

CDABO CASE REPORT

Correction of a severe Class II Division 1 malocclusion with bilateral buccal crossbite

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Fig 1. Pretreatment facial photographs.



Fig 2. Pretreatment intraoral photographs.

HISTORY AND CAUSE

The patient was a 9 years and 2 months old female from the Dominican Republic whose chief complaint was, "My front teeth stick out." The patient's medical history was noncontributory, and she denied any known drug allergies. Her dental history revealed preventive dental visits at 6-month intervals and a fractured incisal edge (maxillary left central incisor). The patient's

mother reported the presence of both a lip-biting and nail-biting habit. There was a familial resemblance in facial appearance and malocclusion. The cause was diagnosed as a combination of environmental and hereditary factors (Figs 1-4).

DIAGNOSIS

The diagnosis was an Angle Class II Division 1 malocclusion with an impinging deep overbite and excessive overjet of 9 mm. Approximately 8 mm of space was present in the maxillary arch, and the mandibular arch displayed 3 mm of space. The maxillary and mandibular right and left first premolars were in buccal crossbite, and the second premolars were nearly edge to

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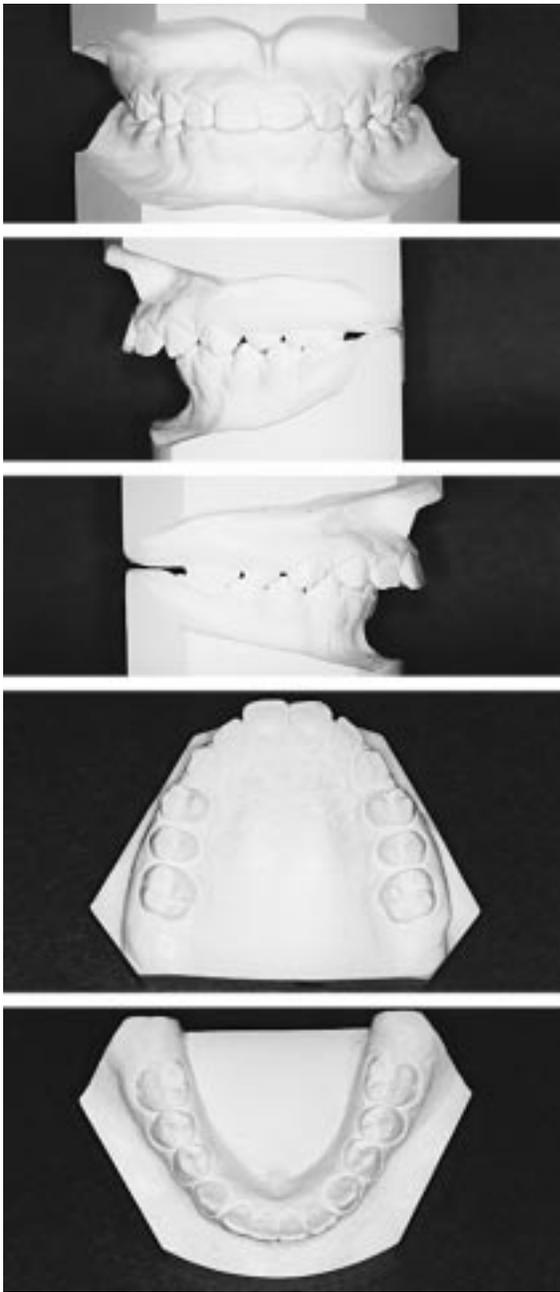


Fig 3. Pretreatment casts.

edge. Both midlines were coincident with the facial midline. The maxillary left central had a fractured incisal edge. Facial analysis revealed a slightly asymmetric dolichofacial pattern, with a convex profile and the appearance of mandibular retrognathism. The patient demonstrated a Class II apical base discrepancy, with a relative anterior upper facial height excess and hyperdivergent pattern of growth. The maxillary and mandibular incisors were proclined.

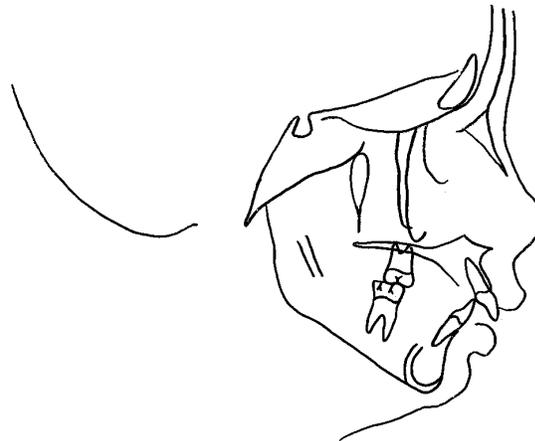


Fig 4. Pretreatment cephalometric tracing.

Table I. Treatment records

Patient: G A
 Born: January 19, 1984
 Age: 9 years 2 months
 Pretreatment records 3/25/93
 Diagnosis:
 Class II division 1 malocclusion
 Maxillary spacing (8 mm)
 Mandibular spacing (3 mm)
 Impinging deep bite
 Excessive overjet (9 mm)
 Bilateral buccal crossbite of maxillary and mandibular 1st premolars
 Premolars
 Midlines coincident with the facial midline
 Convex profile
 Lip and mentalis strain upon closure
 Class II apical base discrepancy
 Slightly hyperdivergent growth pattern
 Anterior facial height excessive relative to posterior facial height
 Anterior upper facial height excessive relative to lower facial height
 Height
 Proclined upper incisors
 Proclined lower incisors
 Treatment:
 Nonextraction
 Cervical head gear (Noncompliant)
 Anterior bite plate (Noncompliant)
 Sliding jigs to upper first molars
 Class II elastics
 Initiated 05/26/93
 Appliances removed 01/15/97
 Active treatment time 44 months
 Posttreatment records 03/13/97
 Retention
 Perfector
 Maxillary Hawley retainer
 Mandibular Hawley retainer

TREATMENT PLAN

1. Nonextraction
2. Edgewise appliances
3. Anterior bite plate



Fig 5. Posttreatment facial photographs.

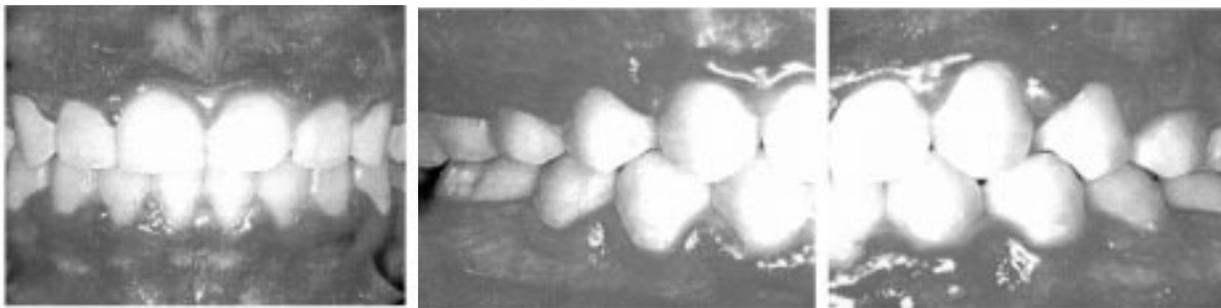


Fig 6. Posttreatment intraoral photographs.

Table II. Summary of cephalometric measurements

Measurements	Norms	Pretreatment	Posttreatment
SNA	81° (4°)	82*	82°
SNB	78° (3°)	75°	76°
ANB	3°	7°	6°
Wits analysis	4.5 to 1.5 mm	5 mm	1 mm
SN:GoGn	32° (5°)	38°	36°
Y-axis	67°	69°	69°
S:Go/N:Me	0.65	0.58	0.6
Extension GoGn	(+,0,-)	(+)	(+)
PP: GoGn	22°	30°	28°
N: ANS/N: Me	0.8	0.87	0.81
Holdaway angle	8°	22°	18°
U1:SN	103.5° (5°)	110°	103°
U1:L1	130° (7°)	113°	119°
L1:GoGn	93° (6°)	100°	102°
L1:APo	(-1 to +3)	3 mm	5 mm
L1:NB	4 mm	8 mm	9 mm
NB:Po	4 mm	0 mm	1 mm
L1:NB/NB:Po	1:1+1	8 mm:0 mm	9 mm:1 mm
Bolton index	0.77	0.76	0.76°

4. Cervical headgear
5. Sliding jigs to first molars
6. Correct all crossbites
7. Correct molar and canine relationship to Class I
8. Reduce overbite and overjet to ideal
9. Obtain ideal torque and axial inclination of all teeth
10. Retain with Perfector and Hawley retainers

Specific Objectives of Treatment (A-P, Transverse, Vertical)

Maxilla. Inhibit or restrain normal/forward and downward growth of the maxilla as much as possible.

Mandible. Allow for normal/forward and downward growth of the mandible.

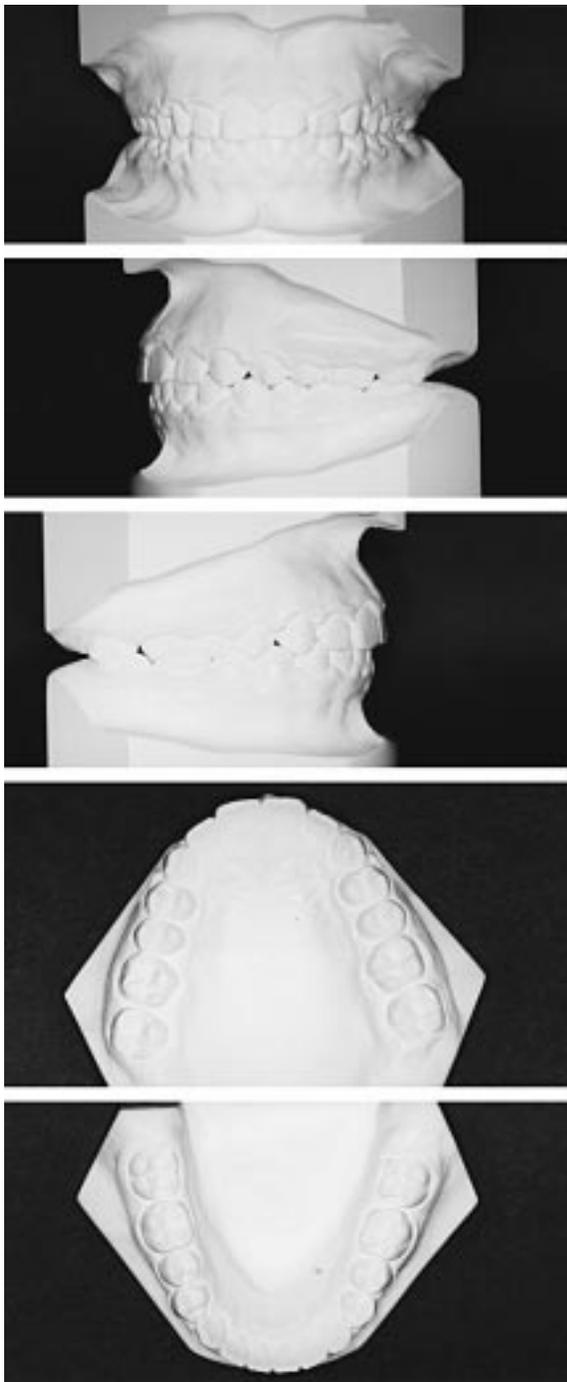


Fig 7. Posttreatment casts.

Maxillary dentition. Control extrusion of the posterior segments and intrusion of the anterior segments. Retract dentition via distalization of first molars and Class II elastics. Maintain general arch form.

Mandibular dentition. Control extrusion of the posterior segments and intrusion of the anterior segments.

Occlusion. Obtain Class I molar and canine rela-



Fig 8. Posttreatment cephalometric tracing.

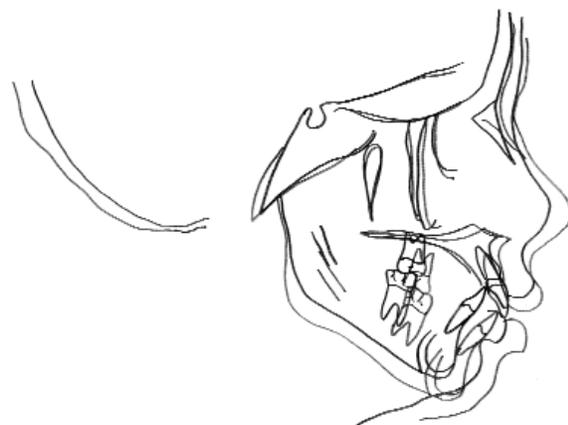


Fig 9. Pretreatment/posttreatment superimpositions.

tionship. Establish ideal overbite and overjet. Achieve proper intercuspation. Maintain coincident midlines.

Facial esthetics. Reduce convexity of the profile. Reduce lip strain.

TREATMENT PROGRESS

Initial treatment included bands cemented on the maxillary first molars, a removable anterior bite plate, and cervical headgear. The patient was non-compliant with the cervical gear and bite plate and stated that she was "scared of the braces." The upper and lower anterior teeth were bonded from 3-3, and following initial leveling, sliding jigs were placed on the upper first molars. Bite-opening mechanics (tip back) and Class II elastic wear was initiated and used against the sliding jigs for 6 months to distalize the upper first molars. Eleven months after initiation of Class II mechanics, the overjet and overbite were dramatically reduced, and the molars were Class I; however, the upper molars were tipped distally and the upper anterior teeth severely retroclined. For one visit, the arch wires were removed and several millimeters of relapse occurred, while the upper and

lower spacing persisted. The maxillary and mandibular premolars were bracketed, and loop stopped arch wires placed. Torque was initiated with stainless steel rectangular arch wires and Bull loops mesial to the maxillary canines, with continued Class II mechanics. The patient was absent for 3 months and returned with several broken brackets, loose bands, and anterior crossbite. No arch wires were placed for one visit, at which time, the appliance was reconstructed, and all second molars were banded. The molars and canines were super Class I with a moderately deep bite, maxillary anterior spacing, and retroclined maxillary incisors. After aligning the second molars, torque was reinstated on the maxillary incisors with Class I mechanics from Bull loops mesial to the canines. Occlusal and esthetic finishing was accomplished in 4 months with light Class II elastic wear during sleeping hours. Once treatment objectives were achieved, the appliances were removed, and final records were taken. An immediate tooth Perfector was delivered, which the patient was instructed to wear 4 to 8 hours daily and while sleeping.

Results Achieved (A-P, Transverse, Vertical)

Maxilla. Maxillary position relatively maintained with slight forward and downward movement.

Mandible. Forward and downward growth observed.

Maxillary dentition. Relative distalization of upper first molars, extrusion of posterior segments, all spaces closed, proclination of incisors reduced, general arch form maintained.

Mandibular dentition. Extrusion of posterior segment and relative intrusion of anterior segments with increased proclination of the incisors.

Occlusion. Class I molar and canine relationship obtained, ideal overbite and overjet achieved, acceptable intercuspation achieved, and coincident midlines maintained.

Facial esthetics. Convex appearance reduced. Lip and mentalis strain reduced.

FINAL EVALUATION

A well-treated Class II Division 1 case using a nonextraction Edgewise technique achieved a Class I functional occlusion and acceptable esthetic improvements were achieved (Figs 5-9). Points of improvement include:

1. Improved alignment of the maxillary first molars
2. Improved axial inclination of mandibular first premolars
3. Reduced inclination of the lower incisors
4. Improved marginal ridge heights in buccal segments