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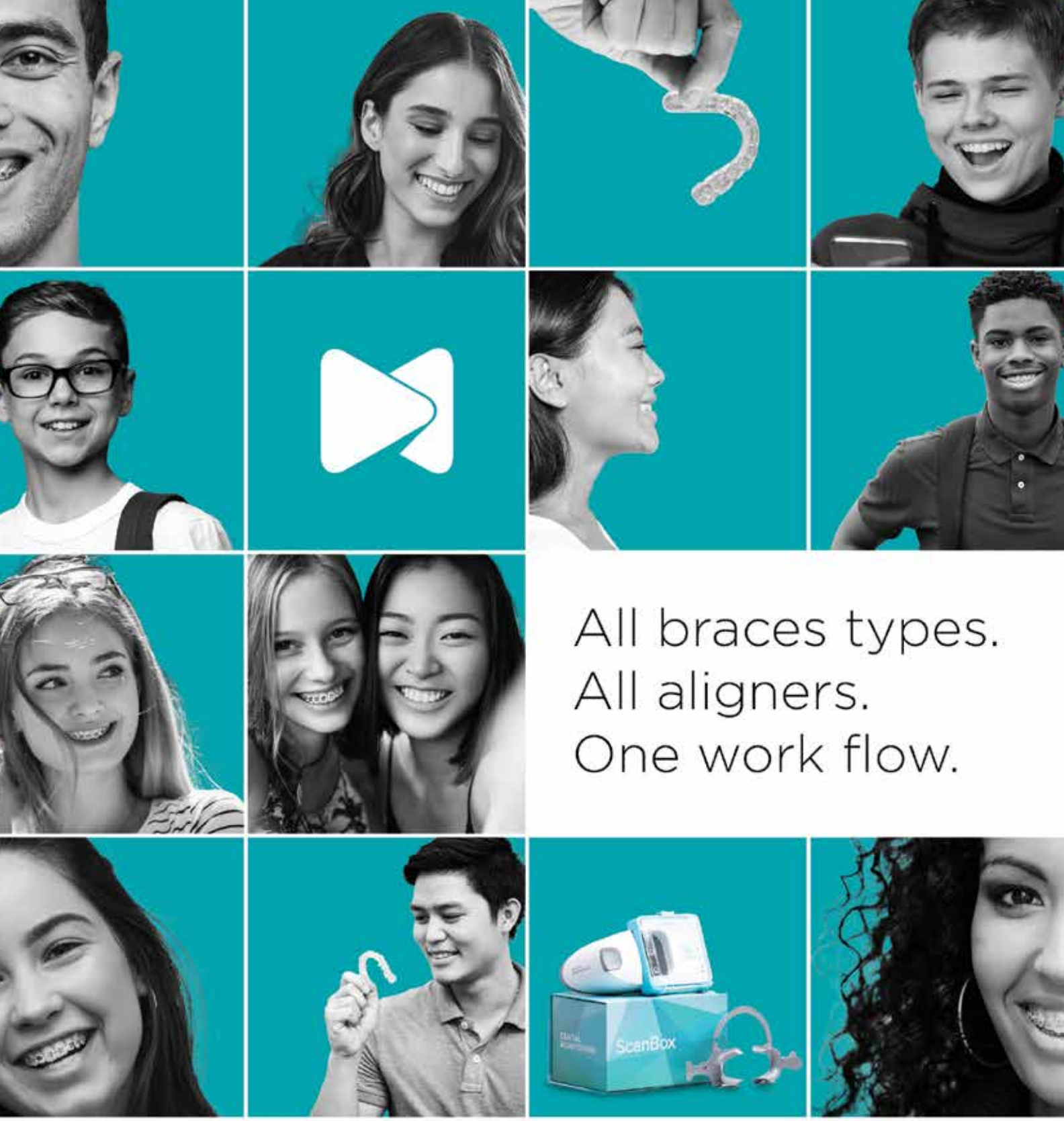

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The DM ScanBox by DentalMonitoring. Learn more on Page 14. (Photo/Provided by DentalMonitoring)


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Orthodontic treatment changes and efficiencies during COVID-19 pandemic

Authors_Michael J. Mayhew, DDS, MS, MS, & Nicole R. Scheffler, DDS, MS

_There have obviously been multiple impacts of COVID-19 on the human race. Measured adjustments to our normal routines, our families and how we have interacted with each other have been drastically changed.

While dental health care, specifically orthodontic care, may seem minor relative to the medical needs impacted by the presence of the COVID-19 pandemic, it was important to make access to care for those already in treatment, and those still seeking care, be within a safe environment for patients and staff members.

During the initial closure of dental offices mandated by state and federal guidelines, we immediately began to receive guidelines provided by the Centers for Disease Control and further communications from the American Dental Association, the American Association of Orthodontists and our state associations. While these seemed to constantly be changing as more was learned about the pandemic and the efforts to control it, one thing was certain — how we would practice in our profession might undergo potentially drastic changes.

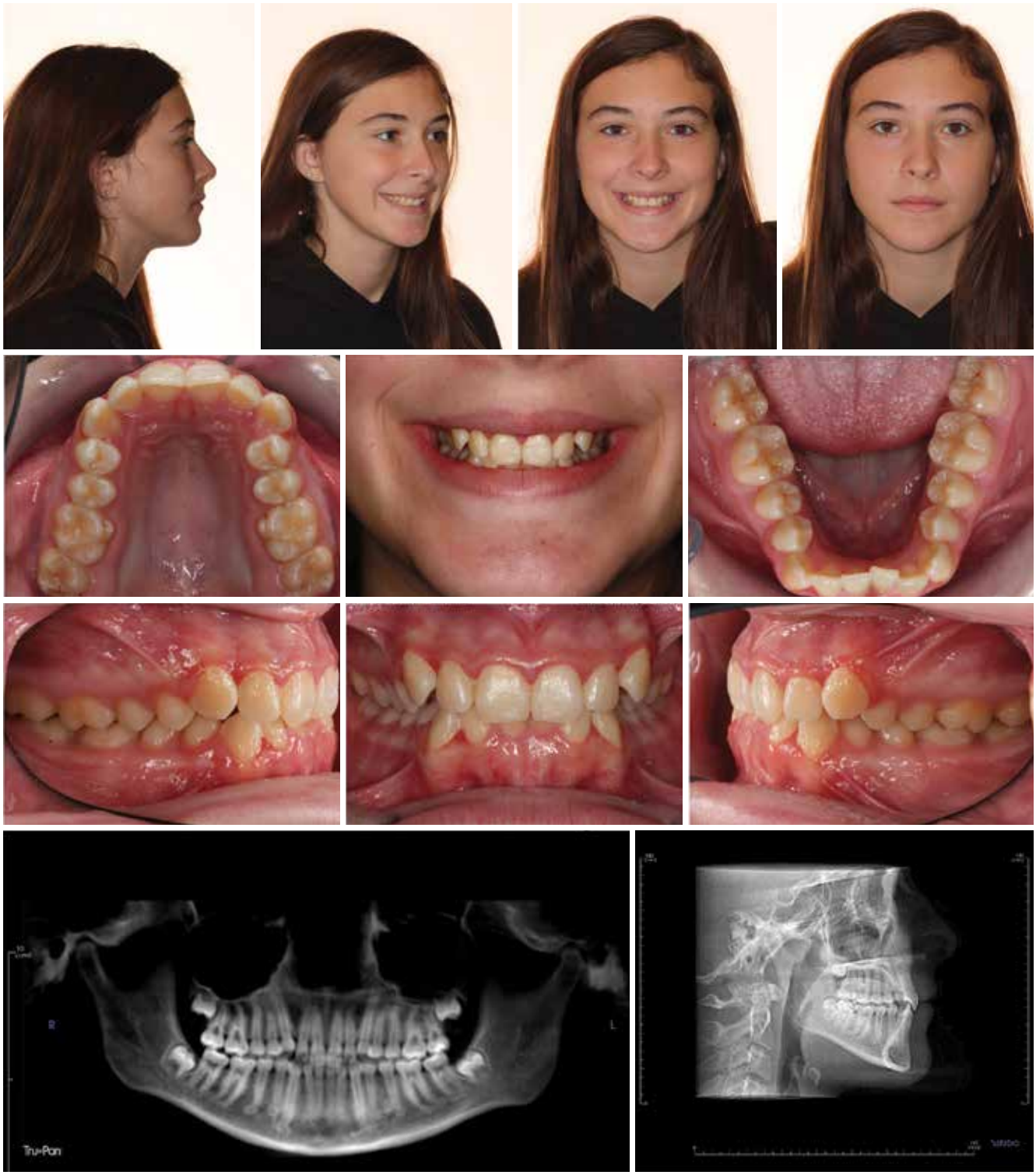
Even though many of the guidelines were clear, the onslaught of recommended requirements and the potential means for how offices might implement protection protocols were overwhelming. Our office has always maintained optimal sterilization and protection features for patients and staff as recommended. Therefore, there were minimal changes necessary relative to patient and staff protections to be implemented.

During the office shutdown we experienced for approximately eight weeks, we began to manage the obvious structural and potential patient flow changes within the office. Those items were determining how we would manage patient flow from the time they entered the building, their time in the dental chair to accomplish services and finally their egress from the office. We decided on removing or blocking off reception room chairs, reducing the number of patient appointment times and dental chairs available, eliminating "community use" brushing areas, and placing reception area and dental chair barriers. We were able to safely manage emergency scenarios for patients as needed.

The Orthodontic Screening Kit app was added to our website with mobile access that also kept us in touch with our current patients while providing a medium for new potential patients to communicate with our office.

An immediate concern was how we would manage the many weeks of rescheduled patients while reducing the numbers of patients seen within the office at the same time. One easy alteration was extending the time our office was open during the day and working increased days during the week, even starting off working on Saturday.

Fortunately, all staff responded positively to returning to work and recognized that we would need



to adapt to our new practice world brought on by the pandemic.

Some patient families were more cautious about returning for appointments than others. Our screening methods did result in turning some patients away, and many were required to reschedule because of family contacts and illness resulting from the pandemic.

There were realizations that treatment progression would be affected. Debonding appointments were now more than eight weeks delayed as were many other appointments. Focus by families and patients were on more important items than dental or orthodontic care.

Our practice has used the Damon System of passive self-ligation appliances for more than 20 years.

Case 1a_Initial records of a case with narrow arches, malalignment and a deep bite.

(Photos/Provided by Michael J. Mayhew, DDS, MS, MS, & Nicole R. Scheffler, DDS, MS)

Case 1b_Two months post-0.014 x 0.0275 CuNiTi Ultima wire.

The features of lower friction and lighter force appliances and more efficient treatment have always been highlighted within our practice. During the pandemic, another benefit became obvious: Our treatment strategies and modalities we had in place allowed us to continue our work.

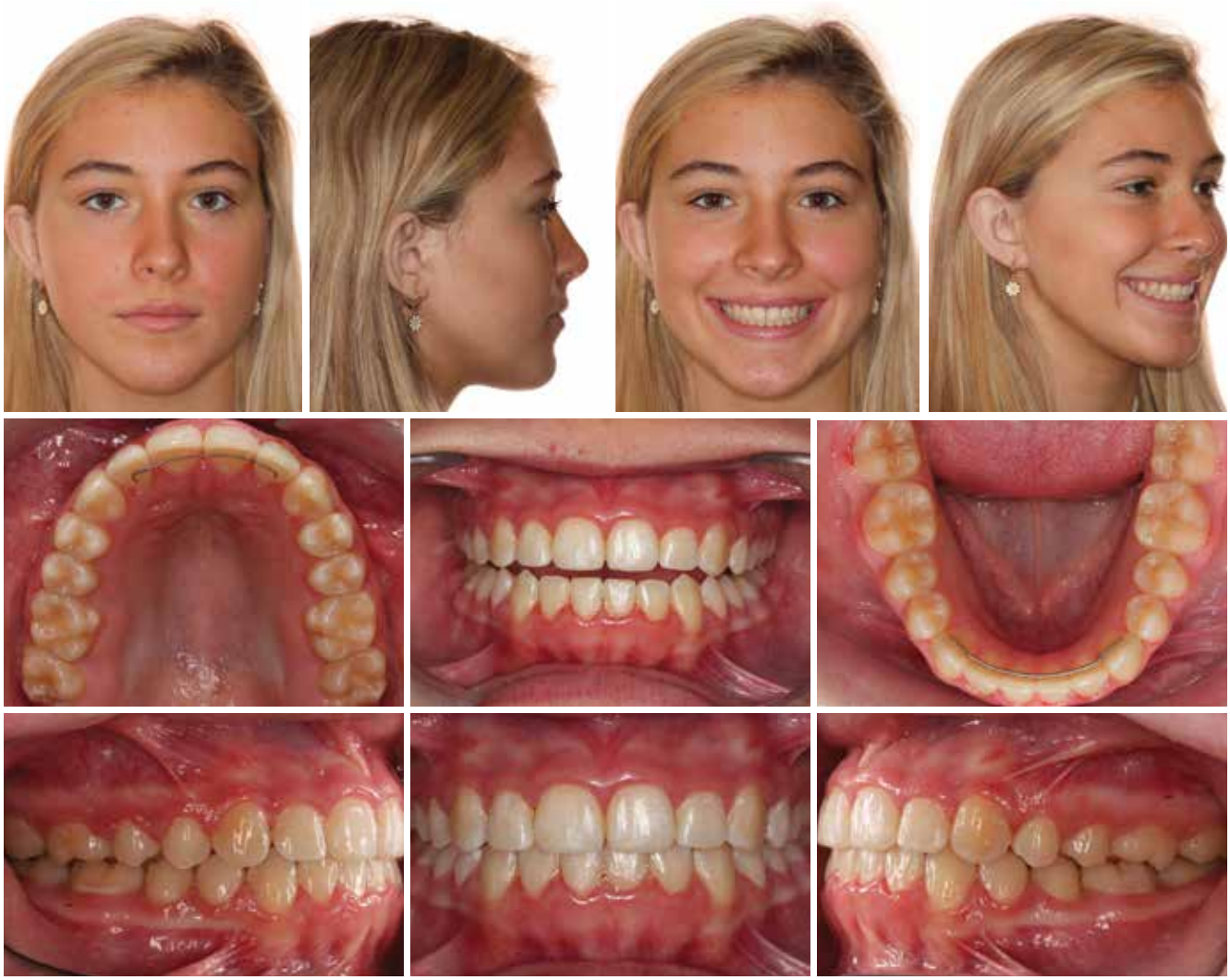
A great example is the self-ligating appliance brackets, which maintained the arch wires well without our ability to monitor patients on a periodic basis. As an aside, many cases fared well, a lesson to learn about over-managing our cases and to allow the appliances to work as engineered.

Along with our active orthodontic patients wearing the Damon System Q2 appliances, we had recently initiated participation in a clinical evaluation of the newest iteration of the Damon System. This evaluation was implemented in eight locations with 10 doctors within the United States in practices experienced in utilizing previous Damon System designs.

The new Damon Ultima™ bracket was engineered with a parallelogram slot shape and three coupling designs of "Neutral," "Procline" and "Retrocline" slots. Damon Ultima brackets are designed for the center point of the slot to line up with the facial axis point to express the desired torque and provide easier and more precise placement.

A novel redesign from the traditional rectangular-shaped wires was completed to be the engine to drive the unique bracket slot shape. Traditional passive self-ligation brackets and wires have significant play, often resulting in poor rotation and torque control that may require manual adjustments and extended treatment time. The proprietary round-sided rectangular wire and parallelogram-shaped slot combines to deliver direct engagement at vertical and horizontal contact points to virtually eliminate play for precise control of rotation, angulation and torque. This makes the innovative Damon Ultima System the first true full-expression orthodontic system, designed to achieve the overall alignment with faster, more efficient and more precise finishing.

While the pandemic affected our management of the Ultima clinical evaluation patients, the approximately three months of no appointments for



Case 1c_Final records of the case, completed in 14 months.

most of those patients had minimal negative effects. An exciting feature was seeing the effects of the first 0.014 x 0.0275 CuNiTi Ultima wire.

Case 1a shows the initial records of a case with narrow arches, malalignment, deep bite treated with the Damon Ultima System. Case 1b demonstrates the alignment achieved with a 0.014 x 0.0275 CuNiTi Ultima wire. The round-sided rectangular Damon Ultima wire engagement at the horizontal contact points delivered efficient rotation control and angulation alignments resolved earlier because of improved wire bracket interface along the vertical contacts. Case 1c reveals final alignment compared for this case completed in 14 months.

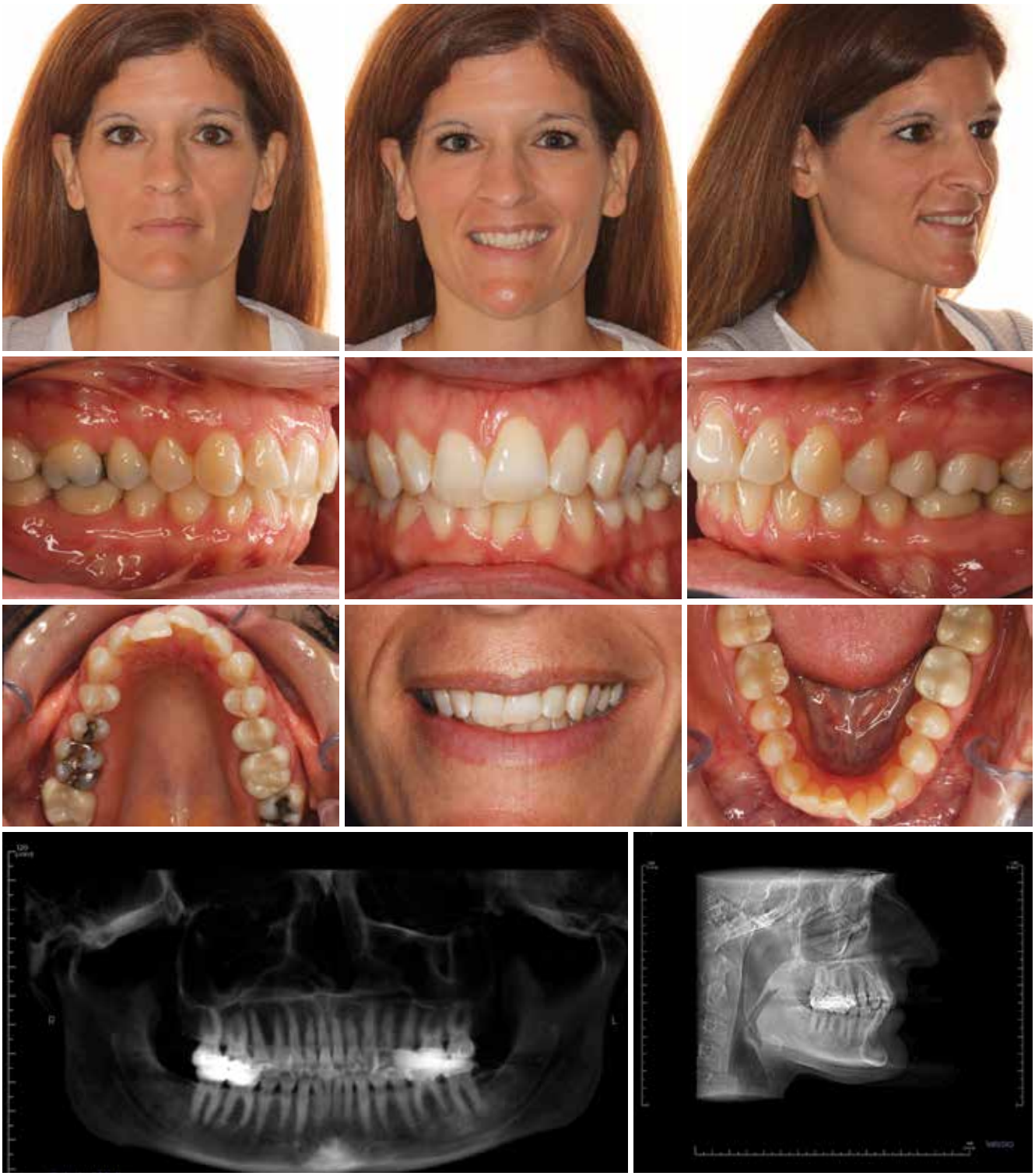
Our experience of managing these Damon Ultima clinical trial patients has met the expectations from this engineering genius. Filling the parallelogram slots with the round sided rectangular wires has proven this Damon System to be the first true full-expression orthodontic system. Most cases were finished with 0.018 x 0.0275 TMA wires, providing lighter wire finishes and, along with more precise bracket positioning, fewer adjustments for that optimal finish.

An interesting phenomenon seen during the pandemic was more adults considering orthodontic treatment. A common comment was, "While we have to wear masks, I might as well get braces to correct the teeth issues I have wanted to fix for a long time." We also noted a large increase of adults specifically seeking clear aligner treatment.

From the initial Spark™ Clear Aligner System trials and following cases, we noted that most treatments required fewer aligners to accomplish the desired treatment results than the leading aligner brand we had used in the past.

Spark Clear Aligners are made with TruGEN,™ the latest innovation in proprietary branded aligner material, and are more transparent than the leading aligner brand and are BPA free.

In addition, the material has been proven to provide advanced "sustained force retention" and has 19 percent better contact surface area with the tooth, which may result in more efficient tooth movement



Case 2a_Initial records for the patient who offered a chief complaint of 'upper front teeth bothering her and getting worse.'

and productive treatment compared to the leading aligner material.

Recently, a new proprietary material was offered as a more rigid option designed for optimal finishing and refinements. With TruGEN XR, doctors now have a "finishing wire material" that allows them to progress from a flexible material at the start of treatment to a more rigid material. This gives doctors more control and better predictability with the finishing details of a case and is on par with the finishing wire option doctors have with traditional braces. The unique properties of force retention, clarity and stain resistance were especially beneficial during the extended wear times patients experienced with their aligners thanks to the pandemic office closure and delayed appointments for new aligners or refinements.

Case 2b_Final records, with treatment completed in eight months.

The efficiency of Spark Clear Aligners is demonstrated in the following case report. Initial diagnostic records (Case 2a) were obtained for the patient who offered a chief complaint of "upper front teeth bothering her and getting worse." Her desire was to have clear aligner treatment and for it to be as fast as possible.

The treatment plan included arch width development, uprighting of the teeth and angulation corrections, and ideal alignment with the potential for interproximal reduction. A vibratory intraoral appliance with directions to use 20 minutes per day was utilized with the initial 33 aligners.

An additional 16 refinement trays were utilized with treatment completed in eight months (Case 2b). Appropriate retention appliances were placed with completion of treatment for a very excited and happy patient!

Our office environment changed during the COVID-19 pandemic, but the treatment strategies and modalities we had in place allowed us to continue our life's work when our office returned from the mandated closure. Continuing to serve our family of patients while maintaining a safe workplace proved a challenge for all but one that helped us to have a common successful cause to rally around in a time of doubt._

_about the authors

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Michael Mayhew, DDS, MS, MS, received his dental education from the University of North Carolina with dual-specialty degrees in pediatric dentistry and orthodontics. He is board certified in both specialties and operates two dual-specialty practices. Mayhew lectures nationally and internationally on the Damon System, CAD/CAM digital orthodontics, indirect bonding and CBCT utilization. He is on the Sports Medicine Team at Appalachian State University, is an adjunct clinical professor at the UNC School of Dentistry and serves as director of the North/South Carolina Damon Study Club. He was inducted into the American College of Dentists in 2010 and the International College of Dentists in 2013.

Nicole Scheffler, DDS, MS, received her dental education and orthodontic degree from the University of North Carolina. She is a diplomate of the American Board of Orthodontics and a member of many professional associations. Scheffler developed AOA's AOB Splint and helped develop Ormco's VectorTAS miniscrew system. She holds a position as an adjunct clinical and research faculty at the University of North Carolina, Department of Orthodontics, and is an internationally recognized lecturer. She has published numerous articles in a variety of professional publications and received the Dewel Clinical Research Award for the best clinical research publication in 2015.