

C L I N I C A L C A S E S

Multidisciplinary management
of a case of anterior infraocclusion

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The patient is a 17 year-old female who consulted us for the esthetic problem of an anterior open bite.

DIAGNOSIS (fig 1 to 4, table 1)

Class I Ballard, skeletal hyperdivergence.
Class I Angle, arch length discrepancy.
Anterior infraocclusion 5 mm.
Maxillary midline deviation of 1.5 mm to the right.
Hypoplastic amelogenesis imperfecta.
Provisionary restoration of the mandibular incisors and of the maxillary central incisors.

A functional examination revealed that the patient had dysfunctional swallowing with a tongue thrust. The labial musculature was hypotonic with contraction of the menton musculature. We noticed clinical signs of TMD pain with alteration of the path of closure.

TREATMENT

The objectives of treatment were to achieve coordination of the arches that would restore functional occlusion with closure of the open bite, align the teeth, and correct the retruded alveolus, which

would require surgical intervention to support the orthodontic treatment.

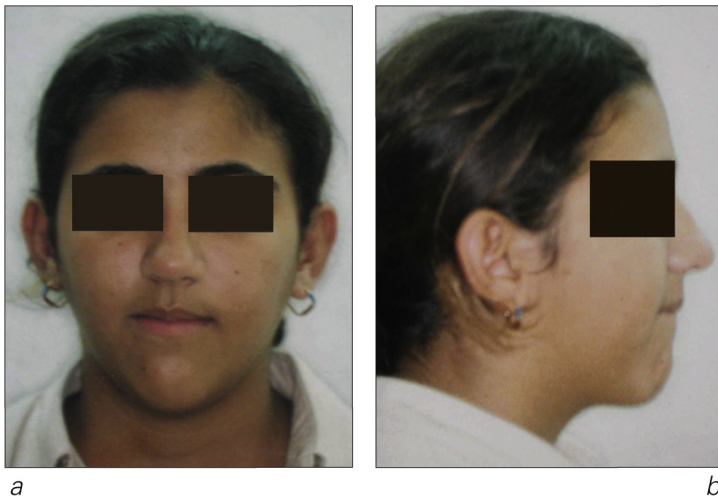
Prosthetic treatment improved dental esthetics and occlusal function.

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Figures 1 a and b
Pretreatment facial photos.

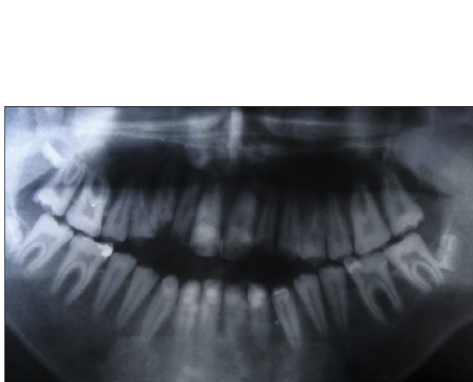
Region	Measurement	¹ A	² B	³ A-B difference
Maxilla to cranial base	SNA (°)	77	84	7
Mandible to cranial base	SNB (°)	76	80	4
	SN/GoGn (°)	45	40	-5
	FMA (°)	39	35	-4
Relation Cranio-maxillo- mandibular	ANB (°)	1	4	3
	Na-Me (mm)	129	124	-5
	S-Go (mm)	75	75	0
	ENA-ME (mm)	78	74	-4
Maxillary dentition	i/NA (°)	27	23	-4
	i/NA (mm)	7	5	-2
	i/SN (°)	99	107	8
	Occl.SN (°)	16	24	8
Mandibular dentition	i/NB (°)	24	28	4
	i/NB (mm)	5	6	1
	i/GoGn (°)	95	88	-7
	Occl.SN (°)	27	24	-3
Soft tissue	Esthetic plane	-5/-2	-2/0	-3/+2

¹A = Pretreatment values; ²B = Posttreatment values; ³A-B difference

Table I
Before treatment cephalometric analysis.



Figures 2 a to c
Pretreatment intraoral photographs.



Figures 3
Pretreatment panoramic film.



Figure 4 a
Pretreatment profile cephalogram.

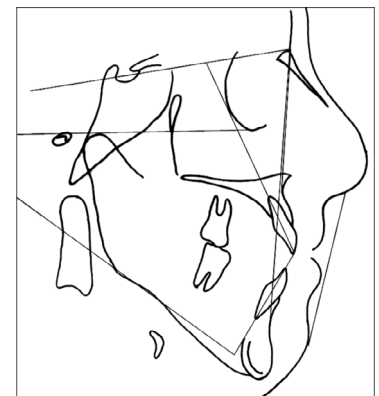


Figure 4 b
Pretreatment cephalometric tracing.

Phase I

Patient wore a nocturnal lingual envelope to correct faulty tongue function for 8 months during which time she was helped to improve her oral hygiene.

**Phase II:
Presurgical orthodontics**

(fig. 5 to 8)

With a quad-helix and a full-bonded-appliance we corrected the dental alignment.



Figures 5 a to c



Figures 6 a to c



Figures 7 a to b



Figures 8 a to c

S E S A C A L A C I N I N L C

Phase III: Orthognathic surgery and occlusal stabilization

(fig. 9 to 13)

The oral surgeon performed a Lefort I osteotomy with impaction of the maxillary anterior sector of 5 mm and 7 mm of the posterior sector.

The goal of the follow-up orthodontic treatment was to achieve good occlusion, which was accomplished in 4 months.

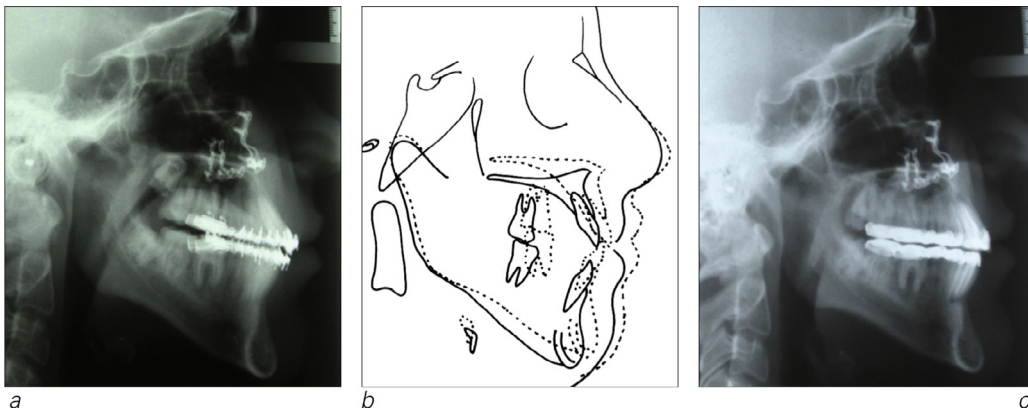
After a total of a year and a half of orthodontic treatment the patient's face was in good balance and her occlusion



Figures 9 a to c



Figures 10 a to c



Figures 11 a to c



a *b* *c*

Figures 12 a to c



a *b* *c*

Figures 13 a to c

was satisfactory so we were able to remove the appliance.

The patient wore bonded upper and lower retainers, which were placed immediately after the attachments were removed, for 10 months.

Phase IV: Prosthetic rehabilitation

(fig. 14 and 15)

The upper and lower anterior teeth had to be treated endodontically so that their preparation to receive ceramic prostheses would not be too painful.



a *b* *c*

Figures 14 a to c

S
E
S
A
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L
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N
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Figures 15 a to c

DISCUSSION

The type of treatment required for skeletal hyperdivergence, a complex malocclusion, depends upon the severity of the anomaly, but in most cases surgical intervention is required. The severity of the disorder is aggravated when the skeletal hyperdivergence is accompanied by a structural dental anomaly like amelogenesis imperfecta, a hereditary disorder not associated with any other systemic defects (Witkop, 1988) that prevents correct formation of tooth enamel.

Our patient was afflicted by hypoplastic enamel, the most frequently occurring, of the four categories of the malady in Witkop's classification. Patients with this version of the disorder have enamel that is normal in quality but insufficient in quantity, which gives it a yellowish coloration. Our patient's thin enamel was free of

caries and strong enough to support the esthetic veneers we placed on her anterior teeth. Partly because of the original sensitivity of her teeth the patient's oral hygiene was not satisfactory causing gingival inflammation that we treated with regular periodontal therapy.

Many patients with amelogenesis imperfecta are affected psychologically by this esthetic effect and benefit from prosthetic restoration of the anterior teeth during the time of the mixed dentition. Accordingly, patients with this disorder need additional transitory prosthetic restoration in the young permanent dentition, accompanied by appropriate periodontal care until, after any needed orthodontic and functional treatment, the definitive prosthetic restoration can be accomplished.

CONCLUSION

In addition to the esthetic deficit they impose on patients, skeletal hyperdivergence and amelogenesis imperfecta lead to serious functional alterations related to both faulty occlusion and attrition of teeth owing to the fragility or absence of hard tissues.

Even though the multi-disciplinary treatment should begin management of these patients when they are in the deciduous dentition stage, the individual characteristics of the young patients and their families remain important factors deciding when

orthodontic treatment should begin, it is the practitioner who must determine the most appropriate time for commencement of therapy.

The etiological origin of the two maladies our patient suffered from is often difficult to establish with precision, but they remain, in a relatively high proportion, intimately associated with each other.

At this time, no procedures are available for preventing the onset of amelogenesis imperfecta, but by intervening at an early stage dentists can limit the therapeutic difficulties of dealing with it by employing the already well codified protocols for managing enamel defects. In addition

early orthopedic intervention can provide particularly useful benefits because it will minimize future orthodontic therapy.

The final assessment of the treatment provided for our patient showed that the infraocclusion had been eliminated, the relationship between the arches had been brought into harmony, facial height had been reduced, a harmonious profile had been assured, and the teeth had been well restored prosthetically. This is yet another illustration of the benefits bestowed on our patients by the multi-disciplinary collaboration of oral surgeon, orthodontist, and prosthodontist.