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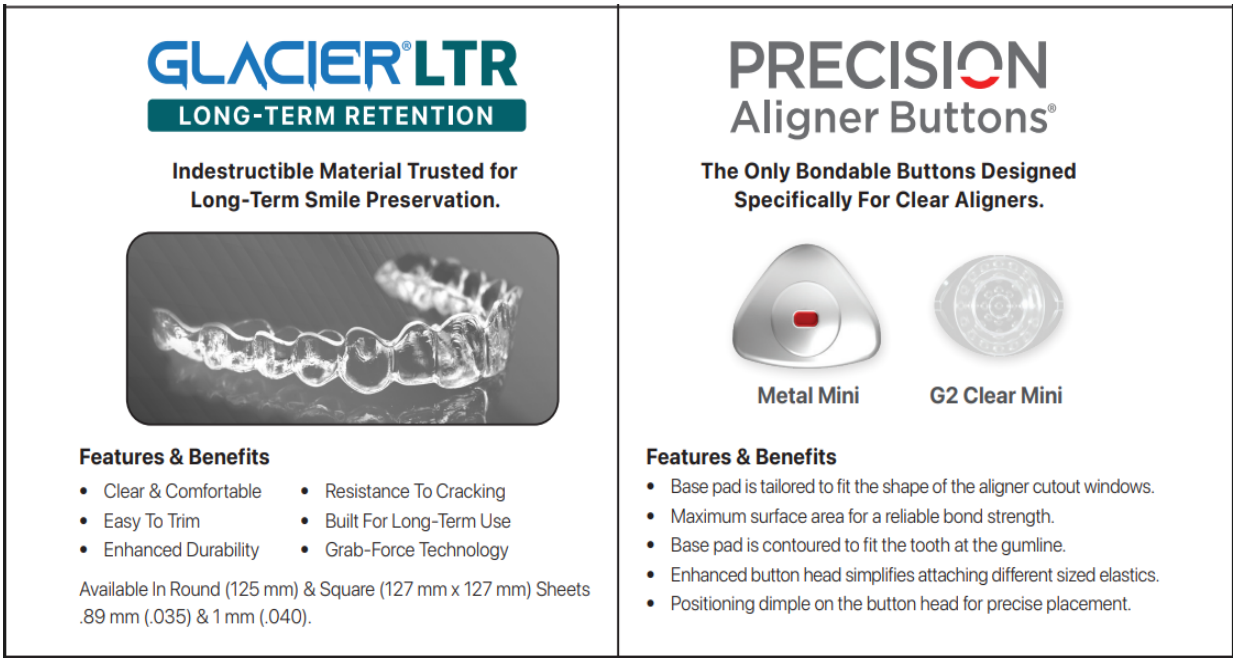

MAR Dental Sciences & Oral Rehabilitation (2026) 7:1

Case Report

Pre-orthodontic Provisionalization (POP): A 3-D Blueprint for Communication

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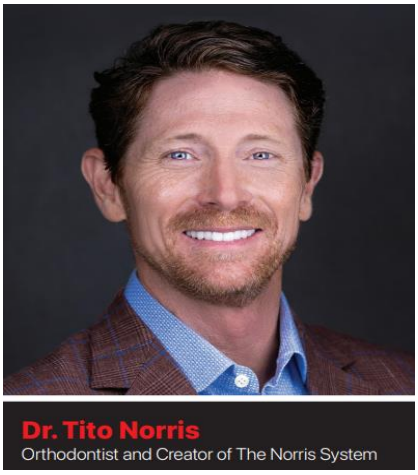

One of the most common interdisciplinary cases that presents to the dentist's/orthodontist's office is a patient who has experienced wear of their dentition. Historically, dentists have referred these patients to orthodontists requesting intrusion of the worn teeth so that vertical space for restorations can be created. In this traditional method, pure intrusion forces are required, and a guessing game exists regarding the precise amount intrusion of the maxillary and mandibular teeth that is ideal for that patient. This creates a nebulous orthodontic goal, and neither the orthodontist nor the dentist is confident that the ideal amount of intrusion has been accomplished in each arch. Furthermore, if wear is present on the anterior dentition, then the patient must experience an anterior open bite as teeth are intruded, resulting in compromised esthetics, chewing, and enunciation.

Case 1 below demonstrates this traditional method of intruding worn anterior teeth in preparation for definitive restorations.

Fig 1 series a: Pre-treatment photos of patient with anterior worn dentition

Fig 1 series b: Treatment photos of patient nearing end of orthodontic treatment. Note absence of accurate incisal edge anatomy, making assessment of ideal incisal display difficult. Furthermore, incisal edge function is absent, making mastication and enunciation challenging.

Fig 1 series c: Post-orthodontic, pre-restorative photos. Orthodontic treatment was 18 months in duration. Note the lack of accurate incisal edge anatomy, making assessment of incisal display and smile arc challenging.

Fig 1 series d: Post-restorative photos demonstrating improved incisal anatomy and enhanced incisal display in repose and in smiling.

A more efficient method for creating restorative space occurs when the restorative dentist performs pre-orthodontic provisionalization (POP) of all worn teeth. This establishes proper anatomy of the dentition and allows the orthodontist to utilize a combination of extrusive and intrusive forces to more efficiently achieve alignment. Furthermore, POP provides a 3-D blueprint for communication between the restorative dentist and the orthodontist, removing the guesswork and the possibility of miscommunication between the two doctors.

Case 2 below demonstrates a more modern and efficient method of creating restorative space utilizing the concept of POP.

Fig 2 series a: 62 y.o. patient presents to her restorative dentist with a chief complaint of short, worn, unattractive teeth. She has a Class I deep bite malocclusion and thinning of anterior enamel.

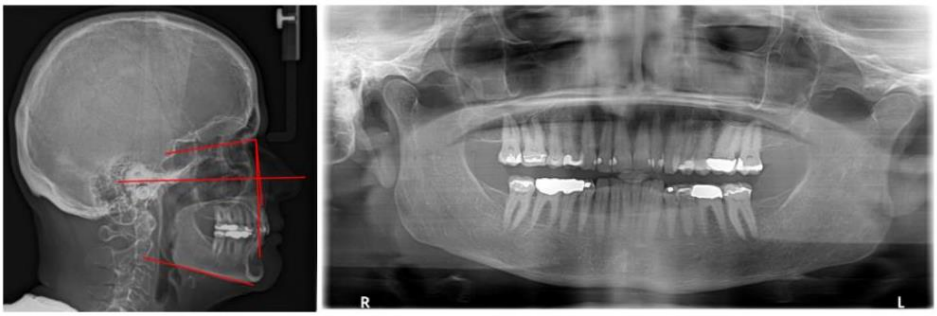

Fig 2 series b: Cephalometric radiograph reveals a low mandibular plane angle and orthognathic jaw relationships. Panoramic radiograph reveals multiple dental restorations and missing third molars.

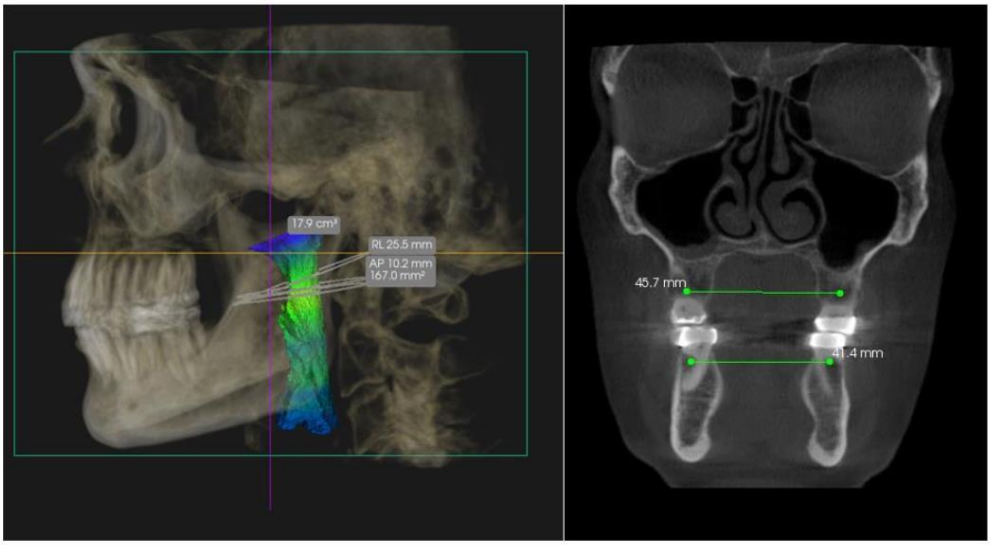

Fig 2 series c: CBCT shows a minimal axial airway of 167 mm2 and well-coordinated maxillary and mandibular transverse widths.

Fig 2 series d: According to the Global Diagnosis** process, the patient demonstrates a slightly long lower facial height, long upper lip (normal values are 20-22mm in females) and a slightly hyperactive upper lip (normal values are 6-8mm).

Fig 2 series e: The patient's anterior gingival architecture is not level. Her maxillary incisor is short (ideal is 10-11mm), and the CEJ cannot be felt beneath the gingival margin with an explorer, indicating the presence of Altered Passive Eruption.

Fig 2 f: Summary of the Global Diagnosis** process.

Fig 2 series g: Pre-orthodontic provisionalization of all worn teeth and Esthetic Crown Lengthening (ECL) was performed by her restorative dentist.

Fig 2 series h: Immediately following ECL and POP, Norris 20/26 orthodontic brackets* were placed, maxillary anterior bite turbos, and .014" Norris Extra-Broad NiTi wires* were delivered. Note the presence of anterior bite turbos on the lingual surfaces of the maxillary incisors. The bite turbos help to establish a new vertical dimension of occlusion (VDO) and help to protect the POP from masticatory trauma.

Fig 2 series i: Patient was instructed to use 5/16" 2 oz. trapezoidal elastics* throughout treatment to facilitate eruption and interdigitation of posterior occlusion. By employing POP, intrusive and extrusive orthodontic movements are utilized, thus making orthodontic movements more efficient and effective.

Fig 2 series j: At the second appointment, second molar buccal tubes were placed, .018" x .018" Norris Extra Broad NiTi wires* were placed in both arches, and posterior vertical elastics were continued.

Fig 2 series k: At the third appointment, an .019x.025" Norris Extra Broad NiTi wires* were placed, and night-time vertical elastics were continued.

Fig 2 series l: A leveling bend was placed between the central incisors to compensate for the differences in gingival margins between the central incisors. Following leveling of the gingival margins, composite resin was added to the maxillary right central incisor, lateral incisor, and canine to provide symmetry. Refinement of provisional restorations during orthodontic treatment is called "dynamic bonding" and is important in visualization of the final restorations.

Fig 2 series m: Post-orthodontic, pre-restorative photographs of the patient's dentition. Orthodontic treatment was nine months in duration. Note that detailed interdigitation of posterior teeth is not required due to plans for a comprehensive restorative rehabilitation.

Fig 2 series n: Final orthodontic records of patient after final restorations.

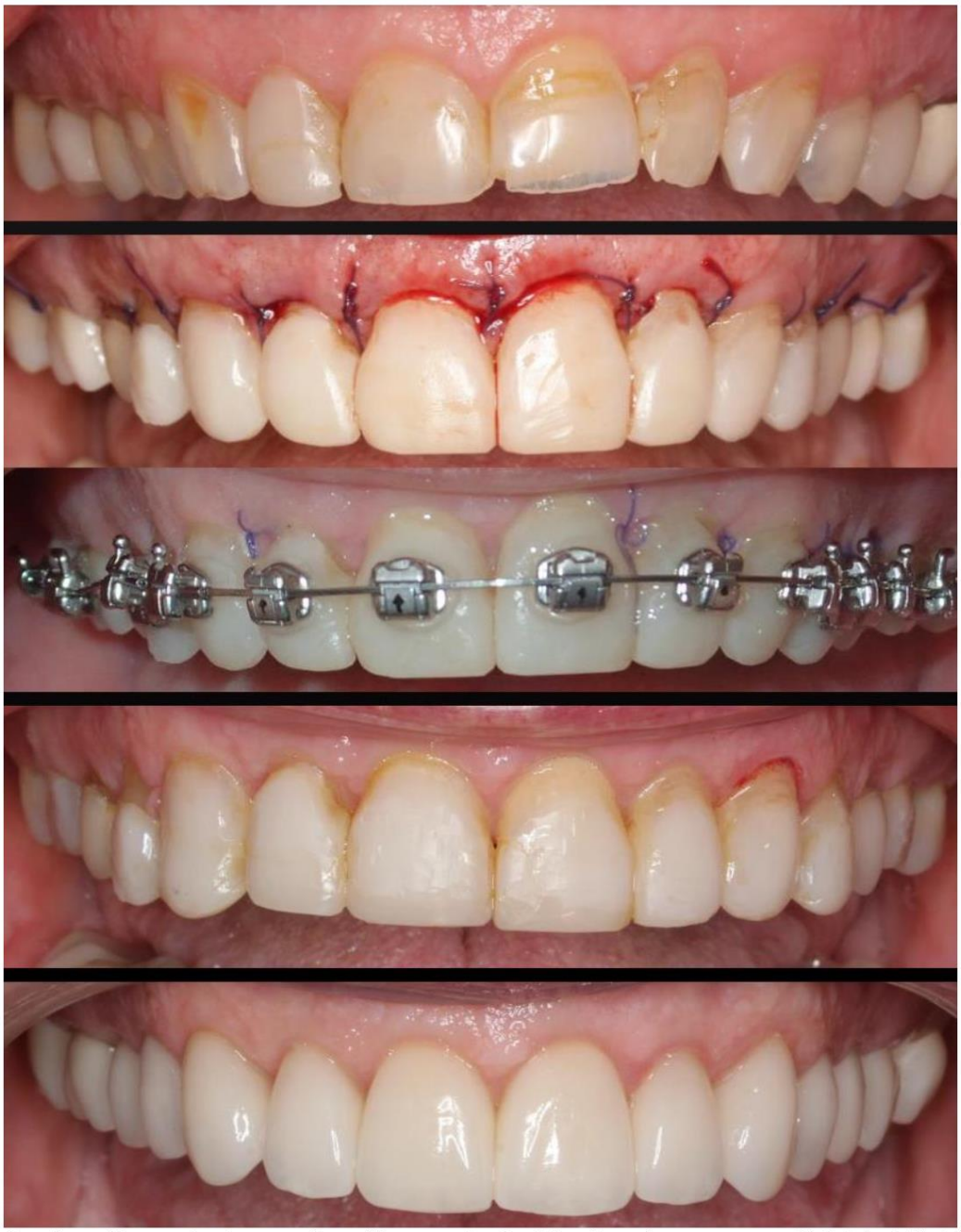

Fig 2 series o: Progressive images of maxillary anterior dentition throughout treatment. 1) Original. 2) After ECL and POP. 3) During orthodontic treatment. 4) After orthodontic treatment. 5) After final restorations.

In summary, pre-orthodontic provisionalization (POP) is an efficient and effective method to restore the natural anatomy of worn teeth prior to the placement of orthodontic appliances. POP allows the restorative dentist to dictate the size and shape of the final restorations and affords the orthodontist accurate incisal edges so that bracket placement can be more accurately performed. Furthermore, accurate incisal edges during orthodontic treatment allows efficient assessment of incisal edge display in repose and smiling throughout orthodontic treatment. POP also allows patients to enjoy enhanced esthetics, anterior mastication, and improved enunciation during orthodontic treatment. By allowing the orthodontist to employ a combination of extrusive and intrusive forces, POP provides an environment in which orthodontic treatment can be treated more efficiently with less time and fewer appointments.

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Dr. Robert "Tito" Norris, DDS, MS

Orthodontist • Educator • Innovator

Dr. Robert "Tito" Norris is an internationally recognized orthodontist known for creating smiles designed to last a lifetime. With a unique background in biology, dentistry, and mechanical engineering, he applies a biomechanics-driven approach to orthodontics, mastering forces, vectors, and tooth movement with exceptional precision.

He earned his bachelor's degree with honors in Biology and a minor in Mechanical Engineering from the University of Texas at Austin. He graduated as Salutatorian from the University of Texas Health Science Center at San Antonio Dental School, completed a General Practice Residency at the V.A. Hospital in Washington, D.C., and earned his orthodontic specialty training at Howard University, graduating as Valedictorian with the highest GPA in the department's 25-year history.

Dr. Norris is Board Certified by the American Board of Orthodontics and is an active member of the American Dental Association, American Association of Orthodontists, and Texas Dental Association. He also served as Chief of Orthodontics in the U.S. Air Force at Misawa Air Base, Japan, providing care to service members and their families.

A leader in sustainable healthcare design, Dr. Norris created the world's first LEED-certified orthodontic office and the first practice in San Antonio to operate on 100% renewable energy using solar and wind power.

He has lectured across the United States, Europe, and Asia, and published in leading orthodontic journals. Based in San Antonio, Texas, he lives with his wife and three children and continues to lead through innovation, education, and clinical excellence.

MAR Dental Sciences & Oral Rehabilitation (2026) 7:1
Case Report

'Short-Face' Patients

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Introduction

Adisyn was 13 years old when her mom brought her to our office (Fig. 1). Their chief complaint was the very mild crowding of her anterior teeth.

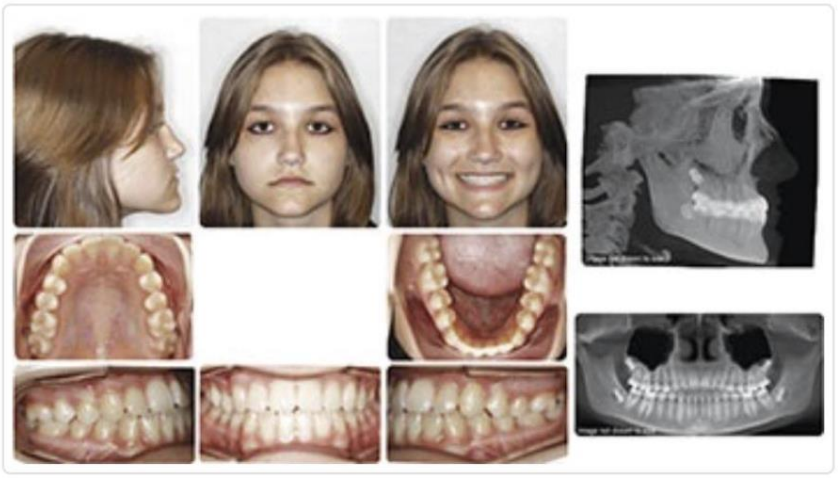

Figure 01

On its surface, if our orthodontic diagnosis and treatment plan were strictly "inside" focused, this is an exceptionally simple case—a case that could be easily managed in well under one year of treatment with braces or aligners and some limited Class III elastics or IPR. And given their simple chief complaint, they would likely have been thrilled with the result of that treatment.

This is where I'd like to take a short tangent on the distinction between orthodontists as "tooth straighteners" and orthodontic and dentofacial orthopedic specialists. The truth is that most of the general public views us as the former. When they come to our offices for treatment, they see us through that lens and often state their concerns within the same limited scope. Admittedly, it is sometimes much easier to meet them at that same level of concern and simply be tooth straighteners for them. We assume that is all the patient really wants anyway. Even if a more comprehensive diagnosis and treatment plan could pose additional benefits, we may further assume that treatment might be too complicated, expensive, lengthy or otherwise unfavorable enough to turn them off from treatment altogether. They often have no idea what is possible until we show them. This is why great effort in communicating, educating and showing patients what is possible is so vital to how we best serve them.

Case Presentation

Having treated and thoroughly documented several short-face cases, I used those records to communicate and highlight the similarities to Adisyn's presentation, visually showing the dramatic aesthetic improvement imparted to patients like her through comprehensive orthodontic treatment at our office. With a new understanding, Adisyn and her mom were no longer interested in simply straightening teeth.

Diagnostically, Adisyn showed many of the characteristic traits of short-face patients. While facially she showed excess chin prominence and a square frontal facial form, her lower third facial height measured relatively within normal limits. Her lips did not look overly compressed, and her smile window was also not noticeably short. The cephalometric X-ray, however, showed a low mandibular plane angle along with mild mandibular prognathism and associated protrusive maxillary incisors. It also showed a characteristic sweeping up in the anterior region of the occlusal plane. This slightly superior position of the maxillary anterior teeth relative to the occlusal plane is a common feature that I find in Class III patients with a tight or end-on overjet. It most often presents as decreased vertical incisor display and flat or reversed smile arc, both of which Adisyn displays. In addition to mild crowding in both arches, the intraoral photos also show a mild Class III occlusion with a shallow overbite and nearly end-on overjet.

In the exam room, my discussion prioritized improving her deficiencies in vertical incisor display and smile arc and how that would impact her smile aesthetics. I let them know there were multiple ways to improve these features, but one unique plan would also involve a facial change that I could simulate for them visually. I had Adisyn stand in front of her mom with her lips together at rest and her teeth biting down in full occlusion. I then had her mom take frontal and profile photos of her face on her own cell phone. Next, I asked Adisyn to disclude her teeth and naturally let her lower jaw roll down and back just a bit. Sometimes this takes more than a couple of tries with a patient to get the desired vertical change just right. Once that new vertical was simulated, I had Adisyn's mom take more profile and frontal facial photos. Having already briefly reviewed the records of two other short-face patients treated in our office, I asked Adisyn and her mom to swipe back and forth between the photos and describe what they noticed. They were very excited to visualize the decrease in chin prominence and the increased taper to her square frontal facial form.

Having learned from previous cases discussed, one of my main goals in establishing this new vertical position for Adisyn and then setting her occlusion to it was to do so in a manner that did not so desperately rely on compliance-driven mechanics. Not every one of my patients is a cooperator. As it turned out, Adisyn would not have achieved the same success as my other patients if her treatment had relied on extended, excellent elastic compliance. She was fairly compliant early in treatment, but that waned a little in the second half of her treatment.

The day we placed her braces (Fig. 2) was when the end goal for her new vertical lower-third facial height was established. This was done via the placement of bite turbos, which were strategically positioned on the U4s. This, in my opinion, is the best place to put them for this type of case, where both molar eruption and smile arc protection (SAP) bracket positioning are desired. Placing the bite turbos more posteriorly inhibits molar eruption. Placing them more anteriorly on the incisors prevents the SAP bracket position from expressing the relative extrusion of the upper incisors as the bracket heights are leveled in early wires. I intentionally built them large enough on the U4s to rotate her mandible down and back to the exact desired position for vertical facial change. You can see this in the photos taken immediately after the braces and bite turbos were placed (Fig. 3). My vertical goal was established. The aim was now to set the occlusion to that position by erupting all the maxillary dentition and tipping the maxillary occlusal plane clockwise to meet the mandibular occlusal plane, which was already in that position.

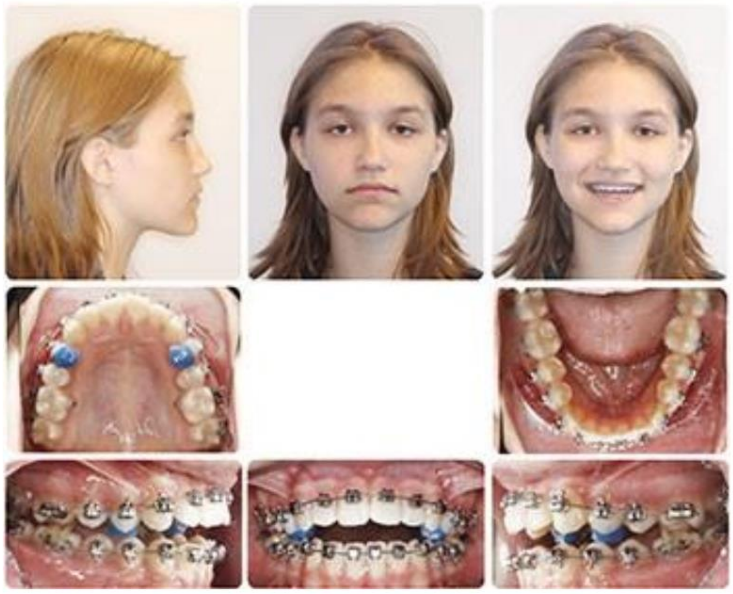

Figure 02

Figure 03

To erupt the molars, Adisyn wore full-time vertical elastics from upper first molars to lower first molars bilaterally. Just like in Lea's case, which we reviewed in a previous issue, caplin hooks were bonded to the lingual of all the first molars, and the elastic pattern alternated buccal/lingual to lingual/buccal to erupt the molars without altering their buccolingual inclination. The molars erupted into contact in about four months (Fig. 4). At that point, I was concerned that I might need a bit more of an increase in lower-third facial height, so I added to the bite turbos and continued with the elastics. At eight months into treatment, the molars were in occlusion, and I was satisfied with her vertical facial change, which was just a bit overcorrected.

The challenge at this point in treatment was how to keep the maxillary molars in their newly erupted position and prevent them from relapsing or intruding while also removing the bite turbos and erupting the rest of the maxillary dentition to the new vertical dimension set by the molar position. My attempt at that came in the form of absolute anchorage and auxiliary sectional mechanics. At nine months into treatment, I placed two

palatal TADs and connected them to the upper first and second molars via double TPA arms (Fig. 5a). In this manner, the maxillary molars were now fixated in their erupted position, and they would be able to maintain the clockwise rotation of the mandible and new vertical position. It is important to note that there would be some relapse or intrusion of the lower molars (which were also erupted with the vertical elastics) anticipated, so some degree of overcorrection of the upper and lower eruption before this point is prudent. In short, the maxillary first molar set our vertical change and would now become "mission control" for the other absolute extrusion mechanics.

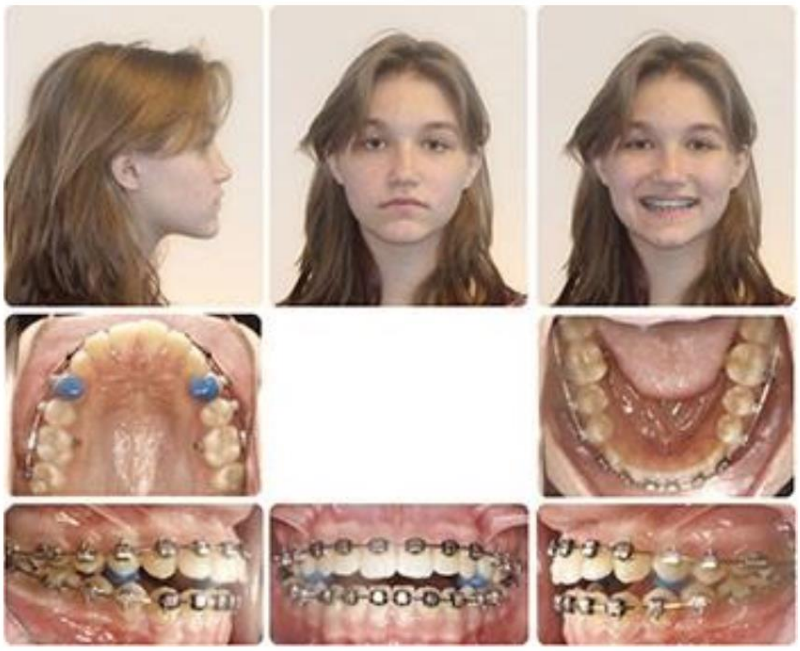

Figure 04

Figure 05

Now that the vertical change was fixated, the bite turbos were also removed and the remaining open bite from second bicuspid to second bicuspid would need to be closed. If anterior vertical elastics were used, they would have yielded eruption of both the maxillary and mandibular anterior teeth. In this manner, the maxillary anterior teeth would descend only approximately half the distance of the open bite before making contact with the simultaneously erupting lower anterior teeth. In my opinion, that would not have been enough eruption of her maxillary teeth to best descend them into their ideal vertical position within her smile. I didn't want to go from 50% vertical upper incisor display to 75% vertical incisor display—I wanted to get as close as I could to 100% VID. I wanted her full maxillary dentition to vertically fill her smile window.

To close the anterior open bite with as much maxillary eruption and as little mandibular eruption as possible, anterior elastics were not initially used at all. Instead, I repositioned her U6 molar tubes with bondable double-slot tubes (Figs. 5b and 5c). There were two specific mechanics employed by these double-slot tubes. First of all, the tubes were bonded with an approximately 30-degree tip-down anteriorly. The thought process behind this was to erupt the dentition anterior to the fixated maxillary molars to the new occlusal plane that the mandibular arch was already set to via the down-and-back rotation of the mandible. This occurred when a continuous 18 NiTi wire was placed from U6 to U6 in one of the double-tube slots. It is important to note that

the continuous archwire was not extended to the 7s because of the now-tipped bracket position on the 6s. The second mechanic employed was the use of sectional 19-by-25 TMA arms that were placed in the other U6 double-tube slot and connected to the continuous archwire mesial to the U3s. These sectional arms had a 45-degree tip-down bend mesial to the U6s so that when they were attached to the continuous archwire mesial to the U3s, they had an extrusive effect on the anterior teeth.

Figure 05a

Figure 05b

At 13 months into treatment (Fig. 6), the open bite had closed via greater eruption of the maxillary teeth. I desired slightly more anterior eruption, so I placed a reverse curve in the lower 16-by-25 stainless steel archwire and continued with activation of the sectional TMA wires.

At 19 months (Fig. 7), I removed the sectional TMA wires and cut off the TPA arms to the U6s. Double-triangle elastics were worn on both sides, as well as an anterior box elastic at night to attempt to stabilize the eruption that had occurred.

Figure 06

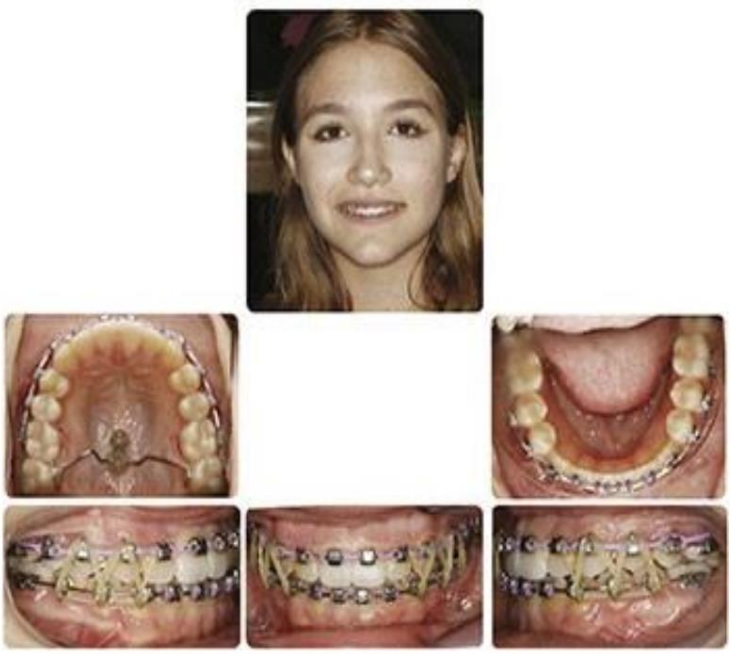

Figure 07

Results

Adisyn was debonded at 22 months into treatment (Figs. 8a–f). Clockwise rotation of her mandible (FMA and SN-GoGN increased 7 degrees) occurred via molar eruption with elastics. This movement achieved our macro-aesthetic (facial) goals of increased third facial height with associated decrease in chin prominence and increased taper to her now more ovoid frontal facial form. This vertical facial change was followed by TAD-fixated maxillary first molars serving as a "mission control" point to erupt all the maxillary dentition, with an emphasis on clockwise rotation of the occlusal plane. This movement achieved our mini-aesthetic (smile) goals of increasing her vertical incisor display and establishing a consonant smile arc. However, beyond just these improved anterior vertical dentition aesthetic goals, it is her full maxillary vertical display (anterior and posterior) that fills her smile and dominates her beautiful smile aesthetics. Her full maxillary dentition was extruded during this treatment.

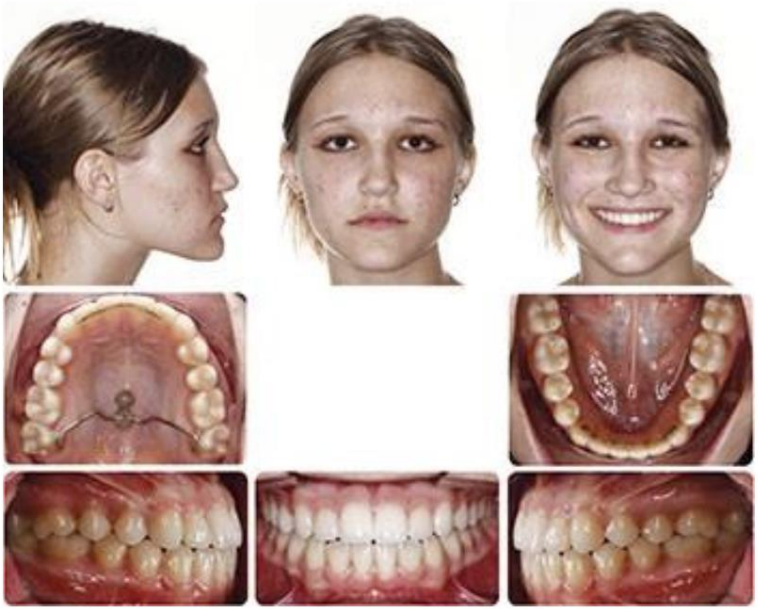

Figure 08a

Figure 08b

Figure 08c

Figure 08d

Figure 08e

Figure 08f

Regarding retention and stability, there were a few additional considerations. The upper incisors were finished in minimal overbite or contact with the lower incisors, as I didn't want the force of occlusion there to relapse or intrude the upper incisors that had extruded. Permanent retainers were placed from U2 to U2 and L3 to L3 and clear overlay retainers were given to wear at night. The patient and her mom declined my recommendation to place minimal bonded composite attachments to her anterior teeth to engage the upper clear retainer, which I felt would help support their erupted position. While not used for Adisyn, I believe this is a prudent retention tactic. The U7-to-U7 TAD bar will be left on for at least 12 months to help prevent maxillary molar relapse.

Another long-term retention strategy for this type of treatment is Botox injections. The saying goes that "muscle always wins," and in short-face patients, their muscular pattern likely plays a primary role, as the natural course of aging tends to return these patients to their pretreatment vertical position. Botox injections have been used to effectively weaken the masseter muscles and show great promise for the future of how we treat our short-face patients.1, 2 For Adisyn, a series of Botox injections to her masseters were recommended every six months for at least two years.

Closing thoughts

As I stated at the beginning of this four-part series, the vertical dimension is one of the most important components of dentofacial aesthetics. The role that the orthodontist can play in treating the facial balance of short-face patients cannot be overstated. For many of these patients, no other medical or dental provider can more naturally and significantly impact this deficiency. I hope that the evolution of concepts and mechanics used in these cases is helpful and encourages more orthodontists to treat these special vertical cases with an outside-in mindset. The treatments can be life-changing for these patients.

I want to make one final statement. I believe the novel mechanics used in Adisyn's case represent the most effective non-surgical orthodontic treatment for pure vertical maxillary deficiency available to date. Adisyn was a mildly deficient case, but I am already applying this same protocol to several more severe vertically deficient cases. The ability of the applied system described above to both induce full maxillary dentition eruption and alter and tightly control the exact desired aesthetic pitch of the occlusal plane is unique. I believe these are the two most important factors in properly treating a vertically deficient patient and I have not seen another treatment protocol that as effectively addresses both of those issues. I hope her case moves the ball forward in how we treat these cases conceptually and mechanically, and I hope that someone reading this article will take the ball even further forward in their own iteration and application. These patients deserve it, and we are capable of giving them what they really need if we view ourselves as more than just tooth straighteners.

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Dr. Chad Foster, DDS, MS

Orthodontist • Educator • Innovator

Dr. Chad Foster is a nationally recognized orthodontist known for combining exceptional clinical results with an outstanding patient experience. His mission is to deliver the highest quality orthodontic care while ensuring every patient leaves saying, “That was the best experience I’ve ever had at a doctor or dentist’s office.”

He earned his dental and specialty training at the University of Southern California, where he ranked #1 in his class, scored in the 99th percentile on national boards, and received the “Top Clinician” award during orthodontic residency. He is Board Certified by the American Board of Orthodontics an honor held by fewer than one-third of orthodontists.

Dr. Foster is Editor-in-Chief of Ortho town Magazine, a former faculty member at USC Dental School, and a national lecturer in orthodontic research and development. An Arizona native, he lives in Phoenix with his wife Natalie and is passionate about advancing orthodontics through innovation, education, and patient-centered care.

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Review Article

Predictability in Orthodontics: A Biomechanical Approach to Appliance Selection and Sequencing

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Dr. Michael B. Guess. (2026). Predictability in Orthodontics: A Biomechanical Approach to Appliance Selection and Sequencing. MAR Dental Sciences & Oral Rehabilitation (2026) 7:4

Abstract

Variability in orthodontic treatment outcomes persists despite advances in digital planning and clear aligner therapy. This inconsistency is often attributed to compliance or technology; however, a more fundamental explanation lies in biomechanics. Specifically, the moment-to-force (M/F) ratio and the ability of an appliance system to generate appropriate force systems govern predictability. This article presents a structured framework for appliance selection and sequencing, demonstrating that different tools are optimized for different biomechanical demands. Aligning treatment stages with biomechanical requirements may improve efficiency, reduce refinement rates, and enhance final outcomes.

Introduction

Clear aligner therapy has expanded access to orthodontic treatment and improved patient acceptance. Despite these advances, clinicians continue to observe inconsistent treatment outcomes.

Some cases finish efficiently and precisely, while others require multiple refinements or fail to reach ideal results.

These inconsistencies are not random.

They reflect underlying biomechanical limitations.

Fundamental Biomechanics of Tooth Movement

Orthodontic tooth movement is governed by the interaction of force and moment. The moment-to-force (M/F) ratio determines the type of movement produced.[1,2]. The moment-to-force (M/F) ratio determines the type of movement achieved:

- Low M/F → uncontrolled tipping
- Optimal M/F → bodily movement (translation)
- High M/F → root movement (torque)

The relationship between force and moment is illustrated in Figure 1.

Figure 1. Moment-to-Force Relationships

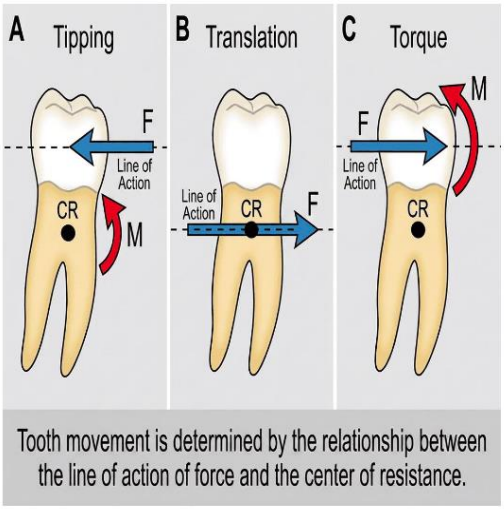


Figure 1. Moment-to-force (M/F) relationships and resulting tooth movement.

(A) Tipping occurs when the line of action of force does not pass through the center of resistance, resulting in rotational displacement.

(B) Translation occurs when the force passes through the center of resistance, producing bodily movement.

(C) Torque results from the application of a moment (couple) in addition to force, producing controlled root movement.

Key Principle:

Tooth movement is determined not by force alone, but by where that force acts relative to the center of resistance.

Appliance-Dependent Force Systems

Different orthodontic tools produce different force systems:

Lab / Orthopedic Appliances

- Address skeletal and transverse deficiencies
- Improve foundational architecture

Fixed Appliances

- Generate continuous forces
- Produce couples → high M/F capability
- Control torque, rotation, extrusion

Aligners

- Intermittent force delivery
- Limited moment generation
- Most effective for low M/F movements

Aligner Movement Predictability

Clear aligners demonstrate high predictability in movements requiring low M/F ratios, such as alignment and tipping, but reduced predictability in movements requiring greater control, including torque, extrusion, and complex rotations.[3–8] The biomechanical limitations of aligners are influenced by material properties, force decay, and limited moment generation compared with fixed appliances.[9]

Movement	M/F Demand	Predictability	Clinical Implication
Tipping	Low	High	Efficient
Alignment	Low	High	Predictable
Rotation	Moderate	Moderate	Needs control
Expansion	Moderate	Moderate	Depends on foundation
Torque	High	Low	Requires strong control
Extrusion	High	Low	Often unpredictable

Sequencing: The Missing Link

Predictability is not only determined by movement type—but also by when that movement is attempted.

Figure 2. Sequencing Model (Critical Figure)

Stage 1: Foundation Development

- Transverse correction
- Skeletal alignment
- Space creation

Primary Tools:

Lab appliances (expanders, Schwarz, Series 2000, MARPE Uprighting devices)

Stage 2: Controlled Tooth Movement

- Rotation
- Torque
- Vertical control
- Translation

Primary Tools:

Fixed appliances

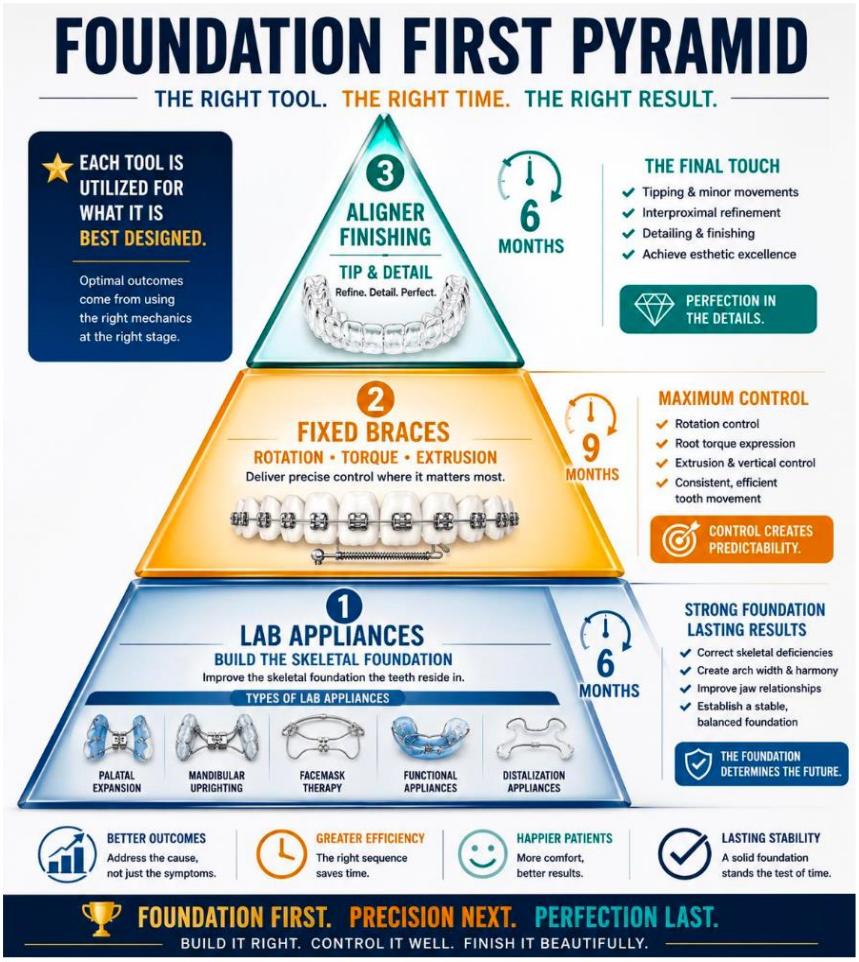
Stage 3: Finishing & Detailing

- Alignment refinement
- Minor tipping
- Aesthetic finishing

Primary Tools:

Aligners

Key Principle: Finishing mechanics cannot compensate for foundational limitations.



"The Right Tool, at the Right Time, for the Right Movement"

"The quality of the finish reflects the quality of the foundation."

Professional artisans never rely on one tool.

3 TOP — ALIGNER FINISHING (6 Months)

Color: Teal

- Tipping
- Alignment refinement
- Aesthetic detailing

Key Message: Precision Finishing

2 MIDDLE — FIXED APPLIANCES (9 Months)

Color: Gold / Amber

- Rotation
- Torque
- Extrusion
- Vertical control

Key Message: Biomechanical Control

1 BASE — LAB APPLIANCES (6 Months)

Color: Deep Blue

- Palatal expansion
- Mandibular uprighting
- Transverse development
- Sagittal development

Key Message: Skeletal Foundation

Discussion

Orthodontic treatment is often approached as if a single appliance system can accomplish all objectives. However, each system possesses inherent biomechanical strengths and limitations.

Aligners excel at low M/F movements but struggle with high-demand movements such as torque and extrusion. Fixed appliances provide superior control but are less efficient for finishing. Lab appliances address skeletal deficiencies that neither aligners nor brackets can fully correct.

These observations are consistent with previously reported studies evaluating aligner accuracy and predictability.[3–8]

The most predictable outcomes occur when:

- The correct tool is selected
- It is applied at the appropriate stage
- It is used within its biomechanical strengths

These findings reinforce the notion that treatment predictability is governed by biomechanical principles rather than by appliance selection alone.[1,2] This framework may help reduce reliance on refinement stages by improving initial treatment predictability.

Conclusion

Orthodontic predictability is governed by biomechanics, not technology alone.

Understanding:

- Moment-to-force relationships
- Appliance capabilities
- Proper sequencing

…allows clinicians to improve efficiency, reduce refinements, and achieve more consistent results. Future studies should evaluate the clinical impact of biomechanically sequenced treatment protocols.

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Dr. Michael B. Guess

Dr. Michael B. Guess, DDS, MS, MA

Dr. Michael B. Guess, DDS, MS, MA, is a highly respected orthodontist with more than three decades of clinical experience and leadership within the specialty of orthodontics. He is a Diplomate and Lifetime Board-Certified orthodontist through the American Board of Orthodontics and has dedicated his career to excellence in patient care, education, innovation, and professional service.

Dr. Guess completed advanced specialty training in Orthodontics and Dentofacial Orthopedics and has pursued extensive postdoctoral education in multiple interdisciplinary areas of healthcare. In addition to his orthodontic specialty certification, he has received training and certification in Dental Acupuncture, the treatment of obstructive sleep apnea using oral appliance therapy, and the therapeutic and esthetic applications of Dental Botox.

Throughout his distinguished career, Dr. Guess has held numerous leadership positions within organized orthodontics. He is a Past-President of the College of Diplomates of the American Board of Orthodontics and has also served as a Councilor and Ezine Editor for the organization. His dedication to advancing the orthodontic profession has earned him widespread recognition among his peers.

Among his many honors, Dr. Guess was the recipient of the prestigious Samir Bishara Award of Merit in recognition of his contributions to orthodontics and professional leadership. In 2025, he was further honored with the Excellence in Doctors Award for Orthodontists in California, acknowledging his outstanding commitment to patient care and clinical excellence.

Dr. Guess has also contributed extensively to organized dentistry and orthodontics through committee service and professional advocacy. He served on Peer Review and assisted in the development and writing of the sleep apnea educational brochure for the California Association of Orthodontists. His interest in airway health and interdisciplinary care has made him a strong advocate for the role orthodontics can play in improving overall health and quality of life.

An accomplished author and educator, Dr. Guess has written dozens of articles on orthodontic materials, biomechanics, treatment techniques, patient comfort, and pain control. His work reflects a commitment to blending sound scientific principles with practical clinical applications that improve treatment outcomes and patient experiences.

Dr. Guess trained under the internationally renowned orthodontic educator and researcher Zeev Davidovitch, who reportedly stated that Dr. Guess was “one of the two or three most capable students” he had trained. This recognition reflects both Dr. Guess’s exceptional academic abilities and his lifelong pursuit of clinical excellence.

Today, Dr. Guess continues to lecture, write, teach, and provide advanced orthodontic care, while remaining actively involved in the ongoing evolution of modern orthodontics, aligner therapy, airway-focused treatment, and interdisciplinary patient care.