



Full CLII div I

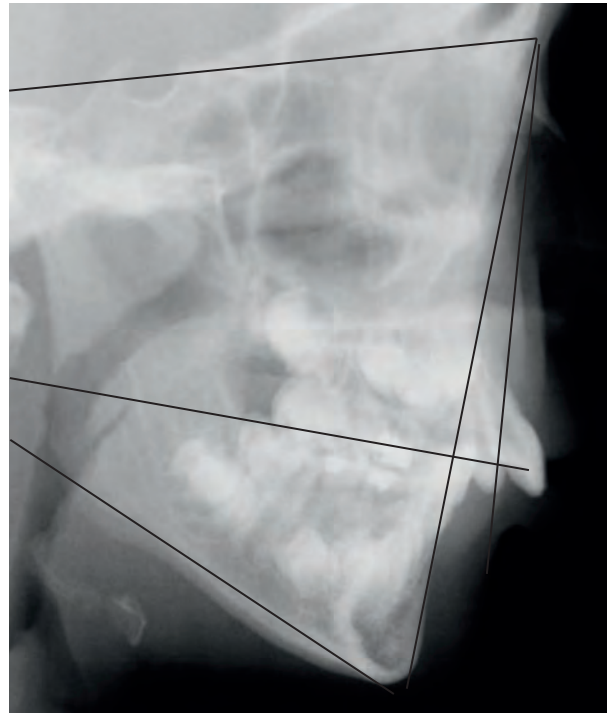
OJ = 15

OB = 8



Missing 8 mm of space for 33, 43. ◆

For many cases, such as this, these types of pre-formed, removable “functional appliances” are inadequate and won’t be of benefit.



SNA = 82°

SNB = 75°

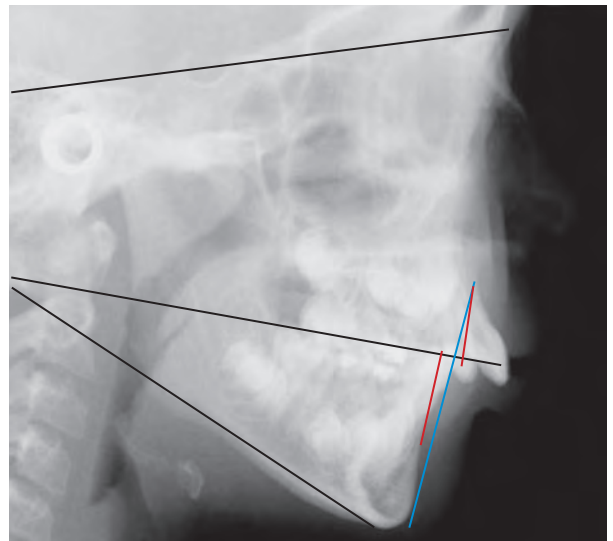
MxI to NA = 34° & 10 mm.

MdI to NB = 21° & 3 mm.

MdI to A-pog = -2

GO-GN to SN = 35°

Wits = +5



Wits = +5

MdI to A-pog = -2

Dental age is 10 years.



GLOBAL TREATMENT PLAN:

Change the shape of the MAX arch from V shape to U shape by using the **HA NiTi Expander and the SWA:**

During expansion of MAX by 6 to 7 mm, the appliance will push the MIs disto-buccally (DB) and distally, and by using molar BBs during this period the incisors are automatically retracted by lingual tipping during the first 2 months, thus reducing the OJ. This permits proper lip closure. In effect the length of the MAX arch form becomes wider, U-shaped and shorter during these beginning months. The MAND is freed-up and can posture forward towards a CLI position.

Once the incisors are lingualized and uprighted into a normal position, then bite-opening wires can be placed. Never place bite-opening wires on flared incisors or they will only flare outward even more, with no intrusion.

The MAND and MAX arches are leveled, in a coordinated fashion, using bite opening 16x22 Beta-Ti intrusion wires followed by the 19x25 steel wires: the MAX wire must have an acc C of 5 mm. Slowly, as the bite opens, the mandible spontaneously and gradually moves forward to find the “new anterior bite”.

Space is gained for 33 & 43 by the advancement of the incisors: Mdi to A-pog line = -2 mm and Mdi to NB = 3 mm & 21°, thus they can be tipped forward several mm if needed to gain the necessary space.

CLII elastics for final correction of the: CLII, MAND mid-line, OJ and OB. By the time all the teeth are bracketed, the OB will be opened sufficiently and all that will remain to be reduced is 2 to 3mm of OJ which is easily and quickly corrected with CLII elastics.

1ST MONTH

MAX: Bracketing (sch 1), 2x4.

NiTi Expander size 30 (will provide -7 mm expansion).

16 HA NiTi, BBs.



Problems:

Vertical: OB = 8 mm (MAND incisors touch the palate).

Transversal: molar width = 27 mm.

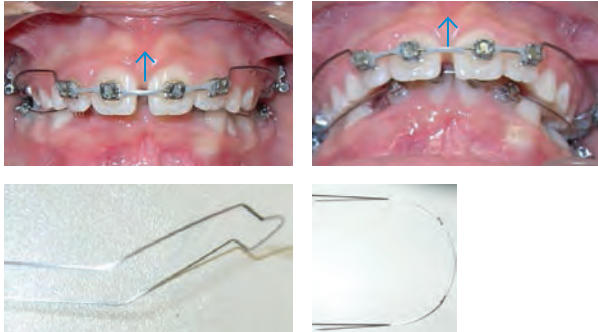
A-P: OJ = 15 mm and a Wits of +5.



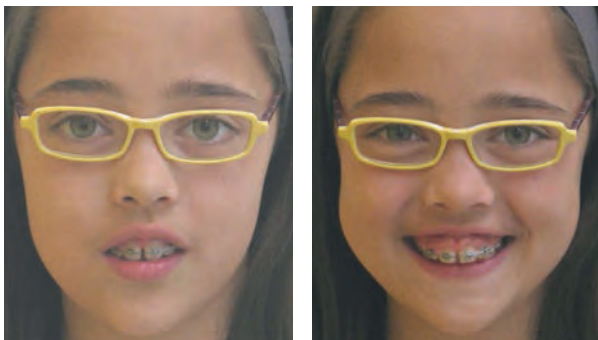
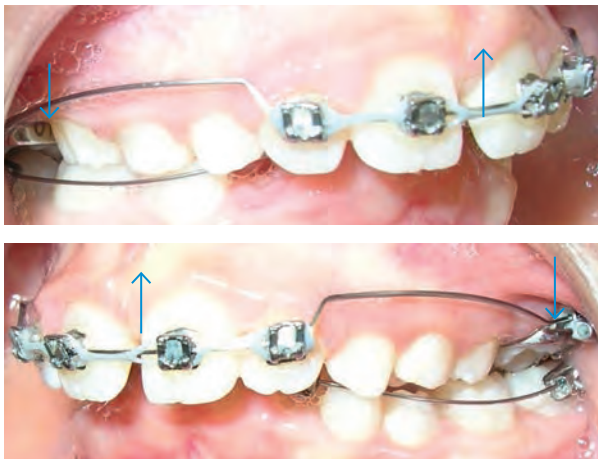
3RD MONTH

MAX: 16x22 Beta-Ti intrusion archwire w/ tip-back bends, BBs and L-L CH 12 to 22.

MAND: Bracketing, 16 HA NiTi, no BBs.



MAX: N. 16x22 Beta-Ti intrusion arch with “tip-backs” for bite-opening: intrusion of the incisors and extrusion of the molars.



MAX: Expander is not completely opened.



MAND: Incisors are upright and lingually positioned to the A-pog line, thus they can tip forward 2 to 4 mm and still be ideal. This creates space for 33 & 43. ♥



4TH MONTH



5TH MONTH

MAX: Same 16x22 Beta-Ti intrusion wire w/ BBs.

MAND: N. 16x22 Beta-Ti intrusion wire.



MAX: Expander is now fully opened.

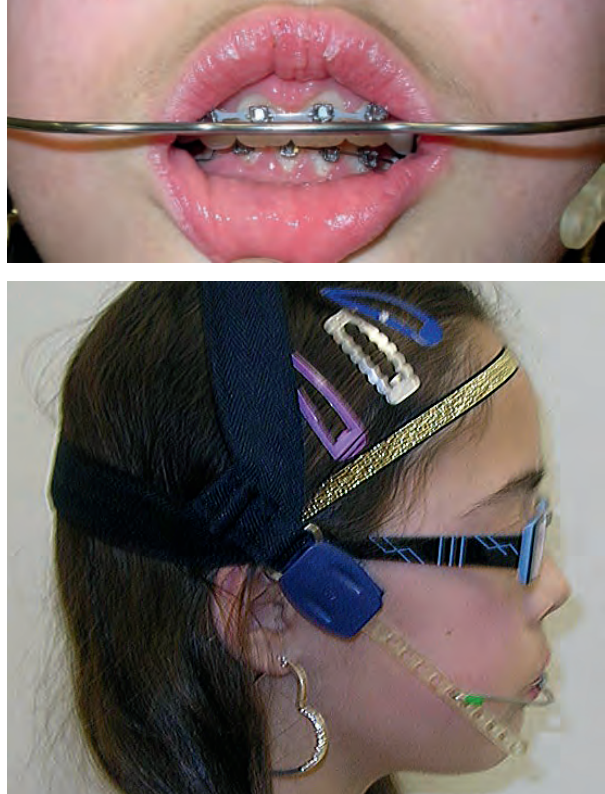
MAND: 43 is erupting into the space.

**2 MONTHS LATER... 7TH MONTH**

Patient had surgery on the frenum to free the tension on the upper lip.

MAX & MAND: same 16x22 Beta-Ti intrusion wires. Bite is opening.

Placed occipital-pull HG, 600 gr per side, 16/24 (home hours).



The idea of using mini-screws to intrude the MAX was refused by parents and patient.

Thus, placed Hi-pull Head Gear with 600 gr /side occipital force to be worn 16/24 (at home). This is used to modify the maxillary growth (slow it down while the MAND grows forward at a more rapid rate) and to provide vertical anchorage for the maxillary molars. With proper usage, the maxilla can be intruded or at least relatively intruded.



And because the maxillary growth has been modified and there is now spontaneous lip closure, the profile has been improved slowly and naturally.



15TH MONTH

Bite is opening and the mandible has advanced.

MAX: bracket 24 25 14 15; 20X20 HA NiTi.

MAND: bracket 33 34 43 44; 20X20 HA NiTi.



Stops (crimp) are needed for “self-ligating” brackets to keep wires from sliding out the distal end of molar tubes.

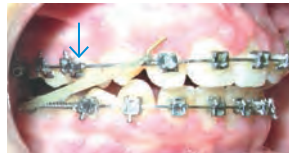


19TH MONTH

MAX: 19x25 posted steel; crimp stops (blue arrow) mesial to 14 & 26 (to keep wire from distalizing when using CLII elastics).

MAND: 19x25 posted steel with expansion (arch shape had become too narrow). O-C spring to hold space for 45, 35.

In order to stimulate an orthopedic advancement of MAND: CLII elastics, 10 mm, night-time only (8/24).



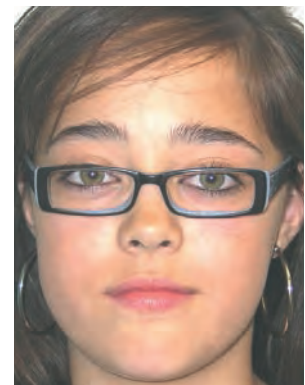
21ST MONTH

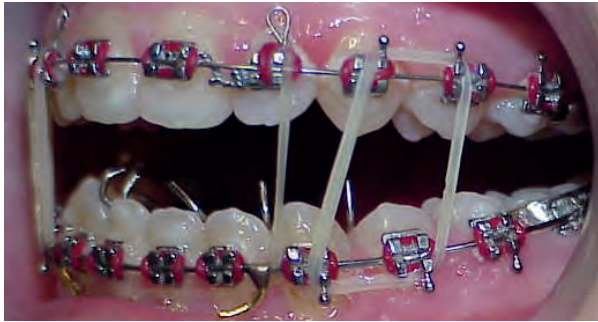
Bite is opened. The patient closes in CLI w/ improved lip posture. The spaces are being maintained for the erupting permanent teeth.



Esthetic results after the levelling is completed.

Patient is 12 years old. ■





From now on, if the bite doesn't close down, then the patient is not wearing the elastics 24/24 as directed. Motivation efforts were made towards the patient.



16TH MONTH



Patient will continue with this combination of bite closing elastics until the final finishing.

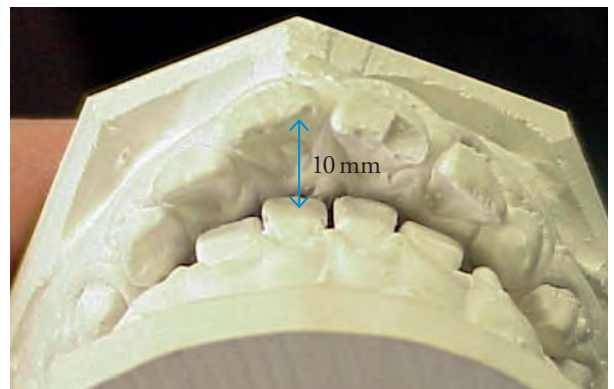


**16/14. CASE: Pr, boy,
11.5 years old**

TP: use of NiTi Transpalatal appliance, High-pull HG, NiTi CLII Corrector and elastics to treat: CLII div I, OJ = 10 mm, OB = 6 mm. Dolichocephalic, vertical growth pattern, convex profile. High MPA. Soft tissue dysfunctions and mouth breathing.



Vertical Maxillary Excess.



Full CLII dental and skeletal with Vertical Maxillary Excess (posterior segments are vertically lower than the anterior segment).





A “functional problem” case. Does not close his lips correctly when he swallows. Habitual mouth breather. He sucks in his lower lip to close the anterior space. Buccal segment collapse and posterior tooth extrusion due to hyper-active cheek and lip muscles.



Vertical Maxillary Excess

A fixed functional appliance, such as the **Nitanium CLII corrector** (NCC) can be added to the SWA and is recommended for skeletal CLII cases where the ability to correct a CLII occlusion without extrusion of the posterior teeth (such as with CLII elastics) is an advantage. NCC is used as well for non-cooperative patients who don't/won't cooperate wearing CLII elastics.



Steep MPA (46°)

Vertical growth pattern – Clockwise growing mandible.

Patient is an habitual mouth breather, and never has proper lip posture or closure.

Lip closure exercises such as: close the lips on a large button, and breath through the nose. This should be done by the patient ½ hour per day. Helps to advance the MAND.



This is more of a vertical problem than an A-P problem.

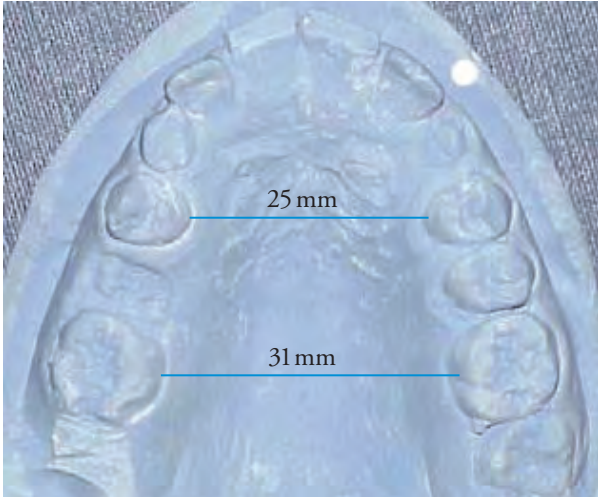
Wits = +3 MPA = 46

Palatal, occlusal and mandibular planes converge just behind the ramus.

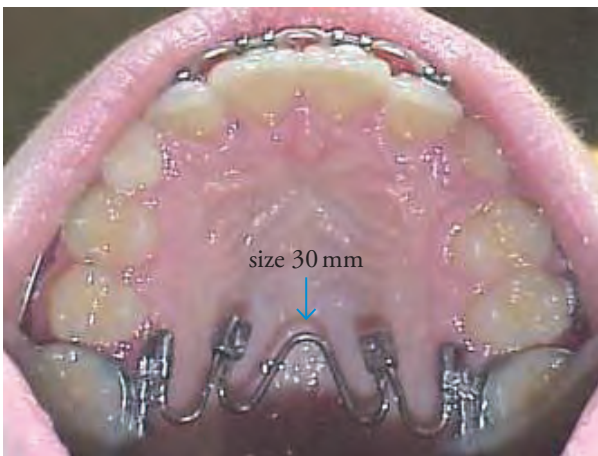


SNA 76° ANB 3° MPA 46°
 SNB 73° Wits +3

Beginning model: V-shaped MAX with mesially rotated molars. Inter-Molar width = 31 mm.



After 2 months of rotator wear: Arch is U-shaped, incisors are retracted, molars are pushed disto-vestibularly.



High-pull HG is placed and adjusted so that the pull force is disto-vertical and through the Center of Resistance (CoR) of the maxillary 1st molar.

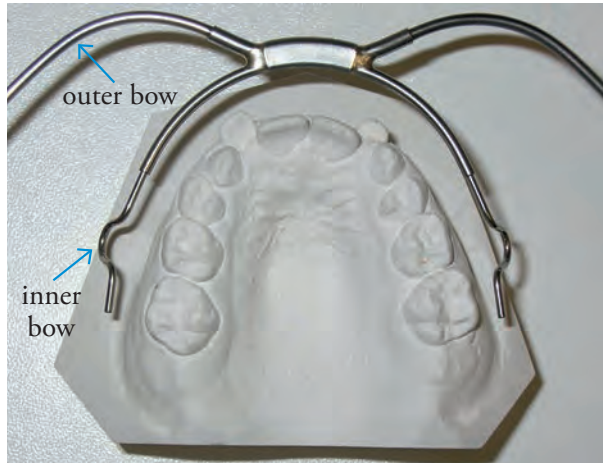
GM creates differential jaw growth: As the maxilla is restrained, the mandible can “catch up” by growing forward and upward.



HEAD GEAR

Head Gear is composed of:

- A facebow with an outer bow and an inner bow.



- A head cap, neck-strap to provide different directional vectors of force traction (occipital, cervical, combi).
- 2 NiTi force modules with a “measured” magnitude of force.

Occipital (or High-pull) head gear for growth modification of the maxilla and for vertical anchorage. ♡



Cervical and Combi HG are used for distalization of the maxillary 1st molars. ♡ ▽



FITTING THE OCCIPITAL HG

Adjust and fit the facebow's inner bow first:

- Facebows can be obtained in different sizes, 1 to 7 with the 7 having the longest and the widest arms of the inner bow.
- When choosing the size, make sure that when the distal extensions of the inner bow are placed into the molar tubes, it does not touch the brackets of the other teeth (should rest 2 to 4 mm away from these brackets). Fitting is accomplished by adjusting the inner bow: the Omega loops and the distal extensions.
- Sometimes the whole inner bow must be widened or made less wide using pliers and/or the fingers.



- Clinically, one side is placed in the molar tube then the second side is placed. Before placing the second side, make sure that it is adjusted so that the distal extension rests passively 1 mm more buccally than the molar tube. Thus, the inner bow must be compressed slightly when being inserted in the tube. This helps in the retention of the facebow in the tubes.

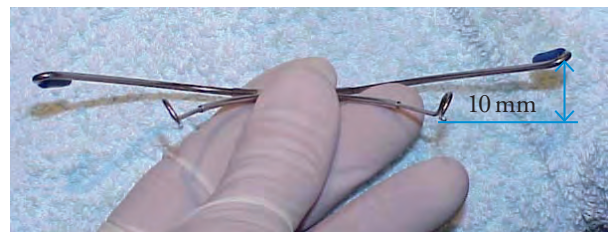


Adjustment of the outer bow of the face bow:

- The attachment hooks should be the same length as the CoR of the maxillary 1st molars.
- “Special Short Outer-bow”: it is easier to use a facebow with short outer-bow because the arms of the outer bows approximate the length of the distal extensions of the inner bow, thus the “attachment point” of the outer bow is already close to the same level as the CoR of the M1s.

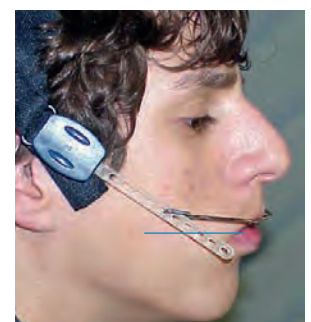
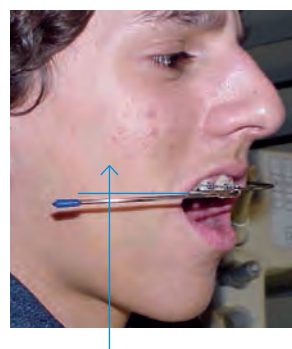


- It is necessary to bend the arms of the outer bow upwards so that the attachment hooks are ~10 mm higher than the distal extensions of the inner bow.



Before adjustment ▼

After adjustment ▼



Imagine the CoR of the 1st molar on the cheek.

- Bend the arms of the outer bow so that they rest close to (but not touching) the cheeks. Patient has to sleep with this.



Adjusting the head cap and the NiTi force modules straps:

- Choose the force module with the desired magnitude of force needed: in this case 600gr per side.
- The modules are attached to the head cap.

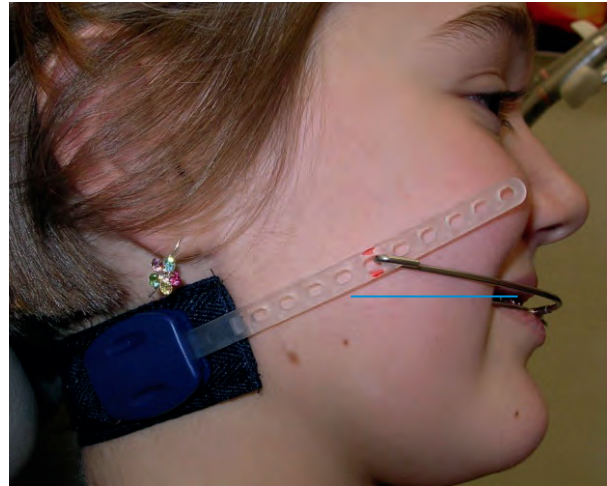


- Place the facebow in the molar tubes. The head cap with the force modules is positioned on the head. The straps of the modules are passively held next to the attachment hooks. Then pull the straps downward “2 holes” and attach the holes onto the facebow hooks. One must consult the manufacturer’s guide to regulate the force levels.



With this adjustment, the force passes through the CoR of the MAX 1st molars.

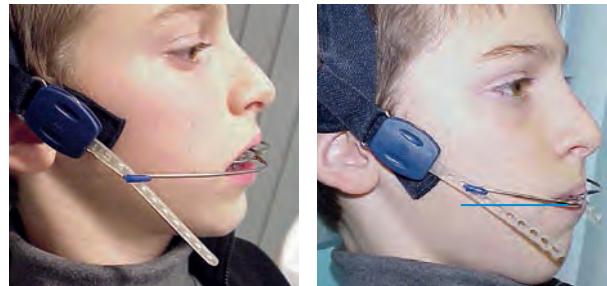
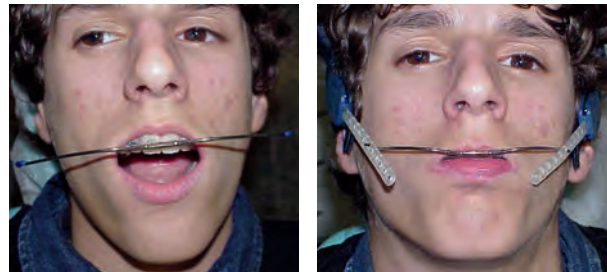
Blue = occlusal plane.



- Before the patients leave the office, they must show that they understand what needs to be done and that they can place and take-off the HG. For growth modification, HG is worn 16 hours / day. Check 1 week.

Before adjustment ▼

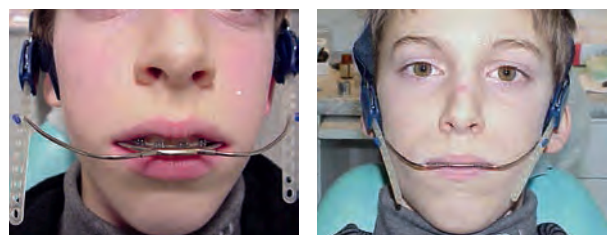
After adjustment ▼



Before facebow adjustment

After adjustment ▲▼

▲▼



6TH MONTH

High-pull HG: 600 gr force /side NiTi, 16/24 (“at home hours”).

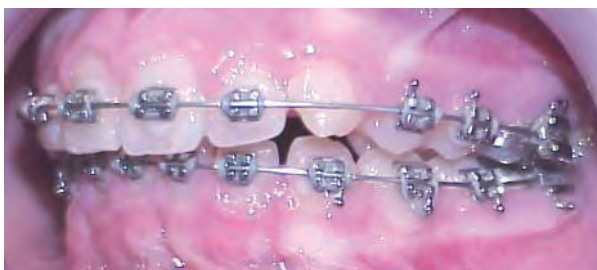
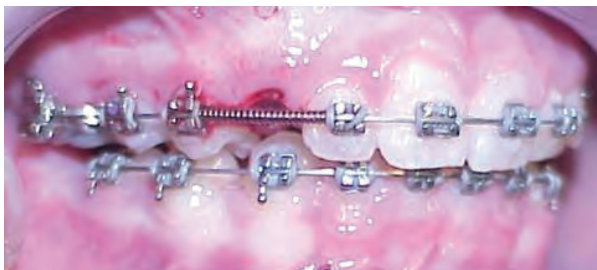
MAX: Extracted 53, bracketed 25. Placed 19X25 HA NiTi.

MAND: Placed 19X25 HA NiTi.

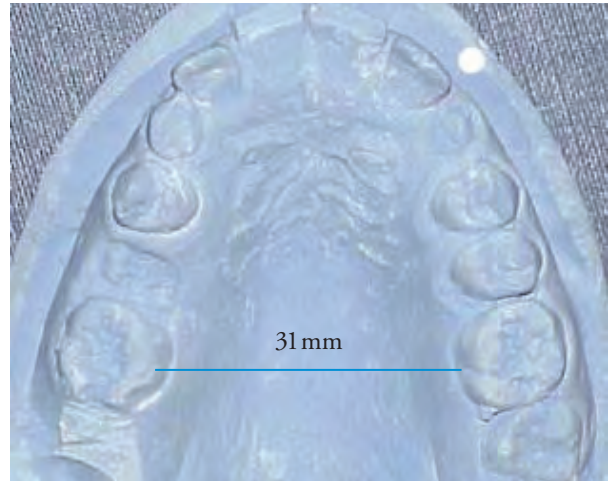
Mandible can now posture forward towards the “new CLI bite” with the mid-lines aligned.



Patient is posturing forward with lip closure. MAX: 010x030 O-C spring is used here for holding the space for I3.



Effect of wire BBs combined with the NiTi rotator: the V-shaped arch form becomes U shaped, wider and shorter.



Rotator (size 30 mm) ▼



7TH MONTH

MAX & MAND: N. 19x25 posted steel. These wires finish the levelling.



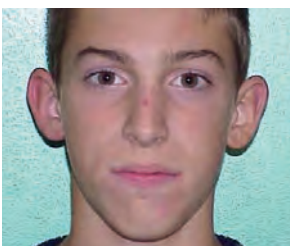
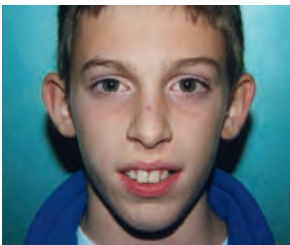


21ST MONTH

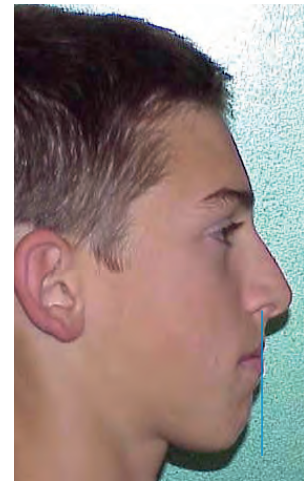
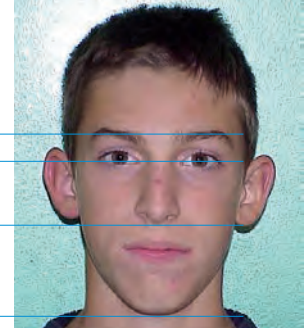
Check progress at 2 months. Place mandible in CR: OJ is reduced. In relaxed position, patient is end-to-end.



Lip-closure.



In all cases of “habitual mouth breathers”, when the MAND is held forward in a CLI position by the NCC, there is Automatic Lip-closure



23RD MONTH

CLII malocclusion has been over-corrected into a slight CLIII.

NCC is removed after ~4 months use.



Always over-correct into a slight CLIII.






RECALL: 6 MONTHS



RECALL AT 12 MONTHS

Age 14.8 years

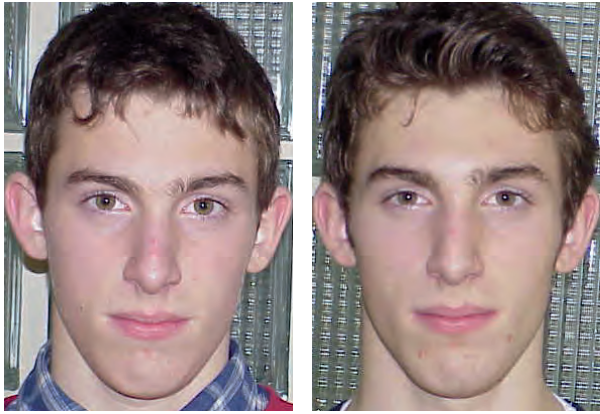


Age 11.5 years 

RECALL: 24.5 MONTHS

Age 16.5 years





MAND: Fixed wire is no longer in place. But as the patient continues to wear the Hawley retainers at night, there is no crowding of the teeth. ▼



Good inter-digitation. Posterior teeth are “longer” as they reach the adult eruption level.

