

## Non-Surgical Orthodontic treatment of a patient with skeletal class III malocclusion.

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### Abstract:

Correction of skeletal class III malocclusion does not always require a Surgical treatment approach, nowadays several options can be offered to the patient in order to avoid surgery. Orthodontic camouflage can be used to correct skeletal class III malocclusion, for certain cases as long as biomechanics involved do not compromise long term stability and integrity of the dental and bone structures. The aim of the present article is to present the case report of an 11-year-old female patient with a horizontal grown pattern and with dental and skeletal class III malocclusion treated with orthodontic camouflage.

**Key words:** Class III, surgery, dental compensation

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### I. Introduction

Skeletal class III malocclusion can occur for different scenarios according to Hogeman and Sanborn: <sup>1</sup>

1. Maxilla in norm and protruded jaw
2. Retruded maxilla and normal jaw
3. Retruded maxilla and protruded jaw <sup>1,5</sup>.

According to Angle the “class III molar malocclusion occurs when the mesiobuccal cusp of the upper first molar occludes behind the mesiobuccal sulcus of the lower first molar”<sup>1,10</sup>.

Early treatment in skeletal and / or dental class III patients returns balance and function to the stomatognathic system, thus facilitating corrective procedures and reducing the probability of performing extractions, providing psychological benefits and better development <sup>4</sup>.

The following report describes a clinical case of a female patient treated with an orthodontic camouflage to avoid orthognathic surgery.

### II. Materials And Methods

An 11-year-old female patient is admitted to the Orthodontic Postgraduate Clinic of the Universidad Autonoma de Baja California, Tijuana campus. The reason for consultation was "I don't bite well and I have crooked teeth"

**Extraoral analysis:** Mesomorphic patient, straight profile, obtuse nasolabial angle, obtuse mentolabial angle, asymmetrical face, lower third of the face increased with respect to the upper and middle, the dental midline does not coincide with the midline facial, shows 90% of the upper dental clinical crown when smiling (Figure 1)



Figure 1.- Extraoral photographs

**Intraoral analysis:** Bilateral class III molar relationship, bilateral class I canine relationship, dental midlines do not coincide with each other, anterior bite edge to edge (Figure 2).



Figure 2.- Intraoral photographs

**Radiographic analysis:** In orthopantomography showed upper second molars in the process of eruption, presence of the germs of the 4 third molars, symmetrical height of the mandibular ramus, symmetrical and thin condyles, uniform bone density, crown-root ratio 1: 2 (Figure 3)



Figure 3.- Orthopantomography

**Cephalometric analysis:** Class III skeletal pattern (ANB-2 ° and Witts -6mm), a convexity of -3mm, proclined upper and lower incisors (Angle 1s / SN 109 °) (1i / Go-Gn 95 °); Horizontal growth pattern according to Vert analysis. A long jaw body in relation to the anterior skull base. (Figure 4) (Table 1)



Figure 4.- Cephalometric

	NORM	
SNA	82°	82°
SNB	80°	77°
ANB	2°	5°
Angle 1s / SN	104°	107°
1i / Go-Gn	90°	104°
Jaw length	71 mm	71mm
length BCA	71 mm	71mm
Body / BCA	1:1	1:1
Angle Go-Gn / SN	32°	28°

Table 1

**Treatment plan:** Skeletal class III Orthodontic Camouflage:

- Fixed appliances (Brackets Alexander slot 0.018”).
- Bands were banded on upper and lower first molars.
- Placement of the appliances on the upper arch and turbo bits over teeth 36, 37, 46, 47.
- Alignment and leveling of the upper arch.
- Placement of the appliances on the lower arch.
- Place advance archwire with Australian wire .016 in upper arch and class III intermaxillary elastic.
- Torque and final detailing.
- The treatment was finished with a circumferential retainers. (Figure 5, 6,7)



Figure 5.- Intraoral photographs during treatment



Figure 6.- Intraoral photographs during treatment

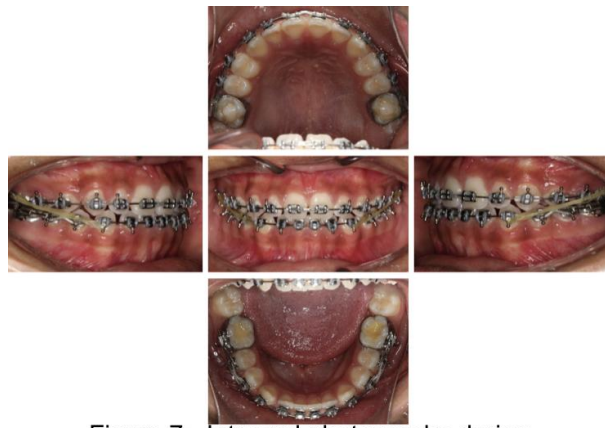


Figure 7.- Intraoral photographs during treatment

**Results:**

With the aforementioned treatment plan the achievements of this case were: an adequate horizontal and vertical overbite, a canine and molar ratio CI, adequate occlusal function, and an improvement in the smile were obtained. (Figure 8, 9)

Discussion

Proffit mentions that there are three ways to treat skeletal malocclusion:

1. To modify the growth, to achieved a minor discrepancy.

**III. Results:**



Figure 8.- Final intraoral photographs



Figure 9.- Final extraoral photographs

With the aforementioned treatment plan the achievements of this case were: an adequate horizontal and vertical overbite, a canine and molar ratio CI, adequate occlusal function, and an improvement in the smile were obtained. (Figure 8, 9)

#### **IV. Discussion:**

Proffit mentions that there are three ways to treat skeletal malocclusion:

1. To modify the growth, to achieve a minor discrepancy.
2. The movement of the teeth to compensate the discrepancies. By proclining or retroclining the incisors, camouflaging effect.
3. Surgical intervention <sup>2,8</sup>.

When the patient is an adult and there is no longer any growth to modify, the treatment possibilities are reduced to two options: surgical intervention and the orthodontic camouflaging <sup>2,8</sup>.

Many authors have conflicting ideas about the best time to intervene in the treatment of class III skeletal pattern <sup>9</sup>. In still growing patients, some believe that it is better to treat patients until their growth has finished for orthodontic treatment or orthognathic surgery, others believe that it is better to start treatment once the abnormality has been detected <sup>2,8</sup>.

It is important that the final aesthetic result is taken into account when choosing the treatment approach; Ackerman and Proffit mention that soft tissues limit the therapeutic options, since the stability of the treatment will be indicated by the physiological limit of the orthodontic treatment and the anatomical limits, which is why a very detailed soft tissue analysis is required as a critical step in the treatment decision <sup>7</sup>.

In the case report presented in this article, it was decided to perform a compensatory orthodontic treatment, using the second approach according to Proffit, the camouflage effect, it was suitable option to accomplish an acceptable aesthetic result and the required orthodontic movements would not compromise the dental or periodontal stability; Also by choosing an orthodontic camouflage it was possible to avoid a more expensive and invasive treatment such as orthognathic surgery, with is the treatment indicated when the skeletal discrepancy is more severe <sup>8</sup>.

The treatment was conservative and an acceptable occlusion was accomplished, providing a long-term stability of the orthodontic results.

#### **V. Conclusion**

When performing compensation in CIII patients there are certain limitations, since it requires compensating skeletal deficiencies with dental movements, without compromising periodontal stability.

This makes it a very difficult and controversial subject due to certain limitations that arise. But by having a proper diagnosis and treatment plan a successful result can be reach, went referring to functionally and aesthetic.

To make the decision about performing a orthodontic camouflage or performing an orthognathic surgery will depend on the degree of discrepancy that the patient has. In order to select a camouflage a mild or moderate discrepancy is required. The orthodontist most considered the cost and benefit for the patient .

In the present clinical case, the skeletal discrepancy manifested by the patient was mild (ANB -2 ° and Witts - 6mm) and the skeletal discrepancy was slightly noticeable at sight, for this reason it was decided to perform

dental compensation. By performing a conservative treatment satisfactory results, such as a visually pleasing profile and stable occlusion with a canine and molar class I, were accomplished.

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