

Clinical case

Camouflage Treatment in Skeletal Class II Patient with Mandibular Laterognathia: Clinical Case Report

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ABSTRACT

Introduction: When there is a discrepancy in the shape and size of the bone bases in class II patients, facial disharmony is generated. Treatments for correction of dentoskeletal deformities are performed orthopedically, orthodontically, ortho-surgically, or a combination of these.

Objective: To establish correct overjet and overbite, eliminating curve of Spee, and maintaining molar class I. To attain canine class I and eliminate crowding. **Case presentation:** A patient presents skeletal Class II, Division 1 malocclusion. Molar class I, non-established canine class, mixed dentition, parabolic upper and lower arch shape, lower midline deviated 3mm to the right (Laterognathia) 1mm overjet, 0 mm overbite; 0.018" slot Roth appliance placement, upper and lower first premolar extractions, use of midline elastics. Molar class I was maintained, canine class I was established, and a better overjet and overbite ratio was established. **Conclusion:** The present work suggests orthodontic camouflage as an alternative treatment when the patient is unwilling to undergo orthognathic surgery.

Keywords: Class II malocclusion; Laterognathia; Orthodontic camouflage.

INTRODUCTION

The development and positioning of the jaws and the soft structures accompanying them are genetically determined, having an important influence on facial aesthetics and the function of the stomatognathic system¹. When there is a discrepancy in shape and size of the bone bases, facial disharmony is generated, which can diminish the patient's quality of life, becoming one of the main reasons for consultation^{2,3}.

Condylar and mandibular asymmetries can be related not only to the position but also to the asymmetric morphology of the mandible, having a double etiology: congenital or acquired. Differences in the length of the mandibular body, as well as differences in the height of the mandibular ramus, can generate facial asymmetry, and arise early in fetal life or as a result of postnatal developmental disturbances. Generally, soft tissues accompany condylar malformations leading to progressive deformity accompanied by facial asymmetry, mandibular laterognathia, dental malocclusion, and the presence of temporomandibular joint pain⁴⁻⁶. The exact cause of this anomaly is not entirely clear. It is most prevalent in females between 15 and 20 years of age but can occur in early growth stages in both genders^{2,7}.

Generally, patients with asymmetries present a natural compensation for their malocclusion⁸. Symmetry is quantifiable and is considered one of the most important characteristics of esthetics⁹. Treatment for dentofacial deformities is performed orthopedically, orthodontically, surgically, or a combination of these. Approximately 4% of the population has a dentofacial deformity that requires orthosurgical treatment to correct it, the most common indications are severe skeletal classes II and III, and vertical and horizontal skeletal discrepancies in patients who have already stopped growing. According to the classification given by Dr. Edward Angle in 1899, he defined class II malocclusion when the mesiobuccal cusp of the upper first molar is located mesial to the buccal sulcus of the lower first molar. This division is subdivided into class II-1 which is characterized by a labial position of the upper incisors, and class II-2 characterized by a retroclined position of the upper central incisors and proclination of the upper laterals¹⁰.

Once the patient's diagnosis has been established and the degree of facial asymmetry has been identified, treatment can be initiated orthopedically, surgically, or by compensatory orthodontics to achieve the most favorable results. However, in patients with severe asymmetry, when orthodontic camouflage treatment is chosen over the surgical option, there may be limits in its esthetic results or the stability of the treatment¹¹. The treatment limitations should be identified from the biological and mechanical aspects since there will be no certainty in predictions given the environmental factors and/or the final manifestations of the growth pattern¹².

The purpose of this article is to show the results that can be obtained in a camouflage treatment in a class II patient with laterognathia with the help of upper and lower first premolar extractions.

CLINICAL CASE PRESENTATION

Male patient aged 11 with the reason for consultation: *"My teeth are ugly and I would like to have them straight"*. The patient presented a convex profile, dolichofacial pattern, laterognathia with deviation to the right, wide smile, and diminished external fifths (Figure 1. A). Intraoral examination showed mixed dentition, molar class I, canine class not established, rotation of tooth 25, parabolic upper and lower arch form, lower midline deviated 3 mm to the right (Laterognathia), 1-mm overjet, 0-mm overbite, edge-to-edge bite (Figure 1. B), maxillary arch length discrepancy of -9.8mm and mandibular arch length discrepancy of -10.9mm, Spee's curve of 3mm (Figure 2).

His radiographs showed good bone trabeculation, permeable airways, mixed dentition, ideal crown-root ratio, presence of the dental germs of teeth 18, 28, 38, and 48 (Figure 3. A), in his carpal radiograph it was observed that he still had growth remnant (Figure 3. B), proclination and protrusion of upper and lower incisors, acceleration stage according to Lamparsky,

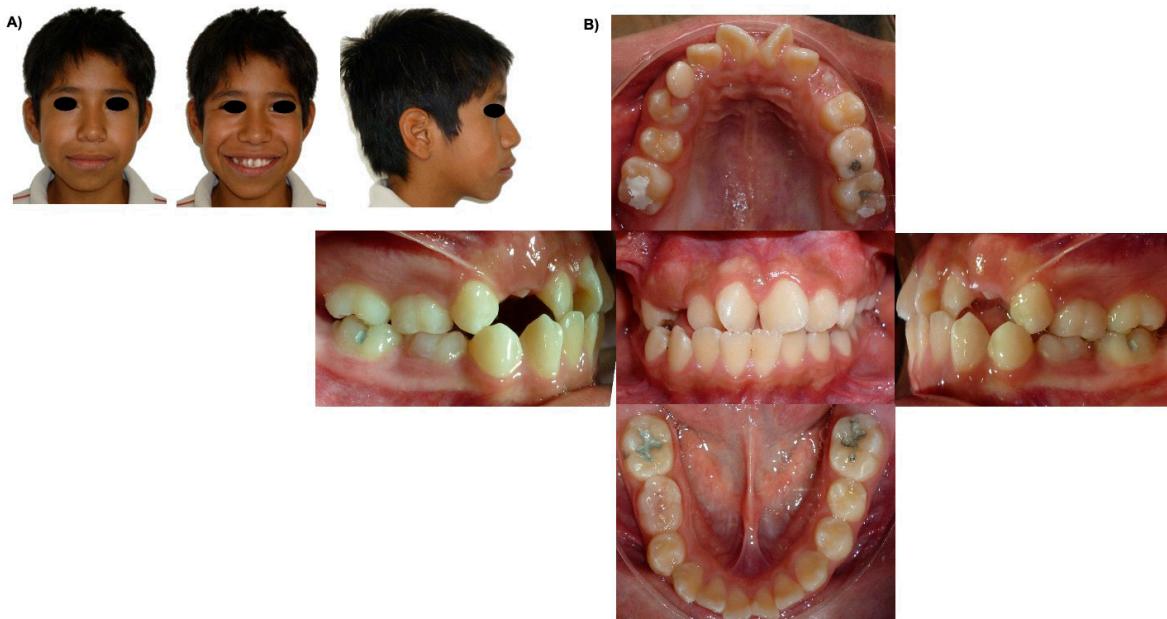


Figure 1. Initial photographs. A) Extraoral. B) Intraoral.



Figure 2. Study models.

convex profile, partially permeable upper airways (Figure 3. C), asymmetric condyles (Figure 3. D). The Steiner cephalometric tracing was performed in Dolphin Software version 9.0.00.19, in which a SNA of 80°, SNB of 75°, and an ANB of 5° were obtained, thus determining an antero-posterior discrepancy characteristic of skeletal class II malocclusion (Figure 3. E and Table 1). The results of the cephalometric analysis revealed a skeletal CII subdivision 1 by mandibular posterior rotation, with vertical growth.

Table 1.
Initial and final Steiner cephalometric analysis.

NAME	NORMA	INITIAL	FINAL
SNA	80°	80°	81.4°
SNB	78°	75°	74.8°
ANB Diff.	2°	5°	6.6°
Go-Gn-Sn	32°	46°	46.9°
U1 SN	103°	108°	99°
Interincisal	135.4°	113°	129.5°
U1 NA °	22°	28°	17.6°
U1 NA mm	4mm	6mm	3mm
L1 NB°	25°	35°	26.3°
L1 NB mm	4mm	10mm	8.7mm

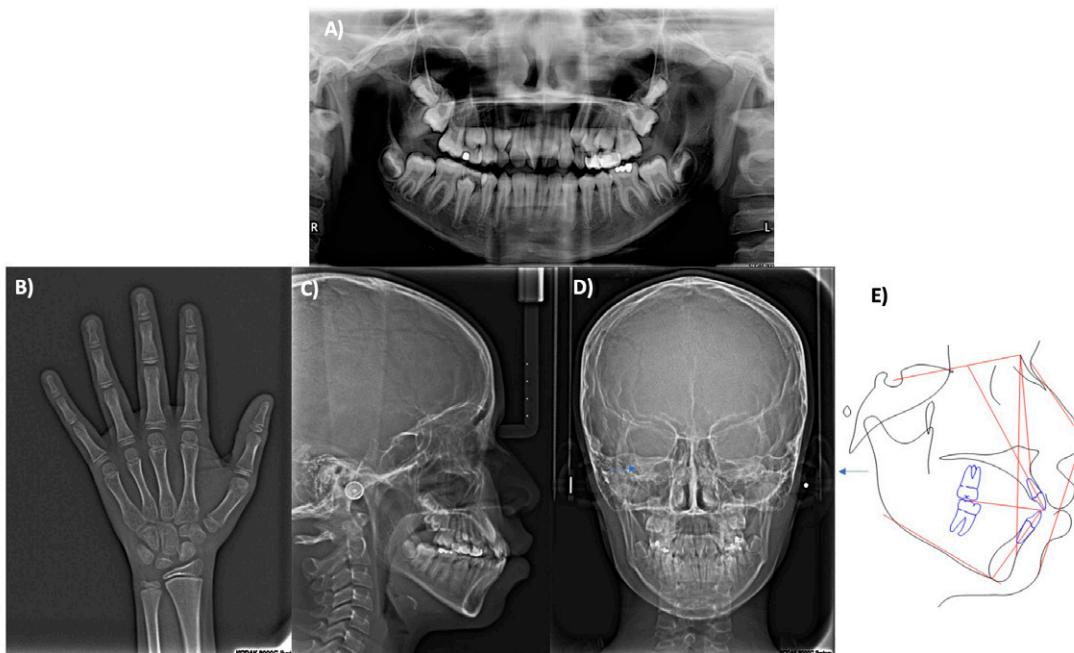


Figure 3. Imaging studies. A) Orthopantomography. B) Carpal radiography. C) Lateral head film. D) Posteroanterior radiograph. E) Steiner cephalometric tracing.

The treatment objectives were to establish correct overjet and overbite, eliminate Spee's curve, maintain molar class I, establish canine class I, and eliminate crowding. To achieve this, we proposed the placement of upper and lower bands and elaboration of a transpalatal arch and lingual arch. Extractions of upper and lower first premolars. Placement of 0.018" slot Roth brackets. Distalization of canines and retraction of anterior segments. Alignment and leveling: 0.016" thermal, 0.016" steel (SS), 0.16" x 0.22" thermal. Working Phase: 0.016" x 0.022" SS. 0.017" x 0.025" SS. Arch coordination, control orthopantomography, repositioning if necessary, detailing, and finishing. Retention: Upper circumferential and lower circumferential retainers.

The upper and lower first premolars were extracted (Figure 4). Retraction of the upper canines was performed with lacebacks, followed by placement of buttons in central incisors to perform a couple and open coil to eliminate incisor rotation. Use of 3/16 4.5-ounce class III elastics on the left side and midline elastics. Orthopantomography was requested and teeth #32 and 35 were repositioned, and tubes were placed in the upper second molars (Figure 5. A-B). Class II elastics were indicated on the right side, class III on the left side, and midline elastics as well. The brackets were removed (Figure 6. A-B).

Among the results obtained, the profile was maintained, but the midline was not corrected due to the laterognathia (Figure 6. A), an adequate settling of the occlusion with anterior guidance and canine class I was achieved, the overjet and overbite were improved, molar class I was maintained, the Spee's curve was reduced, crowding was eliminated, the left upper premolar was left at 180° due to the position in which it erupted, having an adequate occlusion with its antagonists (Figure 6. B). In the orthopantomography, we observed the presence of the third molars and good root parallelism. With the final lateral head x-ray we performed a superimposition in which a better anteroposterior relation was evident, as well as a better position of the upper and lower incisors (Figure 7. A-C). The intermolar and inter-canine distance is shown in Table 2.

Table 2.
Initial and final inter-canine and intermolar distances.

	Initial	Final
Intercanine distance	27mm	27.7mm
Intermolar distance	37.1mm	42mm

DISCUSSION

A key point for success in orthodontic camouflage treatment is to know the etiology of the malocclusion. Although a successful result can be achieved with conservative treatment, on some occasions this is not the case. On the contrary, malocclusion can be accentuated. Aspects such as severity and type of malocclusion, age, and expectations of the patient, among others, should be considered for decision-making¹³.

In this clinical case report an orthodontic camouflage was performed on a skeletal class II division 1 patient with a vertical growth pattern and laterognathia with growth remnant. Having this growth period still latent, the patient is a candidate for orthopedic treatment to discard the surgical procedure¹⁴. In 2003 Mihalik, Proffit and Phillips mentioned the importance of decision-making between orthognathic surgery or orthodontic camouflage treatment, assessing whether the functional improvement achieved with surgery is worth the increased cost of treatment and the risk to which the patient is subjected¹⁵. Due to the high cost of orthognathic surgery and considering that orthodontic camouflage does not have skeletal changes, some orthodontists consider in their treatment mandibular propulsion devices, which could achieve the repositioning of the mandible through remodeling of the condyle and the glenoid cavity¹⁶.

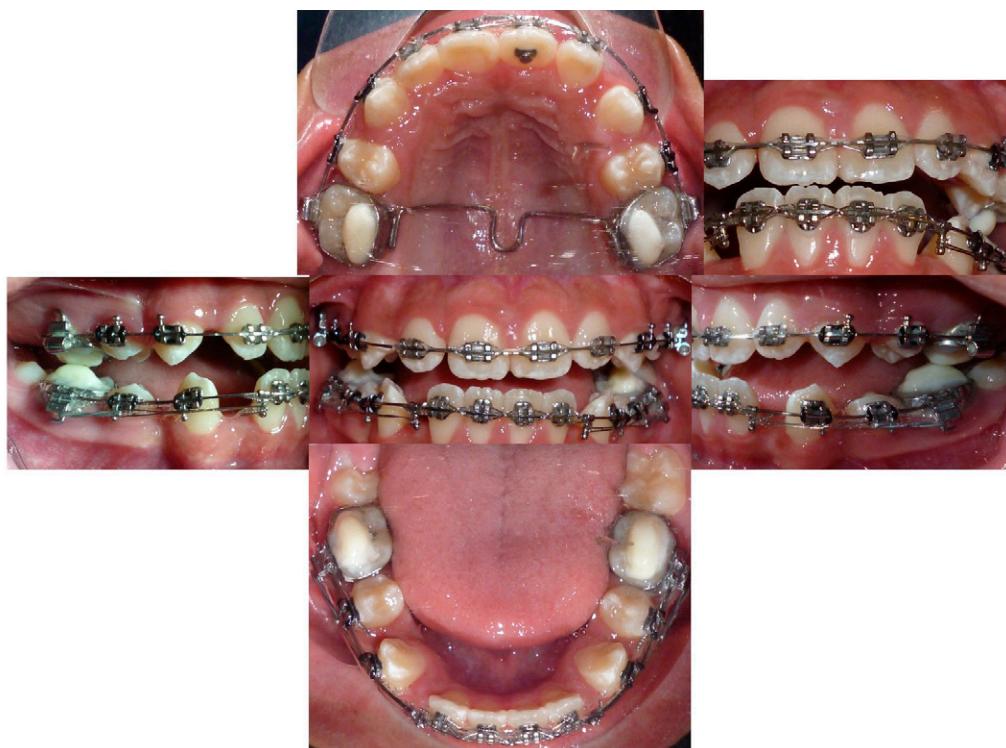


Figure 4. Treatment progress.

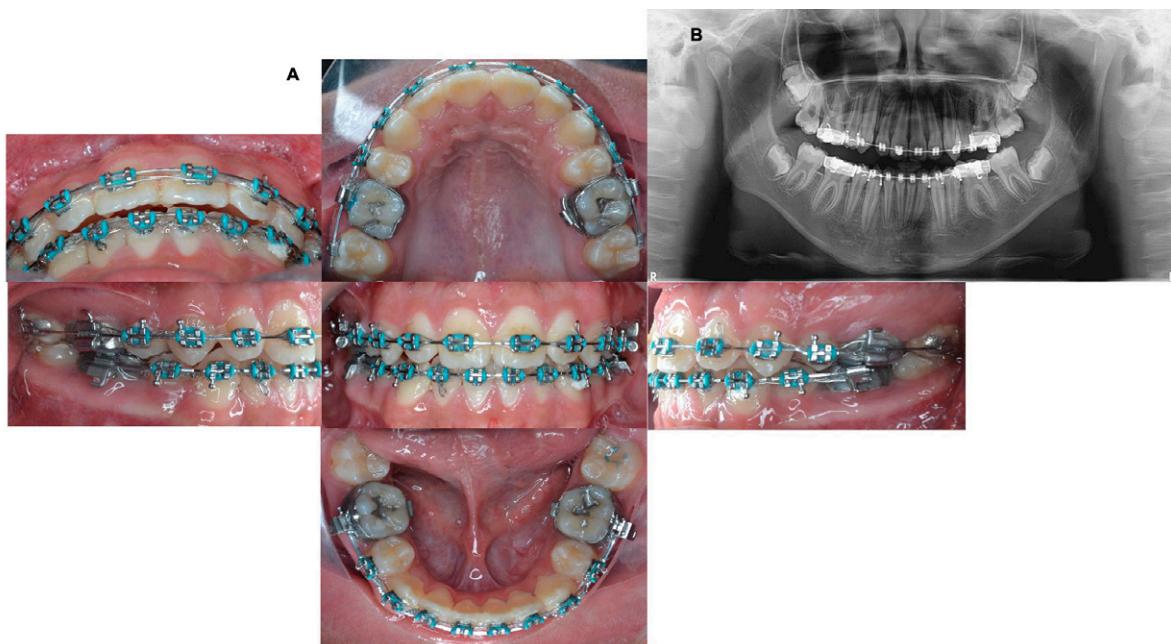


Figure 5. Treatment progress. A) Intraoperative photographs of treatment progress. B) Follow-up orthopantomography.

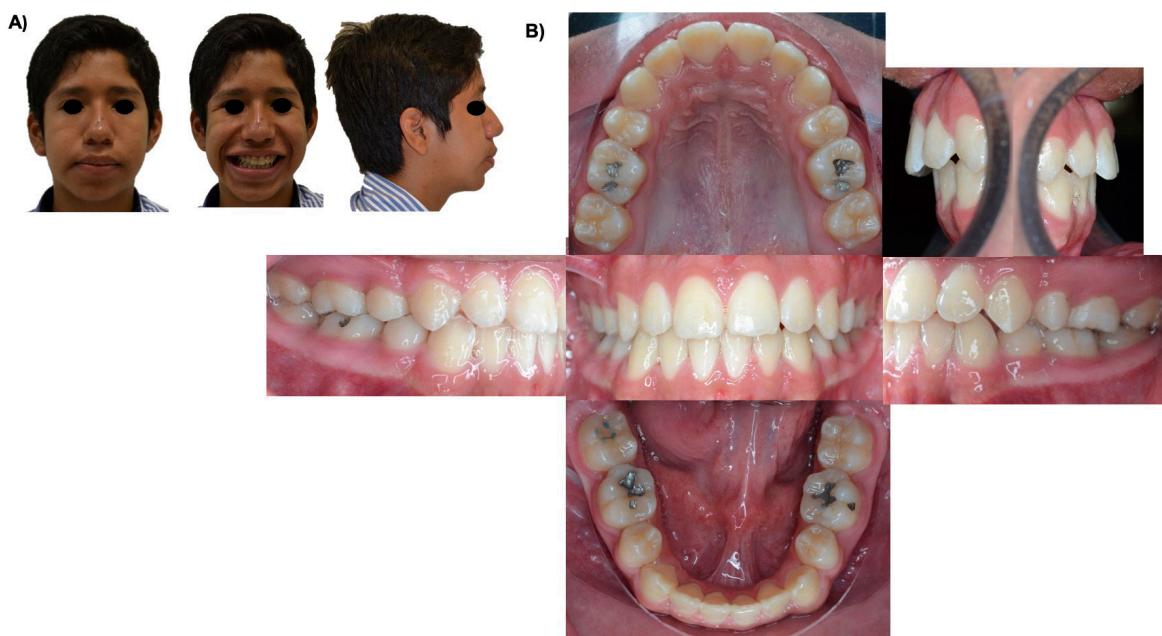


Figure 6. Final photographs. A) Extraoperative. B) Intraoperative.

Raposo in 2017, shares his systematic review and meta-analysis in which he confirms that there is no statistically significant difference between orthognathic surgery and camouflage concerning SNA angle, linear measurement of the lower lip border with Ricketts aesthetic line, and profile convexity without considering the nose¹⁷.

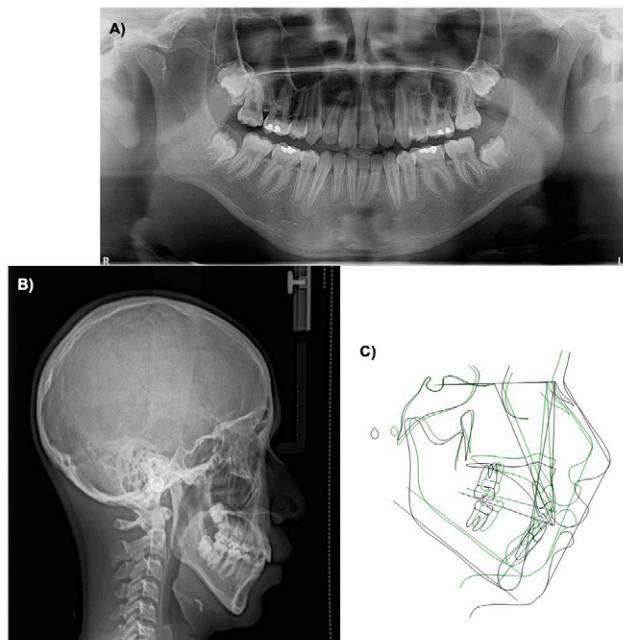


Figure 7. Final imaging studies. A) Orthopantomography. B) Lateral head film. C) Superimposition with Steiner tracing.

Once the diagnosis and treatment plan of the patient were established, extractions of upper and lower first premolars were performed, achieving a retraction of the maxillomandibular anterior sector, the crowding was eliminated and the class I molar and canine relationship was maintained. The patient presented a discrepancy of centric relation and occlusion at the beginning of the treatment and in the final stages he modified the closure of his bite by varying the contacts, he was stabilized with elastics and revising premature contacts; a slight deviation of the midline was observed when removing the appliance, which is attributed to the laterognathia presented by the patient. Since it was a compensatory case, the laterognathia was not eliminated, because bone bases were not modified, when we establish an ortho-surgical treatment there are skeletal, dental, and facial changes².

CONCLUSION

The early diagnosis of a skeletal Class II malocclusion together with a specific treatment plan for each patient is necessary to meet the patient's esthetic and functional goals and expectations. Orthodontic camouflage in patients with Laterognathia will have limitations that the orthodontist should let the patient know before starting treatment, such as no skeletal changes.

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