

Non-Extraction Aligner Treatment for Moderate Crowding and Flared Upper Incisors in a Female with a Flat Facial Profile and Prominent Chin

Abstract

Introduction: A 27-yr-1-mo-old female presented with chief complaints (CC) of flared and crowded incisors. She preferred aligner treatment to avoid oral hygiene problems.

Diagnosis: An assessment of the face revealed slightly concave profile (-2°), increased facial height (54.9%), decreased mandibular plane (FMA, 21°), protrusive maxilla (SNA, 82.0°), protrusive mandible (84.5°), and an intermaxillary discrepancy (-2.5°). Furthermore, there were severely flared incisors (129°) and retroclined lower incisors (77.5°). The dental midline was shifted 2mm to the left, and there was 6mm of crowding in the lower dentition. The Discrepancy Index (DI) was 17.

Etiology: The severe anterior crowding was due to the limited arch development in width.

Treatment: Clear Invisalign® aligners (Align Technology, Inc., San Jose, Calif) were used for the correction of the moderate crowding, flared upper incisors, and retroclined lower incisors. The crowding was mainly relieved by inter-proximal reduction (IPR) and arch expansion. Furthermore, smart-feature attachments were used to improve the rotated teeth. The buccal power ridges were designed for increasing the lingual root torque of the lower anterior teeth. Simultaneous dental movement was employed, and IPR was sequentially performed during the arch expansion and tooth rotation process. During the active treatment of 41 stages, off-tracking occurred on several anterior teeth in the 26th stage, so the remaining stages of aligner treatment were aborted and additional aligners for refinement were constructed. Four sets of additional aligners improved alignment and detailing.

Results: This crowded and canted dentition, with a Discrepancy Index (DI) of 17, was treated in 29 months with an excellent outcome, with a Cast-Radiograph Evaluation (CRE) score of 13 and a Pink and White dental esthetic score of 2. Both arches were well-aligned, and a Class I relationship was achieved. However, after concluding the treatment, slight bilateral posterior open bite still remained and the LL3, LR2 and LR3 still showed minor black triangles.

Conclusions: Crowded end-on Class III dentitions can be treated with IPR and arch expansion to relieve the crowding and allow tilted incisors to be up-righted without further extraction and miniscrew application. (J Digital Orthod 2022;66:4-22)

Key words:

Invisalign, aligner treatment, crowding, flared incisors, anterior crossbite, end-on Class III, arch expansion, inter-proximal reduction (IPR)

Introduction

The dental nomenclature used for this report is a modified Palmer notation. Upper (U) and lower (L) arches, as well as the right (R) and left (L) sides,

define four oral quadrants: UR, UL, LR, and LL. Teeth are numbered 1-8 from the midline in each quadrant, e.g., a lower right first molar is LR6.

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History and Etiology

A 27-year-1-month-old female presented with a relatively straight facial profile, occlusal cant, midline shifted 2mm to the left, crowding in both arches,

flared upper central incisors, and retroclined lower incisors (Figs. 1-5).

There was no history of significant trauma, dental problems, or medical disorders. The etiology appeared to be either the narrow alveolar bone of



■ **Fig. 1:** Pre-treatment facial and intraoral photographs



■ **Fig. 2:** Pre-treatment study models (casts)



■ **Fig. 3:** Pre-treatment panoramic radiograph

the arches that expanded insufficiently during growth, or the poor habit of thumb/pacifier sucking and tongue thrusting, which therefore limited the anterior teeth erupting normally in the early mixed dentition. The constricted arch lengths could not accommodate all the anterior teeth in the proper positions, resulting in the canting and crowding. After reaching adulthood, she searched for an ideal solution to correct the malocclusion for esthetic improvement (Fig. 1). The pre-treatment study models (casts), as well as panoramic and cephalometric radiographs, are shown in Figs. 2-4. The cephalometric analysis is presented in Table 1.



■ **Fig. 4:** Pre-treatment cephalometric radiograph. Note the straight profile and the flared incisors.



■ **Fig. 5:** Flared incisors within the concave mid-face

Diagnosis

Facial:

- Facial Height: *Increased (54.9%) with tapered facial form*
- Protrusion: *Relatively retrusive lips (upper: -5mm to the E-Line; lower: -4mm to the E-Line)*



■ **Fig. 6:** Flared central incisors, LL2 crossbite and retroclined canines

- Symmetry: Maxillary dental midline 2mm to the left of the occlusal plane cant (Fig. 1)
- Smile line: Upper lip curtain had a median elevation, but was consistent with the occlusal cant on the left side (1mm inferior on the patient's right side)

Skeletal:

- Intermaxillary Relationship: Protrusive maxilla (SNA, 82.0°) and mandible (SNB, 84.5°) and intermaxillary skeletal discrepancy (ANB, -2.5°)
- Mandibular Plane: Insufficient inclination (SN-MP, 31°; FMA, 23°) (Fig. 5; Table 1)
- Vertical Dimension of Occlusion (VDO): Excessive Na-ANS-Gn (54.9%)
- Symmetry: Within normal limits

Dental:

- Classification: End-on Class III on both sides
- Overbite: 1mm
- Overjet: 6mm

- Missing/Unerupted: None
- Symmetry: Upper midline deviated 2mm to the left, as well as occlusal cant (Fig. 1)

The ABO Discrepancy Index (DI) was 17 as documented in the subsequent worksheet.¹

Treatment Objectives

The treatment objectives were to: 1. correct the flared upper incisors, retroclined lower incisors, and asymmetric dental arches, 2. improve the canted and crowded dentition, and 3. coincide the upper dental midline to the facial midline.

CEPHALOMETRIC SUMMARY			
SKELETAL ANALYSIS			
	PRE-TX	POST-TX	DIFF.
SNA° (82°)	82.0°	83.0°	1°
SNB° (80°)	84.5°	84.5°	0°
ANB° (2°)	-2.5°	-1.5°	1°
SN-MP° (32°)	28°	28°	0°
FMA° (25°)	21°	21°	0°
DENTAL ANALYSIS			
U1 TO NA mm (4 mm)	8	3.5	4.5
U1 TO SN° (110°)	129°	102°	27°
L1 TO NB mm (4 mm)	1	1	0
L1 TO MP° (90°)	77.5°	75°	2.5°
FACIAL ANALYSIS			
E-LINE UL (-1mm)	-5	-5	0
E-LINE LL (0 mm)	-4	-3	1
%FH: Na-ANS-Gn (53%)	54.9%	55.3%	0.4%
Convexity: G-Sn-Pg' (13°)	-2°	-1°	1°

■ **Table 1:** Cephalometric Summary

Maxilla (all three planes):

- A-P: *Maintain.*
- Vertical: *Maintain.*
- Transverse: *Maintain.*

Mandible (all three planes):

- A-P: *Maintain.*
- Vertical: *Maintain.*
- Transverse: *Maintain.*

Maxillary Dentition:

- A-P: *Decrease.*
- Vertical: *Maintain.*
- Inter-Molar/Inter-Canine Width: *Maintain/expand.*

Mandibular Dentition:

- A-P: *Maintain.*
- Vertical: *Maintain.*
- Inter-Molar/Inter-Canine Width: *Maintain/expand.*

Facial Esthetics:

- *Maintain.*

Treatment Alternatives

In this moderately crowded dentition, sufficient space had to be created for proper alignment. Judging from the profile, SN-MP (FMA) angle, overbite, and incisor inclination are all important when considering alternative treatments. Possible treatment options are listed below (Fig. 7):

Option 1:

Relieve the crowding by extracting 4 premolars.

Option 2:

Relieve the crowding by expanding the arches.

Option 3:

Relieve the crowding with moderate inter-proximal reduction (IPR).

Rationale: An Invisalign provider is trained to create a customized tooth alignment orthodontic plan using the ClinCheck® software (Align Technology, Inc., San Jose, Calif) after receiving all the necessary data. Orthodontists can develop more detailed treatment plans when utilizing the simulation feature of this software. The information regarding the digital steps of the sequence of each tooth movement and the differences from the starting aligner to the final one allows the provider to decide which tooth or steps need further modification.

For the first treatment option, four first premolar extraction provides too much space, which could cause excessive retraction of anterior teeth, as well as a dished-in profile. In the design of aligner treatment progress, large extraction space increases the distance the teeth must move, consequently

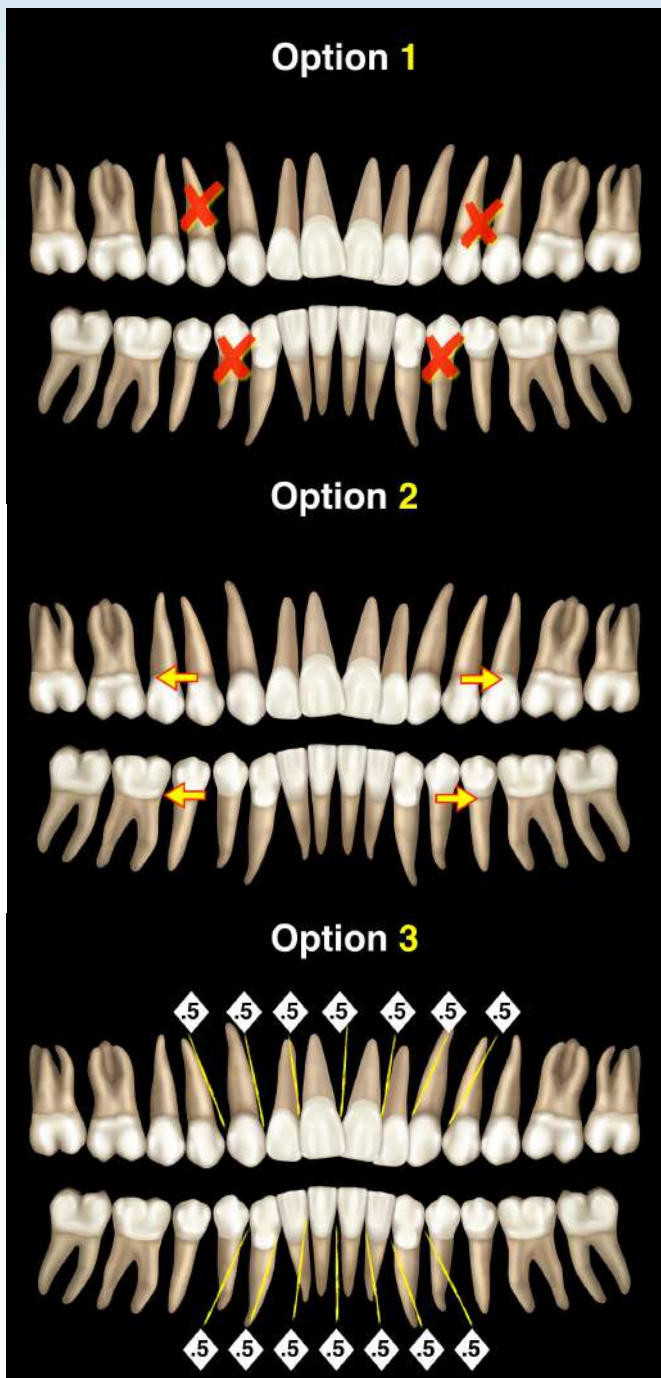


Fig. 7:
Diagram showing the configuration of different treatment plans of tooth extraction, arch expansion, and IPR.

increasing the difficulty of the treatment. Therefore, the number of aligners and refinement plans may have to be increased incrementally.

For the second option, by expanding the arch without extraction and IPR, treatment planning focuses on the preservation of integral teeth and facial profile. However, it is usually suitable for minor crowding or easy cases which need less tooth movement and space creation. Thus, a Class I occlusal relationship with correct midlines of both arches would be easier to manipulate. However, pure arch expansion faces other risks, namely more flared incisors, and possible failed de-crowding due to insufficient arch expansion. In order to reverse the severe side effect of flared out anteriors, bone screws may be necessary as definitive anchorage.

The third option of IPR procedures can be used to relieve excessive crowding. In aligner treatment, less tooth movement is desirable. From the digital analysis in virtual orthodontic progress, reasonable dental reduction can be evaluated for the resolution of dental crowding. Therefore, with less tooth movement and arch expansion, the treatment progress becomes simple and easy. In other words, without premolar extraction and excessive anterior flaring, which are commonly encountered in the first two options, the number of aligners can be markedly reduced, and the final result will be more predictable and stable.

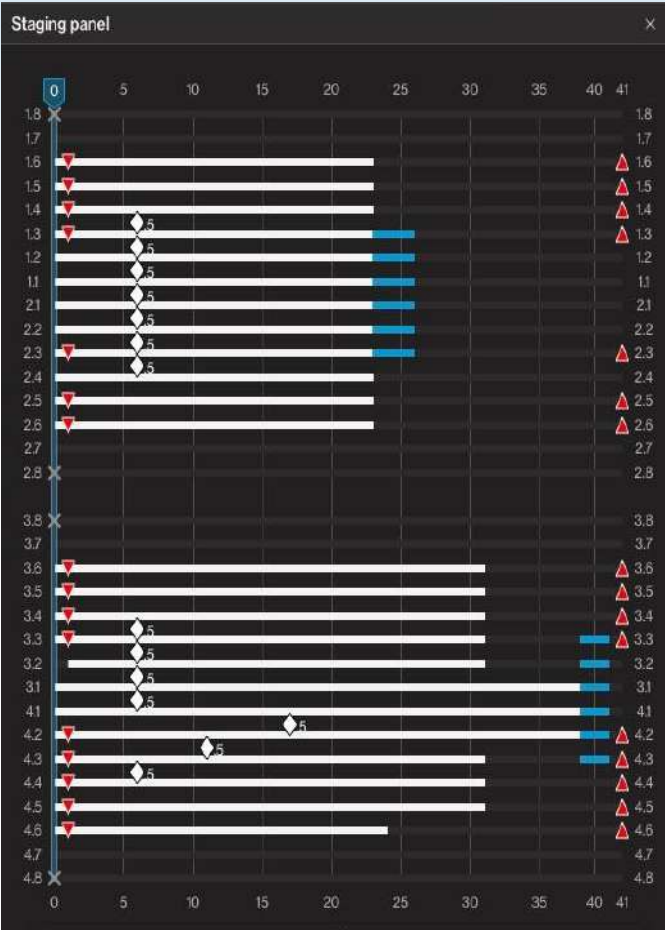


Table 2:
The simultaneous movement of all teeth was planned in the initial alignment.

Treatment Progress

Simultaneous movement of the whole dentition was designed in the staging progress (Table 2), and the main tooth movements were as follows:

- 1. Extrude and rotate upper central incisors.
- 2. Expand upper and lower inter-canine distances.
- 3. Intrude lower anterior teeth.

In the first phase, the aligners was free of attachments, allowing the patient to get used to the wearing process with less restrictions. After 5 days, all the attachments were placed from the second stage of the first set, and each aligner was worn for 10 days (Figs. 8 and 9). One and a half months later, the aligners were well-fitted to all teeth. Therefore, aligners 6-11 were prescribed and were worn for 7 days each. After 1 month, 8 more aligner stages were given to the patient. After 5 months of active treatment, LL2 showed 1mm off-tracking. The wearing time of each aligner was increased to 10 days. By the 26th stage, the aligner

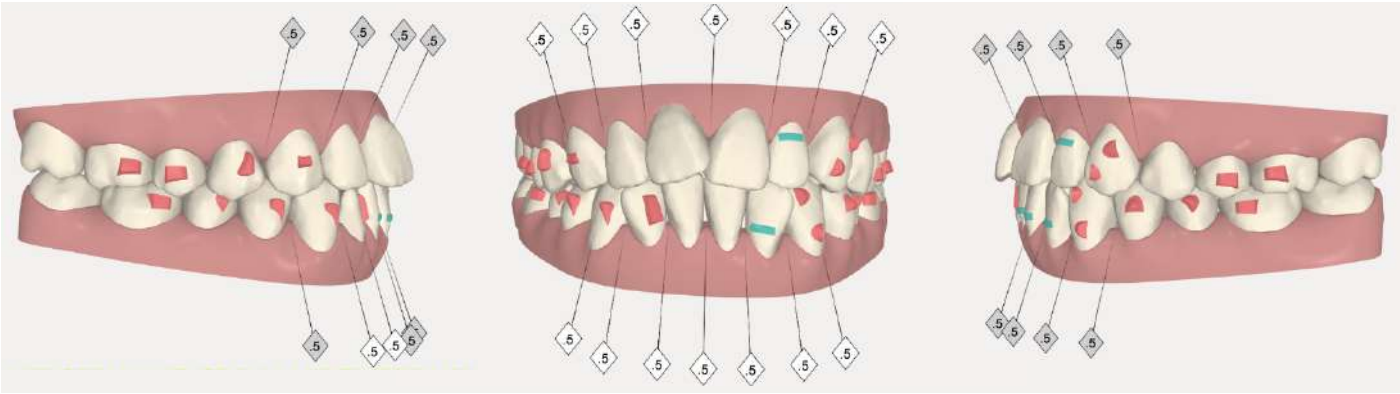


Fig. 8:
Initial setup of the attachments including rectangular and optimized features, IPR around the anterior teeth and upper first premolars, as well as power ridges placed in the late stages of first aligner set.

showed multiple off-track places, especially on UR2, UR1, UL2, LR2, and LL2 (Figs. 10 and 11). Therefore, the need for aligner refinement treatment was identified.

After 9 months of treatment, the second set of 33 aligners was delivered to correct the off-tracking. Further IPR was performed at the 27th stage. After



Fig. 9:
Dark markers can help the clinician to see where to place the attachments.

15 months of treatment, the major dental crowding was relieved. UR1, UL2, and LL2 showed slight rotation, and slight open bite was noted for the posterior teeth (Fig. 12); therefore, more refinement procedures were approved, which focused on pushing UR1 mesial-in, rotating UL2 and LL2 mesial-out, and eliminating the free occlusal contact on the left side for this section of the treatment program. All the aligners were worn with a 7 day protocol.

After 20 months of treatment, UL2 and LL2 did not rotate with enough angulation and needed more mesial-out action to even up the incisal edges. Besides, the lower anterior black triangles were more obvious (Fig. 13). Therefore, IPR was applied between LR2 and LL2 during the next set of aligners. New attachments were placed on UR4, UL7, LL7, and LR2, and old attachments were preserved for the other teeth when delivering new scanning data to the aligner company. 10 aligners were delivered in this part of refinement. In the next refinement of 9 aligners, detailing the occlusion included mesial-out actions of four lateral incisors. Finally, the last refinement of 18 aligners focused on closure of remaining spaces and occlusal contact cultivation. The total



Fig. 10: The first set was halted due to off-tracking of UR2, UR1, UL2, LR2, and LL2 at the 26th stage.



Fig. 11:

After the first set of treatment (9 months (9M)), the arch expansion was not ideal. Further arch expansion was prescribed, and further IPR was performed. A posterior open bite occurred and was corrected in the next set of aligners.



Fig. 12:

After the second set of treatment (17 months (17M)), the anterior crowding was almost solved. All four lateral incisors as well as LL6 and LR6 appeared to be intruded compared to the adjacent teeth. The anterior black triangles were to be decreased with IPR.



■ **Fig. 13:** After 20 months of treatment (20M), the UL2 and LR2 showed rotated positions. Further IPR is needed to create space.

treatment time was 29 months, and all the attachments and auxiliaries were removed (Figs. 14 and 15).

Results achieved

The moderate crowding, flared UR1 and UL1, and UL2 in cross bite (DI=17) were corrected to a more symmetric result (CRE=13) with 29 months of aligner treatment as documented in Worksheet 2 at the end of this report. Despite only moderate IPR, the occlusion was finished in Class I (Figs. 16-19). LFH (VDO) increased 0.4% and FMA, SN-MP, and SNB angles remained unchanged. The profile only increased 1° (final convexity: G-Sn-Pg', -1°) (Figs. 18 and 19). Despite minimal change in the lip profile, the upper incisors were markedly up-righted by 27° (Table 1).

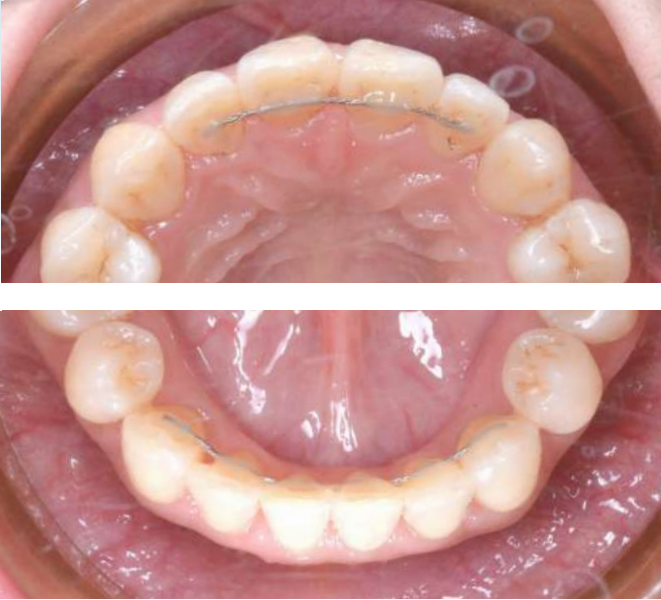
The specific treatment objectives are outlined below:

Maxilla (all three planes):

- A-P: *Maintained*
- Vertical: *Maintained*
- Transverse: *Maintained*



■ **Fig. 14:** Central incisor open bite was completely corrected.



■ **Fig. 15:** Fixed retainers were delivered after aligner treatment.

Mandible (all three planes):

- A-P: *Slightly advanced*
- Vertical: *Maintained*
- Transverse: *Maintained*

Maxillary Dentition:

- A-P: *Slightly retracted incisors*
- Vertical: *Slightly intruded molars*
- Inter-Molar/Inter-Canine Width: *Maintained/Increased*

Mandibular Dentition:

- A-P: *Incisors retracted*
- Vertical: *Molars up-righted*
- Inter-Molar/Inter-Canine Width: *Maintained*

Facial Esthetics:

- Lateral profile maintained (Fig. 16)

Retention

Sectional twisted wires were bonded on UR2 to UL2 and LR3 to LL3 after the aligner treatment. Two ESSIX retainers were given to the patient to maintain the correct alignment and leveling of the dentition in both arches. The patient was instructed to use these retainers throughout the day during the first month and then only while sleeping (Fig. 15).

Final Evaluation

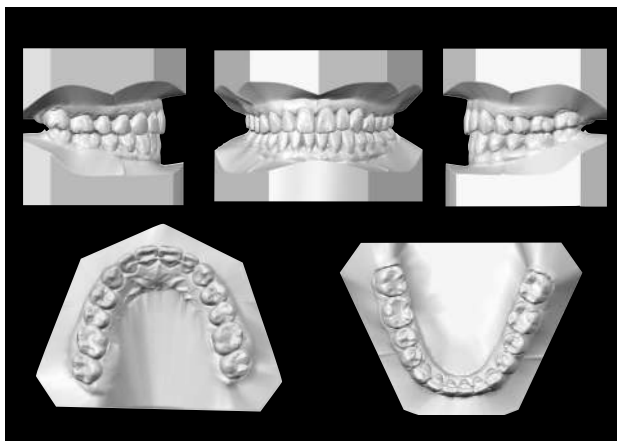
A Class I occlusion was achieved with proper overbite and overjet, and the lower midline was coincident with the upper midline. The ABO Cast-Radiograph Evaluation was 13 points. Rotation, marginal ridge, buccal lingual angulation, and overjet showed excellent results, but the occlusal contacts were compromised (10 points). The deficiencies of occlusal relationship were 4 points. The Pink and White (P&W) dental esthetic score was 2, with symmetry and harmony. The CRE and P&W scores are shown at the end of the case report as Worksheets 2 and 3, respectively.

Discussion

In orthodontics, there are five main ways to create space: tooth extraction, anterior tooth flaring, posterior tooth retraction, arch expansion, and inter-proximal dental reduction. Generally, tooth extraction can create space over 7mm, which is



■ Fig. 16: Posttreatment facial and intraoral photographs



■ Fig. 17: Posttreatment dental models (casts)



■ Fig. 18: Posttreatment panoramic radiograph



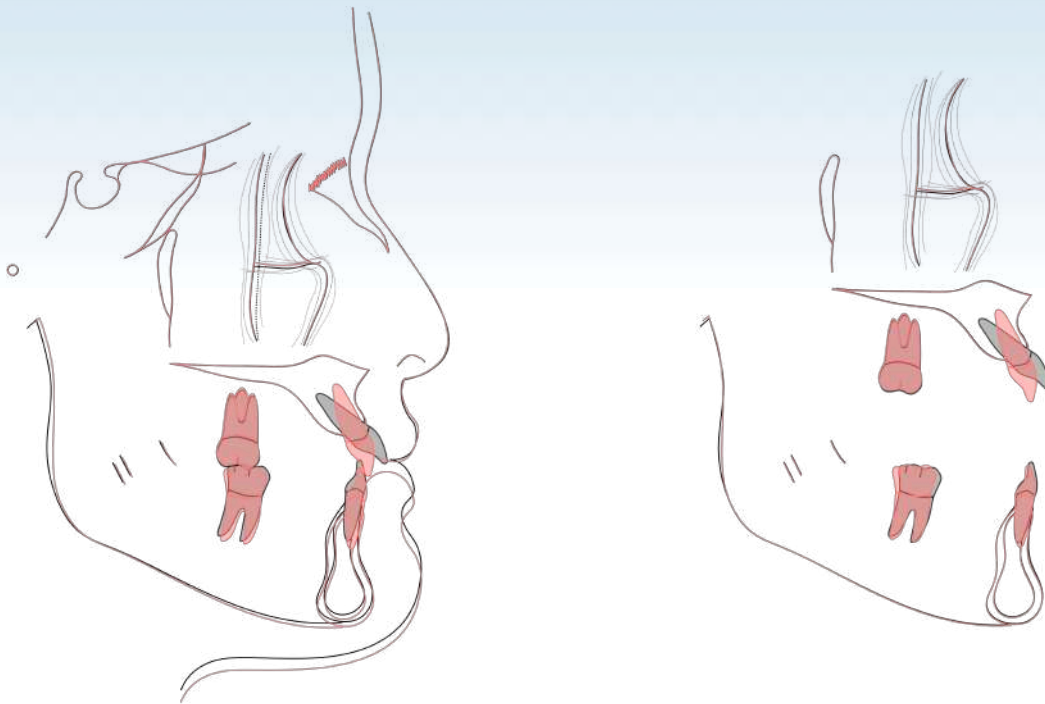
■ **Fig. 19:** Posttreatment cephalometric radiograph

useful not only for relieving moderate crowding, but also for anterior retraction. Therefore, for this case, the space created after removing 4 premolars was about 30mm for only 6mm of crowding relief. Closure of the excess space would make the straight profile more recessive.² Due to the patient's flared anterior teeth, other conventional space creation methods were unsuitable because the pre-treatment incisal angulation was 129°, which was 19° more than the standard value. Therefore, the teeth could not be flared any further. Conversely, the original incisal angulation was reduced by up-righting the teeth instead of flaring them.

Posterior tooth retraction is a good way for creating space whilst avoiding tooth extraction, but the amount of space created is related to the

stability of the designed anchorage. When treating with aligners, the sequential distalization of the posterior teeth can increase the anchorage by allowing movement of only one or two teeth in each aligner activation. Hence, the result after sequential distalization usually can not achieve the designed positions, as much stronger anchorage is required. Commonly, wearing Class II elastics or placing bone screws can achieve more predictable results for posterior tooth retraction. Bone screws provide outstanding anchorage, which can replace inter-arch elastics to avoid anchorage loss and the off-tracking side effect from the vertical force.³

In this case, upper and lower molar relationships were end-on Class III. When placing bone screws or wearing Class II elastics for retraction of the in the upper arch, an anterior crossbite might occur. However, placing bone screws for posterior teeth retraction was still included in this treatment planning as a de-crowding solution of the anterior teeth, as other ways did not work. Arch expansion is easy when faced with minor crowding.⁴ However, when crowding is moderate to severe, arch expansion is significantly related to the root anatomy and cortical plate thickness. Once arch expansion was underway in the treatment, the intended buccal tooth movement was constricted by the buccal bone. It is understood that the buccal bone is composed of cortical bone and therefore more resistant to resorption, so it may slow down the tooth movement or result in more root resorption.⁵ The thickness of buccal bone affects the speed of progress during the aligner treatment, which always needs continual refinement due to the dense bone. Sometimes, the



■ **Fig. 20:**

Superimposed pre-treatment (black) and posttreatment (red) cephalometric tracings show that the occlusion was finished at Class I, and the anterior teeth and lower molar were up-righted. Lower incisor was intruded. A clockwise rotation of the mandible was noticed.

posterior teeth become palatally tilted, which indicates that the coronal portion of tooth is in a more palatal position than the root. Therefore, when the tooth is pushed buccally in the arch expansion procedure, the tooth can move to the up-righted position with less difficult root translation and less resistance of the buccal bone. If a pushing action is employed as the main orthodontic force, arch expansion will be easier when the posterior teeth are tilted toward the palatal side.

IPR is an irreversible procedure which strips the inter-proximal enamel, but it can be an alternative to other space creation methods such as dental extraction.⁶ This procedure can resolve mild to moderate crowding up to 6mm and decrease the unesthetic presence of black triangles in the anterior

teeth. In this case, IPR was performed after the teeth were almost completely aligned, to better evaluate the amount required reducing. The results showed successful crowding relief and eradication of multiple black triangles. Regarding optimization of aligner treatments, tooth rotation, translation, and tipping processes are all digitally and statically staged in the relevant programs of the software. The extrusion and rotation rates are less accurate after aligner treatment.⁷⁸ If these tooth movements were to occur simultaneously, possible errors could increase during the progress. The risk of off-tracking increases, and the treatment could end with poor results. In order to reduce any unwanted mistakes, separating the actions and increasing the number of aligners can slow down and simplify the tooth movement from one stage into several stages.

Enlarging attachment size can improve the retention, especially when a tooth is short or round. The interferences of neighboring teeth before digital planning approval is considerable when relieving crowded dentitions.

Conclusions

The Invisalign aligner treatment can resolve moderate crowding using inter-proximal reduction and arch expansion, but the virtual steps of tooth movement should be optimized for the number of aligners by meticulously evaluating activations relative to the resistance of cortical bone. The patient was very pleased with her new smile, and the posttreatment result is stable (Figs. 21 and 22).

Acknowledgment

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■ **Fig. 21:** Recall for dental stability evaluation



■ **Fig. 22:** A confident wedding smile was achieved.

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Discrepancy Index Worksheet

TOTAL D.I. SCORE

17

OVREJET

0 mm. (edge-to-edge)	=	
1 - 3 mm.	=	0 pts.
3.1 - 5 mm.	=	2 pts.
5.1 - 7 mm. 6mm	=	3 pts.
7.1 - 9 mm.	=	4 pts.
> 9 mm.	=	5 pts.

Negative OJ (x-bite) 1 pt. per mm. Per tooth = 2

Total = 5

OVERBITE

0 - 3 mm.	=	0 pts.
3.1 - 5 mm.	=	2 pts.
5.1 - 7 mm.	=	3 pts.
Impinging (100%)	=	5 pts.

Total = 0

ANTERIOR OPEN BITE

0 mm. (Edge-to-edge), 1 pt. per tooth
Then 1 pt. per additional full mm. Per tooth

Total = 2

LATERAL OPEN BITE

2 pts. per mm. Per tooth

Total = 0

CROWDING (only one arch)

1 - 3 mm.	=	1 pt.
3.1 - 5 mm.	=	2 pts.
5.1 - 7 mm. 6mm (lower)	=	4 pts.
> 7 mm.	=	7 pts.

Total = 4

OCCLUSION

Class I to end on	=	0 pts.
End on Class II or III	=	2 pts. per side 4 pts.
Full Class II or III	=	4 pts. per side _____ pts.
Beyond Class II or III	=	1 pt. per mm. _____ pts. additional

Total = 4

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. Per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB $\geq 6^\circ$ or $\leq -2^\circ$ 0° = 4 pts.Each degree $< -2^\circ$ _____ x 1 pt. = _____Each degree $> 6^\circ$ _____ x 1 pt. = _____SN-MP 28°
 $\geq 38^\circ$ = 2 pts.Each degree $> 38^\circ$ _____ x 2 pts. = _____ $\leq 26^\circ$ = 1 pt.Each degree $< 26^\circ$ _____ x 1 pt. = _____1 to MP $\geq 99^\circ$ 77.5° = 1 pt.Each degree $> 99^\circ$ _____ x 1 pt. = _____

Total = 0

OTHER (See Instructions)

Supernumerary teeth	_____ x 1 pt.	= _____
Ankylosis of perm. Teeth	_____ x 2 pts.	= _____
Anomalous morphology	_____ x 2 pts.	= _____
Impaction (except 3 rd molars)	_____ x 2 pts.	= _____
Midline discrepancy (≥ 3 mm)	@ 2 pts.	= _____
Missing teeth (except 3 rd molars)	_____ x 1 pt.	= _____
Missing teeth, congenital	_____ x 2 pts.	= _____
Spacing (4 or more, per arch)	_____ x 2 pts.	= _____
Spacing (Mx cent. diastema ≥ 2 mm)	@ 2 pts.	= _____
Tooth transposition	_____ x 2 pts.	= _____
Skeletal asymmetry (nonsurgical tx)	@ 3 pts.	= _____
Addl. treatment complexities	1 x 2 pts.	= 2

Identify: Occlusal canting

Total = 2

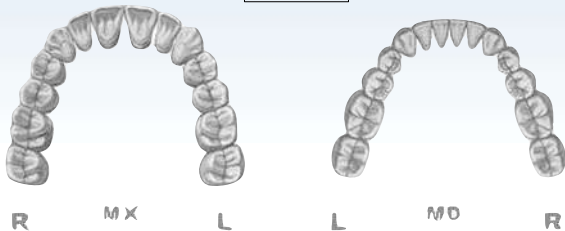
Cast-Radiograph Evaluation

Total Score:

13

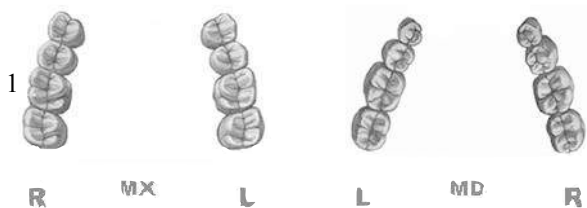
Alignment/Rotations

0



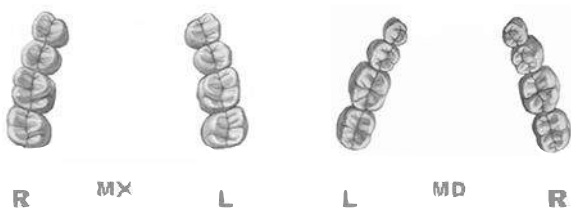
Marginal Ridges

1



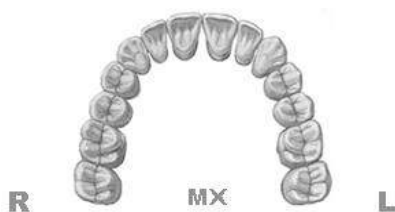
Buccolingual Inclination

0



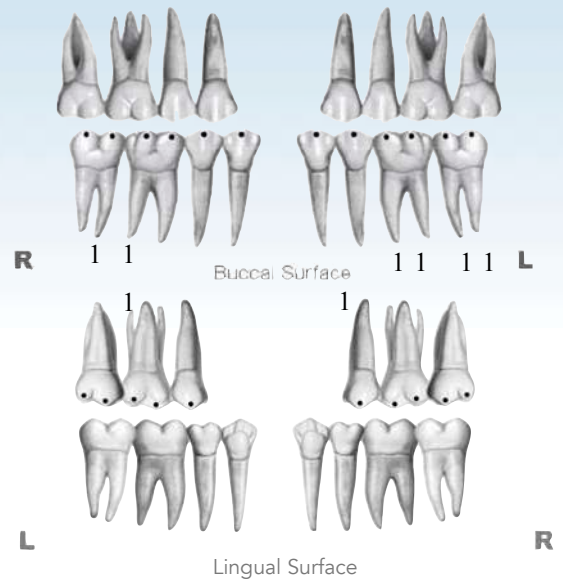
Overjet

0



Occlusal Contacts

8



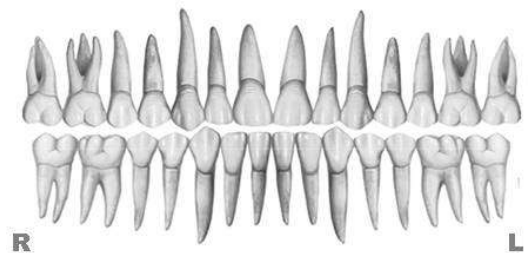
Occlusal Relationships

4



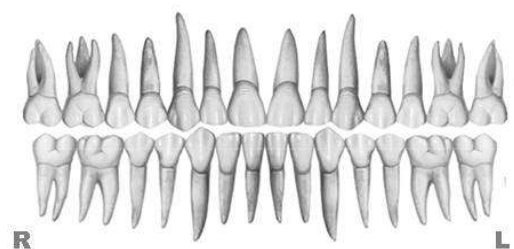
Interproximal Contacts

0



Root Angulation

0

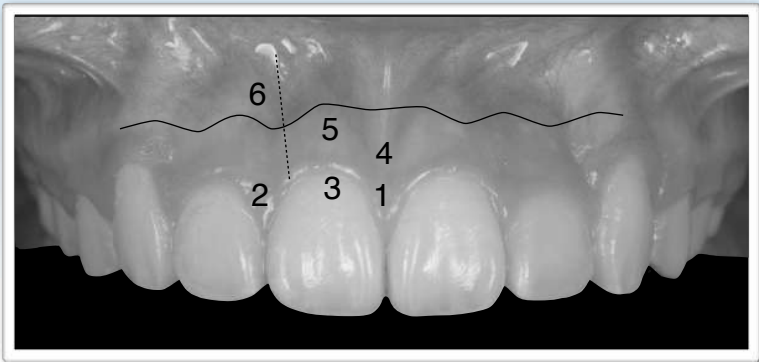


INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI **Pink & White** Esthetic Score

Total Score = 2

1. **Pink** Esthetic Score

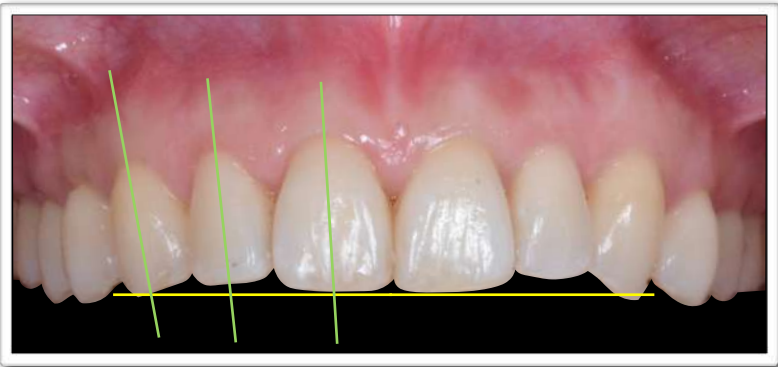
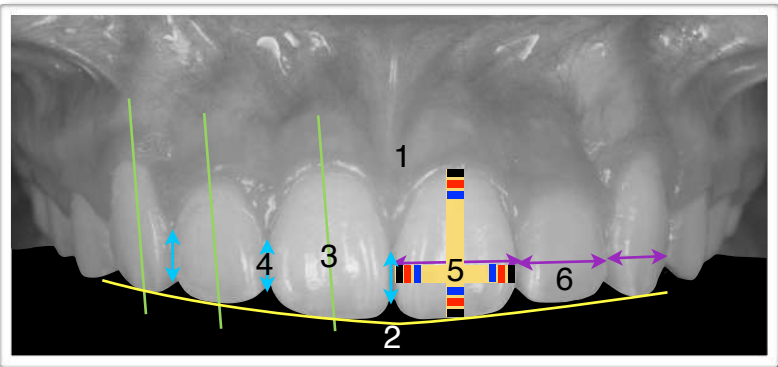


Total = 1

1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

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2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

2. **White** Esthetic Score (for Micro-esthetic)



Total = 1

1. Midline	0	1	2
2. Incisor Curve	0	1	2
3. Axial Inclination (5° , 8° , 10°)	0	1	2
4. Contact Area (50% , 40% , 30%)	0	1	2
5. Tooth Proportion	0	1	2
6. Tooth to Tooth Proportion	0	1	2

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2. Incisor Curve	0	1	2
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2022-2023 第十四年度 貝多芬 矯正精修班



時間：週二上午 09:00-12:00

地點：金牛頓教育中心（新竹市建中一路 25 號 2 樓）

上課日期：

2022 5/10、6/7、7/12、8/16、9/6、10/4、11/15、12/6

2023 1/10、2/7、3/7

- ▶ 09:00 ~ 10:00 精選文獻分析
- ▶ 10:00 ~ 10:30 精緻完工案例
- ▶ 10:50 ~ 12:00 臨床技巧及常犯錯誤分享

全新的第十四年度 2022-23 貝多芬精修班，是由國際知名講師張慧男醫師主持，並偕同貝多芬牙醫團隊住院醫師群共同主講。

每月一次的課程之中，包含了：

1. 精選矯正權威期刊 AJODO 的文章做文獻分析與評讀。
2. 精緻完工 ABO 案例報告，其中因應數位矯正的世界趨勢，Insignia 與 Invisalign 病例為課程探討的主要內容之一。
3. 分享臨床上常犯的錯誤以及解決方法。

2022-23 貝多芬精修班內容豐富精彩，讓您經由每個月一次的課程，在面對各式的臨床案例時，更能游刃有餘、得心應手。

學習目的：

研讀最新趨勢文章可以窺知世界文獻公認的治療方式，而藉由評論文章的優缺點不僅能夠訓練判斷與思考能力，更可以清楚比較作法上的不同，達到完整理解治療方向、內容與穩定性的目標。



報名專線：03-5735676 #218 陳小姐



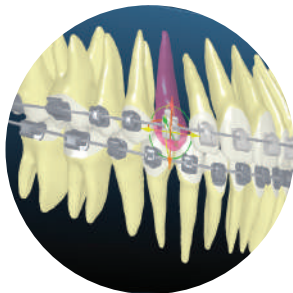
International Workshop

Digital Orthodontics, OBS, VISTA

Digital



@Taiwan 🇹🇼

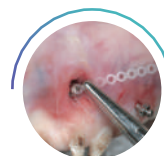
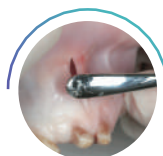


INSIGNIA



OBS

Beethoven's International Workshop is designed for doctors who provide orthodontic treatment using the Damon and Insignia System. This workshop is consisted of lectures, hands-on workshops as well as chair-side observation sessions. Participants will have the opportunity to observe clinical treatment, didactic lectures, live demonstration and gain hands-on practice experiences involving TAD placement, indirect bonding, CBCT-enhanced digital treatment planning for Insignia.



VISTA Vertical Incision Subperiosteal Tunnel Access

Registration:

Day 123 USD 3,600 Early bird rate: \$100 off (advanced registration two months prior to the course date)

Day 4 USD 600 Early bird rate: \$100 off (advanced registration two months prior to the course date)

For more information and registration, visit

<http://iworkshop.beethoven.tw>

course@newtonsa.com.tw
+886-3-5735676 #218 Annie





Course Schedule

Day

1 Chair-side observation

Day

2 Insignia Lecture, Chair-side observation

Chris' Lecture:

Digital Orthodontics with TAD

Day

3 VISTA Lecture & workshop

Chris' Lecture:

VISTA for Impacted Cuspids

* The topics for VISTA workshop:

1. VISTA with screw placement
2. VISTA with connective tissue graft
3. Suture technique



Prof. Dr. Paulo Fernandes Retto, Portugal

"Dr. Angle would be glad to know that contemporary orthodontics has a professional as Chris Chang!"

Digital Orthodontics, OBS & VISTA

Day

4 Keynote workshop (Optional)

by Newton's A team

1. Patient clinical records management
2. Patient communication presentation
3. Basic animations and visual aids



Dr. Rungsi Thavarungkul, Thailand



"If you think this is a computer course that will show you step-by-step how to use the application, please reconsider. If you want to improve communication in your practice, and with patients, this 8-hour course is definitely worth it."

KEYNOTE

THE LECTURER



Dr. Chris Chang

CEO, Beethoven Orthodontic and Implant Group. He received his PhD in bone physiology and Certificate in Orthodontics from Indiana University in 1996. As publisher of *Journal of Digital Orthodontics-A journal for Interdisciplinary dental treatment*, he has been actively involved in the design and application of orthodontic bone screws.