



Assessment of visibility of maxillary incisors in dentate individuals with varying lip lengths – a cross sectional study.

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ABSTRACT-

Statement of problem- For successful prosthesis, it is essential to record the vertical and horizontal relationship of the mandible to the maxilla accurately. The first step in recording vertical relation is to adjust the visibility of the maxillary incisors according to the lip length. The average adult shows

approximately 2mm of upper central incisors when the lips are just parted, but there are many variations from this amount.

Purpose- This study aims to find out whether or not a correlation exists between the lip length and the visibility of the maxillary teeth. This correlation may be used as a guide in the edentulous patients and in patients that require restoration of maxillary anterior teeth.

Material and Methods- The lip length was measured from the base of the nose to the vermillion border of the upper lip at the lowest point of the labial tubercle. The visibility of the maxillary incisors was measured when the lips were at rest. Measurements were made with the digital Vernier calipers.

Results- This study confirms with the previous observations that visibility of teeth is more in women and young patients than in men and old patients respectively.

Conclusion- In the studied population, visibility of central incisors at rest falls within the range of 2-3 mm. Average lip lengths for men and women are 22 and 20 mm respectively. Incisor display is around 0.5 mm more in women than in men and is inversely proportional to increasing age and lip length.

INTRODUCTION-

“The subject of smile and facial animation relates to communication and expression of emotion. Hence restoration of the teeth in the aesthetic zone, chiefly the incisors, should be done such that they do not give an unnatural look. Identification of the position of the incisal edge in both the apico-coronal (incisal curve) and the anteroposterior (incisal profile) directions represents a fundamental aspect of the aesthetic diagnosis. The determination of vertical height of the maxillary incisors is based primarily on the judgement of the dentist rendering the service”.^[1]

Commonly used method is to adjust the incisal edge parallel to the interpupillary line such that 2 mm of it is visible. This is true when the lip length falls within the average values. However, there is very limited data that shows as to how much the tooth should be visible if the lip length is either shorter or longer, in young or old patients or in men or women.

The following article presents a simple cross sectional study that aims to find out whether there is a definite correlation between the visibility of maxillary incisors and various lip lengths, age and sex of an individual in the Indian population.

REVIEW OF LITERATURE-

“When the teeth are at maximum intercuspation, the lips touch lightly and the incisal third of the maxillary incisors is covered by the wet surface of the lower lip”.^[2]

“When the mandible is in the rest position, the teeth do not come into contact, the lips are slightly apart, and a portion of the incisal third of the maxillary incisors is visible, this varies from 1-5 mm, depending on the height of the lips and the patients age and sex”.^[2]

Vig and Brundo reported that on an average, the maxillary incisors are exposed more in women when at rest than in men (3.4 versus 1.91 mm) and that young patients show them much more than middle-aged patients (3.37mm versus 1.26 mm).^[3]

MATERIALS AND METHODS-

The lip length was measured from the base of the nose to the vermillion border of the upper lip at the lowest point of the labial tubercle with digital Vernier callipers when the subject's lips were at relaxed position. (fig.1 and 2).

The visibility of the maxillary incisors was measured with the digital Vernier callipers when the lips were at rest (fig 3).Maxillary incisors were primarily taken into consideration because they provide a reference that guides us in positioning of all other teeth. The intra-operator variability was nullified by taking three readings for each individual and calculating their average value. The inter-operator variability was nullified by involving another individual in the study to take readings from the subjects.

Survey Technique-

A cross sectional study was performed. No attempt was made to maintain a fixed men-to-women ratio. Some age groups were larger than others but all were adequately sized. Inclusion criteria were patients within age 20 to 60 yrs with complete set of natural dentition. Exclusion criteria were missing anterior teeth, extruded or mobile anterior teeth, patients with neuromuscular dysfunction, extreme abrasion, attrition, prosthetic anterior tooth replacements and atypical lip form.

RESULTS-

The difference between the measurements by both the operators was statistically insignificant.

The lip lengths in mm were divided into three groups as 17-19, 20-22 and 23-25. The average incisor visibility was then calculated in mm. Average incisor visibility in the group with lip length 17-19 mm was 2.99 mm. It was 2.93 mm and 2.49 mm in the groups with lip lengths 20-22 mm and 23-25 mm respectively. Thus, incisor visibility was inversely proportional to the lip length.

Average lip lengths in mm in age groups 20-35, 36-50 and above 50 were 20.97, 21.16 and 22.52 respectively. While average incisor visibility in mm in age groups 20-35, 36-50 and above 50 were 3.16, 2.27 and 2.25 mm respectively. Thus, incisal display decreases as age advances.

Average lip length in mm in men was 22.20 mm and that in women was 20.39 showing that average lip length in men is greater than in women. Incisor visibility on the other hand was 2.85 mm in women as compared to 2.37 mm in men.

DISCUSSION-

Treating all the patients in the same manner regardless of age and sex differences contributes greatly to an “artificial look”. Regardless of judgement and technical ability dentists can place artificial tooth more correctly if guidelines are available as to former natural tooth position. This study confirms with the

previous observations that visibility of teeth is more in women and young patients than in men and old patients respectively in the studied population.

CONCLUSION-

Within the limitations of this study, the following conclusions were drawn-

Average values of visibility of central incisors at rest fall within the range of 2-3 mm. Average lip lengths for men and women are 22 and 20 mm respectively. Incisor display is around 0.5 mm more in women than in men. Incisor display decreases as age advances. The decrease however is not very appreciable. Incisor display decreases as lip length increases.

REFERENCES-

1. Claude Rufenacht. Fundamentals of Aesthetics. Quintessence Publishing Co Inc., US.
2. Hurst WW. Vertical dimension and its correlation with lip length and interocclusal distance. J. Am. Dent. Assoc. 1962; 64: 496-504.
3. Vig RG, Brundo GC. The kinetics of anterior tooth display. J Prosthet Dent. May 1978; 39(5):502-4.

Table 1: Correlation between lip length and incisor visibility.

LIP LENGTH in mm	AVERAGE INCISOR VISIBILITY in mm
23-25	2.49
20-22	2.93
17-19	2.99

Table 2: Correlation between age, lip length and incisor visibility.

AGE in yrs	AVERAGE LIP LENGTH in mm	AVERAGE INCISOR VISIBILITY in mm
20-35	20.97	3.16
36-50	21.16	2.27
> 50	22.52	2.25

Table 3: Correlation between sex, lip length and incisor visibility.

SEX	AVERAGE LIP LENGTH in mm	AVERAGE INCISOR VISIBILITY in mm
MEN	22.20	2.37
WOMEN	20.39	2.85

LEGENDS-

Fig.1. Digital Vernier caliper



Fig.2. Measurement of lip length



Fig.3. Measurement of visibility of maxillary incisor.



Fig. 4: Graphical representation of correlation between lip length and incisor visibility.

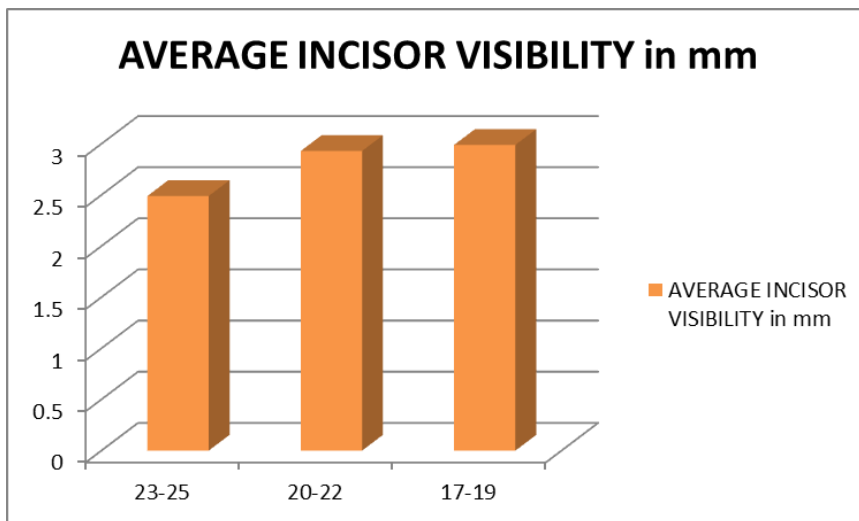


Fig. 5: Graphical representation of correlation between age, lip length and incisor visibility.

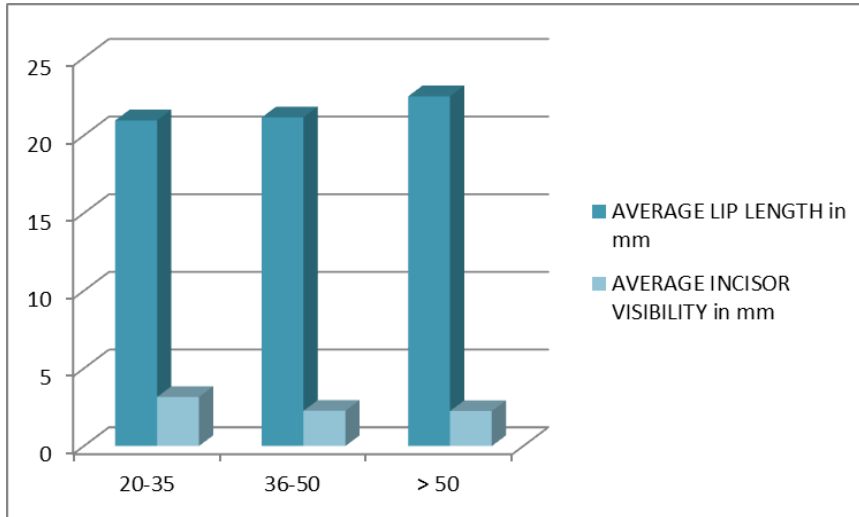


Fig. 6: Graphical representation of correlation between sex, lip length and incisor visibility.

