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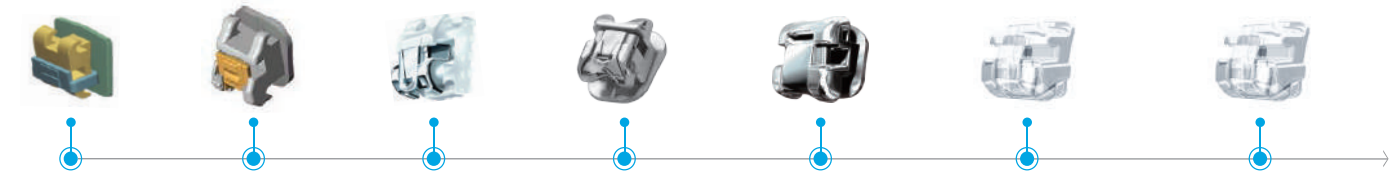

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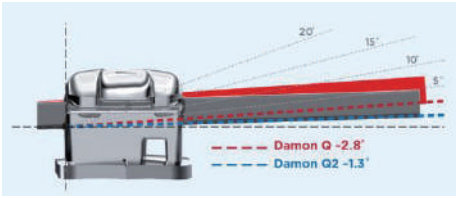

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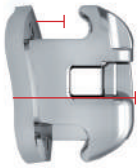

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Pseudo-Class III Malocclusion in an Adolescent Treated with Mandibular Bone Screws and Bite Opening to Enhance Late Maxillary Growth

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_O) 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[1] 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.[2] 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.[3] 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.[4,5] When the mandible is closed in centric relation (C_R), 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.[6]

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Publisher, Journal of Digital Orthodontics (Center)
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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.[3,7-9] Adolescents with midface deficiency may also benefit from eliminating restraints to maxillary growth. A 5-year cohort study[7] 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)[10] 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 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.

Fig. 3: *Pre-treatment panoramic radiograph*

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.

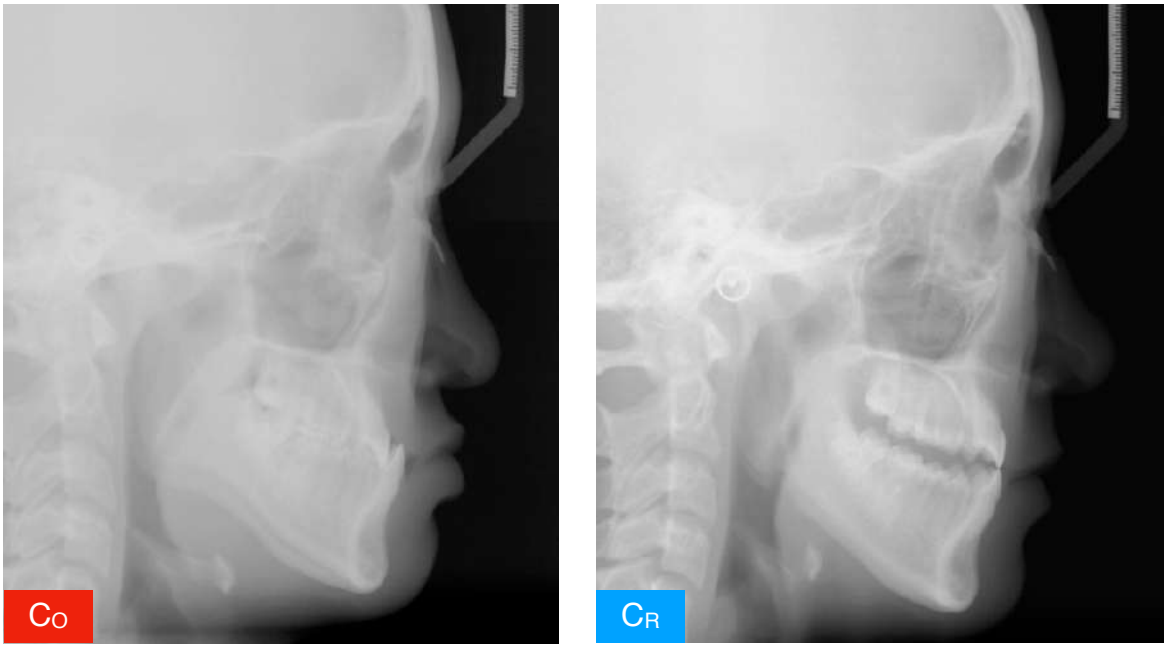

Fig. 4: *Cephalometric radiograph in the C_O (left) and C_R (right) positions. See text for details.*

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˚) 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˚ G-Sn-Pg')*
- Lip Protrusion: *Retrusive upper and protrusive lower lip (-2.5mm/1mm to the E-line)*

Skeletal:

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

Dental:

- Occlusion: *Class III molar relationship*
- Overjet: *-3mm*
- Lower incisor: *Retrusive (L1-NB 1.5mm), decreased axial inclination (L1-MP 75.5˚)*
- 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

2. Differential space closure following extraction of upper second premolars (U5s) and lower first premolars (L4s) that utilizes MBS OBS anchorage

3. 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 16th 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 22nd 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 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.

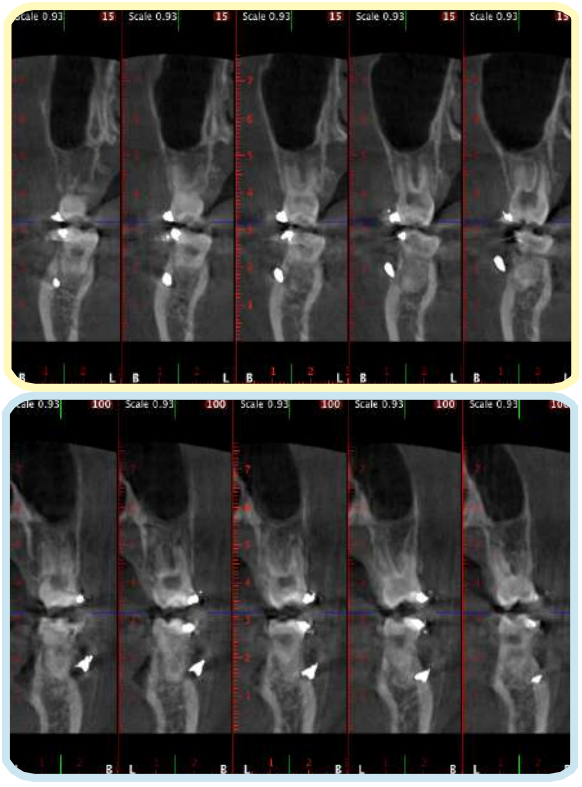

Fig. 10:
CBCT slices in the 16th month show the E-A insertion of mandibular shelf bone screws on the right (upper) and left (lower) sides.

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 22nd month (22M). See text for details.

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

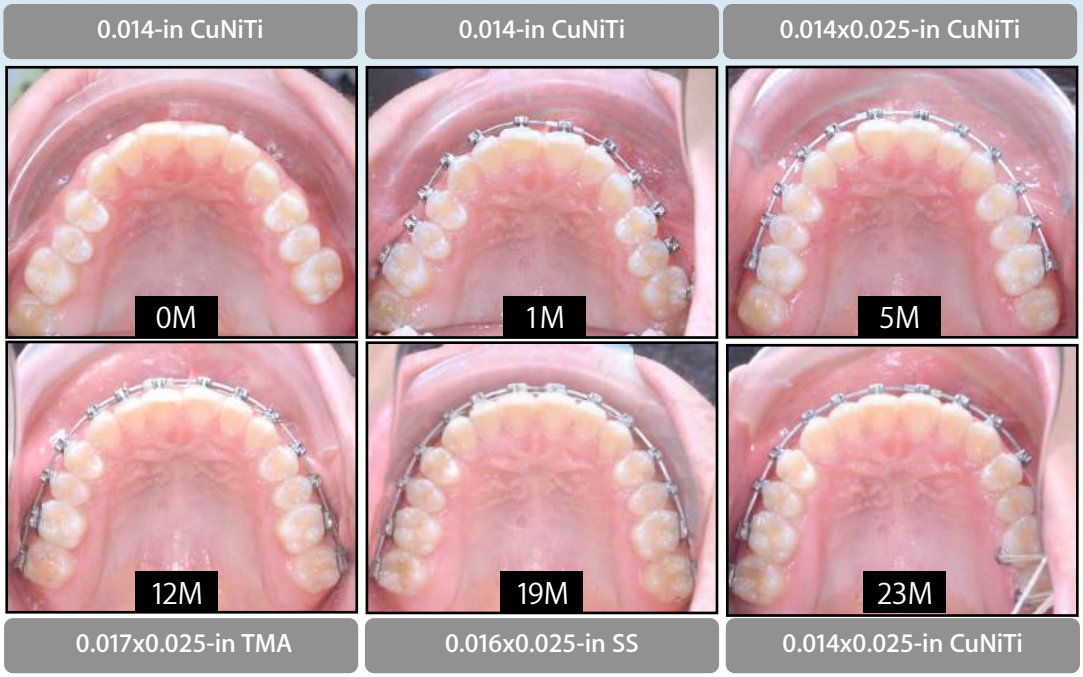

Fig. 13:
Maxillary occlusal views of treatment progress in months (M) and the mandibular archwire progression are shown from the start of treatment (0M) to twenty-three months (23M).

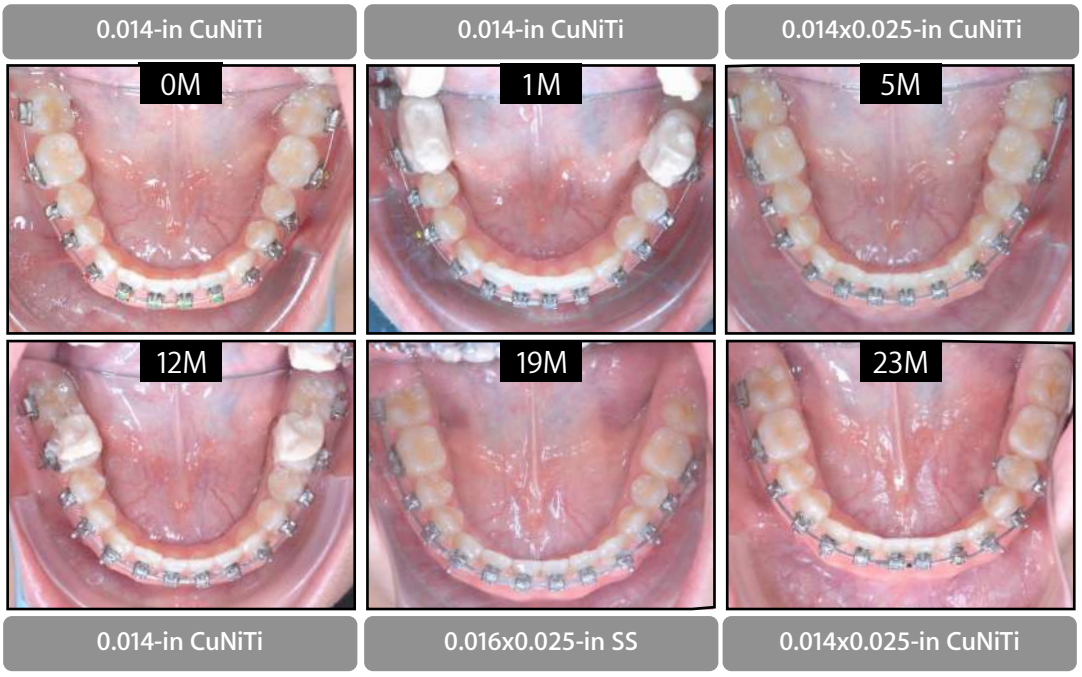

Fig. 14:
Mandibular occlusal views of treatment progress in months (M) and the mandibular archwire progression are shown from the start of treatment (0M) to twenty-three months (23M).

ideal outcome were noted: (1) lingually tipped lower incisors (L1 to MP 66.5˚), 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)*

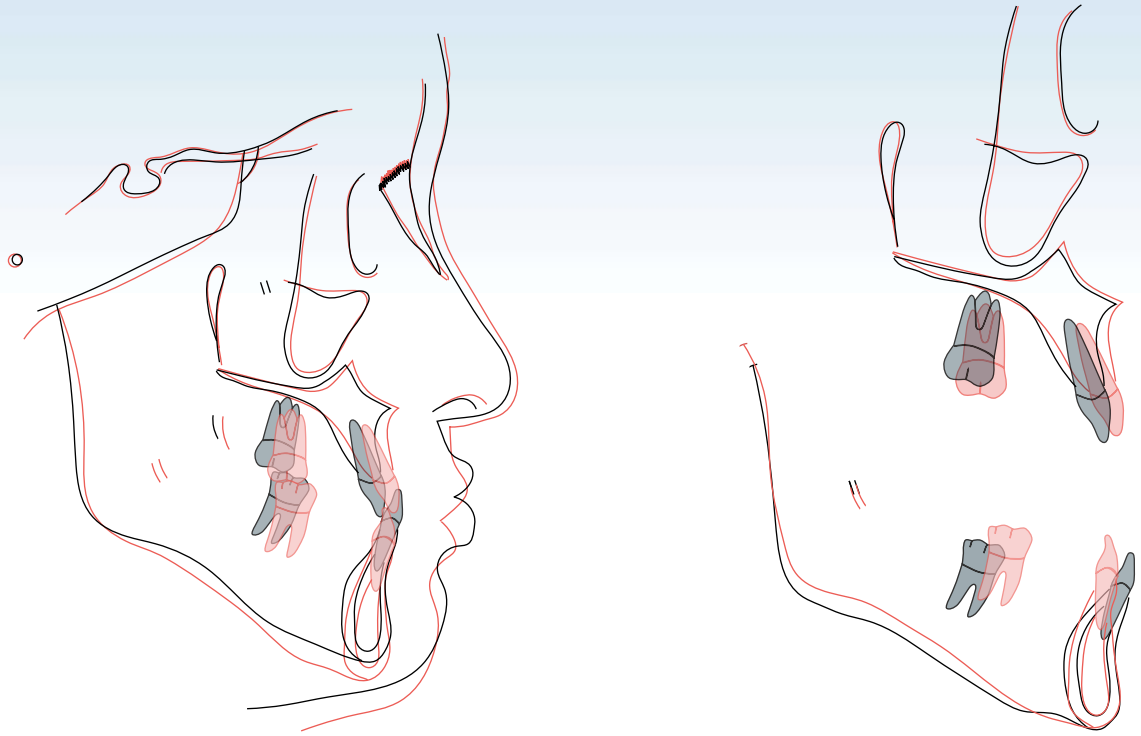

Fig. 18:
Superimposition of the pre-treatment (black) and post-treatment (red) cephalometric tracings shows the dentofacial effects of treatment.

- 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_O-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.[4] 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: [11,12]

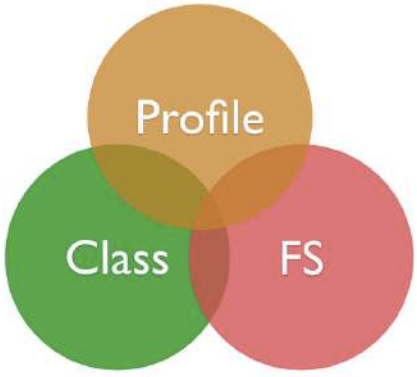

Fig. 21:
The 3-ring diagnosis system for pseudo-Class III malocclusion (Dr. Lin Jin-Jong)

- ***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.[6]

- ***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 $C_O \rightarrow C_R$ functional shift.

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.[13] 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.[7] Use of RPE[14] and/or 2x4 appliances in mixed dentition takes advantage of maxillary growth.[7] 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,[6] but maxillary growth in younger patients enhances the facial outcome.[15,16] Thus, for optimal facial esthetics, treatment in the mixed or early permanent dentition is preferable.[15]

With adequate clearance for anterior crossbite correction provided by posterior bite turbos, light short elastics and passive self-ligating brackets[17] 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˚) (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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Discrepancy Index Worksheet

TOTAL D.I. SCORE 28

OVREJET

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

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

Total = 10

OVERBITE

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

Total = 2

ANTERIOR OPEN BITE

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

Total = 0

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.	=	4 pts.
> 7 mm.	=	7 pts.

Total = 0

OCCLUSION

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

Total = 6

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 4

BUCCAL POSTERIOR X-BITE

2 pts. Per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° 2 x 1 pt. = 2

Each degree > 6° _____ x 1 pt. = _____

SN-MP

≥ 38° = 2 pts.

Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.

Each degree < 26° _____ x 1 pt. = _____

1 to MP ≥ 99° = 1 pt.

Each degree > 99° _____ x 1 pt. = _____

Total = 6

OTHER (See Instructions)

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

Identify: Labially-positioned impacted maxillary canine

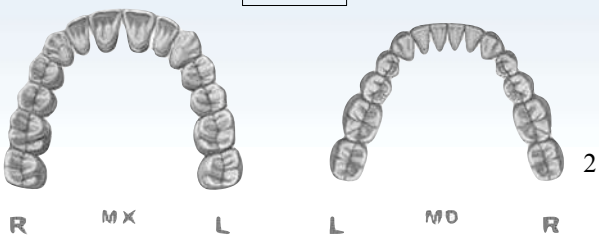
Total = 0

Cast-Radiograph Evaluation

Total Score: 19

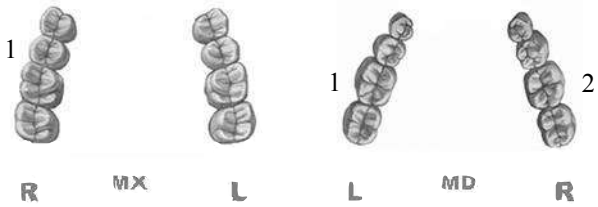
Alignment/Rotations

2



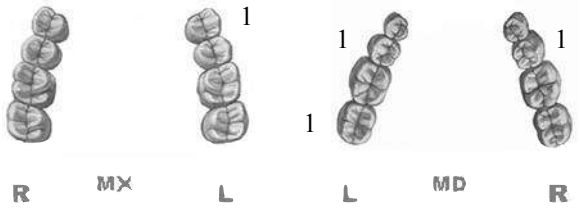
Marginal Ridges

4



Buccolingual Inclination

4

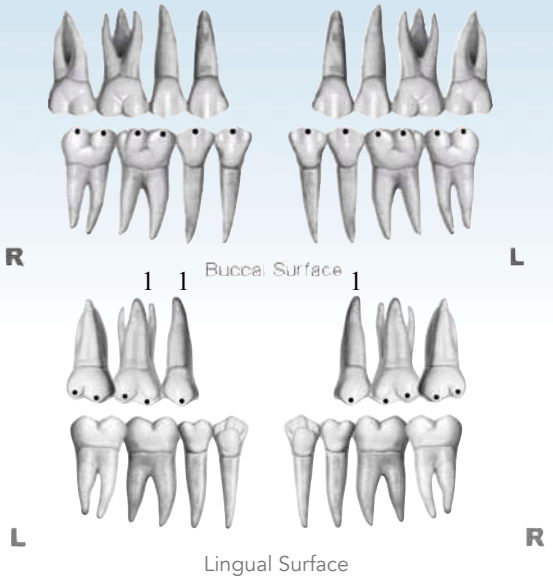


Overjet

3

Occlusal Contacts

3

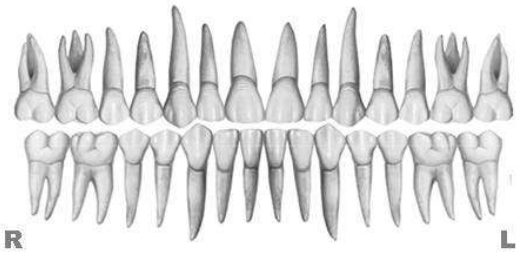


Occlusal Relationships

1

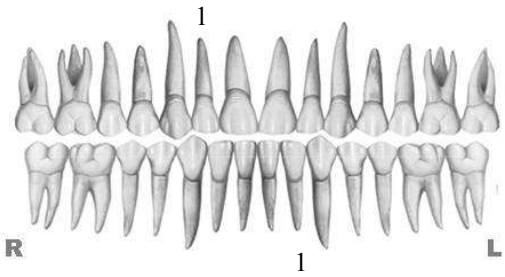
Interproximal Contacts

0



Root Angulation

2



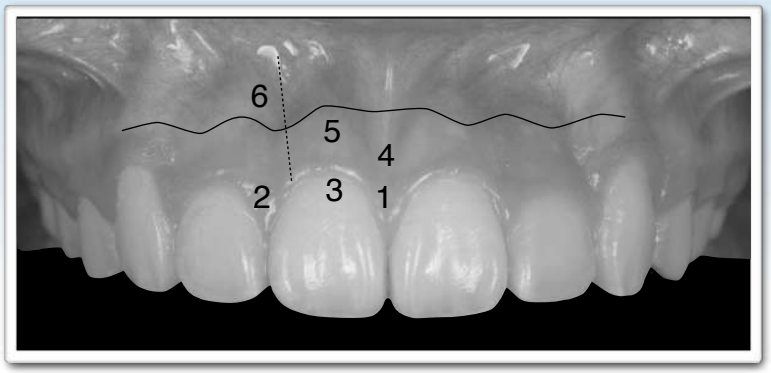
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score

Total Score = 0

1. Pink Esthetic Score

Total = 0

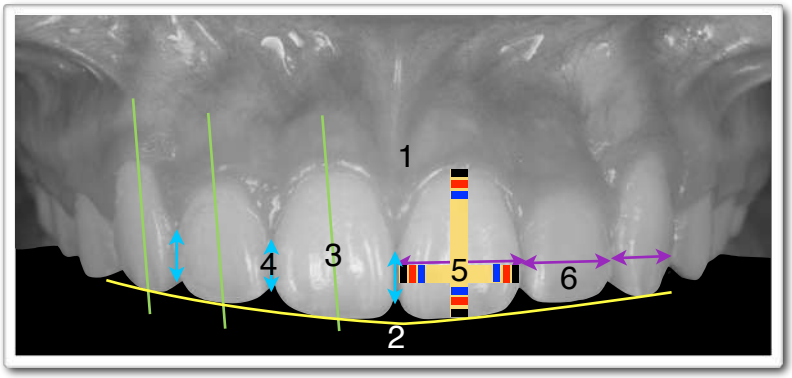


1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

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)

Total = 0



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

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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11/12 MINI FIVE GRACEY CURETTE

SAS13/14C8E2
13/14 MINI FIVE GRACEY CURETTE

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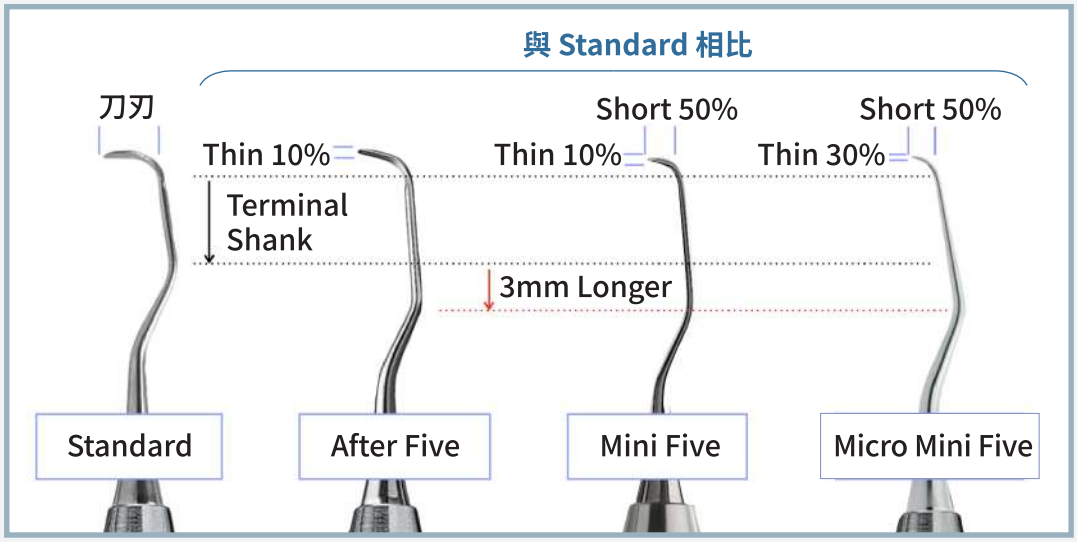

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