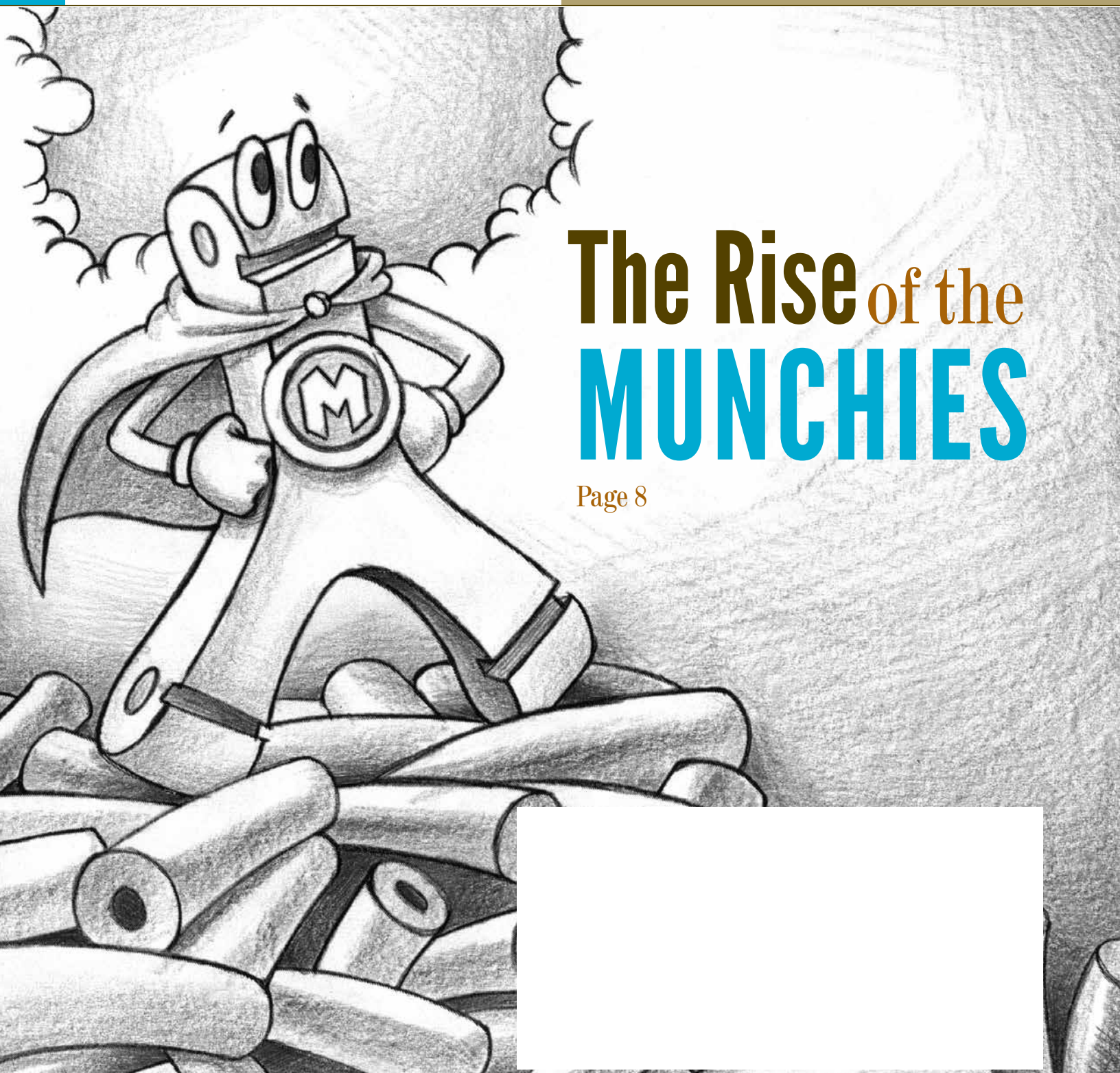


the **Journal**  
American Academy of Clear Aligners

The Academy for Clear Aligner Therapy



# The Rise of the **MUNCHIES**

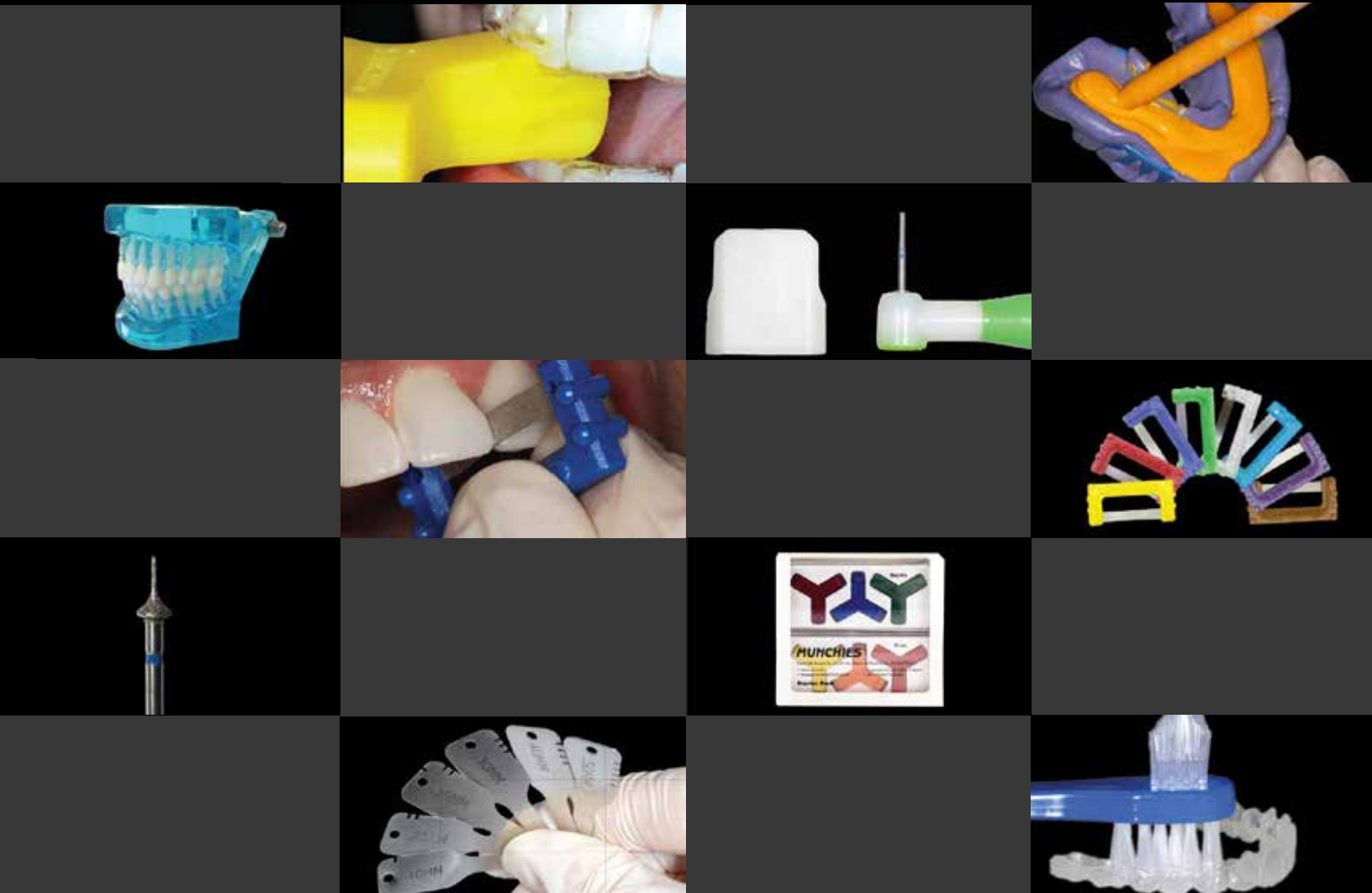
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## Editorial

Sometimes, the patient simply requires a course of well-planned and well-executed Clear Aligner Treatment. Sometimes, the patient simply requires some well-planned and well-executed restorations.

Oftentimes, however, neither approach by itself is sufficient to restore our

patients to a functional and esthetic ideal. An interdisciplinary approach is required, and the degree of restorative difficulty can be greatly eased by first performing strategic, pre-restorative, Clear Aligner Treatment.

Dr. Richard Schmidt, a long-term member of the American Academy of Clear Aligners, has always felt that "Orthodontic treatment can enhance the long-term predictability of restorative dental treatment by positioning the teeth in their optimal location within the dental arches."

Because of this belief, he conducted a survey to discover which conditions presented a restorative dentist's greatest challenges, and the results of this survey appear in this issue of the *Journal*.

Dr. Schmidt will present our readers with a series of six articles, each one demonstrating how difficult and complex restorative problems can be made much more manageable through pre-restorative Clear Aligner Treatment.

We thank this outstanding clinician for sharing his knowledge and expertise with our readers.

Dr. Jeffrey Galler  
Editor

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# the Journal

American Academy of Clear Aligners

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# Case Reports

## Location, Location, Location! ✓

### How to Use Invisalign and ClinCheck to Reposition Spaces in Bolton Discrepancy Cases

by Jeremy Kurtz, DDS



Dr. Jeremy Kurtz is a graduate of the University of Toronto School of Dentistry. He is a general dentist who maintains a unique private practice in Toronto that focuses exclusively on Invisalign and dental implant therapy. Dr. Kurtz is a guest lecturer at various Invisalign and implant study

clubs in Toronto. He is a Top 1% Invisalign GP provider and enjoys making his patients smile with Clear Aligner Therapy.

A disheartened 39-year-old patient presented in my office. Her main complaint was the large space between her mandibular incisors (**Figure 1**). As well, her teeth “stuck out” (that is, they were proclined and in bimaxillary protrusion) (**Figure 2**). In addition, she had an old Maryland bridge on teeth #9 through 11. (**Figure 3**), which she wanted replaced because the poor color match and overly large pontic caused a very unesthetic appearance. She was discouraged because the other dentists she had previously seen had given her a variety of opinions, all of which she found decidedly suboptimal.

One dentist told her that orthodontics, including braces, could not help her (and of course, for that practitioner, Invisalign was a nonstarter). Another dentist suggested removing all her mandibular flared incisors and getting dental implants. Yet another advised her to first replace the Maryland bridge and then address the bottom teeth with braces!

For me, the obvious choice for her was pre-prosthetic treatment with Invisalign.

#### Wide open spaces

The patient had a variety of problems that can be treated very well with Invisalign. First and foremost was the large 7.5 mm space



**Figure 1:** the patient's anterior mandibular gap.



**Figure 2:** proclination of the patient's teeth.

in the mandibular anterior region. Although a 7.5 mm space sounds daunting, in this case it wasn't as bad as it sounds.

The mandibular central incisors were flared forward, and the crowns of the teeth were tipped away from each other in a “V” shape. When retracting and uprighting teeth that are positioned this way, most of the movement will involve uprighting the crowns and minimizing the space between the crowns. This will automatically put the roots in a vertical position. (Had the central incisors been upright and parallel to



**Figure 3:** old Maryland bridge across teeth #9 through #11.

each other, requiring more translational movement of the roots, this would be much more difficult.)

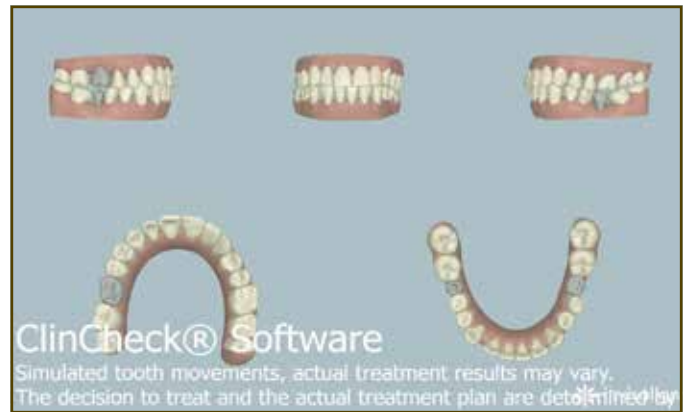
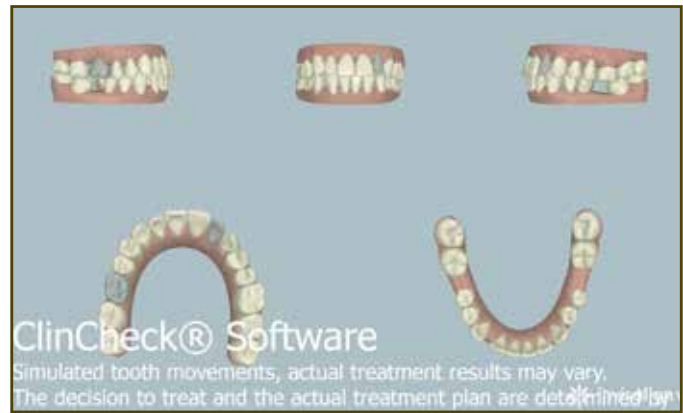
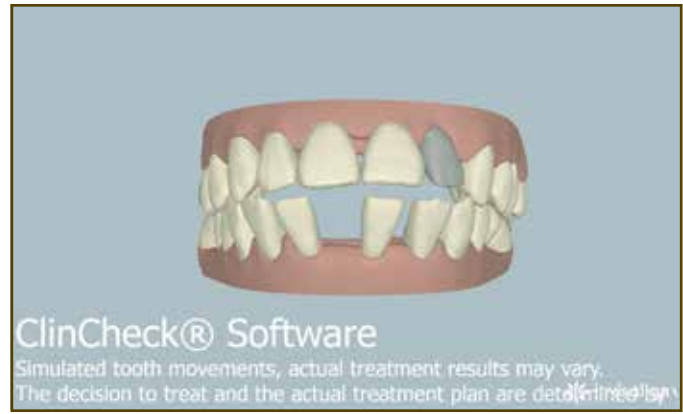
The bigger challenge in my mind was the Bolton discrepancy in the mandibular anterior region. Even visually, it is obvious that not all the spaces can be closed. (It almost appears as if the patient is missing an incisor or two!) So, the way to treat this is to move the location of the space to a less conspicuous area, and leave smaller spaces spread across multiple teeth to allow for esthetic bonding or veneers that will be proportionate in size.

Invisalign is uniquely positioned to help with the planning, diagnostics, visualization, and execution of leaving a predetermined amount of space because of the predictive capabilities of the ClinCheck program (**Figures 4a-d**). I was able to run multiple versions and permutations of anterior teeth positions until I found the best esthetic solution with the simplest movements. In the end, I chose to leave a small space (about 2 mm) distal to tooth #27, and distribute the balance on either side of tooth #22 (mesial and distal, about 1 mm each) (**Figure 5**).

I showed the resulting treatment plan to the patient. She was very happy not to have the large space front and center. (Imagine planning such a movement using braces without a 3D visualization, and then actually moving the teeth with a balance of power chains and springs to get them into the exact position as planned!) Of course, this also allowed for the planning of a more appropriately sized maxillary lateral (tooth #10) for the replacement Maryland bridge.

### Fixing the open bite

The next challenge was the anterior open bite and the severe flaring buccal angle of the teeth. Again, an open bite such as this one is not hard to treat, because the majority of the closure will occur through “relative extrusion.” Since the anterior incisors are so extremely angled, as they begin to upright they will become effectively longer, closing the anterior open bite. (The situation is like that of a tree that has fallen over: as it is lifted back up, it is much higher in its full upright position.) The challenge is that when these teeth are fully upright, they



**Figures 4a-d:** ClinCheck of patient's dentition before treatment, and 3 different solutions we simulated before choosing a plan.

may be too long, owing to overeruption that has occurred over time. These teeth actually require a significant amount of intrusion as they are being retracted, to avoid heavy anterior occlusion and subsequent posterior open bite.

Again, Invisalign is the appliance of choice for intrusion, because of the mechanism of force. First, it is a “pushing” appliance (teeth are being pushed by a plastic tray), whereas wire braces are primarily a “pulling” appliance (teeth are pulled to the position of the wire). In this case, the teeth need to be pushed (intruded) into the bone, so Invisalign provides the right force for the right movement. Second, we can now direct the biting forces of the patient to the anterior teeth using the newer feature of anterior bite ramps. This feature really enhances the ability to intrude anterior teeth.

Finally, with regard to the maxillary movement and the missing tooth #10, the use of Invisalign allows for a pontic built into the actual appliance. As well, the 3D visualization provided by ClinCheck aids in the control of space (pontic size) and angulation of maxillary incisors to ensure good esthetic results in the final bridge.

### Fast results

The course of treatment took 33 initial trays before bridge placement, followed by 8 trays after the bridge was inserted, in order to settle the bite (intrude the mandibular incisors more). I used an Accedent device to allow for 7-day switching of trays. In total, including bridge replacement, this patient’s orthodontic treatment was complete in about 12 months (Figures 6-8).

The patient chose to close small spaces in the mandibular canine regions with bonding. We will address posterior restoration of missing spaces in the future.

I chose Invisalign Vivera retainers for retention for this case. In addition, I placed a mandibular lingual wire on the patient’s mandibular anterior teeth. Because this patient had buccal flaring of the teeth due to strong tongue movement, a lingual wire alone would have provided insufficient retention, leaving a strong likelihood that all anterior teeth would again procline with the wire attached. A buccally applied retention force was required to counteract the force exerted by the tongue. Thus, the Vivera retainer, which secures the teeth and encompasses them on both the buccal and lingual sides, was ideal.

In the end both the patient and I were ecstatic with the results. The patient was most happy with the results achieved, and I was equally excited that Invisalign was able to take a complex problem and treat it in a most predictable and efficient way. Making the once impossible possible, and all with plastic trays instead of braces—now that’s progress! ■



Figure 5: proposed redistribution of spaces around teeth.



Figure 6: after Invisalign but before replacement bridge.



Figure 7: right view showing relocated spaces alongside canines and molars.



Figure 8: with replacement bridge.



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# Clinical Techniques

## The Rise of the Munchies

by David Galler, DMD



Dr. David Galler is the President of the American Academy of Clear Aligners, and has proudly transformed hundreds of smiles with Invisalign® aligners. A featured speaker at numerous study clubs, webinars, national and regional events, Dr. Galler has been featured in educational and marketing

materials designed to help practices learn more about Invisalign treatments and clinical techniques. The *New York State Dental Journal* (Jan. 2009) published his multidisciplinary case incorporating Invisalign, implant, prosthetic, and aesthetic treatment goals. He is the creator of the GST system being utilized by more than 3500 doctors across the country every day.



The key to successful Clear Aligner Treatment is finishing the case on time.

Ordering additional aligners after a case should have been finished, in order to refine the result or to attain a more successful result, is sometimes unavoidable, but is nevertheless a significant waste of valuable chair time. These delays decrease not only the profitability of the case but also the patient's perceptions of our clinical expertise.

The goal, then, is to have the initial set of aligners completely succeed in achieving the desired movements, per the original treatment plan.

To this end, doctors have become adept at recognizing when teeth are not moving properly during treatment within the clear aligners. The easiest and most accurate way to make this determination is to visually evaluate how well the trays are seating over the teeth. The word we use to denote how well the aligners fit is "tracking."

### Tracking a case

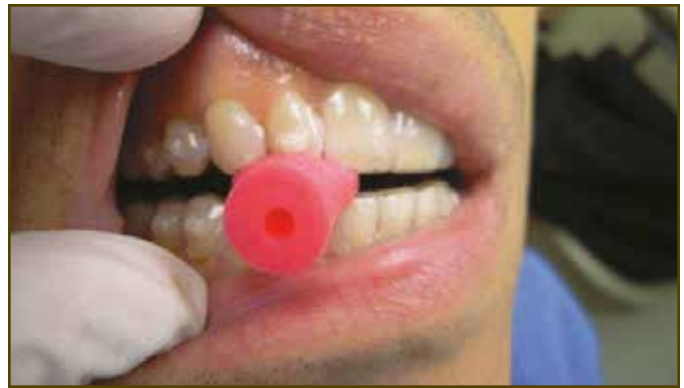
Tracking, the most important word in the Clear Aligner Therapy lexicon, describes whether the teeth are responding to the aligner movement. The better the aligners are tracking, the better the case is progressing. Tracking can be excellent, good, problematic, or poor. **Figures 1-4** show examples of the different degrees of tracking.

How can a dentist ensure that a patient's aligners are tracking all the way through the case? Well, compliance is obviously the most important factor. After that, we evaluate overly tight contacts, attachment placement, occlusal difficulties, excessively difficult movements, or malformed trays, to name a few of the Top 10 reasons causing tracking problems (see Webinar 2015, on the AACA website).

Once tracking problems are noticed, the dentist must troubleshoot and solve those problems so that the treatment can finish on time with the allotted number of remaining aligners.



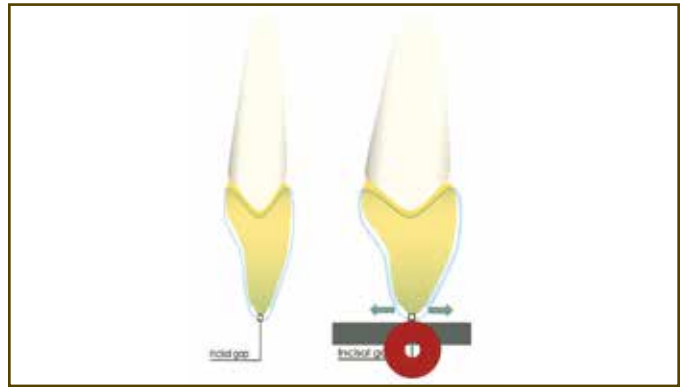
**Figure 1:** excellent tracking.



**Figure 5:** Chewies in use.



**Figure 2:** good tracking.



**Figure 6:** tracking problem.



**Figure 3:** problem tracking.



**Figure 7:** see how the buccal aligner is not engaging after Chewies use.



**Figure 4:** poor tracking.

### Using Chewies

In the past, one of the most popular ways to get cases back on track was to have patients bite into Chewies, made by Dentsply Glenroe. These devices have been used judiciously by dentists for patient tracking problems, with extreme success in some but not all cases (Figure 5). Their low cost and ease of use made them a practice favorite.

However, there was always a small fundamental flaw in Chewies use. It is true that they can reduce the space behind the incisal edge and tooth; at the same time, however, they cause the buccal and lingual parts of the clear aligner to stretch out, leaving the patient with very little surface area coverage of the aligner over the teeth. With less surface contact on the buccal and lingual walls, there is little to no movement achieved (Figures 6-7).

Dr. David Penn, founder of Esthetic Orthodontic Company of America (EOCA), invented a simple, clean solution that is changing the world of Clear Aligner Treatment. He created Ortho Munchies.

Munchies have a built-in notch that allows for maximum gripping of the tooth around an aligner. This notch allows the patient to exert force onto the aligner from three directions (buccal, lingual, and incisal), ensuring that the aligner does not stretch or warp. And, of course, the more closely seated the aligner is over the tooth, the more we can expect the tooth to respond to the movement programmed into the aligner (Figures 8a-c).

### Positive results

Based on doctor feedback since the product's introduction in August 2016, Munchies are becoming an important and integral part of our clear aligner armamentarium. Dentists are reporting 20% to 30% reductions in refinements in cases where Munchies are utilized.

Further, several doctors, including Dr. John Bunkers of California, are using Munchies as an accelerator for speeding orthodontic movements. Many report that using Munchies enables patients to change their Invisalign clear aligners every week instead of every 2 weeks.

In addition, researchers, such as Dr. David Penn, report that the regular use of Munchies can significantly reduce the pain and discomfort experienced by orthodontic patients (see "The Bite Wafer Effect: The Use of a Viscoelastic Appliance in the Management of Orthodontic Pain with Sequential Aligner Therapy," *AACO Journal*, Spring 2016).

Dr. Andrea Dernisky of British Columbia has reported increased successful tracking on all cases across the board for patients who are using Munchies. "This will mean more predictable movements, and faster treatments," she says.

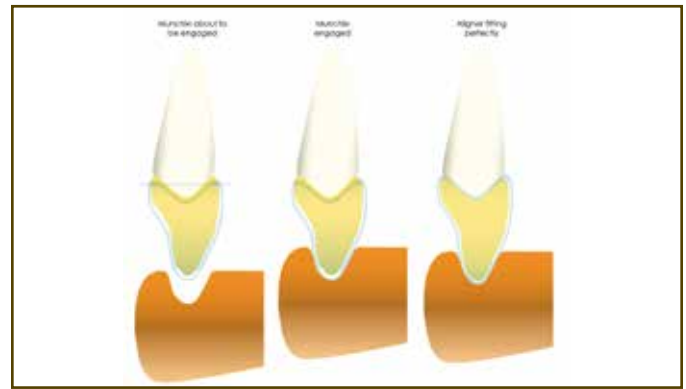


Figure 8a: Munchies engage tooth in 3 directions.



Figure 8b: patient biting into Munchies.

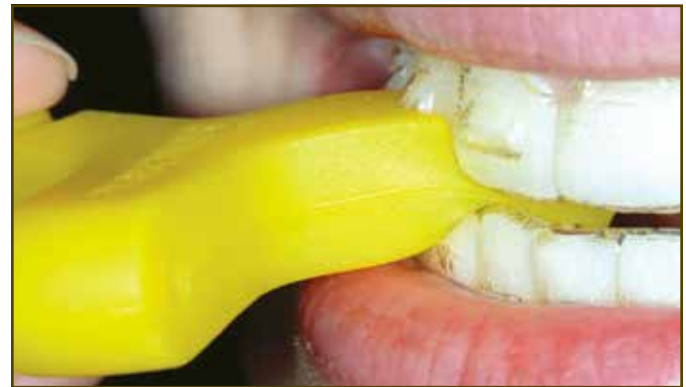


Figure 8c: Munchies engaged.

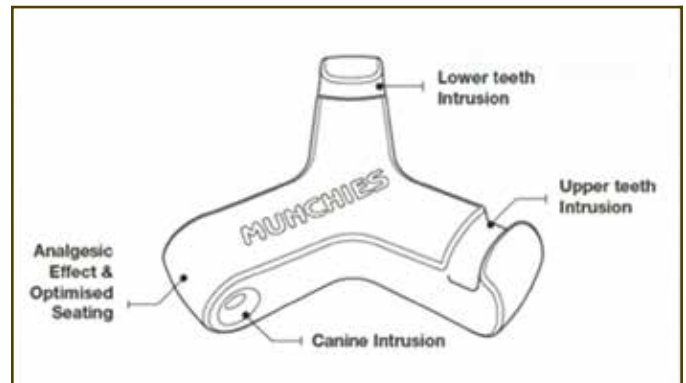


Figure 9: the 3 parts of Munchies.

### How to use them

There are currently slightly different recommendations on how to use Munchies, as patients and dentists alike are trying to balance cost, predictability, and efficiency in their treatment plans.

This author recommends the following simple protocol:

**Yellow Munchies**—at the start of every case

**Orange Munchies**—after treatment is 1/3 complete

**Red Munchies**—after treatment is 2/3 complete

Munchies are used for 5 to 10 minutes in the morning and 5 to 10 minutes at night, every day, during treatment. Each

Munchies device has 3 parts to it: a wide notch for use on maxillary teeth, a narrow arch for use on mandibular teeth, and a hole for canine intrusion (**Figure 9**). ■

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# Feature Article

## Mobile CBCT: Is There a Better Way? You Don't Know What You Don't Know!

by Perry E. Jones, DDS, MAGD, IADFE



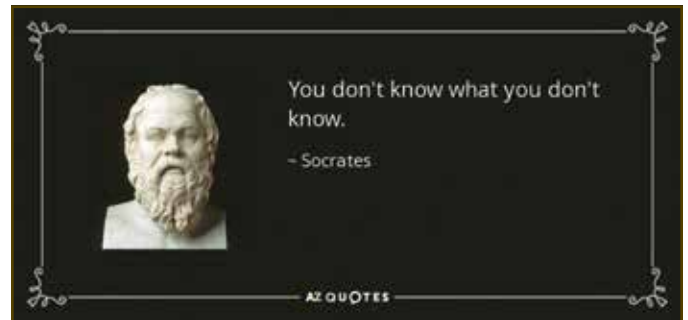
Dr. Perry Jones is a graduate of Virginia Commonwealth University, School of Dentistry, where he is now Adjunct Faculty, Associate Professor. He is a Master of the Academy of General Dentistry and serves as Director of Education for the AACA.

One of the first Align Technology GP education speakers, Dr. Jones lectures extensively and has given some 300+ Invisalign and iTero presentations. Dr. Jones is owner and CEO of Mobile Imaging Solutions, an on-site dental mobile scanning service located in Richmond, Virginia, where he maintains an active private practice.

### Introduction

The genesis of this article lies in the start of a new business venture, Mobile Imaging Solutions. We provide on-site mobile cone beam computed tomography (CBCT) and intraoral digital scans. The basic premise of the company is the often-quoted phrase attributed to the philosopher Socrates, "You don't know what you don't know." Certainly, this concept may take on many different meanings. The precise words have been modified by many folks in the past, but the essential idea has remained (**Figure 1**).

Let me explain what this phrase means for me, in the context of CBCT. I believe most of us can agree that as dentists, we have relied primarily on 2-dimensional radiographs that give us a limited view of width and height. 2D data is limited in scope, making it difficult to impossible to see what is masked by the objects in the field of view. Images are distorted to the extent that precise measurement is unreliable. There are many other limiting factors to 2D imaging, such as a limited "zone of sharpness," as in the case of panoramic systems that image non-round jaw shapes with round capture systems.



**Figure 1:** Socrates, "You don't know what you don't know."

CBCT 3D imaging is a paradigm shift in imaging technology that opens the door to seeing what we have been unable to see with 2D digital sensor or conventional film imaging. It does not take much discussion to agree that 3D imaging offers much more information than we could see with 2D radiographs.

Let's use a specific case example: Following an automobile accident, a patient presented with dental injuries to her anterior incisors. We performed endodontic therapy on 3 maxillary incisors, but after several years the endodontically treated teeth became symptomatic, and we proceeded to extract the 3 maxillary incisors. Upon evaluation of the fourth remaining incisor using routine 2D imaging (**Figure 2**), we deemed it healthy. We planned implants for the anterior missing teeth, and took a CBCT as a part of the comprehensive evaluation.

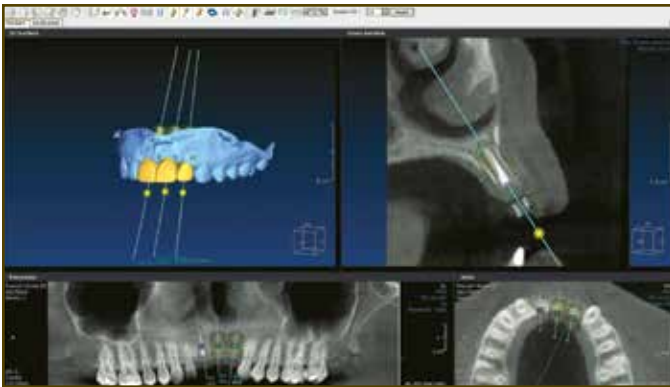
During the 3D planning, we discovered a previously unseen nonsymptomatic radiolucency, hidden lingual and behind the remaining lateral incisor (**Figure 3**). This periapical finding was critically important to the planning of the adjacent implants (**Figure 4**). We performed endodontics on this fourth incisor, prior to the precise placement of 2 implants using a planned guided surgical guide. Thanks to 3D imaging, a potential threat to the success of implant placement was averted!



**Figure 2:** 2D panoramic view fails to show hidden pathology.



**Figure 3:** 3D imaging reveals hidden radiolucency lingual to tooth #10.



**Figure 4:** 3D implant planning reveals the importance of discovery of adjacent pathology.

I entered the world of CBCT imaging with the misconception that its usefulness would lie primarily in helping to plan for implant placement. But the extra dimension that 3D imaging provided quickly opened my eyes to see what I could not see with 2D imaging.

Over the years I had become very adept at reading 2D radiographs, and I have always felt that I've given my patients the very best possible care. Now, as patients came due for 2D panoramic radiographs, we began to take CBCT scans instead. These were routine images taken in lieu of a routine 2D Panorex radiograph. I kept a detailed record of what was discovered. In the first 100 scans, there were 36 cases in which we discovered

Survey 2D	Microsieverts	Ground Radiation
Full Mouth Series (18 Films)	170.7	21 Days
Full Mouth Series (D speed Film)	388	47 Days
Panograph	24.3	3 Days
Single Periapical	9.5	1.17 Days
Bite Wings	37.9	4.68 Days
*Newtom VGI	49	6 Days
*Newtom VG	51	6.29 Days
Medical Head Scan	1500	

**Figure 5:** Comparison of radiation exposures in microsieverts.

information that we had not seen using conventional 2D imaging. That was a huge surprise! I am now of the opinion that a routine comprehensive examination is not complete without 3D CBCT imaging.

Socrates was right: You don't know what you don't know!

### Radiation

CBCT imaging is a most useful and important diagnostic tool, providing imaging not limited to height and width but also offering views of depth. Routine 3D imaging for our patients takes us into a much different world of useful data. Multiple studies can be created from a single CBCT scan, thus significantly reducing both the patient's radiation exposure and the costs. Reducing both radiation and cost may sound like a bold claim, but let's take a look:

One CBCT scan emits as little as 49 microsieverts of radiation (**Figure 5**).

One CBCT scan can produce multiple studies (panoramic, FMX, bitewings, and additional views such as sagittal for orthodontics/airway vertical/TMJ evaluation, focus field view for implant planning, endodontic view, etc.).

Radiation emissions produced in 2D studies include:

- Panorex: 24 microsieverts
- Bitewings: 38 microsieverts
- Full mouth series (18 films): 171 microsieverts
- Full mouth series (with D speed film): 388 microsieverts

A Panorex uses about half the radiation of a single CBCT scan, but CBCT offers multiple studies from the single scan. Alternatively, a single CBCT scan uses less radiation than a Panorex plus bitewings, and much less than an FMX study. It's easy to see the savings in radiation exposure!

### Cost

Cost is another factor. In-house costs for a CBCT unit are considerable, ranging from \$100,000 to \$250,000 or even more. In addition, the unit requires space equivalent to that of a dental office operatory. Moreover, data capture and software implementation for interpretation are time consuming and entail significant labor costs.

Outsourcing the job to a specialist in CBCT imaging is an option. Hospitals, and dedicated "brick and mortar" locations,

are also alternatives. However, often such CT systems are not dental specific and charge high fees. Excess radiation exposure can be a concern, as medical units typically produce a much higher radiation dose than dental CBCT units.

### Mobile imaging model

As I looked at the different options, a mobile CBCT solution seemed like a perfect model to help deliver convenient, reasonably priced scanning, culminating in high-quality images in a familiar viewing format. Patients benefit with imaging taken on site at the dentist's office. Mobile Imaging provides the experts in image-taking and study creation. Rather than requiring office personnel to devote time to learning new and often confusing software, trained technicians will take the CBCT scan and produce the desired study images.

Using Mobile Imaging is much like outsourcing a crown to a dental lab rather than having your own in-house dental lab and technician. There is no need to spend money on ownership of expensive equipment, and no need to devote time and resources to new software training. Just like your dental lab, Mobile Imaging can provide the on-site imaging solutions. You do what you do best: work chairside to produce excellent dentistry!

### Convenience

The Mobile Imaging model offers on-site scanning at the familiar surroundings of the practitioner's office. The dental office and the patient make an appointment, and the van arrives in the parking area of the office (Figure 6). The dental assistant escorts the patient to a well-appointed Mercedes Sprinter van. Inside, Mobile Imaging personnel seat the patient in a familiar-looking dental stool, place a lead shield and position the patient properly (Figure 7). The technician stands behind the lead protection partition and views the patient through an inspection window as the 18-second scan is taken. The entire process takes only a few minutes. The volumetric data is available immediately for viewing and can be sent digitally or via CD to the dentist within 48 hours.

Our Mobile Imaging model provides panoramic, FMX, and bitewing views as a standard part of the routine study data transmitted to the practitioner. Of course, other views can be produced from the single NewTom VGi scan to aid with orthodontic diagnosis, orthodontic records, orthodontic case submission, implant planning, endodontics, TMJ studies, airway studies, and other procedures.

An all-too-common complaint with CBCT imaging has been that doctors are unfamiliar with using the viewer tools often provided with CBCT scans. Many scan centers simply hand over a CD-ROM, and assume the practitioner will be able to successfully navigate the software. This can be somewhat intimidating as we transition to reading 3D information. Viewing tools are required and often are not very intuitive!

I did not fully realize this or even appreciate this issue until we were fully involved in CBCT mobile scanning. To help clear



Figure 6: Mobile Imaging Solutions mobile dental imaging service.



Figure 7: patient comfortably seated in NewTom VGi CBCT unit in mobile on-site van.

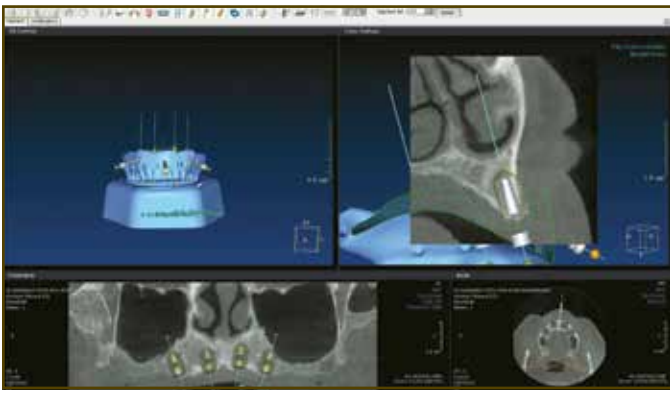


Figure 8: orthodontic sagittal view.



Figure 9: orthodontic view with soft tissue highlighted.

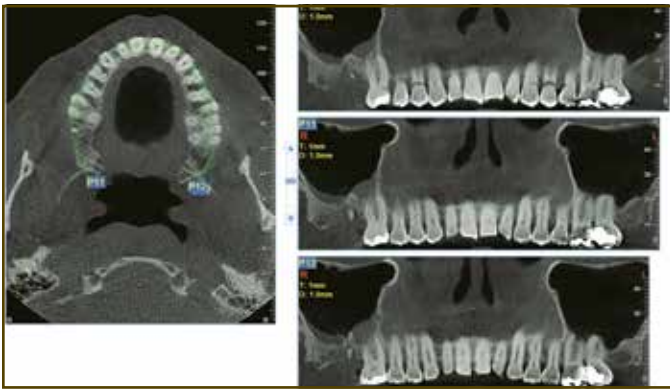




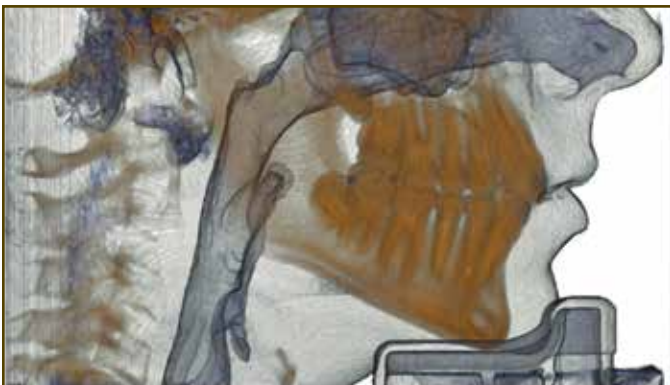
**Figure 10:** implant case planning.



**Figure 11:** panoramic study used for periodontal evaluation.



**Figure 12:** oroantral fistula, retained root tip, and apical pathology defined using CBCT 3D imaging.



**Figure 13:** sagittal view with airway highlight.

this hurdle, we offer the convenience of panoramic, FMX, and bitewing studies in a familiar format that doctors can easily view. A full radiology report from a nationally known dental radiologist is an available option.

### CBCT systems

Technology is quickly changing, and CBCT mobile imaging is no exception. It's an understatement, but cone beam systems are not created equal. In my research, I could find only one machine specifically designed to be "mobile." CBCT equipment is sensitive, and maintaining calibration is critically important. The NewTom VGi unit is designed to be mobile, with daily and weekly on-board calibration systems.

### Benefits of NewTom VGi include:

- **SafeBeam technology:** The NewTom VGi scan takes the image in 360 degrees of rotation, producing 360 images, increasing the range of possible image manipulation. The SafeBeam technology adjusts the radiation dosage according to the patient's age and size, for patient safety. VGi technology uses intermittent bursts of radiation which last only milliseconds, during image acquisition. (By way of comparison, other systems use a constant stream of radiation, and the same radiation whether the patient is an adult or a small child.) SafeBeam technology automatically and continuously monitors system operations, thus eliminating the possibility of unnecessary exposures. When compared to other CBCT systems, NewTom VGi has a wider range of adjustments for the x-ray power and quantity (kV = 110 and mA from 1 to 20). As a result, patient exposure is tailored and image contrast remains consistent regardless of patient size or bone density.
- **Very small focal field:** A revolutionary flat-panel x-ray detector technology is coupled with a very small focal spot (0.3 mm) to produce the clearest, sharpest image possible.
- **Adjustable field of view (FOV):** Multiple fields of view and different scan modes, suitable for various medical applications, are selectable from the software.
  - ◆ Standard scan: 15 cm × 15 cm, 15 cm × 12 cm
  - ◆ Boosted scan: 12 cm × 8 cm, 8 cm × 8 cm
  - ◆ High-res scan: 12 cm × 8 cm, 8 cm × 8 cm, 6 cm × 6 cm
- **Precise 1:1 scale imaging:** Margin of error is reduced thanks to the precise 1:1 scale and 16-bit gray scale.
- **X-ray source:** VGi has a high-frequency rotating anode. Scan time is 18 to 26 seconds, including 3.6 to 5.4 seconds of x-ray emission. The smaller the focal spot, the greater the image clarity, but also the more heat produced. Hence the rotating anode is a very important feature, as it facilitates cooling of the tube head.
- **Greater patient comfort:** Mobile Imaging offers a comfortable seated position for patients during NewTom VGi scanning. Mobile Imaging with VGi is wheelchair accessible.

- **NNT software:** NNT software makes the image-sharing process easier. NNT allows the creation of different kinds of 2D and 3D images in a 16-bit gray scale. It takes only a few seconds to evaluate the data taken during the scan. Images can be exported in DICOM 3.0 format at any time. NNT datasets are fully compatible with most third-party software programs. Images can be gathered and used in different report templates which are defined by the users, and can be delivered digitally, burned on CD or DVD, or printed on paper.

#### Orthodontics:

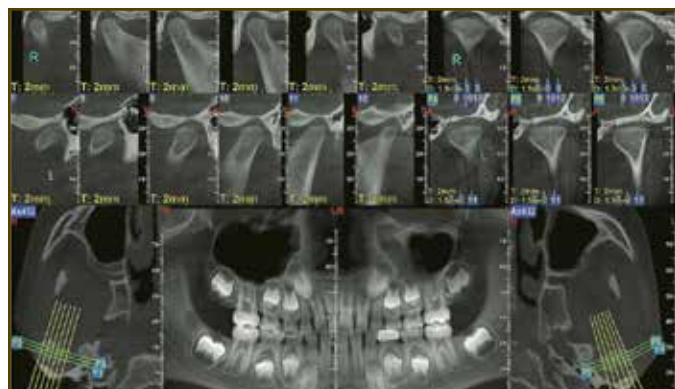
CBCT scans can generate different image types, including panoramic, cephalometric, TMJ soft-tissue, and 3D images, all of which are ideal for orthodontics as well as other procedures. 3D images are capable of clearly illustrating specific details such as buccal bone, roots of teeth, and soft tissue. Identifying root morphology can be very helpful in determining potential difficulty in orthodontic tooth movement. There is a significant difference between a 2-dimensional radiographic plane and 3-dimensional imagery. 3D images provide a comprehensive representation of the scanned area, even allowing for the angle of view and the depth of field of the reconstructed images to be modified. This case example demonstrates a maxillary molar with four roots (**Figures 8-9**).

#### Implants:

CBCT scanning is one of the most effective tools available for analyzing implant sites. 3D images can accurately identify possible pathologies and structural abnormalities. Cross-sectional and panoramic views facilitate various measurements such as height and width of the implant sites. Implant planning examples include potential implant sites near the mental foramen, and cortical bone density evaluation. 3D images highlight the cortical bone thickness, the cancellous bone density, the inferior alveolar nerve, and mental foramen location. They also influence the choice of the appropriate implant to be used, its placement, its width, and consideration of the “die back” from dense cortical bone.

(Almost immediately after a tooth is extracted, the cortical bone [the outer covering of bone] begins to shrink or atrophy. This is a normal process that occurs with the loss of teeth. This atrophy or bone loss is described as the “die back” from dense cortical bone. It is also common to see some degree of bone loss or “die back” from the cortical bone surrounding an implant. CBCT imaging is a helpful and very accurate method of measuring and quantifying the amount of available bone following the “die back” of dense cortical bone. This information can be crucial to proper implant placement. If, for example, the implant is placed too “high” in position, the implant restoration will be exposed. This can be both unesthetic and a functional issue for implant success.)

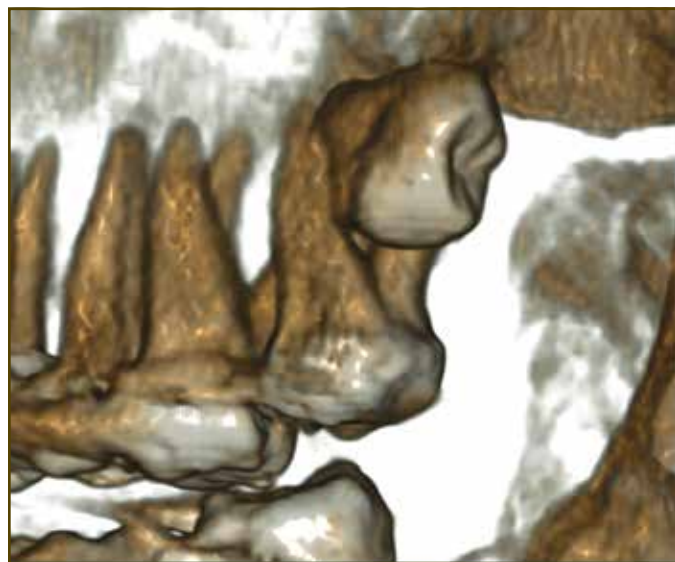
These case examples are typical of implant case planning with NNT software as well as other third-party software (**Figure 10**).



**Figure 14:** TMJ view.



**Figure 15:** mandibular jaw fracture as seen with metallic elements in place.



**Figure 16:** constructed view of unusual third molar positioned within roots of second molar.

#### Endo-perio:

CBCT 3D imaging can help with the decision tree for certain procedures by offering endodontic and periodontal providers extremely accurate high-quality images, as for example in the case of examination of fractured teeth, cracked teeth, bone levels, etc. (**Figure 11**). 3D imaging can allow practitioners to identify every detail of the treatment area, in order to help make an accurate diagnosis and establish an effective

treatment plan. As an example, this case shows an undetected root-tip, oroantral fistula as well as periapical pathology (Figure 12).

**Airway:**

NewTom VGi's exceptional precision and potential for multiple fields of view can provide a clear view of airways. The scans can be carried out using the most suitable radiological parameters, in order to maintain minimal x-ray exposure. This case demonstrates an example of airway study reconstruction (Figure 13).

**TMJ:**

Diagnostic open and closed TMJ imaging can be taken to produce the desired TMJ study. In this case example, we focus on available data from a single scan (Figure 14).

**Oral surgery:**

Scans produce images that accurately reveal details such as the presence of teeth, fractures, bone density, and the depth, shape, and inclination of the root. Due to the low number of radiation bursts necessary, the scattering effect of metallic elements is almost nonexistent, allowing the anatomical structures to be clearly displayed, as can be seen in the case example (Figures 15-16).

**Summary**

It is obvious that 3D imaging offers access to information that is in many cases unseen with conventional 2D imaging. The real issue is not the value of CBCT 3D imaging, but how we can best avail our practices of this most valuable diagnostic technology. I have tried to make two primary points in this article: (1) CBCT scanning should be considered an indispensable part of routine comprehensive dental diagnostic information. (2) The Mobile Imaging model can be a great asset in delivering affordable and convenient CBCT technology to dental practices, especially general dentistry practices.

3D scans use less radiation per single scan yet produce far more study data than 2D imaging. Reduced cost via the mobile model makes 3D imaging more affordable. Convenience with on-site scans is always a plus. Technology made simple by trained technicians allows dentists more time to spend chairside by requiring less time learning software, time that should be valuable to many offices.

Hopefully, this article will give us all something to consider as we look at 3D imaging. Perhaps we can find efficient ways to embrace 3D scan technology to help us routinely find out what we did not know! ■

**References:**

Adibi S, Zhang W, Servos T, O'Neill PN. Cone beam computed tomography in dentistry: what dental educators and learners should know. *J Dent Educ.* 2012 Nov;76(11):1437-1442.

American Dental Association Council on Scientific Affairs. The use of cone-beam computed tomography in dentistry: an advisory statement from the American Dental Association Council on Scientific Affairs. *J Am Dent Assoc.* 2012 Aug;143(8):899-902.

Christensen GJ. Do you need cone beam radiography? *Dent Econ.* 2012 Aug; 102(8).

Horner K, O'Malley L, Taylor K, Glenney AM. Guidelines for Clinical use of CBCT: a review. *Dentomaxillofac Radiol.* 2015 Jan;44(1):20140225.

Ludlow JB. Dose and risk in dental diagnostic imaging: with emphasis on dosimetry of CBCT. *Korean J Oral Maxillofac Radiol.* 2009;39(4):175-184.

Scarfe WC, Farman AG. Cone beam computed tomography: a paradigm shift for clinical dentistry. *Australas Dent Pract.* 2007 Jul-Aug;19:102-110.

*Disclaimer: Dr. Perry Jones is the sole owner and CEO of Mobile Imaging Solutions.*

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# Pre-restorative Orthodontics

## The Top 6 Restorative Challenges Made Easier With Pre-restorative Orthodontics

by Richard Schmidt, BSc, DDS



Dr. Richard Schmidt practices general dentistry in Brampton, Ontario. He has been in practice with his wife, Dr. Tamara Sosath, for 25 years. He has always had an interest in orthodontics and recently introduced Clear Aligner Therapy (Invisalign) as a treatment option for his patients to

establish a sound occlusion. In addition to treating teens with Invisalign, he is utilizing it to align teeth conservatively for rehabilitative restorative treatment.

Your patient presents with a dentition that will require extensive restorative treatment. It will be a complex process. But, oftentimes, the degree of restorative difficulty can be greatly eased by first performing strategic Clear Aligner Treatment.

In this issue, author Richard Schmidt introduces the concept of pre-treatment orthodontics.

In the next six issues of the *Journal*, Dr. Schmidt will describe common restorative challenges that are ideally treated with this interdisciplinary approach.

### Introduction

When faced with a complex case, most dentists would agree that an interdisciplinary approach can often provide the patient with the best outcome dentistry can offer. By involving all the necessary dental professionals and procedures, we can implement many complex treatment plans while giving the patient's overall health the highest priority. The author's vision—"To provide our patients the best possible dental treatment with the most favourable and predictable long-term prognosis in a minimally invasive manner"—can be successfully implemented when pre-treatment orthodontics is utilized.

We were interested in determining dentists' opinions regarding which restorative treatments could be enhanced if, prior to restoration, tooth positioning could be improved via pre-treatment orthodontics.

### Results of survey

We recently conducted a survey amongst 33 general dentists. The results have been tabulated and the top 6 responses provide the framework for this upcoming series of articles. ■

### Survey

Orthodontic treatment can enhance the long-term predictability of restorative dental treatment by positioning the teeth in their optimal location within the dental arches.

Please mark a  beside SIX topics of interest regarding pre-treatment orthodontics and its restorative benefits.

### A Restorative Dentist's Greatest Challenges

- 1) Extensive Anterior Tooth Wear
- 2) Posterior Tooth Erosion
- 3) Crowding
- 4) Tipped Teeth
- 5) Lack of Interocclusal Space
- 6) Lack of Bone for Implants
- 7) Reduced Vertical Dimension
- 8) Fractured Teeth
- 9) Spacing Between Teeth
- 10) Aesthetic Dilemma
- 11) Periodontal Concerns

## Survey Results

Topic #	Topic	Times checked
1	Extensive Anterior Tooth Wear	31
7	Reduced Vertical Dimension	26
10	Aesthetic Dilemma	23
5	Lack of Interocclusal Space	22
2	Posterior Tooth Erosion	20
6	Lack of Bone for Implants	17
4	Tipped Teeth	15
3	Crowding	13
8	Fractured Teeth	12
11	Periodontal Concerns	10
9	Spacing Between Teeth	9

### Challenge #1: Extensive anterior tooth wear



**Figure 1:** treatment of extensive anterior tooth wear made simpler with pre-restorative orthodontics.

### Challenge #2: Reduced vertical dimension



**Figure 2:** pre-restorative orthodontics makes increasing the vertical dimension of occlusion easier.

**Challenge #3: Aesthetic dilemma**



**Figure 3:** the aesthetic result was greatly enhanced through the use of pre-restorative orthodontic treatment.

**Challenge #4: Lack of interocclusal space**



**Figure 4:** the upper left second premolar and first molar were intruded to facilitate the restoration of the mandibular edentulous quadrant.

**Challenge #5: Posterior tooth erosion**

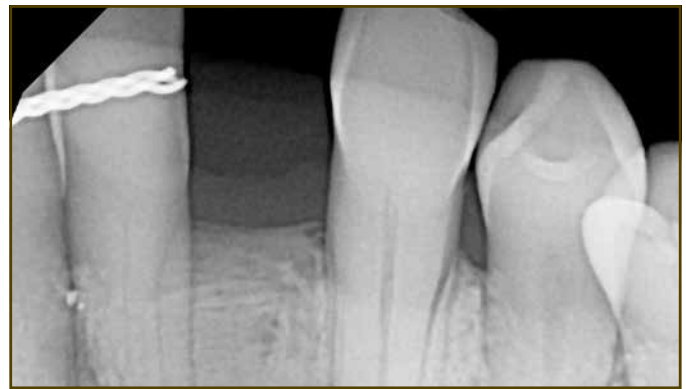
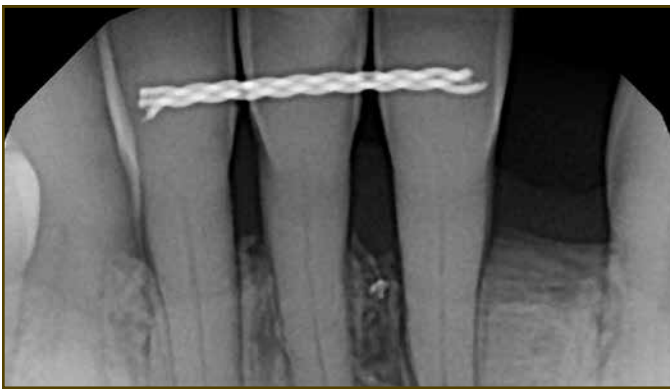
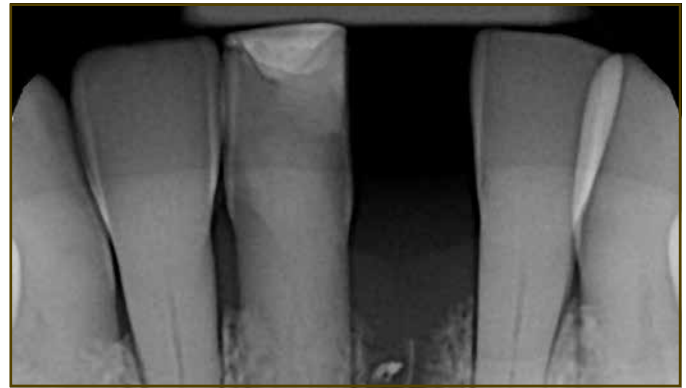


**Figure 5:** the worn posterior teeth will be treated with dentoalveolar intrusive orthodontic movement followed by conservative resin restorations.

## Challenge #6: Lack of bone for implants



**Figure 6:** in this example, the first premolar was distalized to create an implant site of optimal bone regeneration.



**Figure 7:** in this example, an implant site was created by the extraction of the left central incisor followed by the mesialization of the lateral incisor. The orthodontic tooth movement created a nonsurgical, minimally invasive implant site using the body's own bone regeneration capability.

*The next issue of the Journal will continue this series of articles, with a discussion of the challenge of restoring a case with extensive anterior tooth wear.*



Do you have an idea, treatment, or review that you feel your peers would benefit from? Contact [editor@aacaligners.com](mailto:editor@aacaligners.com) to find out how to author articles in future issues of the Journal.

# Focus<sub>on</sub> Photography

## How to Capture Orthodontic Photographs Quickly and Efficiently A Technique Guide for the EyeSpecial C-II Camera

by Anna Kataoka, MS, MBA



Anna Kataoka is an employee of Shofu Dental Corporation. She is a graduate of the MBA dual program in marketing and international business at Baruch College in New York City. She also holds MS degrees in mechanical engineering and in management from Gdansk Polytechnic, in Poland.

This article discusses the techniques and patient positioning required for achieving ideal patient photographic records for Clear Aligner Therapy. The presented technique guide will assist an orthodontic office in capturing the high-quality photographs indispensable in evaluation, treatment planning, and care for orthodontic patients. All required images will be created with the EyeSpecial C-II, a digital dental camera from Shofu Dental Corporation, introduced in the second article in this series, "Dental Photography with the EyeSpecial C-II" (*AACO Journal*, Summer 2016).

### Getting to know the EyeSpecial C-II

The EyeSpecial C-II incorporates 8 preset dental shooting modes. Three of these modes—Face, Standard, and Mirror—can be utilized to successfully complete an orthodontic photo record, typically consisting of 8-9 clinical photographs (*AACO Journal*, Spring 2016).

In the EyeSpecial C-II, a shooting mode can be selected by either pressing down the F1 button or touching the word "Mode," both situated in the top left corner of the screen. After specifying the mode, the operator should determine the cropping range to establish a desired frame (e.g., head, neck and/or shoulders; facial lower third; smile; half arch; single tooth). This can be done by rotating the thumb dial located in the upper right-hand corner of the camera. After the dial is set

to an appropriate position, the top left corner of the screen will display an ideal distance for capturing a specific photography task (**Figures 1a, b**).

Using the built-in blue and gray horizontal and vertical grid lines, the operator can establish an ideal focus plane (e.g., horizontal/vertical midline, incisal plane, interpupillary line) and a focal point (e.g., central/lateral incisor, premolar).

To determine the optimal positioning of the camera and the quality of the image, the shutter button should be depressed to its halfway position. During this operation, either green or red icons will light up on the screen, providing additional information about the selected frame, distance, and focus. When the camera is in an ideal position, the recommended distance, the cropping icon, and the focus dot will all appear in a green hue. However, even if the camera is outside of preferred parameters, for as long as the focus dot is marked green, a quality image can still be achieved (**Figure 1c**).

### Achieving a patient photographic record with the EyeSpecial C-II

The following is a technique guide for capturing predictable and consistent orthodontic photographs for effective case documentation and patient care.

#### Extraoral full-face views (**Figure 2**)

**Recommended mode:** Face mode

**Optimal distance:** 39.4 in (1.0 m) or less to obtain images in horizontal orientation; between 39.4 in (1.0 m) and 66.9 inches (1.7 m) to capture images in vertical orientation.

**Positioning:** The patient should be standing in front of a plain, nondistracting backdrop, with hands at the sides, hair pulled back or tucked behind ears, about 11.8 in (0.3 m) away from the background. The camera angle should be at the same level as the patient's nose. For full-face images, smiling and in repose, the camera should be level with the patient's interpupillary line, along the vertical axis of the face. For full-face profile images,





Figure 1a: EyeSpecial C2 modes.

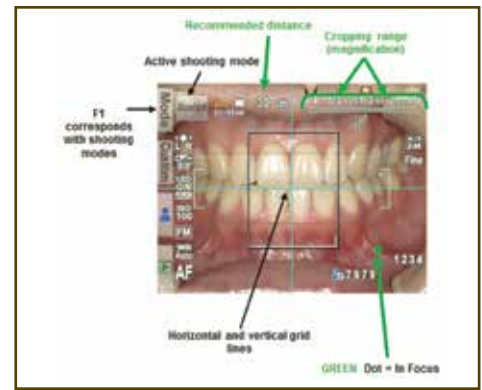


Figure 1b: cropping range and distance.



Figures 1c: how to capture images with ESC2.



Figure 2a: facial in repose.



Figure 2b: facial smiling.

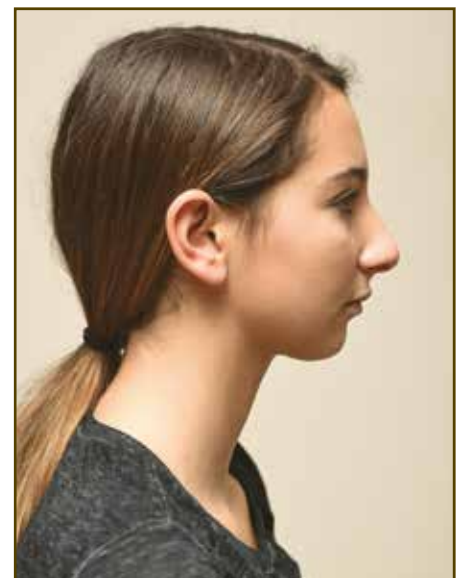


Figure 2c: facial profile.



Figure 3a: anterior retracted.



Figure 3b: anterior auxiliary.



**Figures 4a:** right retracted.



**Figures 4b:** left retracted.



**Figures 5a:** occlusal maxillary.



**Figures 5b:** occlusal mandibular.

the point of focus should be the patient's eyebrows, with the nose lined up with the horizontal midline of the image.

#### **Anterior photographs (Figure 3)**

**Recommended mode:** Standard mode

**Optimal distance:** 11.8 in (0.3 m) from the subject

**Positioning:** Ideally, the patient should be seated facing the photographer, knee to knee. C-shaped cheek retractors should be used, with the lips pulled outward, away from the teeth. The horizontal midline should be the occlusal plane, and the vertical midline should be the anatomic midline. The patient's central teeth should be the focal point of an image.

#### **Buccal images (Figure 4)**

**Recommended mode:** Standard mode

**Optimal distance:** 11.8 in (0.3 m) from the subject

**Positioning:** Buccal images are achieved using the same patient-photographer positioning and the same camera settings as anterior images. For ideal results, V-shaped retractors should be used, with the retraction being shifted to the photographed side. The teeth should be in maximum intercuspation. The horizontal midline should be the occlusal plane, and the vertical midline should be the cuspid. The goal is to capture an entire buccal corridor, from second molar to incisors, and to visualize the canine/molar relationship.

#### **Occlusal images (Figure 5)**

**Recommended mode:** Mirror mode

**Optimal distance:** 11.8 in (0.3 m) from the subject

**Positioning:** The patient should be reclined to the photographer's waist level. Metal retractors should be used to keep the buccal soft tissue and lips away from the teeth. To capture maxillary occlusal images, the photographer should be standing behind the patient, navigating the camera from above. To capture mandibular occlusal images, the photographer should be positioned in front of the patient. The wider end of a mirror should be placed perpendicular to the opposing arch to ensure visualization of the teeth, incisal edges and embrasures. The vertical midline should be the anatomic midline of the patient, with the focus set on premolars.

#### **Disclosure**

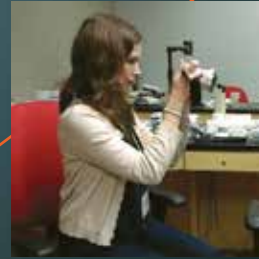
The author is an employee of Shofu Dental Corporation. All images were photographed with the Shofu EyeSpecial C-II digital dental camera. Figures 2a-c courtesy Luciana Arcaro. Figures 3a-b courtesy Shofu Dental Corporation. Figures 4a-b courtesy The Dawson Academy. Figures 5a-b courtesy Shannon Pace Brinker. ■

#### **References:**

- Brinker SP. Taking orthodontic case photos [video]. Available at <http://bcove.me/amczibxn>. March 2016. Accessed June 10, 2017.
- Goodchild JH, Donaldson M. Getting the right shots! Tips and tricks for consistent photographic excellence. *Dent Today*. 2013 Mar;32(3):112, 114-118.
- Orthodontic Photo Guide with the EyeSpecial C-II. Shofu Dental Corporation website. <http://www.shofu.com/en/wp-content/uploads/sites/2/2014/09/EyeSpecial-CII-Placemat2.pdf>. Accessed June 10, 2017.

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Photo taken in Standard Mode at the ratio of 1/2

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\*HIPAA compliant: Brinker, S. (2015, January). HIPAA compliance and digital photography with personal mobile devices. Dental Products Report, 76-80.

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# Financial Management

## Let the Compounding Effect Work for You

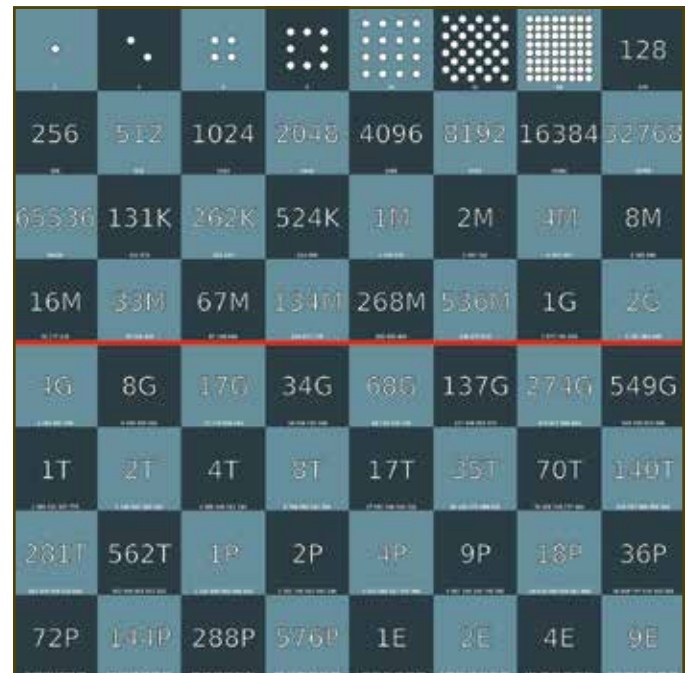
by Venkat Yarlagadda, AIF®



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“Compound interest is the eighth wonder of the world. He who understands it, earns it... he who doesn't... pays it.”

— attributed to Albert Einstein

“Someone is sitting in the shade today because someone planted a tree a long time ago.”

—Warren Buffett

There is an ancient story which explains the power of compounding if one starts to save and invest early and regularly, and sticks to it for a long period of time. It centers around the invention of the game of chess, which some say was recounted in the *Sahnameh*, an epic poem written by the Persian poet Ferdowsi between 977 and 1010. Here is how it is translated in this Wikipedia article.

“When the creator of the game of chess (in some tellings an ancient Indian Brahmin mathematician named Sessa or Sissa) showed his invention to the ruler of the country, the ruler was so pleased that he gave the inventor the right to name his prize for the invention. The man, who was very clever, asked the king this: that for the first square of the chess board, he would receive one grain of wheat (in some tellings, rice), two for the second one, four on the third one, and so forth, doubling the amount each time. The ruler, arithmetically unaware, quickly

accepted the inventor's offer, even getting offended by his perceived notion that the inventor was asking for such a low price, and ordered the treasurer to count and hand over the wheat to the inventor. However, when the treasurer took more than a week to calculate the amount of wheat, the ruler asked him for a reason for his tardiness. The treasurer then gave him the result of the calculation, and explained that it would take more than all the assets of the kingdom to give the inventor the reward. The story ends with the inventor being beheaded. (In other variations of the story, the inventor becomes the new king.)"

Of course, the power of compound interest is most relevant these days when it comes to managing our personal finances. Let's take a look at a few scenarios to show how saving and investing early can positively affect your ending balances in retirement.

### Scenario 1:

Jack decides to start saving for retirement at age 25. He takes advantage of the 401(k) plan at work and contributes \$18,000 (the maximum for 2015) per year until age 45. He then stops saving, and he just lets the interest work in his favor. He has contributed \$360,000 to his 401(k). At age 65, assuming a 10% annual rate of return, he will retire with \$7.3 million.

Jill waits to save and invest until she is 35. She starts contributing to her 401(k) at work the same \$18,000 per year that Jack did, but keeps doing so until age 65. Her total amount contributed to her 401(k) account over those 30 years will be \$540,000. At age 65, assuming a 10% annual rate of return, she will retire with \$3.1 million.

	Jack	Jill
Annual 401(k) Contributions	\$18,000	\$18,000
Annual Return	10%	10%
Years of Saving	20	30
Total Contributions	\$360,000	\$540,000
Ending Balance	\$7,305,930	\$3,118,939

If you notice, Jill has contributed about 1.5 times as much money as Jack did, but Jill ends up with almost \$4.2 million less than Jack at retirement. This is due to compound interest and to delaying the start of saving and investment. Compound interest is interest added to the principal balance so that the added interest also earns interest from then on. This addition of interest to the principal is called compounding.

### Scenario 2:

Now let's assume that Jack doesn't stop saving at age 45, but continues to save the same amount year after year until he retires at age 65. Now he has over \$8.3 million at retirement. His 10-year head start on Jill gave him more than double his ending balance. Again, this is compound interest helping his

cause. The more time you have to use it to your advantage, the less work you have to do.

Thanks to the power of compounding returns, an investment made early in life can generate a larger amount than a larger investment made later in life. Investing for a longer time is more effective than waiting until you have a large amount to invest.

	Jack	Jill
Annual 401(k) Contributions	\$18,000	\$18,000
Annual Return	10%	10%
Years of Saving	40	30
Total Contributions	\$720,000	\$540,000
Ending Balance	\$8,391,911	\$3,118,939

### Scenario 3:

Let's go one step further and see how the numbers would look if Jack invested in a well-diversified portfolio such as IFA Index Portfolio 100 with glide path.

	IFA Index Portfolio 100 With Glide Path
Annual 401(k) Contributions	\$18,000
Annualized Return	10.36%
Annualized Standard Deviation	13.07%
Total Return	5,057.64%
Years of Saving	40
Time Period	3/1/1969 to 2/28/2009
Total Contributions	\$720,000
Ending Balance	\$11,204,266

**Note:** The above numbers are the lowest rolling period returns for Index Portfolio 100 for a 40-year period in the last 50 years. The ending balance is heavily dependent on the sequence of returns.

If you save, invest in a well-diversified portfolio, and have the discipline and patience, the power of compounding can do wonders for your investments. If you have not started investing yet, you can start investing now and perhaps amass a substantial amount for your retirement.

In our opinion, investing requires education, discipline, and a fiduciary advisor. Our clients benefit from our unwavering commitment to strategies that incorporate financial innovations (or dimensions of expected returns) that are sensible, persistent through time, pervasive across markets, and cost effective to create a well-diversified portfolio.

IFA's recommendation is that investors establish an investment policy by taking our Risk Capacity Survey <<https://www.ifa.com/survey/?aid=26>>, develop a financial plan, and then invest and relax. ■

# Pension Planning

## Is Your Retirement Plan Strategy Due for an Annual Checkup?

by Tom Zgainer



Tom Zgainer is the founder and CEO of America's Best 401k. According to his website ([www.americasbest401k.com](http://www.americasbest401k.com)), "He has helped over 3500 businesses obtain a new or improved retirement plan over the past 15 years with a focus on strategic plan design to help achieve individual and corporate objectives."

Regular maintenance of our health, be it twice-a-year teeth cleaning or an annual physical, allows the experts to determine if we are as fit as we think we are, or to see if there might be some issues under the hood that need attention. Likewise, each April, we are reminded whether our tax planning is sufficient, or perhaps needs a tune-up. Similarly, your retirement plan strategy is worth reviewing with a pension expert every year.

Oftentimes, the original plan and strategy you implemented gets away from your intended individual and corporate goals. Your employee populace may have experienced turnover. The age demographics of your staff may have taken on a different makeup. And by the way, you are now a year closer to retirement. You may find that these changes limit your personal contributions, because of the amounts of required employer contributions. More positively, your evolving situation may open up new opportunities to design a plan that accelerates your personal contributions.

### They get theirs, you get yours

Every retirement plan, be it a 401(k), a profit-sharing plan, a defined-benefit plan, or a cash-balance plan, requires some give and take. For owners, principals, key associates, or partners to take advantage of the opportunity to maximize annual contributions, you'll need to give eligible employees a proportional amount that passes all the required compliance tests.

These contributions at first blush might not be palatable to you and to your bottom line. However, using a long vesting schedule—up to 6 years—can help ensure that employees stay and contribute to your practice for that long in order to earn each year's contribution. Plus, you receive the tax-deduction benefit of the full amount of employer contributions in the tax year of the contribution, up to 25% of gross payroll.

A great reason to go through an annual plan design checkup is to see if there is a better plan type option for you. As you get closer to retirement (generally over age 45), plan types such as a New Comparability profit-sharing plan, a cash-balance plan, or a defined-benefit plan can be paired with a 401(k) to rapidly accelerate your personal contribution objectives.

For 2017, you can defer \$18,000 into a 401(k), with a \$6,000 catch-up provision if you're over 50. That's generally the best first thing to accomplish. If your plan demographics are suitable—meaning the staff is younger than the owners, principals or partners—and you are over 45, a New Comparability plan can provide a maximum benefit for a select employee group, while providing the lowest possible contribution allowed by law to non-key groups. This plan design can help you add to your deferrals and reach the \$54,000/\$60,000 annual limits from combined employee and employer contributions.

### Get there faster

To really accelerate your contributions, consider adding a cash-balance or defined-benefit plan. Maximum contributions for these plans range from over \$102,000 at age 45 to over \$237,000 at age 62. When added to the 401(k)/profit-sharing contributions, it's like squeezing 20 years of retirement saving into 10, not to mention the reduction in tax liability you will enjoy.

This is a great time of year to get a retirement plan checkup. A census with your current firm demographics will enable an experienced pension specialist or actuary to help determine if there is a better way to proceed into the years ahead for your retirement planning. ■

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# Practice Management

## Six Words That Are Hindering Your Case Acceptance

by Amy Drewery



As the lead coach for Brady Group, LLC, Amy Drewery has been coaching dentists and their teams since 1999. Amy also teaches many Brady Group events, and is a contributing writer to the Brady Group blog and training materials. The Brady Group provides customized coaching focused

on increasing your net income, and decreasing stress, by incorporating systems and personally training your team to become partners in helping you achieve your vision. Members also learn to work smarter, not harder, allowing them to accomplish much more in less time at the office.

Visit [www.bradygroupllc.com](http://www.bradygroupllc.com) for more information, or you can reach Amy directly at 800.592.7239.

If you'd like to receive Amy's complimentary electronic newsletter, just email her directly at [amy@bradygroupllc.com](mailto:amy@bradygroupllc.com) and she will get you set up!

These words are not always triggers about your confidence level, but they can signal the patient that something is amiss—that you aren't sure about your product or service. If you find yourself using these words often with patients, they may perceive a lack of confidence, and that perception could be hindering your case acceptance.

### Remove these words from your vocabulary!

#### 1. Might

Be careful when you tell patients you "might" do something. Are you sure about that? "I might be able to help" implies you may lack some ability, whether it's a clinical solution or helping them with finances.

#### 2. Think

As with "might," when you say "I think I can...," you aren't giving off an enthusiastic vibe. Your patient just might respond with "I'll **think** about it." Try this instead: "Yes! We can do that for you! Would you like to?"

#### 3. Usually

This is a trigger word that indicates you are putting your patients in a box. "We usually take x-rays and photos on all new patients" isn't what your patients want to hear. They want to know that you've listened to them, and that any solution you offer matches their motivation.

#### 4. Impossible

Just...don't.

#### 5. Worried

It really doesn't matter what **you** are worried about when it comes to your patients' teeth. When you tell patients that you are worried, or even concerned about their mouth, it's more about you.

#### 6. Ummmmm...

Instead of delaying the inevitable by just making a noise, be honest! Try this: "That's a great question! I'm going to find out for you." ■



Keep up to date with the latest ideas and conversations in Clear Aligner Treatment by adding the AACAA Forum to your RSS feeds – [www.aacaligners.com](http://www.aacaligners.com)



# PART II – ADVANCED TRAINING DAY PROGRAM

## FEATURING:

- 1) BERIK ACCELERATION METHOD WITH PROPEL
- 2) CLOSING BLACK TRIANGLES WITH BIOCLEAR MATRIX
- 3) ADVANCED INVISALIGN CONSULT TECHNIQUES



Dr. David Galler is a graduate of the University of Pennsylvania School of Dental Medicine and became Invisalign trained in 2003. He practices in NYC and is a top 1% Super Elite Premier Provider. Dr Galler has treated more than 2,000 patients with Invisalign and is the Leader of the Reingage Invisalign training program. He is known as the Wolf of Invisalign.



Dr. Danielle Larose graduated from Montreal University in 1997. She attended the Dawson Institute and the Las Vegas Institute for Advanced Dental Training. For the past 12 years she has been receiving great reviews teaching full-day hands-on classes in Canada and the U.S. devoted to anterior esthetic techniques.



Dr. Anna Berik, owner of Newton Dental Associates, Diamond Smile Design, and Greater Boston Invisible Braces, is one of Boston's Premier Cosmetic Dentists. She has been creating captivating smiles for over 20 years and is a regularly featured dentist in the Boston media. Dr. Berik is an Invisalign Elite Premier Provider.

### Course Details

**Date/Time** Mon, Nov 6<sup>th</sup>, 2017  
8:00 am–8:00 pm

**Location** Courtyard Marriott – Pasadena  
180 N Fair Oaks Ave  
Pasadena, CA 91103

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### Registration Information

**Phone:** Michelle at 516-232-1295 or  
**Fax:** completed form to Michelle at 516-342-4430 or  
**Email:** completed form to aacortho1@gmail.com

**Fees:** \$295 for non-members of AACA  
\$195 for members of AACA

**Refund & Cancellation Policy:**  
All cancellations must be 30 days prior to course (Oct 6<sup>th</sup>) for full refund.



# COURSE SCHEDULE

- 7:00 am–8:00 am:** Breakfast and Registration
- 8:00 am–12:00 pm:** **Berik Acceleration Method With Propel by Dr. Anna Berik**
  - Science Behind Propel Micro-osteoperforation Technique
  - Technique
  - Comparing Acceleration Methods
  - BAM—Berik Acceleration Method
  - Case Review and Integration
  - Review of the Go Tier System
- 12:00 pm–1:00 pm:** Lunch
- 1:00 pm–3:00 pm:** **Black Triangle Closure With Bioclear Matrix by Dr. Danielle Larose**
  - Close Those Black Triangles Using Bioclear Matrices
  - Transform Peg Laterals Efficiently and Beautifully With Bioclear and Easy Layering Techniques!
- 3:00 pm–5:00 pm:** **Hands-on Practice: Bioclear Matrix**
- 5:00 pm–6:00 pm:** Dinner
- 6:00 pm–8:00 pm:** **Advanced Invisalign Closing Techniques With Dr. David Galler**
  - How to Talk to Patients About Invisalign
  - Body Language Techniques
  - Scripting
  - Rainbow Move
  - Closing Like a Pro

## Reingage course **REGISTRATION FORM**

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Fax completed form to Michelle at 516-342-4430, or email completed form to [aacortho1@gmail.com](mailto:aacortho1@gmail.com).

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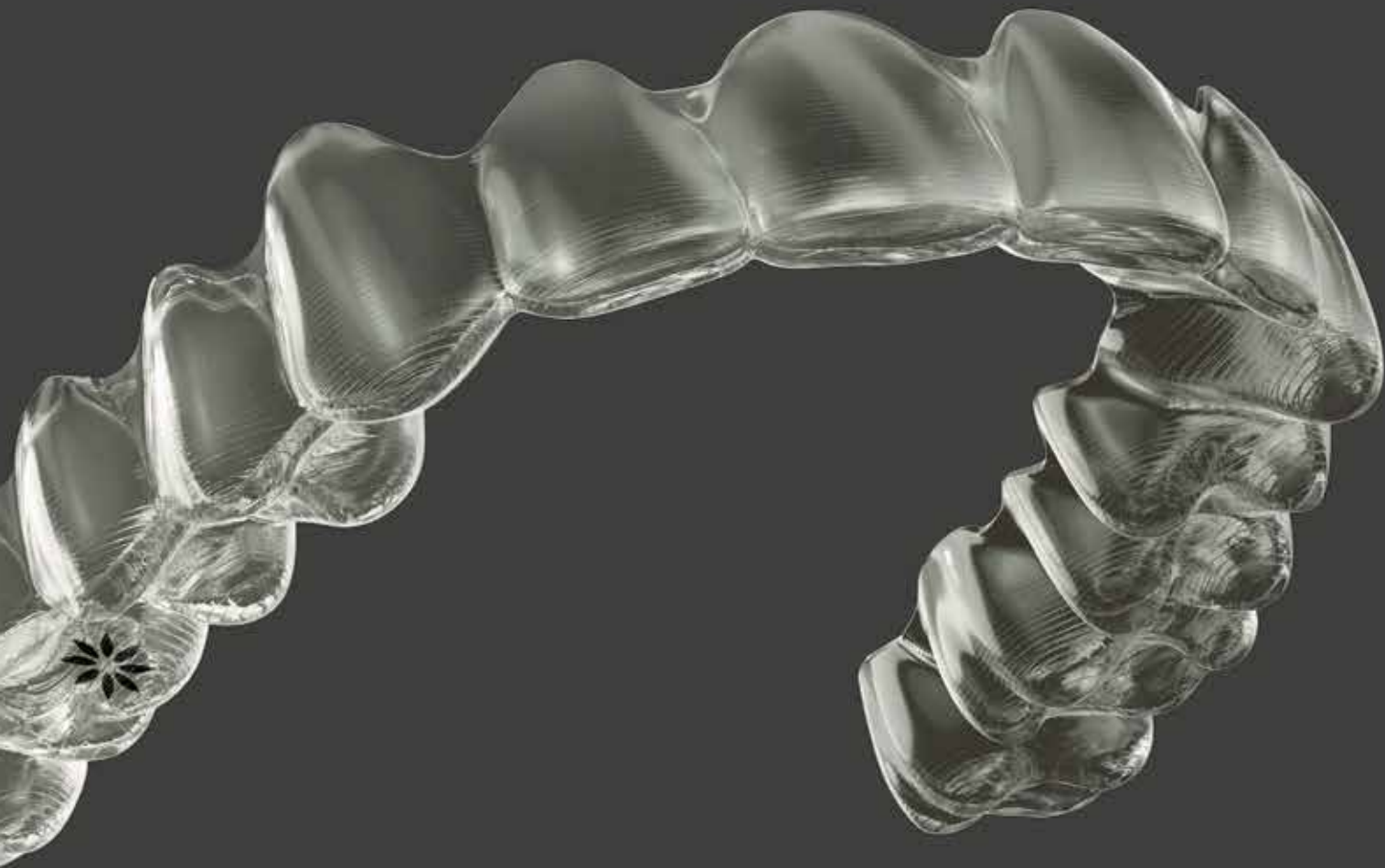
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