Clinical Impressions Welcomes Articles

The editorial staff of Clinical Impressions is always open to receiving articles from orthodontic professionals. If you are interested in having an article considered for publication, simply e-mail us at ci@sybrondental.com. If you already have the article written, you would be welcome to submit it directly. If you have a concept for an article, you may use this means to submit an outline of that concept. Someone from the Clinical Impressions editorial staff will then contact you about taking the process further.

Article Priority

Our top three article priorities are in the following order: (1) clinical case management, (2) step-by-step procedure, and (3) practice management.

Clinical Case Management Article

We give first priority to clinical articles supported by photographic presentations of one or two clinical cases. The cases must demonstrate high-quality results given standard orthodontic norms. It is also preferable to demonstrate case photographs at key intervals of treatment. The article itself should discuss the clinical procedures and philosophies related to the cases as well as highlight pearls for appliance use that focus on high-quality results, efficiency and patient comfort. Clinicians may also incorporate practice management ideas as they relate to the clinical aspects of treatment.

Step-by-Step Procedural Article

Articles that delineate clinical procedures in a step-by-step fashion supported by photographs of the protocol are our second priority. This type article is a good option for a clinician who is not currently taking treatment interval photographs.

Practice Management Article

While we prefer to slant the content of Clinical Impressions toward clinical issues, we are open to practice management articles, they being our
To our valued CI readers:

We are very pleased to provide you with your latest edition of Clinical Impressions.

In this edition you will find several terrific articles, including our featured author, Dr. Mark Coreil, on the topic of “Uncompromising Aesthetic Treatment: Dispelling the Myths About Ceramic Brackets.” In our second article, Dr. Bob Borkowski discusses the biological basis behind the Damon treatment philosophy. And finally, we’re pleased to present a very informative and useful article by Dr. Tom Marcel on “Team-Centered Care.” Dr. Bob Smith has prepared this issue’s Case Test, and we invite you to look at this case and compare your treatment plan with the one chosen by Dr. Smith.

Many of you have expressed interest in submitting articles for publication in CI. Our CI editorial board would love to hear from you! Please see the “Call for Articles” section for more information.

We would also like to invite you to join us at our booth at the upcoming AAO annual session in Orlando, Florida. We will be featuring several new products and many exciting promotional offers. We’d be pleased to discuss with you the clinical benefits of our newest technologies and most popular products, including the Damon System, the new and improved Inspire Ice, Titanium Orthos brackets and buccal tubes, and/or any other products or services that may be of interest to you.

Ormco remains committed to providing you, your staff and your patients with the highest quality, most innovative products in the industry. We thank you for choosing Ormco products and look forward to seeing you soon.

Best regards,

Dan Even
President, Ormco Corporation
For many years, I did my best to avoid using aesthetic appliances in my practice. Like many orthodontists, I was frustrated with their performance. Polycarbonate brackets tended to stain and wear down over the course of treatment and ceramic brackets often broke using routine mechanics, so I did everything I could to avoid using either one. I even talked patients out of them, using the old excuse that treatment would be considerably longer.

As the years went by, patient demand for aesthetics increased significantly and I could tell that I would have to make the difficult choice of using some type of aesthetic appliance or risk losing patients to another orthodontist. Obviously, I couldn’t just give up new patients to other clinicians who would be willing to use aesthetic brackets, so I had to learn how to make them work in my practice. My overriding fear was that I would have to significantly compromise the way I wanted to treat patients because of what I felt were inadequacies inherent in aesthetic materials. What I have since found is that I can use aesthetic appliances without compromising treatment mechanics in any way, even on the most difficult cases. It was simply a matter of knowing how.

After trying nearly every aesthetic appliance on the market, I have chosen to use a ceramic bracket regularly in my practice. I feel that one in particular (Ormco’s Inspire Ice™) has all the features I value in my metal bracket of choice, with the added benefit of being completely clear. I’m guessing that many of you continue to shy away from these appliances. By dispelling what I consider to be the most common myths about those ceramic appliances, I hope to show you that they can go from being the nemesis of your practice to your new best friend.

**Myth #1: “I don’t use aesthetic brackets and it’s not hurting my practice.”**

**Reality: That may have been true ten or even five years ago, but today it couldn’t be more wrong.**

All orthodontists, whether they like it or not, are faced with demands from patients and parents in their practice to which they must capitulate. How many of you arrange your office hours around school schedules? What about the location of your practice? Have you used noncompliance appliances? Every day we make decisions, sometimes even compromises, in order to ensure the long-term success of our practices. We don’t always like making decisions in this way but doing so is the reality of owning a business and the types of treatment we offer can’t be exempt from such decisions.

The tremendous growth in the use of aesthetic appliances over the last several years is not just something I’ve seen in my practice, it’s a trend worldwide. This trend has no doubt been helped by the fact that some manufacturers have gone directly to the consumer with their advertising. At the same time, technology and materials have also advanced in recent years to accommodate this fast-growing trend. Luckily for us, these circumstances have not only made orthodontic treatment more attractive to patients who would otherwise avoid it but have also made using an
aesthetic appliance easier than ever. These days, savvy prospective patients and their parents will shop around to find an orthodontist who provides everything they’re looking for and that often means the offer of clear appliances. If you don’t offer one, you’re likely to lose that prospective patient to someone else who does.

**Myth #2: “You can’t use stainless steel wires in a ceramic bracket.”**

**Reality: You can. I do regularly. The key is knowing how and when to use them.**

I often hear orthodontists say that they won’t use a ceramic bracket because they can’t use the stainless steel wires on which they have come to rely. Their concern is tie-wing breakage. Believe it or not, tie-wing breakage has never been a problem for me, and my archwire sequence is exactly the same with ceramic appliances as it is with metal. How is this possible? First, not all ceramic brackets are the same. I can make this statement because I’ve tried nearly all. Every lot of Inspire Ice brackets is tested for tie-wing and slot strength, and not just with any wire. Each is tested with either an .018 x .025 (in the case of an .018-slot bracket) or an .021 x .025 (in an .022-slot bracket) stainless steel archwire. I’ve seen the data. I know Inspire Ice is nearly three times as strong as other ceramic brackets and I’ve experienced that difference in my practice.

Second, using the appropriate archwire sequence is critical. If you’re using large stainless steel archwires in the working and/or final phases of treatment, ask yourself if you’re preparing the arches for them properly. Are you rushing too quickly into the rigid, high-force wires or are they going in nearly passive, as they should be. I regularly use .019 x .025 and .021 x .025 stainless steel archwires as part of my treatment mechanics with both ceramic and metal brackets. I count on these archwires to help me close spaces and coordinate arches. In my opinion, nothing else does the job as well. The reason I don’t have to compromise on my mechanics when using stainless steel archwires in ceramic brackets is that just prior to a stainless steel archwire, I always use a similarly sized Copper Ni-Ti® or TMA® archwire (depending on the needs of the case). This sequence allows me to gain torque control, work out rotations and even begin closing spaces if needed (Figure 1).

**Myth #3: “Treatment is longer with ceramic brackets because you can’t close spaces effectively.”**

**Reality: With the appropriate mechanics, closing space can be just as efficient with a ceramic bracket as it is with a metal one.**

Friction seems to be a particularly hot topic with ceramic brackets of late. I have chosen to eliminate the friction factor from my treatment mechanics, especially when I’m closing spaces. Years ago I found that Double Keyhole-Looped closing archwires did the trick and I now use them routinely in extraction cases. These wires help close spaces quickly and efficiently with relatively light force due to their extended wire length. Their rigidity provides excellent control of an established arch form as well as vertical and torque control of the incisors. Activation is also fast and easy, keeping appointment times to a minimum. Once in place, I use this wire for several months at a time, reactivating it as needed, which also helps avoid excessive wire changes.

A major advantage of the Double Keyhole-Looped closing archwire is its ability to be activated with a

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### Archwire Sequence

**INITIAL PHASE**

**Light Round Wire**

- .014, .016 CuNiTi or Align

**WORKING PHASE**

**Intermediate Edgewise Wire**

- .017 x .025 CuNiTi or Align
  - When .019 x .025 CuNiTi is too difficult.

- .018 x .025 CuNiTi, Align or TMA

Extraction – Consolidate anteriors here with Chain

- .019 x .025 Stainless Steel
  - When need to level curve of Spee or coordinate arches

- .021 x .025 Align or TMA
  - When need bracket expression for torque

**FINAL PHASE**

**Full-Size Finishing Wire**

- .022 x .028 Align
  - When maximum torque needed

- .021 x .025 Stainless Steel
  - When arch coordination and torque needed

- .019 x .025/.021 x .025 D-Rect
  - As final wire if settling of occlusion needed with elastics.

- Double Keyhole-Looped Closing Archwire, Chain or Ni-Ti Spring

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*Figure 1*
Space Closure with Elastic Chain, Ni-Ti Coil Springs or Double Keyhole-Looped Wires

Periodically I use sliding mechanics for space closure if the patient doesn’t want closing loops showing when smiling. In this case I use either chain or springs to effectively close space.

While I know that many clinicians have moved away from using Double Keyhole-Looped archwires for closing extraction sites, they are still my preference. Their rigidity offers excellent control of an established arch form as well as vertical control of incisors. The .019 x .025 dimension also provides exceptional torque control.

Whether using sliding mechanics or closing archwires to close space, Inspire Ice performs remarkably well.

Chain on the upper and Ni-Ti® Coil Spring on the lower

Double Keyhole-Looped archwire

ligature wire. This ability is especially helpful in the lower arch because the end of the wire often impinges on soft tissue. To activate the double-looped wire using a ligature wire, ligate it from the first molar hook to the distal keyhole loop. To achieve maximum anchorage, tie the first and second molars together. When the case requires only minimum anchorage, reduce the posterior length of the wire, which fosters better mesial movement of the posterior teeth with the anterior teeth fully engaged for support. Having used this archwire in my extraction cases for more than ten years, I find it to be one of the best tools in my armament (See Case 1).

Myth #4: “It’s too difficult to get full torque expression when using a ceramic appliance. Either the bracket breaks or I have to compromise on the amount of torque I get.”

Reality: If you take the appropriate steps, not only can you get full torque expression but you can also introduce additional torque just as effectively as you would with a metal bracket.

Myth #5: “Bracket placement isn’t as accurate with a ceramic appliance as it is with metal, and I find myself either bending the wire or repositioning a lot of brackets to compensate.”

Reality: Ceramic bracket placement doesn’t have to be difficult. It depends on the design of the bracket.

In my opinion, there is nothing more important in orthodontics than bracket placement. It sets the tone for how the rest of treatment will go; but let’s face it, it’s nearly impossible to orient a bracket properly on the tooth when you can’t see it very well.
Placing clear brackets was one issue that had always bothered me about aesthetic brackets. Most manufacturers tried to solve this problem by pre-positioning small, plastic jigs on each bracket and color-coding them by tooth. I assume these jigs are of help to some, but to me they’re simply a nuisance. If they’re so useful, why don’t metal brackets come with them? The answer is that they don’t need them, and I would argue that ceramic brackets don’t need them either.

Placing metal appliances has always been a matter of aligning the bracket references with specific tooth anatomy. The primary reference points on metal brackets are the archwire slot, tie-wings and vertical scribe lines. These reference points are the same ones I use when placing my ceramic bracket. The difference is that I don’t have to contend with a plastic jig that obstructs my view because Ormco’s Inspire Ice features a patented Face-Paint™ identification and placement system that uses a water-soluble dye to color the top surface of the bracket (tie-wings). The recessed areas of the bracket, including the archwire slot and the vertical scribe line, remain clear in contrast to the colored tie-wings. This cross-hairs effect gives what was a virtually invisible bracket all the same references I’m accustomed to having in my metal appliances.

Myth #6: “Ceramic brackets should be avoided on lower anteriors to prevent damage to upper incisors in occlusion.”

Reality: Using a low-profile ceramic bracket with beveled occlusal wings allows safe use of ceramic brackets in the lower arch.

Many of us have had patients experience upper incisor wear from ceramic brackets on the lower incisors being in occlusion. This damage can occur in just a few weeks; thus many orthodontists tell their patients that clear braces can only be used on the upper arch. When patients ask for clear brackets, they expect them to be placed in both arches. Using metal brackets on the lower arch is a compromise for them. Because of its low profile, there’s no need to ask patients to compromise with Inspire Ice. As important is the fact that Inspire has a beveled occlusal tie-wing that adds a significant amount of clearance for the upper incisors (Figure 3). Even patients who present with a deep overbite and minimal overjet can wear Inspire Ice ceramic brackets on the lower incisors. I often bond the upper arch first and then follow with the lower arch after getting sufficient clearance. With Inspire I don’t have to wait long to start the lower arch because of the advantages of the bracket overall. In cases with severe overbite, I incorporate Bite Turbos to prevent bracket-tooth interference.

If you’re still fighting patient demand for aesthetics because you’re haunted by all those broken brackets in years past, take another look at what’s available to you. You’ll be surprised at how little you have to compromise these days. With the right materials and appropriate steps, you can give your patients the aesthetics they’re looking for, prevent prospective patients from going elsewhere and manage to keep the quality of work you strive for.

Keeping Treatment Aesthetic

The last thing patients want after they’ve just chosen aesthetic brackets is to have an unaesthetic problem of staining ligatures. The best option is to use Teflon®-coated ligature ties. They blend in with teeth and don’t stain between appointments.

*Teflon is a registered trademark of Dupont.

Figure 2. The Face-Paint identification system of Inspire Ice creates a cross-hairs effect that gives this virtually invisible bracket all the same references I’m accustomed to having in my metal appliances.

Figure 3. In this photograph you can see the beveled occlusal tie-wings on the lower anterior Ice bracket (center) that add a significant amount of clearance for upper incisors versus other aesthetic brackets. This feature allows me to place ceramic brackets on the lower arch so that the patient doesn’t have to compromise aesthetics.
CASE 1

PRETREATMENT
Female, 11 years old. The patient exhibited Class II, div. 2 crowded malocclusion. The treatment plan included upper first bicuspid extractions and full bonding with Inspire™ and TruStraight-Wire™ appliances.

3 MONTHS – Initially an .014 Copper Ni-Ti® wire was used followed by an .016 Copper Ni-Ti wire. After the second month, all rotations were corrected and the upper canines were leveled. In both arches .019 x .025 Copper Ni-Ti wires were placed. At this appointment an .019 x .025 TMA® was placed in the upper arch for selective molar torque while a chain was used to consolidate upper anteriors.

5 MONTHS (not shown) – With the upper anteriors consolidated, an .019 x .025 stainless steel Double Keyhole-Looped closing archwire was placed to begin upper space closure. An .019 x .025 stainless steel wire was placed in the lower arch to adjust for arch coordination and to begin leveling the curve of Spee.

7 MONTHS – Upper space closure is progressing well with the closing archwire. Note the reduction in overbite as the lower curve of Spee leveled. Arch coordination continues to be excellent. The adjustment appointments have been exceptionally short because of the ease of activation with the closing loop.

9 MONTHS (not shown) – Upper space closure was near completion in only four months. An .021 x .025 stainless steel wire was placed in the lower arch to continue bracket expression for molar and precision torque. The occlusion looked great because of the excellent control during space closure with the Double Keyhole-Looped closing archwire.

10 MONTHS – With upper spaces closed, it is apparent that there was some uprighting of the upper incisors. An .022 x .028 Align™ wire was placed in the upper arch to gain full bracket engagement and upper incisor torque. An .019 x .025 D-Rect was used in the lower to allow settling of the occlusion with seating elastics.

POSTTREATMENT
The profile photographs show no change in lip support even though extractions were used in the upper arch. The overbite was corrected and the overall occlusion is excellent. Tracings show significant improvement of incisor torque, proving that torque control with ceramic brackets is excellent.

TOTAL TREATMENT TIME: 11 MONTHS, 9 APPOINTMENTS
CASE 2

PRETREATMENT
Female, 38 years old. Her primary complaint was that her front teeth were crowded and her bite was off. The patient exhibited a Class 1 molar and canine relationship (1 mm anterior slide CR-CO). The maxillary incisors were moderately crowded and the maxillary central incisors were in complete crossbite. The patient requested a nonextraction treatment approach. The treatment plan included full bonding with Inspire™ and TruStraight-Wire™ appliances and a posterior biteplane to open the bite.

5 MONTHS – Initially only the upper arch was bonded. A lower acrylic posterior biteplane was used to open the bite and allow forward movement of the upper central incisors without interference. An .014 Align wire was used on the upper arch for two months followed by an .016 Align wire. The lower arch was bonded after 4 months in treatment, once the crossbite was corrected, and an .016 Align wire was used.

9 MONTHS – The upper and lower second molars were banded and .019 x .025 Align wires were used. Chain was used in the upper arch to close spaces between the upper incisors. Arch alignment and coordination was excellent.

11 MONTHS – To improve incisor and molar torque, upper and lower .021 x .025 stainless steel wires were used. Arch coordination was excellent but the occlusion needed settling in the buccal segments. Seating elastics along with .019 x .025 D-Rect wires in both arches were used to improve coupling. Minor equilibration of the lingual of the upper canines was needed to allow seating of the occlusion.

POSTTREATMENT
As expected, the facial photographs show minimal change from pretreatment to posttreatment and the cephalograms show maxillary incisor flaring. Gingival recontouring of the upper right central was recommended.

TOTAL TREATMENT TIME: 13 MONTHS, 9 APPOINTMENTS
The concept of team-centered care is that one clinical assistant will follow a particular patient throughout that patient’s treatment. Much as there is in an orthodontic residency, there are some noteworthy clinical benefits of this arrangement. There are also some powerful opportunities for employee professional growth as well as marketing benefits. The primary reason to consider this in your office, however, is to give your patients a sense of familiarity, closeness and even friendship with your staff.

It is important to note that an office of any size can benefit from team-centered care. Although I think the benefits (and need) increase as the size of the practice increases, an office could employ this system with two clinical assistants or 20. The benefits are the same.

1. In addition to the doctor, the assistant becomes a familiar face who welcomes the patient at every visit. This familiarity fosters trust and improved communication, reduces anxiety and sometimes even results in lasting friendship.

2. The assistant becomes more familiar with the nuances of that patient’s care. For example, is the patient the type who likes to have every detail explained or is the patient a “just the facts, ma’am” type? Is there a parent who needs similar communication? Because the doctor sees every patient at every visit but the assistant sees only a limited number of the same patients every visit, the assistant is more likely to remember the little things that make those patients happy.

3. The assistant becomes more involved in the patient’s case progression. The assistant sees the effect of the previous appointment’s adjustment and intuitively gains a better understanding of orthodontic mechanics, creating a more-informed assistant who can better anticipate the doctor’s needs, enhance communication and generate greater clinical efficiency.

4. This learning process stimulates a more collegial doctor-assistant atmosphere. The assistant is not simply passing ties and mixing cement; the assistant has an active role in the success of the patient and achieving the goals of the practice. This builds professional growth, creates loyalty and aids in staff retention.

Issues to Consider

There are, however, some issues or possible complications that should be considered before instituting team-centered care. The first consideration is scheduling; especially if your office is using a doctor-time scheduling grid. Often these grids or scheduling templates need to be redesigned to distribute appointments equally among the teams. The second consideration is attrition, which is inevitable. What do you do when a clinical assistant moves to another town or needs to fill another role in your office? Can another clinical assistant effectively fill that void? Lastly, despite excellent training efforts, clinical assistants possess different skill levels and various strengths and weaknesses. Sometimes a clinical assistant is better suited for a particular type of appointment or patient. This can conflict with your team-centered care ideals. These issues are by no means “deal breakers.” They just need to be considered before plunging forward.

The Four-Member Team

The team is made of four individuals: the patient, the doctor, the clinical assistant and, in my office, the clinical coordinator. Each clinical assistant has the same number of starting appointments in a given week. If a clinical assistant aided in that patient’s banding and bonding, that clinical assistant will remain with that patient throughout treatment. The clinical assistant explains this arrangement and the benefits to the patient during the home-care instruction that follows the banding appointment.

The role of the patient is explained to the patient: “Your role is to value your care. Take an active part in guaranteeing the very best result. Ask questions. Understand our home-care instructions and take...
meticulous care of your teeth, gums and appliances. Know that each appointment is important and critical to completing treatment on time. Give us feedback on what makes your experience positive and what we can do better for you.”

The role of the doctor is explained to the patient: “Dr. Marcel’s role is to see that the treatment plan we have laid out for you progresses as smoothly and efficiently as possible. He makes all clinical decisions. He communicates to you how your case is progressing and he makes sure all of our orthodontic goals are met before we remove your braces.”

The role of the clinical assistant is explained to the patient: “My role in this team is to help the doctor in the delivery of your care. Although there may be an occasion when you may need to see one of the other assistants, I will get to see you most often. I am here to give you feedback on your home-care efforts, answer questions and, basically, make sure your experience in this office is as positive as possible. Here is my business card. Please call me any time you have a question or concern, no matter how trivial.”

The last person on the team, the clinical coordinator, is introduced to the patient: “Kim is our clinical coordinator and my direct supervisor. She may be involved with your case from time to time by filling in for me in my absence, and she helps the clinic secure your scheduled appointment time and ensures procedural accuracy. If there is any aspect about your care (whether it’s positive or negative) that you wish to share but are uncomfortable sharing it with me or Dr. Marcel, please call Kim. I am including her card in your welcome pack as well.” The role as clinical coordinator also includes cross training and evaluating performance of each clinical assistant.

Introducing the team-centered care concept to patients this way does three things. First, it sends a message to the patient that they are an active participant in their care. Success, at least partly, will be achieved only with their involvement. Second, it legitimizes and gives credibility to the clinical assistant’s education, licensure, and concern they have for their patients. Lastly, it sends a message that we want to make sure that the patient’s orthodontic experience in our office is a positive one. This is not only good marketing but also good healthcare.

The role of the clinical assistant in team-centered care can be expanded to another level. In many offices with computers at chairside, the clinical assistant also makes the patient’s next appointment before the patient leaves the chair. This makes good sense because this is the person who best knows the type of appointment needed – more so than the front desk person who may not have been privy to the doctor’s comments at chairside. In other offices, individual statistics on each team’s performance are assessed. For example, using management software, overall production, number of on-time finishes, number and type of emergency appointments, and missed appointments can all be assessed, which will provide excellent feedback for the clinical assistant and doctor.

The installment of team-centered care in our office has been extremely rewarding and is well received by the staff. It has made us more productive and efficient and it gave us an element of customer service that we had previously ignored.

**Roles for Team-Centered Care**

**DOCTOR**
- Makes clinical decisions.
- Ensures efficient treatment plan.
- Communicates progress to you.
- Ensures goals are met.

**CLINICAL ASSISTANT**
- Is on-call for your questions or concerns.
- Helps doctor deliver care.
- Answers your questions.
- Ensures you have positive experience.
- Gives you feedback on home-care efforts.

**PATIENT**
- Value your care.
- Take an active part in care.
- Ask questions.
- Understand home-care instructions.
- Take care of teeth and appliances.
- Keep appointments.
- Give us feedback.

**CLINICAL COORDINATOR**
- Is on-call for your questions or concerns.
- Ensures procedural accuracy.
- Helps the clinic secure your scheduled appointment time.
- Fills in for your clinical assistant in her absence.
This patient walks into your office. Given the information below, how would you treat her?

At the beginning of this Case Test we’ve provided all the information you need to diagnose the case and determine a treatment plan. Think about how you would choose to treat the case and then turn to pages 28-29 where we present how the clinician who submitted the case chose to treat it.

**BACKGROUND**

Patient: NB  
Age: 12 years 0 months  
Chief Complaint: Protruding teeth and crowding  
Dental History: Maxillary right central incisor is slightly dark. Patient reported no history of trauma or pain.

**DIAGNOSIS**

- Skeletal and dental Class II, division 1  
- Retrusive maxilla and mandible  
- Lip incompetency with muscle strain on closure  
- Increased anterior facial height  
- Bilateral posterior crossbite  
- Anterior open bite  
- Excessive maxillary incisor protrusion with rotations  
- Excessive gingival exposure during a full smile  
- Moderate crowding in both dental arches  
- Mandibular midline right of facial midline by 2 mm  
- Mild mandibular skeletal asymmetry 2 mm to the right  
- Occlusal cant  
- Root resorption or blunting of both maxillary central incisors  
- Root shortness on the maxillary lateral incisors

**COMMENTS**

Patient was advised that orthognathic surgery might be indicated in the future. Parents and patient wanted us to attempt a nonsurgical approach to her care. She did not consider the excessive gingival exposure on smiling a major problem.

To see treatment results, turn to pages 28-29.

If you would like to submit a Case Test, let us know by sending an e-mail to ci@sybrondental.com.
Visit us at the AAO Orlando!

Great offers. Great giveaways. Come to Ormco’s booth and find out what you can take home.
The combination of Damon™ Passive Self-Ligating Brackets and low-friction, low-force mechanics has been shown to provide remarkable advantages over traditional orthodontic approaches.

Thousands of orthodontists throughout the world are now achieving results beyond previously conceived expectations – in less time, with very few auxiliary appliances and with far greater patient comfort.

The Damon System can help you deliver what patients want – beautiful smiles in less time with less discomfort. The Damon System recognizes the unique characteristics of each individual, yet provides a system that yields superior results with far greater efficiencies than conventional appliances.
PRETREATMENT. Severe crowding, cuspids blocked out to the labial, unilateral posterior crossbite, midline shift and lower third molars tipped anteriorly.

5½ YEARS POSTTREATMENT. Treated with Damon passive self-ligating brackets and a new high-tech archwire sequence, without extractions or headgear. Gained 14mm of posterior arch width without rapid palatal expansion.

Posttreatment CT image shows transverse arch development and normal alveolar bone on lingual and buccal surfaces.
**INSPIRE ice™**

The aesthetic appliance patients prefer,* now totally redesigned for easier debonding, improved patient comfort and greater strength.

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**Smooth and Comfortable** – An innovative new boron carbide tumbling process gives Inspire Ice a seamlessly smooth surface and rounded facial contours for greatly enhanced patient comfort.

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**Improved Tie-Wing Strength** – Recent advances in heat-treatment technology allow us to remove even the most minute surface imperfections and produce brackets that are almost twice as resistant to breakage than other ceramic appliances. Torque strength is nearly 3 times that of other ceramic brackets.

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*In a recent survey, patients preferred Inspire Ice 16-1 over the other leading brand.

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**Introducing ORTHO SOLO STICK.** Your favorite bond enhancer. Now in a convenient Unidose delivery.

Ortho Solo has become the bond enhancer of choice for thousands of orthodontists around the world. Now available in Unidose™ delivery, Ortho Solo™ Stick contains enough sealant/bond enhancer for one arch, making everyday bondings faster and easier than ever before. Consistent and accurate dosages minimize product waste and Unidose delivery reduces the risk of cross contamination and signifies your priority for their safety. Its tightly sealed container also ensures that there is no harmful exposure to air and no risk of product evaporation.

**ORDER INFORMATION**
740-0269 Ortho Solo Stick (box of 10)
I recently read a magazine article that referred to the day ether was utilized to perform surgery on a patient, painlessly, for the first time in history. It went on to say that “there are moments in medical history when science morphs into magic.”

I like that. To me, it means that a new reality is being recognized.

While doing my graduate studies in 1976 on root resorption, I ran across eye-opening research that, as early as the turn of the last century, shed light on exactly how little force it takes to move teeth. Sadly, we’d had this information for over 70 years but we still didn’t have a controlled means of delivering the truly light forces – those in the range of fractions of grams even – that the research suggested would be ideal. For 25 years, I waited, not innovative enough myself to develop such a system, but guessing what it could mean when it did evolve. It would honor the principles of cellular biology, vascular physiology, engineering, metallurgy and, perhaps, even fluid dynamics!

So I waited, and the fact that a truly light, continuous force system – the passive Damon System™ appliance – has, at last, been devised brings reality to the dream of pioneers decades ago. This system provides a reliable and simple means of achieving the best possible facial balance for each patient through the use of light forces that foster corrective functional adaptation of the arch form while maximizing patient comfort. Extensive clinical results indicate that practitioners can maintain many complete dentitions, even in severely crowded arches, by utilizing very light-force, high-tech archwires in the passive Damon appliance, thus taking into account and working with the volumetric balance of forces between the lips, tongue and muscles of the face, in all dimensions.

With its emphasis on muscular balance and bony adaptation, the Damon System challenges our thought processes, which primarily stem from the education we received during our orthodontic residencies. Certain principles of tooth movement are sacrosanct. Maintaining pretreatment lower cuspid width is a good example. We would question the stability of reshaping the lower arch and expanding cuspid width via the Damon System because using the force parameters and fixed appliance armamentarium with which we have traditionally been constrained, we observed that lower arches could not be expanded with stability, yet when Frankel allowed for the tongue to do the shaping by letting his buccal shields alter the equilibrium of balancing forces, we found that the long-term results were different. I suggest that the reason the Damon System gets results similar to the Frankel is that using small, high-tech, low-force wires in a large, passive tube channel offers a force system substantially below what we get with conventionally ligated brackets, other active self-ligating systems and even other passive self-ligating systems that do not incorporate all the nuances of the Damon System.

Tooth Movement and Force
In 1904, Dr. Carl Sandstedt was investigating the occurrence of root resorption (a novel and much discussed concept at the time) when he discovered that varying forces have quite different effects on the way teeth move through bone. What he found formed the core of our knowledge of the physiology of tooth movement.

During his investigation, Sandstedt divided tissue responses to tooth movement into two components: the tension side and pressure side. On the tension side, he found that with both weak and strong forces, bone deposition occurs with spicules forming along the direction of the strained periodontal fibers. He also saw that old bone was unchanged and easily distinguishable.
from new bone. On the other hand, pressure-side tissue reactions seemed to differ when weak versus strong forces were utilized. With weak forces, new bone was equally resorbed along the entire surface of the socket and the tooth surface remained free of root resorption. When strong forces were used, the periodontal ligament (PDL) was over-compressed in some areas and the underlying bone was not resorbed due to an apparent loss of tissue vitality. Instead, the active resorption occurred in the still vital areas surrounding the compressed patches of periodontal membrane, along with resorption of the tooth material. He termed this phenomenon undermining resorption. 2

Sandstedt’s findings began what would become a century-long expansion in our knowledge about the nature of tooth movement and the ideal amount of force to use. In 1932, a contemporary of his, Dr. A. M. Schwartz, confirmed Sandstedt’s findings, concluding that movement utilizing amazingly light pressure (which he defined as 20-26 g/cm², the same pressure found in the blood capillaries of the periodontal ligaments surrounding the teeth) offered the safest movement. This explanation makes sense – to keep from collapsing a blood vessel, don’t exceed its outward pressure. As part of his Four Degrees of Biologic Effect, which he meant to serve as a guideline for orthodontic treatment, Schwartz stated that any force greater than 26 g/cm² strangulates the capillaries of the periodontal tissues, leading to their suffocation and buildup of necrotic tissue at the pressure areas. 3

In 1938, Dr. O. H. Stuteville postulated that occlusal forces required consideration when determining force system tolerances for healthy tooth movement and that when adding those forces to the equation, it might allow that only .5 gram (one half of one gram!) of orthodontic force might be needed, in some instances, before the force would become damaging. 4

Decades later in the 1970s, researchers Rygh and Reitan did work that expanded on that done by Sandstedt and Schwartz. With the most comprehensive and valuable contribution to the study of tooth movement up to that time, they defined for us additional new terms such as hyalinization, necrosis and frontal resorption, and furthered our knowledge on the mechanisms of ultrastructural changes and tissue behavior during tooth movement in which forces are so strong that they are moving the teeth completely through the PDL space and strangulating the tissue. 5-12

Tooth Movement and Oxygen

Other researchers, such as Dr. O. C. Tuncay, went on to confirm in later works that “oxygen is the trigger mechanism for remodeling of the periodontium.” 13 If vascularity is interrupted in the periodontal space between bone and the teeth, oxygen is no longer available and cellular activity is slowed or stopped. 13 This phe-
nomenon, which occurs when high-force mechanics are used to move teeth, results not in the desired frontal resorption, but in a long process of undermining resorption, whereby the front bony wall can only be resorbed after waiting for a pincher type of movement from the sides, causing it to collapse from underneath. Only at this point can the PDL begin to revascularize in this area.

Bringing us to the end of the last century, Dr. William Proffit advocated that “Optimum force levels for orthodontic tooth movement should be just high enough to stimulate cellular activity without completely occluding blood vessels in the periodontal ligament.” Profitt also stated, “If the applied force is great enough to totally occlude blood vessels and cut off the blood supply, a hyalinized avascular necrotic area is formed. This area must revascularize before teeth start to move.” This process slows progress and lengthens treatment time.

With conventional forces, this process occurs at each appointment – and may even occur between appointments if the appointment interval is long enough – and the wire is activated through a distance wider than the PDL space. At each wire change, teeth slam against the wall of the socket, and the intricate network of blood vessels is crushed yet again (Figure 1). Each time this trauma occurs, it takes weeks for the PDL to revascularize at the cellular level. This healing time is, in essence, a big timeout in the progress of treatment. Understanding this phenomenon makes me wonder if this healing time isn’t the reason why, in conventional mechanics, adult treatment takes longer than adolescent treatment. What is one process that adults take longer to do than youngsters? It is healing. Perhaps this reason is one of the explanations for why we see truly light (not what we usually consider light) forces produce more similar treatment times in both adults and youngsters.

Even with these and countless other researchers confirming that continuous light forces have a far superior effect on the cellular biology of tooth movement, until recently our ability to move teeth was hindered by the mechanical systems available to us, most notably twin brackets with archwires tied into the slots. By minimizing necrosis, hyalinization and undermining resorption, we can make continual progress in our cases from beginning to end without the start and stop that occurs when we occlude the vascularity of the blood vessels. With the advent of the passive self-ligating Damon System, in which high-tech archwires – Copper Ni-Ti® and TMA® – can work to maximum advantage, we can now move teeth in concert with what we know are the primary mechanisms of tooth movement.

**The Nature of a Malocclusion**

One of the most gratifying benefits of using extremely light forces via the passive Damon System is the posterior adaptation that allows many complete dentitions to be maintained. This adaptation precludes the trauma of extractions with its attendant lingual tipping and arch deformation, or use of high-force rapid palatal expansion devices, which can threaten the integrity of the cortical plate.

All living tissue responds differently to light compared with heavy forces. Through the thousands of cases treated with the Damon System and light continuous forces, clinicians have consistently observed that arches are developed laterally and vertically through judicious uprighting of previously lingually inclined buccal segments in a vertically corrected facial complex without fenestration and, in fact, with positive gingival reaction and reversal of periodontal degeneration. I maintain that malocclusions can be viewed largely as the result of an imbalance of inwardly directed versus outwardly directed force, which work in intimate concert with the vertical dimension.

In correcting a malocclusion, all we want to do is place just enough force from the wires to make up for the insufficiency in the tongue’s outward force, reversing the existing equilibrium and reestablishing the lost vertical. This process helps the tongue move up from the bottom of the oral cavity to do its job, which is to counter the inward-directed force of the muscles of the face and lips. This alteration creates a new force equilibrium that allows the arch form to reshape itself to accommodate the teeth; the body determines where the teeth should be positioned for each individual patient, not the clinician or the wire manufacturer. Again, it helps to think volumetrically. This functional adaptation is akin to the “Frankel effect” in its arch-widening results, and provides the arch form to which

**The Fragile Vascular Network**

This scanning electron micrograph (magnification x180) of the periodontal ligament of a rabbit illustrates its rich vascularity. As with humans, the angioarchitecture is a delicate network that clusters within the thin cushion of membrane between the tooth root and the socket wall.

we will adapt and shape our final wire. This neuromuscularly determined arch form gives our wire shape, not vice versa.

A New Paradigm

This phenomenon challenges our previous paradigm about arch expansion, but it makes sense when you consider the physiology. It is critical to realize that the positive changes within this paradigm can be seen only if forces are kept extremely light. Research has been done with CAT scans which validate our observation that, given a chance, bone can adapt along with the teeth if moved by very light forces in much the same way that quad helices were found to be able to create maxillary expansion where previously we had thought that only the skull-splitting forces of rapid palatal expansion could do that trick. 15

If we open our minds to the idea that orthodontic and orthopedic responses are different with variant force levels, we will see that there emerges an entirely new set of parameters within which we can now work. I’ve come to find that in all specialties of dentistry and medicine, great gains are being realized and huge advances are being made by professionals who are opening their eyes and their minds to alternative views. In the age of evidence-based thinking, we would do well to remember that the scientific method is rooted in meticulous observation. Men became healers by observing the results of certain treatments they performed. They were meticulous in the recordings of their results and then came to eventually understand how they worked. Recognizing the varied response of eye tissue to invasive treatments like RK, when compared to laser treatment such as Lasik surgery, ophthalmological surgeons have made great strides in their field. We, too, can do the same.

So now we have it, and from this time forward we should be able to harness this irony – lightness is power! What we have revealed in this article is how all that we have known for decades about cellular biology and the physiology of tooth movement can explain the phenomena we are seeing today when using truly light, continuous forces, and how metal-lurgy and engineering principles in our archwires and brackets allow us to tap into this powerful new treatment protocol.

Conclusion

By treating the tissue more gently and creating less cellular trauma, we are making strides in improving treatment for our patients. Less trauma means greater comfort, and conveniently enough, a quicker progress from start to finish. Our patients trust us to be doing what we can best do to continually make advances in these areas and to be the best doctors we can be.

It’s just plain better medicine. 4

REFERENCES

15. VC-Denta Scan, Inland Imaging Valley CT, December 2003.
**Titanium Orthos2 Buccal Tubes** combine the bond strength and biocompatibility benefits of titanium with a revolutionary new design to give you a molar bond you can actually count on. They have a teardrop design on the lower arch to help keep them out of occlusion and a flared slot opening that makes archwire engagement easy without adding extra dimension to interfere with occlusion. A notch on the occlusal edge makes holding the buccal tube a cinch and aids initial placement on the tooth. No tie-wings and a hook that tilts away from the gingiva also make it comfortable for patients to wear. It’s the first Ormco buccal tube to feature an I.D. dot and is compatible with the Orthos system. And, we put it on the largest pad available to add surface area and increase bond strength. Titanium Orthos2 Buccal Tubes are available in .018 and .022 slot sizes in the original Orthos prescription.

### ORDER INFORMATION

**Optiband Ultra – Tooth**
- 740-0291 5-Syringe Kit – 5 syringes (1.8 g), 10 disposable tips
- 740-0292 10-Syringe Kit – 10 syringes (1.8 g), 20 disposable tips

**Optiband Ultra – Blue**
- 740-0293 5-Syringe Kit – 5 syringes (1.8 g), 10 disposable tips
- 740-0294 10-Syringe Kit – 10 syringes (1.8 g), 20 disposable tips
- 740-0295 Disposable Tip Refill (50 tips)
Providing Solutions Using New Technologies and Knowledgeable Teams

Paula Allen-Noble, Mandeville, Louisiana
John Fuller, Sturtevant, Wisconsin

As products and services evolve, clinical challenges arise that require a variety of material and modification options to meet a myriad of patient treatment goals. To help meet those challenges, AOA’s Special Projects and Technical Support Teams are continually collaborating with colleagues and clinicians to bring new design concepts and technologies to the orthodontic community. The following are descriptions of a few of the latest enhancement options to new and old products that will help you in prescribing customized appliances when treatment planning your patients.

Red White & Blue with DuraLiner for Enhanced Performance

Red, White & Blue has been the perfect option for patients who want minor adjustments to their incisors but don’t want braces. However, some of these cases have presented clinical challenges such as short clinical crowns.

DuraLiner provides added grip and memory strength to the Red, White & Blue retainer system in areas where needed, such as short clinical crowns.

Red, White & Blue has been the perfect option for patients who want minor adjustments to their incisors but don’t want braces. However, some of these cases have presented clinical challenges such as short clinical crowns.

As a solution, our team developed DuraLiner, a tough, flexible, clear film that provides additional grip and memory strength where you need it. DuraLiner is ideal for overcorrections and for extending the durability of the Blue long-term retainer. Simply select where added grip and memory strength are needed and mark it on the prescription form. AOA will affix the special DuraLiner material to the area prescribed before forming the appliances.

Interarch Retention with Dr. Damon’s Retention Splint and Tongue Trainer

Clinicians have found that using an interarch retention splint and tongue trainer is the key element in successfully treating patients with mixed or permanent dentition who have had Class II correction or were treated for severe posterior crossbites, lateral tongue thrusts, or Class II with severe muscle dysfunction (buccolingual coordination challenges). Thinner thermoformed materials not available a few years ago have made such appliances less bulky, more comfortable and more aesthetic, resulting in higher patient compliance.

Dr. Dwight Damon has long advocated the use of the retention splint and contributes the low incidence of relapse in such cases to the splint phase of treatment. Dr. Damon suggests the following after Class II treatment:
Hold mixed dentition, first-phase patients in the splint until ready for full appliances. In mixed dentition the splint may need blocking out in areas of erupting permanent teeth. Hold permanent dentition patients in a slight edge-to-edge position. Instruct patients to wear their splint nightly for approximately 10 to 12 months, if the patient is nongrowing, or until growth is completed, if the patient is still growing. Have the patient wear the Damon splint in conjunction with a lower 3-3 bonded wire placed at the debonding appointment. Upper 3-3 bonded wire is not usually required, except in cases that presented with a significant diastema or extreme malalignment.

Dr. Damon does not have his splint patients use any method of retention during the day.

To achieve success with the splint, it is critical to fabricate the appliance with minimal vertical opening posterior to anterior. It is also critical that the patient’s wax bite reflect the patient’s anterior teeth placed edge-to-edge and no further forward. Incorrect wax bites for splint-style appliances has always been the bane of clinicians and the technicians who fabricate the appliances. With this in mind, AOA is developing a preformed template to minimize errors in getting that perfect wax bite.

**Spring Retainers with ProActive Series When Correction Can’t Be Completed with One Standard Spring Retainer**

For almost 40 years spring retainers have been a favorite option for minor anterior tooth alignment. With the incorporation of exotic designs and wire technologies, these appliances are moving into a new era. Most of the limitations associated with the original cuspid-to-cuspid spring retainers have been overcome by a number of appliance design and wire options to accommodate unusual degrees of correction.

One of these options is the ProActive Series spring retainer. This appliance is an excellent choice when a case requires two standard spring retainers to accomplish ideal teeth positioning in an arch. Its unique heavy-duty labial bow with helix loops is very flexible, affording aggressive anterior tooth movement. The design is especially adaptable when incorporating cuspid corrections, labial or lingual movement, and width adjustment (using the lingual body wire).

A notable benefit of this appliance is that it is forgiving. If the patient hasn’t worn the appliance for a month or two, there’s enough resiliency in the labial bow to move any relapsed teeth, and since there’s no palatal acrylic, it’s easy to reseat.

### Distal Jet* and Spring Jet* with Mambo Jet Modification – Set It and Forget It

Distal Jet and Spring Jet appliances offer an accurate, hands-off approach to molar distalization and transverse expansion. However, some doctors have experienced clinical problems activating the appliances. If the set screw is tightened too much, the director tube becomes distorted, trapping the guide wire and causing friction, which prevents the NiTi spring from expressing itself. Unfortunate for both doctor and patient, this problem is virtually undetectable until the next appointment.

Once again AOA’s Technical Team worked out a solution. They call it the Mambo Jet modification. In this modification, the set screw portion was redesigned by redirecting and attaching it to a paralleling wire away from the director tube, guide wire and NiTi Spring.

*Distal Jet and Spring Jet are trademarks of American Orthodontics.*
now tightened onto this new wire, the director tube and guide wire remain friction free, removing the chance of overtightening and allowing the wire to slide freely within the tube as the NiTi spring expresses itself. The Mambo Jet modification is available with all Distal Jet and Spring Jet appliances.

**ProFlex Silicone Tooth Positioner Using New-Materials Technology to Fine-Tune Case Completion**

There is probably little argument that the positioner is the best finishing device invented. The positioner is a removable appliance that can assist in fine-tuning some orthodontic results and may produce swifter completion of treatment, especially when the occlusion is nearly ideal and additional changes in wires or brackets may introduce other dilemmas or if the patient’s interest and cooperation has run out.

A positioner is chosen for specific cases to enhance the finishing phase of traditional orthodontic treatment. Even though the orthodontic treatment goal is to finish cases with beautiful smiles and ideal occlusions, these aspirations are not always met, which is often because of poor patient cooperation (e.g., lack of elastic wear or appliance breakage) or errors somewhere in the treatment process. The positioner is also an excellent conclusion for cases treated with a series of clear aligners such as Invisalign or Red, White & Blue appliances. One might say making a good case better.

Long-term compliance, however, has been problematic because the positioner has been perceived as bulky and unaesthetic. The first positioners introduced in the early 60’s were made of a rubber-based material. As technology advanced, a variety of materials were offered for their unique properties to produce a blend of appliance efficacy and patient comfort. Silicone became very acceptable because of its aesthetic look, resistance to heat and hypoallergenic properties, but it was plagued with inaccuracy arising from the fabrication process.

The AOA team worked with material experts to develop a new type of silicone positioner, using a more resilient and flexible material that virtually will not distort from its original shape and continues to deliver the same force for an extended amount of time. This newly developed material allows the positioner to be processed directly on the diagnostic wax setup mounted on a plaster-free articulator, which permits the technician to observe and control proper compression and curing of material, creating a more accurate positioner. In addition, a special coating is used to enhance the translucency. The ProFlex positioner is slimmer, clearer and more resilient than past silicone positioners, making it more aesthetic and pleasing to patients.
Celebrate 30-for-30 with AOA at the AAO

Join AOA’s founder, David Allesee, and our many talented associates in their celebration of 30 plus years of service to the orthodontic industry. Visit our booth and pick up a 30-for-30 Certificate for $30 off your next Red, White & Blue case. Our booth, #2025, is located across from Ormco. While you’re there, check out the new 13-patient MARA Kit and latest Herbst options. You’ll also find exceptional discounts on a large selection of consultation aids across from our main AOA booth.

New 13-Patient MARA Kit – AOA is proud to introduce the long-awaited 13-patient MARA Kit. This kit consists of an assortment of upper and lower molar crown components in sizes 4 thru 8, long and short elbows, advancement spacers and torquing tool. The MARA Kit is an excellent choice for practices that require immediate MARA placement or if there is no time to return an original custom component for repair or replacement.

New Herbst Options – See the latest innovations in Herbst mechanisms. Let our Herbst specialists answer your questions concerning the ever-increasing options, such as the Hanks Telescoping Herbst and Flip-Lock Herbst as well as the Damon FlipLock on the Archwire modification.

Get $30 off your next Red, White and Blue!

Discounts on Consultation Aids at the AAO

Visit AOA’s typodont and product booth (#2132) located across from our main AOA booth and take advantage of exceptional discounts on a large selection of items offered at the AAO.

- Consultation models with preconstructed appliances
- Models depicting 24 different occlusions
- Our famous Gnathos (9 set) and Pedo (6 set) Series models of common malocclusions in display binders
- Models depicting erupting and impacted teeth
- Popular patient educational puppets (with and without braces)
- And many more...
TREATMENT PLAN

• Use standard torque prescription of the Variable Torque Orthos® (VTO) appliance in both dental arches.

• Use rapid palatal expansion and mandibular lingual holding arch with stainless steel crowns and extensions to the second molars to reduce posterior vertical development.

• Delay placement of brackets in the maxillary arch due to potential for root resorption.

• Use posterior high-pull headgear and vertical-pull chin-cup headgear simultaneously. Once the maxillary teeth are leveled and aligned, use anterior vertical and Class II elastics to help close the remaining anterior open-bite and AP discrepancy.

• To help maintain the mandible plane angle and close the anterior open bite, extraction of the maxillary second molars will probably be necessary later.

• Monitor the maxillary right central incisor. The tooth might need root canal therapy and bleaching.

• Consider surgical advancement genioplasty with vertical reduction to reduce hypermen-talis activity and improve facial balance.

ACTUAL TREATMENT HISTORY

• Maxillary expander and mandibular lingual arch with extensions were in place for 24 months to prevent second molar vertical development.

• Chin-cup headgear was worn for 12 months. The posterior high-pull headgear was worn for 24 months.

• Maxillary brackets were placed after 12 months.

• Once in .019 x .025 TMA®, anterior vertical elastics were worn for 3 months. After headgear removal, Class II elastics were worn for 4 months.

• Maxillary second molars were extracted 23 months into treatment.

POSTTREATMENT COMMENTS

Anterior open-bite malocclusions are often our most challenging cases. Most of these cases are best treated with the extraction of all first bicuspids; however, because of the initial bimaxillary skeletal retrusion, I felt extraction of her first bicuspids would produce too much dental retraction with deleterious effects to lip support and facial aesthetics. This case illustrates many of the current mechanical concepts I use to treat the more-challenging open-bite cases. I referred her to an endodontist for evaluation of the central incisor and recommended bleaching of all teeth. I also referred her to a periodontist to evaluate for gingival recontouring to enhance incisor crown length and reduce gingival exposure on smiling. With a morphed lateral facial image, I showed her how she might appear with genioplasty surgery.
## Course Locations

Select the course(s) you would like to attend:

**Dr. Dwight Damon**
- June 11-12: Calgary, Canada
- June 18-19: Salt Lake City, Utah
- June 24-25: Boston, Massachusetts
- June 28-29: Houston, Texas
- July 9-10: Atlanta, Georgia
- July 15-16: Honolulu, Hawaii
- August 4-5: Detroit, Michigan

**Dr. Alan Bagden**
- September 10: Indianapolis, Indiana (course details and accreditation vary for this course)
- September 17-18: Toronto, Canada
- September 23-24: Springfield, Virginia (Washington D.C. area)

For this in-office course fee and to register, contact Kathy Bagden at 703.893.0963.

### Course Schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Day 1</td>
<td>8:30 am – 5:00 pm</td>
<td>(registration begins at 8:00 am)</td>
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<tr>
<td>Day 2</td>
<td>8:30 am – 1:00 pm</td>
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### Tuition

- Orthodontists – $395 each
- Staff Members – $150 each
- Ormco Elite Club – $250 each
- Residents – No Charge

Course fees include coffee breaks, lunch (day 1) and a comprehensive Damon System Workbook for doctors.

### Registration

To register, complete this form and **fax it to 714.516.7596**. For additional information, contact June Myerscough at 800.854.1741, Ext. 7846, or 714.516.7846, or via e-mail at myerscoj@sybrondental.com.

**Ormco Account #**
**Doctor/Practice Name**
**Address**
**Phone**
**Fax**
**E-mail**

Print names of all attendees as you would like them to appear on name badges:

1. ____________________  Tuition $________
2. ____________________  Tuition $________
3. ____________________  Tuition $________
4. ____________________  Tuition $________
5. ____________________  Tuition $________

### Payment Method

- [ ] Bill my Ormco account  [ ] Visa  [ ] MC  [ ] Amex
- Credit Card # ____________________  Expiration Date ____________________
- Signature ____________________

### Cancellation Policy

Registration fees are fully refundable for cancellations received within one month prior to the course date. There are no refunds for cancellations received less than one month prior to the course date or for no-shows.

Each 2-day course is accredited for 11 ADA continuing education credits. Acceptance of C.E. credits may differ among states.
Dr. John R. (Bob) Smith received his D.D.S. degree from Emory University in 1975 and his M.S.D. degree from the University of Washington in 1977. He received the Milo Hellman Research Award for his graduate thesis. An original member of the Lingual Task Force, Dr. Smith has lectured and published extensively on lingual orthodontics as well as practice management, diagnosis and treatment planning, efficiency and profitability, and the Herbst appliance. He maintains a full-time practice in Winter Springs, Florida.
DAMON SYSTEM SEMINARS
LOW-FORCE, LOW-FRICTION ORTHODONTICS
A biologically sensible way of moving teeth for improved quality and facial aesthetics

The combination of Damon Passive Self-Ligating Brackets and Low-Friction, Low-Force Mechanics has been shown to provide remarkable advantages over traditional orthodontic approaches. In these courses, Drs. Damon and Bagden will demonstrate how you can incorporate the Damon System into your practice to treat all malocclusions to a higher quality end-result, with far fewer extractions, no headgear, and without rapid palatal expanders.

Thousands of orthodontists throughout the world are now achieving results beyond previously conceived expectations – in less time, with very few auxiliary appliances and with far greater patient comfort.

Low-Friction, Low-Force Orthodontics
The Damon System utilizes very light forces in conjunction with passive self-ligating brackets to help you deliver what patients want – beautiful results, in less time and with less discomfort. The Damon System recognizes the unique characteristics of each individual, yet provides a system that yields superior results with far greater efficiencies than conventional appliances.

What you will learn
• The cellular response of light versus heavy forces
• The efficiency of light forces in conjunction with low-friction mechanics
• Diagnosis and treatment planning for improved tooth position and greatly enhanced facial aesthetics
• The clinical and practical advantages of reducing extractions, reducing or eliminating headgear therapy and near-total elimination of rapid palatal expansion
• Treatment protocols for dramatically reducing treatment time while achieving greatly enhanced tissue and bone response
• How and why this system enhances patient enthusiasm and reduces the need for patient compliance
• The long-term stability of this revolutionary new concept
• The financial and practice management rewards that dramatically increased efficiency can provide
• How to easily incorporate this exciting new system into your practice

What others are saying
Comments from seminar evaluations:
“Dr. Damon’s course was one of the most inspiring experiences of my professional career. I thought I was going to just learn about a new bracket, but this course wasn’t about a bracket, it was about a new system and a new way of thinking.”

“The case presentations were fabulous.”

“With the Damon System, the Golden Age of orthodontics is returning.”

“The Damon System will make my life much easier. I can hardly wait to get to my office to start with the system!”

Who should attend
Whether you’re an experienced Damon user or just thinking about trying it, these courses are for you! For those new to the system, these courses will provide you with everything you need to know to get started. For experienced Damon users, you will see and hear the latest information about the system, including new information on diagnosis and treatment planning, simplified mechanics, a new high-tech archwire sequence, tips for finishing, patient-friendly retention protocol, and new ideas for harnessing the power of this revolutionary bracket system and treatment philosophy.