seldom are they cited in articles, reference lists or bibliographic lists for self-ligating brackets.

As John F. Kennedy (1963) so adroitly stated, “A man may die, nations may rise and fall, but an idea lives on … we must keep our minds open to new ideas but always remain skeptical of the ‘quick fix’ solutions to age-old problems. However, though I think research is the key to establishing a real understanding of issues, evidence-based dentistry or evidence-based orthodontics just cannot keep up with clinical innovations and, thus, our experience and judgment is tested on a daily basis.

For years, I wondered about the claims being made about tooth-guidance appliances and whether there was really a place for this type of appliance in my practice. I started to see things differently after seeking a solution to one of the many vexing problems I encountered with fixed appliance therapy every single day: namely, closing open bites. It all started when I had a run of lateral open bites with tongue thrusts that resisted vertical elastics, spurs and everything else I could throw at them. You know the ones when you’re just about to finish up, and the bite just won’t settle down. And getting these cases referred out for the oral surgery they need doesn’t always happen. I now have a certified oral surgeon in my practice.

What caught my eye about tooth-guidance appliances when I first read about them was the fact that they were not solely aimed at influencing the teeth, but that they were focusing on the musculature.

Case 1

This patient presented in my practice at the age of 10 with severe crowding. Treatment involved the use of an upper Farrell Bionator System (BWS) combined with MBK’s Soft Pre-Orthodontic (1/4/k) appliance (Figs. 1a, 1b).

The patient also took part in Trainer Activity to improve dental habits. After a period of 11 months, the BWS was removed and the hard 1/4/k was used. Treatment continues and will use the Myobrace to finish the case (Figs. 2a, 2b).

Case 2

This patient entered my clinic at nine years of age with a Class II Division 1, bimaxillary protrusion and orofacial pain disorders, orofacial management and health-care administration. Re counseling of the importance of access to orthodontic care, orthodontists and health-care practitioners and has provided expert testimony in numerous orthodontic, TMJ and medi-legal litigation cases. His professional accomplishments include being a diplomate of the American Board of Orthodontics, a diplomate of the American Board of Special Care Dentistry, and a certified dental editor. He is clinical associate professor and former director of the TMD section, postgraduate orthodontic department, Nova Southeastern University, College of Dental Medicine, Fort Lauderdale, Fla.; senior attending, postgraduate orthodontic section, Albert Einstein Medical Center, The Maxwell S. Fogel Department of Dental Medicine, Philadelphia, and clinical associate professor, dental medicine, craniofacial sciences and therapeutics, University of Southern California, School of Dentistry, Los Angeles; former primary adjunct professor, the Union Institute and University, Graduate College, North Miami Beach, Fla.; and research council member of the J. Paul Getty Research Institute and Library, Los Angeles.

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As a pragmatist and realist, I see the worldview of a research question for allowing the researcher to be open to (a) multiple methods of data collection, such as qualitative and quantitative sources; (b) focus on practical implications of research; and (c) emphasize the importance of conducting research that best addresses the research problem.

When exploring a pragmatic research problem from the most relevant aspect of our society, postmodern perspectives must be addressed and interspersed with racial, gender and ethnic considerations.

As ADEA Executive Director Richard W. Valachovic stated in a monthly newsletter, we must ensure that all graduating dental students glean an appreciation for accessing and applying the knowledge research provides and the value of research.

References

lary retrusion. She had a narrow maxillary arch, lip entrapment under the excess overjet, deep anterior overbite and crowding of the lower anterior teeth. She had a forward head posture with habitual open mouth posture. Facial muscles were overactive on swallowing. She also has a low maxillary frenum and a midline diastema (Figs. 3a, 3b).

After one year of treatment with an upper and lower BWS (six and four months, respectively), i2n trainer (for three months) and an i2 trainer (for six months), the malocclusion and the soft tissue dysfunctions were corrected. The bi-maxillary retrusive skeletal pattern and profile remains at this point, though much growth remains (Figs. 4a, 4b).

Case 3
This patient presented in my clinic at age 7 with an adequate arch form but a deep overbite. This is a perfect case to show how a little interceptive treatment can go a long way to solving problems that would be harder to correct later on (Figs. 5a, 5b).

The Soft T4K was used for four months, followed by the Hard T4K for three months longer, at which point the overbite was resolved. The Hard T4K was used for seven more months, at which point less intensive use of the Hard T4K was prescribed. The T4K was used to assist 10 minutes of daily trainer activities to improve poor oral habits during a period of 18 months, after which the use of the T4K was discontinued. The patient still performs posture exercises for the long term (Figs. 6a, 6b).

Correcting deep overbites with fixed appliances can be difficult, requiring bite planes or turbos along with full strap ups. This case was essentially solved in the first four months and continued to improve thereafter. No other treatment is anticipated.

Every orthodontist knows the musculature is influential on growth and development. For this, the evidence is clear. Angle knew it. Alfred Rogers knew it. Graber knew it and raised holy hell about it. Strudt helped create a subspecialty around it. Harvold showed us how critical airway is. The same Proffit signed off on Tulloch’s work taught us about postural tongue position. Moss and Enlow showed us how it worked. Estuki Kondo’s ‘Muscle Wins’ shows soft tissues and local factors to be critical in the development of malposition and malocclusion of the teeth.

**Every orthodontist knows the musculature is influential on growth and development.**
The question that all these icons of our specialty raise is whether the soft tissues and skeletal structures of the mouth and face are indeed genetically determined, or if perhaps they are subject to the same environmental influences as all other bones and muscles of our body (Bloyd 2002). Indeed, you can change the muscle mass of your biceps in two weeks just by stressing it with weights. Likewise, two weeks prone in a hospital bed can render them weak. Why can’t the same apply to the muscles of the mouth?

We also know that bone responds to the forces that surround it, in both the functional and capsular matrices. The action of the muscles certainly influences hard tissue.

The capsular matrices of the mouth are constantly active: if we are not talking, eating, swallowing, laughing or drinking, we are certainly breathing. There is never a moment of non-activity of the oro-nasopharynx, and the way it is being used is reflected in how the structures that surround it grow. Isn’t it likely that all relapse we deal with, both orthodontic and orthognathic, has less to do with the teeth than it does with the way the bones and the malformations in the first place? It seems so simple a concept, why is it still considered so radical a thought?

We can’t say that muscles can’t be trained. We teach the tongue and the masticatory muscles to speak a language, don’t we? Why can’t we teach muscles to work and perform, too? The tongue doesn’t need to be pushing against the teeth, ruining all my good orthodontic work. I want to teach it to go up on the palate where it belongs during rest and swallowing.

Tooth positioning and myofunctional orthodontic appliances have provided me with a treatment modality that I can use in my practice to train the musculature. Yes, these appliances do have the disadvantage of requiring cooperation. So do elastics. So do piano lessons and dance lessons and schoolwork for that matter. And we even have theGeomorphological perspective on the Etiology of Malocclusion, a philosophical overview, AJODO, 2004, Nov/Dec, 34–40.

And once you learn this lesson, well, the teeth will guide themselves into place.

References
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