

A not-so-tender trap

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Orthodontists are in an uproar in this country over a recent diktat by a commercial enterprise (Align Technology, Santa Clara, Calif) that threatens to impose additional educational and practice-management requirements on our specialty as well as on general dentists. With the philosophical and practical issues at stake, the strongly negative reaction by orthodontists was entirely appropriate and justified. Nevertheless, suggesting to the company that the quality of care rendered with this appliance by orthodontists and general dentists should be measured and compared to show the difference between them is fraught with difficulty and potential hazard.

The American Association of Orthodontists is making a determined effort to ensure that reliance on evidence prevails in future developments in orthodontic practice and teaching. This is an admirable goal and will serve the public and the specialty well. Part of this effort will require developing measures that can be used for assessing the quality of orthodontic care; this is precisely what has been proposed to resolve the current dilemma. The question is, what will those measures be? Will they be developed from the orthodontists' or the patients' viewpoints, which have been shown to differ? If criteria are developed from the orthodontists' vantage points, they will largely be morphologic; ie, they will be determined by assessments of function and appearance. If the factors to be considered are taken from the patients' perspectives, they are more likely to be based on the broader improvements in social well-being and quality of life. Of these criteria (appearance, function, social well-being, and quality of life), the 2 most difficult to measure are appearance and function.

It should be no surprise that valid and reliable quantification of appearance continues to elude researchers in every discipline. Asking panels of laypeople and professionals to subjectively rate dentofacial attractiveness, or place a series of subjects in hierarchical order according to appearance, is a method that has been used with some success in the past. The problem is that, because the measures are not precise, this approach lacks speci-

ficity and sensitivity; this means that differences between the 2 groups of patients must be quite large to be statistically significant. Imagine trying to use panels to determine which of 2 groups of patients treated with a series of thermoformed trays had more favorable esthetic outcomes. Even if dentofacial appearance in patients treated by orthodontists was better than in those treated by generalists, what is the chance that the results would be statistically significant, let alone clinically significant?

Let's consider an even thornier issue. Although the concept of ideal occlusion has taken precedence as the ultimate goal in clinical orthodontics for some 110 years and serves well as an adopted arbitrary convention and a clinical gold standard, it has no verifiable scientific validity. No one has yet demonstrated that ideal occlusion provides significant benefits in oral or general health, or that it significantly improves oral function. This is not to say that ideal occlusion has no value conceptually. Ideal occlusion as a goal for reaching the achievable optimum for patients has great merit. It is extremely difficult to imagine orthodontics without this seminal idea—but it cannot stand alone as the clinical standard.

The point is that trying to compare the degree of improvement in occlusion in a group of patients treated by specialists vs those treated by generalists has the same risk as attempting to differentiate between changes in appearance. There might be measurable differences, but the likelihood that the differences would be statistically significant is inevitably small. The only measures that have shown any promise in rating occlusal irregularities or disparities are the peer assessment rating and the index of orthodontic treatment need. Using these indexes might yield measurable differences between 2 groups of treated patients, but the likelihood that those differences would be either statistically or clinically significant is quite small. If one adds the variable to the experiment that both practitioner groups are confined to using a technologically limited method, the odds against demonstrating a difference become even greater.

The crux of the problem is that, in a clinical "shoot out" between orthodontists and generalists, if the quality of the decision-making processes between the 2 groups were compared and tested, the orthodontists

would undoubtedly win handily. There is compelling evidence that 2 or 3 years of additional education and clinical training give orthodontists a broader biological background and greater clinical insight and acumen than their colleagues without this further training. It makes no sense to restrict the measure of high-quality orthodontic care to "finishing." We should recognize instead that the fundamentally important skills of orthodontists are patient assessment, clinical diagnosis and treatment planning, midcourse corrections during treatment if appropriate (as usually is the case), and post-treatment management.

This change in emphasis does not discount the role of ideal occlusion as the clinical gold standard for excellence in clinical practice, but it does acknowledge that the critical importance of a cogent strategy before treatment would be the most meaningful thing that

could and should be compared and contrasted between the 2 groups. Even Align Technology acknowledges that practitioners who have not sufficiently surmounted the learning curve for successfully using this technique fail from the beginning with 3 aspects of treatment planning: not selecting patients prudently, setting unreasonable treatment goals, and inadequately guiding their technicians regarding what tooth movements are feasible and what increments of change are realistic.

Unfortunately, none of these insights solves the problems resulting from the commercialization of orthodontics today. But these suggestions can provide serious caution in drawing conclusions from clinical observations that are not based on sound hypotheses and principles. Needless to say, one should never carelessly bait a trap and then carelessly put one's finger in it!

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