A Minimally Invasive Approach for Anterior Crossbite Correction without Surgery and Screws

Abstract

***History**: A 17yr male presented with a chief compliant of anterior crossbite. The probable etiology of the malocclusion was ectopic eruption of the maxillary central incisors at ~6yr of age. There was no other contributing medical or dental history.*

***Diagnosis**: In centric occlusion (C_O), the buccal segments were Class I but all the maxillary incisors were in crossbite. In centric relation (C_R), the incisors were end-to-end consistent with ~1.5mm $C_R \rightarrow C_O$ discrepancy. Cephalometrics in C_O revealed bimaxillary protrusion (SNA 86.5°, SNB 86°, ANB 0.5°), relatively flat FMA (17°), and an everted lower lip. The ABO discrepancy Index (DI) was 24.*

***Treatment**: A passive self-ligating appliance was installed, along with bite turbos on the lower incisors and second molars. Class III elastics, bite turbos, and torque-specific brackets were used to correct the anterior crossbite. Molars were extruded to open the bite and increase facial convexity. Progressive archwire therapy aligned and detailed the dentition. After 19 months of treatment, near ideal dentofacial esthetics and function were achieved.*

***Outcome**: The Cast-Radiograph-Evaluation (CRE) score was 27, and the Pink & White esthetic score was 4. (J Digital Orthod 2020;57:76-92)*

Key words:
Anterior crossbite, deep bite, minimally invasive approach

Introduction

Anterior crossbite is a major esthetic and functional concern. In diagnosing an anterior crossbite, it is essential to perform a differential diagnosis to distinguish skeletal from pseudo Class III malocclusions. Many adult patients with anterior crossbites are assumed to have skeletal Class III malocclusions that require orthognathic surgery. However, that is over-treatment for Class III patients with an acceptable profile and a functional shift.[1-17] Cephalometric analysis in centric occlusion (C_O)[1-3] may be inadequate. Clinical assessment of the occlusion in centric relation (C_R) and C_O is essential for distinguishing between a skeletal and pseudo Class III malocclusion.[4] Pseudo Class III patients with an acceptable orthognathic profile in C_R usually have a good prognosis following conservative treatment to resolve the anterior crossbite.[3,5] The aim of this case report is to present a minimally invasive approach to treat a Class III malocclusion with anterior crossbite and deep bite.

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Fig. 1: Pre-treatment facial and intraoral photographs show dentofacial relationships with the mandible in C_R and C_O.

Diagnosis and Etiology

A 17-year-old male (*Figs. 1-5*) presented for orthodontic consultation with a chief complaint: poor dental esthetics and function due to anterior crossbite. There was no contributing medical or dental history. Facial examination revealed symmetric structures, a straight profile and protrusive lower lip compared to the upper lip. The facial profile was improved in C_R (*Figs. 1 and 4*).

Intraoral examination revealed generalized marginal gingivitis that was more prominent in the maxillary anterior. Mandibular dental and facial midlines were coincident, but the facial midline was deviated 3mm to the right, which was associated with a blocked upper right lateral incisor (*UR2*). All four maxillary incisors (*UR2-UL2*) were in a deep anterior crossbite (*Figs. 1-3*). Overjet was negative 1-2mm, and overbite was 6mm. Molar relationships were Class I on the right and Class III on the left in C_O (*Fig. 2*), but Class I bilaterally in C_R (*Figs. 1 and 4*). Crowding was ~10mm in the upper arch and 3mm in the lower arch.

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

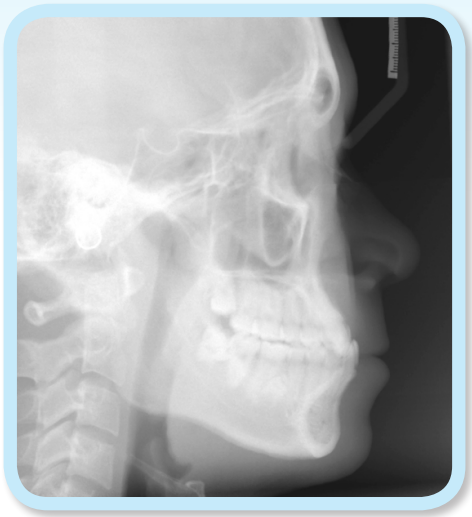

Fig. 3: Pre-treatment cephalometric radiograph

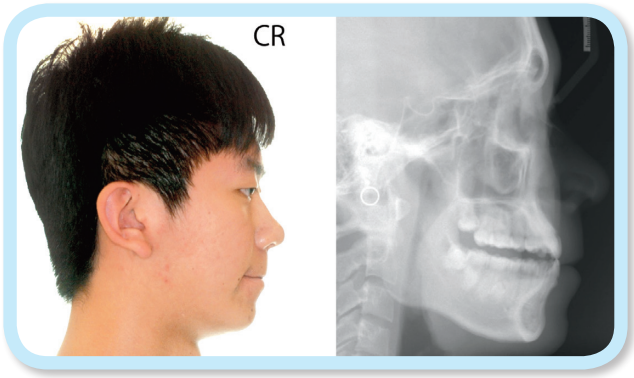

Fig. 4:
Pretreatment facial profile photograph and a cephalometric radiograph are in C_R. See text for details.

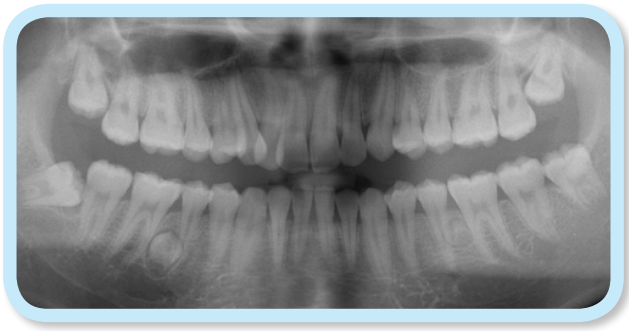

Fig. 5: Pre-treatment panoramic radiograph

CEPHALOMETRIC SUMMARY			
SKELETAL ANALYSIS			
	PRE-Tx	POST-Tx	DIFF.
SNA° (82°)	86.5°	86.5°	0°
SNB° (80°)	86°	85°	1°
ANB° (2°)	0.5°	1.5°	1°
SN-MP° (32°)	24°	25°	1°
FMA° (25°)	17°	18°	1°
DENTAL ANALYSIS			
U1 To NA mm (4 mm)	2 mm	4.5 mm	2.5 mm
U1 To SN° (104°)	107°	1 5°	8°
L1 To NB mm (4 mm)	5.5 mm	5 mm	0.5 mm
L1 To MP° (90°)	90°	94.5°	4.5°
FACIAL ANALYSIS			
E-LINE UL (-1 mm)	-2 mm	-1 mm	1 mm
E-LINE LL (0 mm)	0.5 mm	2 mm	1.5 mm
%FH: Na-ANS-Gn (53%)	54%	54.5%	0.5%
Convexity: G-Sn-Pg' (13°)	9.5°	11.5°	2°

Table 1: Cephalometric summary

Pre-treatment cephalometric analysis in C_0 showed a 0.5° ANB angle and a 17° mandibular plane angle (*FMA*) (*Fig. 3, Table 1*). The panoramic radiograph (*Fig. 5*) showed that there were two supernumerary teeth in the alveolar process of the mandibular premolar areas: one was at the root apex of the right second premolar (*LR5*), and the other was at the middle third of the left second premolar (*LL5*). The lower right third molar (*LR8*) and both upper third molars (*UR8, UL8*) were impacted (*Fig. 5*). The American Board of Orthodontics (*ABO*) discrepancy index (*DI*) was 24 points, as shown in the supplementary Worksheet 1.

Treatment Objectives

1. A full fixed passive self-ligating (*PSL*) appliance to level and align both arches.
2. Bite turbos, Class III elastics, and torque-specific brackets on the incisors to correct the anterior crossbite.
3. Extrude maxillary molars to open the bite and rotate the mandible posteriorly to improve the facial profile and the incisor display when smiling.
4. Correct the midline with cross-arch elastics.
5. Optimize occlusion with bracket repositioning and detailing bends.

Treatment Alternatives

Extracting both lower second premolars (*LR5, LL5*) was considered to facilitate the removal of the supernumerary premolars. Asymmetric extraction of upper premolars (*UR5, UL4*) would also help correct the midline discrepancy (*Fig. 6*). However,

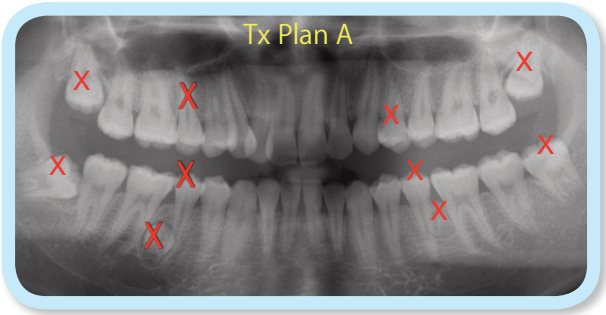

Fig. 6:
Treatment Plan A is to extract UR8, UR4, UL4, UL8, LR8, LR5, LL5 and both supernumerary mandibular premolars. All teeth to be removed are marked with a red X. See text for details.

there was an acceptable profile in C_R (*Fig. 4*), so closing extraction spaces would probably decrease lip protrusion. In addition, the patient preferred to avoid extraction other than the supernumerary teeth and third molars. Therefore, a minimally invasive protocol was adopted, but the patient did agree to the use of mandibular buccal shelf bone screws (*MBS BSs*) if needed (*Fig. 7*).

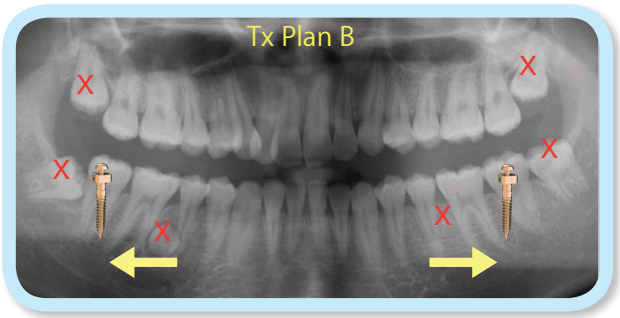

Fig.7:
Treatment Plan B is to extract only four third molars and supernumerary premolars as marked with a red X. MBS BSs are used as needed to retract the lower arch (yellow arrows). See text for details.

Treatment Progress

All four third molars and both supernumerary lower premolars were extracted before treatment. A .022-in slot, passive self-ligating (*PSL*) appliance (*Damon Q®, Ormco, Glendora, CA*) was bonded on all permanent teeth. All archwires and auxiliaries were produced by the same supplier. Except for the blocked-in UR2, the maxillary arch was bonded with low torque brackets. An open coil spring was placed between the UR1 and UR3 to open space for the UR2. Posterior bite turbos constructed with glass ionomer cement were constructed on the lower second molars (*L7s*) to facilitate anterior crossbite correction and upper arch alignment (*Fig. 8*). For the lower arch, low torque brackets were bonded upside down on the lower incisors for enhanced axial inclination (*positive torque*), and high torque brackets were bonded on the canines (*Fig. 9*). An anterior bite turbo was bonded on the mandibular central incisors to produce an inclined bite plane for anterior movement of upper incisors. Two early light Class III elastics (*Parrot 2 oz.*) were prescribed from the upper first molars to the lower canines to assist in anterior crossbite correction. Three months later, the anterior crossbite was improved so the lower anterior bite turbo was removed (*Fig. 10*). Once space was opened, a button was bonded on the labial surface of the UR2, and a power chain was tied to

Fig. 8:
One month (1M) into treatment, the maxillary arch was bonded with a PSL appliance, and an open coil spring was used to open space for the blocked-in UR2. Posterior bite turbos were constructed on lower first molars to open the bite for crossbite correction. See text for details.

Fig. 9:
Two months (2M) into treatment, low torque brackets were bonded upside down on lower incisors. An anterior bite turbo (inclined plane) was bonded on the mandibular central incisors. Early light elastics (Parrot 2 oz.) were applied to assist with anterior crossbite correction. See text for details.

the archwire to accelerate anterior alignment (*Fig. 11*).

In the tenth month, the UR2 was aligned, .014x.025 NiTi archwires were placed on both arches, and Class III elastics were stopped (*Fig. 12*). At the 13th month, a panoramic radiograph revealed axial inclination problems for the UR4 and UL5, and both were rebonded (*Fig. 13*). In the 14th month, Class II elastics (*Fox 3.5 oz.*) were applied from the mandibular LL5 via the canine (*LL3*) to the UR1 for dental midline correction (*Fig. 14*). A mesial-out bend on the UR3 and a step-up bend on the UL2 were placed to refine alignment (*Fig. 14*). The next month, a torque spring

Fig. 10:
Five months (5M) into treatment, the anterior crossbite was corrected, so the anterior bite turbo was removed.

Fig. 11:
Five months (5M) into treatment, a button is bonded on the labial surface of the UR2 and traction is applied with the archwire. See text for details

Fig. 12:
Ten months (10M) into treatment, the UR2 is aligned (upper) and Class III elastics were stopped. The provisionally aligned upper and lower arches are shown in the middle and lower occlusal views, respectively.

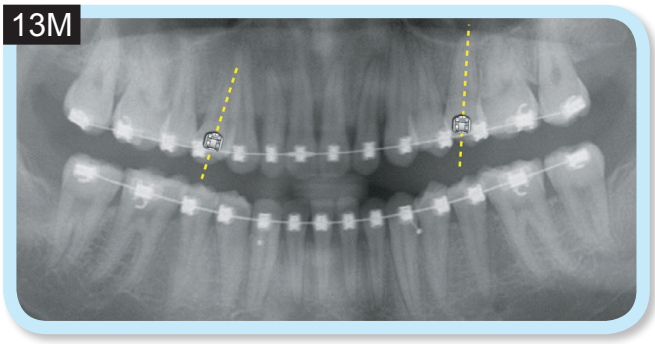

Fig. 13:
Thirteen months (13M) into treatment, a progress panoramic radiograph shows the axial inclination (yellow dotted lines) of two premolars (UR4 and UL5) requiring rebonding. See text for details.

Fig. 14:
Fourteen months (14M) into treatment, a Class II crossarch elastic (Fox 3.5 oz.) was used for dental midline correction (blue line). Yellow circles indicate a mesial-out bend on the UR3 and a step-up bend on the UL2. The archwires were 0.017x0.025-in TMA. See text for details.

Fig. 15:
A torque spring (auxiliary) was placed on the crown of the UR2 to provide a labial root torque force. See text for details.

Fig. 16: Post-treatment facial and intraoral photographs show a fixed retainer was bonded from 2-2 in the maxillary arch.

was applied to the UR2 crown to apply labial root torque (*Fig. 15*). After 19 months of active treatment, all brackets were removed. A fixed retainer was bonded on the lingual surface between the maxillary lateral incisors, and clear overlay retainers were delivered for both arches. The patient was instructed to wear the retainers full time for the first month and nights only thereafter.

Treatment Results

Dentofacial esthetics were substantially improved (*Fig. 1 vs. Fig. 17*). Both arches were well aligned and articulated in a Class I molar relationship (*Fig. 16*). Negative overjet and deep overbite relationships were corrected. The post-treatment cephalometric radiograph shows near ideal facial profile (*Fig. 18*), but the panoramic radiograph reveals an axial inclination problem for the UR5 (*Fig. 19*). The ABO Cast-Radiograph Evaluation (*CRE*) score was 27 points (*Worksheet 2*). The major residual problems were lack of occlusal contacts (*7 points*), marginal ridges (*6 points*), and buccolingual inclination (*6 points*). Superimposed cephalometric tracings (*Fig. 20*) show a relative increase in the axial inclinations of the upper incisors from 107° to 115°. Molars were extruded, consistent with an increase in lower facial hight, and the mandibular incisors were intruded. Leveling of the occlusal planes

Fig. 17: Post-treatment study models (casts)

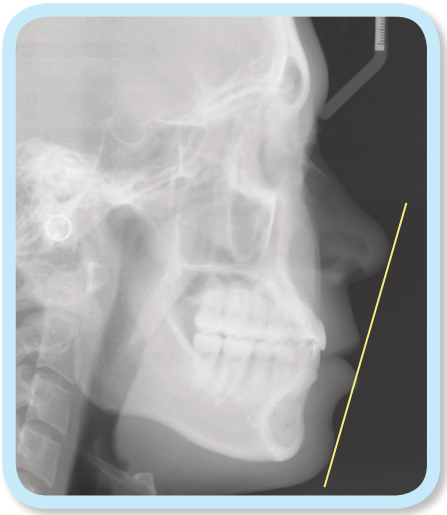

Fig. 18:
Post-treatment cephalometric radiograph shows the E-Line in yellow.

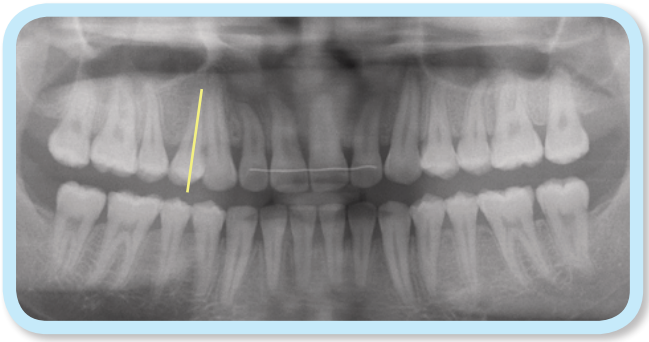

Fig. 19:
Post-treatment panoramic radiograph reveals the axial inclination of the UR4 is too far from the mesial (yellow line).

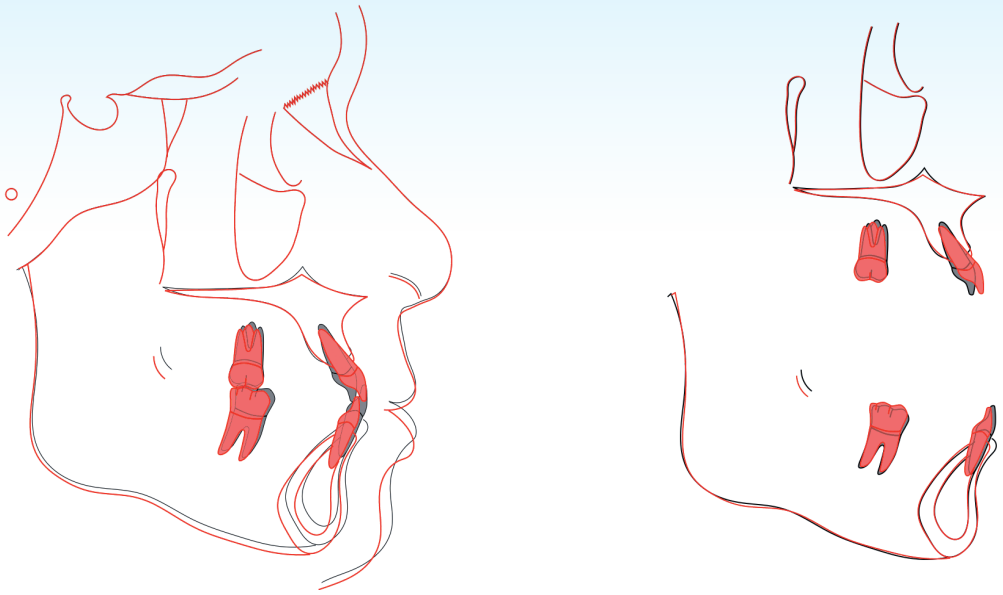

Fig. 20:
Superimposed cephalometric tracings before (black) and after (red) treatment show more labial orientation of the maxillary incisors. The upper and lower molars are sufficiently extruded to increase the vertical dimension of occlusion to increase facial height. See text for details.

resulted in clockwise rotation of the mandible which increased the ANB angle by 1°. The patient was quite satisfied with the results.

Discussion

The treatment of Class III malocclusion is often challenging because of an inadequate diagnosis. Lin's 3-ring diagnosis is an effective guide to distinguishing pseudo from true skeletal Class III malocclusion:[6,7]

- **Profile**: The majority of pseudo Class III patients with a functional shift have facial profiles that are orthognathic in C_R, even if the ANB exceeds -2°. These patients typically respond well to dentoalveolar treatment.
- **Class**: Class I occlusion in C_R is a positive indicator for the prognosis of conservative treatment.
- **Functional Shift**: Occlusal interference of the incisors requires anterior movement of the mandible to occlude in C_O. An occurrence of an anterior $C_R \rightarrow C_O$ shift is also a positive indicator for the prognosis of conservative treatment. Measuring the ANB angle on a cephalometric radiograph taken with the mandible in C_R is a more realistic assessment of the skeletal problem. A Class III malocclusion with an anterior functional shift is more likely to respond positively to conservative therapy (*Fig. 21*).

When evaluated in C_R the present patient had an acceptable profile, near Class I molar relationship and a mandibular functional shift to C_O. These are all

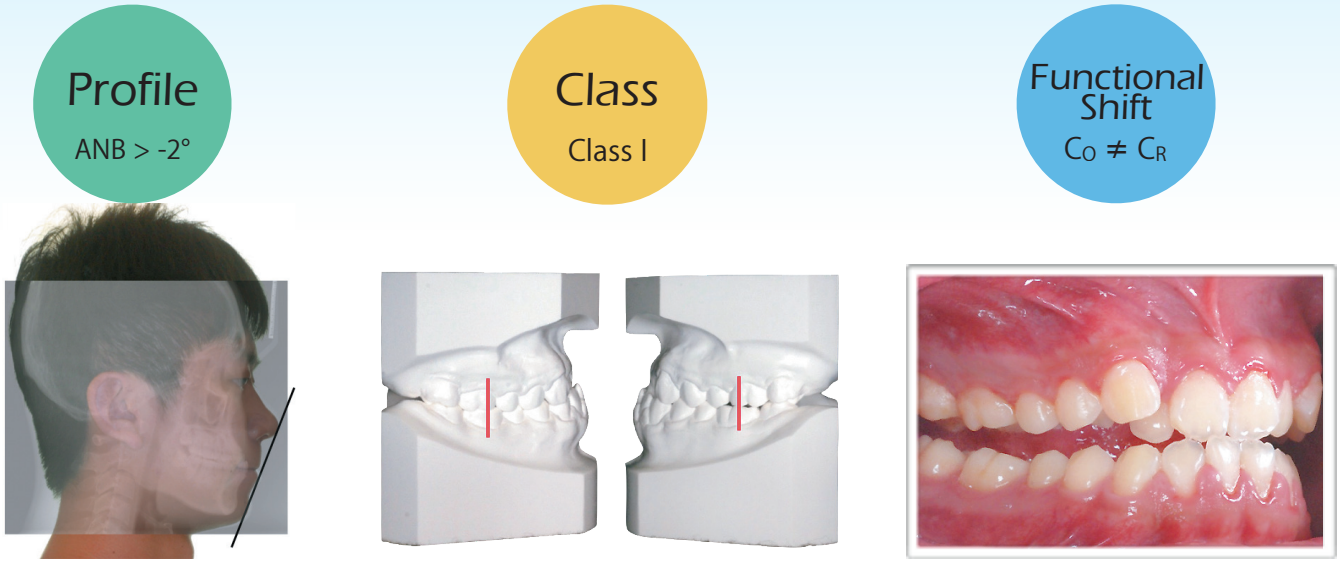

Fig. 21:
Use the 3-ring diagnosis to distinguish pseudo from skeletal Class III malocclusion. The three diagnostic criteria in CR are facial profile and ANB (left), Class I molar relationship (center), and functional shift CR → Co (Right).

positive factors favoring conservative dentoalveolar treatment. Bite turbos and light force Class III elastics facilitated anterior crossbite correction in five months.

Class III Mechanism

When Class III elastics are applied to the lower canines, upward and backward force on the mandibular arch retracts the incisors (*Fig. 22*).[8] When a lower rectangular archwire is engaged in high torque brackets, it delivers lingual root torque.[9-11] The combined force system retracts the entire mandibular arch as it is aligned. Equal and opposite force from the Class III elastics is applied to the upper first molars, resulting in a tendency of extrusion and mesial movement (*Fig. 22, yellow arrows in the upper posterior*). The anterior force tips the

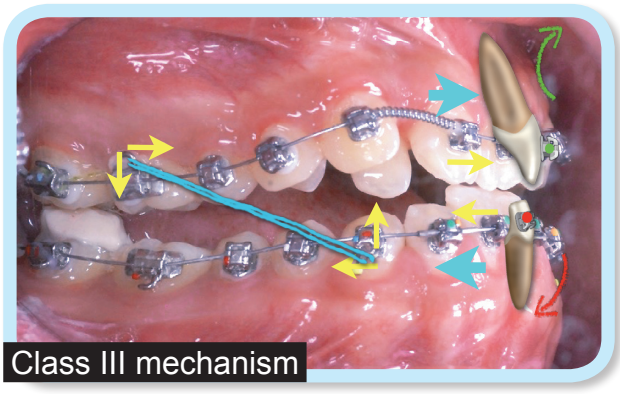

Fig. 22:
The Class III mechanism for anterior crossbite correction involves five elements:

1. *Class III elastic (blue line) applies vertical and horizontal force components (yellow arrows) that tip upper incisors labially (upper blue arrow), and lower incisors lingually (lower blue arrow);*
2. *Low torque brackets on upper incisors apply labial root torque (green curved arrow) to resist incisal tipping;*
3. *Low torque brackets bonded upside down on lower incisors apply lingual root torque (red curved arrow) to resist incisal tipping;*
4. *Bite turbos on lower first molars open the bite to avoid incisal interference; and*
5. *Another bite turbo on lower incisors serves as a bite plate to assist in crossbite correction. See text for details.*

upper anteriors labially, and the rectangular archwire in low torque brackets resists incisal flaring (*green arrow*). The resulting force system tends to translate the upper incisors anteriorly (*upper blue arrow*). The posterior bite turbo supports the occlusion while the bite turbo on the lower incisors acts as an inclined plane to tip the upper incisors labially to correct the crossbite (*Figs. 22-25*).The axial inclination of the upper incisors to the SN plane increased from 107° to 115° (*Table 1, Fig. 20*). This is a combined effect of the anterior bite turbo, open coil spring, and Class III elastics. All of these mechanisms tend to flare the maxillary incisors despite that the upper archwire is tied to the UR2 with a power chain (*Fig. 11*), and that the maxillary incisors are bonded with low torque brackets. This outcome emphasizes the importance of these measures in preventing excessive incisal flaring.[12-15]

Torque	High	Std	Low
U1	22	15	2
U2	13	6	-5
U3	11	7	-7
L1	11	-3	-11
L2	11	-3	-11
L3	13	7	0

Fig. 23:
The table shows the torque combinations (High, Standard and Low) for upper (U1-3) and lower (L1-3) incisors.

Clinical Tips

Stops:

On Damon light-force archwires, stops are usually crimped on either side of a center incisor to prevent the wire from sliding. In this patient, whose maxillary mid-line shifted to the right, it is best to avoid placing stops in areas where coil springs will be placed (*Fig. 24*). A better position for the stops is on either side of the bracket of the UL3 on the archwire.

Lower Anterior Bite Turbo:

The bite turbo on the lower incisors is used to assist anterior crossbite correction. Flowable resin is ideal for constructing lower anterior bite turbos because it can be easily added or removed to achieve the bite opening desired. The vertical dimension of the bite turbo was constructed at a height to permit the upper incisors to clear their antagonists (*Figs. 22 and 25*) .

Fig. 24:
Archwire stops are usually crimped on either side of the UL1 bracket. A better position for stops (blue) are around the bracket of the UL3 (yellow arrow).

Fig. 25:
Flowable resin is used to construct lower anterior bite turbo that will serve as as an inclined plane to help correct the anterior crossbite. See text for details.

Torque Spring:

A torque spring is an auxiliary used to change the axial inclination of a tooth.[16,17] When applied to the crown edge, its force combined with that of the restrained bracket, resulting in a root-labial moment. When the force is applied from the gingiva to the bracket, a root-lingual moment is produced. Note that the arm should be engaged on the tooth under the archwire to exert compressive force at the incisal edge (*Fig. 15*).

Anterior Crossbite Correction

The anterior crossbite case reports published in the International Journal of Orthodontics and Implantology (*IJOI*) over a 4-year period (*2012-16*) were sampled as a cohort group to examine the effectiveness of the Class III mechanism (*Fig. 22*). For efficient correction of anterior crossbite, the lower anteriors are bonded with super high torque brackets (*low torque bracket turned upside down*) (*Fig. 23*), a lower anterior bite turbo is constructed, and early light Class III elastics are applied (*Fig. 22*). "*Chris's Formula for Anterior Crossbite Correction*" is confirmed by the collection of IJOI case reports. Favorable conditions for these mechanics include an ANB angle of -2° or more and crowding of the anterior maxillary dentition (*Table 2*).

Conclusions

A differential diagnosis of Class III malocclusion with anterior crossbite requires a careful evaluation of the facial profile, molar classification and functional shift in C_R. With an accurate diagnosis of pseudo rather than skeletal Class III malocclusion, patients can be treated successfully with a minimally invasive approach utilizing bracket torque selection, bite turbos and intermaxillary elastics.

Acknowledgment

Thanks to Mr. Seth T. Pankhurst for proofreading this article.

Gender	Age	Pro-file	Molar relationship	Crowd-ing	Ext	OJ mm	OB mm	MP	ANB	Bracket	Auxiliary	★	DI
F	12y	C	Class I	U	Ext	-2	3	H	1°	U:S, L:S	BT	3M	37 [6]
F	23y	S	L(III) R(I)	U&L	Ext	-3	3	H	0°	U:S, L:H	Tongue depressor	3M	24 [7]
F	24y	S	L(III) R(I)	L	Ext	-3	5	H	-1°	U:L, L:S	BT, ELSE, Op	4M	39 [8]
F	24y	C	L(I) R(III)	U&L	Non	-2	3	N	-2°	U:S, L:S	BT, MBS	4.5M	26 [9]
M	14y	C	L(III) R(I)	U	Non	-3.5	7	L	-5.8°	U:L, L:sH	BT, ELSE, IZC	2M	24 [10]
F	28y	C	Class III	U	Non	-3	3	L	-4°	U:sL, L:sH	BT, ELSE	3M	50 [11]
F	29y	C	Class I	U	Ext	-2	6	L	-4°	U:L, L:sH	BT, ELSE	6M	30 [12]
F	26y	C	Class III	U	Ext	0	0	H	-4°	U:S, L:H	ELSE	9M	49 [13]
M	13y	Bi	L(I) R(III)	U&L	Ext	-3	3	H	-5°	U:S, L:sH	BT, ELSE	7M	46 [14]
F	31y	Bi	Class I	Space	Non	-2	-2	O	2°	U:S, L:S	ELSE, IZC	10M	34 [15]
F	18y	Bi	Class III		Non	-3	-3	O	1°	U:L, L:S	MBS	15M	55 [16]
F	24y	S	Class III	U&L	Ext	-2	-3	O	-1°	U:L, L:sH	LSE	13M	60 [17]

★	anterior cross bite corrected in () months
Profile	C: concave, S: straight, Bi: bimaxillary protrusion
OJ	overjet
OB	overbite
MP	mandibular plane angle. H: high, N: normal, L: low, O: openbite
Bracket	U: upper, L: lower, S: standerd Q, H: high Q (standard bracket up-side-down), L: low Q, sH: super high Q (low torque bracket up-side-down), sL: super low Q (standard bracket up-side-down)
Auxiliary	BT: bite turbo, ELSE: early light short elastics, Op: open coil spring, MBS: mini screws at mandibular buccal shelf, IZC: mini screws at infra zygomatic crest. LSE: light short elastics
DI	discrepancy index

Table 2: Twelve anterior crossbite cases collected from IJOI from 2012 to 2016. The legend for abbreviations is below the table.

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Discrepancy Index Worksheet

TOTAL D.I. SCORE 24

OVERJET

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 = 1+1+1+2

Total = 5

OVERBITE

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

Total = 3

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 = 7

OCCLUSION

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

Total = 2

LINGUAL POSTERIOR X-BITE

1 pt. per tooth Total = 0

BUCCAL POSTERIOR X-BITE

2 pts. per tooth Total = 0

CEPHALOMETRICS (See Instructions)

ANB ≥ 6° or ≤ -2° = 4 pts.

Each degree < -2° _____ x 1 pt. = _____

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

SN-MP
≥ 38° = 2 pts.
Each degree > 38° _____ x 2 pts. = _____

≤ 26° = 1 pt.
Each degree < 26° 2 x 1 pt. = 2

1 to MP ≥ 99° = 1 pt.
Each degree > 99° _____ x 1 pt. = _____

Total = 3

OTHER (See Instructions)

Supernumerary teeth 2 x 1 pt. = 2
Ankylosis of perm. teeth _____ x 2 pts. = _____
Anomalous morphology _____ x 2 pts. = _____
Impaction (except 3rd molars) _____ x 2 pts. = _____
Midline discrepancy (≥3mm) @ 2 pts. = 2
Missing teeth (except 3rd molars) _____ x 1 pts. = _____
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:

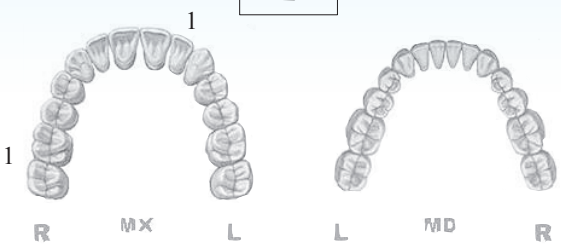
Total = 4

Cast-Radiograph Evaluation

Total Score: 27

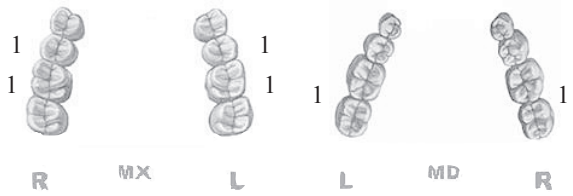
Alignment/Rotations

2



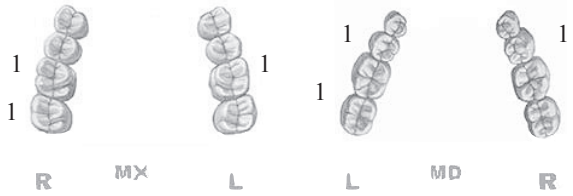
Marginal Ridges

6



Buccolingual Inclination

6

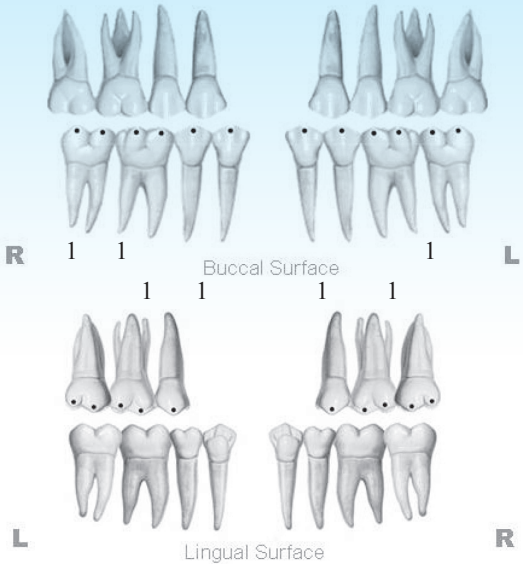


Overjet

0

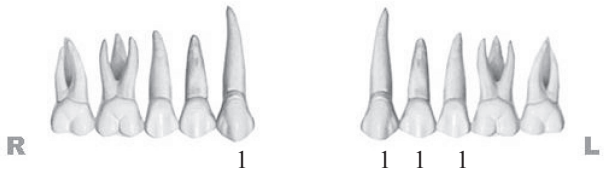
Occlusal Contacts

7



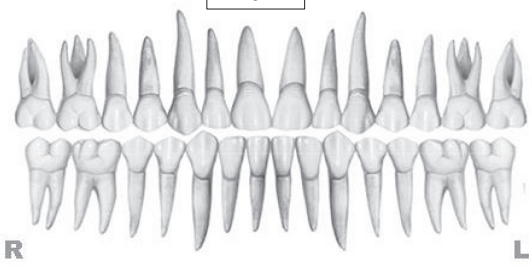
Occlusal Relationships

4



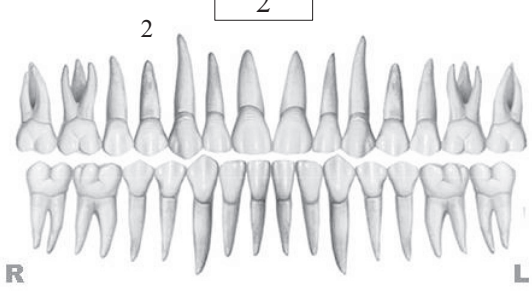
Interproximal Contacts

0



Root Angulation

2



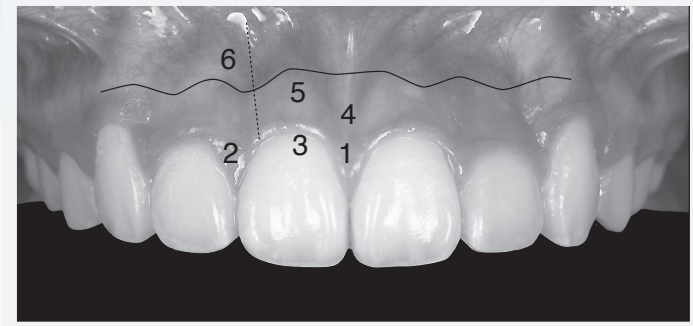
INSTRUCTIONS: Place score beside each deficient tooth and enter total score for each parameter in the white box. Mark extracted teeth with "X". Second molars should be in occlusion.

IBOI Pink & White Esthetic Score

Total Score: = 4

1. Pink Esthetic Score

Total = 2

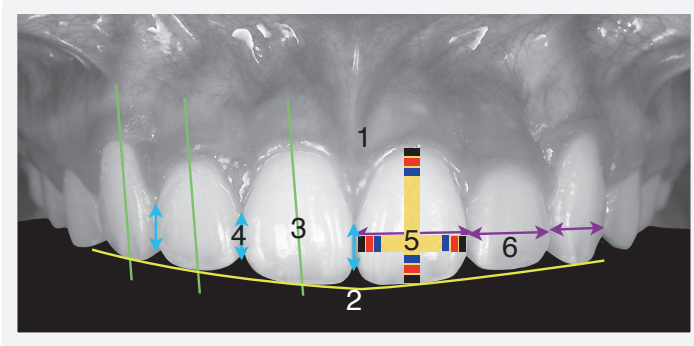


1. M & D Papillae	0	1	2
2. Keratinized Gingiva	0	1	2
3. Curvature of Gingival Margin	0	1	2
4. Level of Gingival Margin	0	1	2
5. Root Convexity (Torque)	0	1	2
6. Scar Formation	0	1	2

1. M & D Papilla	(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-esthetics)

Total = 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 (1:0.8)	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 (1:0.8)	0	(1)	2
6. Tooth to Tooth Proportion	(0)	1	2