COMMENTARY

Influence of the Vertical Position of Maxillary Central Incisors on the Perception of Smile Esthetics Among Orthodontists and Laypersons

VISHNU RAJ, BDS, MSFS, MS*

Maxillary anterior incisal and gingival display play a very significant role in the perception of dental esthetics. The vertical positioning of the maxillary anterior teeth and their incisal edge relationship to the lower lip, i.e., the smile arc, is an important esthetic consideration during orthodontic and restorative treatment. This article titled, "Influence of the Vertical Position of Maxillary Central Incisors on the Perception of Smile Esthetics Among Orthodontists and Laypersons," attempts to evaluate the influence of different upper central incisor vertical positions, on the perception of smile esthetics.[1]

An "ideal" smile image was altered in 0.5 mm increments to establish six different incisor vertical positions. The images were divided into three different views: a full smile, a gingival close-up, and an incisal close-up. The images were subsequently evaluated in random order by 60 orthodontists and 60 laypeople. The visual analog scale was used to rate image attractiveness. The highest rated smiles exhibited a central incisor-to-lateral incisor step of 1.5 mm with gingival margins of the central and lateral incisor coincident and both gingival margins coronal to the gingival margin of the canine. The least attractive smile was one with no step between the centrals and laterals and with the central incisor gingival margins 1.0 mm above the canine gingival margins.

The authors' findings of a "step" or vertical offset between the maxillary central and lateral incisors is consistent with and substantiates guidelines proposed by other authors who reported optimal esthetics with vertical offsets ranging from 0.5 to 1 mm.[2–4] The slight differences in the degree of vertical offset among these studies may be reflective of the different nationalities of the judges.[3,4] The authors also found that the smile with the highest score was the one in which the central incisor gingival margins matched the lateral incisor margins, and both were 0.5 mm coronal to the canine margins. However, it is important to consider the effect of clinical crown height. In general, maxillary central incisors have slightly greater clinical crown heights compared with maxillary canines.[5] Thus, depending on the clinical crown height, positioning the gingival margins of the central incisors coronal to the gingival margins of the canines may have negative esthetic and functional implications on anterior overbite.

The other extreme esthetic scenario is represented by the incisal edges of the maxillary central and lateral incisors being positioned apical to the canine cusp tip. This is a frequently observed error during orthodontic treatment and is usually a consequence of improper bracket placement, indiscriminate arch leveling, or attempting to "seat" the canine cusp tip during the finishing stages. This may lead to extrusion of the canine relative to the incisors, thus manifesting as a "reversed smile arc." Interestingly, both the orthodontic and the layperson groups considered this to be a less attractive smile. One option to avoid creating a reversed smile arc is to level the arches and correct overbite by intrusion of the lower incisors—this will allow for an optimal gingival and incisal relationship among the maxillary anterior teeth.

**Private practice, Austin, TX, USA*

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The authors concluded that gingival margins had minimal impact on the overall perception of smile esthetics compared with the incisal edge relationship. However, the validity of this inference is questionable because both the gingival close-up view and the incisal close-up view used in this study defy categorization as smiling views. In the absence of the upper or lower lip, these two views only represent a static arrangement of teeth and not a smile. The authors are to be commended on designing this useful study; perhaps the next step would include an interactive study of a smile that can allow manipulation of the gingival margins and incisal edges to where the evaluators deem it to be the most attractive.

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