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3M℠ Health Care Academy

Clarity™ ADVANCED Ceramic Brackets

Case Overview

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Contributing Doctors

Dr. Patrice Pellerin, DDS

Dr. Pellerin received his post graduate Certificate in Orthodontics in 1991 from the University of Montreal. Before orthodontics, he practiced general dentistry for four years after earning his dental degree from the University of Montreal in 1985. Since 1991, he has maintained a solo private practice in Lachine, Quebec. In 1998, Dr. Pellerin converted his practice to a fully aesthetic practice.

He is referred to by his peers as the grandfather of the completely aesthetic practice. He has lectured worldwide to share his practice philosophy of highest aesthetics without compromise to accomplish treatment. Dr Pellerin also currently teaches lingual and aesthetic orthodontics to the residents at the University of Montreal and University of Winnipeg. He has been an active member of the 3M Unitek Advisory Committee for Aesthetic Appliances since 2003, as well as a 3M Advocate for the use of aesthetic appliances since 2004.

Dr. Anoop Sondhi

Dr. Anoop Sondhi received his dental degree from the Indiana University School of Dentistry, and his post-graduate certificate and M.S. in Orthodontics from the University of Illinois in 1977. Following his graduation, he was on the graduate faculty of the Department of Orthodontics at Indiana University. During his full-time academic appointment at Indiana University, he maintained a part-time private practice. Since 1988, he has been in full-time private practice in Indianapolis, and continues to be a Visiting Professor for several graduate programs in Orthodontics. He has presented seminars and continuing education courses to several dental and Orthodontic organizations in the United States, and has been invited to give courses in Canada, Central America, South America, Europe, Asia, South Africa, Australia and New Zealand.

Foreword

Dr. Patrice Pellerin, DDS

When I began practicing orthodontics, I was interested in delivering aesthetic appliances to my patients from the very beginning. Unfortunately, that was still in the early days of "clear" braces when they were made of plastic or sapphire or another material; manufacturers had a good concept but frankly, those appliances were not optimal. 1998 brought a big change for me when I began treating all of my patients with Clarity™ Braces, i.e. upper and lower full arches as much as possible, second bicuspid to second bicuspid, unless nature didn't allow me to do it. This was a precursor to how I practice today, and I remember the skepticism on fellow doctors' faces as I lectured around the world on "The Aesthetic Practice" and the fact that I treated close to 100% of my cases with clear braces.

Today, with the quality, control, and response of Clarity™ ADVANCED Ceramic Brackets, this is now the bracket of choice in my practice, regardless of the age of the patient or the treatment mechanics required for the case. I am able to treat malocclusions in the same amount of time, and with the same results, as I can with metal brackets. 99.9% of my patients choose clear braces instead of metal, and therefore they are treated with Clarity ADVANCED Brackets. The type of malocclusion does not restrict the clinician's choice of appliances as it once did – occasionally the anatomy of the teeth may but that is your only limit, the only other one being yourself! If patients are allowed to choose the nicest appliances for the same cost, one might be surprised at how the very vast majority would opt for Clarity ADVANCED Brackets. If you're an advocate of self-ligation, the Clarity™ SL Self-Ligating Appliance System will do it for you.

Advancements in orthodontic product materials and manufacturing allow us to work with aesthetic brackets that are equal to metal appliances in torque and rotational control, offering efficient, comfortable and aesthetic treatment to all potential orthodontic patients including those with deep bites, open bites, and patients requiring surgery.

With the availability of today's modern aesthetic appliances, the sky is the limit in what we can achieve clinically while allowing our patients the opportunity to choose how they look during treatment. With Clarity ADVANCED and Incognito™ Lingual Brackets being available, the only question I can ask my patients is: How discreet do you want your appliances to be? The technology is certainly available. This guide on Clarity ADVANCED Brackets will show you varying case examples and different treatment mechanics to demonstrate how ceramic braces can be used for all your patients, regardless of the malocclusion and respecting your patient's choice for aesthetic treatment.

Class I Cases

CLASS I

Case 1: Class I with crooked lower front teeth; Light Class II relationship on the left side

Patient
Female (M.D.L.)
20 years 3 months

Patient's Main Concern
Crooked lower front teeth, and too long and too forward upper front teeth

X-ray Findings
- Complete permanent dentition
- Pneumatized maxillary sinuses
- Evidence of formation of wisdom teeth

*Patient should have removed earrings before X-ray

Dental Analysis
- Class I with a light Class II relationship on the left side
- Light to moderate crowding in both arches
- Midline discrepancy
- Narrow upper jaw

Treatment Plan
- Upper/Lower – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF[1])
- Bonding charts:
  Upper MBT System open bite 4.5 mm
  Lower MBT System open bite 4.5 mm
- Use of a half bracket[2] on LL1
- Light Class II elastics to correct the Class II relation
- Indirect Bonding Double Clear Tray Technique

Treatment	12 months (April 2013 – April 2014)		
Mx	April 2013	Indirect	14 SE[3] (5s), 16×22 SE (4s), 17×25 Classic[4] (26s), 16×16 SE (4s), 17×25 Classic to the end
Md	April 2013	Indirect	14 SE (13s), 18 SE (6s), 16×22 SE (11s), 17×25 Classic (7s), 16×16 SE (5s), 17×25 Classic to the end
# of visits	13		
Emergencies	0[5]		

Retention
- Fixed lingual wires 0.018 TMA
- Upper canine to canine/
  Lower first bicuspid to first bicuspid

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Cephalometric Analysis					
SNA (°)	82.4	82.0	3.5	0.1	
SNB (°)	76.6	80.9	3.4	-1.3	*
ANB (°)	5.7	1.6	1.5	2.7	**
Maxillary Depth (FH-NA) (°)	91.4	90.0	3.0	0.5	
Facial Angle (FH-NPo) (°)	86.5	88.6	3.0	-0.7	
FMA (MP-FH) (°)	27.9	23.9	4.5	0.9	
UFH:LFH, Upper (N-ANS/N-Gn) (%)	43.3	45.0	1.0	-1.7	*
U-Incisor Protrusion (U1-APo) (mm)	2.2	6.0	2.2	-1.7	*
U1 – Palatal Plane (°)	104.0	110.0	5.0	-1.2	*
L1 Protrusion (L1-APo) (mm)	-1.0	2.7	1.7	-2.2	**
IMPA (L1-MP) (°)	91.2	95.0	7.0	-0.5	
Interincisal Angle (U1-L1) (°)	136.2	130.0	5.0	1.2	*
Upper Lip to E-Plane (mm)	-4.9	-6.0	2.0	0.5	
Lower Lip to E-Plane (mm)	-2.2	-2.0	2.0	-0.1	
Nasolabial Angle (Col-Sn-UL) (°)	124.9	102.0	8.0	2.9	**
Maxillary length (ANS-PNS) (mm)	51.2	51.6	4.3	-0.1	
Mandibular length (Go-Gn) (mm)	73.1	65.9	5.5	1.3	*
Facial Convexity (G'–Sn-Po') (°)	160.9	154.0	5.6	1.2	*
Wits Appraisal (mm)	3.6	-1.0	1.0	4.6	****
SUMMARY ANALYSIS					
Class II Molar Relationship					
Skeletal Class II (A-Po)					
Skeletal Class II (ANB)					
Retrusive Mandible (Pg-N)					

CLASS I – Case 1 (continued)

Initial

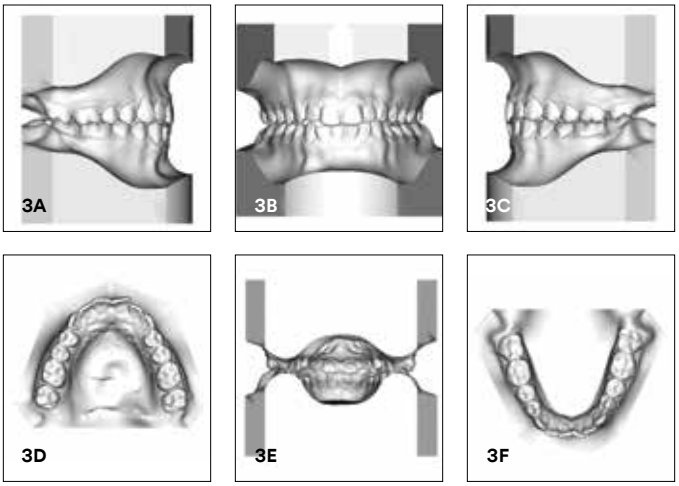


Figure 3A-F: Initial dental analysis.

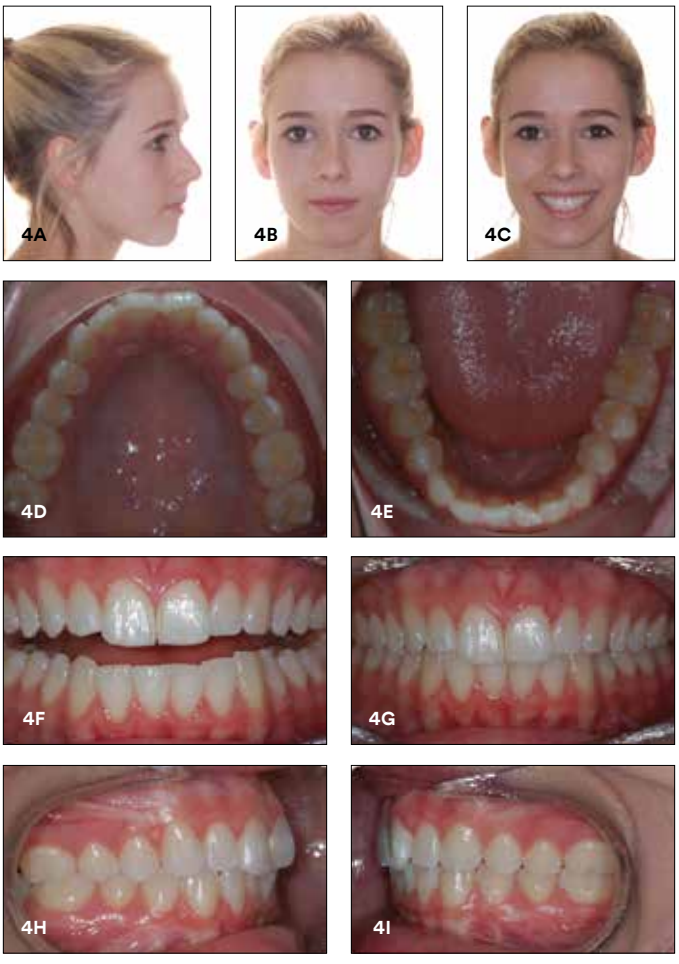


Figure 4A-I: Initial photos.

Clarity™ ADVANCED Ceramic Brackets Half Brackets

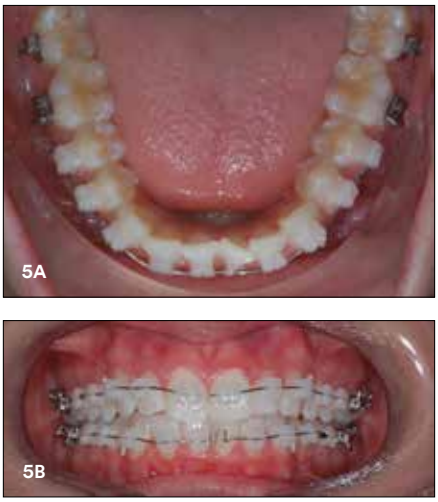


Figure 5A-B

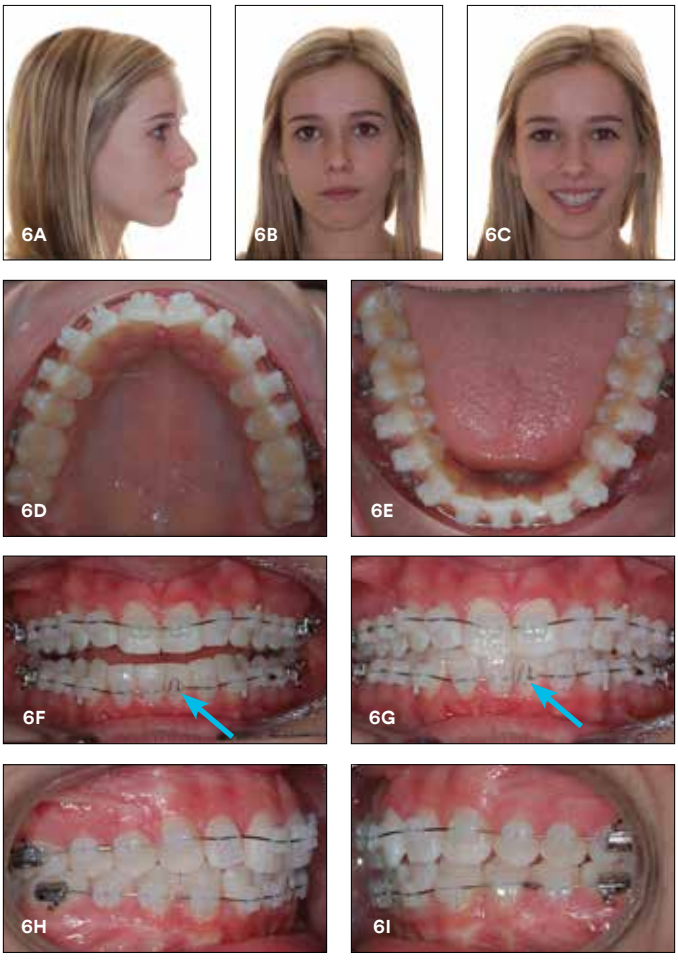


Figure 6A-I

CLASS I – Case 1 (continued)

Mid-Treatment

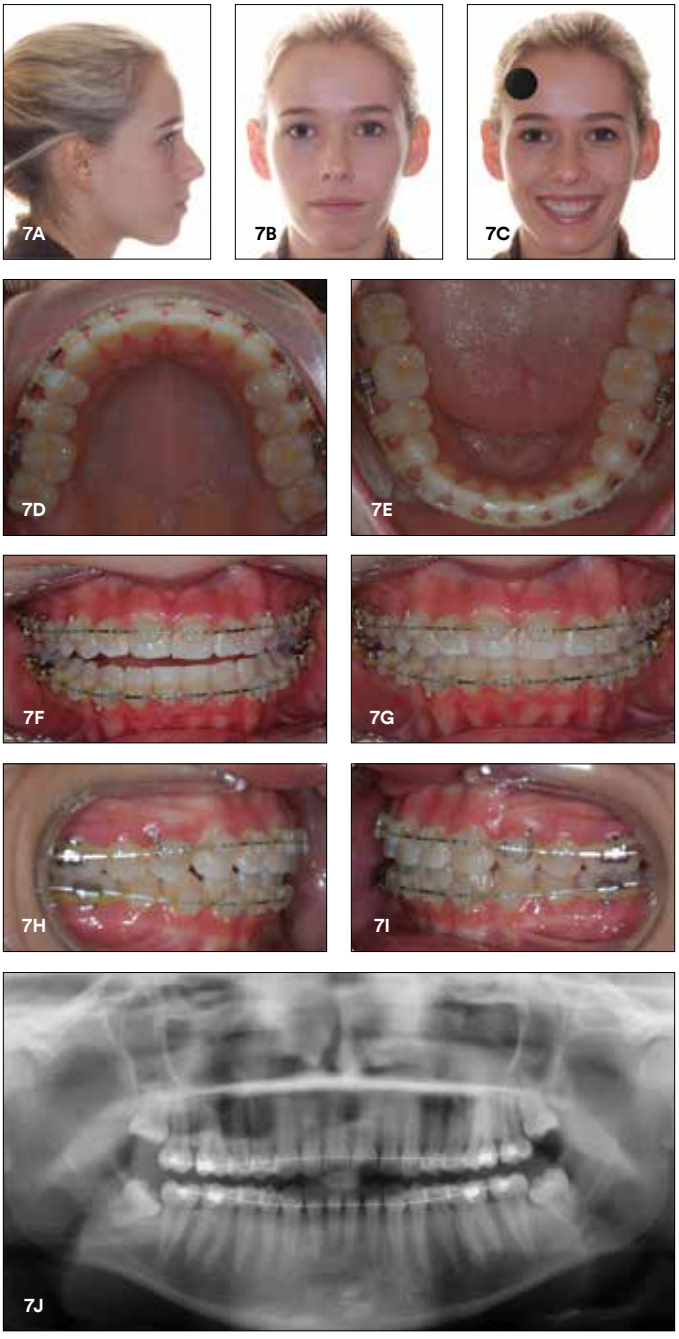


Figure 7A-J: Mid-treatment photos.

Retention

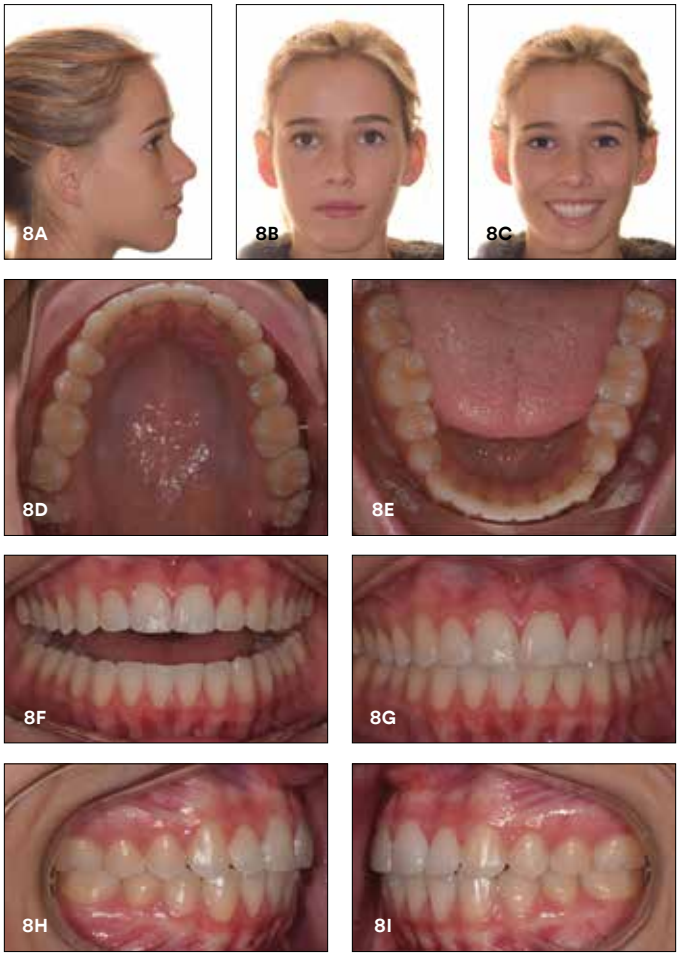


Figure 8A-I: Retention photos.

CLASS I – Case 1 (continued)

Initial and Final Comparison

Figure 9A-B: Initial vs. final.

Figure 10A-B: Initial vs. final.

Doctor's Notes

1. **APCFF** denotes **APC**™ **F**lash-**F**ree Adhesive Coated Appliance
2. If a severe rotation doesn't allow you to position a normal bracket in the proper position on the tooth, one may choose to first open the space with coil or use an eyelet or buttons. Once the rotation is corrected and there is access, a regular bracket can be positioned.

   My preference is to take advantage of a feature unique to all the brackets in the Clarity™ brand bracket family: a pre-serrated bracket base that facilitates consistent and easy debonding. This feature enables the clinician to cut the Clarity bracket in two, allowing access to proper bracket positioning ("LA" point) with torque and angulation control (always depending of the bracket you are using - in this case, a lower anterior bracket with MBT™ Appliance System prescription has no angulation). To do so, simply use a sharp pin and ligature cutter to easily create a smaller bracket with the correct torque and angulation. The reason to use a "sharp" pin and ligature cutter is not to cut the bracket (they are pre-serrated), but rather to cut the non-woven mat in the case of Clarity™ ADVANCED Brackets with APC™ Flash-Free Adhesive, or the metal slot in the case of a Clarity™ SL Self-Ligating Bracket.
3. **SE** denotes NiTi Super Elastic wire
4. **Classic** denotes NiTi Classic wire
5. Using **APC**™ **Flash-Free Adhesive with indirect bonding,** no bond failures or emergency appointments during treatment.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

CLASS I

Case 2: Class I with spaces between the front teeth; Anterior cross bite, midline discrepancy

Patient
Male (B.C.)
33 years, 2 months

Patient's Main Concern
Spaces in between the front teeth and history of bruxism

*Patient came for a first consultation in October 2007, came back to start treatment in October 2013.

X-ray Findings
- Permanent dentition, no wisdom teeth
- Pneumatized maxillary sinuses
- Root dilaceration UL1, LL5
- Bonding material mesial of UR1, UL1

Dental Analysis
- Class I molar and cuspid
- Inadequate OB
- Negative OJ with anterior cross bite and procline lower anterior
- Midline discrepancy
- Tooth size-arch length discrepancy
- Wide upper labial frenum

Treatment Plan
- Upper/Lower – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF)
- Indirect Bonding using bonding open bite charts 5 mm for the upper and open bite 4.5 mm for the lower arch
- Close the lower spaces first
- When the OJ is positive, start closing the upper spaces and remove the bonding material on UR1, UL1
- Class I and vertical elastic mechanics
- Reassess the upper labial frenum

Treatment	18 months (October 2013 – April 2015)		
Mx	October 2013	Indirect	14SE (6s), 16×16 SE (6s), 17×25 Classic (18s), 16×16 SE (4s), 17×25 Classic to the end[1]
Md	October 2013	Indirect	14SE(6s), 16×16 SE (6s), 17×25 Classic (14s), 16×22 SE (8s), 17×25 Classic to the end[1]
# of visits	21		
Emergencies	2 for broken elastic chain; 1 for poking wire		

Retention
- Fixed lingual wires 0.018 TMA
- Upper canine to canine/Lower first bicuspid to first bicuspid

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Initial Analysis					
SNA (°)	90.3	82.0	3.5	2.4	**
SNB (°)	86.3	80.9	3.4	1.6	*
ANB (°)	4.0	1.6	1.5	1.6	*
Maxillary Depth (FH-NA) (°)	100.2	90.0	3.0	3.4	***
Facial Angle (FH-NPo) (°)	95.6	89.6	3.0	2.0	**
FMA (MP-FH) (°)	11.2	22.9	4.5	-2.6	**
UFH:LFH, Upper (N-ANS/N-Gn) (%)	46.4	45.0	1.0	1.4	*
U-Incisor Protrusion (U1-APo) (mm)	3.0	6.0	2.2	-1.3	*
U1 – Palatal Plane (°)	117.6	110.0	5.0	1.5	*
L1 Protrusion (L1-APo) (mm)	4.3	2.7	1.7	0.9	
IMPA (L1-MP) (°)	111.2	95.0	7.0	2.3	**
Interincisal Angle (U1-L1) (°)	119.3	130.0	5.0	-2.1	**
Upper Lip to E-Plane (mm)	-4.4	-8.0	2.0	1.8	*
Lower Lip to E-Plane (mm)	1.0	-2.0	2.0	1.5	*
Nasolabial Angle (Col-Sn-UL) (°)	117.6	102.0	8.0	2.0	**
Maxillary length (ANS-PNS) (mm)	52.0	51.6	4.3	0.1	
Mandibular length (Go-Gn) (mm)	68.6	65.9	5.5	0.5	
Facial Convexity (G'–Sn-Po') (°)	165.0	154.0	5.6	2.0	**
Wits Appraisal (mm)	-0.4	-1.0	1.0	0.6	
SUMMARY ANALYSIS					
Class I Molar Relationship					
Skeletal Class I (A-Po)					
Low Mandibular Plane Angle					
Protrusive Maxilla (A-N)					
Protrusive Mandible (Pg-N)					
Anterior Cross Bite					

CLASS I – Case 2 (continued)

Initial

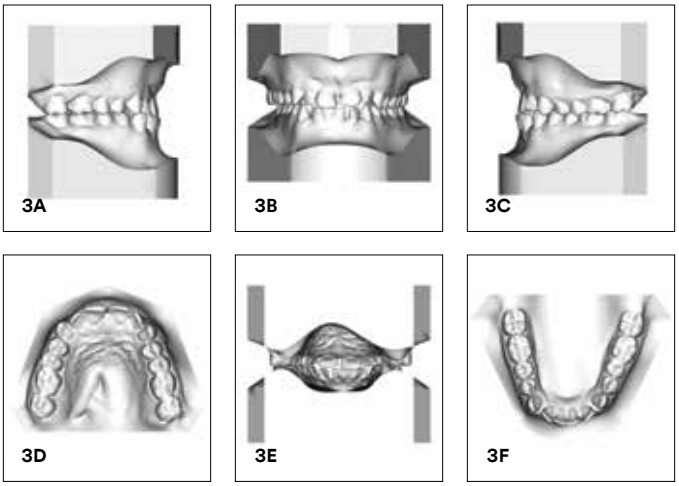


Figure 3A-F: Initial dental analysis.

Figure 4A-I: Initial photos.

Mid-Treatment

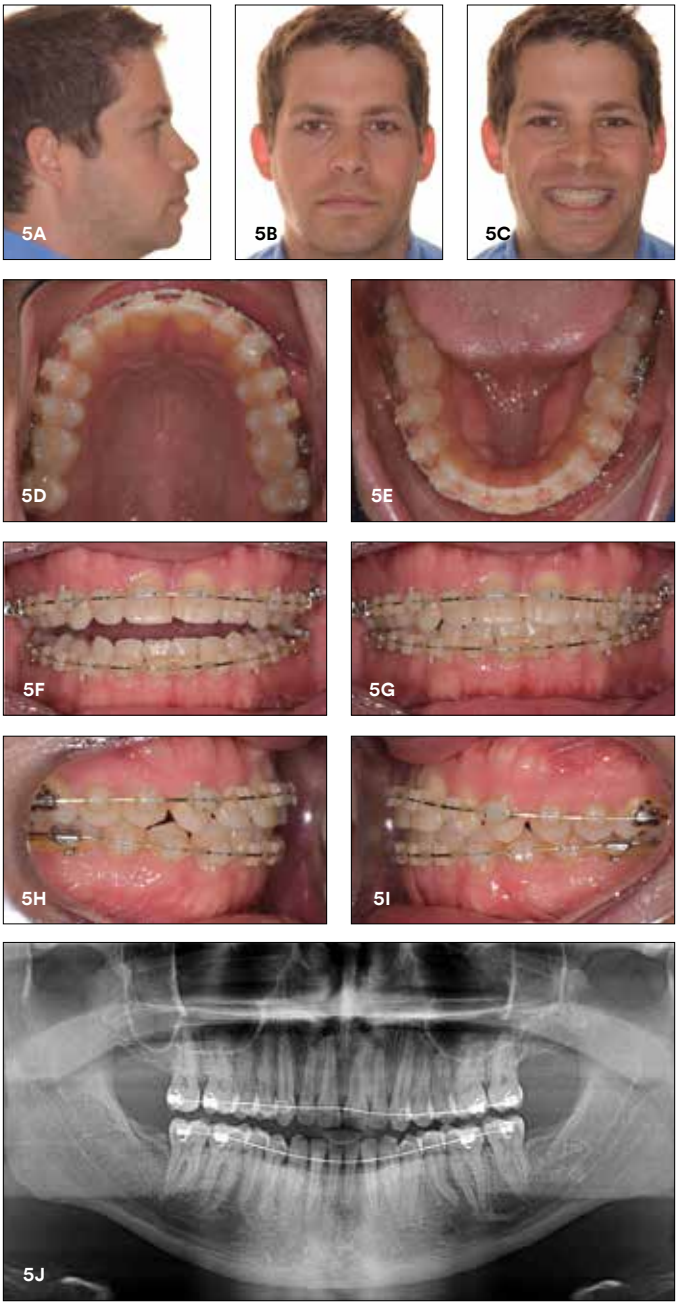


Figure 5A-J: Mid-treatment photos.

CLASS I – Case 2 (continued)

Retention

Figure 6A-J: Retention photos.

Initial and Final Comparison

Figure 7A-B: Initial vs. final.

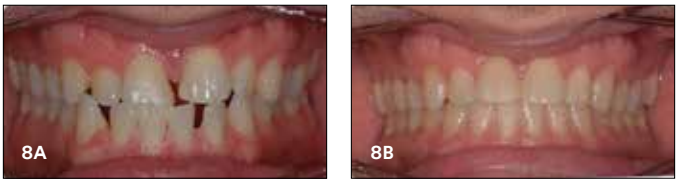


Figure 8A-B: Initial vs. final.

CLASS I – Case 2 (continued)

Doctor's Notes

1. The sliding mechanics were done on a NiTi Classic wire. Two things to point out, with 0.018 slot brackets the finishing wire is smaller, thus if you use too much force while closing the spaces you may create some curve of Spee. This is something to be aware of, and if it happens, your two options are to reduce the forces used to close space, or to have the patient work with vertical elastics at night to counteract the side effects.
2. Regarding sliding resistance, some studies indicate that sliding in the presence of saliva is better on NiTi wire than on Stainless Steel.

Thorstenson GA, Kusy RP. Resistance to sliding of self-ligating brackets versus conventional stainless steel twin brackets with second-order angulation in the dry and wet (saliva) states. Am J Orthod Dentofacial Orthop. 2001;120:361-70

Thorstenson GA, Kusy RP. Comparison of resistance to sliding between different self-ligating brackets with second-order angulation in the dry and saliva states. Am J Orthod Dentofacial Orthop. 2002;121:472-82.

Kusy RP, Whitley JQ. Resistance to sliding of orthodontic appliances in the dry and wet states: Influence of archwire alloy, interbracket distance, and bracket engagement. J Biomed Mater Res. 2000;52:797-811.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

CLASS I

Case 3: Class I with Class II cuspid relationship; Residual spaces at the maxilla

Patient
Female (A.B.)
14 years, 9 months

Patient's Main Concern
Want straighter teeth

*This patient was first seen for a consultation in 2008, serial extractions were performed with extraction of the 4 first bicuspids in 2010.

X-ray Findings
- Permanent dentition
- Pneumatized maxillary sinuses
- Missing the 4 first bicuspids
- Evidence of formation the 4 wisdom teeth

Dental Analysis
- Class I molar relationship, Class II cuspid relationship
- Residual spaces at the maxilla
- Excessive OB
- Moderate lower curves of Spee and Wilson

Treatment Plan
- Upper/Lower – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF)
- Bonding charts: Upper/Lower MBT System standard 4.0 mm
- Light Class II elastics on both sides, upper cuspid to lower first molars

Treatment	13 months (August 2013 – September 2014)		
Mx	August 2013	Indirect	14SE (7s), 16×22 SE (14s), 17×25 Classic to the end
Md	August 2013	Indirect	14SE (7s), 16×22 SE (7s), 17×25 Classic to the end
# of visits	11		
Emergencies	0		

Retention
- Fixed lingual wires 0.018 TMA
- Upper canine to canine/Lower first bicuspid to first bicuspid

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Initial Analysis					
SNA (°)	85.9	82.0	3.5	1.1	*
SNB (°)	78.8	80.9	3.4	-0.6	
ANB (°)	7.2	1.6	1.5	3.7	***
Maxillary Depth (FH-NA) (°)	92.9	90.0	3.0	1.0	*
Facial Angle (FH-NPo) (°)	84.5	88.6	3.0	-1.4	*
FMA (MP-FH) (°)	28.8	23.9	4.5	1.1	*
UFH:LFH, Upper (N-ANS/N-Gn) (%)	43.5	45.0	1.0	-1.5	*
U-Incisor Protrusion (U1-APo) (mm)	5.1	6.0	2.2	-0.4	
U1 – Palatal Plane (°)	109.4	110.0	5.0	-0.1	
L1 Protrusion (L1-APo) (mm)	-0.6	2.7	1.7	-1.9	*
IMPA (L1-MP) (°)	93.7	95.0	7.0	-0.2	
Interincisal Angle (U1-L1) (°)	131.1	130.0	5.0	0.2	
Upper Lip to E-Plane (mm)	-1.3	-5.9	2.0	2.3	**
Lower Lip to E-Plane (mm)	2.1	-2.0	2.0	2.1	**
Nasolabial Angle (Col-Sn-UL) (°)	104.7	102.0	8.0	0.3	
Maxillary length (ANS-PNS) (mm)	41.9	51.6	4.3	-2.3	**
Mandibular length (Go-Gn) (mm)	62.1	65.9	5.5	-0.7	
Facial Convexity (G'–Sn-Po') (°)	162.3	154.0	5.6	1.5	*
Wits Appraisal (mm)	5.2	-1.0	1.0	6.2	******
SUMMARY ANALYSIS					
Class I Molar Relationship					
Skeletal Class II (A-Po)					
Skeletal Class II (ANB)					
Retrusive Mandible (Pg-N)					
Deep Overbite					

CLASS I – Case 3 (continued)

Initial

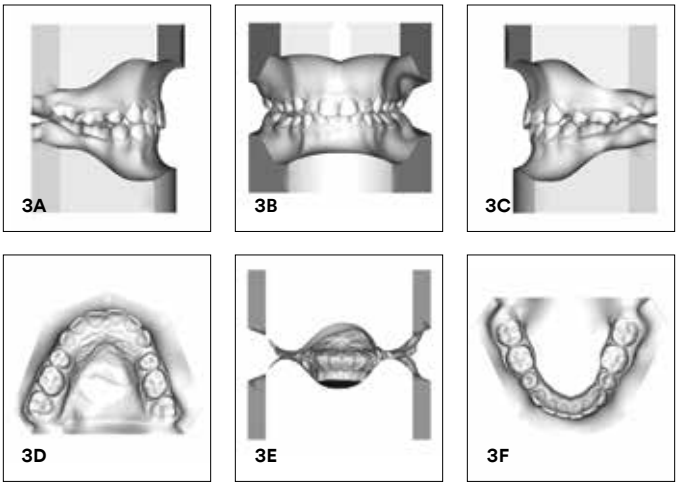


Figure 3A-F: Initial dental analysis.

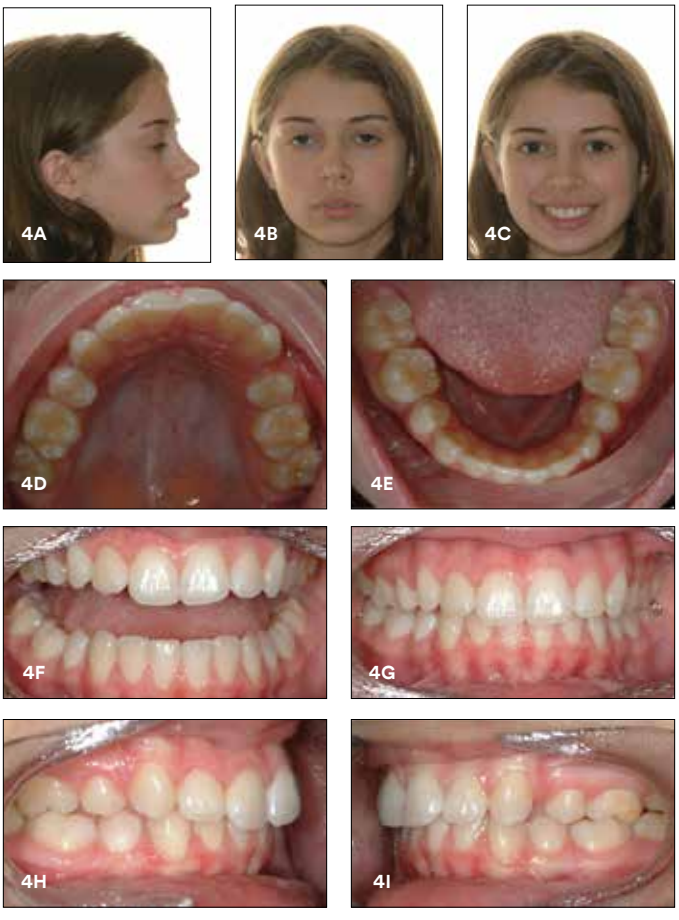


Figure 4A-I: Initial photos.

Mid-Treatment

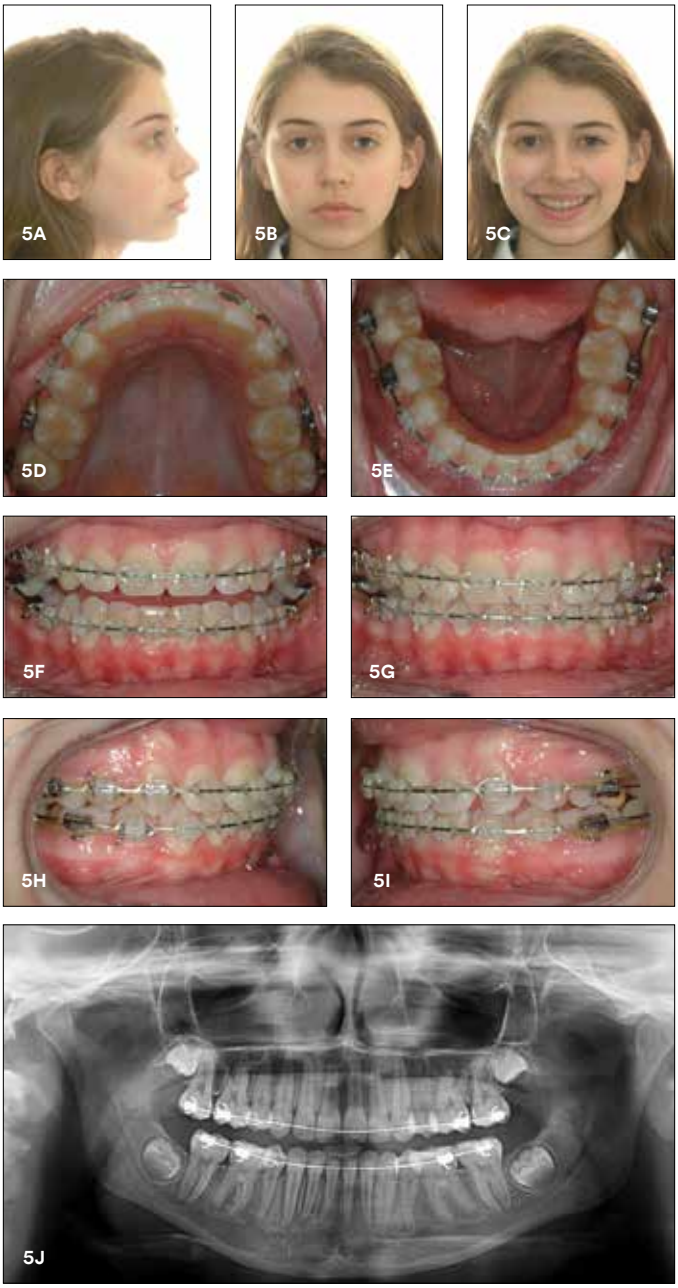


Figure 5A-J: Mid-treatment photos.

CLASS I – Case 3 (continued)

Retention

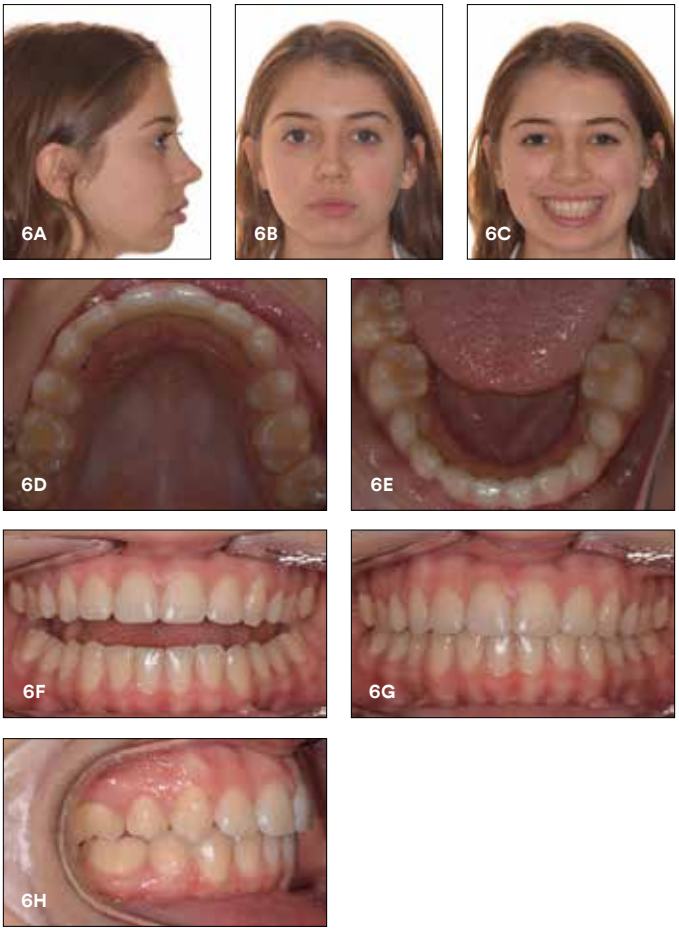


Figure 6A-H: Retention photos.

Initial and Final Comparison

Figure 7A-B: Initial vs. final.

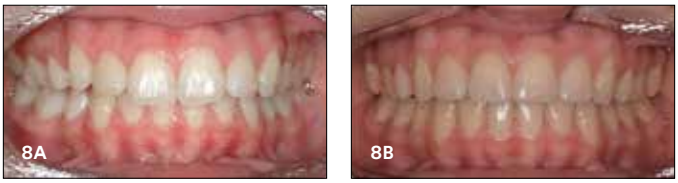


Figure 8A-B: Initial vs. final.

Doctor's Notes

1. Good vertical control and torque expression with Clarity™ ADVANCED Ceramic Brackets with APC™ Flash-Free Adhesive.

*My apology for the missing left lateral final photo.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

Class II Cases

CLASS II

Case 1: Class II on right side; Midline discrepancy; Extractions; Class II Correctors

Patient
Female (C. DR.)
14 years, 10 months

Patient's Main Concern
The middle of my teeth is not in line and noise in my jaw (TMJ) when I close

X-ray Findings
- Permanent dentition
- Evidence of formation the 4 wisdom teeth (upper at Nola stage 7)[1]
- Irregular and asymmetrical condyles

Dental Analysis
- Class II subdivision on patient's right side
- Inadequate OJ/OB
- Midline discrepancy
- Very light dental irregularity in the upper arch

Treatment Plan
- Upper/lower – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF)
- Bonding charts: upper/lower MBT System standard 4.5 mm
- Band with occlusal headgear tube on UR6
- Extraction of UR7 and UR8 (wisdom tooth) will be kept as replacement for UR7, the Nola developmental stage indicates that the wisdom tooth (UR8) will erupt during treatment
- Forsus™ Fatigue Resistant Device on patient's right side to regain the class I molar relationship
- Light class II elastics to finalize the midline correction

Treatment	**12 months (March 2013 – March 2014)**		
Mx	March 2013	Indirect	14 SE (14s), 17×25 Classic to the end
Md	March 2013	Indirect	14 SE (14s), 17×25 Classic to the end
# of visits	13		
Emergencies	1, canker sore (lower right)		

Retention
- Fixed lingual wires 0.018 TMA
- Upper canine to canine/lower first bicuspid to first bicuspid

*UR8 was erupted enough and in contact with LR7, so no other specific retention was required to prevent extrusion of LR7

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Cephalometric Analysis					
SNA (°)	86.5	82.0	3.5	1.3	*
SNB (°)	81.8	80.9	3.4	0.3	
ANB (°)	4.7	1.6	1.5	2.1	**
Maxillary Depth (FH-NA) (°)	94.3	90.0	3.0	1.4	*
Facial Angle (FH-NPo) (°)	90.5	88.6	3.0	0.7	
FMA (MP-FH) (°)	16.5	23.9	4.5	-1.7	*
UFH:LFH, Upper (N-ANS/N-Gn) (%)	45.3	45.0	1.0	0.3	
U-Incisor Protrusion (U1-APo) (mm)	2.7	6.0	2.2	-1.5	*
U1 – Palatal Plane (°)	112.3	110.0	5.0	0.5	
L1 Protrusion (L1-APo) (mm)	-1.3	2.7	1.7	-2.3	**
IMPA (L1-MP) (°)	100.1	95.0	7.0	0.7	
Interincisal Angle (U1-L1) (°)	128.3	130.0	5.0	-0.3	
Upper Lip to E-Plane (mm)	-5.1	-5.9	2.0	0.4	
Lower Lip to E-Plane (mm)	-4.7	-2.0	2.0	-1.3	*
Nasolabial Angle (Col-Sn-UL) (°)	126.8	102.0	8.0	3.1	***
Maxillary Length (ANS-PNS) (mm)	50.5	51.6	4.3	-0.2	
Mandibular Length (Go-Gn) (mm)	65.3	65.9	5.5	-0.1	
Facial Convexity (G'-Sn-Po') (°)	166.2	154.0	5.6	2.2	**
Wits Appraisal (mm)	4.6	-1.0	1.0	5.6	*****
SUMMARY ANALYSIS					
Class II Molar Relationship					
Skeletal Class II (A-Po)					
Skeletal Class II (ANB)					
Low Manibular Plane Angle					
Protrusive Maxilla (A-N)					

CLASS II – Case 1 (continued)

Initial

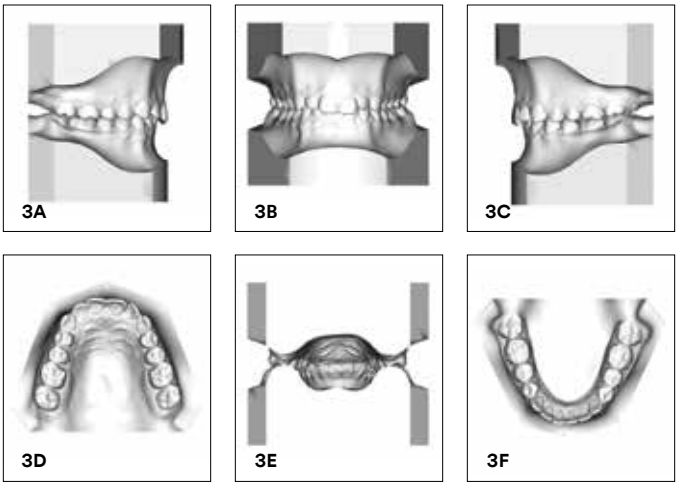


Figure 3A-F: Initial dental analysis.

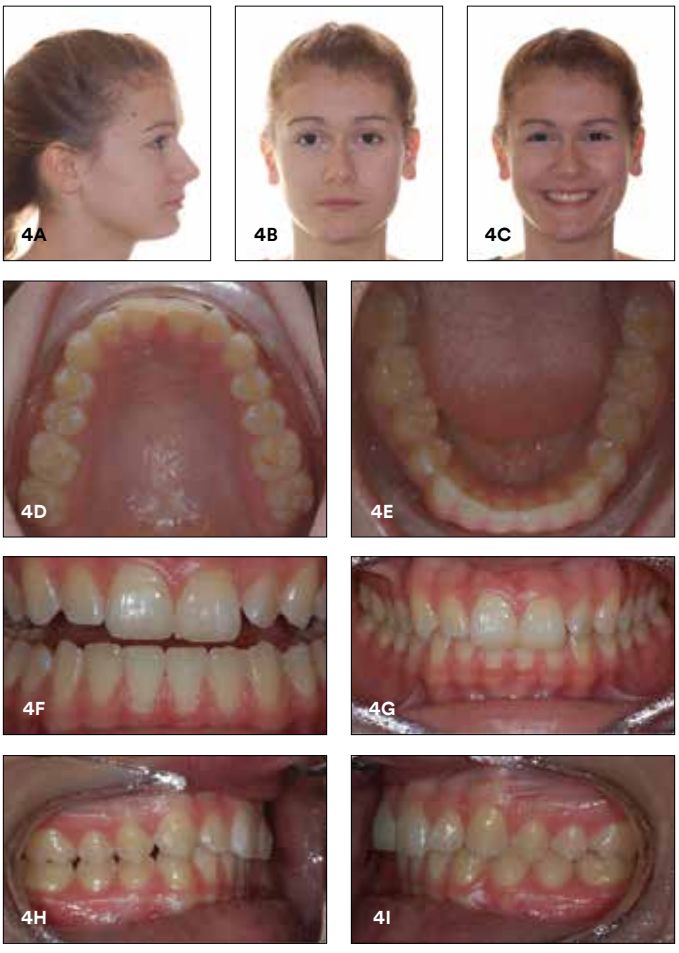


Figure 4A-I: Initial photos.

Treatment Plan

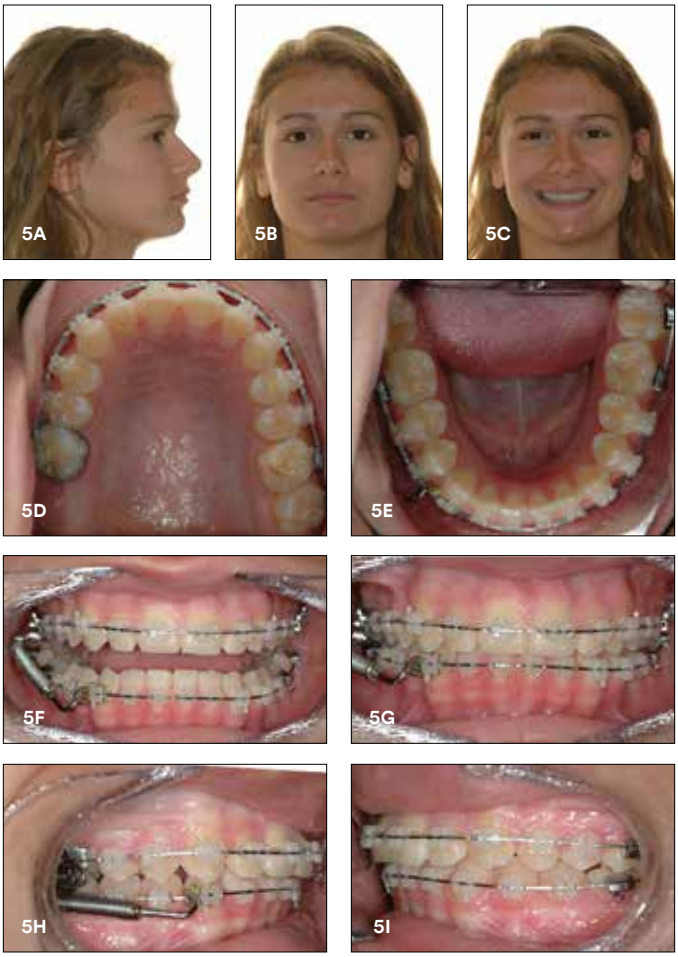


Figure 5A-I: Treatment plan photos.

CLASS II – Case 1 (continued)

Mid-Treatment

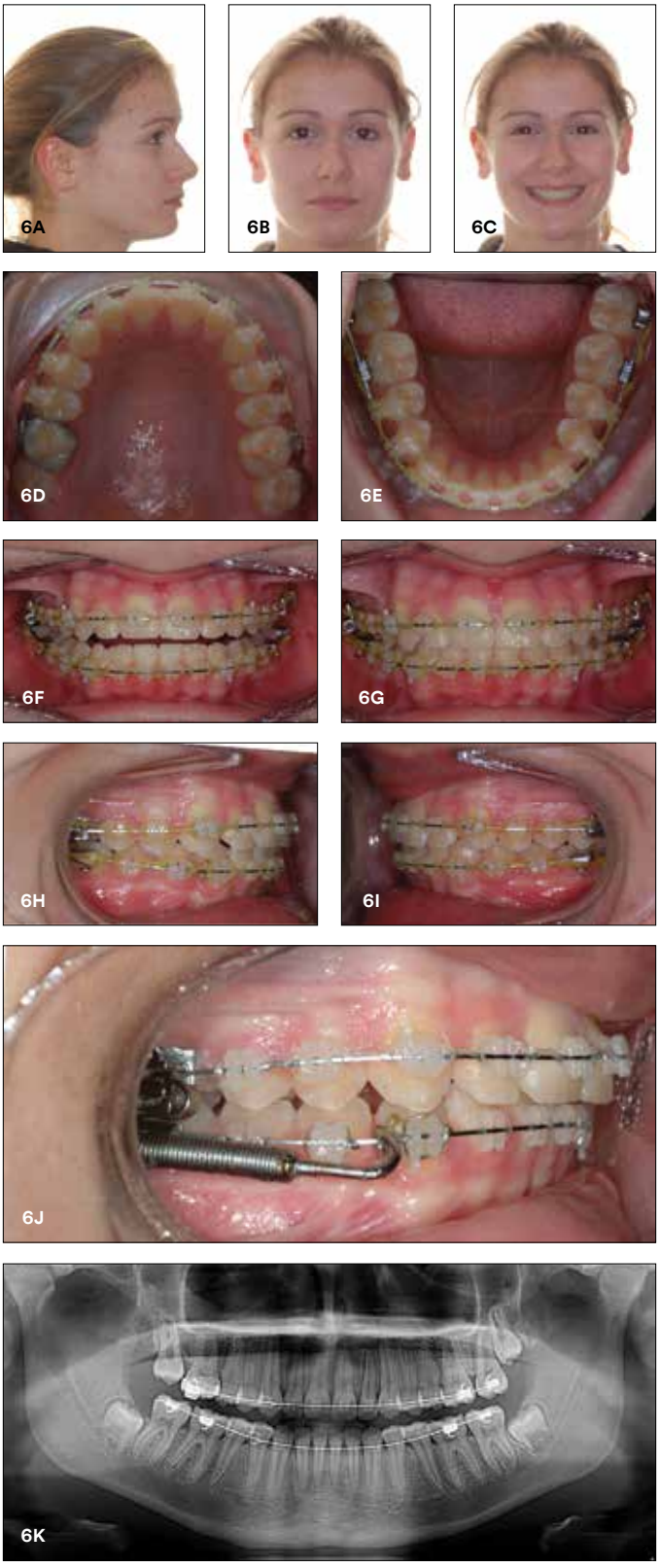


Figure 6A-K: Mid-treatment photos.

Retention

Figure 7A-J: Retention photos.

CLASS II – Case 1 (continued)

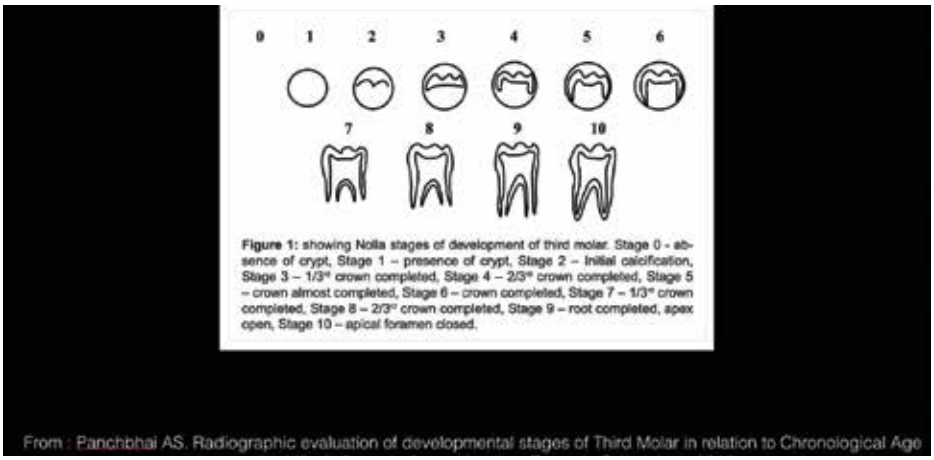
Initial and Final Comparison

Figure 8A-B: Initial vs. final.

Figure 9A-B: Initial vs. final.

Doctor's Notes

1. Nola stage of development is used to assess the formation of the wisdom teeth in a molar extraction case.



2. Note the use of an AlastiK™ Guard on the distal aspect of the cuspid where the Forsus™ Fatigue Resistant Device will apply force to increase patient comfort and protect the bracket.
   a. Install the AlastiK Guard before engaging the wire.
   b. Engage the wire and place a steel tie on the brackets of teeth mesial and distal of the Forsus device.
   c. From here, follow the regular Forsus appliance installation instructions.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

CLASS II

Case 2: Class II Asymmetric malocclusion; Severe midline discrepancy; Posterior open bite

Patient
Female
28 years, 10 months

Patient's Main Concern
Inability to bite posterior teeth together, midline discrepancy. Previous treatment w/ Invisalign® was unsuccessful.

X-ray Findings
- Complete permanent dentition
- Third molars have been extracted
- Atypical root morphology noted on teeth #18, 19, 30 and 31

Dental Analysis
- Asymmetric Class II Division 1 malocclusion
- Right side half cusp Class II
- Left side Class I
- Severe midline discrepancy
- Bilateral posterior open bite

Treatment Plan
- Upper/Lower Clarity™ ADVANCED Ceramic Brackets .018 slot – Variable Prescription
- Molar tube set atypically to upright tooth #19
- Class II elastics on the right side for Class II correction
- Indirect Bonding with Sondhi™ Rapid Set Indirect Bonding System
- No emergency appointments

Treatment	**13 months (March 2014 – April 2015)**		
Mx	4/16/14	Indirect	.016 Nitinol SE .016x.022 Nitinol .016x.022 SS
Md	4/16/14	Indirect	.016 Nitinol SE .016x.022 Nitinol .016x.022 SS
# of visits	6		
Emergencies	0		
Total Treatment Time	11 months		

Retention
- Maxillary and mandibular .040 Essix® Retainers

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Initial Analysis					
Skeletal Measurements					
Convexity (NA-APo) (°)	3.4	4.9	3.0	-0.5	
Facial Angle (FH-NPo) (°)	93.8	88.6	3.0	1.7	*
SNA (°)	83.8	82.0	3.5	0.5	
SNB (°)	81.3	80.9	3.4	0.1	
ANB (°)	2.5	1.6	1.5	0.6	
Palatal-Mand Angle (PP-MP) (°)	20.0	25.0	6.0	-0.8	
Y-Axis (SGn-SN) (°)	64.5	67.0	5.5	-0.5	
Dental Measurements					
Occ Plane to FH (°)	-2.6	-11.0	2.0	4.2	****
IMPA (L1-MP) (°)	93.5	95.0	7.0	-0.2	
Wits Appraisal (mm)	-0.5	-1.0	1.0	0.5	

CLASS II – Case 2 (continued)

Initial

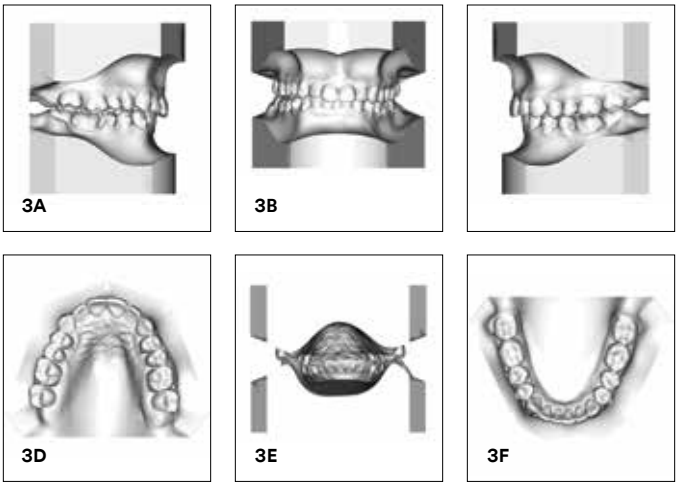


Figure 3A-F: Initial dental analysis.

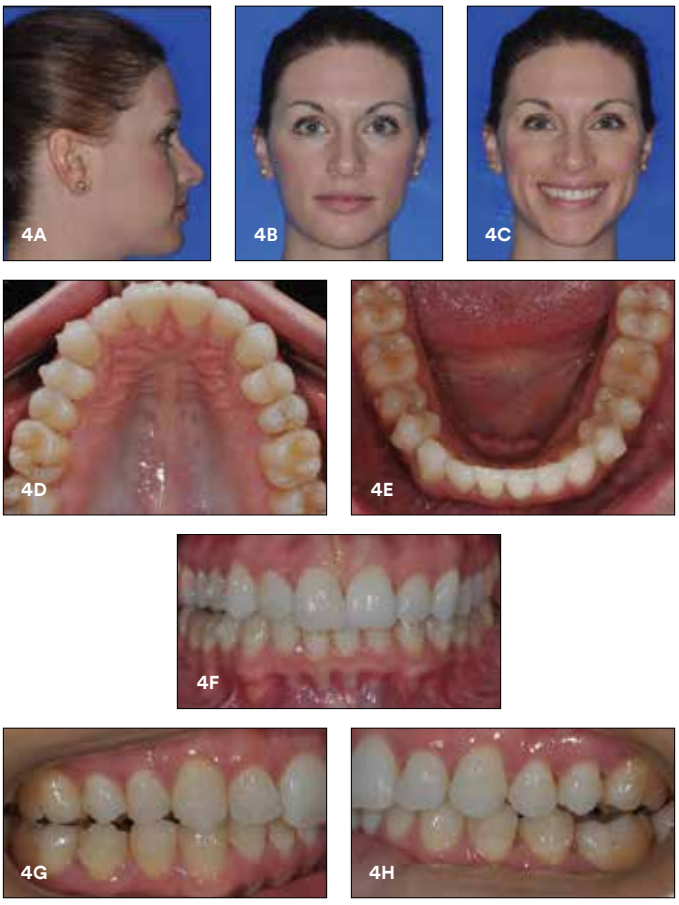


Figure 4A-H: Initial photos.

Mid-Treatment

Figure 5A-E: Mid-treatment photos.

CLASS II – Case 2 (continued)

Final

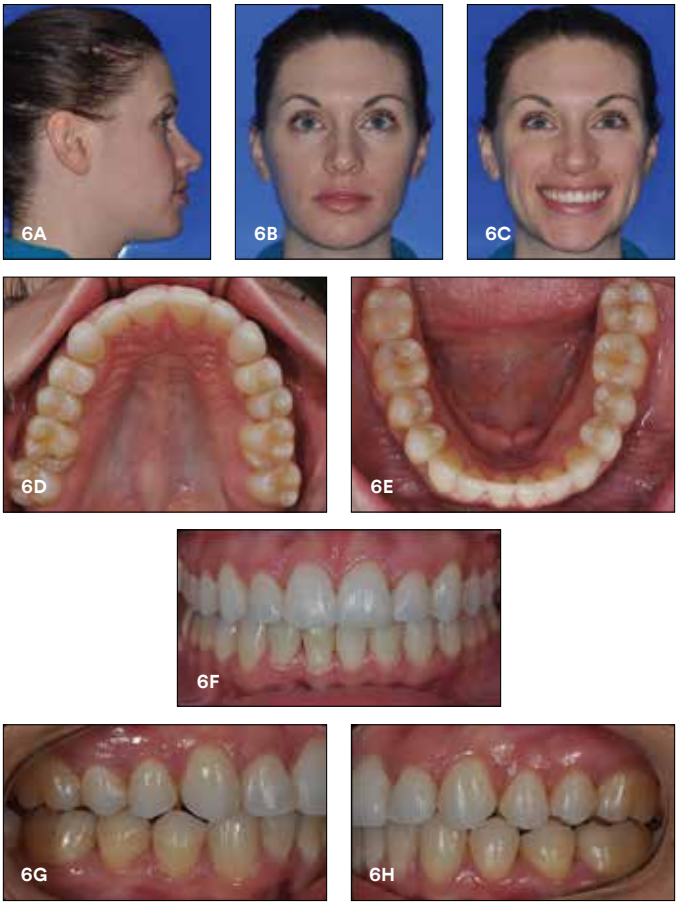


Figure 6A-H: Final photos.

Figure 7: Final X-ray.

Figure 8: Final cephalometric analysis.

CLASS II – Case 2 (continued)

Initial and Final Comparison

Figure 9A-B: Initial vs. final.

Figure 10A-B: Initial vs. final.

Doctor's Notes

This case report demonstrates that adult patients who may not be particularly good candidates for aligner therapy are extremely receptive to the new generation of esthetic brackets.

Case and images provided by Dr. Anoop Sondhi, Indianapolis, Indiana.

Class III Cases

CLASS III

Case 1: Class III cuspid relationship; Crowding; Missing upper biscuspids; Extractions

Patient
Male (S.A.)
36 years, 11 months

Patient's Main Concern
Had extraction of teeth in the upper jaw as a teenager, teeth are very tight, do some more teeth need to be removed?

X-ray Findings
- Permanent dentition
- Missing two upper bicuspids (UR4, UL4?)
- Wisdom teeth erupted
- Pneumatized maxillary sinuses
- Condylar irregularity (left), and asymmetrical

Dental Analysis
- Class II molar relationship, class III cuspid relationship
- Inadequate OJ/OB (end to end relation)
- Missing two upper bicuspids
- Crossbite of teeth UR6, UR2, UL2
- Dental crowding (-6 mm upper arch, -10 mm lower arch)
- Weak attached gingiva, UR6, UL6, LL5

Treatment Plan
- Upper – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF)
- Indirect bonding using bonding open bite charts 4.5 mm
- Extraction of LL5, LR5
- Sectional direct bonding (second molar to first bicuspid) using bonding open bite charts 5 mm, with active tie back retraction
- When the space is adequate direct bonding lower cuspid to cuspid with open bite charts 5 mm
- Class III and vertical elastic mechanics
- Reassess the vertical relationship and patient comfort with the wisdom teeth

Treatment	27 months (October 2012 – January 2015)		
Mx	October 2012	Indirect	14 SE (7s), 16×16 SE (6s), 16×22 SE (6s), 17×25 Classic (25s), 16×22 SE (5s) 17×25 Classic to the end
Md	December 2012	Direct	16×16 SE (6s), 17×25 Classic (12s), 16×16 SE (14s), 14 (12s), 16×16 (12s), 17×25 Classic to the end
# of visits	24		
Emergencies	0		

Retention
- Fixed lingual wires 0.018 TMA
- Upper canine to canine/lower first bicuspid to first bicuspid
- Lower Essix retainer nighttime use only

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Cephalometric Analysis					
SNA (°)	81.5	82.0	3.5	-0.1	
SNB (°)	78.6	80.9	3.4	-0.7	
ANB (°)	2.9	1.6	1.5	0.9	
Maxillary Depth (FH-NA) (°)	94.1	90.0	3.0	1.4	*
Facial Angle (FH-NPo) (°)	91.0	89.6	3.0	0.5	
FMA (MP-FH) (°)	24.5	22.9	4.5	0.4	
UFH:LFH, Upper (N-ANS/N-Gn) (%)	42.4	45.0	1.0	-2.6	**
U-Incisor Protrusion (U1-APo) (mm)	2.9	6.0	2.2	-1.4	*
U1 – Palatal Plane (°)	117.7	110.0	5.0	1.5	*
L1 Protrusion (L1-APo) (mm)	1.2	2.7	1.7	-0.9	
IMPA (L1-MP) (°)	87.9	95.0	7.0	-1.0	*
Interincisal Angle (U1-L1) (°)	130.9	130.0	5.0	0.2	
Upper Lip to E-Plane (mm)	-8.9	-8.0	2.0	-0.4	
Lower Lip to E-Plane (mm)	-3.8	-2.0	2.0	-0.9	
Nasolabial Angle (Col-Sn-UL) (°)	113.1	102.0	8.0	1.4	*
Maxillary Length (ANS-PNS) (mm)	50.2	51.6	4.3	-0.3	
Mandibular Length (Go-Gn) (mm)	73.4	65.9	5.5	1.4	*
Facial Convexity (G'-Sn-Po') (°)	169.2	154.0	5.6	2.7	**
Wits Appraisal (mm)	-0.2	-1.0	1.0	0.8	
SUMMARY ANALYSIS					
Class I Molar Relationship					
Skeletal Class II (A-Po)					
Skeletal Class I (ANB)					
Protrusive Maxilla (A-N)					

CLASS III – Case 1 (continued)

Initial

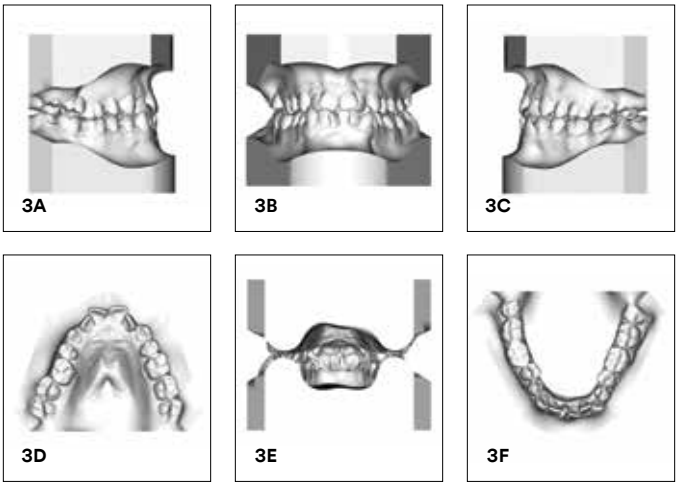


Figure 3A-F: Initial dental analysis.

Figure 4A-I: Initial photos.

Treatment Plan (1)

Figure 5A-I: Treatment plan (1) photos.

CLASS III – Case 1 (continued)

Treatment Plan (2)

Figure 6A-I: Treatment plan (2) photos.

Mid-Treatment

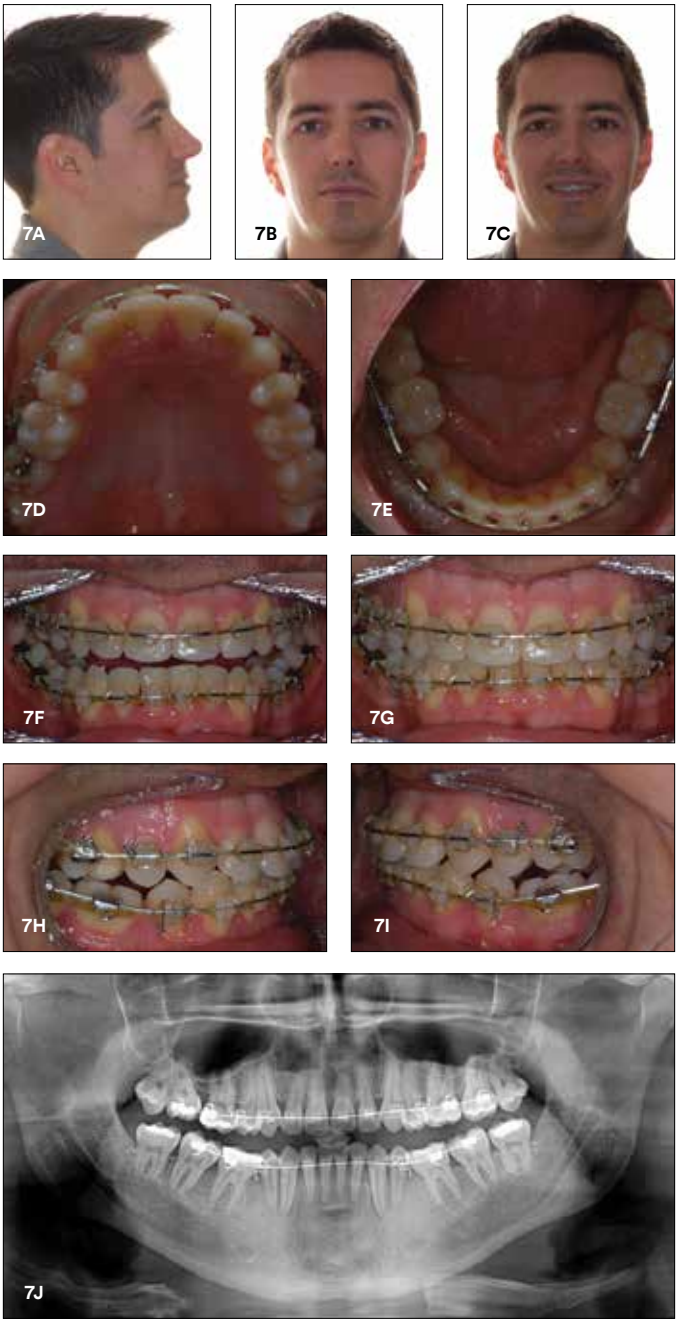


Figure 7A-J: Mid-treatment photos.

CLASS III – Case 1 (continued)

Active Tie-Back Retraction

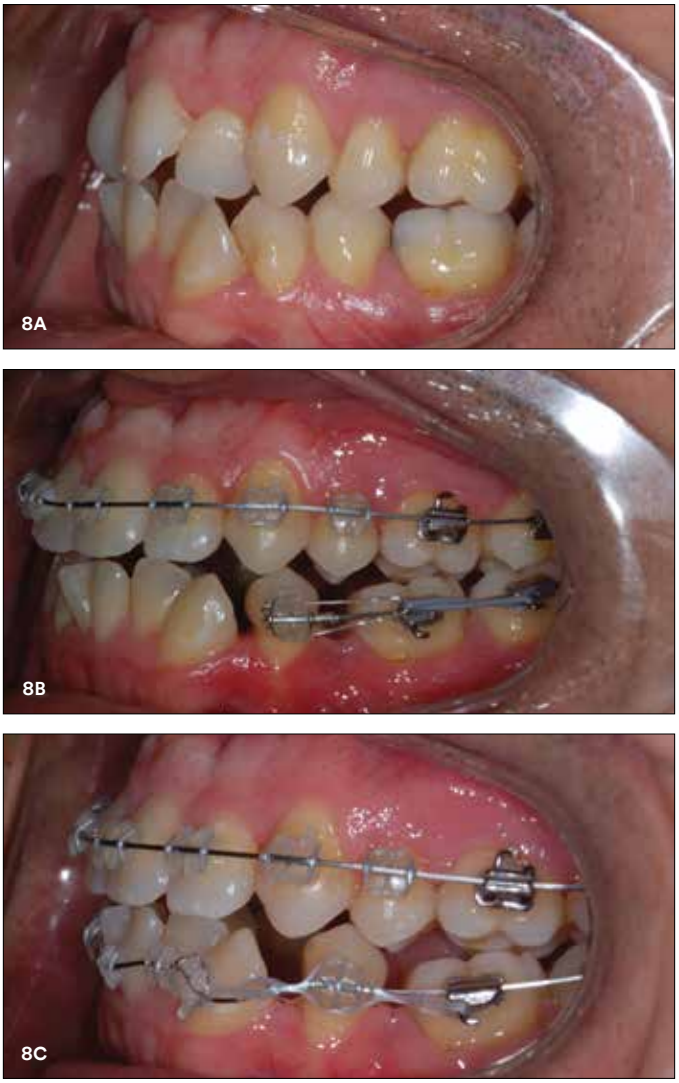


Figure 8A-C: Active tie-back retraction photos.

Retention

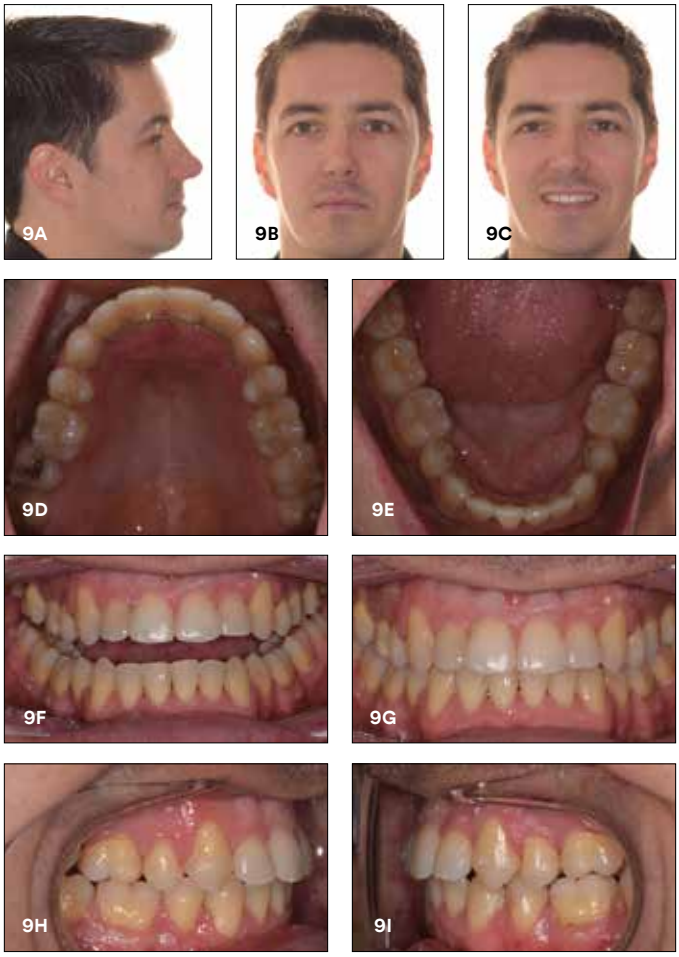


Figure 9A-I: Retention photos.

CLASS III – Case 1 (continued)

Initial and Final Comparison

Figure 10A-B: Initial vs. final.

Figure 11A-B: Initial vs. final.

Doctor's Notes

1. The retraction is completed using some of the mechanical concepts from Dr. Burstone's segmented arch technique, controlling the side effects, but with a modern twist. You don't have to reinvent the wheel. Stick to basic biomechanics and you will always have control, or at least you will know what to expect.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

CLASS III

Case 2: Class III with missing dentition; Open bite; Midline discrepancy

Patient
Female (J.N.)
25 years, 6 months

Patient's Main Concern
I want to improve my teeth but I don't want surgery. I was told I needed surgery to fix my teeth.

X-ray Findings
- Permanent dentition, missing UL6, LL5 and no wisdom teeth
- Microdontia of UR2
- Pneumatized maxillary sinuses
- Asymmetrical condyles

Dental Analysis
- Class III open bite
- Negative OJ/OB
- Microdontia UR2, missing teeth (UR6, LL5)
- Upper midline discrepancy
- Tooth size/arch length discrepancy

Treatment Plan
- Patient is informed that ortho-surgery is the best option but refused it
- Preliminary dental alignment of both arches and reassessment of the vertical, options will then be: Elastic mechanics and IPR; TADs for molar intrusion; Surgery (?)
- Direct bonding upper/lower – Clarity™ ADVANCED Ceramic Brackets 0.018 slot – MBT™ System prescription (APCFF)
- Upper open bite charts 5 mm/lower open bite chart 4.5 mm
- Reconstruction (build up) of UR2

Treatment	26 months (April 2013 – June 2015)		
Mx	April 2013	Direct	14 SE (8s), 16×16 SE (7s), 17×25 Classic (20s), 16×22 SS to the end
Md	April 2013	Direct	14 SE (8s), 18 SE (7s), 16×22 SE (11s), 17×25 Classic (44s), 18 SE (10s), 17×25 Classic to the end
# of visits	27		
Emergencies	1, poking wire		

Retention
- Essix upper retainer until build up of UR2
- Fixed lingual lower wire 0.018 TMA first bicuspid to first bicuspid
- After UR2 build up
- New Fixed upper lingual wire 0.018 TMA canine to canine after build up
- New Essix upper retainer with palatal component to increase the rigidity of the width, to be used at night

Figure 1: Initial X-ray.

Figure 2: Initial cephalometric analysis.

Cephalometric Analysis					
SNA (°)	83.2	82.0	3.5	0.3	
SNB (°)	78.5	80.9	3.4	-0.7	
ANB (°)	4.6	1.6	1.5	2.0	**
Maxillary Depth (FH-NA) (°)	95.4	90.0	3.0	1.8	*
Facial Angle (FH-NPo) (°)	90.4	88.6	3.0	0.6	
FMA (MP-FH) (°)	31.4	23.9	4.5	1.7	*
UFH:LFH, Upper (N-ANS/N-Gn) (%)	42.1	45.0	1.0	-2.9	**
U-Incisor Protrusion (U1-APo) (mm)	1.7	6.0	2.2	-1.9	*
U1 – Palatal Plane (°)	107.3	110.0	5.0	-0.5	
L1 Protrusion (L1-APo) (mm)	-0.8	2.7	1.7	-2.0	**
IMPA (L1-MP) (°)	84.8	95.0	7.0	-1.5	*
Interincisal Angle (U1-L1) (°)	132.1	130.0	5.0	0.4	
Upper Lip to E-Plane (mm)	-3.6	-6.0	2.0	1.2	*
Lower Lip to E-Plane (mm)	0.0	-2.0	2.0	1.0	*
Nasolabial Angle (Col-Sn-UL) (°)	104.9	102.0	8.0	0.4	
Maxillary Length (ANS-PNS) (mm)	46.7	51.6	4.3	-1.1	*
Mandibular Length (Go-Gn) (mm)	73.2	65.9	5.5	1.3	*
Facial Convexity (G'-Sn-Po') (°)	166.9	154.0	5.6	2.3	**
Wits Appraisal (mm)	1.2	-1.0	1.0	2.2	**
SUMMARY ANALYSIS					
Class II Molar Relationship					
Skeletal Class II (A-Po)					
Skeletal Class II (ANB)					
High Mandibular Plane Angle					
Protrusive Maxilla (A-N)					

CLASS III – Case 2 (continued)

Initial

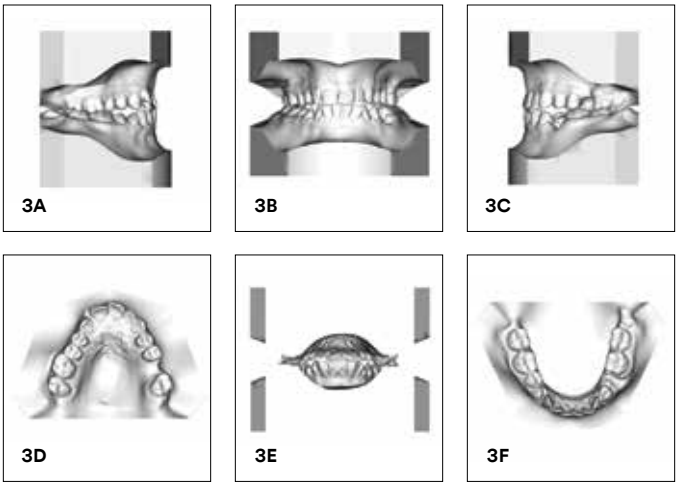


Figure 3A-F: Initial dental analysis.

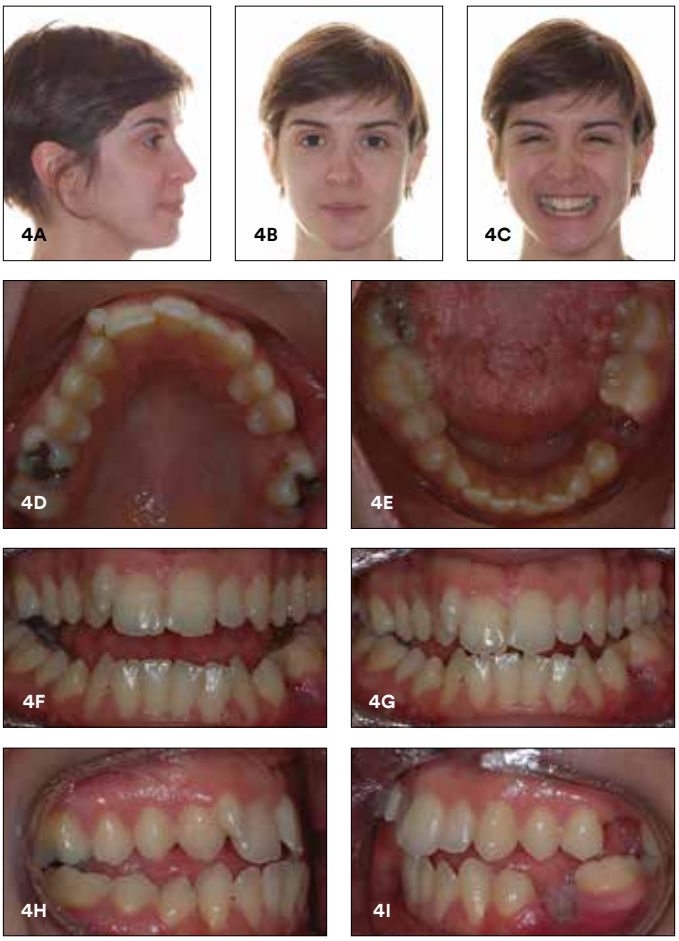


Figure 4A-I: Initial photos.

Treatment Plan

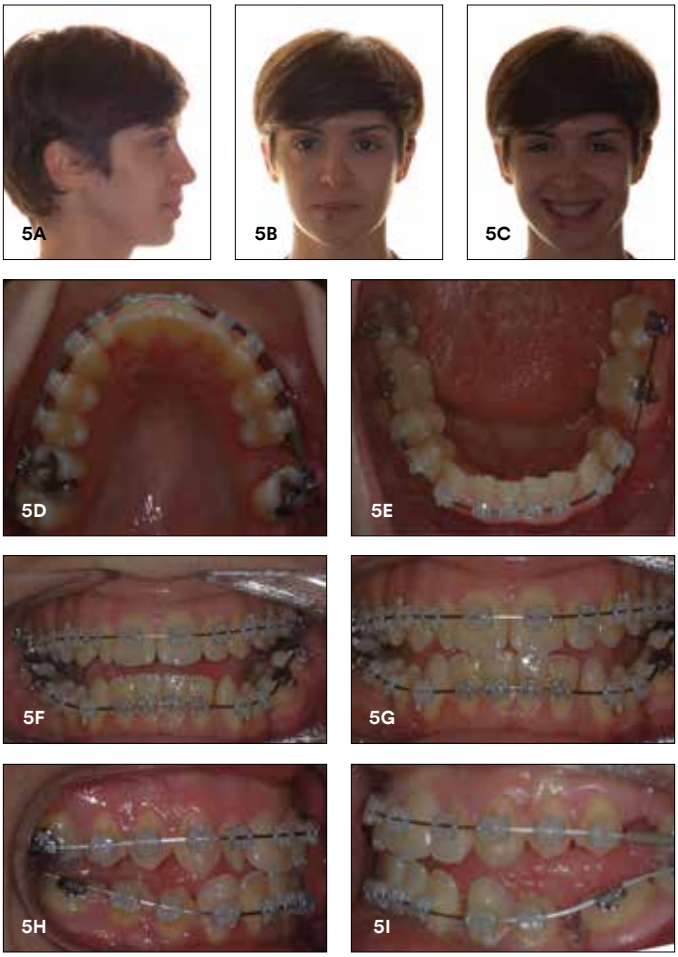


Figure 5A-I: Treatment plan photos.

CLASS III – Case 2 (continued)

Mid-Treatment (1)

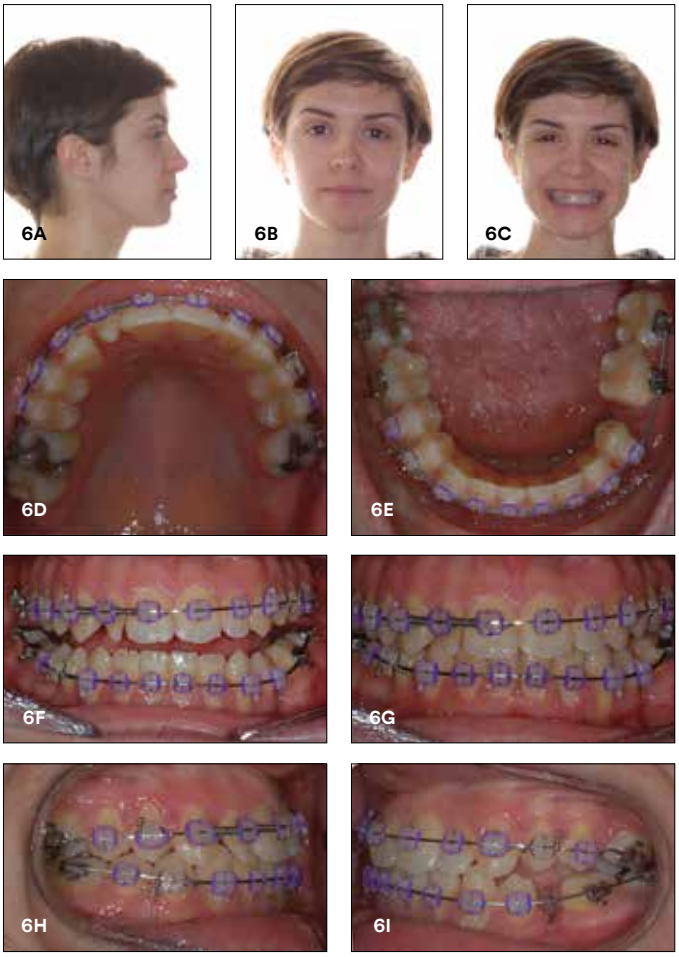


Figure 6A-I: Mid-treatment (1) photos.

Mid-Treatment (2)

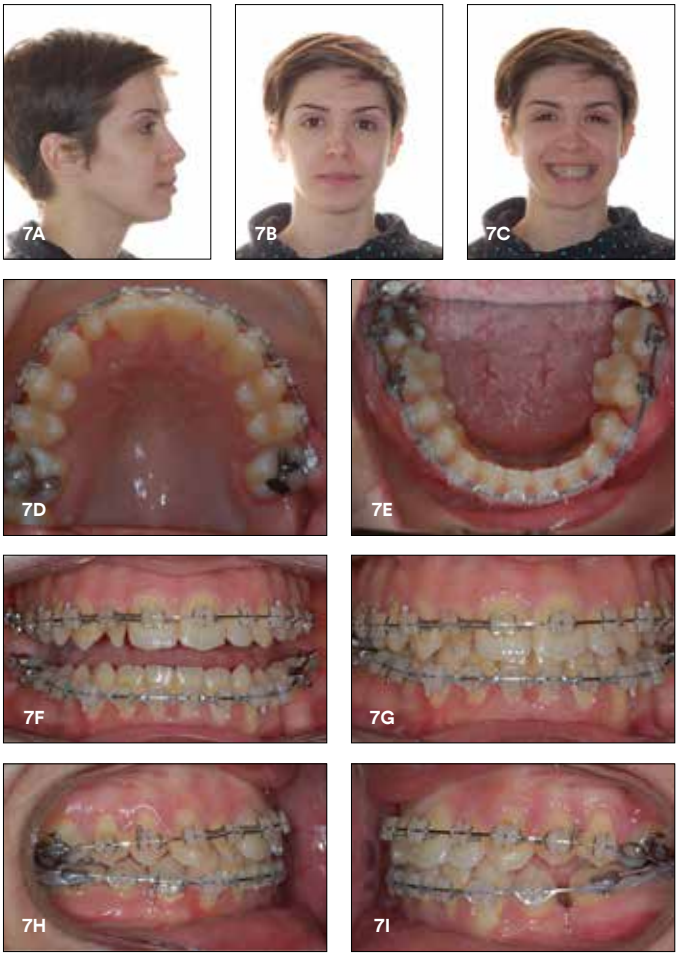


Figure 7A-I: Mid-treatment (2) photos.

CLASS III – Case 2 (continued)

14 Months in Treatment

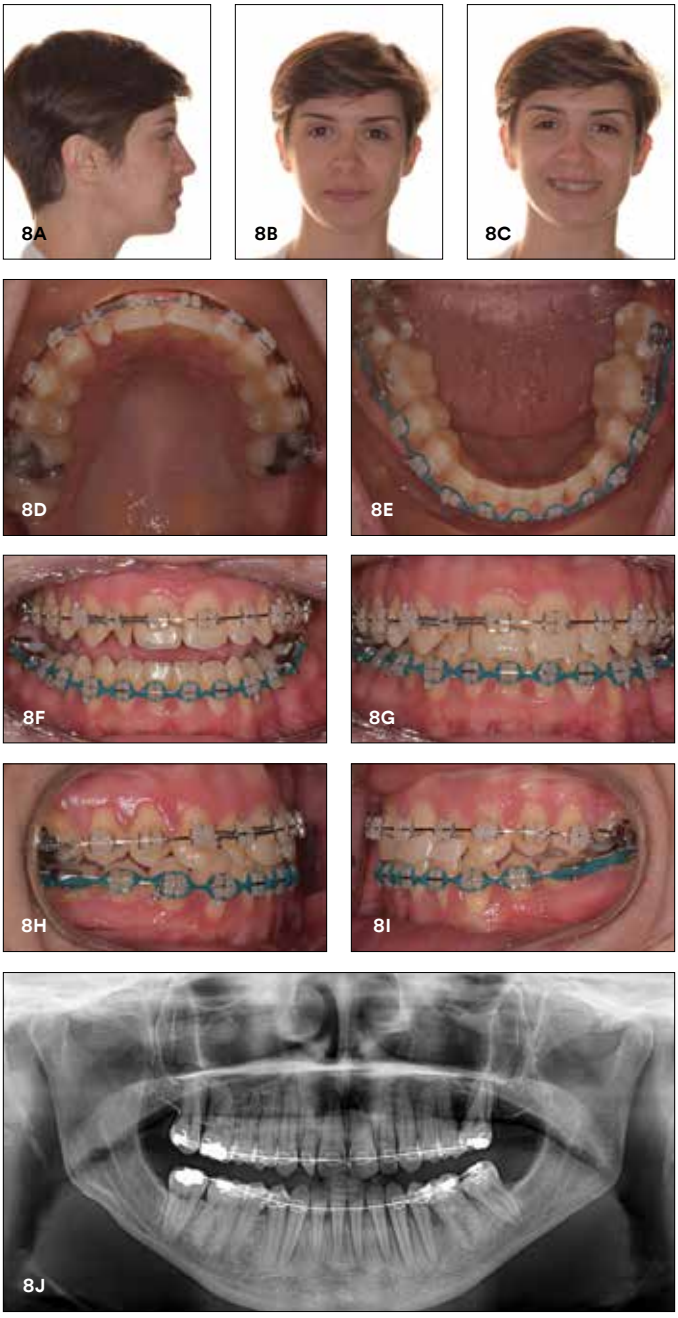


Figure 8A-J: 14 months in treatment photos.

Initial vs. 14 Months in Treatment

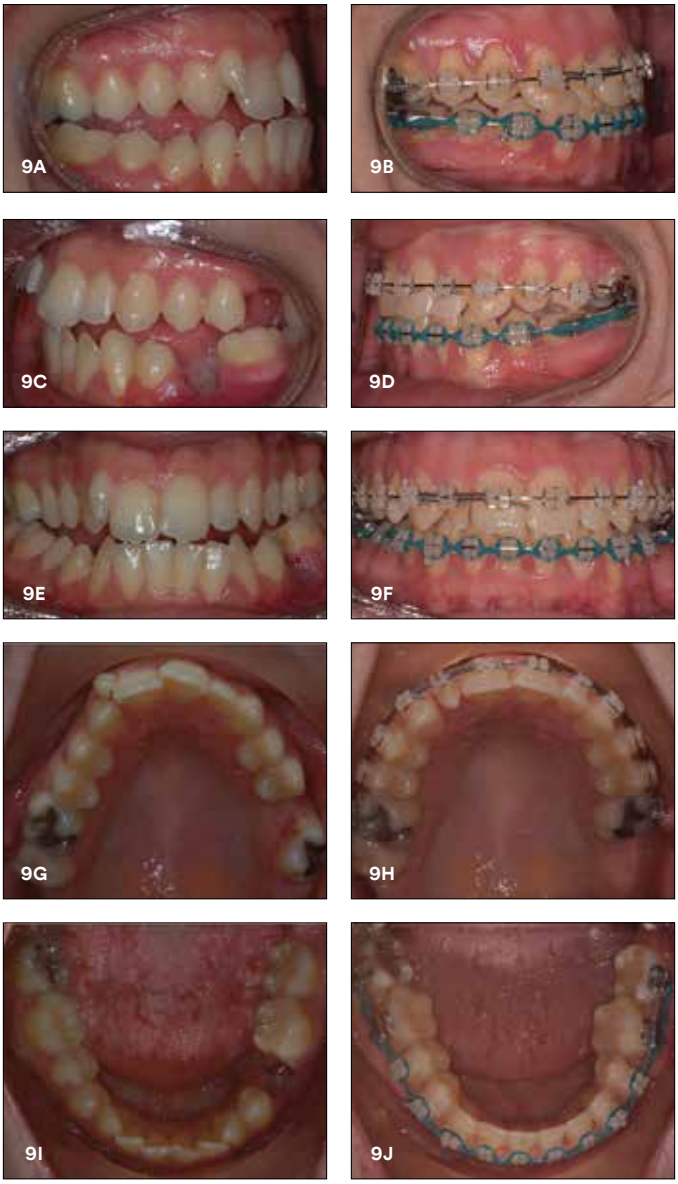


Figure 9A-J: Initial vs. 14 months in treatment.

CLASS III – Case 2 (continued)

Retention

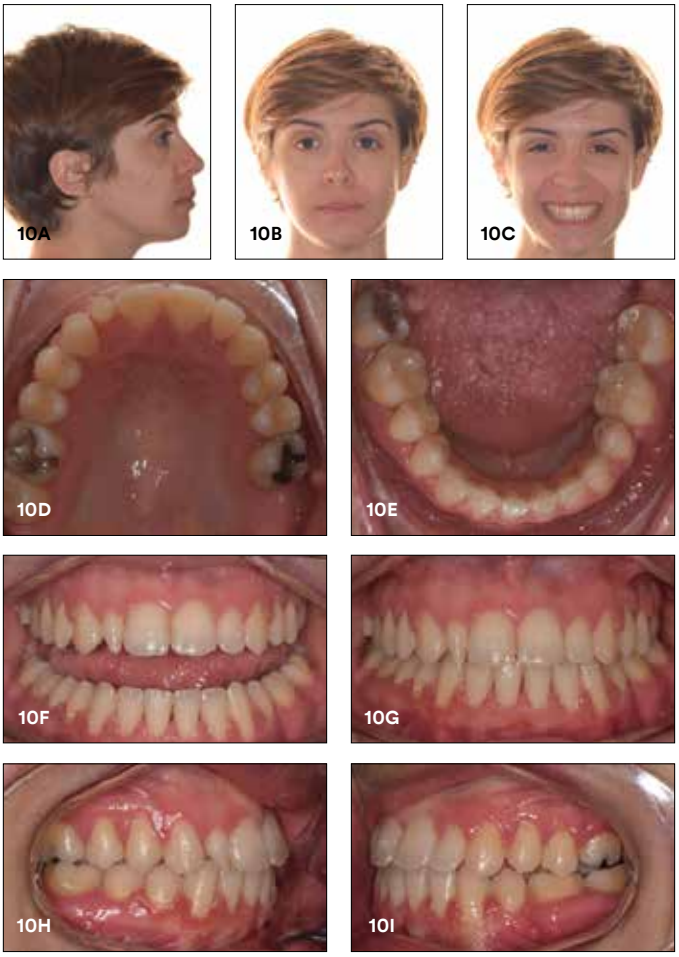


Figure 10A-I: Retention photos.

Final

Figure 11A-I: Final photos.

CLASS III – Case 2 (continued)

Final X-rays

Figure 12A-B: Final X-rays.

Initial and Final Comparison

Figure 13A-B: Initial vs. final.

Figure 14A-B: Initial vs. final.

Figure 15A-B: Initial vs. final X-rays.

Case and images provided by Dr. Patrice Pellerin, Montreal, Canada.

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