose and the inferior border of mandible in the midline.The width (maximum mesiodistal) and the length (maximum cervico incisal) of the central incisor was measured using the vernier caliper on the cast. The facial shape and tooth form was classified as square, tapering and ovoid. The facial and tooth indices were statistically tested for their correlation. The value of correlation in the present study was found to be <0.05. Any value less than 0.05 is found to be statistically insignificant. The results revealed no correlation of any kind between the facial outline and tooth form.*

Keywords: *Facial outline,central inscisor, zygomatic mesiodistal ,cervicoincisal*

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I. Introduction

Aesthetics plays an important role in the success of complete dentures treatment. The shape, shade as well as their arrangement of teeth should be based on individual requirements to achieve satisfactory aesthetics1. Dentofacial morphology is closely related to facial aesthetics.Anterior teeth plays a key role in the aesthetic analysis of the face. Facial harmony should always be taken into account in dental restorations.2 Harmony between facial form and tooth shape has been reported to be one of the factors in dental aesthetics. It was Leon Williams who advocated this concept. Leon Williams states that the shape of the maxillary central incisor tooth has a definite relationship to the facial outline form. An enlarged version of the central incisor held upside down will nearly coincide with the outline form of the face. On this basis, Williams had evolved a classification for facial forms.ie, square, tapering and ovoid.3 Williams' study were conducted among western population. In the early 20th century tooth shape was classified according to facial shape but inverted and were grouped into different shapes like square, tapering and ovoid3. Due to wide difference in racial environmental and cultural features the observations of Leon Williams may or may not hold good in Indian subjects. In the absence of scientific studies no definite conclusions can be arrived. The concepts of Leon Williams can become a useful guideline in the selection of anterior teeth if found applicable in Indian subjects also. This study was therefore undertaken so as to evaluate the following. Whether the concept advocated by Leon Williams hold good in Indian subjects of Kerala region

II. Materials And Methods

A total of 500 subjects were selected of which 250 were males and 250 were females, from the patients reporting to the Govt. Dental College, Thiruvananthapuram. The age group varied from 15-35 years. The subjects included in the study should have sound anterior teeth without fracture, caries, erosions or marked incisor attrition. They should not have facial asymetry ,or under gone treatment for fracture or ssurgery for any disease of the jaw bones .

2.1 Measurement of Facial outline

The outline form of the face was evaluated by measuring the width and length of the face. The width of the face is usually measured at the zygomatic prominence and therefore the zygomatic prominence was used for measuring the width of the face. A black marker was used to mark the zygomatic prominence. Similarly the length of the face was determined by measuring the distance, extending from the root of the nose (frontonasal suture) to the inferior border of the mandible in the midline. These points were also marked with marker pen. All the points should be marked such that it can be seen even in the photograph. After marking the points the head of the patient was positioned in the cephalostat. Cephalostat was used to standardize the position of the head in every case. The camera was placed on a tripod 100cms away from the cephalostat and the base of the camera was placed parallel to the horizontal arm of the cephalostat. Center of the square piece in the viewfinder was made to coincide with the midline of the face. Photograph of the face was taken for all the subjects. The photographs initially obtained in 15 mm to 26 mm were enlarged to 65mm x 65mm so that the outline form of the face could be evaluated with greater accuracy.

2.2 Measurement of Central Incisor

In order to evaluate the shape of central incisor, impression of the maxillary arch was recorded in irreversible hydrocolloid and models were prepared in dental stone. The dimensions of maxillary central incisor was accurately measured using vernier calipers. The length is measured at the point of maximum cervicoincisal dimension and the width is measured at maximum mesiodistal width on the labial surface.

Calculation of facial and tooth index was done using the formula :

Length /width x100 .Table III and VI shows the facial and tooth form of the male and female subject included in the study The data so obtained was subjected to statistical analysis

III. Results

The facial outline and shape of the central incisor teeth indices were subjected to statiscal analysis to find out the correlation. ie whether the shape of the tooth had any correlation to the facial outline form and if so to what extent . To determine the correlation the following formula is used

$$r = \frac{P}{\sigma X \sigma Y}$$

Where $P = \frac{1\sum(X-\overline{X})(Y-\overline{Y})}{N}$

X - Index of facial measurement

$\overline{X}$-mean value of facial index

y –Index of the central incisor

$\overline{Y}$ - Mean value of the index of the tooth

N –no of observation

Table –I shows the mean facial index and tooth index of 250 male subjects

Table -II shows the distribution of shape of face according to facial index seen in 250 male subjects

Table III shows the distribution facial form among 250 males subjects and the shape of the tooth seen in them

Table -1V shows the mean facial index and tooth index of 250 female subjects

Table- V shows the distribution of shape of face according to facial index in 250 female subjects

Table VI shows the distribution facial form among 250 females subjects and the shape of the tooth seen in them

The data was subjected to statistical analysis and it was fond that r the correlation for males was –0.0222 similarly for females it was found to be-0.09 .If the value of r is < 0.05 the correlation was considered insignificant .If the value is > 0.05 the correlation was considered significance. Since the value is less than .05 there is no correlation

IV. Discussion

The success of rehabilitation with complete dentures depends on the aesthetic need of the patient along with other requirements. Leon Williams "Law of Harmony" advocated his concept of facial form and its relation to the shape of the central incisor based on visual observation.3 It was believed that the face should not look isolated in the general personality background of the individual. However the observations of Williams were not backed by scientific data. The present study was aimed at evaluating Williams concept as applicable to the population of Kerala. The results revealed that the Williams concept was not applicable as facial contours differ

widely with the shape of the teeth. Frush and Fischer are of the opinion that Williams' concept is reasonable and worth implementing.4 However they too didn't evaluate the merits of Williams' concept on a scientific basis. They have suggested certain other criteria to achieve natural appearance with denture. Since it has been found that facial outline form has no significant correlation to the tooth form attempt was made to relate the length of the face to the length of the tooth. This too was found to have no significance. The present study proved that no relationship existed between facial outline and tooth form.

Similarly the study by Mavrokoufis et al and Vijae et al using photographic methods compared the relationship between the shape of the face and the shape of the central incisor and didn't agree with the Law of Harmony.5,6 The selection of tooth is an important aspect in denture fabrication and it has to be dealt by applying various other principles. The selection has to be based on individual personality requirements of the patient rather than on the mere outline form of the face alone. The final outcome to certain extend may depend on the artistic talent of the operator. It is also important to realize that the face undergoes changes during lifetime and such stages invariably is at the cost of soft tissues. But the anterior teeth don't undergo a parallel change except to the extend of some incisal attrition. Therefore to place undue reliance on the relationship between the teeth and face is not justifiable.

IV. Tables & Graph

Table I : Mean facial index and tooth index of 250 male & their correlation

Mean Facial index+ SD	Mean Tooth index+ SD	Correlation
88.525+1.9994	120.5610+11.3295	-0.0222

table -ii : Distribution of shape of face according tofacial index in 250 male subjects

Facial Index Value	Shape Of Face	Number
85 And Below	Square	82
86 To 90	Ovoid	110
91 And Above	Tapering	88

Table Iii: Distribution of facial forms among 250 male subjects investigated in the study and the shape of the tooth seen in them

Shape of Face	Square Tooth	Ovoid Tooth	Tapering Tooth
Square (52 numbers)	21	14	17
Ovoid (110 numbers)	44	23	43
Tapering (88 numbers)	40	11	37

Graph I : Graph showing face form & tooth form of males

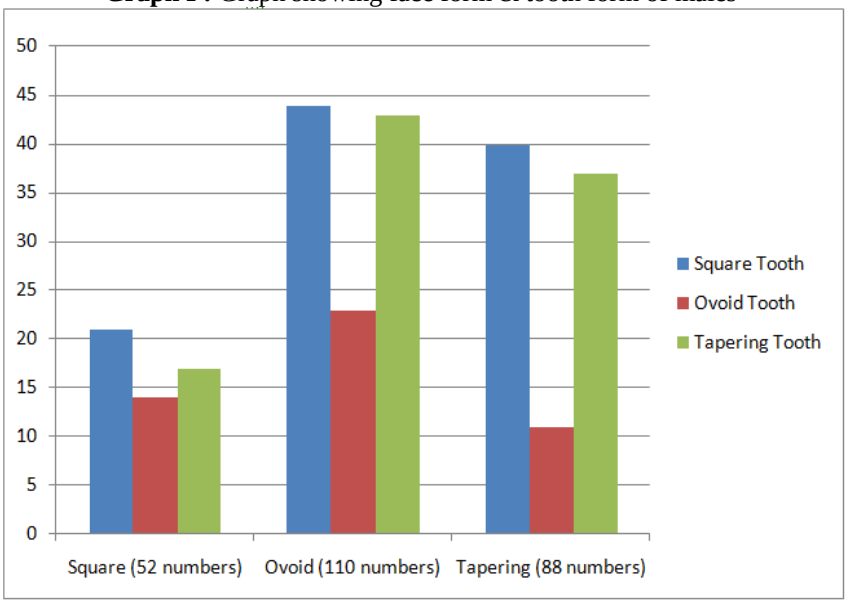

Table –Iv Mean facial index and tooth index of 250 female

Mean Facial index + SD	Mean Tooth index + SD	Correlation
87.8888 +1.8177	115.0110 +11.3788	-0.0904

Table- V Distribution of shape of face according tofacial index in 250 female subjects

Facial Index Value	Shape Of Face	Number
85 And Above	Square	111
86 To 90	Ovoid	109
91 And Above	Tapering	30

Table Vi : Distribution of facial forms among 250 female subjects investigated in the study and the shape of the tooth seen in them

Shape of Face	Square Tooth	Ovoid Tooth	Tapering Tooth
Square (111 numbers)	32	45	34
Ovoid (109 numbers)	35	25	49
Tapering (30 numbers)	11	8	11

Graph I I: Graph showing face form & tooth form of females

V. Conclusion

In conclusion, results of the present study don't confirm the Law of Harmony proposed by Leon Williams. Other factors should also be considered in order to achieve aesthetically pleasing dentures.

References

[1]. Sellen.PW, Jagge.DC , Harrison.A ,Computer generated Study of the Correlation between tooth form arch form and palatal contours JProsthetDent 1998; 2:163-168.
[2]. Tay.L Herrera.D, Bernabe E,LagravereM, Delgado.L,Esthetic perception towards different combination of facial contours and upper incisor shape .BrazJOral Scie 2009;8(2):193-96.
[3]. William J Leon ,A new classification of Human tooth form with special reference to new system of artificial tooth Dental Cosmos Vol56:627 -628,1914.
[4]. Frush J and Fisher R How dentogenic restoration interprect the sex factor J Prosthet Dent 1956;6:160-72.
[5]. Mavroskoufis Ritchie GM The face form as a guide for the Selection of maxillary central incisor . J.Prosthet Dent; 1980, 43(5):501-5.
[6]. Varjao M Sualdini S Russi S Neudenin J .Correlation between maxillary central incisor form and face form in four facial groups. Quintessence Int 2006;31(10): 767-77.

*Dr K Harshakumar. "A Study on the Facial Outline Form As Related to the Shape of the Maxillary Central Incisor Tooth At A Teritiary Dental Health Care Centre." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.8 (2017): 34-37.