

# Treating the cause of malocclusions, not the consequence

By German Ramirez-Yañez, DDS, MDS, PhD



Extraction versus non-extraction treatment in orthodontics has been a matter of controversy since the beginning of the specialty. Edward H. Angle debated, “The best balance, the best harmony, the best proportions of the mouth in its relation to the other features require, in all cases, there shall be the full complement of teeth, and each tooth shall be made to occupy its normal position.” Later, Tweed swung the pendulum toward extractions in the mid-1930s, reaching a peak in the United States during the ‘60s. However, added to a better understanding on the biology of the mouth and the physiology of various tissues in the cranio-cervico-mandibular system, the development of new techniques, insights in early treatment<sup>1</sup> and the probability of combining fixed and functional appliances<sup>2</sup> has swung the pendulum again to the side of non-extractions.

Today, there is a high prevalence of malocclusion (approximately 80 percent<sup>3,4</sup>), and dental extraction continues to be included in treatment plans. Extractions might give enough space for tooth alignment and third-molar eruption if present;<sup>5</sup> however, teeth are moved into a theoretical ideal position, which is not necessarily a natural nor a stable position. So, professionals treating malocclusion use a retainer at the end of active treatment (which needs to be in place for a long period), expecting that the cranio-cervico-mandibular system will adapt to this non-physiological situation. But this does not occur in most cases.

Relapse occurs when the patient discontinues use of his or her retainer because, although teeth are aligned, the muscles in the system continue to exert as much force as they had prior to treatment. Although it has been reported that a physiological force delivered by the facial and masticatory muscles may not affect the position of teeth,<sup>6</sup> in a situation where those muscles deliver a non-physiological force on the structures of the system, it will definitively affect the position of the teeth.<sup>7</sup>

As it was stated by Graber,<sup>8</sup> “In a fight between muscles and bone, bone loses.” In other words, a muscular dysfunction present at the beginning of treatment,

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and not corrected during the course of treatment, will continue delivering non-physiological forces to the jaws and teeth, producing a relapse.<sup>7</sup>

It is important to understand that fixed appliances were designed to move teeth but not to control and improve muscular activity in the masticatory, facial and tongue muscles.

Furthermore, brackets were not designed to improve nasal breathing. Also, only a few functional appliances produce that effect. Therefore, issuing a diagnosis that determines the factors causing the malocclusion — using a combination of various techniques to correct all factors involved — allows for better treatment to be performed, while significantly reducing the number of extractions required.

There is little justification for the profession to continue extraction-based orthodontics on its patients and then ask them to wear a retainer appliance or a bonded wire for long periods of time. The dental profession has to understand that the crano-cervico-mandibular system is active and dynamic.

Moving teeth would be the ideal solution if we were working on a static system, but we are not. Treatment of malocclusion should deal with the causative factors, dysfunction and altered muscular force, as well as with the consequences: tooth misalignment. In this way, a stable result will be achieved.

Therefore, any treatment intending to correct a malocclusion must aim to improve oral function while reeducating the masticatory and facial muscle's activity during function — naturally positioning the teeth without extractions.

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How much force can move an anterior tooth?

1.7gm

How much force does the lower lip exert?

100–300gm

How much force is the tongue capable of exerting?

up to 500gm

0gm 100gm 200gm 300gm 400gm 500gm

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