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Original Research

Assessment of relationship between the shapes of the face and permanent upper central incisor

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ABSTRACT:
Background: The position, shape, and color of permanent upper central incisors enhance the esthetics of the smile. The present study was conducted to assess aesthetic value of the relationship between the shapes of the face and permanent upper central incisor. **Materials & Methods:** 56 patients of both genders were included. The incisor image was aligned keeping the mesial surface of the tooth and the smile line perpendicular to the horizontal plane. These criteria allowed a geometric classification of faces and incisors. Tangents were drawn at the farthest points of right and left face contours: the lateral longitudinal lines RT and LT, corresponding to the lateral mesial (MT) and distal (DT) tangents of the incisor. The greatest width of the face (distance between RT and LT) was denominated FW1, and the greatest width of the incisor (distance between MT and DT) was denominated TW1. The width of the face inner portion, at the height of the labial rima, was denominated FW2. **Results:** Out of 56 patients, males were 26 and females were 30. Fa angle in males was 79.8 and in females was79.2, Ta was 81.4 and 81.5, Fb was 48.1 and 48.7, Tb was 57.9 and 57.4, Fab was 148.2 and 148.5 and Tab was 156.3 and 155.9. The difference was non- significant (P> 0.05). Face and central incisor shapes agreements Obs was 51% by examiner 1, 30% by examiner 2 and 34% by examiner 3. Kappa value was 0.24 by examiner 1, 0.68 by examiner 2 and -0.07 by examiner 3. **Conclusion:** There was no relationship between the shapes of the face and the central incisor.
Key words: Central incisor, face, aesthetic

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INTRODUCTION

Smile is the most visible record of the patient for the dentist. The aesthetic restoration of the edentulous patient has an important psychological effect.[1] Once properly restored, the patient's self- esteem and self-confidence are often improved, which is also the goal of the oral rehabilitation treatment. Selection of anterior teeth and their arrangement to meet aesthetic and functional requirements demand artistic skill in addition to scientific skill.[2]

The position, shape, and color of permanent upper central incisors enhance the esthetics of the smile.[3] In cases involving the reconstruction of these teeth, parameters are required to assist in elaborating a plan of treatment that corresponds to the expectations of both patients and dental professionals.[4] Because of this demand, many methods have been proposed to determine the shape of central incisors.[5] In 1914, Williams suggested a correlation between the inverted shape of the face and the shape of the upper permanent central incisors, the so-called "law of harmony.[6] Some researchers have associated measurements of the face and the central incisor, with the main measures being the width of the zygomatic

arch, the interpupillary distance, the distance between the inner corners of the eyes, the interalar width, and the distance between labial commissures (labial rima width).[7] These measures have been suggested as parameters to determine the central incisor width.[8,9,10] The present study was conducted to assess aesthetic value of the relationship between the shapes of the face and permanent upper central incisor.

MATERIALS & METHODS

The study was conducted among 56 patients of both genders. A digital camera was used for obtaining pictures of patients. For measurement standardization, only the right incisor and the right side of each face were analyzed. The relationship between face and central incisor, measurements were carried out taking into account three criteria applicable to the images of face and central incisor contours. The face image was aligned keeping the bipupillar line (BL) parallel to the horizontal plane. The incisor image was aligned keeping the mesial surface of the tooth and the smile line perpendicular to the horizontal plane. These criteria allowed a geometric classification of faces and incisors. Tangents were drawn at the farthest points of right and left face contours: the lateral longitudinal lines RT and LT, corresponding to the lateral mesial (MT) and distal (DT) tangents of the incisor. The greatest width of the face (distance between RT and LT) was denominated FW1, and the greatest width of the incisor (distance between MT and DT) was denominated TW1. The width of the face inner portion, at the height of the labial rima, was denominated FW2. Shape of the faced was square, oval and triangular. Results of the study was compiled and assessed statistically using chi- square test. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 56		
Gender	**Males**	**Females**
Number	26	30

Table I shows that out of 56 patients, males were 26 and females were 30.

Table II Assessment of angles in both gender

Angles	Male	Female	P value
Fa	79.8	79.2	0.12
Ta	81.4	81.5	0.31
Fb	48.1	48.7	0.41
Tb	57.9	57.4	0.17
Fab	148.2	148.5	0.21
Tab	156.3	155.9	0.19

Table II, graph I shows that Fa angle in males was 79.8 and in females was79.2, Ta was 81.4 and 81.5, Fb was 48.1and 48.7, Tb was 57.9 and 57.4, Fab was 148.2 and 148.5 and Tab was 156.3 and 155.9. The difference was non- significant (P> 0.05).

Graph I Assessment of angles in both gender

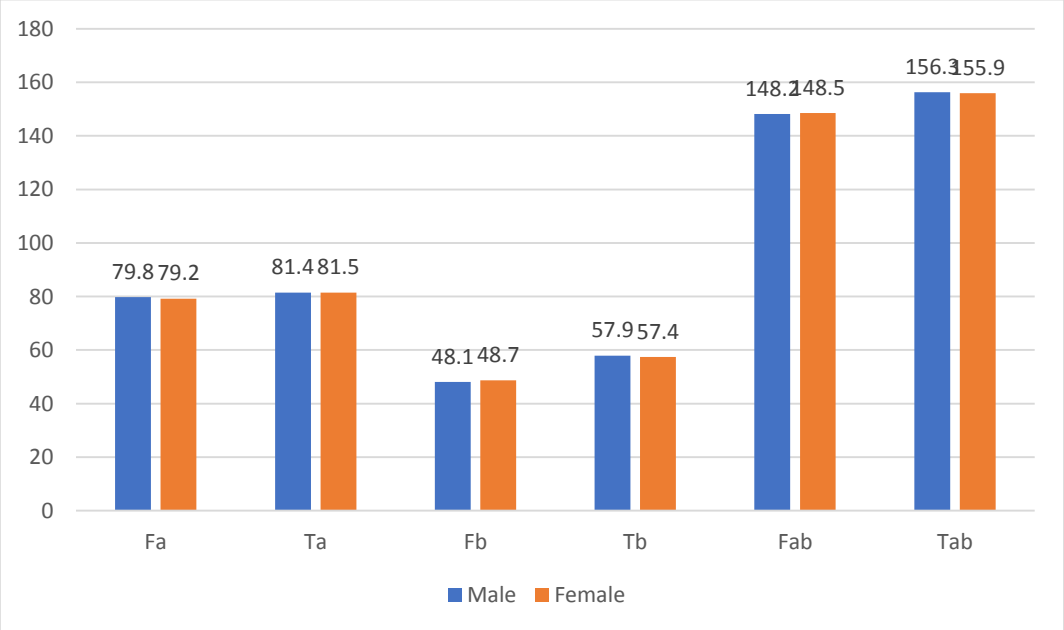

Table III Global agreement and kappa index for face and central incisor shapes and angles

	Examiner 1	Examiner 2	Examiner 3
Face and Central incisor shapes Agreements Obs	51%	30%	34%
Kappa	0.24	0.68	-0.07

Face and central incisor shapes agreements Obs was 51% by examiner 1, 30% by examiner 2 and 34% by examiner 3. Kappa value was 0.24 by examiner 1, 0.68 by examiner 2 and -0.07 by examiner 3.

DISCUSSION

Numerous studies have addressed the discrepancy between the patient's and dentist's perception of dentofacial aesthetics, highlighting the importance of dentist in determining the patient's aesthetic expectation prior to beginning treatment.[11,12] The dental measurements like the shape, position and size of the teeth, gingival morphology and the facial measurements like upper lip height, maxillary incisal display and the inter commissural width at the rest position and smile are the most important factors in determining facial attractiveness.[13,14] The present study was conducted to assess aesthetic value of the relationship between the shapes of the face and permanent upper central incisor.

In our study, out of 56 patients, males were 26 and females were 30. Farias et al[15] the overall mean values of the angles were: Fa = 79.76 ±3, 16, Ta = 81.22±4.42, Fb = 48.76±6.12, Tb = 57.00±6.60, Fab = 149.24 ± 5.68, Tab = 156.33 ± 5.51.Ta, Fb, and Fab presented significant differences between the means of males and females (P<.05). The angles Fa (face) and Ta (incisor) were used to develop a criterion of classification into geometric shapes (triangular, oval, and square). The straight line of linear regression was calculated from the measurements of angles Fa and Ta, and hence the highest and lowest values for the measurements were determined, which were in turn equally divided into three groups. These angles were related to the geometric figures so that the lowest values classified the sample as triangular, the intermediate values as oval and the highest as square. The face shape identified in the sample as triangular accounted for 30% of subjects, with the oval shape accounting for 40% and the square for 30%. There was no statistically significant difference between the Fa averages of males and females (P = .28, Kruskal-Wallis).

We observed that Fa angle in males was 79.8 and in females was79.2, Ta was 81.4 and 81.5, Fb was 48.1 and 48.7, Tb was 57.9 and 57.4, Fab was 148.2 and 148.5 and Tab was 156.3 and 155.9. We found that face and central incisor shapes agreements Obs was 51% by examiner 1, 30% by examiner 2 and 34% by examiner 3. Kappa value was 0.24 by examiner 1, 0.68 by examiner 2 and -0.07 by examiner 3. Lakshmi et al[16] investigated patients satisfaction and correlate the variability of aesthetic dental and facial measurements by the maxillary anterior teeth appearance in different gender group among Indian patients. The dental and facial measurements were made on 80 Indian subjects: Central incisor width/length ratio, gingival zenith displacements, the upper lip height, intercommisural width, maximum maxillary central incisal at rest and smile were measured. All the patients rated their satisfaction with the dental appearance on the visual-analogue scale. All the parameters have been analyzed with respect to gender. The great majority of the participants were completely satisfied with their dental appearance (p > 0.05). In the men, maximum maxillary central incisal display at rest and intercommisural width during smile showed statistical significant difference. In women, the combination of central incisor width/length ratio, intercommissural width at rest and smile, and maximum maxillary incisal display measurements were statistically significant.

CONCLUSION

Authors found that observed no relationship between the shapes of the face and the central incisor.

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