Virtual Journal of Orthodontics

Case Report n°5

Patient	N.K.
Age:	12
Diagnosis	Class.II div.1
ANB	6.5
OJ	4.5 mm
OB	5 mm
EXTR.	Non extraction case

Case History

The patient is a 12 year old boy who is in good general health. His medical history is free of general or local diseases known to influence the development of craniofacial structures.

Current Status

He is tall for his age, and average body build. His face is oval without any extraoral asymmetry and his profile has a tendency to a convex one, while the nose and the chin are of average shape and size. The overall face height as well as the jaw angle inclination is normal.

Both the tissue tone and the lip morphology are normal. During swallowing the teeth are in contact and there is neither mentalis contraction nor a tongue thrust. The opening and closing movements are in a straight line without premature contacts.
He is a nose breather.

Intraoral Findings

He has a good oral hygiene and low caries activity. The supporting tissue, labial frenum and tongue are normal. The frenum seems to be high. The intraoral radiograph reveals a mixed dentition with few fillings in the lower permanent molars. It seems that there is a little space available for 13, but most probably this doesn't affect the root of 12. All wisdom teeth are present. 13 is labial to the root of 12.

Model Analysis

Lateral View

The molar relationship on the left side is end to end, while the right side is a Class II relationship. The overjet is 5 mm and the overbite is also 5 mm. He does not have an impinging overbite. The curve of Spee is fairly flat. Both the maxillary and mandibular incisor axes are slightly smaller than average.

Anterior View

The maxillary midline is about 1mm to the right of the facial midline. The mandibular midline is deviated 2mm to the left of the facial midline.

Occlusal View

The following teeth are present:

17 16 55 14 53 12 11	21 22 63 24 25 26 27
47 46 85 44 43 42 41	31 32 33 34 73 36 37

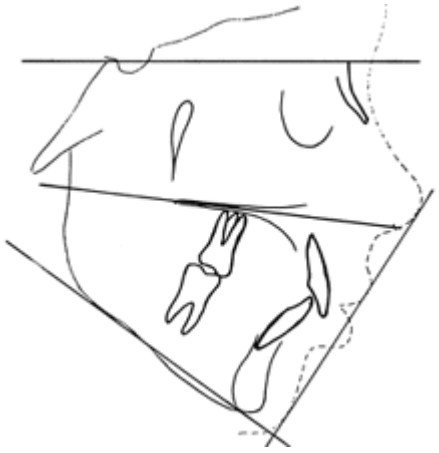
The alveolar process width is normal. Both the maxillary and mandibular arches seem to have a parabolic arch form. The intermolar mandibular width is 34.5 mm. 33, 41, 43, 12 are rotated.

Space Analysis

Space analysis reveals a lack of space in both arches. There is 8.5 mm of upper and 2 mm of lower crowding.

Cephalometric Analysis

Cephalometric Analysis	Mean	Value
SNA	**82**	85.5
SNB	**80**	77.5
ANB	**2**	8
SNPg	**81**	78
NSBa	**130**	131
ML-NSL-1	**32**	34
NL-NSL	**8.5**	8
ML-NL	**23.5**	26.5
Gn-tgo-Ar	**126**	128
N-Sp' (mm)	**-**	51
Sp'-Gn(mm)	**-**	63
N-Sp'/Sp'-Gn x100%	**79**	81
Interinc.	**131**	123.5
+1-NA	**22**	17.5
T-NB	**25**	31
+1-NA	**4**	2.4
T-NB	**4**	9
Pg-NB mm	**-**	1
N-angle	**58**	64
UL-EL (mm)	**2**	-0.5
LL-EL (mm)	**0**	1.5
H-angle	**8**	18



The position of the maxilla and the mandible reveals a prognatic position of maxilla and a distal position of mandible. The ANB of 8 degree makes the sagittal basal relation distal.
The SNPg angle is 78° and the NSBa is 131°. There is a slightly posterior inclination of the mandibular plane (34°) and a normal inclination of the nasal plane (8°). The slight high jaw angle makes the intermaxillary angle greater than average (26.5°). The face high ratio has an average value of 81°.
The interincisor angle has a small value than average due to the protruded lower incisors: I-NB=9 mm and 31°, while the upper incisors seems to be a little uprighted 2.5 mm and 17.5°. As the soft tissue relationship it can be stated that the upper lip has almost the ideal value (-0.5) while the lower is 4.5 mm anterior to the esthetic line.

Growth Prognosis

The patient is in the MP3 cap stage, which means he has one year till the growth spurt. The growth direction of the mandible seems to be anterior.

Diagnosis

1. Oval face, convex profile
2. Distal basal sagittal relation
3. Class II on the left side and cusp-to-cusp relation on the right
4. Overjet of 4.5 mm and an overbite of 5 mm
5. Tendency of open basal relation (ML-NL=26.5°)
6. Lack of space in both jaws: UJ=8.5 mm and LJ=2 mm

Etiology

Considering the type of malocclusion, it is probably due to hereditary factors.

Treatment needs

The treatment need is prophylactic, functional, and esthetic, and all considered as objective needs.

Treatment Objectives

1. Achieve neutral basal sagittal relation
2. Achieve Angle Class I relationship on the molars and the canines on both sides
3. Reduce the overjet and the overbite
4. Correct the midline
5. Align the teeth in the upper and lower jaw

Treatment Plan

Considering the patient in MP3cap is probably one year before the growth spurt. The residual growth is in anterior direction and thus favorable for the treatment plan, and considering also that the maxillary incisors need to be retruded, it is realist to expect an ANB angle of 5 and the Pg maybe 2 mm. This value bring to an individual proposal of 3.5 mm for the mandibular and 1.35 mm for the incisors.

Treatment description

Introductory treatment: 10 months with a cervical head gear.

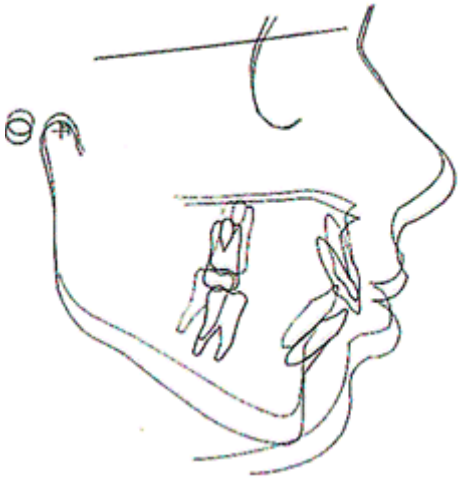
Fixed appliance: 15 months

Retention with a Hawley plate in the upper arch and a bonded lingual 3-3 retainer in the lower arch.

Evaluation of treatment results

(Click on pictures to zoom)

Cephalometric Analysis	Mean	Starting Value	Final Value
SNA	82	85.5	81
SNB	80	77.5	76
ANB	2	8	5
SNPg	81	78	76
NSBa	130	131	131.5
ML-NSL-1	32	34	37
NL-NSL	8.5	8	12
ML-NL	23.5	26.5	25
Gn-tgo-Ar	126	128	126
N-Sp' (mm)	-	51	58.0
Sp'-Gn(mm)	-	63	71
N-Sp'/Sp'-Gn x100%	79	81	81.5



Final model analysis:

The sagittal analysis shows bilateral canine and molar Class

Interinc	**131**	123.5	105
+1-NA	**22**	17.5	28
T-NB	**25**	31	41.5
+1-NA	**4**	2.4	6.0
T-NB	**4**	9	10.5
Pg-NB mm	**-**	1	1
N-angle	**58**	64	62.5
UL-EL (mm)	**2**	-0.5	-0.5
LL-EL (mm)	**0**	1.5	1.5
H-angle	**8**	18	17.5

I relationship. There is good alignment in both arches. The interdigitation on both sides is good. 13 is not fully erupted. Both upper and lower incisors appear protruded. The overjet at the treatment start was 5 mm and is now 2 mm. The upper and lower midlines coincide with the facial midline. 12 and 22 are slightly mesially tipped and 12 is distobuccally rotated. The overbite at the treatment start was 2 mm and is now 0.5 mm.

The main goals of the treatment objectives were fulfilled.
The achievment of the Class I relation was achieved by the distalization of the upper first molars and by protrusion of the lower anterior teeth.

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