WORLD BOARD OF LINGUAL ORTHODONTISTS

APPENDIX 1
CASE PRESENTATION FORMS

WORLD BOARD OF LINGUAL ORTHODONTISTS

CANDIDATE NUMBER: 1

CASE NUMBER: 2

Year: 29 / 6 / 2017

RÉSUMÉ OF CASE 2

CASE CATEGORY:
CLASS I MALOCCLUSION

NAME:	OOOO OOOO
BORN:	7 / 8 / 1981
SEX:	Female
PRETREATMENT RECORDS:	AGE: 26.10 Years DATE: 2 / 7 / 2008
CLASSIFICATION:	R & L side: Angle Class I
TEETH MISSING BEFORE TREATMENT:	None
APPLIANCE:	Upper & Lower : STb appliance by ORMCO
TREATMENT STARTED:	AGE: 27.2 Years DATE: 25 / 10 / 2008
TREATMENT ENDED:	AGE: 28.11 Years DATE: 31 / 7 / 2010
ACTIVE TREATMENT TIME:	1.9 Years
POSTTREATMENT RECORDS:	AGE: 28.11 Years DATE: 31 / 7 / 2010
RETAINERS:	a)upper: Clear Retainer a)lower: Clear Retainer DATE: 31 / 7 / 2010
RETENTION ENDED:	a)upper: Begg Type a)lower: Spring Retainer DATE: 9 / 3 / 2013
RETENTION TIME:	2.7 Years
(POST-) RETENTION RECORDS:	AGE: 31.7 Years DATE: 9 / 3 / 2013
TIME OUT OF RETENTION:	Continued

DIAGNOSTIC DESCRIPTION OF THE MALOCCLUSION

A. SUMMARY

The patient visited our office with a chief complaint of crowding.

The facial findings revealed the convex type in the lateral view, while protrusion of the upper and lower lips was observed. The intraoral findings revealed severe crowding in the lower arch and a right-side deviation of the mandibular midline.

On the cephalometric radiogram, the sagittal skeletal measurements were the S-N-A of 91.0°, S-N-Pg of 83.5°, and A-N-Pg of 7.5°, which indicated a tendency for skeletal class II due to maxillary protrusion. The vertical skeletal measurement was S-N/Go-Gn of 37.0° and ANS-PNS/Go-Gn of 29.5 ° , which indicated the Dolicho-facial pattern. The dental measurements were Mx1-ANS-PNS of 124.5°, and Md1-Go-Gn of 91.5°, which labial tipping of the maxillary anterior teeth and the mandibular anterior teeth being normal.

The findings of the dental casts revealed that the molar relationship was Angle class I on both sides, while the canine relationship was class I on the left side and class III on the right side. The ALD were −2.0 mm in the upper arch and −10.0 mm in the lower arch.

Based on these findings, this patient was diagnosed Angle class I maxillary protrusion with severe crowding.

B. EXAMINATION OF HEAD AND FACE

The lateral view showed the convex type, while protrusion of the upper and lower lips was observed. The frontal view showed a symmetrically-shaped oval face and hypertonic chin. When the patient smiled, the midlines of the maxillary and mandibular did not align, and the left corner of the mouth appeared higher than the right corner.

C. FUNCTIONAL EXAMINATION

No parafunctional habits were identified. Similarly, the patient had noticed no such habits. Moreover, no otorhinolaryngologic disease was detected. The TMJ caused no clicks, pain, or closed lock. The tooth 23 had been ground down, suggesting bruxism.

DIAGNOSTIC DESCRIPTION OF THE MALOCCLUSION

D. INTRAORAL EXAMINATION

The molar relationship was Angle class I, and the canine relationship was class I on the left side and class III on the right side. There was severe crowding in the mandibular arch. Because of lingual transposition of the tooth 42, the midline of the mandibular arch was deviated to the right by 4.0 mm. While the maxillary and the mandibular arches were asymmetrical, the right premolars and molars in the maxillary and mandibular arch both were tipped toward the lingual side. Teeth 18 and 48 had erupted, whereas teeth 28 and 38 had been extracted. Caries were observed on the mesial contact areas of the teeth 15 and 36. Inlay restoration had been performed for all premolars and molars except teeth 14 and 35.

E. DENTAL CASTS

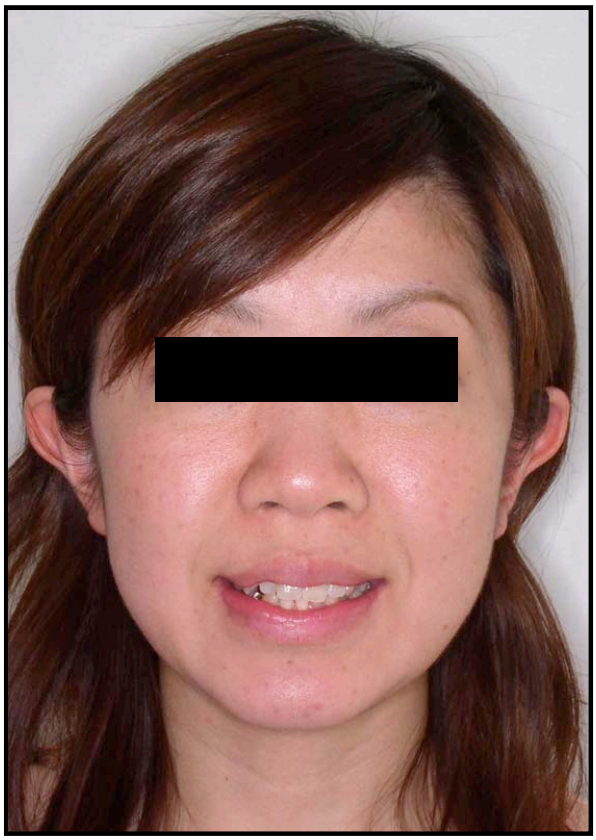
Mandibular arch: Arch length discrepancy -10.0 mm

Maxillary arch: Arch length discrepancy -2.0 mm

Occlusion Sagittal: the molar Angle class Ⅰ Over jet 4.0mm

Occlusion Vertical: Over bite 4.0mm

Occlusion Transversal: nothing particular



FRONTAL

SMILING

PROFILE

FACIAL PHOTOGRAPHS BEFORE TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION BEFORE TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

LATERAL SKULL RADIOGRAPH BEFORE TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

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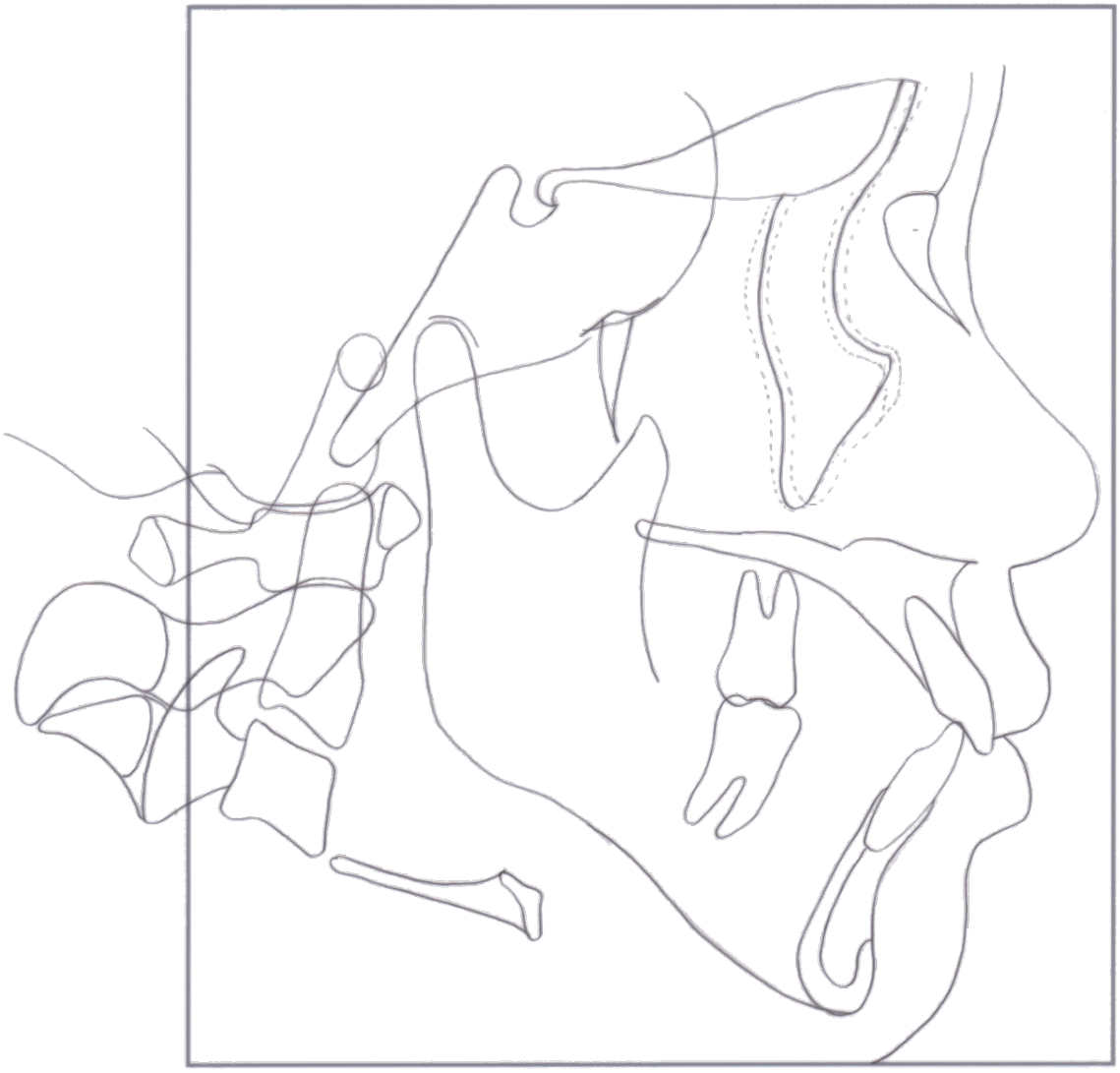

TRACING OF LATERAL SKULL RADIOGRAPH
BEFORE TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 1

	Pre-treatment	Post-treatment	Retention/postretention	Mean SD
Sagittal Skeleatal				
Maxillary Position S-N-A	91.0			**82º ±3.5º**
Mandibular Position S-N-Pg	83.5			**80º ± 3.5º**
Sagittal Jaw Relation A-N-Pg	7.5			**2º ± 2.5º**
Vertical Skeletal Relations				
Maxillary Inclination S-N/ANS-PNS	8.0			**8º ± 3.0º**
Mandibular Inlination S-N/Go-Gn	37.0			**33º ± 2.5º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 1

	Pre-treatment	Post-treatment	Retention/postretention	Mean SD
Vertical Jaw Relation ANS-PNS/Go-Gn	29.5			**25º ± 6.0º**
Dento-Basal Relations				
Maxillary Incisor Inclination 1-ANS-PNS	124.5			**110º ± 6.0º**
Mandibular Incisor Inclination 1-Go-Gn	91.5			**94º ± 7.0º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 1

Mandibular Incisor Compensation 1 –A-Pg (mm)	**4.5**			**2 ± 2.0**
Dental Relations				
Overjet (mm)	4.0			**2º ± 2.0**
Overbite (mm)	4.0			**2 ± 2.5**
Interincisal Angle 1/1	119.0			**132º ± 6.0º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

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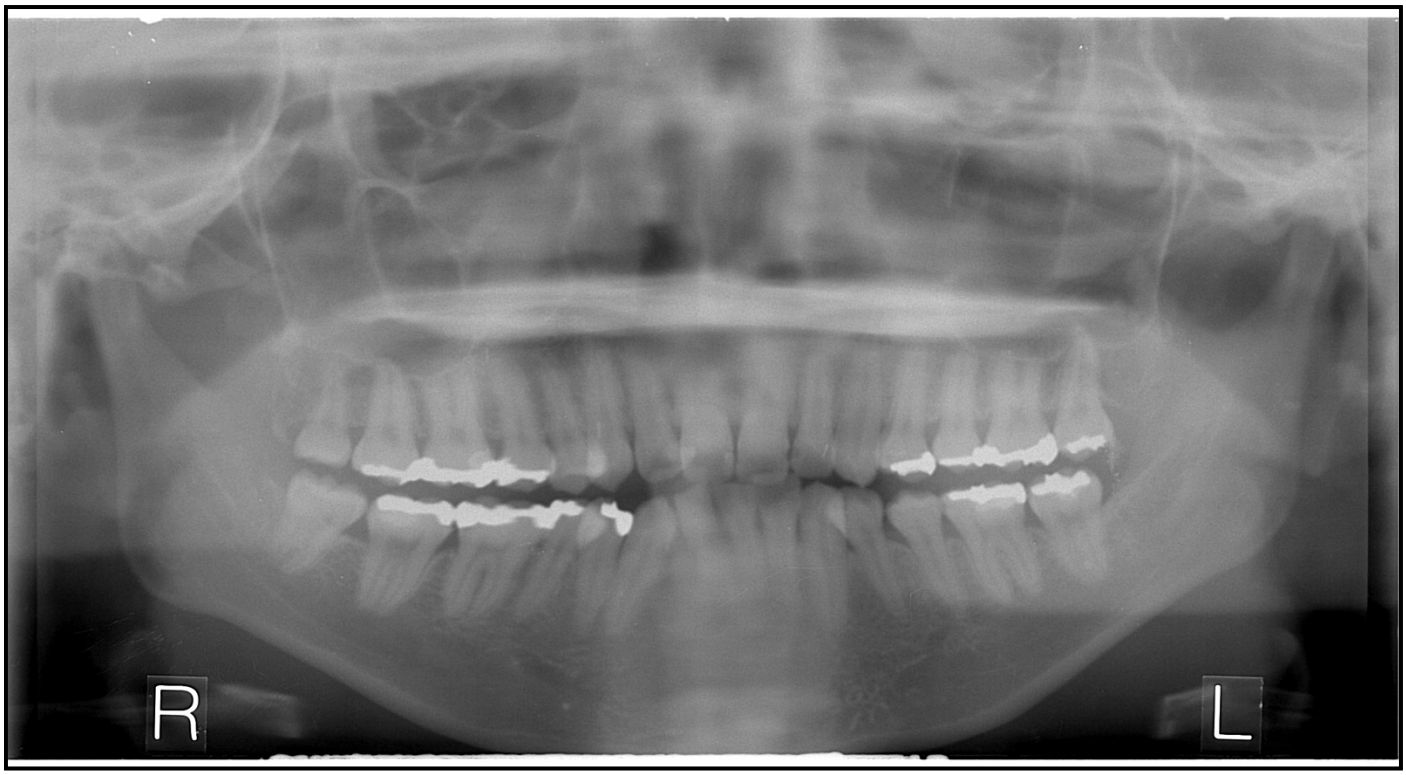


PERIAPICAL OR PANORAMIC RADIOGRAPHS

BEFORE TREATMENT

RADIOGRAPHIC ANALYSIS

BEFORE TREATMENT

A. INTRAORAL / PANORAMIC RADIOGRAPH

The number of teeth was normal, and neither missing nor pulpectomized teeth were identified. The teeth 18 and 48 had erupted, whereas the teeth 28 and 38 had already been extracted.

B. INTERPRETATION OF CEPHALOMETRIC ASSESSMENT

The sagittal skeletal measurements were the S-N-A of 91.0°, S-N-Pg of 83.5°, and A-N-Pg of 7.5°, which indicated a tendency for skeletal class II due to maxillary protrusion. The vertical skeletal measurements were S-N/ANS-PNS of 8.0 ° , S-N/Go-Gn of 37.0° and ANS-PNS/Go-Gn of 29.5 ° , which indicated the Dolicho Facial pattern.

The dental measurements were Mx1-ANS-PNS of 124.5°, Md1-Go-Gn of 91.5°, and inter-incisor angle of 119.0°, which labial tipping of the maxillary anterior teeth despite the tooth axis of the mandibular anterior teeth being normal.

As for the soft tissue findings, the distance from the upper lip to the esthetic line was 0.5 mm, which was normal. However, the distance from the lower lip to the esthetic line was 2.5 mm, indicating slight protrusion.

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

TREATMENT PLAN

AND THE REASON FOR IT

Treatment Plan

1.The plaque control and caries treatment.

2.Teeth 18, 14, 24, 34, 44,and 48 are extracted.

3.Leveling is performed with a nickel titanium wire.

4.En-masse retraction is performed with moderate anchorage for the upper arch and maximum anchorage for the lower arch.

5.Intermaxillary elastics is used as needed.

6.A class I relationship should be established on both molars and canines by detailing, and canine guidance should be obtained during lateral movement of the lower jaw.

7.Retention follow-up period.

The reason for it

1.Plaque control and caries treatment allow the intraoral condition to be prepared for orthodontic treatment.

2.Extraction spaces are used to correct anterior protrusion of the maxillary and crowding in the lower arch.

3.To correct the Crowding .

4.To correct the maxillary incisors protrusion. Because the canine relationship tends to be Angle class III, anchorage is a moderate for the maxillary arch and the maximum for the mandibular arch. However, no reinforced anchorage is determined to be necessary for the mandibular arch in consideration of the strong anchorage provided by lingual orthodontic.

5.The tendency for an Angle class III canine relationship is improved. Moreover, intermaxillary elastics are used as needed to align the midlines.

6.By establishing a class I relationship on both molars and canines, stabilization of occlusion can be attempted. Functional occlusion is achieved.

7.Long-term stabilization of occlusion is attempted. The conditions of alveolar bones and teeth are monitored long term.

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 02/07/08 AGE:26.10

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION BETWEEN TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 27/12/08 AGE:27.4

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION BETWEEN TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 18/07/09 AGE:27.11

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION BETWEEN TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 01/05/10 AGE: 28.8

RÉSUMÉ OF THE TREATMENT CARRIED OUT INCLUDING ANY DIFFICULTIES ENCOUNTERED

July 2008: After diagnosis, caries were treated, and teeth 18, 14, 24, 34, 44 and 48 were extracted.

October 2008: Lingual multibracket appliances (STb appliance) were attached to the upper and lower archs. Leveling was started with .012 NiTi wire for both the upper and the lower arch. Because excessive crowding of the mandibular anterior teeth made it difficult to attach the brackets, an open coil was inserted in the central incisor area to obtain an adequate space. To prevent occlusal interference of the brackets on the maxillary anterior teeth with the mandibular anterior teeth, resin was layered onto the mandibular molar areas. In consideration of esthetic appearance, shell crowns were placed at the extraction space.

November 2008: A bracket was attached to the mandibular central incisor, and leveling was continued with .012 NiTi wire. For the upper arch, leveling was continued with .016 X .016 NiTi wire.

December 2008: For the upper arch, .0175 X .0175 TMA wires were used to establishment of torque after leveling had been completed. For the lower arch, leveling was continued with .016 copper-NiTi wire.

February 2009: For the upper arch, en-masse retraction was started with .016 X .022 stainless steel wires. Because of moderate anchorage, a technique involving sliding mechanics was selected. For the lower arch, torque was established with .0175 X .0175 TMA wires. Moreover, the resin layered onto the mandibular molar areas was removed because of bite rising.

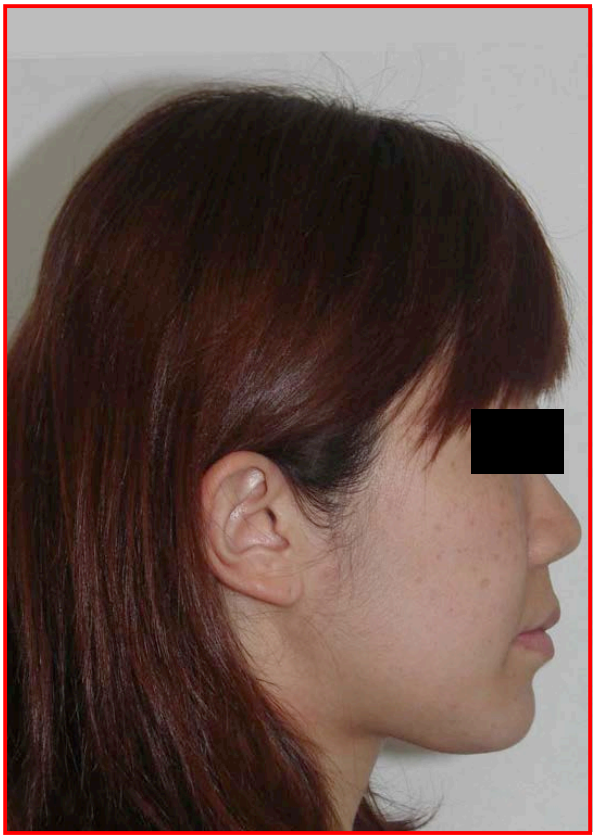
April 2009: While en-masse retraction was performed for the upper arch, .016 X .022 stainless steel wires were set on the lower arch to start en-masse retraction using the sliding mechanics technique (10 months). In the middle of the retraction process, class III elastics were used to establish a good occlusal relationship.

February 2010: Because the spaces were closed, detailing was started with .0175 X .0175 TMA wire for the upper arch and .016 TMA wire for the lower arch (5 months). Because the brackets touched some parts in the early stages, occlusion was adjusted at each treatment session.

July 2010: Because detailing had been completed, the appliances were removed, and the patient was transitioned to retention follow-up.

FRONTAL

SMILING



PROFILE

FACIAL PHOTOGRAPHS AT COMPLETION OF TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION AT COMPLETION OF TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

LATERAL SKULL RADIOGRAPH
AT COMPLETION OF TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

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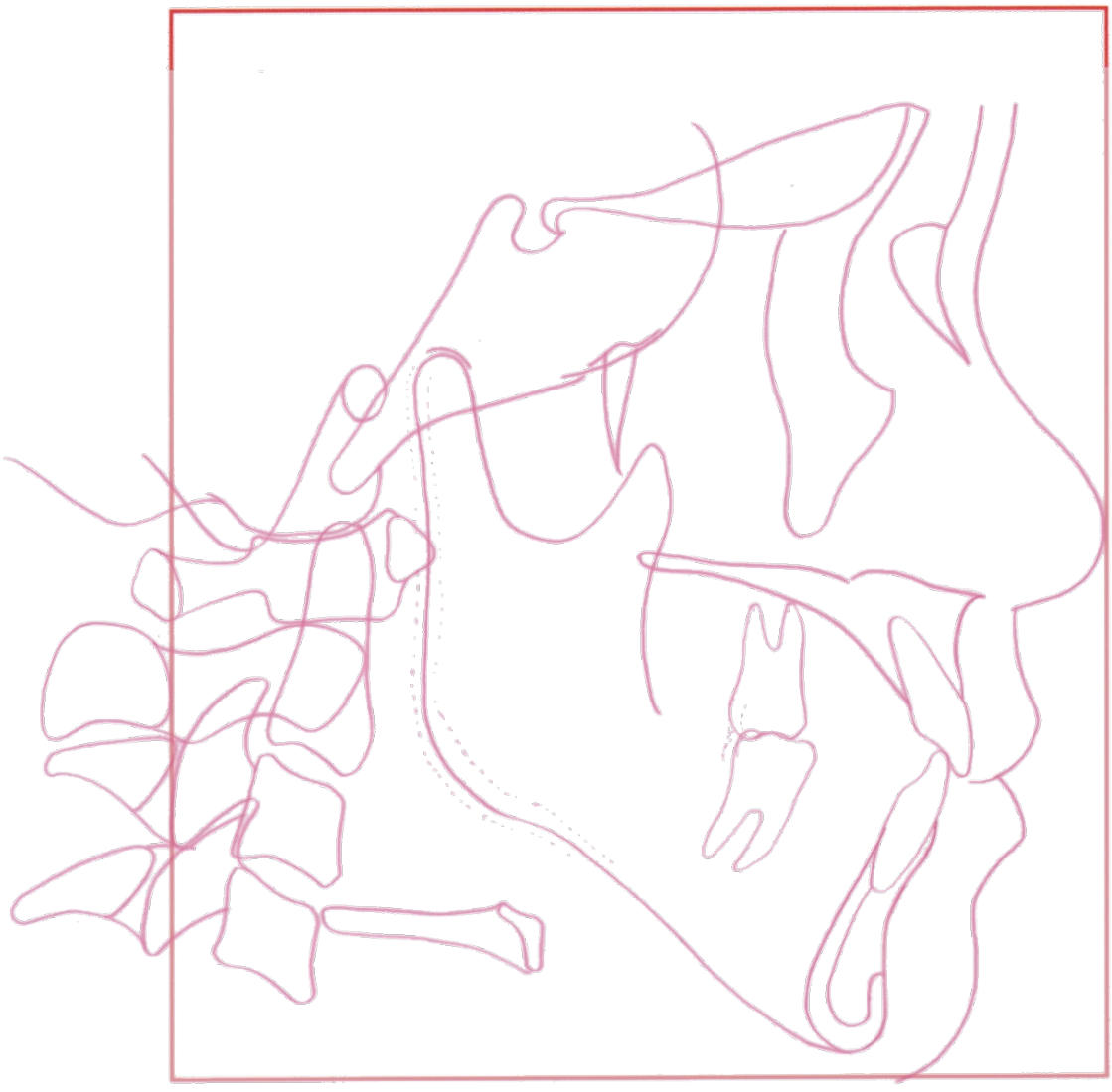

TRACING OF LATERAL SKULL RADIOGRAPH
AT COMPLETION OF TREATMENT

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 2

	Pre-treatment	Post-treatment	Retention/postretention	Mean SD
Sagittal Skeleatal				
Maxillary Position S-N-A	91.0	91.0		**82º ±3.5º**
Mandibular Position S-N-Pg	83.5	83.0		**80º ± 3.5º**
Sagittal Jaw Relation A-N-Pg	7.5	8.0		**2º ± 2.5º**
Vertical Skeletal Relations				
Maxillary Inclination S-N/ANS-PNS	8.0	8.0		**8º ± 3.0º**
Mandibular Inlination S-N/Go-Gn	37.0	36.5		**33º ± 2.5º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 2

	Pre-treatment	Post-treatment	Retention/postretention	Mean SD
Vertical Jaw Relation ANS-PNS/Go-Gn	29.5	29.0		**25º ± 6.0º**
Dento-Basal Relations				
Maxillary Incisor Inclination 1-ANS-PNS	124.5	120.0		**110º ± 6.0º**
Mandibular Incisor Inclination 1-Go-Gn	91.5	85.5		**94º ± 7.0º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 2

Mandibular Incisor Compensation 1 –A-Pg (mm)	**4.5**	**1.0**		**2 ± 2.0**
Dental Relations				
Overjet (mm)	4.0	3.5		**2º ± 2.0**
Overbite (mm)	4.0	3.0		**2 ± 2.5**
Interincisal Angle 1/1	119.0	129.0		**132º ± 6.0º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

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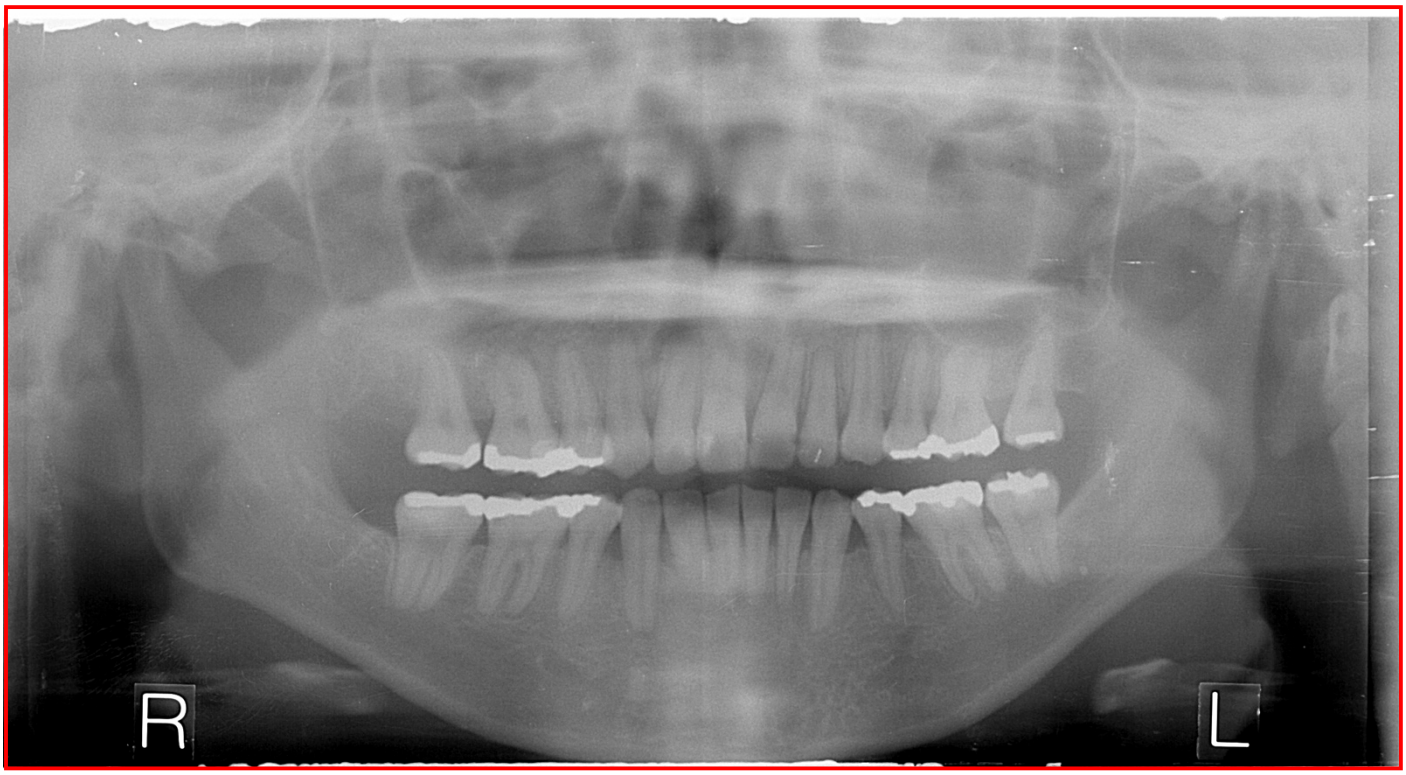

PERIAPICAL OR PANORAMIC RADIOGRAPHS

AT COMPLETION OF TREATMENT

RADIOGRAPHIC ANALYSIS AT COMPLETION OF TREATMENT

A. INTRAORAL / PANORAMIC RADIOGRAPH

The extraction spaces were closed. Moreover, the extraction sockets of the third molars healed well.

Favorable root parallelism was obtained for all teeth, whereas no root resorption was observed.

B. INTERPRETATION OF CEPHALOMETRIC ASSESSMENT

The cephalometric analysis values revealed no changes in skeletal measurement, such as clockwise rotation of the mandible.

As for dental measurements, the maxillary and mandibular anterior teeth were tipped toward the lingual with the Mx1-ANS-PNS changing from 124.5° to 120.0° and the Md1-Go-Gn angle changing from 91.5° to 85.5°. Consequently, the inter-incisal angle changed from 119.0° to 129.0°.

The sagittal positions showed changes in the Mx1 to A-Pg distance from 10.0 to 5.0 mm and the Md1 to A-Pg distance from 4.5 to 1.0 mm. The anteroposterior positional relationships of the maxillary and mandibular teeth were improved.

According to soft tissue findings, the degree of protrusion relative to the esthetic line decreased from 0.5 to –2.0 mm for the upper lip and from 2.5 to 1.0 mm for the lower lip.

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 31/07/10 AGE:28.11

DESCRIPTION OF THE TREATMENT RESULT

Crowding, of which the patient had complained, was resolved, while a favorable Angle class I occlusal relationship was achieved.

The cephalometric analysis values revealed few changes in skeletal measurement. As for dental measurement, the maxillary and mandibular anterior teeth were tipped toward the lingual with the Mx1-ANS-PNS changing from 124.5° to 120.0° and the Md1-Go-Gn changing from 91.5° to 85.5°. Consequently, the inter-incisal angle changed from 119.0° to 129.0°. The sagittal positions showed changes in the Mx1 to A-Pg distance from 10.0 to 5.0 mm and the Md1 to A-Pg distance from 4.5 to 1.0 mm. The anteroposterior positional relationships of the maxillary and mandibular teeth were improved. According to soft tissue findings, because anterior maxillary protrusion was resolved, the degree of protrusion relative to the esthetic line decreased from 0.5 to –2.0 mm for the upper lip and from 2.5 to 1.0 mm for the lower lip.

The superimposed cephalograms of the pre and the post treatment revealed. Although anchorage was not reinforced for either the maxillary and the mandibular arch, the amount of mesial movement of the molars was minimized to 1.0 mm. This seems to be characteristic of lingual orthodontics with strong anchorage.

On the dental casts, over jet slightly decreased from 4.0 to 3.5 mm, and over bite from 4.0 to 3.0 mm. Angle class I molar and canine relationships were established on both sides, while canine guidance was obtained during lateral movement of the lower arch. The midlines of the maxillary and mandibular dentition were aligned. The lingual tipped of the right molars, which was observed before treatment, was resolved, and the dental arch became symmetrical.

This therapeutic procedure allowed completion of active treatment in a relatively short period of 1.9 years.

FRONTAL

SMILING

PROFILE

FACIAL PHOTOGRAPHS AT RETENTION / POST RETENTION

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

Right Buccal

Left Buccal

Center

Upper Occlusal

Lower Occlusal

INTRA-ORAL COLOUR PHOTOGRAPHS
AT RETENTION / POST-RETENTION

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

LATERAL SKULL RADIOGRAPH
AT RETENTION / POSTRETENTION

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

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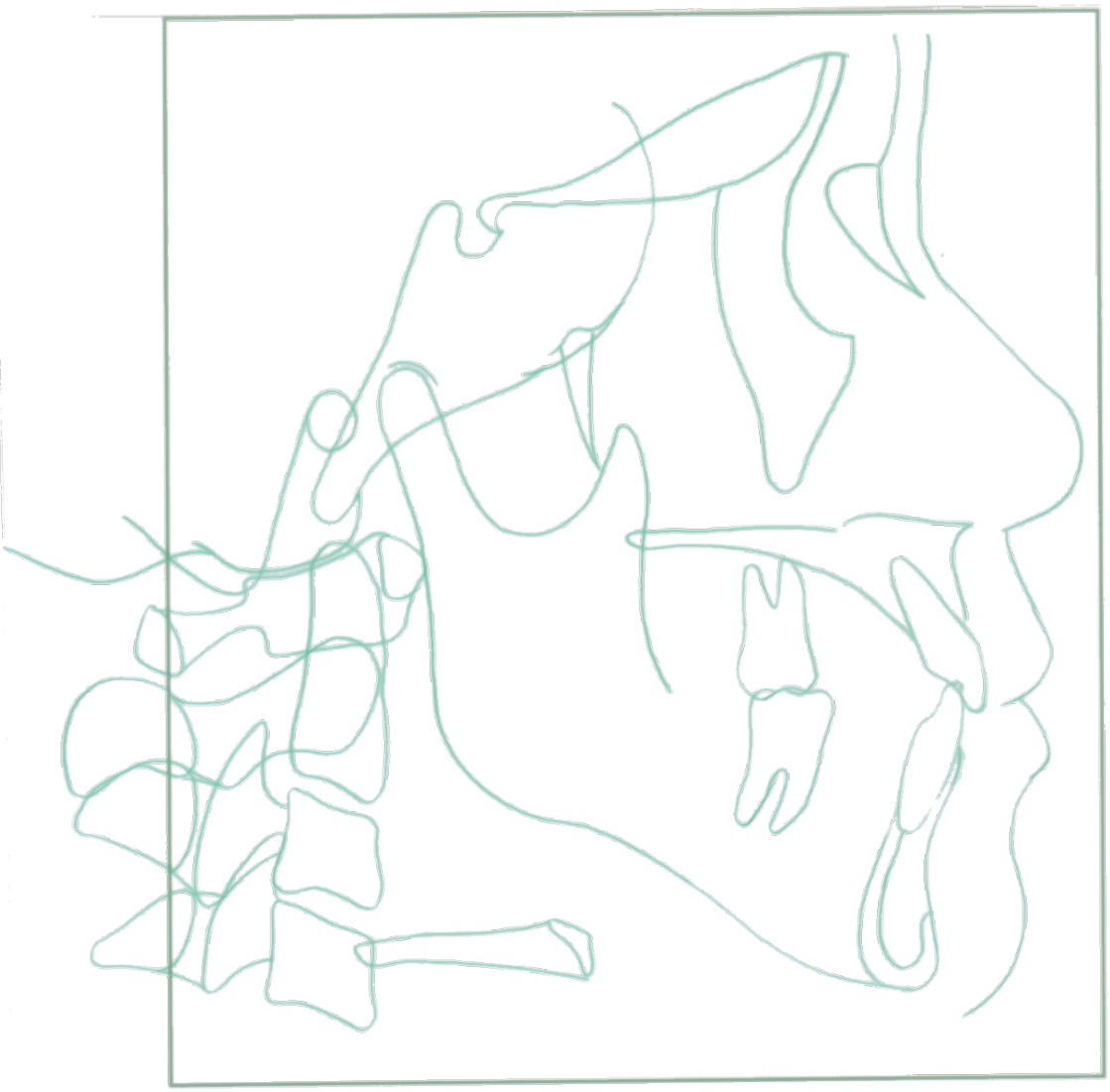


TRACING OF LATERAL SKULL RADIOGRAPH
AT RETENTION / POST-RETENTION

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 3

	Pre-treatment	Post-treatment	Retention/postretention	Mean SD
Sagittal Skeleatal				
Maxillary Position S-N-A	91.0	91.0	91.0	**82º ±3.5º**
Mandibular Position S-N-Pg	83.5	83.0	83.0	**80º ± 3.5º**
Sagittal Jaw Relation A-N-Pg	7.5	8.0	8.0	**2º ± 2.5º**
Vertical Skeletal Relations				
Maxillary Inclination S-N/ANS-PNS	8.0	8.0	8.0	**8º ± 3.0º**
Mandibular Inlination S-N/Go-Gn	37.0	36.5	36.5	**33º ± 2.5º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 3

	Pre-treatment	Post-treatment	Retention/post retention	Mean SD
Vertical Jaw Relation ANS-PNS/Go-Gn	29.5	29.0	29.0	**25º ± 6.0º**
Dento-Basal Relations				
Maxillary Incisor Inclination 1-ANS-PNS	124.5	120.0	121.0	**110º ± 6.0º**
Mandibular Incisor Inclination 1-Go-Gn	91.5	85.5	85.5	**94º ± 7.0º**

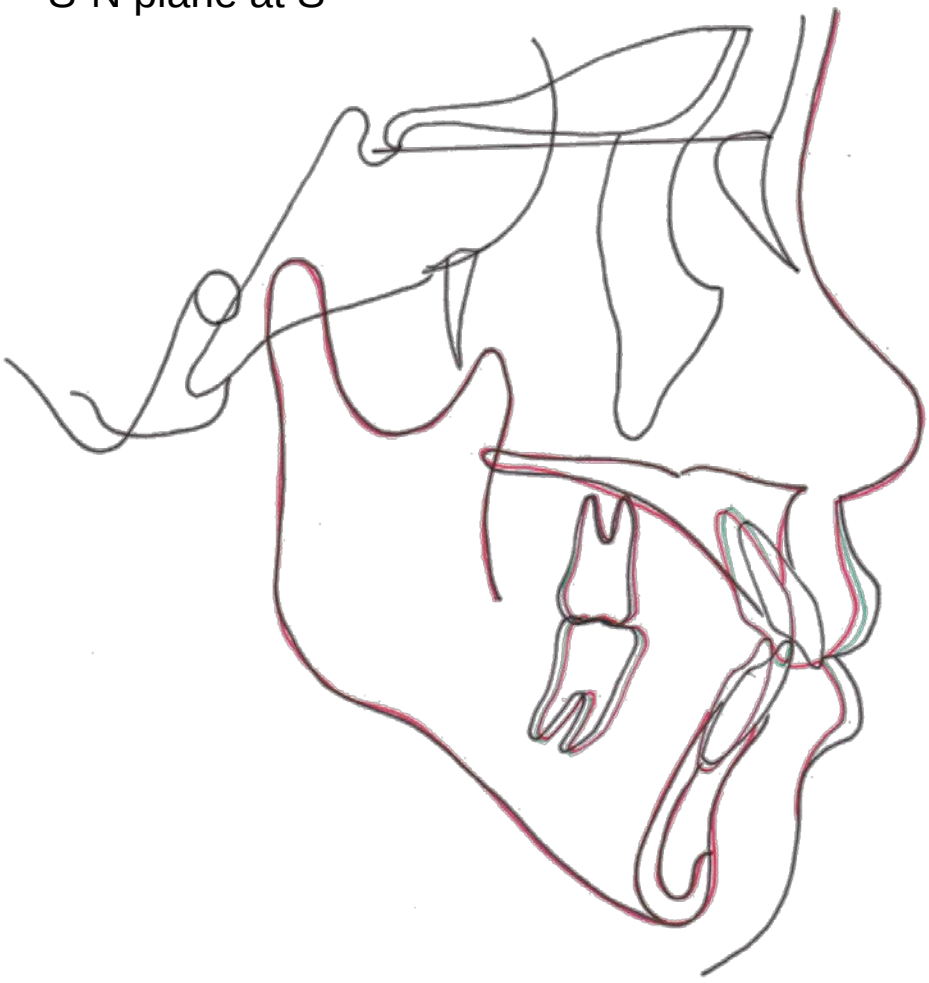
CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT 3

Mandibular Incisor Compensation 1 –A-Pg (mm)	**4.5**	**1.0**	**1.0**	**2 ± 2.0**
Dental Relations				
Overjet (mm)	4.0	3.5	3.5	**2º ± 2.0**
Overbite (mm)	4.0	3.0	3.0	**2 ± 2.5**
Interincisal Angle 1/1	119.0	129.0	131.0	**132º ± 6.0º**

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7

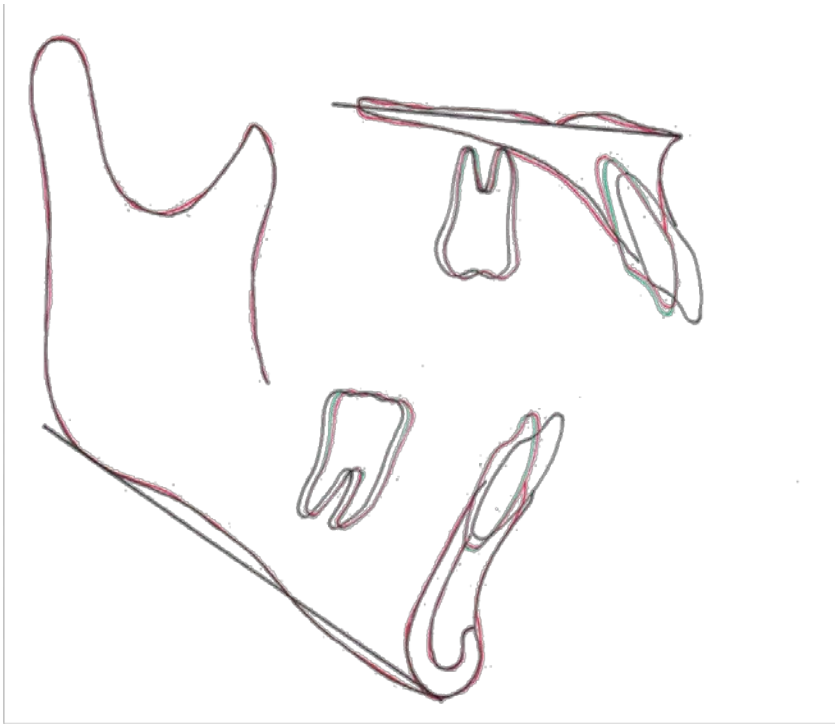
S-N plane at S



CANDIDATE NUMBER: 1

CASE NUMBER: 2

Palatal plane at ANS



Mandibular plane at Me

CANDIDATE NUMBER: 1

CASE NUMBER: 2

DESCRIPTION OF RETENTION / POST-RETENTION FINDINGS

Description of the post-treatment evaluation of retention

The patient was instructed to use clear retainers for both the upper and the lower arch all day. 1.7 years later, they were changed to the Begg-type retainer for the upper arch and a spring retainer for the lower arch. The duration of required wearing time for the retainers was reduced to 12 hours.

2.5 years later, it was determined that the retainers needed to be worn on the upper and lower arch only during the night, and they are still being used at present. The patient has been strictly adherent to the instructions regarding the time that the retainers are to be worn.

Description of retention/ post-retention findings

At 2.8 years after treatment, the dental arch and occlusion are stable. Although comparison between post treatment and post retention revealed no changes in skeletal and dental measurements. Because lingual inclination of the mandibular anterior teeth can cause crowding, long-term retention follow-up, including adjustment of occlusion, may well be necessary in the future for this patient.

CANDIDATE NUMBER: 1 CASE NUMBER: 2 DATE: 09/03/13 AGE: 31.7