# Letters

## Anterior arch adjustment

In "Anterior arch circumference adjustment," (Angle Orthod 1996;66(6):457-462) Drs. Steyn, Harris, and du Preez offer a number of tables for use in pretreatment planning to predict overjet (or lack thereof) of the six anterior teeth for various tooth mass sums and intercanine widths.

The authors illustrate how one may make a potentially irreversible decision to reduce tooth mass or create anterior spacing that may later prove unnecessary, resulting in round-tripping of the teeth as well as increased treatment time.

These important pretreatment planning decisions are based on the assumption that the anterior dental arcs (canine to canine) are accurately described by a segment of a parabolic curve; the work of two previous investigators is cited.[1] In this earlier work, the accuracy of fit was determined by three observers who "eyeballed" the arrangement of the anterior teeth vs. a parabolic arc and reported, "It is apparent from the data that occasional gross interobserver disagreement on fit of the parabola has occurred, and this subjective assessment may not have great objective reliability. One may conclude that the observers show great vulnerability both between themselves and between observations as to what constituted a good or poor fit of a parabola to the dental arch..." The best reproducibility occurred only in the posttreatment lower dental arch, and "it was found that the best parabolic fit also occurred here." These investigators go on to say that "more complex computer fitted curves should provide a more consistent curve fit on pretreatment dental arch forms."

With the recognized inherent inaccuracy of the parabolic curve as a representation of the anterior dental arcs, it is presumptuous for the authors to suggest that important treatment decisions be based on the data presented. I hope the authors are not proposing that all mandibular anterior segments be altered to a parabolic shape, as this opens the additional question of posttreatment stability.

I am particularly interested in this area and have a manuscript, "The dynamic relationships of the mandibular anterior segment," in press at the AJODO. This manuscript shows that the hyperbolic cosine function provides an excellent representation of the anterior dental segment ($r$=0.951). Thus, reasonably accurate and predictable correlations of canine width, anterior tooth mass, and related anterior arc depth can be obtained. Since the overjet relationship of the maxillary and mandibular anterior dental arcs has already been established,[2] a numograph and a clinically useful computer program are being developed and will likely be available in 1998.

Thus, it is hoped that pretreatment planning decisions can be made on more substantive data.

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### References

1. Jones ML, Richmond S. An assessment of the fit of a parabolic curve to pre- and posttreatment dental arches. Brit J Orthod 1989;16:85-93.
2. White LW. The clinical use of occlusograms. J Clin Orthod 1982; Feb:92-103.

## Authors' response

We suspect that far more round-tripping during orthodontic treatment is done through lack of clinical information and consider the tables merely another aid to more effective treatment. We believe that the relatively small reduction in tooth mass achieved by interproximal stripping is preferable to extracting teeth.

Furthermore, we believe that the correction of a Bolton discrepancy through interproximal stripping will not prove to be unnecessary if measured and executed correctly. The tables can be useful as a clinical tool, and we do not suggest that they are the final solution or that they be used for every case. We do not suggest that the tables be used for arch forms other than the parabolic type, which, incidently, seems to be the most common form in our part of the world.

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