Guest Editorial

So What’s New? Arch Expansion, Again
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In Phoenix, Arizona, during three comfortable days in January 2008, Ormco Corporation hosted the 8th annual Damon Forum to celebrate its flagship orthodontic product line, the Damon System. At the heart of the system is an interesting self-ligating bracket with an assortment of prescribed wires and auxiliaries. The progenitor of these products is Dwight Damon, an affable orthodontist from the state of Washington. Many of the features of his appliances were envisioned and developed by Dr Damon some 18 years ago as the result of his experiences and frustrations in clinical practice. Over the past 8 years, he has parlayed his visions and hard work into a huge success story. A total of 1781 doctors, residents, and staff attended this meeting—a larger group than at any AAO Constituent Society annual session—filling a room the size of a football field and paying Ormco more than a million dollars to hear about its products.

The kernel of Damon thinking that attracts these masses is the promise of excellence in treating almost all orthodontic patients with the same enticing treatment plan: a nonextraction, nonsurgical, non-palate splitting, non-headgear, pain-free, reduced-time, fixed-appliance method. Laced throughout the various Damon speakers’ presentations were agreeable words and phrases such as “perfection,” “excellence,” “best for the patient,” “less chair time,” “more beautiful,” “face-driven,” “high-tech,” “low force,” “low friction,” and “bone adaptation.” The basic mechanism used to deliver on these claims is gross dental arch expansion of the magnitude that Edward H. Angle advocated more than 100 years ago. However, a big difference between the Damon and Angle approaches is that Damon uses wonderfully resilient copper-nickel-titanium (CuNiTi) alloys that distribute expansion forces much gentler than Angle’s gold, German silver, or chrome steel wires ever could provide.

The idea of straightening teeth by widening the dentition in every direction is almost 300 years old. Frenchman Pierre Fauchard, considered a founder of modern dentistry, proposed an ingenious mechanical system in 1728 to treat irregularities of the teeth with dental arch expansion. In 1899, Dr Angle patented his “E-arch,” a device that capitalized on expansion to resolve the crowding of malocclusion, while obeying Angle’s strict rule against tooth extractions.

Seventy-five years ago, Angle protégé Charles H. Tweed was preoccupied with work in his Phoenix office, not far from where the 2008 Damon Forum was held. He was struggling with the posttreatment orthodontic failures he had observed in patients he treated according to Angle’s nonextraction arch expansion philosophy. Early in his career, Tweed, an exceptionally skilled clinician, followed Angle’s dictums exactly and had expanded in all dimensions. A few years later, by the mid-1930s, he modified his approach by expanding the dental arches, most often laterally, to keep the incisors over the basal bone. Soon, after continued disappointment and retreatment and much soul searching, Dr Tweed courageously broke rank with the Angle faithful and concluded that to avoid the unstable “horsey look,” orthodontists must consider extracting premolars frequently.1

In 1949, Robert H. W. Strang,2 another Angle School graduate of great repute, wrote the definitive essay that finally closed the door on reckless “denture expansion” as a standard orthodontic treatment method. Strang, like Tweed, was as an ardent Angle expansionist until patient after patient returned to his Connecticut office “relapsed into varying states of malocclusion.” Dr Strang’s usual posttreatment protocol included “no retaining appliances.” Thus, he witnessed quickly the rebounding movements of teeth that were driven off their basal bone. So one may reasonably ask, “How can Damon orthodontists develop a true sense of stability or instability of their expansion methods if their treatment results are sealed indefinitely with permanently bonded retainers?” It seems to me that their views would be shaped more by an unwitting optimism than by reality.

A contemplative orthodontist at the meeting might have questioned other issues. The presenters said that they had done studies to prove their methods. However, at the time of the Damon Forum, none of these studies had made it into a peer-reviewed scientific publication. For example, we know almost nothing about Dwight Damon’s early study of 7000 pho-
tographs of great smiles that resulted in his ideal arch form—a single shape and size to which Damon System wires are molded. The same goes for Alan Bagden’s study of Damon brackets versus Alexander brackets, bonded on opposite sides of the same patients, which he said showed that significantly faster tooth movement took place on the Damon side. And I have my doubts frankly about excited claims of thick bony buccal plate maintenance identified subjectively from very fuzzy computed tomography (CT) scans of Damon patients after sizable transverse arch expansion. We should wonder why these doctors have endorsed big-time marketing of an appliance system before properly publishing the relevant studies that they talk about.

If the Damon Forum were structured to permit greater interaction with its audience, here are some questions I would have wanted to ask:

1. It seems that all your patients get a Damon fixed appliance as their first and only mechanotherapy. Isn’t the Damon Diagnostic System therefore appliance-driven, rather than being centered on the particular needs of the individual patient?
2. You don’t show us many x-ray films of your treated cases, but the few we’ve seen show seriously impacted third molars. How do you figure that condition into your nonextraction diagnosis and treatment planning?
3. A high proportion of the projected cases show labially displaced, completely blocked out canines. Wouldn’t these types of patients have a greater chance for postorthodontic stability if their treatment were started earlier, before canine eruption, rather than with nonextraction arch expansion after eruption?

Still, some good things can be said about the Damon approach. The marvelous superelastic CuNiTi wires that are a centerpiece of the technique have remarkable properties as initial decrowders. Although they would not be appropriate for every treatment plan, these wires should be a part of every orthodontist’s armamentarium. And the Damon speakers encouraged—correctly, I believe—that the larger bracket slot (0.022 inch) is preferable to the 0.018 slot, which has been made obsolete by the availability of today’s highly resilient wires.

We orthodontists support a multibillion dollar industry. With close to 3 million active Damon patients today, Ormco’s Damon proprietary products and services likely collect a billion dollar chunk of that business. This is incentive enough for a company to want to take charge, regardless of science or sense. As conscientious doctors, we must be vigilant in assuring that truth, not product, will drive the flow of progress in our science-based profession. Two recent commentaries on the mentality of the corporate world remind us that patient care, not market share, should be everyone’s foremost goal.3,4

We know that pitfalls and shortcomings are associated with any medical product or method. Manufacturers and promoters must acknowledge this liability in their pitches. It’s a mistake to tie the success of a commercial product to an illusory and untenable way of thinking. The Damon bracket seems by itself to be a serviceable entry in the self-ligation field. However, the intimate linkage of this new hardware to yet another version of old fashioned dental arch expansion may ultimately be the undoing of the whole Damon business. Seasoned orthodontists know well that natural equilibrium or homeostasis wins eventually, so we had better work with nature, rather than dream up a system that works against her.

REFERENCES