



Science.  
Applied to Life.™

# Innova

*Orthodontic science and  
practice excellence*

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**James Ingebrand**  
Vice President and  
General Manager  
3M Oral Care

## Blend In. Be Bold.

What a prospective patient asks for—and what they really need—is not always the same thing. Of course, that's no surprise. Information conveyed on a billboard or in a 30-second infomercial doesn't exactly make someone an expert.

As an orthodontist, you know exactly what your patients want—a beautiful smile and healthy teeth that will last a lifetime. What they need to accomplish that goal is where your expertise comes in.

When offered treatment solutions, patients want options that are sometimes clear, sometimes colorful but always comfortable. This can mean providing effective options without the lifestyle compromises associated with plastic aligners.

3M™ Clarity™ ADVANCED Ceramic Brackets give your patients what they want and what they need. They provide esthetic versatility—from blending in to being bold—simply by changing the ligatures. These ceramic brackets blend with various tooth shades, so braces can be clear and discreet or loud and bright. Your patients will love them.

So what's in it for you? Clarity ADVANCED Brackets employ some pretty amazing technology. Incorporating proprietary 3M™ APC™ Flash-Free Adhesive provides you with a perfect tool for doing your very best work. In your hands, they allow optimal treatment times and great finishing. Importantly, they can fit perfectly into your practice. Flash-free technology can significantly speed up bracket placement time and help reduce bond failures. This means reduced stress in your office and less disruption to your busy day.

Building a practice around the beautiful esthetics of Clarity ADVANCED Brackets can help differentiate your practice and set you apart. Treatment consultations are supported by creative in-office tools as well as digital media that help ensure your patients feel good about you and their decision. Ask your 3M Oral Care representative about available marketing support materials designed to help you communicate these benefits to your patients.

I have to admit there is one important feature that Clarity ADVANCED Brackets do not have—and that's the lab fee associated with plastic aligners.

Please enjoy this latest edition of *Innova*. I think you will see in the following articles the advantages that Clarity ADVANCED Brackets and other 3M appliance systems offer to patients, practices and practitioners. You can build your practice with confidence, knowing there is a team of 3M consultants, scientists and engineers working for you. Our commitment is the same as yours—advancing the art and science of orthodontics.

**3M** Science.  
Applied to Life.™

# Table of Contents

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## News and Information

|   |   |
|---|---|
| <b>Introduction from James Ingebrand, 3M Oral Care</b> .....  | 1 |
| <b>Gaining a competitive advantage in today's complex marketplace.</b><br><i>By Tammy Torbert, Global Category Manager, 3M Oral Care</i> .....  | 3 |
| <b>What does 3M mean to our practice?</b><br><b>A perspective by Dr. Adriano Farina.</b><br><i>By Adriano Farina, DMD, M.Sc., FRCD(C)</i> ..... | 5 |
| <b>3M in the News</b> .....   | 7 |
| <b>Upcoming 2017 Educational Opportunities</b> .....  | 8 |

## 3M™ Health Care Academy

### Clinical Cases

|   |    |
|---|----|
| <b>Lingual correction of a complex Class III malocclusion:</b><br><b>Esthetic treatment without sacrificing quality results.</b><br><i>By Christopher S. Riolo, DDS, M.S., Ph.D.</i> .....                        | 11 |
| <b>Orthodontic retreatment with 3M™ Clarity™ SL Self-Ligating Appliance System for a traumatic anterior edge-to-edge occlusion with periodontal implications.</b><br><i>By Rodrigo del Pozo, DDS, Ph.D.</i> ..... | 16 |
| <b>3M™ Incognito™ Appliance System extraction case study.</b><br><i>By Toru Inami, DDS, Ph.D.</i> .....   | 20 |

# Gaining a competitive advantage in today's complex marketplace.

**APC™ Flash-Free**  
Adhesive Coated Appliance System

**CLARITY™ | ADVANCED**  
advanced ceramic brackets



**Tammy Torbert, Global Category Manager,  
3M Oral Care**

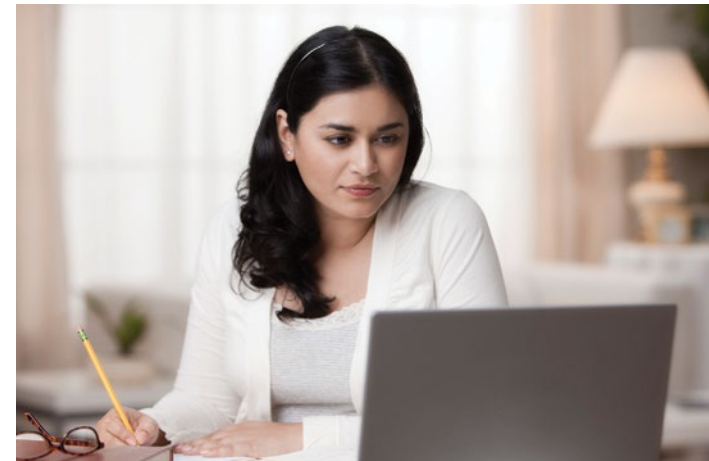
Tammy Torbert is a global category manager for traditional orthodontics at 3M. Her career at 3M spans more than 20 years, with global marketing roles in Healthcare, Industrial, and Consumer businesses where she worked on the iconic Post-It™ Brand.

The internet has changed how today's consumers make their purchase decisions. The path to purchase is no longer linear, and as a result, orthodontists must navigate an increasingly complex marketing environment to bring prospective patients in the door and convert them to patients.

Imagine a woman in her 40s who did not have orthodontic treatment as a teen. 2016 research conducted by 3M indicates the top places she will seek information are: the internet (where she will be looking at orthodontist and dentist websites and rating and reviews), her dentist and word of mouth.



While the internet may influence who a patient will choose for their orthodontic treatment, the global trend of beauty and esthetics will impact types of orthodontic treatment considerations. In a recent study published by the American Society of Plastic Surgeons, Americans spent more than \$11 billion in more than 14.6 million cosmetic procedures, 89 percent of which were nonsurgical, with a majority of these nonsurgical procedures above the shoulder.<sup>1</sup>



When this prospective patient arrives at your office, she has already done significant research about potential treatment options and may have already identified her preferred treatment. What she most likely doesn't know is her clinical diagnosis and what treatment option will provide the best results that last a lifetime.

The consultation is critical to uncover what the patient already knows and thinks she wants so you and your treatment coordinator can properly position treatment options that will provide the best results.

3M Oral Care offers esthetic treatment options to help differentiate your practice from the office down the street and drive growth in a very competitive market. By offering 3M™ Clarity™ ADVANCED Ceramic Brackets, patients can choose an unmatched combination of esthetics and performance. And when combined with unique 3M™ APC™ Flash-Free Adhesive pre-coating, you add unmatched bonding efficiency to your procedures.

▶▶ [Click here to visit the 3M website.](#)







### APC™ Flash-Free Adhesive Coated Appliance System

- Less than 2% bracket bond failure rate—saves time and cost
- No flash clean up reduces bonding time and chance for accidental bracket movement after positioning
- Protects tooth enamel under the adhesive
- Easy remnant clean-up



### CLARITY™ | ADVANCED advanced ceramic brackets

- Brilliant esthetic appearance, blends in with teeth
- Trusted strength, small size, low profiles
- Resists staining and discoloration
- Proprietary stress concentrator for predictable debonding

***“I think offering the Clarity ADVANCED Bracket gives my practice an edge ... It would be hard to practice without it.”***

— Dr. Joe Hannah, Olathe, Kans.

***“It’s better for our patients, because they’re obviously going to be in the chair less. Using the flash-free product, especially in combination with Clarity ADVANCED Brackets, is incredible.”***

— Dr. Ben Gregg, Ashland, Ohio

***“Using Clarity ADVANCED Brackets with APC Flash-Free Adhesive ... has virtually eliminated my bond failures, protects my patients’ teeth under the brackets and provides a way to market my practice differently.”***

— Dr. David Kemp, Franklin, Tenn.

***“... We’ve got patients that come in asking for it (Clarity ADVANCED Ceramic Braces).”***

— Dr. Brandon Johnson, Hays, Kans.

***“The APC Flash-Free Bracket has probably been, for our practice, the best improvement in bracket technology and efficiency that I’ve seen in 15-16 years.”***

— Dr. Craig Hunter, Pueblo West, Colo.

## Tools for successful consultations: New social media kit

3M Oral Care recently developed a social media kit to help orthodontists inform patients about the benefits of choosing treatment with their practice and Clarity ADVANCED Clear Brackets.

The social media kit tools in the Live Free and Clear Practice Marketing Kit make it easy to communicate the clinical and lifestyle benefits of treating with Clarity ADVANCED Brackets and to launch your own digital campaign.

Ask your local 3M Oral Care representative how you can use this kit, in conjunction with Clarity ADVANCED Brackets and APC Flash-Free Adhesive, to attract new patients and enhance the efficiency of your practice.



The Live Free and Clear Practice Marketing Kit.

### References

1. American Society of Plastic Surgeons

# What does 3M mean to our practice?

*A perspective by Dr. Adriano Farina.*



**Adriano Farina, DMD, M.Sc., FRCD(C)**

Dr. Farina earned his dental degree at McGill University in 2011, graduating at the top of his class. He then spent a year as a fellow at the Montreal Children's Hospital, specializing in treating children and special needs patients. He earned his certificate in Orthodontics and his Masters of Science in 2014, from Case Western Reserve University in Cleveland, Ohio, where he was awarded the Sanford Neuger Award for Clinical Excellence.

Dr. Farina currently has a private practice in Pointe-Claire, Quebec and is co-director of the orthodontic clinic at the Montreal Children's Hospital. He is a member of the Order of Dentists of Québec (ODQ), the American Association of Orthodontists (AAO), and the Canadian Association of Orthodontics (CAO).

Our practice aims to provide the best care possible to each and every one of our patients, while making the whole orthodontic experience memorable. Making sure our staff has fun and is able to execute tasks efficiently is equally as important. 3M products allow us to accomplish all of these goals.

Upon joining and then taking over the orthodontic responsibilities of our current practice in early 2015, I wanted to ensure we were using top-of-the-line orthodontic products. We believe our office provides the very best orthodontic care available. Why should we expect any less from the products we use? This is where 3M has been a game changer.

We live in a time where the consumer wants the biggest, the best and the latest of whatever you have to offer. In 2017, if you're not primarily using esthetics appliances you're already outdated. Ensuring we were using the BEST ceramic brackets available became a necessity. As a staff, we set out and did our homework. After doing extensive research, and attempting a variety of ceramic brackets, we decided that 3M™ Clarity™ ADVANCED Ceramic Brackets were the only option our patients

deserved. By the time we bonded up our first patient with ceramic brackets, it was already clear we had made the right decision.

It was a mother of one of our patients who decided it was finally her time to get the smile she always wanted. Her daughter was already in treatment using another brand of ceramic brackets. It took just one month for the daughter to ask if we could remove her existing ceramic brackets and replace them with the Clarity Brackets her mom had. I'll never forget her asking, "Are the ultra-invisible braces only for adults?" Our office feels that giving the patient the best smile possible at the end of treatment is crucial, but the journey to this end result should be as pleasant as possible.

From an esthetic perspective, our office feels undeniably that no other company has a ceramic bracket that competes with the Clarity ADVANCED Bracket. Benefiting our patients is just half of the battle. It's important that any new technology we incorporate into our office helps our staff. We work hard, use a ton of energy and love what we do.



To ensure our staff is giving every single one of our patient's the best experience possible, we need to ensure we're using products that are making the patient's appointments as seamless as possible. This way we can concentrate on building incredible relationships with our patients. I don't want our hygienists bogged down and silent, fighting to get that 2nd molar tube into position. I want them to effortlessly pop these brackets into position while asking our patient how their soccer team did in the playoffs or if she's picked out her dress for prom.



Taking over a practice where not much was delegated to the staff, it became increasingly important to train the staff in bonding. I don't know where we would be if we hadn't chosen 3M™ APC™ Flash-Free Adhesive coated brackets. From the get-go, our bonding time was reduced drastically. Compared to cases where we had to manually paste adhesive to our brackets, we were easily cutting our bonding time down by 60% when using the flash-free alternative.\*

As any orthodontist knows, chair time is king. We were able to see more patients per day and remove those painstakingly long bonding appointments from our schedule. Long gone are the dreaded appointments of adding a new bracket or replacing a lost bracket. Combined with self-etching primer, these previously difficult appointments are taking us a matter of seconds. Parents who have their second child now undergoing treatment will routinely ask us why this bonding appointment is so much shorter than the older siblings appointment done just a few years ago.

Most clinics probably agree that bonding buccal tubes to the molar teeth are usually the most challenging. Isolation is difficult, visibility is reduced and the room to work is tight. I'm sure many staff members can remember the times where they've been

fighting to clean the flash off the distal of that lower molar before the pool of saliva creeps up and contaminates the whole tooth. It's a race against the clock. If they only had a little more time. Also, you don't have to fight for isolation while trying to clean up the pesky flash and extra adhesive around the molar tube. It's a simple and easy procedure. Place, push, cure!



Our office started by using Clarity ADVANCED Brackets with APC Flash-Free Adhesive, and traditional metal brackets (from a competitor) we would have to manually paste. We used to charge \$300 more for the ceramic option. I would hear my staff members sigh when they would hear the patient was choosing the traditional metal option. "Uggghhhh. This is going to take so long! Are you sure they don't want the ceramic braces?" At this point it became clear that we should be making the ceramic and flash-free option readily available to our patients. We shouldn't be up-charging for ceramic braces. It's what the majority of our patients want, we prefer to use it and it just works better in our hands.

It's of no surprise to us that 3M continues to be a pioneer in adhesive technology. They also have a great beat on what today's consumer is looking for. But what makes them so unique compared to other companies is their focus on both the patient and the orthodontist. They have made our patients extremely happy and have greatly eased the day-to-day routine of our staff. We can guarantee we're providing optimal orthodontic care and give our extra attention to the patient, because it's just that much easier with 3M.



\*The APC Flash-Free Adhesive Coated Appliance System has shown a 40% reduction in the time required for bracket placement, positioning and clean-up. Individual user experiences may vary.

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# 3M in the News



## Recognized among world's most ethical companies

3M has been recognized for its ethics and integrity in doing business by the Ethisphere Institute, which has placed science-based 3M company on its list of World's Most Ethical Companies for a fourth year in a row. Only three other industrial manufacturing companies worldwide were included this year. This reflects 3M's unwavering dedication to doing business the right way: with honesty and integrity.

For more information, visit:

<http://news.3m.com/press-release/company-english/3m-named-2017-worlds-most-ethical-company>



## Named to Dow Jones Sustainability Index

3M has once again been selected for inclusion in the Dow Jones Sustainability Index (DJSI). 3M is included on a very small list of companies that have been recognized in the DJSI for their sustainability efforts, both in the U.S. and globally, for 18 consecutive years.

Sustaining our business and our world means protecting natural resources, empowering individuals and communities, and collaborating with our customers globally to encourage progress.

To learn more about 3M efforts in Sustainability, visit

[www.3m.com/sustainability](http://www.3m.com/sustainability)



## Voted as preferred workplace for millennials

3M has topped Google, Apple and other traditional favorites as the most preferred workplace for millennials in a 2016 national survey. The National Society of High School Scholars surveyed 13,000 students and young professionals between the ages of 15 to 32.

Read more at:

[http://www.3m.com/3M/en\\_US/sustainability-report/all-stories/full-story/?storyid=3768fac9-ab9d-4983-8cbf-dd1453f44ebb](http://www.3m.com/3M/en_US/sustainability-report/all-stories/full-story/?storyid=3768fac9-ab9d-4983-8cbf-dd1453f44ebb)



# 3M<sup>SM</sup> Health Care Academy

## Upcoming 2017 Educational Opportunities

| DATE           | LOCATION       | EVENT   |
|----------------|----------------|---|
| October 6      | Poland         | 3M <sup>SM</sup> MBT <sup>SM</sup> Treatment Management – Molar and Incisor Extraction Cases, Molar Mesialisation |
| October 6      | France         | 3M <sup>SM</sup> Incognito <sup>SM</sup> Appliance System Refresher Course  |
| October 7      | Ukraine        | TAD Mechanics   |
| October 7      | France         | Incognito User Meeting  |
| October 8-9    | UK             | In Lab Days – Bad Essen   |
| October 12     | France         | 3M <sup>SM</sup> Forsus <sup>SM</sup> Class II Correctors Lecture   |
| October 12     | Benelux        | Forsus Course   |
| October 13-14  | US             | Circle of Excellence  |
| October 13     | Benelux        | Symposium Innovation in Orthodontics  |
| October 23     | Israel         | Forsus Correctors and Self-Ligation   |
| October 23-25  | Costa Rica     | MBT Certification Course  |
| October 25-27  | El Salvador    | MBT Certification Course  |
| October 27-28  | Poland         | Conference on Interdisciplinary Treatment   |
| October 27     | Canada         | MBT System Metal & Ceramic – Missing Maxillary Lateral Incisors   |
| October 28     | Australia      | Ecstatic About Aesthetics   |
| October 30     | Australia      | Ecstatic About Aesthetics   |
| November 3     | Czech Republic | Forsus Correctors and Self-Ligation   |
| November 3     | Canada         | University of Montreal  |
| November 4-5   | England        | Seminars in Clinical Excellence: Adult Orthodontic Treatment  |
| November 10    | Canada         | University of Western   |
| November 10    | Canada         | University of Toronto   |
| November 13-14 | China          | 3M <sup>SM</sup> Self-Ligation Modulus Course   |
| November 14    | China          | Esthetic and Efficient Orthodontic Solutions  |
| November 15-16 | China          | 3M Self-Ligation Modulus Course   |
| November 15-16 | Japan          | Incognito System Certification Course   |
| November 16-17 | US             | Kemp In-Office Course   |
| November 17-18 | Poland         | Incognito System Certification Course   |
| November 18    | India          | Orthodontic Management of Dento-alveolar and Skeletal Asymmetries   |
| November 9-10  | Russia         | 3M <sup>SM</sup> Ortho Annual Conference: TMD/TMJ and Other Clinical Topics                                       |
| December 7     | France         | Forsus Class II Correctors  |



***Interested in an upcoming educational event?***

Contact your local 3M Oral Care representative today!

# 3M<sup>SM</sup> Health Care Academy

## On-Demand Webinars Available now!



### Three-Part Practice Marketing Webinar Series

Dr. Anoop Sondhi

Credits: 1 CEU, Free Self-Study

#### PART 1

#### Practice Marketing Strategies

Explore the 4P's of Marketing as they apply to a modern practice. In this CE webinar, Dr. Sondhi will discuss strategies to market your practice in light of the changing orthodontic practice environment.

#### PART 2

#### Contemporary Marketing Strategies in a Digital World

Understand why change is needed in today's marketing and learn insights into how to proceed. In this CE webinar, Dr. Sondhi will discuss strategies on how to differentiate and market your orthodontic practice.

#### PART 3

#### Measuring and Monitoring the Marketing Plan

Understand why measuring and monitoring a marketing plan is important for an orthodontic office in today's marketing environment. Dr. Sondhi discusses orthodontic market trends, and provides examples of methods and touchpoints for information gathering.



### Becoming a Digital Orthodontist – Top 10 Social Media & Digital Marketing Tips

Dr. Kyle Fagala

Credits: 1 CEU, Free Self-Study

Learn how to grow your orthodontic practice by engaging your audience on social media and attracting new patients to your website. In this CE webinar, Dr. Kyle Fagala shares his Top 10 digital marketing secrets for social media sites like Facebook, Instagram, Snapchat and Twitter. He also discusses best practices for SEO, Web Design, Blogging, and Google Ads.



### Strategic Philanthropy – Doing Well by Doing Good

Dr. Lisa Alvetro

Credits: 1 CEU, Free Self-Study

In this practice marketing webinar, Dr. Lisa Alvetro shares how her devotion to philanthropy has enhanced her community while building her practice. Learn how using community service to strategically build brand recognition can make a difference – to your community and your bottom line.



### The Exceptional New Patient Experience

Dr. David Kemp

Credits: 1 CEU, Free Self-Study

We have an opportunity to make our new patient experience exceptional. One way to achieve this is by using strategies through marketing to give our patients what they want instead of what we want. This is the foundation and the key to being competitive in highly competitive markets. If we make a decision to differentiate our practices this way we can become more successful than ever. My simple market research has found that my patients have four top desires. They want esthetic treatment. They want the treatment to be fast. They want excellent results and they want to be wowed. This course will explore strategies how we can incorporate these ideals into our practices and therefore attract more new patients and also to be able to improve our Case Acceptance Rate.

## How to get started.

1. Go to [www.3M.com/ortho](http://www.3M.com/ortho) and click on the **EDUCATION** tab on the menu bar.
2. Under Access On-Demand Education, create an **Enterprise Network Login** with a **username** and **password**.
3. Once registered for **3M Health Care Academy** the educational portal will open. Search for the course title or click on the library icon and choose **Oral Care** to view a full course listing.

# Clinical Cases



## 3M<sup>SM</sup> Health Care Academy

# Lingual correction of a complex Class III malocclusion: Esthetic treatment without sacrificing quality results.

Incognito<sup>TM</sup>  
Appliance System



**Christopher S. Riolo, DDS, M.S, Ph.D.**

Dr. Riolo received his DDS from the University of Michigan. He received his Specialty Certificate and MS in Orthodontics at the University of Detroit Mercy and subsequently completed a Ph.D. in Epidemiology from the School of Public Health at the University of Michigan. Dr. Riolo is a diplomate of the American

Board of Orthodontics, maintains a private practice in Seattle, Wash., specializing in adult esthetic orthodontics and is an affiliate assistant professor at the University of Washington teaching in the interdisciplinary seminar and clinic segment.

## Introduction

There is an increasing demand for esthetic orthodontic treatment options. Patients are forced to make a choice between a buccal appliance or no treatment at all. This false choice results in thousands of patients not benefiting from the treatment they desire. For many patients, there is a difference between “excellent treatment” and “excellent treatment outcome”; for these patients an excellent treatment outcome is necessary but not sufficient to achieve an “excellent treatment”. This case presentation illustrates a situation where only a fixed appliance can fully correct the Class III relationship. While it is true that perhaps clear aligner therapy in conjunction with heavy IPR could improve this patient occlusal relationship, clear aligners are unlikely to achieve the Class III correction shown here. This case shows how the 3M<sup>TM</sup> Incognito<sup>TM</sup> Appliance System can provide not only “excellent treatment results” but the truly esthetic treatment that for this patient constituted “excellent treatment”.

## Diagnosis

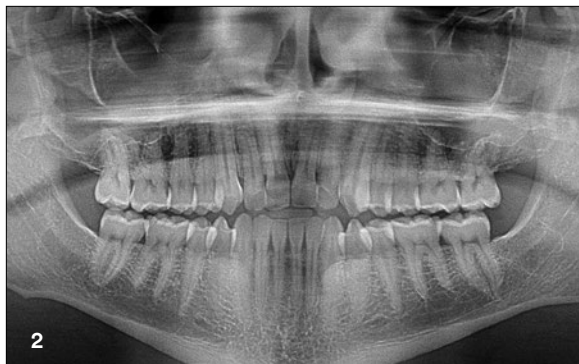
Patient was a 28-year-old caucasian male with no significant medical or dental history. He had a history of orthodontic treatment as an adolescent. The chief complaint was, “I did not wear my retainer and I want to fix my teeth.”

The patient presented with a Class III skeletal dysplasia, characterized by slightly retrognathic maxilla and prognathic mandible. Dentally the patient had a Class III molar and canine (sub div) relationship, upper and lower crowding and a partial anterior crossbite involving the UR3-UL2 with LR3-LL2 (Figure 3A-H and Figure 4A-F). The anterior crossbite resulted in moderate attrition of UR1 and L1's. The periodontal charting revealed probing depths within normal limits although he had gingival recession on UR4,5, UL1,2,3, LL3, LR3,4. The functional analysis revealed no anterior guidance with significant anterior traumatic occlusion.





**Figure 1:** Pre-treatment cephalometric image.

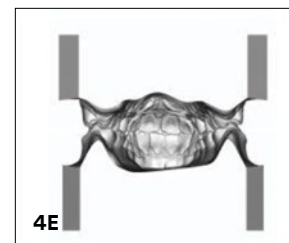
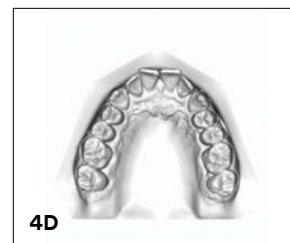
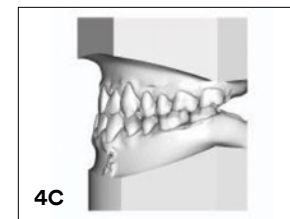
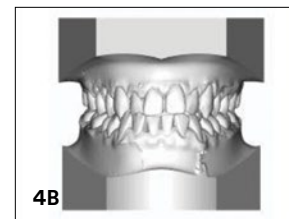
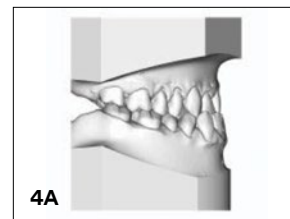


**Figure 2:** Pre-treatment panoramic image

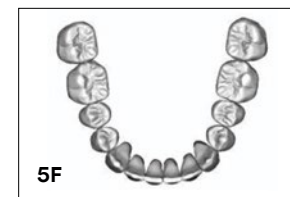
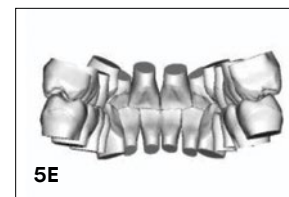
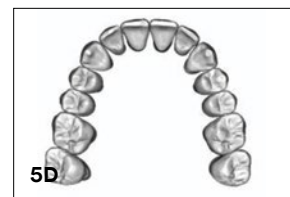
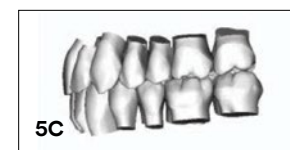
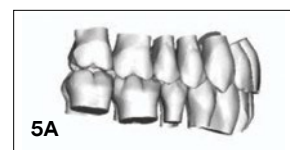


**Figure 3A-H:** The initial photo layout show a Class III sub div molar relationship, anterior crossbite, upper and lower crowding.

The etiology of the Class III relationship is likely genetic and the anterior crossbite is likely a result of late mandibular growth after the completion of his initial orthodontic treatment.



**Figure 4A-F:** The malocclusion models are shown here: note the anterior crossbite and the Class III molar relationship on the left side.



|                                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                   |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |   |  |    |  |    |  |     |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |    |  |    |  |
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| UR8                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | UR7                               |  | UR6             |  | UR5             |  | UR4             |  | UR3             |  | UR2             |  | UR1             |  | UL1             |  |   |  |    |  |    |  | UL2 |  | UL3             |  | UL4             |  | UL5             |  | UL6             |  | UL7             |  | UL8             |  |    |  |    |  |
| UR                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | UR                                |  | UR              |  | UR              |  | UR              |  | UR              |  | UR              |  | UR              |  | UR              |  | UR                                      |  | UL |  |    |  |     |  |                 |  | UL              |  | UL              |  | UL              |  | UL              |  | UL              |  | UL |  |    |  |
| LR8                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | LR7                               |  | LR6             |  | LR5             |  | LR4             |  | LR3             |  | LR2             |  | LR1             |  | LL1             |  |   |  |    |  |    |  | LL2 |  | LL3             |  | LL4             |  | LL5             |  | LL6             |  | LL7             |  | LL8             |  |    |  |    |  |
| LR                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | LR                                |  | LR              |  | LR              |  | LR              |  | LR              |  | LR              |  | LR              |  | LR              |  | LR                                      |  | LR |  | LL |  |     |  |                 |  |                 |  | LL              |  | LL              |  | LL              |  | LL              |  | LL |  | LL |  |
| 0.2   0.2   0.1   0.2   0.1   0.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0.1   0.2   0.1   0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.1   0.2   0.2   0.1   0.2   0.2 |  |    |  |    |  |     |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  | 0.1   0.2   0.2 |  |    |  |    |  |
| 5G                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                   |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |   |  |    |  |    |  |     |  |                 |  |                 |  |                 |  |                 |  |                 |  |                 |  |    |  |    |  |

**Figure 5A-G:** The setup and planned IPR are shown in the figure.

### Objectives of Treatment

The treatment objectives were to level and align the dentition, correct anterior crossbite, establish proper anterior guidance with a Class I canine relationship, improve periodontal stability and smile esthetics. In the maxilla we wanted to expand the intercanine distance and maintain the intermolar distance. In the mandible our goal was to maintain or constrict the intercanine distance and maintain the intermolar distance.

### Treatment Plan

Upper and lower lingual fixed appliances, non-extraction, lower anterior IPR (1.8 mm per setup), Class III elastics. The treatment setup and planned IPR chart is shown in Figures 5A-G.

### Treatment Discussion

The Incognito Appliance design and wire progression can be seen in Figure 6A-F; bands with half occlusal coverage were employed to initially open the anterior bite. Figure 6A-F also shows that the upper first molar bands were designed with buccal buttons in anticipation of using Class II elastics. Figure 6A-F on the left shows 0.014 NiTi wires engaged into the upper and lower arches. The lower wire is engaged into the self-ligating slot; in the upper the wire is fully engaged using double overties. Figure 6A-F in the middle depict progress photos with the upper and lower aligned with 0.016×0.022 NiTi wires fully engaged. On the right in Figure 6A-F the arches are shown with upper and lower 0.016×0.024 SS wires. The upper wire had 13 degrees of extra torque in the anterior and lower clear buttons have been placed on the lower

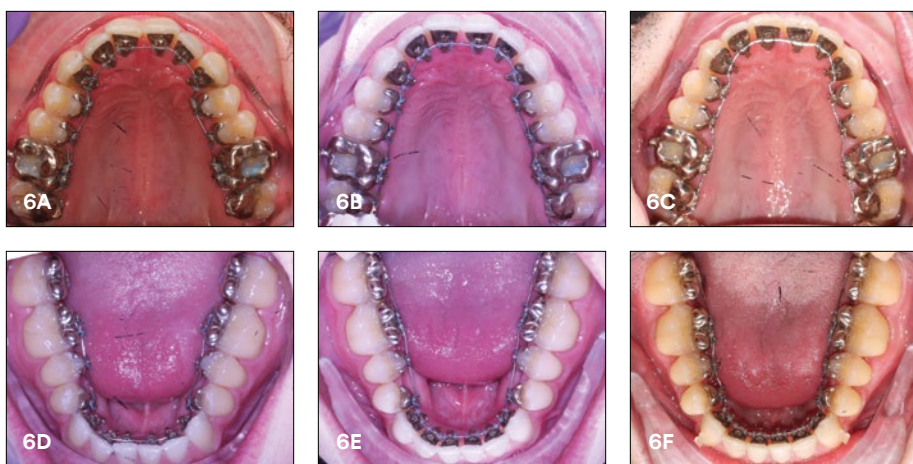


Figure 6A-F

canines for the Class III elastics. An upper 0.0182×0.0182 TMA wire was used with the lower stainless steel wire and vertical elastics to detail and finish the treatment.

The final treatment result is shown in Figure 7A-H. Class III elastics were planned and used during the treatment to accomplish A-P Class I correction of the molars and canine; 1.8 mm of lower anterior IPR planned in the treatment setup and was this was accomplished during treatment (see Figure 5A-G). The amount of intercanine expansion planned in the setup was fully expressed to the tenth of a millimeter (see Table 1). Interestingly, the superimposition (Figure 9) reveals that the molar Class I correction was largely due to extrusion of the posterior teeth and down and backward rotation of the mandible rather than strictly anterior posterior movement of the upper and lower dentition. This type of correction is very unlikely with clear aligner therapy.



Figure 7A-H: The final photo layout.



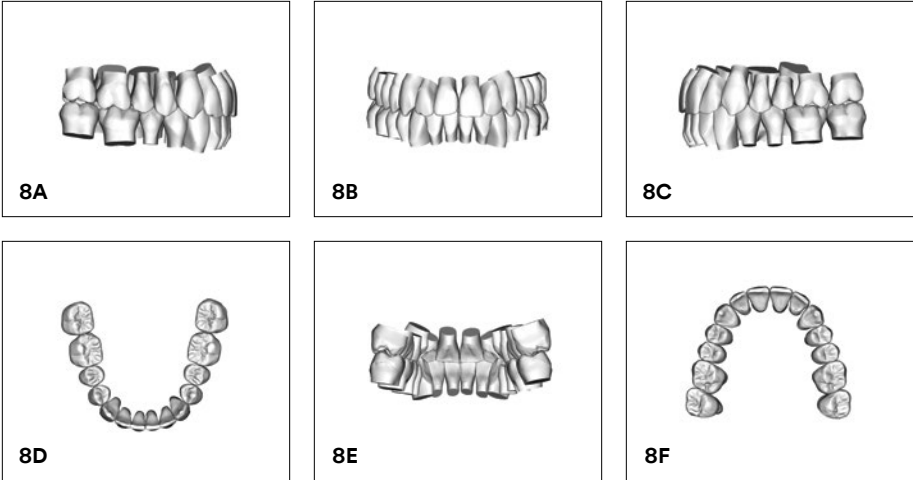


Figure 8: The final models revealed an easily passing ABO CRE score of 15.

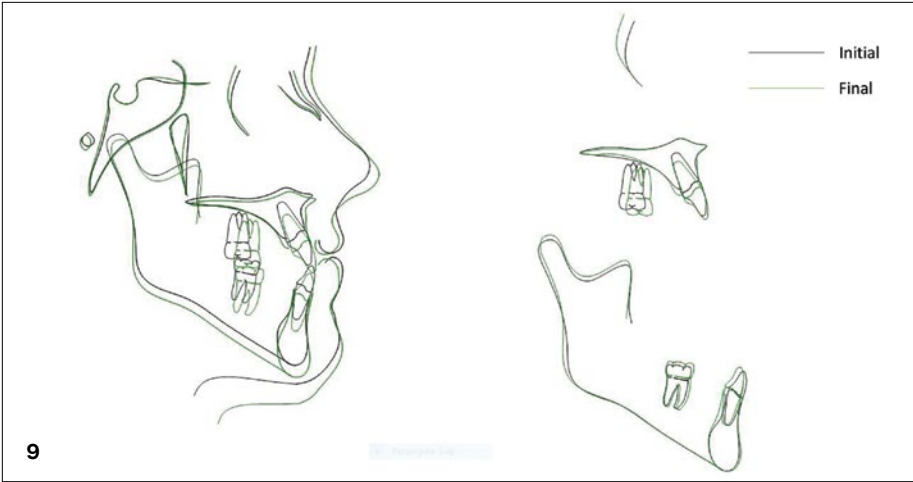


Figure 9: The pre- and post-treatment superimpositions show extrusion as well as anterior movement of the maxillary posterior molars. This dental movement resulted in rotation of the mandible, an increase in the LAFH and correction of the Class III molar relationship. The anterior crossbite was corrected through dental compensation.



Figure 10: Post-treatment cephalometric image.



Figure 11: Post-treatment panoramic image

|            |              | Malocclusion | Setup   | Actual post-treatment |
|------------|--------------|--------------|---------|-----------------------|
| Maxillary  | Inter Canine | 30.8 mm      | 32.7 mm | 32.7 mm               |
|            | Inter Molar  | 45.0 mm      | 43.3 mm | 44.5 mm               |
| Mandibular | Inter Canine | 23.3 mm      | 24.3 mm | 24.3 mm               |
|            | Inter Molar  | 36.2 mm      | 36.7 mm | 37.8 mm               |

Table 1: Initial analysis.

*Case photos provided by the Dr. Christopher S. Riolo.*



## 3M<sup>SM</sup> Health Care Academy

# Orthodontic retreatment with 3M<sup>TM</sup> Clarity<sup>TM</sup> SL Self-Ligating Appliance System for a traumatic anterior edge-to-edge occlusion with periodontal implications.



**Rodrigo del Pozo, DDS, Ph.D.**

Dr. Rodrigo del Pozo received his Degree in Dentistry from Universidad Central de Venezuela in 1995, and his Ph.D. in Dental Science and Certificate of Orthodontics in Hiroshima University in 2002 with a Scholarship of the Japanese Government. Dr. Rodrigo del Pozo is a tutor in the Master and Ph.D. Program in several Universities in South America. Currently

he is a Cathedratical Professor in the Post-graduate Course of Orthodontics at Universidad Cooperativa de Colombia. Since 2003 he has been practicing with the 3M<sup>TM</sup> MBT<sup>TM</sup> Versatile+ Appliance System philosophy.

### Introduction

In the last decades, there has been an enormous increase in the percentage of adults seeking orthodontic treatment. Unfortunately, in some cases these patients have periodontal problems that could be aggravated during orthodontic therapy. It is important for the orthodontist to identify periodontal problems before orthodontic treatment begins in order to determine the correct treatment plan that would allow the improvement of these conditions, with the correct combination of orthodontic and periodontal therapy.

Periodontal diseases include a group of chronic inflammatory disorders such as destructive and nondestructive diseases of the supporting periodontal tissues of the teeth. In some cases they are caused by incorrect anterior or occlusal contact that may be traumatic, causing excessive forces to be applied to the periodontal structure. The aforementioned, in combination with orthodontic forces, can cause more rapid destruction than that produced by inflammation alone.<sup>1</sup>

In these interdisciplinary situations it becomes imperative for the ideal orthodontic treatment plan to include the application of continuous low friction forces for tooth movement. The aim is to cause reduced damage to the root, periodontal ligament, and alveolar bone by minimizing necrosis and subsequent hyalinization and indirect resorption. By these means it is possible to achieve continuous progress in dental movement, avoiding the repeated interruptions that occur when the blood vessels are blocked, thus reducing the great risk of further bone loss when treatment is rendered for individuals with decreased osseous support. Furthermore, by applying stresses of low magnitude the lag phase in tooth movement can be eliminated and effective movement can be produced.<sup>2,3</sup>

Based on these facts, it seems suitable to think that a new generation of low friction self-ligating brackets in combination with newer wire materials and longer period of activation between appointments is the answer for providing more favorable periodontal reactions/responses in patients with delicate periodontal conditions.<sup>4,5</sup>



## Clinical Case

A 38-year-old male patient attends consultation seeking to improve his occlusion since he cannot chew properly. He explains that a previous orthodontic treatment was done approximately eight years ago that involved the extraction of the right and left upper and lower first bicuspid.

In extraoral examination the patient showed a slight long face pattern and a straight to slight concave profile. In intraoral examination the patient presented a molar Class I in both sides, right canine in Class II and left canine in Class I, open bite in the bicuspid and canine region with edge-to-edge traumatic incisor contact. Gingival retraction was observed in the vestibular region of the lower incisors (Figure 1A-I).

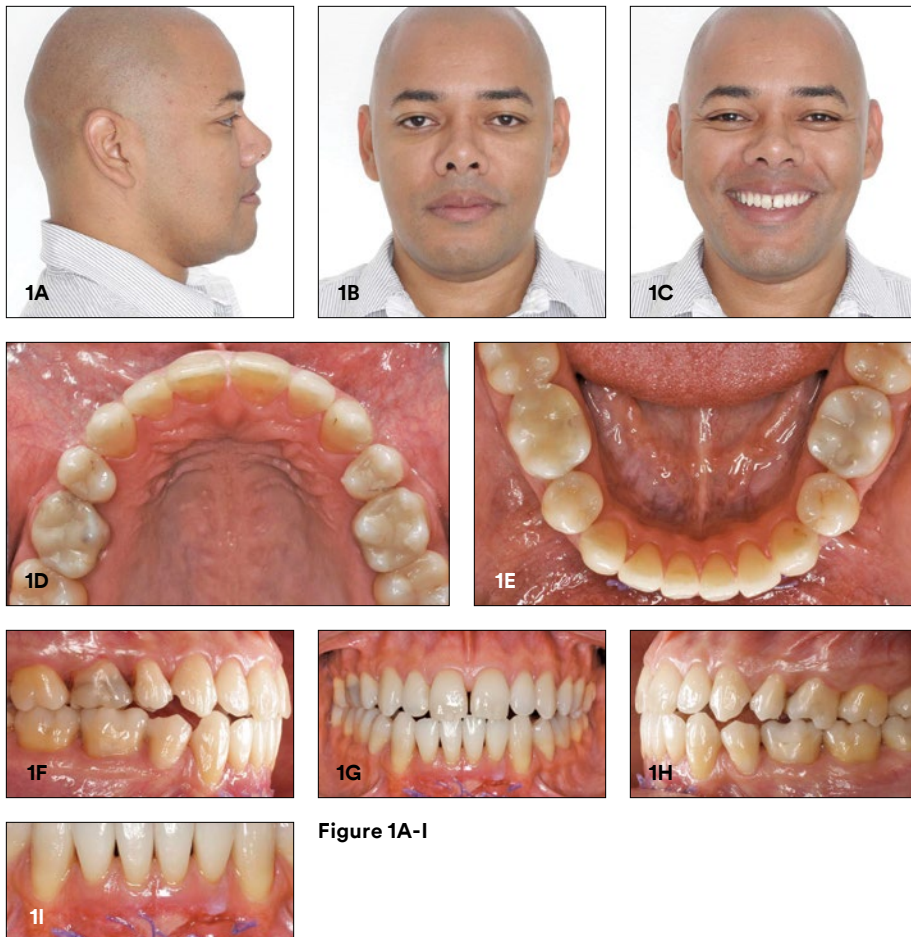


Figure 1A-I

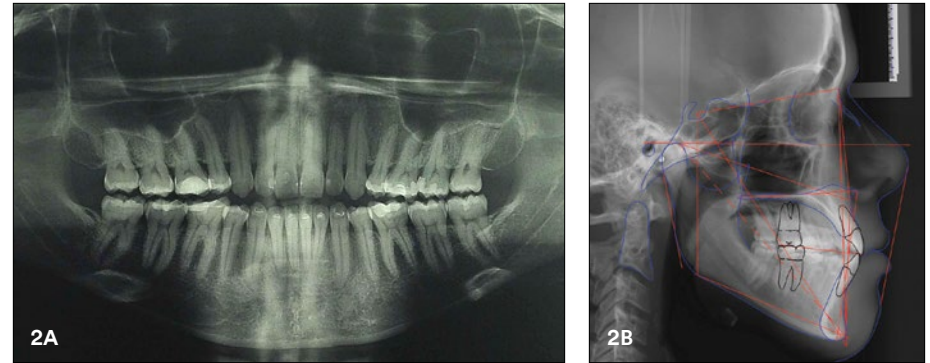


Figure 2A-B

In the panoramic X-ray an improper root parallelism was observed in the canine, bicuspid and molar region (Figure 2A-B).

## Treatment Planning

Periodontal evaluation and maintenance was essential before beginning orthodontic treatment. Two months prior to starting active tooth movement, palatal graft to thicken the gingival area of the lower incisor region was performed. The Periodontist recommended applying low continuous forces during tooth movement for a better effect on the cell biology. For this reason, the use of ceramic 3M™ Clarity™ SL Self-Ligating Brackets was selected as our treatment option.

## Treatment Evolution

### Six Months

The initial six months of treatment focused on aligning and leveling, and an anterior open bite tendency was expected to develop as a result of the divergence of the roots in the upper right and left canine, bicuspid and molar region as seen in the panoramic X-ray. For this reason, light intermaxillary elastics (1/4" 2½ oz) were used to counteract.

During these phases, the following archwire sequence was used in the upper and lower arches (Figure 3A-C):

- 0.014 Nitinol heat-activated.
- TANDEM ARCH: 0.014 + 0.016 Nitinol heat-activated.
- 0.017×0.025 Nitinol heat-activated.



Figure 3A-C

### Eight Months

After eight months treatment, 0.019×0.025 Nitinol heat-activated upper and lower archwires were used in combination with Class III 1/4" 4.5 oz intermaxillary elastics. Proper periodontal and gingival health were observed in the area of the graft (Figure 4A-C).



Figure 4A-C

### Ten Months

During the working phase, a stable occlusion became evident after 10 months of treatment with an upper and lower 0.019×0.025 stainless steel archwire (Figure 5A-C).



Figure 5A-C

### 12 Months

The total treatment time was 12 months, in which an adequate overjet/overbite relationship were obtained, with Class I canine and molar relationship and adequate intermaxillary interdigitation. Moreover, mucosal grafting in the vestibular region of the lower incisors did not suffer any inconvenience during tooth movement (Figure 6A-F).



Figure 6A-F



In the X-ray analyses, an ideal root parallelism was obtained combined with a better crestal bone area and bone density. Important achievements include improvement of the profile and a balanced chewing mechanism (Figure 7A-H).

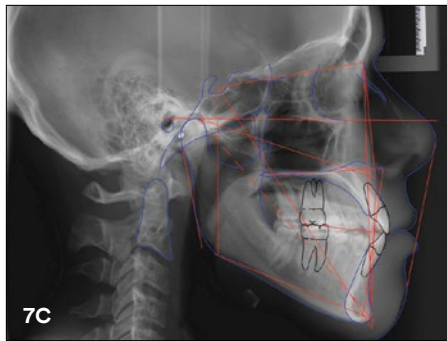




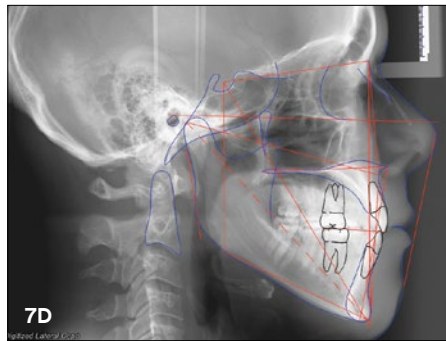
Before



After



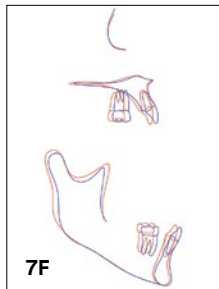
Before



After



Before



After



Before



After

## Conclusions

This clinical case is a good example of how self-ligating appliances maximize the many benefits of orthodontic treatment as well as help improve periodontal health.

Normal occlusal function is a necessary mechanical stimulus for maintaining homeostasis of the periodontal tissue, whereas excessive occlusal loads result in disharmonic functioning of these tissues. This patient presented common signs of traumatic dental occlusion, including vertical reduction of the inter-dental septum, altered inclination of roots, and gingival recession, all of which were treated. This case demonstrates that the interdisciplinary approach is successful, and must include appropriate periodontal and orthodontic treatment.

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Case photos provided by Dr. Rodrigo del Pozo.



## 3M<sup>SM</sup> Health Care Academy

# 3M<sup>TM</sup> Incognito<sup>TM</sup> Appliance System extraction case study.

Incognito<sup>TM</sup>  
Appliance System



**Toru Inami, DDS, Ph.D.**

Dr. Toru Inami graduated from the Aichigakuin University School of Dentistry in 1976. From 1977 to 1981, he worked as a research associate at the Department of Orthodontics at Aichigakuin University, and in 1981 became the director of the Inami Orthodontic Office. From 2005 to 2007, Dr. Inami served as president of the Japan Lingual Orthodontic Association (JLOA), and has since served as director of the executive committee

of the Japanese Orthodontic Society (JOS and chairman of the Japanese Orthodontic Board (JOB). Dr. Inami has been a clinical professor of the Aichigakuin University Department of Orthodontics since 2013. He is also a board member of the Japan Orthodontic Board, as well as an active member of JLOA, WSLO, and the European Society of Lingual Orthodontics (ESLO)."

### Section A: Guidelines for extraction cases using the 3M<sup>TM</sup> Incognito<sup>TM</sup> Appliance System

My practice has successfully used the Incognito Appliance System with adult patients since 2008. Given the needs of our specific patient base, when circumstances indicated, my practice began implementing lingual braces on younger patients. In response to improved treatment times, treatment outcomes and patient acceptance, our percentage of child and adolescent patients has consistently increased each year to where my practice now has an average patient age of 18 years old with this treatment protocol (Figure 1).

As a byproduct of the reduced average age, it was also observed that over 60% of our patient base needed orthodontic extractions accompanying the application of braces. Following are our notes to explain some of the more important aspects of extraction in partnership with the Incognito System.

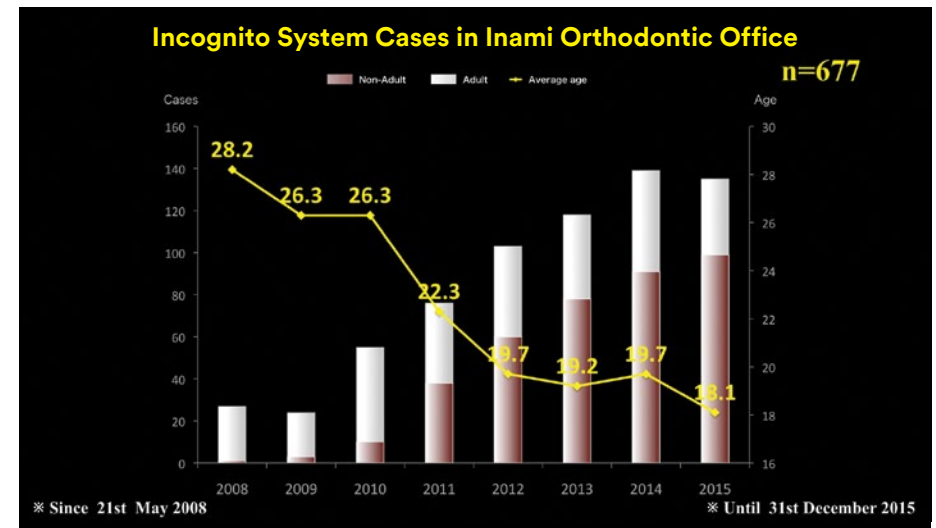


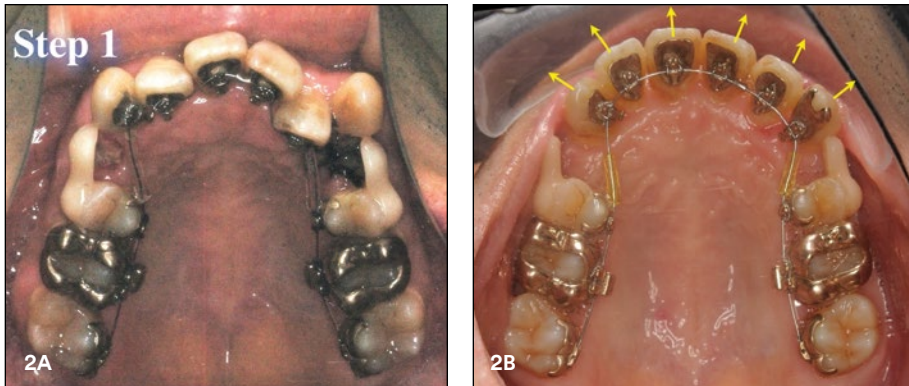
Figure 1

## Phase 1: Crowding Control

### 1. Crowding control

It is important to watch for potential flaring of the incisors when round wires are used in the initial alignment phase, especially in patients with weak lip muscles. As a result, the treatment period is increased to offset the fanning effect. To best control treatment periods, even in cases of severe crowding, I recommend this guideline as reflected in the case study below (Figure 2A-B).

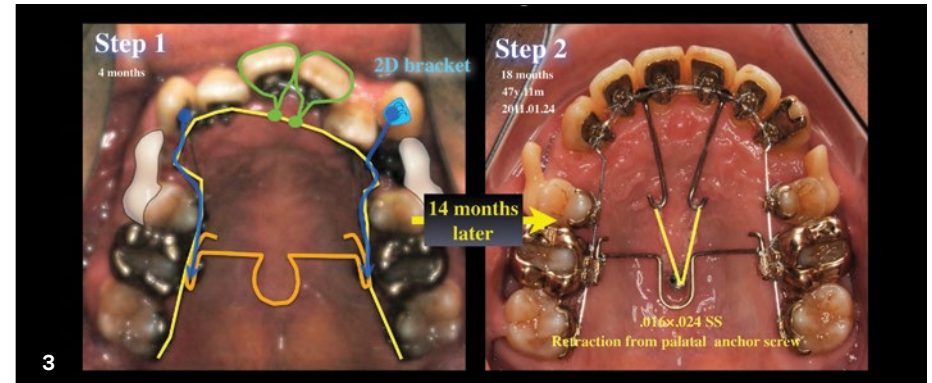
- Use a trans-palatal bar.
- Use rectangular, .016x.022 NiTi, ligating very gently.
- In our study case, we applied O-lasso to central incisors and retracted the canine slowly.



**Figure 2A-B:** Initial leveling using round wire in severe crowding case. Figure 2A .010 NiTi; Figure 2B .014 NiTi (flare out).

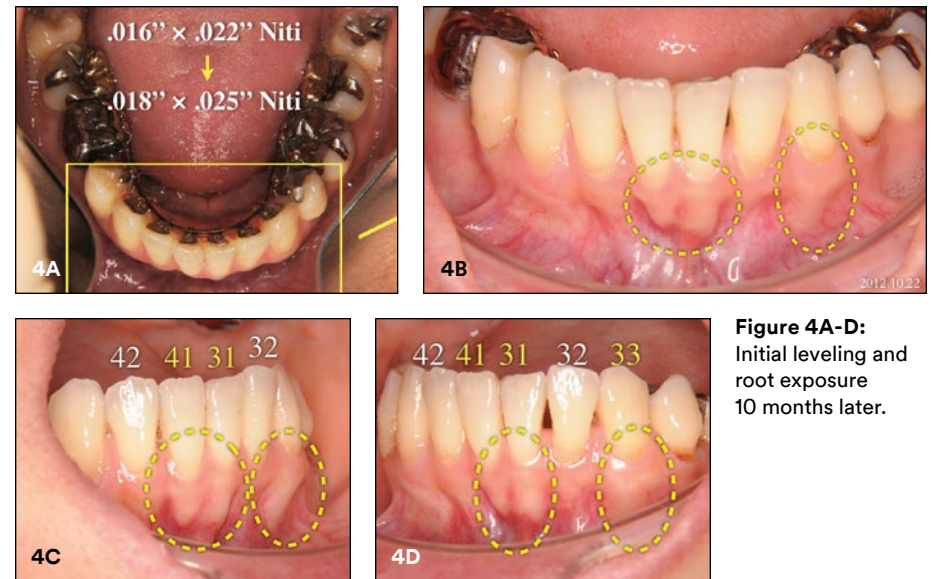
### 2. Root exposure precaution: required when using initial rectangular wires

When the .016x.022 NiTi wire is inserted forcibly in initial leveling, there is a possibility that exposure of the root can occur in the mandibular anterior teeth. Handling of the initial wire is very important (Figure 3).



**Figure 3:** Recommended initial leveling in severe crowding case.

Figures 4A-D, Figure 5 and Figures 6A-B demonstrate results after using the .016x.022 NiTi initial archwire actively engaged in the anterior slots. Figure 5 demonstrates the root exposure as shown in CT scan images. In response, I used the round wire for recovery. The right side of Figure 5 illustrates recovery of root exposure.



**Figure 4A-D:** Initial leveling and root exposure 10 months later.

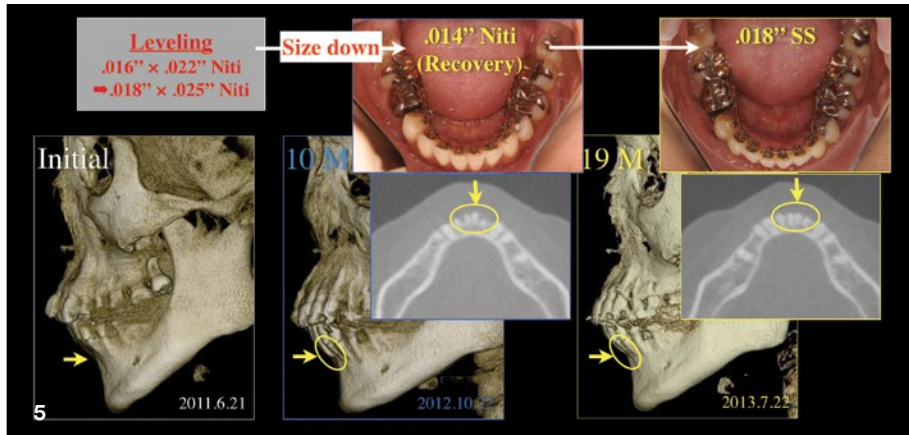


Figure 5: Torque control – an example of uncontrolled torque.

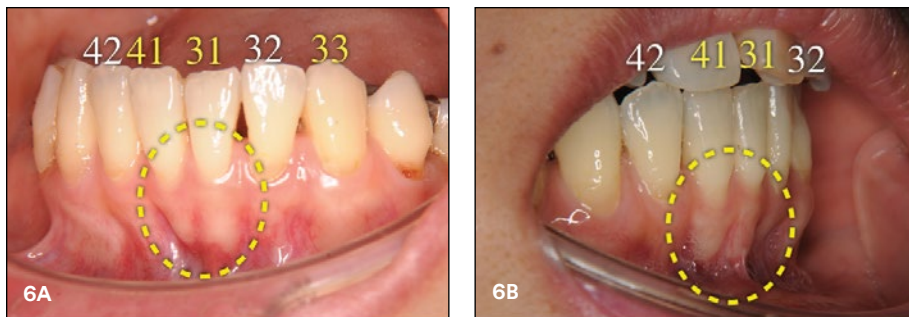


Figure 6A-B: Ten months later in initial leveling.

### 3. When a partial canine retraction is recommended ...

**Option 1.** Caution is urged to prevent excessive canine retraction, since, in this case, engaging the next wire from canine to canine is not possible. In this case, at every visit, I reduced by 1 mm, the composite within the retraction space (Figure 7 and Figure 8).

In the case of partial canine retraction there are 5 key elements.

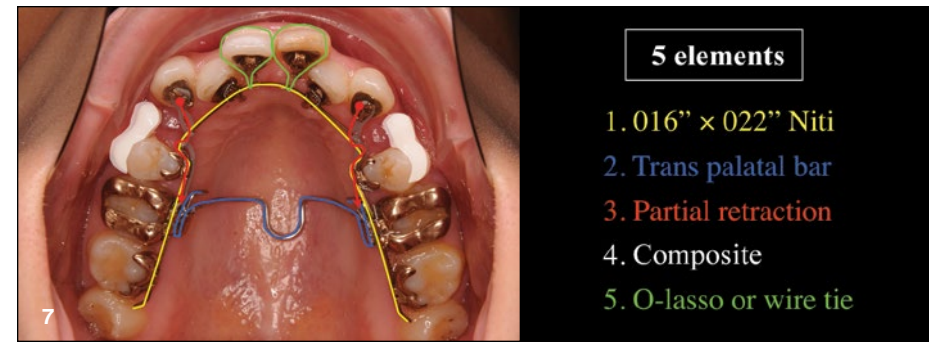


Figure 7: Recommended method of canine retraction.

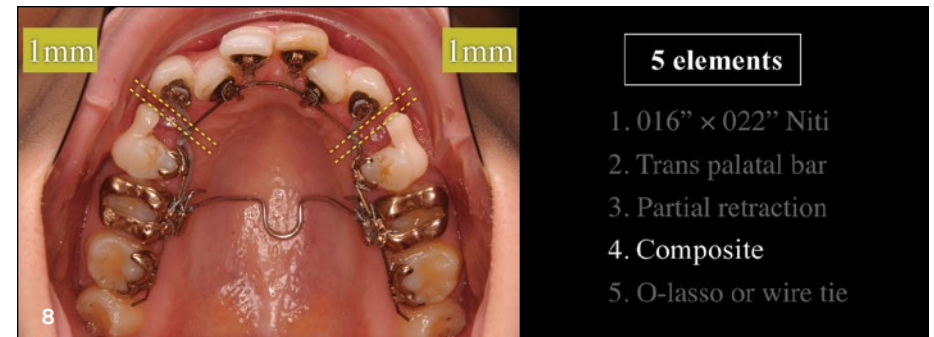


Figure 8: Pay attention to excessive canine retraction. Reduce 1 mm composite for retraction space.

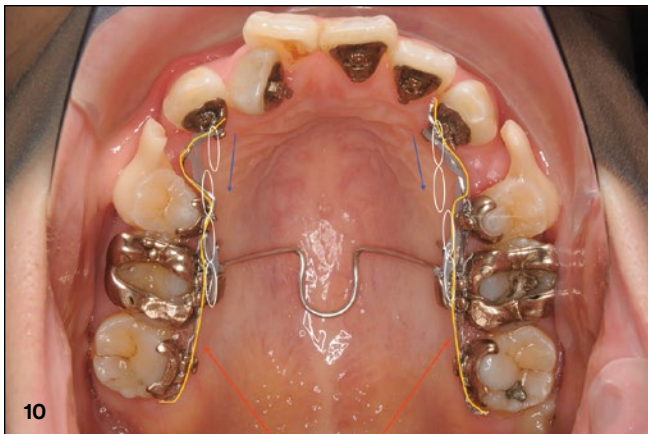


**Option 2.** Another method of canine retraction is wire selection. This photo (Figure 9) shows NiTi wire cut at the severe crowding region.



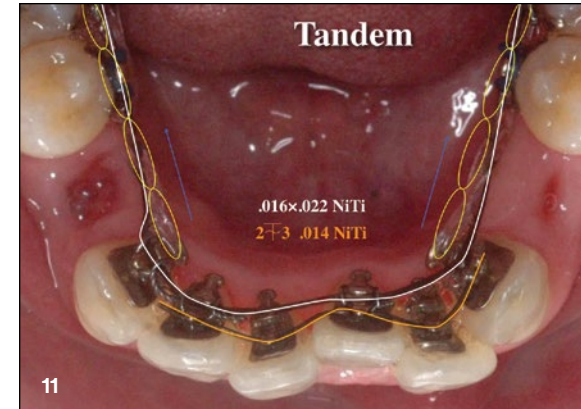
**Figure 9:**  
Another method of canine retraction – wire selection. .016x.022 NiTi wire cut at the severe crowding region.

**Option 3.** An alternative wire selection. This photo demonstrates the use of sectional Stainless Steel wire from second molar to canine, placed to avoid the severe crowding area (Figure 10).



**Figure 10:**  
Another method of canine retraction – wire selection .016x.022 SS sectional wire.

**Option 4.** Canine retraction using the tandem technique as illustrated (Figure 11).



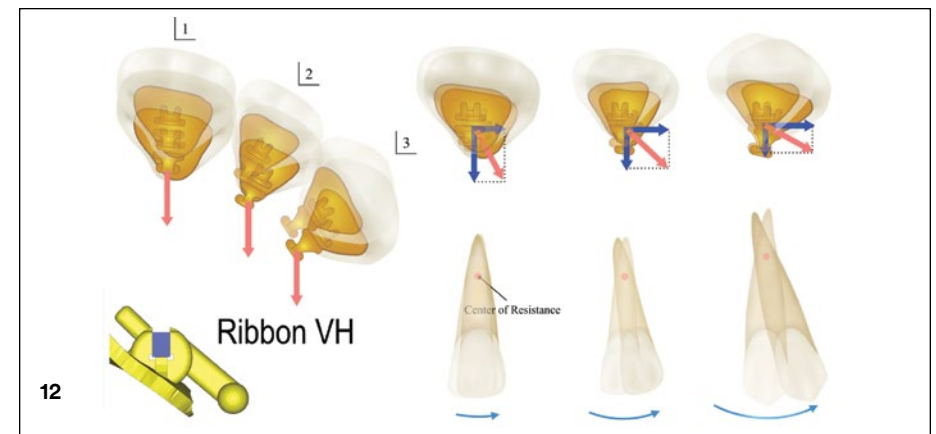
**Figure 11:**  
Tandem technique.

## Phase 2: Anterior Retraction

### 4. Tip Control

During en masse retraction, some of the maxillary anterior teeth may tip distally in the process.

The anterior tooth tends to distal tipping in the Step 2 retraction stage. I refer to this as the Anterior Fan Shaped Phenomenon (Figure 12).



**Figure 12:** Anterior Fan Shaped Phenomenon.



Figure 13 shows the play between the Incognito Bracket slot and .016x.024 Stainless Steel wire. The narrower the right bracket width becomes, the bigger the play. When the right slot length is 1.6 mm  $\theta 2$  (angulation play) becomes calculated as 5-6°.

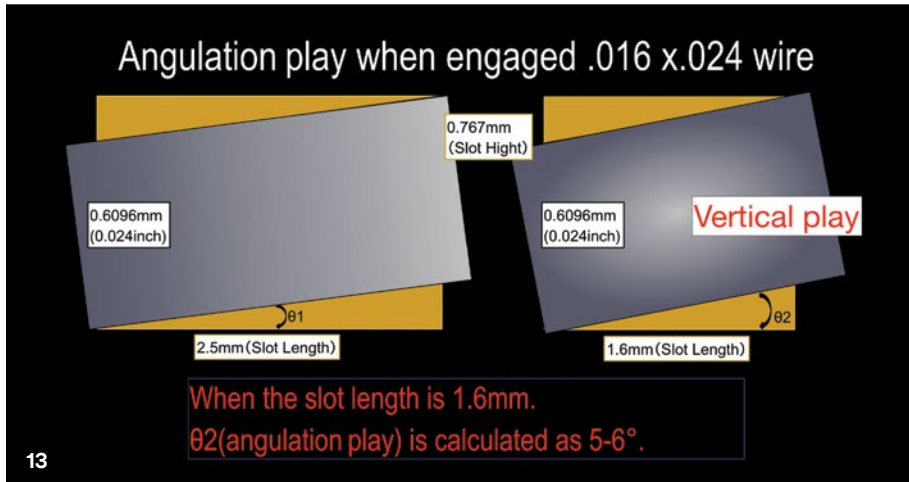


Figure 13

The question of most effective correction to the Anterior Shaped Phenomenon requires consideration. The original protocol recommends alignment correction through a power-tie in the detailing stage. In my experience, a better course of action is to utilize Beta Titanium wire or Stainless Steel wire with over-correction tip bend of the respective 2°, 4°, 6° in anterior teeth.

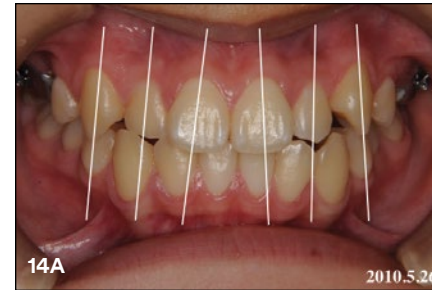


Figure 14A: Initial.

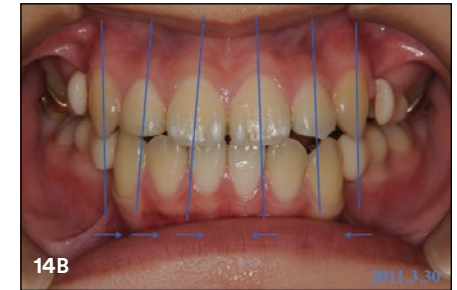


Figure 14B: Before retraction; well controlled with NiTi.

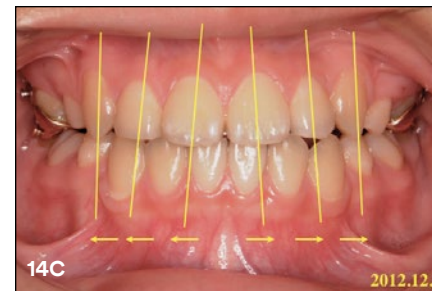
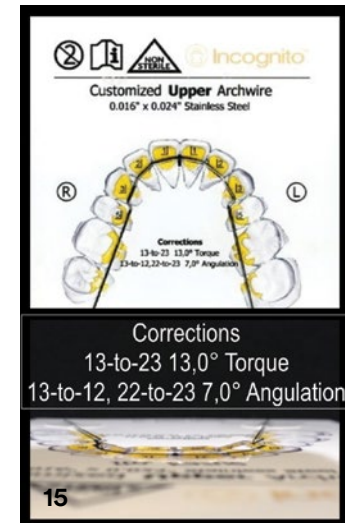


Figure 14C: During retraction; tip distal (fan shaped).

Dr. Keizo Hirose, my colleague and the practitioner for this case, requested 3M to create a customized archwire .016x.024 SS with anti angulation bend on lateral incisor and canine 7° mesial tipping for this specific case (Figure 14A-C). A copy of that request is included in Figure 15.

Figure 15 shows a copy of an archwire template showing the customization of a .016x.024 Stainless Steel wire with mesial tipping on lateral and canine of 7°.



## 5. Torque control and vertical bowing effect control

Torque control and vertical control are very important issues.

Figures 16 and 17 demonstrate a comparison of treatments with the Incognito System vs the Kurz™ System.\* Both the Incognito and Kurz System groups will show

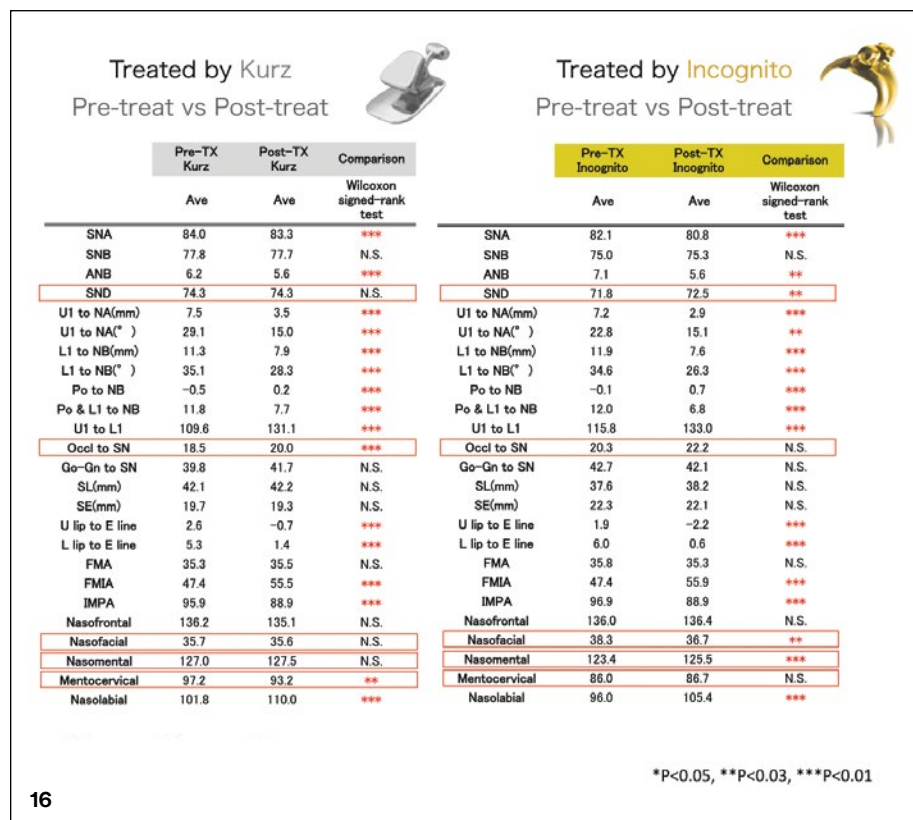


Figure 16

favorable treatment results. In the case of the Incognito System, the vertical slots for the anterior teeth are highly accurate, dimensionally, and as such may better limit the vertical bowing effect, as well as the tendency for proclination. In addition, the high dimensional accuracy of the slot may permit more precise alignment of the teeth without excessive torque loss and thereby increase the accuracy of treatment.

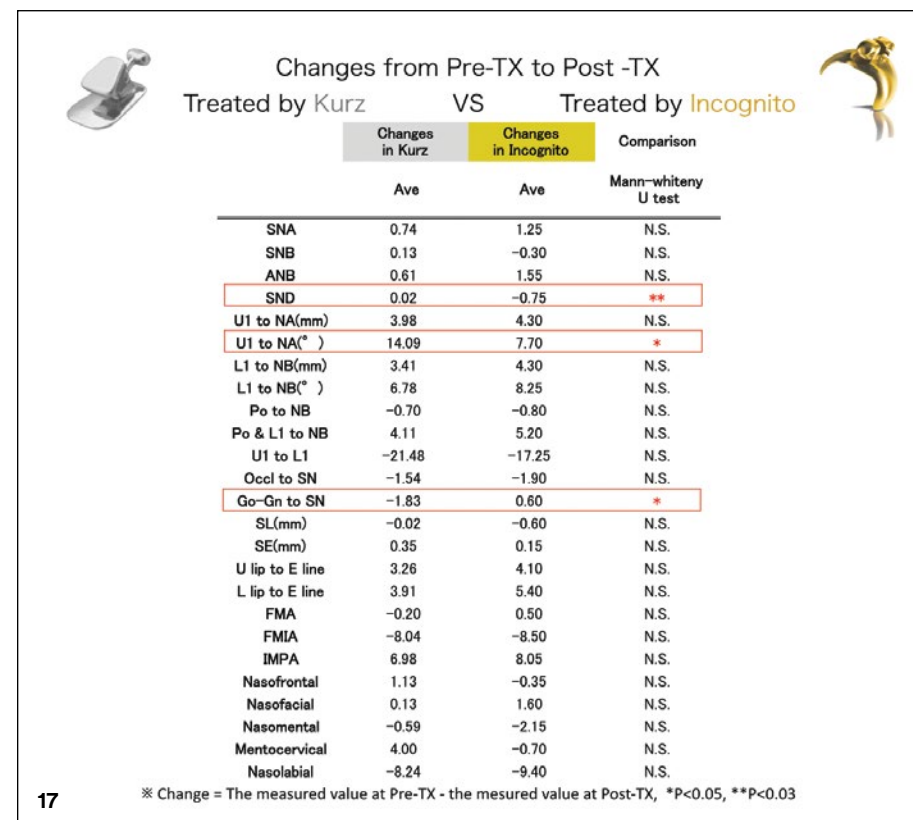
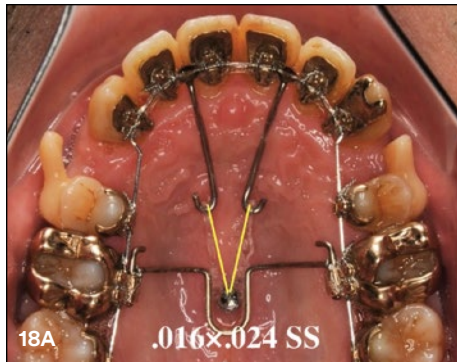


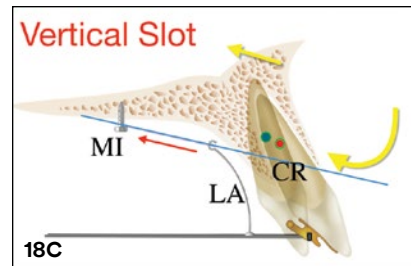
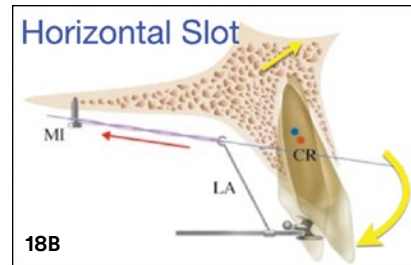
Figure 17

\*Note: The comparison shown here is intended to demonstrate a difference in mechanics between a bracket system with a horizontal slot and the Incognito Appliance System's vertical slot. – Editor

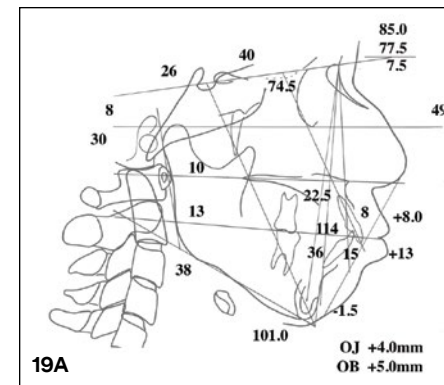
Figures 19A-B compare the same patient's pre-treatment and post-treatment lateral cephalograms. The anterior protrusion represents the ideal correction.



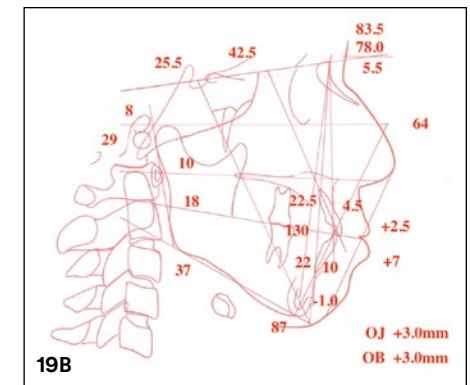
**Figure 18A-C:** Step 3; Retraction from palatal anchor screw; 47y 11m.



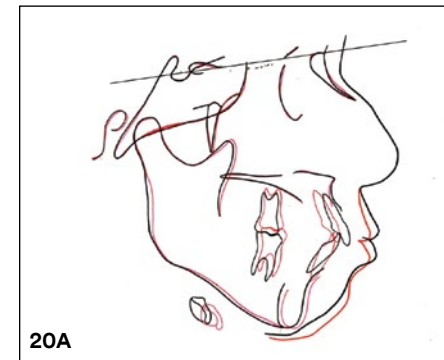
From pre- and post-treatment cephalometric tracing superimposed, upper anterior were retracted bodily and upper first molar were depressed. Torque control for anterior and vertical control for posterior, were established (Figure 19A-B and Figure 20A-B).



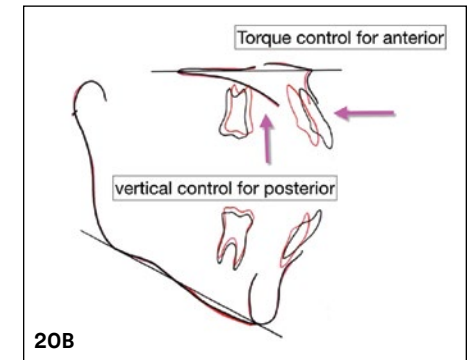
**Figure 19A:** Lateral cephalogram trace: pre-treatment (2008.12.25, 45y 10m).



**Figure 19B:** Lateral cephalogram trace: post-treatment (2013.03.22; 50y 01m).



**Figure 20A:** Superimposition: pre-treatment (2008.12.25, 45y 10m).



**Figure 20B:** Superimposition: post-treatment (2013.03.22, 50y 01m).



## 6. Horizontal bowing effect control

In performing the en masse retraction of anterior teeth, there is some possibility that the molars may tilt to the lingual side; that is to say, a horizontal bowing effect may occur (Figure 21A-B).



Figure 21A-B: Horizontal bowing effect.

The ribbon-wise wire has almost two times the stiffness of the edgewise wire, based on mechanical calculation. In extraction cases, the horizontal bowing effect occurs easily even if we use optimum force in anterior retraction (Figure 22).

Therefore, in order to prevent the bowing effect, I recommend using either double cable retraction or retraction from the buccal side as shown (Figure 23A-B).

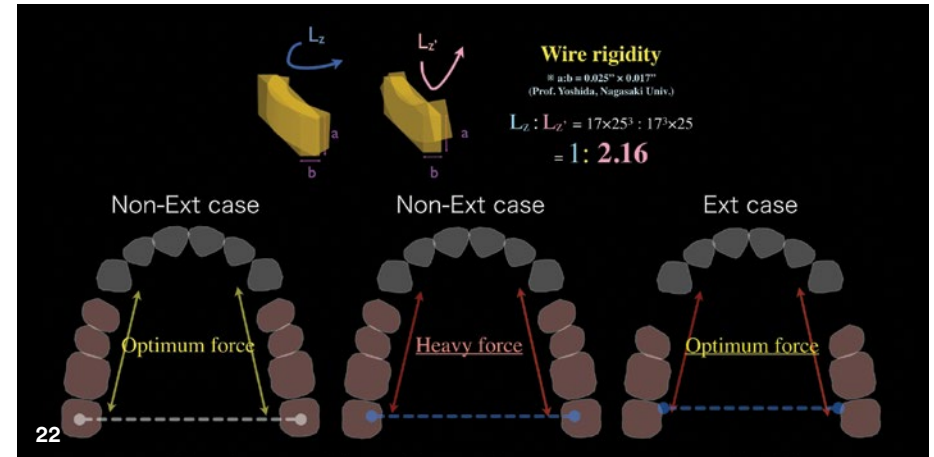


Figure 22: Horizontal bowing effect occurs easily.

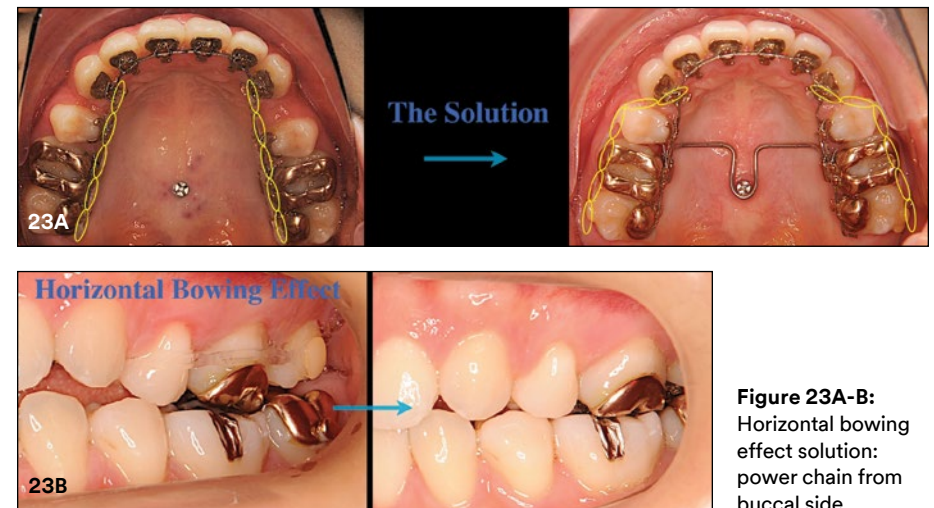


Figure 23A-B: Horizontal bowing effect solution: power chain from buccal side.



### 7. The molar lingual cusp during realignment

It is important to pay attention to the potential loss of lingual cusp seating during anterior retraction (Figure 24).

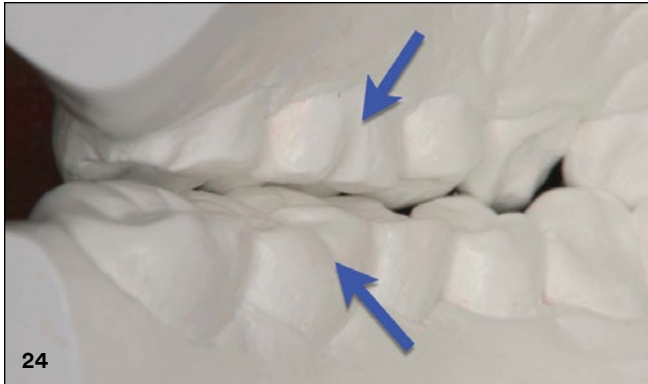


Figure 24

When anterior teeth are retracted in response to the effect of the alveolar-bone screw, the force of the lingual inclination tends to occur to the anterior. However, if ribbon-wise wire and the vertical slot is used, the counterforce caused by anterior teeth proclination is unlikely to occur. The lingual cusp of the molar is depressed with lingual crown torque, due to the stiffness of the wire (Figure 25A-B).

### Alveolar-bone screw vs Mid-palatal screw

#### Aim

Differences in treatment outcome between Alveolar-bone screw and Mid-palatal screw

25A



25B

#### Alveolar-bone screw + No Lever-arm

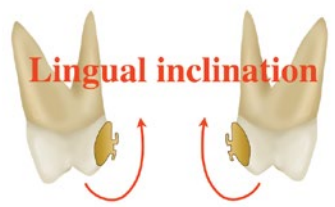
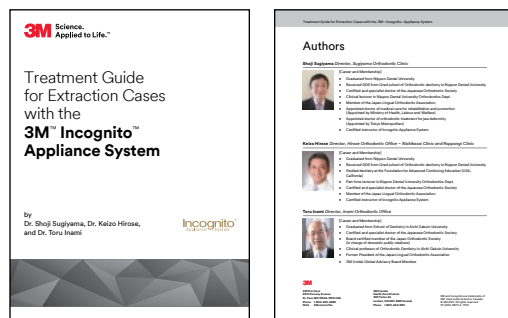



Figure 25A-B: Alveolar-bone screw vs. mid-palatal screw.

## Section B: Treatment guideline of extraction cases


In Japan, there are many high angle, severe crowding and bi-maxillary protrusion patients. The ratio of the extraction cases is running at approximately 50%. Based on our experience, my colleagues and I have devised a treatment guidebook (Figure 26) for extraction cases. Included is a summary of situational recommendations for insertion sites for TADs in Incognito System cases, per my recommendation. Refer to the graphic guide that follows for those recommendations (Figure 27 and Figure 28).



**Figure 26:**  
Treatment Guide for Extraction Cases with the 3M™ Incognito™ Appliance System.

| Mechanics Pattern of the En-Masse Retraction                                       |                        |   |                                       |                                       |                                       |
|--|------------------------|---|---------------------------------------|---------------------------------------|---------------------------------------|
|  |                        |   |                                       |                                       |                                       |
| Power chain 3 to 7   |                        | Light Anti Bowing Curve                 | Anti Bowing Curve                     | Anti Bowing Curve                     | Power chain TAD to TPA                |
| Double cable   |                        | TPA (recommend)                         | Eight tie TAD to 15,25                | Medium Power Hook                     | Light Anti Bowing Curve               |
| Eight tie 13-33  |                        | Power chain 3 to 7                      | Power chain 3 to 6                    | Power chain P-H to TAD                | Power chain 3 to 7                    |
| Eight tie 13-33, 16-17, 26-27 12, 13, 22, 23 Anti Tipping bend 7 degree            |                        |   |                                       |                                       |                                       |
|  | Conventional Mechanics | Mechanics Type I-a Ext case with no TAD | Mechanics Type II-a Ext case with TAD | Mechanics Type II-b Ext case with TAD | Mechanics Type II-c Ext case with TAD |
| TAD  | Non                    | Non                                     | TAD (alveolar)                        | TAD (alveolar)                        | TAD (alveolar)                        |
| TPA  | Non                    | TPA                                     | Non                                   | Non                                   | TPA                                   |
| Horizontal Anchorage   | Weak                   | Maximum                                 | Weak                                  | Weak                                  | Maximum                               |
| Vertical Anchorage   | Moderate               | Heavy                                   | Moderate                              | Weak                                  | Heavy                                 |
| Anterior/Post Anchorage  | Weak                   | Moderate                                | Heavy                                 | Maximum                               | Maximum                               |

**Figure 27**

| Mechanics Pattern of the En-Masse Retraction  |  |  |  |  |   |
|---|--|--|--|--|---|
|  |  |  |  |  |   |
| Long Power Hook   |  | Long Power Hook                        | Short Power Hook                             |  |   |
| Light Anti Bowing Curve   |  | Light Anti Bowing Curve                | Light Anti Bowing Curve                      | Light Anti Bowing Curve                      | Light Anti Bowing Curve                 |
| Power chain P-H to TAD  |  | TPA (recommend)                        | i-Station                                    | i-Station (multi)                            | AGUPB                                   |
|   |  | Power chain P-H to TAD                 | Power chain P-H to TAD LA                    | Power chain 3 to 7                           | Power chain P-H to TAD                  |
| Eight tie 13-33 12, 13, 22, 23 Anti Tipping bend 7 degree                           |  |  |  |  |   |
|   | Mechanics Type III-a Ext case with TAD | Mechanics Type III-b Ext case with TAD | Mechanics Type III-c Ext case with i-Station | Mechanics Type III-d Ext case with i-Station | Mechanics Type III-e Ext case with AGPB |
| TAD   | TAD (palatal)                          | TAD (palatal)                          | TAD (palatal)                                | TAD (palatal)                                | TAD (palatal)                           |
| TPA   | Non                                    | TPA                                    | i-Station                                    | i-Station (multi)                            | AGUPB                                   |
| Horizontal Anchorage  | Moderate                               | Maximum                                | Weak   | Maximum                                      | Maximum                                 |
| Vertical Anchorage  | Moderate                               | Maximum                                | Weak   | Maximum                                      | Maximum                                 |
| Anterior/Post Anchorage   | Heavy                                  | Maximum                                | Maximum/Dist. move                           | Maximum/Dist. move                           | Maximum/Dist. move                      |

**Figure 28**

## Section C: Case documentations

### Learning Objectives

Accurate torque control and robust standardized archwires are the most notable clinical advantages of this fully customized ribbon-wise lingual system. These advantages are the results of a perfectly customized bracket base, extremely accurate bracket slot, and ribbon-wise archwires allowing the achievement of reliable torque control without vertical bowing effect. Our goal is to demonstrate effective, efficient controls for any bowing effect using various sites of the Temporary Anchorage Devices (TADs) in the conjunction with the Incognito System – a fully customized ribbon-wise lingual bracket appliance system.

### Key Points

- The Incognito System is a fully customized ribbon-wise lingual bracket appliance system.
- It provides improved accuracy in tooth positioning, as well as improved control over vertical and horizontal bowing effects.
- Included is a chart of optimal insertion sites for TADs, per my recommendation.

Case photos provided by Dr. Toru Inami.



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