

THE ANATOMY OF A SMILE

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ABSTRACT

Good appearance is not considered a vanity sign, but literally a need, and the dentistry has a fundamental role in obtaining it, since the face is the exposed area of the body and mouth a prominent line. The smile constitutes an important component in the presentation of a human being favouring his or her social acceptance. A non harmonic smile decrease the beauty of the face and it can cause discomfort in the social conviviality, as it is one of the most important facial expression that demonstrates friendship, sensation and appreciation. This study analyzed the aesthetic components of the smile, evaluating the relationship between the curve formed by the incisal line of the anterior superior teeth and the curve of the lower lip, the touch of this incisal line on the inferior lip and the number of teeth displayed during smile. Three hundred fifty Punjabi females above 19 years of age and having full dentition were selected. Photographs were taken (Smile) using digital camera. Results show that a typical or average smile has the following characteristics: 1) The overall cervicoincisor length of the maxillary anterior teeth is displayed. 2) Gingiva does not show (except interproximal gingiva). 3) The incisal curvature of the maxillary anterior teeth parallels the inner curvature of the lower lip. 4) The incisal curvature may be either totally touching or slightly touching the lower lip.

KEYWORDS: Smile, Lip, Gingiva

INTRODUCTION

Smile – a pleasing positioning activity of muscles of facial expression which radiates pleasant sensory stimuli thus creating a feeling of wellbeing to the wearer and the spectator. An attractive or pleasing smile clearly enhances the acceptance of an individual in our society by improving the initial impression in interpersonal relationship. A defective smile might be considered as a physical handicap. The smile is one of the most important facial expressions and is essential in expressing friendliness, agreement and appreciation.

It would be useful to describe some average desirable characteristics of smile to help achieve optimum result in aesthetic oral rehabilitation. This study formulates a standard position of upper and lower lip during an active smile. This standard may serve as a guideline for restoration or enhancement of aesthetic and plastic surgery.

MATERIAL AND METHODS

The present study is based on 350 Punjabi females, above 19 years of age and having full dentition. Eruption of last molar was ignored in classifying person with full dentition (as 3rd molar eruption is variable). Those people who migrated into Punjab from other places were excluded from this study. Subjects with inflammation, trauma, malformation, deformity and surgical scars (e.g. operation for cleft palate) and other abnormalities of the lips were excluded because of their unsuitability for this investigation. In each subject, the position of upper and lower lip was recorded during smile.

POSITION OF UPPER LIP

Depending on the extent of exposure of maxillary anterior teeth, interdental papilla, gingiva and mucosa during smile, three types of smiles have been identified as follows^{1,2,3}:-

High smile (Mucosa smile) – full exposure of labial surface of teeth, interdental papilla, free marginal gingiva and labial mucosa.

Average smile (Papilla smile/gingiva smile) – About 75% to 100% exposure of maxillary anterior teeth and the interproximal gingiva only.

Low smile (Tooth Smile) – Exposure of less than 75% of maxillary anterior teeth.

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*High smile**Average smile**Low smile***Fig. 1 : Three general types of smile****Table 1**

Comparison between smile types of present study with other worker.
(Position of upper lip while smiling)

Positions	Present study in Punjab (350 F subjects)	Tjan et al in California ¹ (247 F subjects)
High	79 (22.5%)	34 (13.79%)
Average	229 (65.5%)	182 (73.71%)
Low	42 (12%)	31 (12.50%)

Parallelism of the maxillary incisal curve with the lower lip

Generally three types of smile lines are observed: Convex, Straight and Concave. When smile line is convex or concave, it is referred to as smile curve. Convex smile line accentuates the quality of smile and therefore it is a positive smile line. The concave smile line gives an

unpleasant, harsh, distracted character to smile and it is therefore a negative smile line. Straight smile line can have a positive or negative effect depending on its harmony to the lip curvature and to the presence or absence of buccal corridor. A convex smile line and parallelism of smile line to lower lip are two desirable qualities of smile which gives pleasantness to smile.

*Convex Curve**Straight Curve**Concave Curve***Fig. 2 : Types of maxillary anterior incisal curvature in relation to lower lip.****Table 2**

Types of incisal curvature.

Positions	Present study in Punjab (350 F subjects)	Tjan et al in California ¹ (247 F subjects)
Convex Curve	208 (59.5%)	212 (85.77%)
Straight	102 (29%)	33 (13.56%)
Concave Curve	40 (11.5%)	2 (0.6%)

Position of the incisal curve relation to touching the Lower lip

Contact between lower lip and incisal edges or the labial surface of upper anterior teeth is also an important feature which contributes to the aesthetic effect of smile. For an

attractive smile, contact should preferably be present between the incisal edges of upper teeth and vermillion border of lower lip. Absence of parallelism between smile line and lower lip together with no contact of incisal edges with lower lip gives negative effect to the smile. When the smile is not parallel to lower lip curvature, there is a

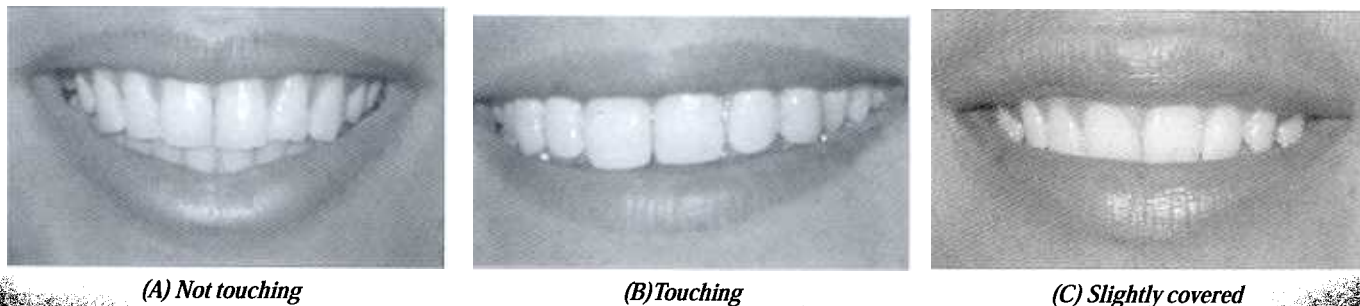


Fig. 3 : Maxillary anterior incisal edges - not touching, touching and slightly covered by lower lip.

Table 3

The position of maxillary anterior incisal curvature relative to lower lip

Positions	Present study in Punjab (350 F subjects)	Tjan et al in California ¹ (247 F subjects)
Not touching	176 (50.3%)	59 (34.62)
Touching	106 (30.3 %)	124 (49.61)
Slightly covered	68 (19.4 %)	31 (15.76)

break in the harmonial relation existing between the incisal edges of upper anterior teeth with the lower lip. A triangular space or area is identified between the incisal edges of upper anterior teeth with the lower lip. This is an undesirable feature as it distracts the observer's attention to neutralize the harmony existing between smile line and lower lip during smile.⁴

RESULT AND DISUSSION

Smile type – The survey revealed that 79 (22.5%) persons were classified as having a high smile, 229 (65.5%) as having an average smile, and 42 (12%) as having a low smile. Our results were comparable with Tjan et al who found similar preponderance of average smile (73.72%) in caucasian female subjects, followed by high smile in 13.79% and low smile in 12.50%.

Parallelism of maxillary incisal curve with the lower lip – 208 (59.5%) subjects showed parallelism of the upper incisal curve with the inner curvature of the lower lip, 102 (29%) showed a straight rather than a curved line, 40 (11.5%) showed reverse smile line. Similar to our study, Tjan et al reported that most subjects had parallelism of maxillary incisal curve with the lower lip, but there was statistically significant difference in the preponderance of convex curve (85.77% vs. 59.50 % in our study, p value= 0.001, highly significant). Hence, according to Tjan et al, only a minority of population had a straight incisal curvature (13.56% vs. 29% in our study, p value=0.0001, highly significant) and concave incisal curvature was practically nonexistent in their study population (0.6% vs. 11.5% in our study, p value= 0.001, highly significant).

Position of incisal curve relative to touching the lower lip – The data revealed that 176 (50.3%) subjects showed the maxillary anterior teeth not touching the lower lip, 106 (30.3%) were touching the lower lip, and 68 (19.4%) had the incisal position of the anterior teeth covered by the lower lip. This did not follow a trend with the study by Tjan et al where maximum subjects (49.61%) showed maxillary incisal curvature touching the lower lip (vs. 30.3% in our study, p value <0.01, highly significant) 34.62% showed maxillary incisal curvature not touching the lower lip vs. 50.3% in our study, p value =0.0001, highly significant. Therefore the % of subjects with maxillary incisal curvature slightly covered by lower lip was comparable between the two studies (19.4% in our study, 15.76% in Tjan et al) p value >0.05% insignificant.

The result of this experiment show that a typical or average smile has the following characteristics:

1. The overall cervicoincisal length of the maxillary anterior teeth are displayed.
2. Gingiva does not show (except interproximal gingiva).
3. The incisal curvature of the maxillary anterior teeth parallels the inner curvature of the lower lip.
4. The incisal curvature may be either totally touching or slightly touching the lower lip.

Consideration of the criteria of a smile obtained from this study may be very useful in improving the esthetic value and resotations.

SUMMARY AND CONCLUSION

A survey of the characteristics of an open smile was conducted on 350 Punjabi females. Findings show that an average smile exhibits approximately the full length of the maxillary anterior teeth, has the incisal curve of the teeth parallel to the inner curvature of the lower lip, has the incisal curve of the maxillary anterior teeth touching slightly the lower lip, and displays the six upper anterior teeth and premolars. Consideration of the characteristics may be useful in improving the esthetics of restoration. Hence it is inferred from the present study that Punjabi females have an aesthetically pleasing smile with desirable characteristics.

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