

Comparison of Position of the Gingival ZENITH in Males and Females

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ABSTRACT

Aim: To evaluate the position of gingival zenith relative to the midline in maxillary central incisors in males and females.

Material and methods: 66 subjects (33 females and 33 males) with an average age range of 18 to 23 years were included and assessed. Subjects without any gingival and periodontal diseases were considered for this study. Subjects with periodontitis, rotated incisors, spacing, crowding and anterior restorations were not considered for this study.

Results: The results show no significant difference in the gingival zenith position between males and females. The gingival zenith positions were found to be located more towards the distal of the midline compared to central or mesial to midline.

Conclusion: The gingival zenith position and location obtained from this study can be clinically applied to re-establish the gingival zenith location of the maxillary anterior teeth during periodontal surgery; crown lengthening or root coverage procedures.

Keywords: Gingiva, Periodontal disease, esthetics.

INTRODUCTION

Beauty has been defined as a combination of features that give pleasure to the mind¹. The beauty of the person's face is determined by the harmony of proportions and symmetry.² It is the responsibility of the dentist to preserve, create, or enhance a pleasing smile without impairing function.

Dental aesthetics is a major consideration for patients seeking a restorative treatment. Anterior teeth proportion plays an important role in restoring the aesthetics in patients. Gingival health is one of the aesthetic objectives during treatment

planning. For an optimal aesthetic result, gingival morphology with an emphasis on lines and contours plays an important role. The gingival zenith position and level is an important factor in gingival aesthetics³.

To attain the final aesthetic result and achieve optimal results in rehabilitation of gingival contour during procedures like crown lengthening in prosthodontics rehabilitation, implant related emergence profile, and orthodontic therapy⁴, it is important to take gingival contours into consideration during treatment planning. The location of the gingival zenith in a medial-lateral position relative to the vertical tooth axis of the

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maxillary anterior teeth remains to be clearly defined. The appropriate placement of the gingival zenith is important, as it helps to determine the desired axial inclination of the tooth by manoeuvring the line angle of the tooth vertical axis. The purpose of this investigation was to evaluate and compare the gingival zenith positions between males and females.

MATERIAL AND METHODS

66 subjects (33 females and 33 males) with an average age range of 18 to 23 years were included and assessed. Subjects without any gingival and periodontal diseases were considered for this study. Subjects with periodontitis, rotated incisors, spacing, crowding and anterior restorations were not considered for this study.

The inclusion criteria were subject 66 people of age 18 to 23 years, were selected from a total of 100 people from a dental check up who were willing to participate in the study. Subjects with missing or artificial prosthesis, restored anterior teeth, presence of spacing between the teeth, crowding and pre-existing periodontal disease like gingival recession, gingival overgrowth were excluded from this study. As the method of recording the zenith positions and locations on the cast were cumbersome, measuring the locations and positions of gingival zenith were done digitally. Photographs were taken with a mobile phone (iPhone 6 with resolution of 12 megapixels) in balanced day light conditions.

Photographs were cropped to the required area of interest (i.e maxillary central, lateral and canine regions) and a grid was superimposed digitally with the help of Adobe Photoshop Mix.

The highest point of the free gingival margin was marked and location evaluated as related to the vertical midline or long axis of each tooth of the maxillary anterior dentition, including the central incisors, lateral incisors, and canine teeth, to obtain the gingival zenith position.

All measurements were made by one investigator.

Statistical analyses were done using the chi square test to compare the zenith positions between the male and female subjects.

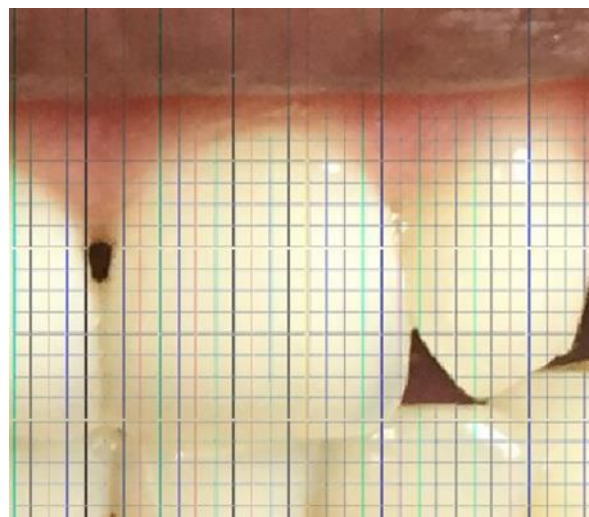


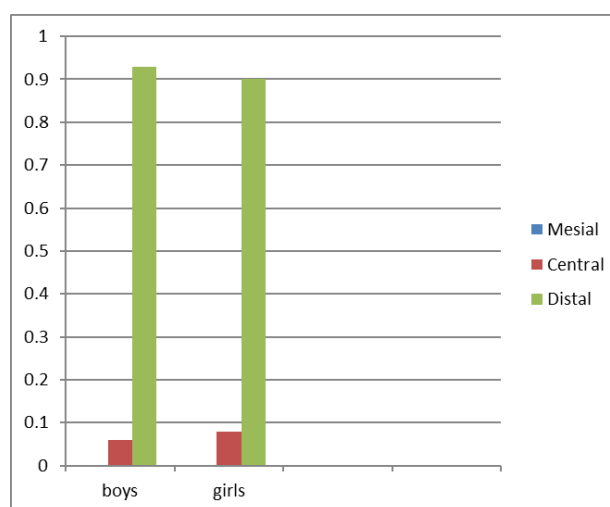
Fig 1: Area of interest with a grid was superimposed digitally with the help of Adobe Photoshop.

RESULTS

Table: Comparison between boys and girls with respect to maxillary central, lateral and canine regions.

	MESIAL	CENTRAL	DISTAL
BOYS (33)	0	n=2 6%	n=31 93%
GIRLS (33)	0	n=3 8%	n = 30 90%
	0	n =5 7.5%	n =61 92.5%

*p<0.05 statistically significant.



*p<0.05 statistically significant

Graph 1: Comparison of boys and girls.

The results of gingival zenith position of maxillary anterior teeth in total population are shown in table. No significant difference was found for the gingival zenith position between male and female.

The gingival zenith positions were found to be more towards the distal of the midline as compared to central and mesial locations

Zagar et al. studied the distal displacement of the gingival zenith in relation to the long axis of the crowns in the maxillary anterior dentition⁹.

DISCUSSION

The zenith is defined as the most apical point of the gingival marginal scallop⁶. On comparing the gingival zenith position between the male and female subjects in our study, no significant difference was seen. The study was done digitally to prevent the cumbersome technique of making impressions and pouring casts to take measurements. The photos were taken with the native camera app of an iPhone 6 with a resolution of 12 megapixels, and the area of interest, the central incisors, lateral incisors and canines was cropped. The grid lines for evaluating the location of zenith was superimposed on the pictures and evaluated by only one investigator.

CONCLUSION

The gingival zenith position and location obtained from this study can be clinically applied to re-establish the gingival zenith location of the maxillary anterior teeth during periodontal surgery as required during aesthetic rehabilitation like crown lengthening or root coverage procedures. The position is of significance while establishing the emergence profile in implant procedures. The position may also be mimicked during festooning to make complete dentures look more realistic.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Naini FB, Gill D. Facial Aesthetics: Concepts and canons. Dent Update. 2008; 35:102-7.
2. Prakash R, Naidu PL, Teja DUK. Selective Mirror Image Layering & Editing (S.M.I.L.E.) - Proposing a new digital tool for diagnosis, treatment planning & patient education. Part I: The handedness of a smile. J Res Adv Dent 2018; 7:3:203-206.
3. Humagain M, Rokaya D, Sri R, Dixit S, Kafle D. Gender Based Comparison of Gingival Zenith Esthetics. Kathmandu Univ Med J 2016; 54(2):148-52.
4. Snigdha Gowd, T Shankar, Suravi Chatterjee, Pritam Mohanty, Nivedita Sahoo, Srinivas Bara. Gingival Zenith Positions and Gingival Zenith Levels of Maxillary Anterior Dentition in Cases of Bimaxillary Protrusion: A Morphometric Analysis. The Journal of Contemporary Dental Practice. 2017; 18(8):1-5.
5. Arun P Maradi, Fazal Ilahi Jamesha, Milind Atulkar, Arunkumar B Sajjanar. Assessment of Gingival Zenith Levels in the Healthy Gingiva of Maxillary Anteriors for Esthetic Considerations. J Clin dent Sci 2017; 2(3).
6. Pawar B, Mishra P, Banga P, Marawar PP. Gingival zenith and its role in redefining esthetics: A clinical study. J Indian Soc Periodontol 2011; 15:135-8.
7. Charruel S, Perez C, Foti B, et al. Parameters for gingival contour assessment. J Periodontol 2008; 79(5):795-801.
8. Burkey B. Dental and facial asymmetry. Rev Angle Orthod 1994; 64: 89-98.
9. Zagar M, Zlataric KD, Carek V. A Quantitative Evaluation of the Distal Displacement of the Gingival Zenith in the Maxillary Anterior Teeth. Coll Antropol 2010; 34: 225-8.