

## Commentary: The gingival smile line

Robert J. Isaacson, DDS, PhD

**T**his article will be quoted for the foreseeable future and makes a definitive contribution to the progress of orthodontic understanding of facial esthetics. I am pleased to see it as the feature article for the Summer edition of *The Angle Orthodontist*. The doctors Peck, Peck and Kataja have made a significant contribution in opening up what is essentially a new field of inquiry, lip function and the gingival smile line. Facial esthetics is talked about a lot in orthodontics, but much needs to be done to quantify and create reproducible measures of many parameters of facial esthetics.

The intent in this article was to measure soft tissue, dental and skeletal variables seemingly related to the gingival smile line. Selected parameters were compared between 27 subjects with a high gingival smile line, GSL, (defined as 2mm or more exposed gingival tissue above the left central at maximum smile) to a reference sample of 88 randomly selected orthodontic subjects. This grouping stacked the data against the authors since 26% of subjects in the reference sample qualified for the gingival smile line group. Consequently, potential intergroup differences were obfuscated by the presence of experimental subjects in the control group and the differences reported are probably even stronger than noted.

The finding of identical lip length at rest between the two groups speaks directly against the concept that GSL is a function of a short upper lip. However, this finding, like all the data in this and similar studies, must be interpreted with the

understanding that mean values represent central tendencies and not absolutes present in all patients.

Attention should also be directed at the practice of evaluating GSL exclusively at the maxillary incisors. Vertical maxillary excess (VME) manifests primarily as posterior maxillary excess and the vertical development of the posterior maxillary teeth also contributes to the esthetics of the smile. When the occlusal plane at the molars is located markedly below the commissures of the mouth on smiling, the esthetics of the smile are definitely altered. Gingival exposure at the molars is an as yet unexplored phenomena.

It is also worthy of note that intergroup differences were found in the resting lip to incisal edge measurement since this is the parameter commonly used to determine maxillary position in LeFort I surgical procedures. However, by the same token, the authors call into question the propriety of drawing direct correlations between negative esthetic judgements and increasing height of the GSL. Clearly this issue is not resolved.

The finding that subjects in the GSL group raise their lips a mean of 1mm more than the subjects in the reference group quantifies an important intergroup difference not measured in the usual orthodontic workup. This, coupled with the greater anterior vertical maxillary excess in the GSL group, appears to be the most important factor contributing to a high smile line identified in this study. The absence of associations with other parameters measured, however, may not

necessarily rule out their contribution or association with the high GSL patient. For example, this study was not designed to test different mandibular plane angle patients against each other. Certainly groups that are homogenous for one parameter under study will more easily reveal intergroup differences in that parameter than they will reveal differences for other related, but separate, parameters for which they are more heterogeneously grouped.

As the focus in orthodontics increasingly turns toward esthetic and cosmetic concerns, it is imperative that these parameters are better

defined and understood. Society has grappled with this issue for centuries with only limited success and during this time, values have also evolved. That does not lessen the importance of applying the best possible efforts, not to necessarily agree on what is beauty, but to sharply define the words we use and quantify the parameters under study.

*R. Isaacson is Professor and Chairman of the Department of Orthodontics, Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia.*