The orthodontic tradition is no different and has seen a familiar quarrel rumbling for more than a century.

In broad terms, two faculties of thought have evolved. The first, traditional school (Angle 1907) works under the premise that certain skeletal dimensions are intransigent (Cross 1977), and uses fixed appliances to render predominately dentoalveolar movements.

The second, historically European school (Andreson & Haupl 1936), is predicated on the belief that muscle function affects the size of jaws and dental arches, and that functional appliances can fix form by treating dysfunction.

This article will not subscribe to the heavily flogged corpse that is the debate between the two sides. It is simply unscientific to enlist ourselves to either cause; rather, we must be directed by the flow of evidence, and be willing to jettison past beliefs in favor of new evidence.

“Providing early orthodontic treatment for children with upper front teeth is no more effective than providing one course of orthodontic treatment when the child is in early adolescence” (Cochrane Review 2007).

Turpin (2007) claims this news “will help the clinician feel less pressure to begin early correction of this malocclusion.”

It must be noted, however, that the Review’s conclusion was based simply on overjet, peer assessment rating (PAR) scores and ANB angle; the first and second criteria concern dentoalveolar relationships, while the third describes how the maxilla and mandible approximate to each other, and not to the rest of the cranium.

There is no assessment of soft-tissue profile, and these scores are simply not indicative of how the face looks.

Moreover, there is no mention of such complications as root resorption (Ballard et al. 2009), incisor trauma (Justus 2008), white spot lesions (Willmot 2008) and damaging of facial profiles with premolar extractions that are all associated with later intervention.

“Whenever there is a struggle between muscle and bone, bone yields” (Graber 1963)

The role of muscles in fashioning bone and dental arches is an immutable fact. Many studies have shown that masticatory muscle function increases sutural growth in the craniofacial complex and stimulates bone apposition (Kiliaridis 2006). Furthermore, it is not simply mastication but the whole spectrum of muscle function that influences bone, such as deglutition, respiration, sucking and speech.

Electromyographical studies have also revealed that muscles have the power to remodel bone and arches even at postural resting position, as compensatory myofunctional alterations for structural discrepancies (de Souza et al. 2008).

The studies have cast a retrospective glow on Graber’s prescient 1963 sentiment that any hope of a stable result rests on restoring the myofunctional balance of the stomatognathic system.
Invisalign adds new features

Align Technology has introduced new features to the Invisalign product line that are designed to improve extractions, rotations and root movements. Optimized attachments, Power Ridges™, and velocity optimization help provide greater control and precision for specific tooth movements across a broader range of patients.

Optimized attachments are designed to improve extrusions of anterior teeth and canine rotations by optimizing aligner forces. These next-generation attachments are customized to a patient’s unique tooth anatomy and create a patient-specific solution for each case.

Power Ridges, formerly available only on Invisalign Teen®, help deliver lingual root torque by optimizing forces on upper incisors. They can be used when up-righting retroclined upper incisors, such as in Class II Division 2 cases.

Velocity optimization provides more controlled movements for the entire tooth, including the root, and works with improved ClinCheck® protocols to limit the speed of crown and root movements to optimal ranges.

In addition, IPR improvements now allow IPR to be set up in later stages of treatment when crowded teeth are more aligned and may be easier to access. A new Invisalign Attachment Kit also helps achieve better bond strength, wear resistance and dimensional accuracy when used to create attachments, including the optimized attachments. To learn more, visit www.invisalign.com.

References

Fig. 1: October 2009

Fig. 2: January 2010

This overwhelming evidence clearly indicates the need for treatment to be geared toward correcting function, because it is a function that affects form.

Evidence-based orthodontics
Since the epidemiologist Sackett (1986) observed that orthodontics was on par with science in terms of scientific legitimacy, the industry has made a concerted effort to transform itself. More orthodontists are embracing this paradigm-shift toward the weight of evidence, which rests firmly with evidence-based orthodontics.

The KODAK 9500 3-D System is now one of only a few advanced 3-D dental imaging systems certified by OraMetrix for use with its SureSmile® technology, which transforms cone-beam scans of the mouth and teeth into 3-D computer models for orthodontic planning and treatment.

This new integration enables orthodontists to submit 3-D scans acquired by the KODAK 9500 3-D System to SureSmile for the manufacture of customized wires for patients.

The SureSmile system is a digital therapeutic solution for orthodontics that replaces conventional manual treatment. Orthodontists can take a 3-D scan of the patient’s mouth, face and jaw and use this data in the SureSmile system for unprecedented control of treatment through virtual diagnostic simulations, instant quality grading tools, prescriptive planning capabilities and robotic archwire customization.

The KODAK 9500 3-D System enables practitioners to quickly produce magnificent 3-D images — ranging from single jaw to full craniofacial images — at the lowest possible dose. With high-quality, anatomically correct 3-D images up to 0.2 mm voxel size, practitioners are able to provide more accurate diagnoses, improved treatment planning and better patient care.

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About the author
Dr. Rohan Wijey graduated in 2000 from Griffith University (Gold Coast, Queensland) where he took a special interest in orthodontics and especially in myofunctional orthodontics. He started working with Myofunctional Research in 2007, researching and writing articles on both traditional and myofunctional orthodontics. Wijey is now embarking on an extensive program of post-graduate studies in traditional and myofunctional orthodontics and TMJ disorder.