

*The severe crowding with anterior crossbite was treated using passive self-ligating appliances and open coil springs. Space was created by 4 first premolar extractions. During closure of extraction spaces, Class II mechanics corrected the proclination of the upper anterior teeth.*



# 2023-24 熱愛學矯正

全新的貝多芬高效 Damon 矯正大師系列課程是由國際知名講師張慧男醫師親自規劃及授課，課程特色強調由臨床病例帶動診斷、分析、治療計畫擬定與執行技巧。此外，透過數位影片反覆觀看，課堂助教協助操作，以及診間臨床見習，讓學員在短時間能快速上手，感染「熱愛矯正學，熱愛學矯正」的熱情。

## 張慧男 博士

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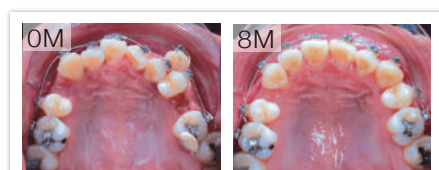
## Damon Master

(Thu) 9:00-17:00 中文授課

The Beethoven Damon Master Program, created by Dr. Chris Chang, is a two-year clinical program. Its hands-on orientation features case study-based diagnosis, analysis, treatment planning and result evaluation. Combining in-class teaching assistants, after-class video review and chair-side observation, participants will learn to master the essential tips of the Damon System.

### 2024

Module 1 - 3/28	Module 7 - 6/27
Module 2 - 4/11	Module 8 - 7/11
Module 3 - 4/25	Module 9 - 7/25
Module 4 - 5/16	Module 10 - 8/29
Module 5 - 5/30	Module 11 - 9/19
Module 6 - 6/20	



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## Excellent Finishing

(Tue) 9:00-12:00 中文授課

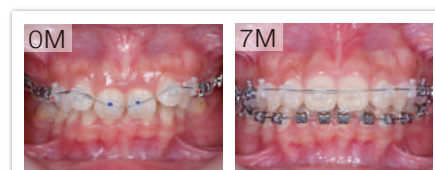
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### Finishing XV

Module 8 - 11/7/23'	Module 10 - 1/9/24'
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Module 1 - 4/16	Module 7 - 10/22
Module 2 - 5/21	Module 8 - 11/5
Module 3 - 6/18	Module 9 - 12/10
Module 4 - 7/9	Module 10 - 1/14/25'
Module 5 - 8/13	Module 11 - 2/18
Module 6 - 9/10	



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## Screws & Aligners

International Workshop English Class

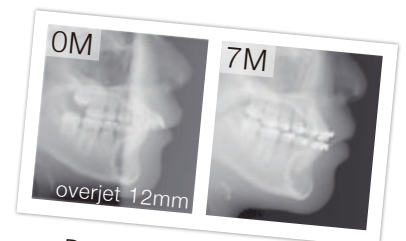
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*Creating a More Effective Way of Learning*

It has been a driving motivation and commitment of mine for the past 30-odd years to diversify the way that I, and consequently others, learn orthodontics. I have been seeking different methods that allow us to explore and truly learn all facets of orthodontics effectively. Especially for those who are just getting started, lowering the prerequisite criteria so that they can not only grasp and learn but also enjoy and appreciate the beauty of the knowledge in this field is, and always has been, the utmost goal for me.

From this year on, every article published in JDO will come with a supplementary 3-minute English video clip that incorporates audio and visual elaboration of the key points. This allows a more personal and animate presentation of the case reports that literally jumps off the pages, hopefully helping readers with diverse learning habits to review and fully comprehend the main ideas more easily. For the junior doctors in my clinic, creating the video clips has been intentionally designed as a second language training to prepare them for both regional and international public speaking. In my opinion and based on my own experience, it is only when one is fully prepared to deliver a speech in front of a crowd that one truly starts to take on more personal initiative in one's learning. I sincerely hope that someday they will come to stand where I have found myself and speak internationally about their accumulated knowledge from their practices and research. I believe to achieve advancement to the whole of humanity in any field of expertise, the most important process is to document what is known in our time and pass this knowledge on to the younger generations who will carry on transporting the torch in any said profession.

These supplementary videos will be available as a playlist on my YouTube channel: [Chris Chang Ortho](#). I invite you to join me and witness the journey that these younger doctors are embarking upon which will definitely broaden and deepen the knowledge of our field as we continue together along our path to glory!

Wishing you all a happy, healthy, peaceful and prosperous 2024.

*Chris Chang* PhD, ABO Certified, Publisher of JDO

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# Skeletal Class I Malocclusion with Severe Crowding and Anterior Crossbite Treated with 4 First Premolar Extractions

## Abstract

**History:** A 19yr-6mo-old female presented with chief complaints of severe crowding and an anterior crossbite.

**Diagnosis:** The skeletal Class I malocclusion (SNA, 83.5°; SNB, 85°; ANB, -1.5°) was associated with severe crowding (> 7 mm) and an anterior crossbite. The Discrepancy Index was 12.

**Treatment:** Bilateral maxillary and mandibular first premolars were removed to gain space for relieving the crowding and retracting the anterior segment to correct the anterior crossbite. A Damon® system appliance with passive self-ligating brackets was applied to correct the dental malocclusion after extracting four premolars.

**Results:** Improved dentofacial esthetics and occlusal function were achieved after treatment. The Cast-Radiograph Evaluation score was 24, and the Pink and White esthetic score was 2.

**Conclusions:** This case report demonstrates the use of passive self-ligating appliances and open coil springs to resolve an anterior crossbite and severe crowding. Furthermore, the application of Class II elastics during the closure of extraction spaces corrected the proclination of the upper anterior teeth. (*J Digital Orthod* 2024;73:4-18)

**Key words:**

Skeletal Class I, proclined anterior teeth, anterior crossbite, passive self-ligating brackets, Class II elastics, first premolar extraction

The dental nomenclature for this report is a modified Palmer notation with four oral quadrants: upper right (UR), upper left (UL), lower right (LR), and lower left (LL). Teeth are numbered 1-8 from the midline in each quadrant.

## Introduction and Etiology

Bimaxillary crowding with a Class I molar relationship is a prevalent issue throughout the Asian population.<sup>1</sup> Crowding not only affects appearance but can also contribute to periodontal problems due to challenges in maintaining oral

hygiene. Extracting four first premolars is an efficient way to relieve bimaxillary crowding,<sup>2</sup> but other factors such as facial profile, lip protrusion, and mandibular plane angle must also be taken into consideration.

Managing torque control, which involves maintaining the desired axial inclinations of teeth, can be challenging when closing extraction spaces. This case report outlines the treatment of bimaxillary crowding using extractions, and details effective torque control measures for retracting the maxillary incisors.



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## Diagnosis

A 19-year-old female presented for orthodontic consultation with chief complaints of anterior crossbite and crowding (Figs. 1 and 2). No contributing medical or dental histories were reported.

The plaster casts revealed severe crowding ( $> 7$  mm) (Fig. 3). The radiographic documentation of the malocclusion includes a lateral cephalometric film in centric occlusion ( $C_0$ ) (Fig. 4), a panoramic radiograph (Fig. 5), and temporomandibular joint (TMJ) views (Fig. 6). There were no signs nor symptoms of temporomandibular dysfunction. The



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



**Fig. 2:** Pre-treatment photograph shows anterior crossbite and an edge-to-edge incisor relationship.



**Fig. 3:** Pre-treatment dental models (casts)

American Board of Orthodontics (ABO) Discrepancy Index (DI) was 12 as shown in the subsequent Worksheet 1.<sup>3</sup> Cephalometric analysis was summarized in Table 1.

**Facial:**

- Convexity: *concave* (G-Sn-Pg,  $-3^\circ$ )
- Lip protrusion: *Within normal limits (WNL)* (upper/lower lips were  $-2\text{ mm}/0\text{ mm}$  to the E-line.)



**Fig. 4:** Pre-treatment cephalometric radiograph



**Fig. 5:** Pre-treatment panoramic radiograph



**Fig. 6:** Pre-treatment transcranial radiographs of the temporomandibular joints (TMJs) are shown, from the left: right TMJ closed, right TMJ open, left TMJ open, and left TMJ closed. The mandibular condyles are outlined in blue.

**Skeletal:**

- Skeletal Class I (ANB,  $-1.5^\circ$ ), normal maxilla (SNA,  $83.5^\circ$ ), and mandibular prognathism (SNB,  $85^\circ$ )
- Mandibular plane angle: *Normal* (SN-MP,  $29^\circ$ ; FMA,  $22^\circ$ )

**Dental:**

- Molar relationship: *Class I on both sides*

- Upper incisor: *protrusive and proclined* (U1-NA, 6 mm; U1-SN,  $115.5^\circ$ )
- Lower incisor: *WNL* (L1-NB, 4 mm; L1-MP,  $90.5^\circ$ )
- Overjet/overbite: 0 mm/0 mm (*edge-to-edge*)
- Severe crowding ( $> 7$  mm)
- Anterior crossbite (UR2 and UL2)

**Treatment Objectives**

1. Correct the anterior crossbite and the edge-to-edge relationship of U1s.
2. Relieve the severe crowding.
3. Retract and retrocline U1s.
4. Achieve a desired profile.

**Treatment Plan**

According to Chang's Extraction Decision Table (Table 2), extraction is the first choice for a case with flared central incisors and severe crowding.<sup>5</sup> Since the patient was willing to have teeth extracted, UR4, UL4, LR4, and LL4 were scheduled for extraction prior to active treatment in order to create enough space to relieve the anterior crowding and retract the flared anterior teeth. Closing the extraction space by retracting the anterior segment would also lead to the retraction of the lips. To correct the anterior-posterior relationship between the maxillary and mandibular dentitions, the use of Class II elastics was

CEPHALOMETRIC SUMMARY			
	PRE-TX	POST-TX	DIFF.
<b>SKELETAL ANALYSIS</b>			
SNA° (82°)	83.5°	82.5°	1°
SNB° (80°)	85°	84°	1°
ANB° (2°)	-1.5°	-1.5°	0°
SN-MP° (32°)	29°	30°	1°
FMA° (27°)	22°	23°	1°
<b>DENTAL ANALYSIS</b>			
U1 TO NA mm (4mm)	6	5	1
U1 TO SN° (104°)	115.5°	110°	5.5°
L1 TO NB mm (4mm)	4	1	3
L1 TO MP° (90°)	90.5°	78	12.5°
<b>FACIAL ANALYSIS</b>			
E-LINE UL (-1mm)	-2	-3	1
E-LINE LL (0 mm)	0	-2	2
%FH: Na-ANS-Gn (56%)	56.5%	55.5%	1%
Convexity: G-Sn-Pg (13°)	-3°	0°	3°

■ Table 1: Cephalometric Summary



	Ext	Non
1. Profile	Protrusive	Straight
2. Md. angle	High	Low
3. Bite	Open	Deep
4. Ant. inclination	Flaring	Flat
5. Crowding	> 7 mm	None
6. Decay/missing	Present	?
7. P't perception	Ok	No
8. Etc...		

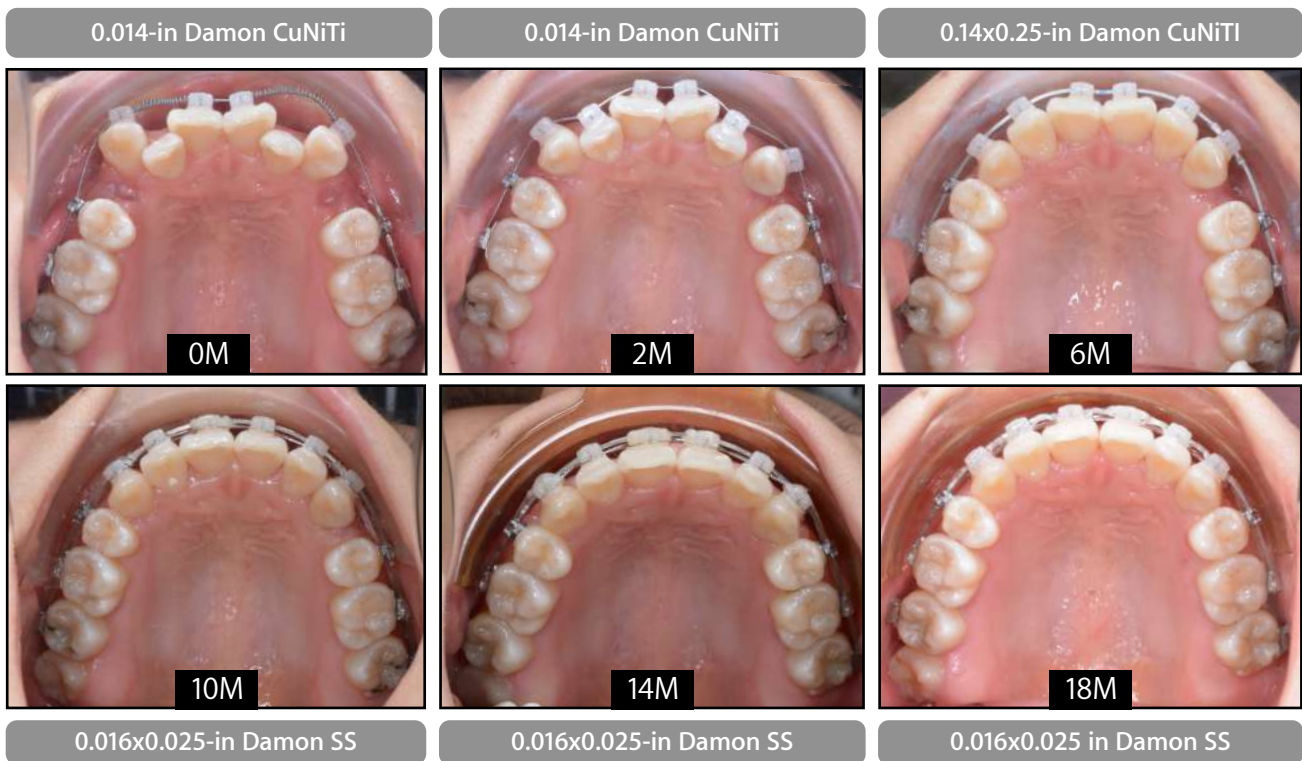
■ Table 2: Chang's Extraction Decision Table

indicated.<sup>5</sup> To correct the anterior crossbite, open coil springs were planned to be introduced for creating spaces between U1s and U3s.

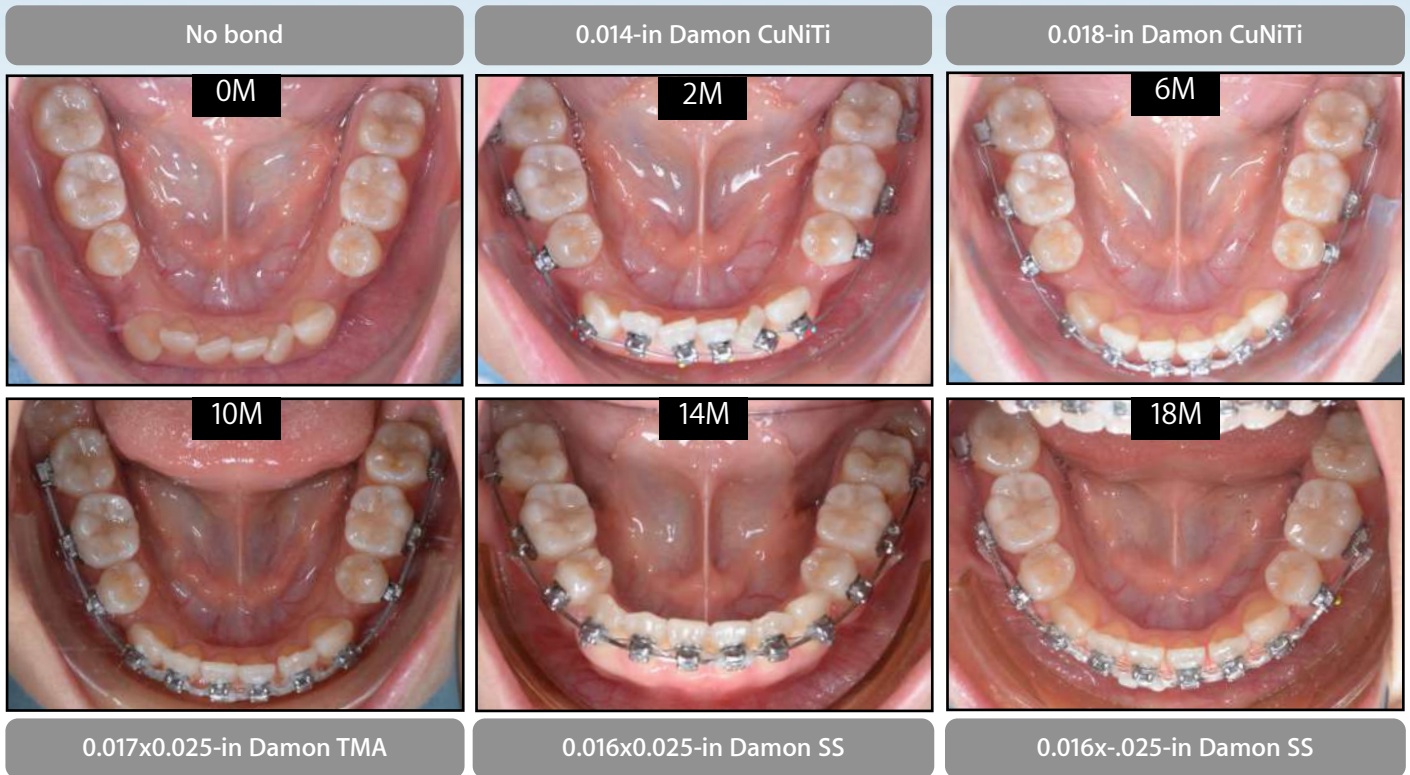
### Treatment progress

The treatment progress is documented from the right buccal, frontal, left buccal, upper occlusal, and lower occlusal views, respectively (Figs. 7-11); the archwire sequence is shown in Figs. 7 and 8.

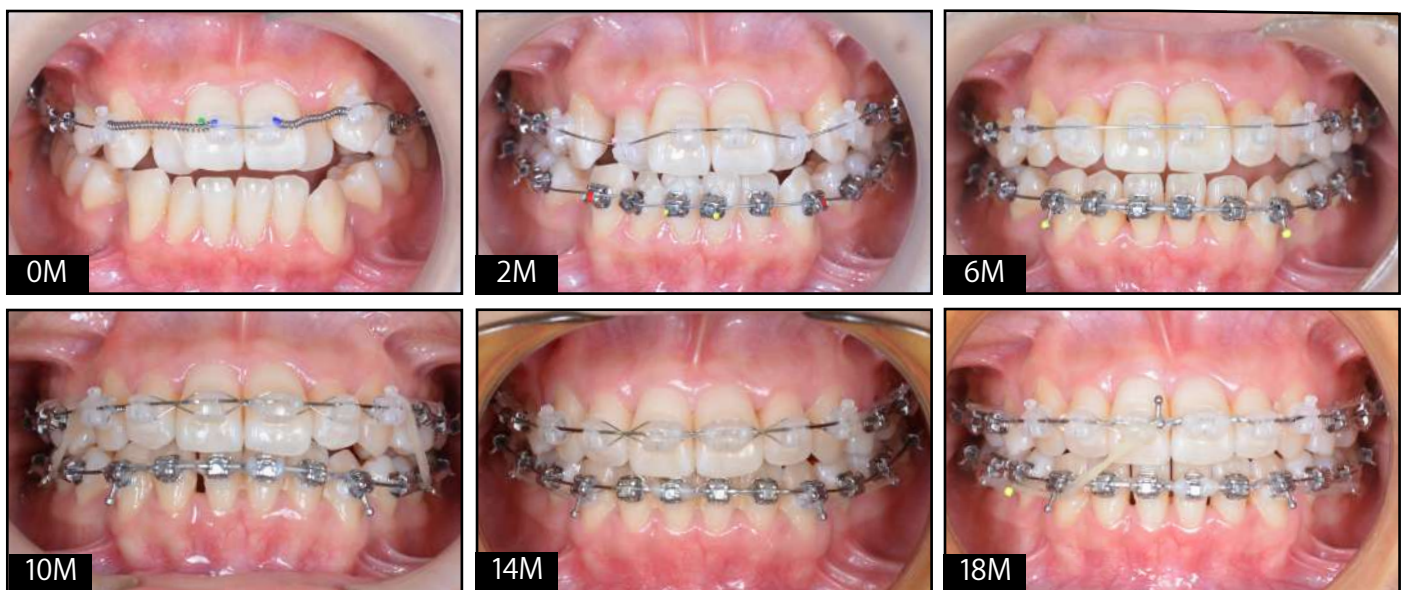
Before active orthodontic treatment, the patient was referred to have UR4, UL4, LR4, and LL4 extracted. A Damon Q® fixed appliance self-ligating (PSL) brackets featuring 0.022-inch slot and passive



■ Fig. 7: Treatment progress from the maxillary occlusal view is shown in months (M): 0M, 2M, 6M, 10M, 14M, 18M, with archwire specifications provided in grey boxes.

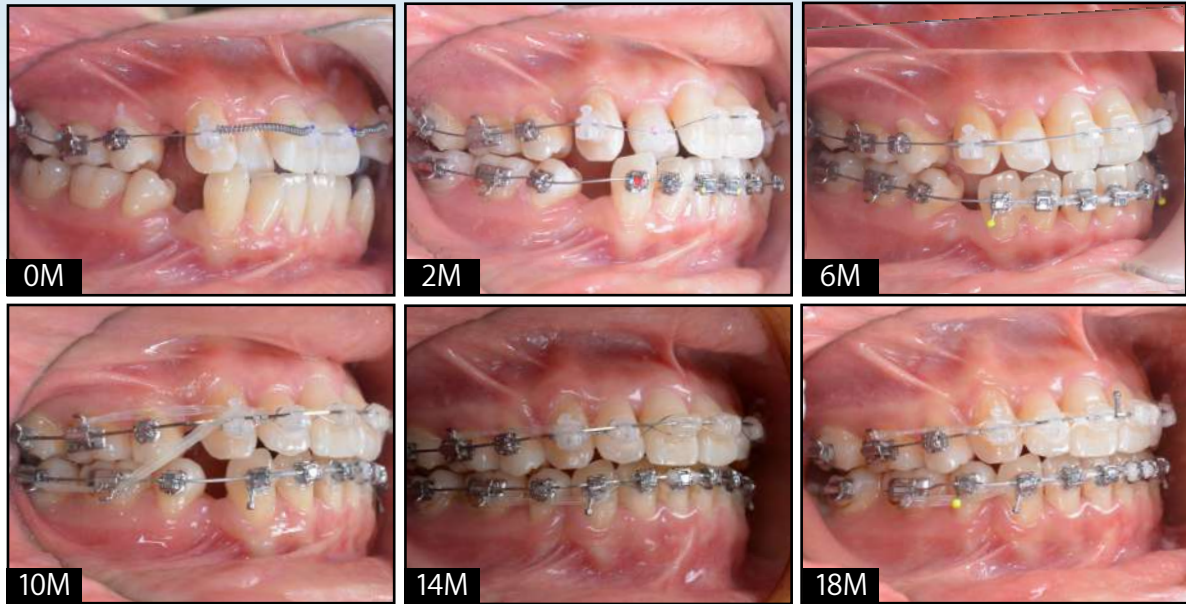


■ Fig. 8: Treatment progress from the mandibular occlusal view is shown in months (M): 0M, 2M, 6M, 10M, 14M, 18M, with archwire specifications provided in grey boxes.

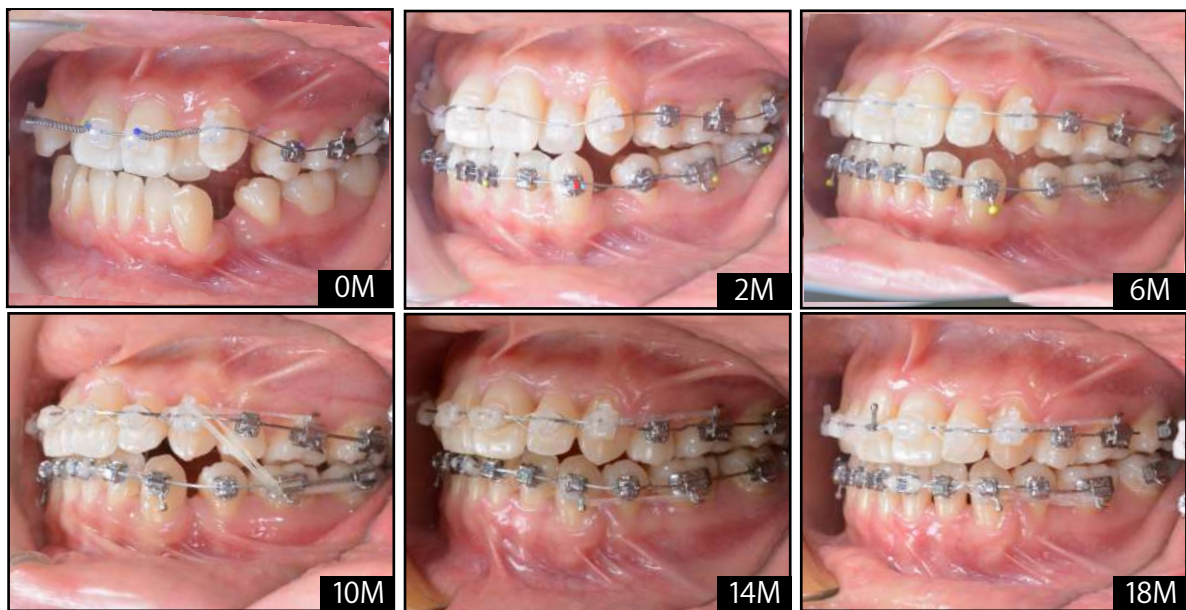


■ Fig. 9: Frontal view of the treatment sequence is shown in months (M): 0M, 2M, 6M, 10M, 14M, 18M.





■ Fig. 10: Right buccal view of the treatment sequence is shown in months (M): 0M, 2M, 6M, 10M, 14M, 18M.



■ Fig. 11: Left buccal view of the treatment sequence is shown in months (M): 0M, 2M, 6M, 10M, 14M, 18M

self-ligating (PSL) brackets, and all designated archwires and orthodontic auxiliaries were included.

At the start of the treatment, the brackets were bonded on all upper teeth except for U2s. Standard-

torque brackets were chosen for U1s and high-torque brackets were chosen for U3s. A 0.014-in CuNiTi archwire was engaged on the upper arch. Two open coil springs were placed between U1s and U3s on both sides to create space.





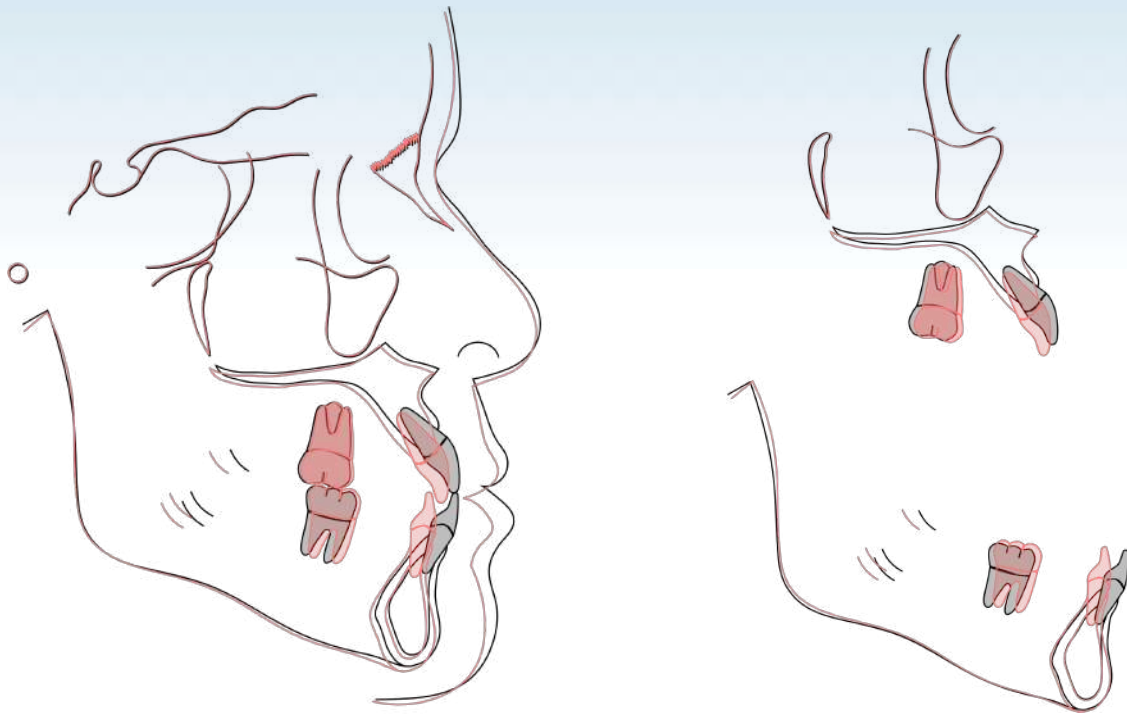
Following a month of space opening, sufficient space for the U2s was successfully attained, so the open coil springs were subsequently taken out. The lower dentition was also bonded with PSL brackets. Standard-torque brackets were placed on the lower incisors, while high-torque brackets were placed on the lower canines.

By the 6<sup>th</sup> month, the anterior crossbite on both sides were successfully corrected, and the

**Fig. 12:**  
Space consolidation with power tube from UR2 to UL2 in 17<sup>th</sup> moth



**Fig. 13:** Post-treatment facial and intraoral photographs



■ Fig. 14:

*Superimposed cephalometric tracings show the dentofacial changes after 19 months of active treatment (Pre-Tx: black; Post-Tx: red). The tracings are superimposed on the anterior cranial base (left), maxilla (upper right), and mandible (lower right). See text for details.*

alignment of both arches was achieved with progressive 0.014x0.025-in CuNiTi and 0.017x0.025-in TMA archwires. In the 10<sup>th</sup> and 11<sup>th</sup> months, more rigid 0.016x0.025-in SS archwires were employed in the maxillary and mandibular lower arches for the remaining space closure.

To close the extraction spaces, four-ring power chains were applied bilaterally, from U3s to U6s in the maxilla. Simultaneously, Class II elastics (Fox, 1/4-inch, 3.5-oz; Ormco) were applied bilaterally from U3s to L6s and L7s.

In the 17<sup>th</sup> month, black triangles were noted interproximally between the four upper incisors. Interproximal enamel reduction (IPR) was

performed from UR2 to UL2 in the 17<sup>th</sup> month (Fig. 10) and from LR3 to LL3 in the 18<sup>th</sup> month of treatment, respectively. Figure-of-eight ties were subsequently applied in both arches.

Following 19 months of active treatment, the removal of all fixed appliances took place. Subsequently, post-treatment records, including casts, photographs, as well as panoramic and lateral cephalometric radiographs, were obtained. (Figs. 13-17).

### Result Achieved

The severe crowding and anterior crossbite were successfully corrected after 19 months of active



■ **Fig. 15:** Posttreatment cephalometric radiograph

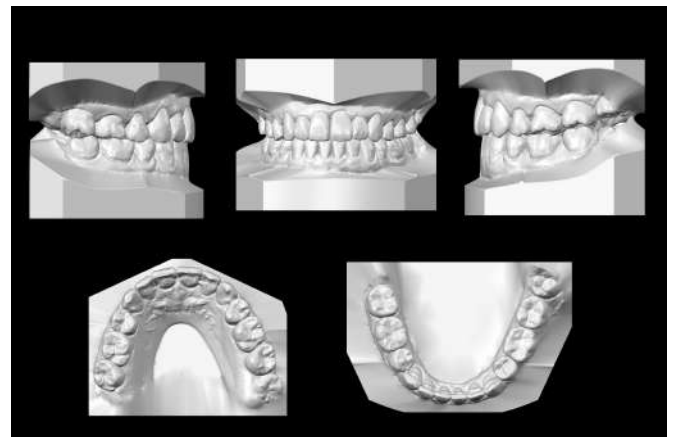
treatment (Fig. 13). The extraction spaces were fully closed, and the canine and molar relationships were corrected to Class I relationships.

The superimposed cephalometric tracings illustrate that the axial inclination of the upper incisors (U1-SN) decreased  $5.5^\circ$  after treatment ( $115.5^\circ$  to  $101^\circ$ ), but the lower incisors (L1-MP) were unavoidably tipped lingually due to space closing. ( $90.5^\circ$  to  $78^\circ$ ) (Fig. 14; Table 1).

The upper and lower lips were both retruded following the retraction of the anterior segments. The mandibular plane angle (SN-MP) was well-maintained. The Cast-Radiograph Evaluation (CRE) score was 24 points, as shown in the supplementary Worksheet 2.<sup>6</sup> The Pink and White dental esthetic score was 2 points (Worksheet 3).<sup>7</sup> The patient was pleased with the final result.



■ **Fig. 16:** Posttreatment panoramic radiograph



■ **Fig. 17:** Posttreatment dental models (intraoral scanning)

## Retention

After the fixed appliances were removed, two ESSIX® (Dentsply Sirona, Harrisburg, PA) overlay retainers were provided to retain the alignment of the dentition. Fixed retainers were also placed from UR2 to UL2 on the upper arch, and from LR3 to LL3 on the lower arch to prevent the crowding from relapsing.



## Discussion

### Extraction or Non-extraction

The primary issue for this patient was overcrowding in the anterior teeth. The patient presented with a concave profile, flared anterior teeth, and severe crowding exceeding 7 mm. Following Chang's Extraction Decision Table (Table 2), a treatment plan was devised, which involved the extraction of all four first premolars to alleviate the crowding and facilitate the retraction of the anterior teeth, aiming for an optimal esthetical and functional outcome.

### Brackets torque selection: Consider Class II elastics and space closure.

High-torque brackets were selected for the upper and lower canines to prevent their roots from striking the buccal cortical bone and causing problems related to space closure.

The initial condition of the U1s was proclined and protruded, whereas the L1s were initially flat. To address the proclination of the U1s and the flat L1s, Class II elastics were employed during the closure of the extraction spaces. This approach aimed to retract and recline the U1s while also flare out the L1s. Taking the available mechanics into consideration, standard-torque brackets were selected for both the upper and lower incisors to achieve the aimed effects.

However, upon reviewing the posttreatment cephalometric radiograph, it was observed that during the first premolar extraction space closure,

the lower incisor angle (L1→MP) decreased excessively (90.5° to 78°), which was less than ideal. If we were to reconsider the treatment plan, the use of high-torque brackets for the lower incisors might have been a more suitable choice.

Alternatively, introducing Class II elastics at an earlier stage could also be considered. If Class II elastics were introduced earlier, the mechanics could cause further flaring of the lower anterior teeth and simultaneously straighten the upper anterior teeth.

### Anterior crossbite correction

Anterior crossbite is a malocclusion characterized by the maxillary anterior teeth being positioned lingually in comparison to the mandibular anterior teeth. In the current case, the patient's anterior crossbite resulted from insufficient space in the maxilla to accommodate the upper lateral incisors.

Following the extractions, brackets were bonded on all upper teeth except for U2s. To create space for U2s, an open coil spring was introduced bilaterally between U1s and U3s. It is advisable to leave U2s unengaged from the archwire during this space-opening phase to allow them to remain as free bodies. Once sufficient space was created by the open coil spring, the U2s were bonded and engaged with the archwire for alignment and leveling.

### Black triangle management

Interproximal reduction (IPR) of the enamel is a common technique used in orthodontic

treatments to create additional space for alignment.<sup>9,10</sup> Followed by space consolidation with power tubes, IPR helps increase the length of interproximal contacts and reduces the presence of black triangles.

In this case, since a black triangle was observed, IPR was carried out to enhance both alignment and esthetics. Figure-eight ties were applied on both arches in order to maintain space consolidation between the anterior teeth.

## Conclusions

This Class I malocclusion, complicated by severe crowding, an anterior crossbite, and protruding anterior teeth, was successfully treated to a pleasing result. The decision on whether to extract or not was guided by Chang's Extraction Decision Table, which provided a well-defined and structured guideline. In cases involving extractions, torque selection is a pivotal factor influenced by various considerations, which plays a crucial role in achieving a successful outcome.

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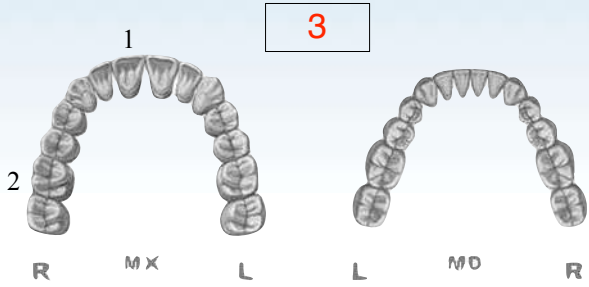




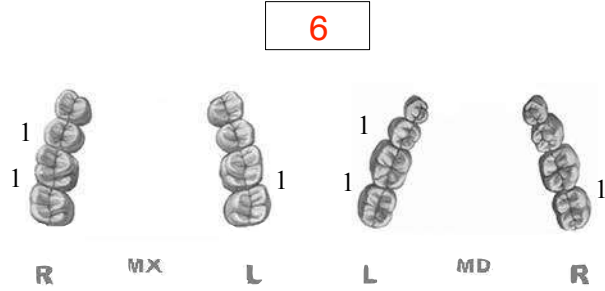
# Cast-Radiograph Evaluation

Total Score: 24

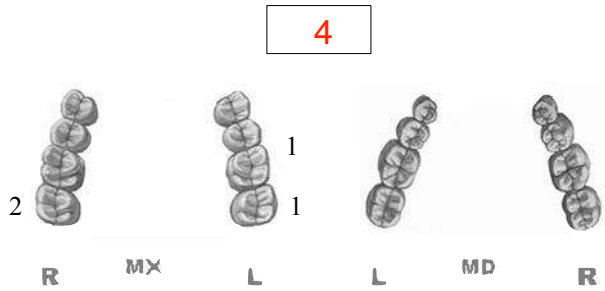
## Alignment/Rotations



## Marginal Ridges



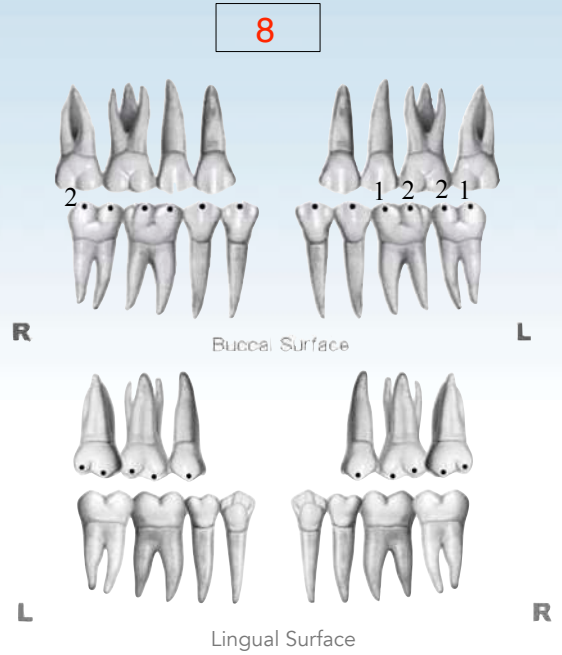
## Buccolingual Inclination



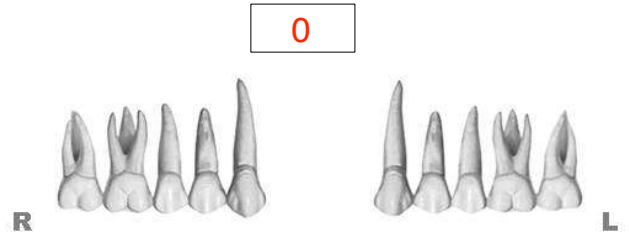
## Overjet



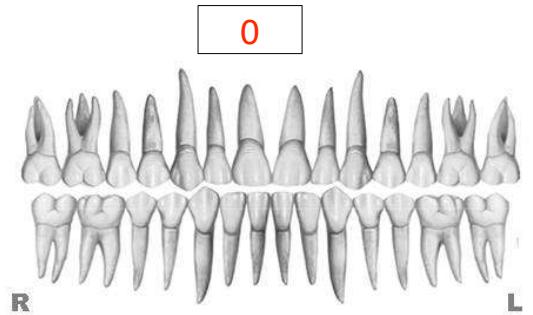
## Occlusal Contacts



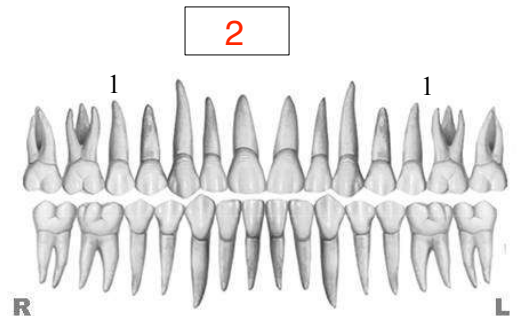
## Occlusal Relationships



## Interproximal Contacts



## Root Angulation



**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

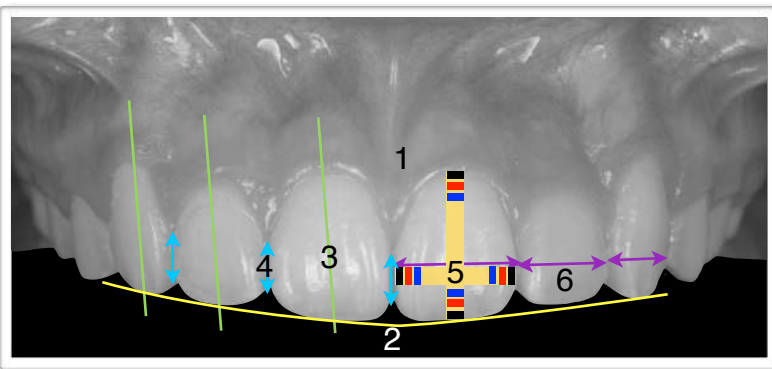


1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity ( Torque )	0	1	2
6. Scar Formation	0	1	2

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

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



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

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



## OBS Super Set

Created by Dr. Chris Chang, OBS is made of medical grade, stainless steel and titanium, and is highly praised by doctors for its simplistic design, low failure rate and excellent quality. OBS is your must-have secret weapon for maximum, reliable anchorage.



### Smooth Mushroom Head

For comfort & retention of elastic chain

### 4-way Rectangular Holes

For lever arm to solve impacted tooth

### Double Neck Design

Easy hygiene control & extra attachment



Made in Taiwan

New

**Titanium** Higher biocompatibility\*

1.5 | 1.5X8mm

**Stainless Steel\*\***

2.0 | 2.0x12mm

2.7 | 2.0x14mm (with holes)



Buy a Super Set, get **OBS Clinical Guide** (eBook) for free.

\* TADs made of Ti alloy have a lower failure rate compared to SS when placed in thin cortical bone. These results are consistent with a biocompatibility-related tendency for less bone resorption at the bone screw interface. Reference: Failure Rates for SS and Ti-Alloy Incisal Anchorage Screws: Single-Center, Double Blind, Randomized Clinical Trial (J Digital Orthod 2018;52:70-79)

\*\* The overall success rate of 93.7% indicates that both SS and TiA are clinically acceptable for IZC BSs.

Reference: Failure rates for stainless steel versus titanium alloy infrazygomatic crest bone screws: A single-center, randomized double-blind clinical trial (Angle Orthod 2019;89(1):40-46)





## Screws & Aligners

# International Workshop

### Beethoven International Workshop

demonstrates how to incorporate TADs and minor surgeries in complex orthodontic treatment. Experienced practitioners get to (1) learn firsthand from the world-renowned orthodontist and lecturer, Dr. Chris Chang, (2) observe management secrets behind a highly efficient clinic, and (3) take home effective clinical tips developed by the Beethoven group to take your clinical results to the next level!



### Observership at Beethoven

Chair-side observation of Dr. Chang's clinical treatment and patient communication



### Master-level TAD Learning

Identify various clinical indicators for TADs and master application skills



### All New Hands-on Workshop

Custom-made model designed by Dr. Fernando Rojas-Vizcaya for realistic impaction treatment practice



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Hsinchu, Taiwan





2024

Dates updated!

Screws & Aligners

Nov 26-28

Keynote (optional)

Nov 29

Course fees\*:

Day 123 USD **3,950** (Early bird rate\*) USD ~~4,600~~

Day 4 USD **500** (Early bird rate\*) USD ~~700~~

\* Fees cover local transportation, meals and three nights of shared accommodation (double occupancy). Airport pick up is available upon request with additional charges.

\* Early bird rate ends two months prior to the course date.

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



Prof. Dr. Paulo Fernandes Retto, Portugal



**Dr. Chris Chang**

DDS, PhD. ABO certified, Angle Midwest member, director of Beethoven Orthodontic Center, Taiwan

Dr. Chang 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.

## Course Schedule

DAY

**1 Chair-side observation**

DAY

**2 Lecture, chair-side observation**

Lecture topic: **Screws & Aligners**

DAY

**3 VISTA & 4 other minor surgeries for orthodontic practice**

Hands-on workshop

DAY

**4 Keynote workshop**

(optional) conducted by Newton's A team



# IMPACTION



**VISTA** ✓

Vertical Incision Subperiosteal Tunnel Access



# 2024 一年一度 Damon Master Program



全新改版的 2024 年貝多芬高效 Damon 矯正大師系列課程，是由國際知名講師張慧男醫師親自規劃及授課，課程特色強調由臨床病例帶動診斷、分析、治療計畫擬定與執行技巧，本年度亦特別加入最新的**數位矯正與隱形牙套**的內容，並邀請了貝多芬牙科集團各院院長演講特別矯正專題。

此外，透過數位影片反覆觀看，結合矯正與電腦教學，課堂助教協助操作，讓學員在短時間能快速上手，感染「熱愛矯正學，熱愛學矯正」的熱情。

名額有限，一年僅有一次機會在台完整體驗 Damon 矯正大師課程，錯過只能等明年囉！

## Module 1 - 3/28

1. Selecting your ideal first case
2. Bonding position
3. Bonding + BT + ceph tracing
4. TADs + space closing + hook + spring
5. Finishing bending & fixed retainer

Practice: Clinical photography (黃亭雅, 陳韻如醫師)

## Module 2 - 4/11

1. Four stages of efficient orthodontic treatment
2. Simple and effective anchorage system
3. Extraction vs. non-extraction analysis

Practice: Patient photo management (金牛頓工程師)

## Module 3 - 4/25

1. Soft & hard tissue diagnostic analysis
2. Big overjet correction
3. Damon diagnosis & fine-tuning

Practice: Ceph tracing (金牛頓工程師)

## Module 4 - 5/16

1. Excellent finishing
2. Retention & relapse

Practice: Ceph superimposition & measurement (金牛頓工程師)

## Module 5 - 5/30

1. Simplify your system
2. Extraction vs. non-extraction

Practice: Case report demo (陳俊宏醫師)

▲ Computer training (Mac): 1:30-3:00 pm

## Module 6 - 6/20

1. Class III correction
2. Class II correction

Topic: Early orthodontic treatment (曾淑萍醫師)

## Module 7 - 6/27

1. Upper impaction
2. Lower impaction
3. Gummy smile correction

Topic: Modified VISTA (蘇笠瑋醫師)

## Module 8 - 7/11

1. ABO DI, CRE workshop (林彥君醫師)
2. Open bite

Topic: Ortho-viewed interdisciplinary treatment (徐重興醫師)

## Module 9 - 7/25

1. Implant-ortho combined treatment
2. Asymmetry

Topic: Impacted cuspid treatment (張譚文, 張瑜珍, 黃亭雅, 陳韻如醫師)

## Module 10 - 8/29

1. Minor surgeries in orthodontics
2. Digital orthodontics

Topic: Modified 2X4 appliance in ortho treatment (李亮賢醫師)

## Module 11 - 9/19

1. Aligner design
2. Comprehensive aligner treatment
3. Aligner & its challenges

Topic: Pre-aligner treatment (林詩詠醫師)

▲ Special lecture: 1:30-2:30 pm

時間：週四全天 (9 am - 5 pm)

地點：金牛頓藝術科技 (新竹市建中一路 25 號 2 樓)

費用含課程視訊\*、iPad、課程電子書與材料。

\*贈送之課程視訊提供兩年時間串流觀看。

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南區 王慧靜

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線上購物

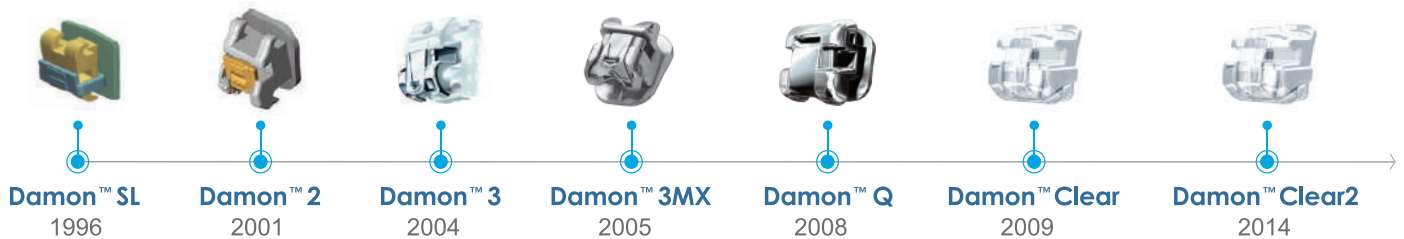


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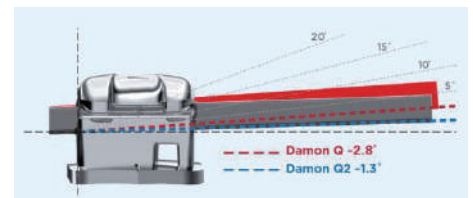
Driving the Future of Orthodontics  
*together*



## DAMON™ Q2

### EFFICIENT. PREDICTABLE.

Four solid walls with refined precision slot for **+2x the rotational control** designed for predictable finishing and efficient treatment.



### VERSATILE. CONVENIENT.

Ample **under tie-wing area** accommodates all powerchain, elastics, steel ligatures, and other auxiliaries for treatment versatility.



Damon™ Q



Damon™ Q2

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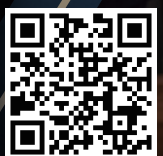
2024 基礎 + 進階系列課程

**張慧男** 醫師

美國矯正最高殿堂AAO受邀講者  
超過4,000人的演講廳爆滿

世界各國矯正專科的KOL爭相聽他的演講

每年超過20場國際演講，全世界超過50個國家都有張醫師的演講足跡。



課程詳細資訊



# DAMON™ Q2

## Damon Q2 Brackets

### Bondable Tube

.022 (G/O, Accent, Peerless)



#### A Damon Copper Ni-Ti Wire

size .014 / .014 x .025

#### B Damon Stainless Steel Wire

size .016 x .025

#### C Damon TMA Low-Friction Wire

size .017 x .025



- Brackets x 200個
- Tubes x 80個
- Archwires A x 40條, B x 20條, C x 20條

**10人份套組 特價NT\$149,999/組**

- Brackets x 600個
- Tubes x 240個
- Archwires A x 120條, B x 60條, C x 60條

**30人份套組 特價NT\$369,999/組**

# DAMON™ CLEAR 2

## Damon Clear2 / Clear Brackets

### Bondable Tube

.022 (G/O, Accent, Peerless)



#### A Damon Copper Ni-Ti Wire

size .014 / .014 x .025

#### B Damon Stainless Steel Wire

size .016 x .025

#### C Damon TMA Low-Friction Wire

size .017 x .025



- Brackets x 200個
- Tubes x 80個
- Archwires A x 40條, B x 20條, C x 20條

**10人份套組 特價NT\$189,999/組**

- Brackets x 600個
- Tubes x 240個
- Archwires A x 120條, B x 60條, C x 60條

**30人份套組 特價NT\$459,999/組**





# Pseudo-Class III Malocclusion in an Adolescent Treated with Mandibular Bone Screws and Bite Opening to Enhance Late Maxillary Growth

## Abstract

**History:** A 12-year-old female presented with a chief complaint (CC) of anterior crossbite.

**Diagnosis:** Skeletal Class III (SNA, 77.5°; SNB, 82°; ANB, -4.5°) relationship in centric occlusion (C<sub>0</sub>) was associated with midface deficiency, crossbite of the entire dentition except the molars, and lingually inclined lower incisors (L1 to MP, 75.5°). The Discrepancy Index (DI) was 28.

**Treatment:** Bone screws were placed in the mandibular buccal shelves to retract the mandibular arch. To enhance adolescent maxillary growth, the bite was opened at the start of treatment with posterior bite turbos, and Class III elastics were applied. Left posterior crossbite was corrected with cross elastics. Lower arch retraction was limited by soft tissue impingement in the retromolar area.

**Outcomes:** After 25 months of active treatment, a near-ideal profile and occlusal alignment was achieved. The Cast-Radiograph Evaluation (CRE) was 19. Pink and White esthetic score was 0. There were two discrepancies from ideal: crossbite of the upper left second molar, and excessive lingual inclination of lower incisors (66.5°).

**Conclusions:** This case report demonstrated the use of OrthoBoneScrew® (OBS) to resolve skeletal Class III malocclusion in a growing adolescent. Class III elastics in addition to bite opening for removal of incisal constraint resulted in enhanced anterior growth expression of the maxilla. A single phase of treatment in the early permanent dentition efficiently resolved a difficult skeletal Class III malocclusion. (*J Digital Orthod* 2024;73:26-44; reprinted from *J Digital Orthod* 2021;61:4-22)

### Key words:

Pseudo-Class III, anterior crossbite, late maxillary growth, passive self ligating brackets, mandibular buccal shelf, bone screws

## Introduction

Class III malocclusion is defined by Angle<sup>1</sup> as a condition in which the relationship of the jaws is abnormal. Compared to normal, all mandibular teeth occlude more mesial by the width of one bicuspid or more. About 5% of ethnic Chinese adolescents are affected by Class III malocclusion.<sup>2</sup> Etiology is classified as (a) *functional*, which is associated with abnormal tongue placement or neuromuscular conditions; (b) *skeletal*, when the maxilla is underdeveloped and/or mandible is

overdeveloped; and (c) *dental*, due to ectopic palatal eruption of maxillary incisors or the early loss of lower deciduous molars.<sup>3</sup> Class III malocclusions of dental origin often involve a substantial functional shift of the mandible to achieve posterior occlusion, so they are defined as pseudo-Class III.<sup>4,5</sup> When the mandible is closed in centric relation (C<sub>R</sub>), the incisors often show an end-to-end relationship, and molars are Class I. When the mandible shifts anteriorly to achieve full posterior occlusion, the molars shift into a Class III occlusion. Pseudo-Class III malocclusion is usually amenable to conservative orthodontic treatment.<sup>6</sup>

**Alex Lin,**  
*Lecturer, Beethoven Orthodontic Center (Left)*  
**Chris H. Chang,**  
*Founder, Beethoven Orthodontic Center  
Publisher, Journal of Digital Orthodontics (Center)*  
**W. Eugene Roberts,**  
*Editor-in-Chief, Journal of Digital Orthodontics (Right)*



Pseudo-Class III patients with good growth potential are candidates for early intervention. Typically, the bite is opened and incisal angulations are corrected to resolve the anterior crossbite.<sup>3,7-9</sup> Adolescents with midface deficiency may also

benefit from eliminating restraints to maxillary growth. A 5-year cohort study<sup>7</sup> was conducted on 25 young Chinese patients with pseudo-Class III malocclusion treated to a stable result with a 2x4 appliance during mixed dentition. However, 20% of



■ Fig. 1: Facial and intraoral photographs at 9y11m

the sample required a second phase of comprehensive fixed appliance therapy, which may be viewed as a psychological and/or financial burden. Introduction of temporary anchorage devices (TADs)<sup>10</sup> provided the option for retraction of the entire lower arch. An additional advantage for resolving anterior crossbite during the growing years is facial growth to help resolve the skeletal discrepancy. Enhancing the potential for maxillary

growth is a particularly important strategy for pseudo-Class III patients with midface deficiency.

### History and Etiology

A relatively immature 9yr-11mo-old female sought orthodontic consultation for an anterior crossbite. Her facial profile was unesthetic due to both midface deficiency and mandibular prognathism (Fig. 1). No contributing medical or dental history was reported.



■ Fig. 2: Pre-treatment facial and intraoral photographs at 12y9m



Clinical examination revealed a concave facial profile, lower lip protrusion, anterior crossbite, and lingual crossbite of left molars. Buccal segments were Class I on the right and Class III on the left. An edge-to-edge incisal relationship was noted when the mandible was guided to  $C_R$ . Intraoral examination revealed all primary molars and both primary upper canines were present. Early intervention therapy with 2x4



■ Fig. 3: Pre-treatment panoramic radiograph

appliances or rapid palatal expansion (RPE) was proposed, but the deep Curve of Spee and anterior deepbite suggested that a second phase of orthodontic therapy would be required. To control the financial impact, the family preferred only one phase of treatment: comprehensive management after the permanent buccal segments erupt.

The patient was recalled three years later at 12y9m of age for a follow-up orthodontic evaluation (Fig. 2). The malocclusion remained stable as the buccal segments erupted. Overjet was -3mm, overbite was 6mm, and there was a full-cusp-Class III relationship in  $C_O$ . In  $C_R$ , the incisors were end-to-end with asymmetric buccal segments: Class I right and end-on-Class III left. There was no significant crowding in either arch.

Panoramic (Fig. 3) radiography was within normal limits (WNL). Lateral cephalometric radiographs (Fig.



■ Fig. 4: Cephalometric radiograph in the  $C_O$  (left) and  $C_R$  (right) positions. See text for details.



■ Fig. 5: Pre-treatment dental models (casts)

4) revealed decreased inclination of the incisors in both arches and a relatively straight profile when the patient was in  $C_R$ . The decreased SNA angle ( $77.5^\circ$ ) contributed to midface deficiency. Some maxillary growth potential was expected, so comprehensive orthodontic treatment was indicated to correct the anterior crossbite (Fig. 5).

## Diagnosis

### Facial:

- Facial Convexity: *Concave* ( $-3^\circ$  G-Sn-Pg')
- Lip Protrusion: *Retrusive upper and protrusive lower lip* ( $-2.5\text{mm}/1\text{mm}$  to the E-line)

### Skeletal:

- Sagittal Relationship:
  - *Mild Skeletal Class III at  $C_0$*  (SNA  $77.5^\circ$ , SNB  $82^\circ$ , ANB  $-4.5^\circ$ )
  - *Skeletal Class I at  $C_R$*  (ANB  $-1^\circ$ )
- Mandibular Plane Angle: *WNL* (SN-MP  $33.5^\circ$ , FMA  $26.5^\circ$ )

### Dental:

- Occlusion: *Class III molar relationship*
- Overjet:  $-3\text{mm}$
- Lower incisor: *Retrusive* (L1-NB  $1.5\text{mm}$ ), *decreased axial inclination* (L1-MP  $75.5^\circ$ )
- Crossbite: *All teeth except left molars*

American Board of Orthodontics (ABO) Discrepancy Index (DI): 28.

## Treatment Objectives

1. Level and align both arches.
2. Open the bite, and rotate the mandible posteriorly.
3. Encourage growth of the maxilla with passive self-ligating (PSL) appliances and Class III elastics.
4. Protract the upper incisors and retract the lower incisors to correct anterior cross-bite.
5. Optimize occlusal contacts with archwire finishing and posterior vertical elastics.

## Treatment Plan

The objective for full fixed appliance treatment was to resolve the pseudo-Class III malocclusion, retract the lower arch, and protract the upper dentition. Three options were considered:

1. Non-extraction therapy to retract the lower arch with bilateral anchorage provided by the

CEPHALOMETRIC SUMMARY			
SKELETAL ANALYSIS			
	PRE-Tx	POST-Tx	DIFF.
SNA° (82°)	77.5°	80°	2.5°
SNB° (80°)	82°	81°	1°
ANB° (2°)	-4.5°	-1°	3.5°
SN-MP° (32°)	33.5°	35°	1.5°
FMA° (25°)	26.5°	28°	1.5°
DENTAL ANALYSIS			
U1 TO NA mm (4mm)	4	4	0
U1 TO SN° (104°)	101°	103.5°	2.5°
L1 TO NB mm (4mm)	1.5	-1.5	3
L1 TO MP° (90°)	75.5°	66.5°	9°
FACIAL ANALYSIS			
E-LINE UL (-1mm)	-2.5	-3.5	1
E-LINE LL (0mm)	1	-2	3
%FH: Na-ANS-Gn (53%)	50%	51.5%	1.5%
Convexity:G-Sn-Pg' (13°)	-3°	4°	7°

■ Table 1: Cephalometric summary

mandibular buccal shelf (MBS) OrthoBoneScrew® (OBS) (iNewton, Inc., Hsinchu City, Taiwan) bilaterally

- Differential space closure following extraction of upper second premolars (U5s) and lower first premolars (L4s) that utilizes MBS OBS anchorage
- Achieve ideal alignment with two-jaw orthognathic surgery.

**First Option:** directly addresses the anterior crossbite of the pseudo-Class III malocclusion. Bilateral MBS OBSs are required to retract the lower dentition to

correct the anterior crossbite. This option is minimally invasive but it requires an extended treatment time.

**Second Option:** efficient for anterior crossbite management, but closing extraction spaces in the absence of crowding may compromise incisal axial inclinations and complicate posterior lingual crossbite correction.

**Third Option:** corrects the skeletal discrepancy, but occlusal relationships deteriorate because the molars are Class I in  $C_R$  prior to treatment. Extensive orthodontics is required to align the dentition once the skeletal discrepancy is corrected. This option is undesirable because (1) surgical intervention is not necessary; (2) It is highly invasive; and (3) surgical correction of the jaws complicates orthodontic finishing.

After a discussion of the three options with the patient and her parents, the first option was preferred because it was expected to deliver a near ideal dentofacial result in a minimally invasive manner.

## Treatment Progress

PSL appliances (Damon Q®, Ormco Corporation, Brea, CA) were initially bonded on all lower teeth, and a 0.014-in CuNiTi archwire was engaged. High-torque brackets were chosen for the anterior teeth, i.e., low-torque brackets positioned upside down to avoid loss of torque during retraction of the lower arch (Fig. 6). After one month of lower arch leveling and aligning, PSL brackets were bonded on the upper dentition utilizing low torque brackets on the incisors to resist Class III mechanics. Glass ionomer cement (GC Fuji II®, GC America, Alsip, IL) was



applied to the occlusal surfaces of the lower first molars (bite turbos) to open the bite for correction of the anterior crossbite (Fig. 7). Early light short Class III elastics (Parrot 5/16-in 2-oz, Brea, CA) were used for five months to correct the anterior crossbite (Fig. 8). Once the anterior crossbite was resolved, the buccal occlusions was Class I (Fig. 9), so the glass ionomer bite turbos were removed.

In the tenth month, 0.016x0.025-in stainless steel archwires were placed in both arches, and Class III elastics were increased to Fox 1/4-in 3.5-oz (Ormco,

Brea, CA) to reinforce the anterior crossbite correction. Upper archwire adjustment increased the root-palatal torque on the upper incisors and expanded the arch. In the 16<sup>th</sup> month of treatment, an OBS was inserted in each MBS to retract the lower arch. Computerized tomography documented that each OBS was buccal to the roots of the respective molars and well-anchored in the cortical plate (Fig. 10). Extra-alveolar insertion of a MBS OBS is crucial for en masse movement of the mandibular dentition without tooth root interference as the arch is retracted.

The OBSs were removed in the 22<sup>nd</sup> month when it was evident that the brackets of the lower second molars were embedded in the retromolar soft tissues (Fig. 11). This complication limited the amount of lower arch retraction. By the next appointment, all crossbites were corrected except for the left posterior segment. Buttons were placed on the lingual side of LL4, LL5, UL6 and UL7 to attach cross elastics (Fig. 12). A panoramic radiograph revealed problems with root parallelism that required bracket repositioning. Figs. 13 and 14



**Fig. 6:**  
Low-torque brackets were placed upside-down on lower incisors. See text for details.



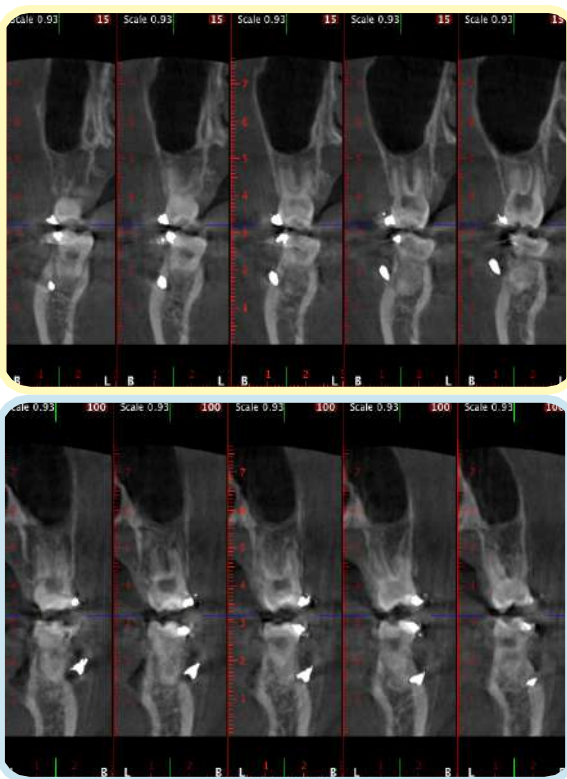
**Fig. 7:**  
Occlusal view of bite turbos constructed at two months (2M) by placing glass ionomer cement on the occlusal surfaces of the lower first molars. See text for details.



**Fig. 8:**  
Frontal view of bite turbos placed on lower first molars at two months (2M) into treatment to open the bite. Class III elastics are used to retract the lower arch. See text for details.



**Fig. 9:** Cephalometric radiograph exposed at 5 months into treatment (5M). Notice the crossbite was corrected and buccal segments were Class I. See text for details.



**Fig. 10:** CBCT slices in the 16<sup>th</sup> month show the E-A insertion of mandibular shelf bone screws on the right (upper) and left (lower) sides.

are panels of intraoral occlusal photographs showing treatment progress in the maxillary and mandibular arches, respectively. Immediately after the fixed appliances were removed, a mandibular 3-3 lingual retainer was bonded in place.

## Results Achieved

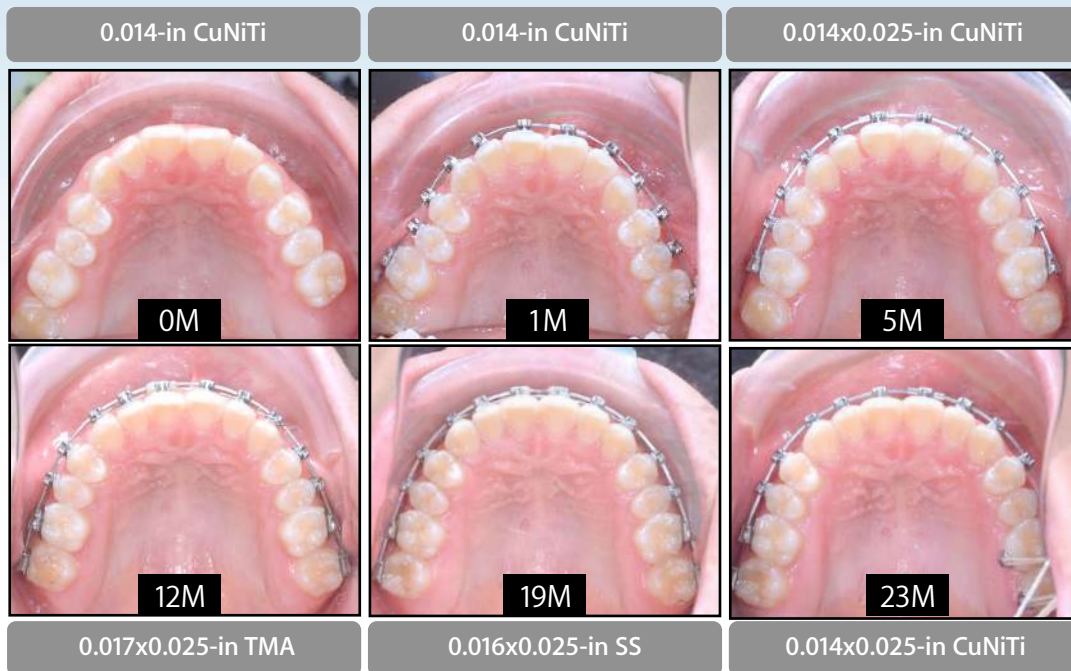
After 25 months of active treatment, this difficult malocclusion (DI = 28) was treated to an optimal alignment (CRE = 19) with an excellent Pink and White esthetic score of zero (see worksheets at the end of this case report). Two discrepancies from an



**Fig. 11:** Retraction of the lower arch with Class III elastics resulted in the lower second molar brackets embedded into retromolar soft tissue in the 22<sup>nd</sup> month (22M). See text for details.

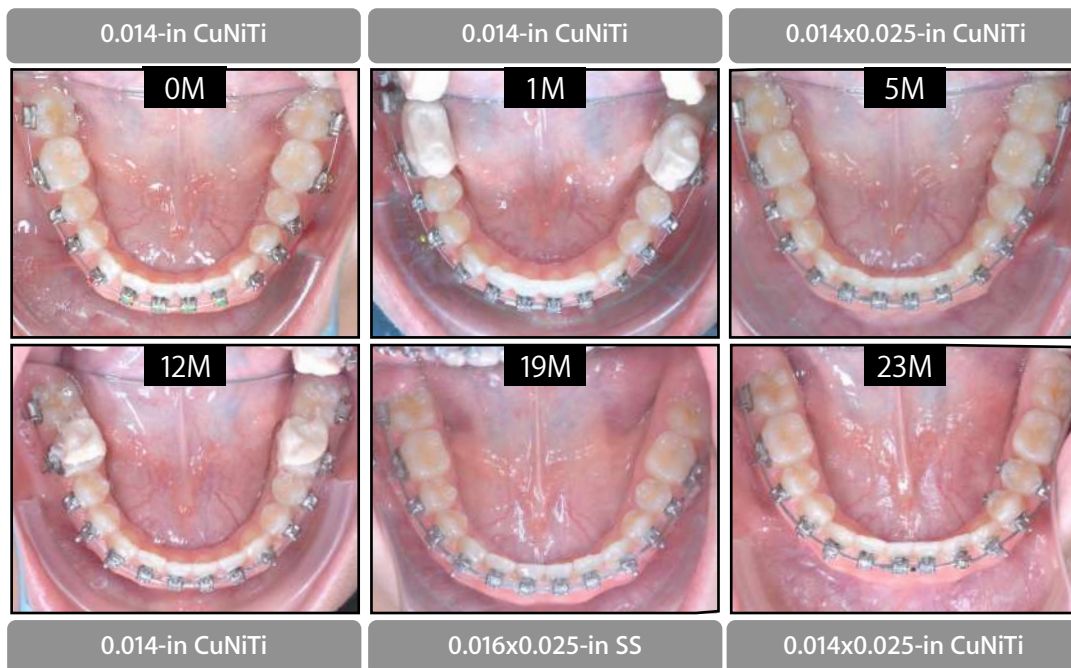


**Fig. 12:** Crossbite at the left posterior region was corrected with cross elastics in the 23<sup>rd</sup> month (23M).



■ Fig. 13:

Maxillary occlusal views of treatment progress in months (M) and the mandibular archwire progression are shown from the start of treatment (0M) to twenty-three months (23M).



■ Fig. 14:

Mandibular occlusal views of treatment progress in months (M) and the mandibular archwire progression are shown from the start of treatment (0M) to twenty-three months (23M).



ideal outcome were noted: (1) lingually tipped lower incisors (L1 to MP  $66.5^\circ$ ), and (2) lingual crossbite of the UL7. Post-treatment panoramic and lateral cephalometric radiographs are shown in Figs. 15 and 16, respectively. Although the UL7 was in crossbite, the occlusion was stable at the end of treatment (Fig. 17). After the functional shift was corrected, the facial profile was improved and buccal segments were in Class I occlusion. Superimposition of the pretreatment and post-treatment cephalometric tracings reveal the late facial growth, dentofacial orthopedic changes of the maxilla, and posterior rotation of the mandible (Fig. 18). Fig. 19 is a panel of post-treatment facial and intraoral photographs. Assessment of specific objectives:

**Maxilla** (all three planes):

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

**Mandible** (all three planes):

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

**Maxillary Dentition**

- A-P: *Protraction of incisors and molars*
- Vertical: *Extrusion of molars*
- Inter-molar Width: *Decreased*

**Mandibular Dentition**

- A-P: *Retraction of incisors and molars*



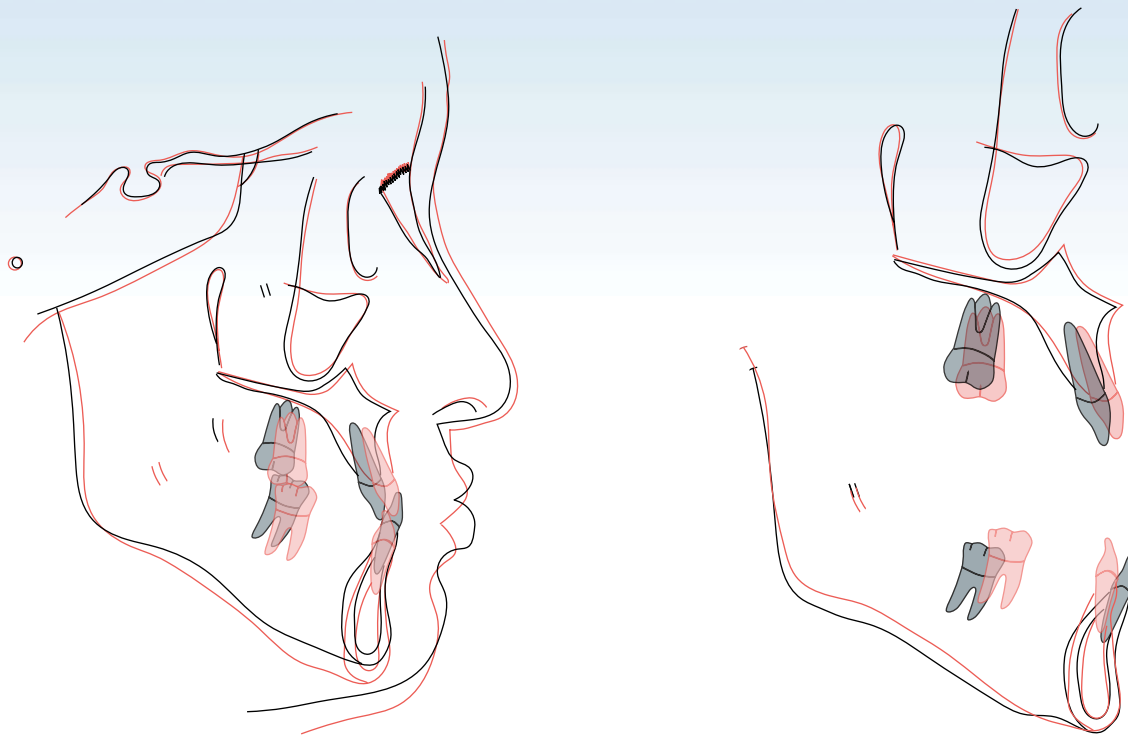
■ Fig. 15: Post-treatment panoramic radiograph



■ Fig. 16: Post-treatment cephalometric radiograph



■ Fig. 17: Post-treatment dental models (casts)



■ **Fig. 18:** Superimposition of the pre-treatment (black) and post-treatment (red) cephalometric tracings shows the dentofacial effects of treatment.

- Vertical: *Maintained*
- Inter-molar/Inter-canine Width: *Increased/Maintained*

**Facial Esthetics**

- Upper and lower lip: *Retraction of both lips*

**Final Evaluation of Treatment**

Clinical examination revealed an improved facial profile as the maxilla grew forward and the mandible rotated posteriorly. The inclination of the maxillary incisors was corrected to resolve the anterior crossbite and eliminate the  $C_0-C_R$  functional shift. The molars were extruded and the inter-molar width of the maxillary arch was

decreased as the upper molars were protracted while the lower arch was retracted. Both lips were retracted relative to the E-line as the mandible rotated posteriorly. Dental alignment and esthetics were near ideal. The only significant discrepancies were crossbite of the upper left second molar and decreased axial inclination of the lower incisors. Two-year follow-up evaluation documented the stability of the final occlusion (Fig. 20). Neither relapse of the anterior crossbite nor excessive mandibular growth were noted.

**Discussion**

Managing adolescents with pseudo-Class III malocclusion requires diagnostic acumen to



■ Fig. 19: Post-treatment facial and intraoral photographs

distinguish between a true skeletal Class III relationship as opposed to a pseudo-Class III with a functional shift. Correct timing for the intervention is designed to maximize the treatment response while minimizing the burden on the patient. MBS OBSs provide E-A anchorage to conservatively resolve both the skeletal and pseudo-Class III components of a malocclusion.

### Diagnosis

Pseudo-Class III malocclusion can be challenging to diagnose and treat. Skeletal Class III patients may have a mandibular length (Co-Gn) that is 3-6mm longer than for Class I subjects.<sup>4</sup> On the other hand, pseudo-Class III patients often have a mandible of average length, which results in a Class I buccal



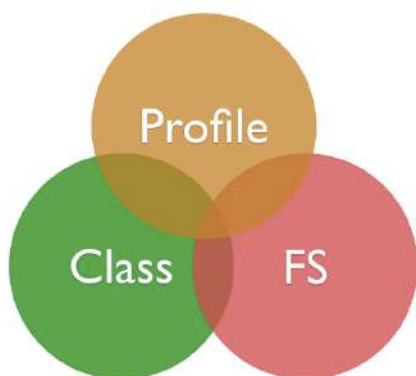


■ Fig. 20: Intraoral photographs taken 2 years after treatment was completed

segments with edge-to-edge incisal contact in  $C_R$ . Mandibular protrusion into an exaggerated anterior crossbite is required for the posterior segments to occlude. Abnormal occlusal posture may contribute to an undesirable inclination of the incisors. Clinicians may overlook the functional and dental compensations associated with a pseudo-Class III malocclusion, and inappropriately refer the

patient for orthognathic surgery as a skeletal Class III problem. To correctly diagnose pseudo-Class III malocclusion, Lin devised the 3-ring diagnosis system (Fig. 21), which is composed of three diagnostic steps: <sup>11,12</sup>

- **Profile:** If the patient has an acceptable (orthognathic) facial profile when the mandible is in the  $C_R$  position, conservative orthodontic therapy is indicated.
- **Class:** Buccal segments at or near a Class I relationship in  $C_R$  is a favorable indication for nonsurgical correction. This diagnostic step can be interpreted liberally because osseous anchorage devices (TADs) can compensate for many dental alignment problems.<sup>6</sup>
- **Functional Shift:** The present patient had an edge-to-edge incisor relationship when the mandible was guided into the  $C_R$  position, i.e., about a 2mm  $C_0 \rightarrow C_R$  functional shift.



■ Fig. 21:  
The 3-ring diagnosis system for pseudo-Class III malocclusion  
(Dr. Lin Jin-Jong)

All three diagnostic criteria (Fig. 21) favored conservative orthodontic treatment without orthognathic surgery. However, the severity of the problem required opening the bite to produce posterior rotation of the mandible. In addition, treating the patient in the early permanent dentition resulted in a desirable forward growth of the maxilla.

### Anterior Crossbite Correction

To provide clearance for anterior crossbite correction, glass ionomer cement (bite turbos) were placed on the occlusal surfaces of lower molars.<sup>13</sup> High torque brackets were selected for the lower incisors to resist retraction mechanics and Class III elastics. In contrast, low torque brackets were bonded on the upper anterior teeth to prevent flaring due to the anterior component of force for the Class III elastics. In retrospect, the high torque brackets for the lower incisors with the specified archwire sequence failed to correct or even maintain the axial inclinations of the lower incisors (Fig. 18; Table 1). This problem is related to the limit on lower arch retraction due to soft tissue impingement in the retromolar area (Fig. 11). Attempting to correct lower incisor root angulation with additional root lingual torque in the brackets or archwire may have resulted in relapse of the anterior crossbite.

### Treatment Timing

Maxillary growth is helpful for correcting pseudo-Class III relationships that are associated with midface deficiency.<sup>7</sup> Use of RPE<sup>14</sup> and/or 2x4 appliances in mixed dentition takes advantage of

maxillary growth.<sup>7</sup> Many anterior crossbites corrected in the mixed dentition require no further orthodontic treatment unless there are dental alignment problems such as crowding.

Pseudo-Class III patients with a deepbite and exaggerated lower Curve of Spee are difficult to resolve with 2x4 appliances and/or RPE in the mixed dentition. Although it may increase the financial and psychological burden for the patient and family, Phase I early intervention in the mixed dentition may require arch leveling and alignment prior to correction of the anterior crossbite. Furthermore, Phase II therapy is often required to achieve a stable result. If resolving the entire malocclusion with one stage of treatment is the priority for the family, comprehensive treatment should be delayed until the early permanent dentition (~12yr of age).

MBS OBS anchorage is effective for retraction of the entire lower arch to manage Class III malocclusion. Similar mechanics are also effective for pseudo-Class III problems in adults with no growth potential,<sup>6</sup> but maxillary growth in younger patients enhances the facial outcome.<sup>15,16</sup> Thus, for optimal facial esthetics, treatment in the mixed or early permanent dentition is preferable.<sup>15</sup>

With adequate clearance for anterior crossbite correction provided by posterior bite turbos, light short elastics and passive self-ligating brackets<sup>17</sup> deliver a continuous light mechanics to encourage anterior growth of the maxilla. This growth response was important for an optimal facial outcome for the present patient because of the

pretreatment maxillary deficiency (SNA  $77.5^\circ$ ) (Figs. 18 and 19; Table 1). Growth is not as important for patients with an ideal SNA prior to treatment. Dental compensations can be corrected at any age, but a favorable growth response requires intervention during the growing years. This case report demonstrates the advantage for treating pseudo-Class III malocclusion in an adolescent with PSL system and MBS OBS anchorage.

### Residual Posterior Crossbite

Despite the correction of the anterior crossbite, the upper left second molar erupted into lingual crossbite. In retrospect, this problem was preventable with more posterior archwire expansion during treatment.



■ Fig. 22: Facial and intraoral photographs at 4 years post-treatment document the current condition of the patient.



## Conclusions

Differential diagnosis of an anterior crossbite is essential for distinguishing a pseudo-Class III malocclusion that is amenable to conservative correction. Unlike a skeletal Class III relationship which requires complete growth of the mandible for predictable treatment, correction of pseudo-Class III is indicated during the growing years. Although the anterior crossbite of a pseudo-Class III is correctable in adults, a young growing patient with a midface deficiency usually achieves an enhanced facial outcome.

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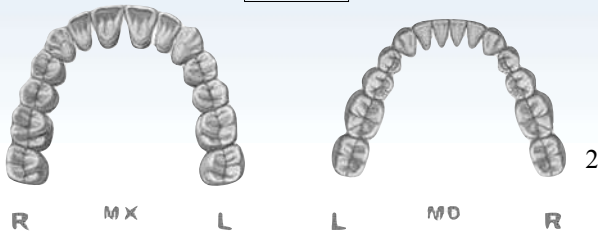


# Cast-Radiograph Evaluation

Total Score: **19**

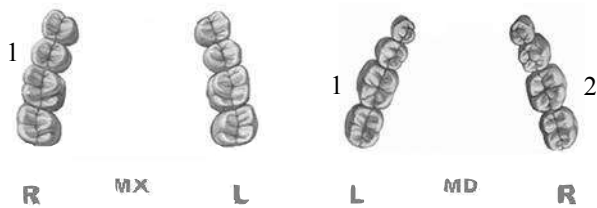
## Alignment/Rotations

**2**



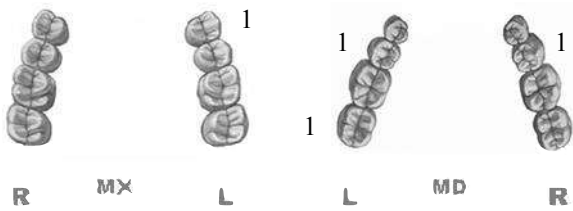
## Marginal Ridges

**4**



## Buccolingual Inclination

**4**



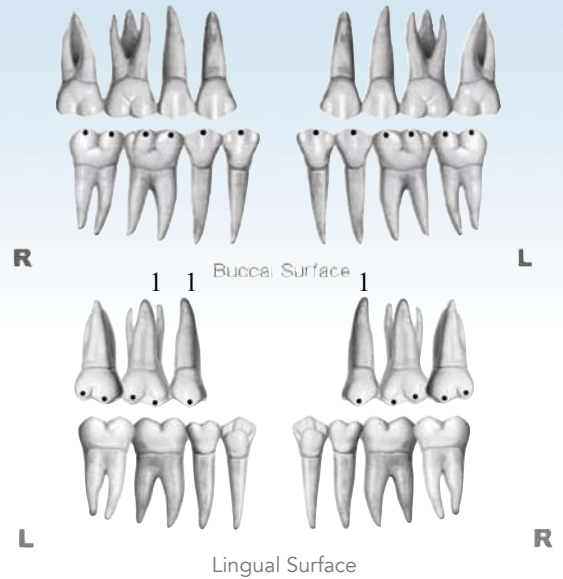
## Overjet

**3**



## Occlusal Contacts

**3**



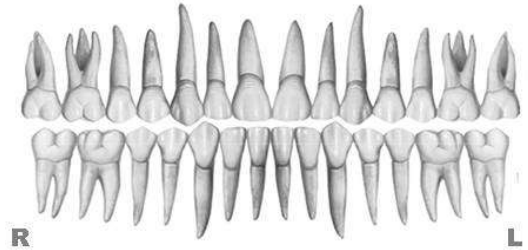
## Occlusal Relationships

**1**



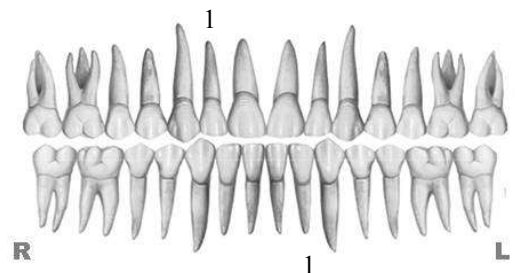
## Interproximal Contacts

**0**



## Root Angulation

**2**



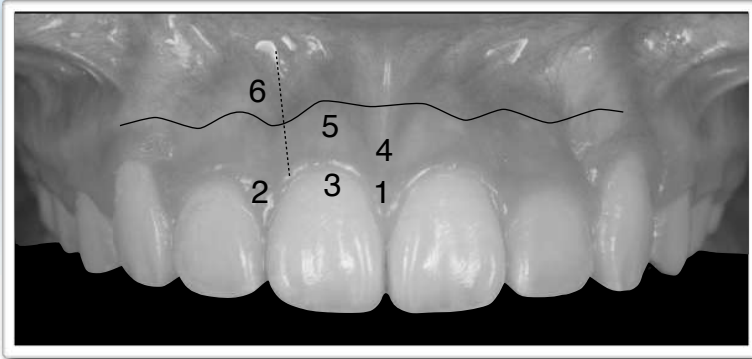
**INSTRUCTIONS:** Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.



# IBOI Pink & White Esthetic Score

Total Score = 0

## 1. Pink Esthetic Score



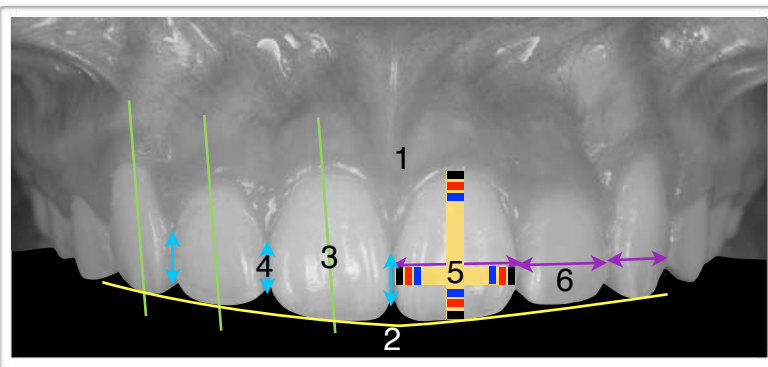
1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity ( Torque )	0	1	2
6. Scar Formation	0	1	2

Total = 0



1. M & D Papillae	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
2. Keratinized Gingiva	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
3. Curvature of Gingival Margin	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
4. Level of Gingival Margin	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
5. Root Convexity ( Torque )	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
6. Scar Formation	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2

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



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

Total = 0



1. Midline	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
2. Incisor Curve	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
3. Axial Inclination (5°, 8°, 10°)	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
4. Contact Area (50%, 40%, 30%)	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
5. Tooth Proportion	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2
6. Tooth to Tooth Proportion	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0</span>	1	2

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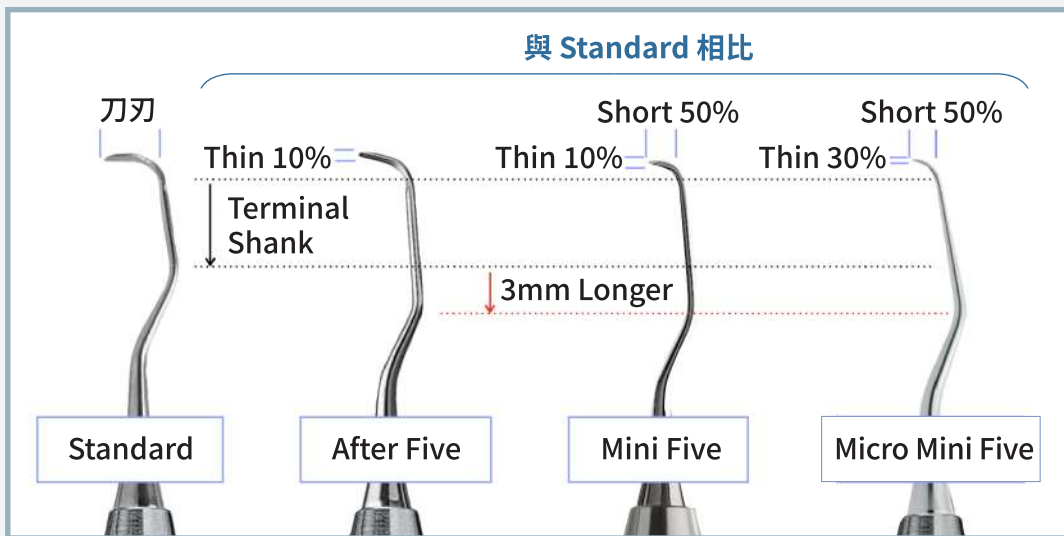
**SAS11/12C8E2**  
11/12 MINI FIVE GRACEY CURETTE



**SAS13/14C8E2**  
13/14 MINI FIVE GRACEY CURETTE



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20 pts

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桃園 宗醫師



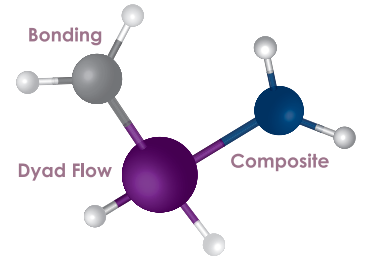
它牌口鏡



不鏽鋼口鏡2.0







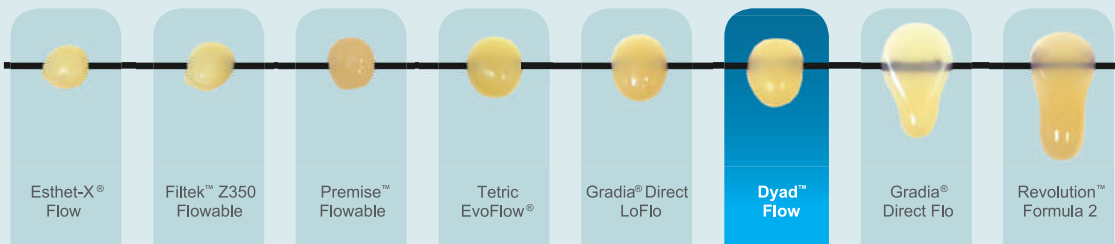
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#### Indications include:

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- Small Cavities (Class I, Class II)
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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：

2024 4/16、5/21、6/18、7/9、8/13、9/10、10/22、11/5、12/10

2025 1/14、2/18

- ▶ 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

全新的第十五年度 2024-25 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。

2024-25 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

## About Peer Review

In fact, being a peer reviewer is not as difficult as imagined. You only need to add a little more active critical thinking as you normally do when reading papers. Personally, I think reviewing an article is a good opportunity of thinking training, which can reversely be applied when writing academic articles in the future.

Below are three recommended principles to keep in mind during the reviewing process:

1. Fairness and impartiality: Put aside your personal clinical and academic habits, as well as likes and dislikes, and review as objectively and comprehensively as possible. As Dr. Chris Chang said: "Being a reviewer has certain social responsibilities."
2. Be soft-spoken but hard-hearted: Respect the time and effort the authors have put in, and try to be friendly and tactful in the tone when giving suggestions and feedback. At the same time, do not compromise the standards you hold in mind. While what you wish to see in the article as a reader must be put forward, the requests should be reasonable.
3. Focus on the big, and let go of the small: Even though you may want to nitpick and make as many modifications as possible, prioritizing your suggestions according to the level of their importance is critical. The key points should be mentioned first, and minor details that do not affect the overall contexts can be omitted. As for the grammatical and formatting errors, feel free to leave the responsibilities to the editorial department. There is no need to include them.

The following aspects are worth considering when reviewing an article. You are welcome to add some more:

1. Does the title hit the central idea of the content?
2. Does the Introduction provide enough background knowledge to lead the subsequent discussion?
3. Are there any omissions or errors in the diagnosis?
4. What other treatment options are there, and are the reasons for not choosing the alternatives reasonable?
5. Are details of the key treatment process clearly described? Is there anything unreasonable? (For example, the cutout for Class III elastics in an article under review is on the mesial-buccal sides of the upper molars, but there is a large space in the front to be closed.)





**Lexie Y. Lin**

*Resident, Beethoven Orthodontic Center*

6. Are the figures sufficient to support the authors' statements? If you have any doubts, ask for more relevant information (such as cephalometric tracing of specific tooth position, ClinCheck superimposition in a certain view, difference between planned and actual tooth movement, etc.)
  7. Does the Discussion clearly grab the central ideas and discuss in depth the key steps of treatment? Are there any other aspects that can be added?
  8. Are there enough corresponding references to support the discussion?
  9. Does the Discussion highlight some parts that could be improved throughout the treatment, and provide the possible ways?
  10. The Conclusions must be based on the entire argument process in the Discussion, rather than just citing similar articles.
3. The Confidential comments to editor section can be written if there are some relatively sensitive issues that need to be reported to the editor. Otherwise, one can skip this part in general.

I think the key to giving a good peer review is to put yourself in the right place. Since it is "*peer*" review, you must adjust your mindset to an equal state with the other party. The fact that you are invited to be a peer reviewer is a qualification and affirmation in your profession. You are not less than others, but nor are you much better than others. Fulfill your professional duties. Avoid being too humble or too arrogant. Understand that the purpose of hard work is for your own improvement and for the collective advancement of this specialty.

Finally, when it is time to fill out the rating form:

1. Avoid giving mediocre scores, for example: marking 2 out of 3 in all the criteria.
2. Unless it is an extremely good or bad article, generally we do not "accept" or "reject" directly. There will always be things that need to be modified (in different degrees).

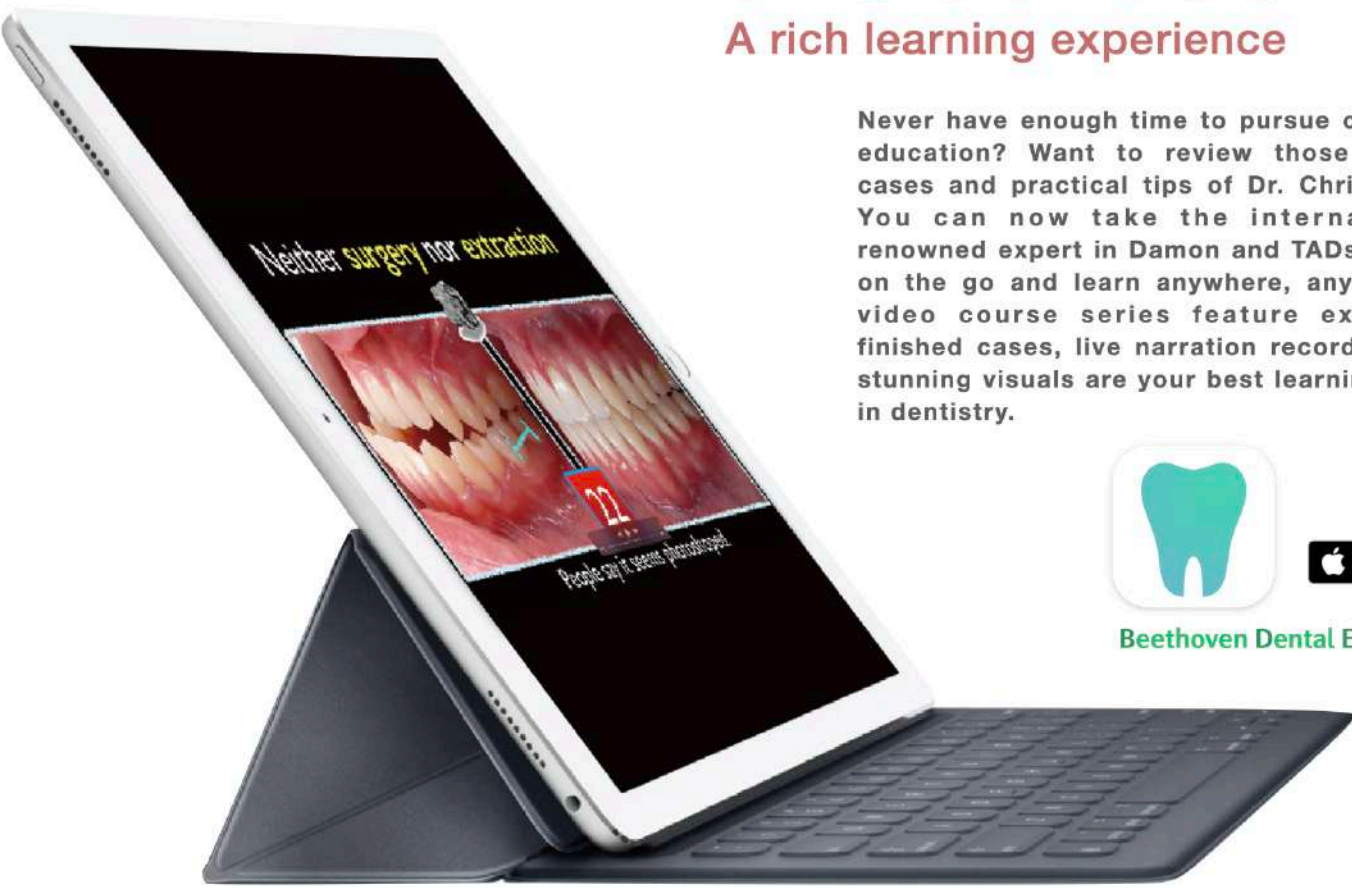
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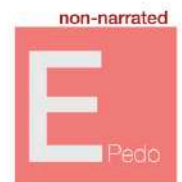
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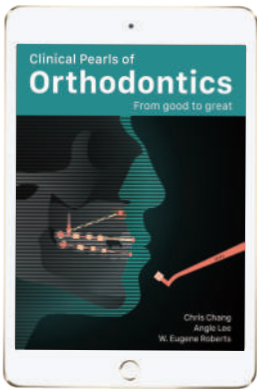
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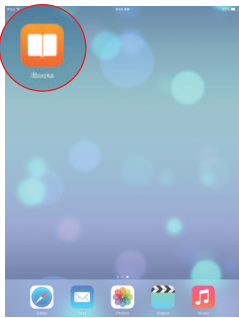
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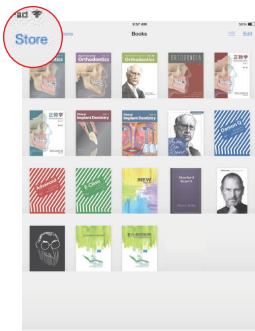
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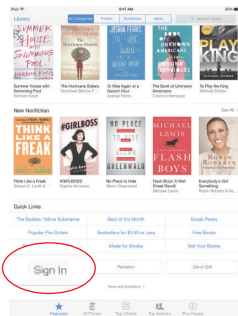
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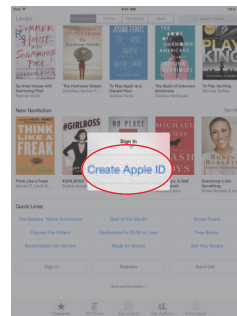
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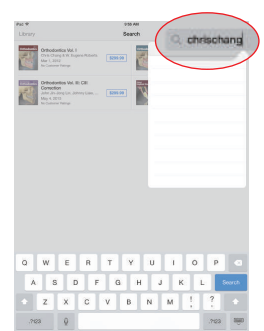
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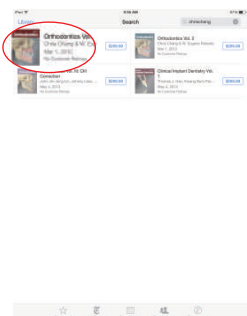
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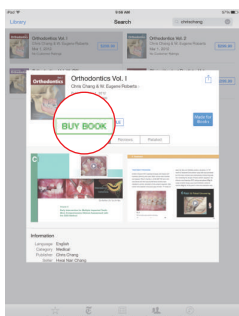
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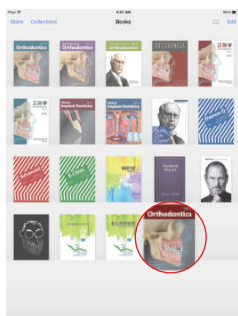
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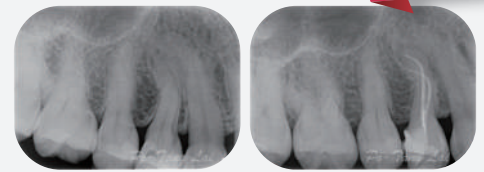
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