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Unconventional Class III Treatment Proposal

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1. Introduction

The modification of the facial occlusion height has repercussions on the anteroposterior sense.

Bilateral posterior edentation, leading to the loss of facial height, may result in anterior projection of the mandible, or even the onset of mandibular prognathia, regardless of the age of the patient [2].

By increasing the vertical dimension, with the posterior elevation of the occlusion, the mandibular growth can be controlled as well as promoting maxillary growth, especially in children. Displacement of the mandible backwards by rotation around its condylar axis modifies the stimuli it transmits to the maxillary as well as its proprioception. This receding of the mandible will automatically reduce the class III relationship, but also allow the passage of inverted articulate by simple orthodontic means.

The early recovery of a normal incisal overhang will promote a balanced development of the maxillae.

2. Therapeutic concept

The treatment will be performed by a single-maxillary removable device provided with balanced posterior bite plans and a mandibular incisors retention system (retraction arch, removable plate, anterior elastics on snaps, etc.). The maxillary apparatus allows anterior elevation beyond the inocclusion free space [1].

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The posterior planes of molar elevation are balanced in such a way as to be free from any interference that may favor prolato-slip and must be readjusted from time to time as a function of the compensatory intrusion of the posterior zones.
(Fig. 1a-1c). For this patient, the effective height was obtained in two stages. The treatment does not require the presence of definitive teeth (Fig. 1a-1c).

This device is permanently worn, including during meals, which promotes the transverse development of the maxillary. Cylinders or springs may be added to the plate to allow selective cross-sectional or anteroposterior development of a sector.

As the anterior articulation progresses, assisted by the control of the lower incisors, these elevation wedges are gradually ground.

3. Clinical cases

1. Case of a child with a dentition presenting an inverted articulated anterior with recovery. The articulated jump is performed in a few weeks by a maxillary device only (Fig. 2a-2f).

2. Treatment in mixed dentition of class III without am overlap or protraction (Fig. 3a-3i). A device with molar elevations was first placed in the maxilla.

Then, a retraction arch maintains the mandibular incisors, while the elevation is gradually removed.

a b c

Figure 1

a b c

d e f

Figure 2

The facial pattern, a hyperdivergent class III, has improved anteroposteriorly and vertically (Fig. 4a-4c). The incisal contact is obtained at the same time as the skeletal changes begin, it will act as a positive proprioceptive call for the harmonious growth of the skeletal bases.

3. At first, the orthopedic device with elevation will allow the deployment of the maxillary arch in the foregoing and transversal, which will also give room for the lateral incisors (Fig. 5a-5i).

As soon as the anterior overhang is restored, the posterior wedges are gradually removed, which causes a transient lateral bite.
The plate is held in place until the disappearance of this open bite.
Overlays with x-ray performed two years after removal (Fig. 6a-6c) show a harmonization of the skeletal relationships of the bases of the bones by normalizing maxillary growth.

Figure 3

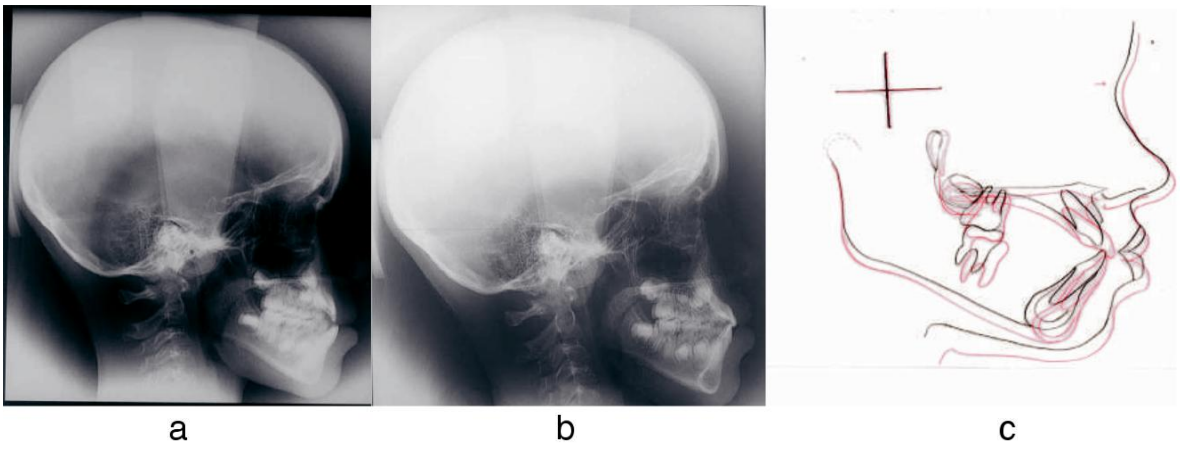


Figure 4

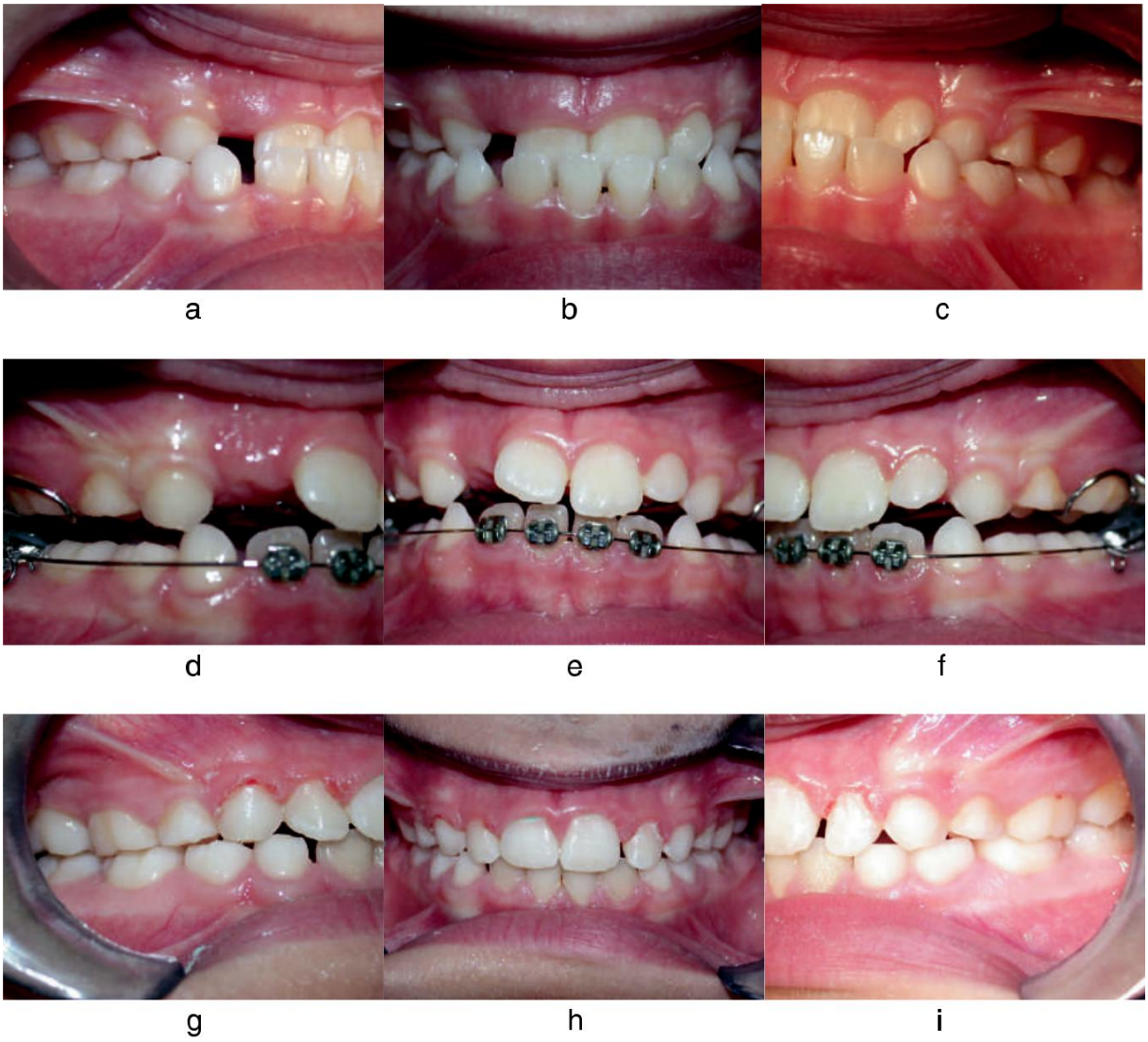


Figure 5

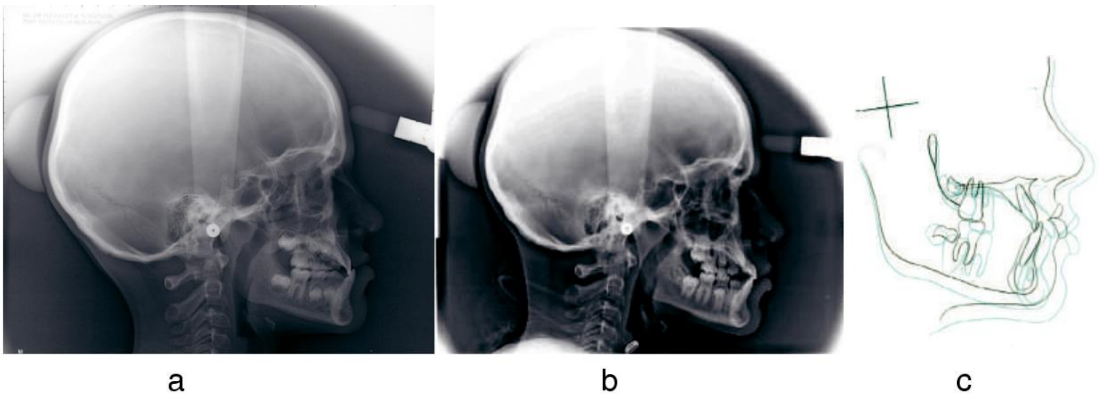


Figure 6

4. In this Asian patient, the posterior elevation allows to restore the anterior occlusion is shown in a few months (Fig. 7a-7i).

5. The jump of articulated anterior is realized quickly, before the establishment of the lower fastenings.

The multi-attachment device is often used for retraction of the mandibular incisors. It can be associated with lower directional forces. In this case, it allows the alignment of the maxillary incisors and the installation of intermaxillary elastic. A transpalatine bar contributes to the maintenance of the molar joint and the transverse direction. Growth is continued with a stronger maxillary component (Fig. 8a-8c). The occlusal plane has been lowered with the palatine plane clockwise, there is neither alveolar compensation nor vestibulo-version of the superior incisors.

Epidemiology of class III

Miyujima, et al. [11] investigated the evolution of occlusion in Japanese women with class III with an anterior cruciate joint.

They showed a worsening of the dysmorphy by increasing the mandibular protrusion while the maxillary retrusion remained unchanged.

They advocate an early intervention, from the diagnosis, and refute the therapeutic abstention.

According to Singh, et al. [14], the prevalence of classes III can reach up to 50% in some South Korean populations, compared to 2 to 7% or 2 to 13% in Caucasian populations. In practice, we find that people of Asian origin respond more easily and more quickly to the orthopedic treatment of maxillary advancement.

4. Operation of the extra height molars

When the upper teeth are covered by theirantagonists, any possibility of expansion is prevented [12], and the occlusion imposes a concentric force on them.

The thick molar elevation [1] modifies the direction of masticatory forces by giving it a more posterior origin, which adds a horizontal component, thus propulsive to this vector.

The height of the molar resin shims will depend on the desired effect; to treat anterior maxillary hypoplasia (as in Class III), it will be preferable, to lower the mandible sufficiently to obtain its recoil.

If a strictly transversal expansion is sought after, the disocclusion must be much smaller.

The lowering and lowering of the condyle in the glenoid cavity alters the orientation of the lateral pterygoid fibers, which become horizontal and therefore less propulsive.

The tongue, generally very powerful in these patients, can exert its centrifugal action on the upper teeth, which are no longer blocked by occlusion.

The elevations will increase the available volume for the language; as their thickness is greater than the free space of inocclusion, the lingual interposition between the arches is prevented.

The lower orbicularis will no longer constrain the upper incisors, but rather the mandibular teeth, the upper orbicularis considered less toned.

The resin intimately covers the entire palatine and occlusal surface of the upper lateral teeth. The activations of the expansion cylinder do not engender a simple vestibulo-version of the supporting teeth with descent of the palatal cusp and opening of the vertical direction, but a transverse displacement of the maxillary hemi, with active solicitation of the intermaxillary suture.

Unlike the different class III activators with discontinuous port [4-10, 12, 13], the single-maxillary device must be worn during meals.

Any nociceptive masticatory contact of the old reference system is therefore deprogrammed.

The elevations produce ingression of the lateral teeth in contact with the resin. The resulting transitional gap, after the passage of the incisively articulated, bears witness to this.

When the correct incisal covering is obtained, the resin planes must be ground very gradually, to allow a spontaneous egression, to create no lingual interposition

Figure 7

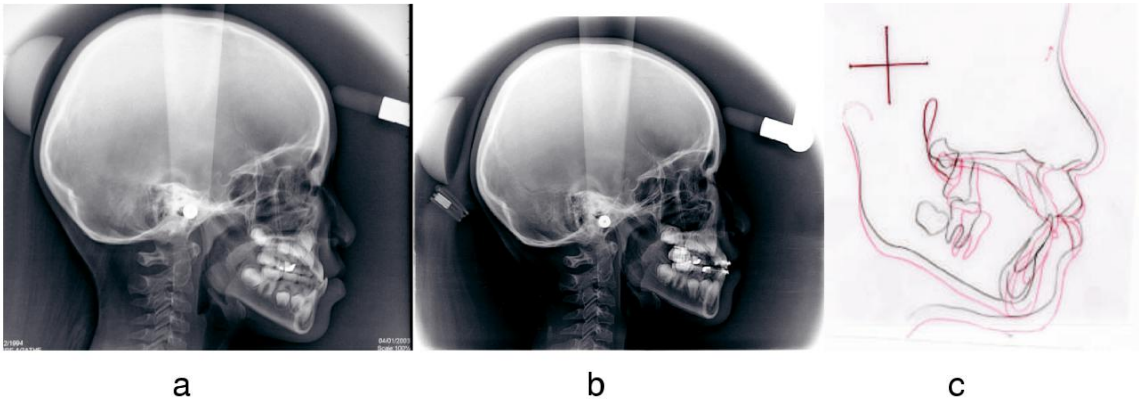
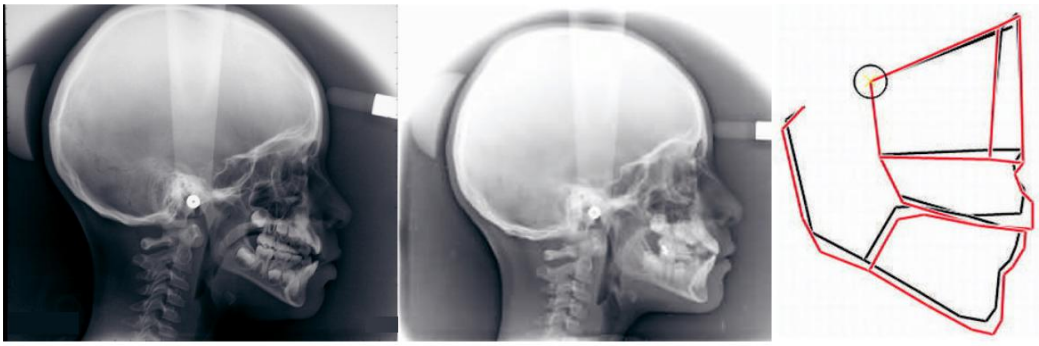


Figure 8

a b c

Figure 9



a b c

Figure 10

and unstable premature contact which may cause the closure to deviate.

At the removal of the holds, if the incisors are in open bite, the two open spaces coexist, leaving contact only on the milk canines. Their grinding will decrease the two gaps.

The ingressive effect of the lateral areas can be increased on the six-year-old teeth by addition of resins, while the grinding of the deciduous teeth diminishes the height of the occlusion.

The transient intrusion of 26 is clearly visible in the intraoral view (Fig. 9a-9c). It is due to the particular setting of the plans, to increase their support selectively on the first molars.

The lingual drive must nevertheless be corrected, to preserve the acquired results.

The superimpositions (Fig. 10a-10c) show essentially maxillary changes: a clockwise slump and an advance. The flip-flop of the occlusion plane compensating class III malocclusions is counter-clockwise, which is not the case here.

5. Stability of acquired results

The incisal contact in normocclusion produces a recovery essential to the durability of the results.

A night-time bi-maxillary activator can be used when lacteal incisors replacement is delayed or when the mandible continues to be propulsive. He must maintain the incisive overhang. This overhang can also be accentuated by the coronary elongation of the maxillary incisors.

Speech therapy also contributes to the maintenance of results, it must be undertaken after removal traumatic occlusal pathologies, to prevent the interposed tounge acting as a protective buffer.

Dental occlusion is the first part of swallowing for toothed subject, it must be comfortable to become automatic.

6. Conclusions

The therapeutic modification of the vertical direction allows us to act on the anteroposterior sense and on the transversal direction.

This early management of maxillary hypoplasias and mandibular prognathies from the time of lacteal dentition [3] is aimed at normalizing intermaxillary relationships, promoting their joint and balanced development, and thus reducing the need for subsequent surgical intervention.

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