

## Case Report

## A new, no-compliance class II correction strategy using nickel-titanium coil-springs

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## ABSTRACT

**Background:** Correcting Class II malocclusion with Class II elastics or functional appliances requires great patient collaboration. Here we describe two Class II cases successfully treated with an alternative approach using a fixed device designed to obviate compliance.

**Methods:** We fitted specific Class II springs to the bilateral hooks on the stainless steel maxillary and mandibular archwires of a full fixed appliance to correct the Class II malocclusion and to promote mandibular growth.

**Results:** The new device brought about full Class I canine and molar relationships in both treated cases and improved the maxillomandibular relationship without relying on patient collaboration.

**Conclusion:** Class II springs appear to be a simple, fast, and effective alternative approach to Class II correction, facilitating mandibular growth even in noncompliant patients.

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## 1. Introduction

Various treatment strategies have been introduced for the correction of Class II malocclusion, and a range of different functional and interarch appliances, such as Class II elastics, have been proposed [1–3]. Class II elastics can be an effective means of correcting Class II malocclusions, exerting primarily dentoalveolar, rather than skeletal, effects [4].

However, Class II elastics, like many of these correction devices, are removable and therefore require great patient compliance, an influential factor that is difficult to predict before treatment is begun [5], but one that ideally needs to be taken into account before the treatment protocol is established [5].

Great interest has therefore been focused on techniques that minimize the need for patient cooperation, leading to the development of several devices, beginning with the first fixed functional appliance introduced by Herbst in 1905 [6].

The CS-2000 Class II correction device (DynaFlex, St. Ann, MO) has two closed coil-springs attached between the maxillary and mandibular archwires of a full fixed appliance. Although the device is fixed in the mouth, the springs act continuously, 24 hours a day,

unlike elastics, which act only when in position. By emulating the effects of devices such as Class II elastics, but without the need for patient compliance, the appliance was thus designed to permit faster resolution of the sagittal component of the malocclusion if used just after perfect alignment and leveling.

This article describes two cases of Class II patients—Class II Division 2 and Class II subdivision—successfully treated with the aid of the CS-2000 Class II springs.

## 2. Case 1

## 2.1. Diagnosis and etiology

The patient, a 12-year-old girl, was referred with a chief concern of dental crowding. No oral habits or temporomandibular joint symptoms were noted. Clinical examination showed a well-balanced and symmetrical face, with a good profile, competent lips, a good chin button, an obtuse nasolabial angle, and a retrognathic mandible.

The pretreatment intraoral photographs showed Class II molar and canine malocclusion on the right and the left sides, a good arch form, increased over jet and over bite, and a lower midline deviation of 1 mm to the right. The mandibular arch displayed minor crowding and deep curves of Spee and Wilson. Although her oral hygiene appeared poor, her periodontium was in good health.

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The panoramic radiograph showed complete dentition, with the maxillary third molars present. The condyles appeared normal in size and form. Root length and bone height were normal, and no caries or other pathologies were noted (Fig. 1).

Under cephalometric analysis, the patient displayed skeletal Class II (point A, nasion, point B angle [ANB]  $5^\circ$ ) with a horizontal growth pattern and a retruded mandible. The maxillary incisors were tipped lingually, but the mandibular incisors were ideally positioned (Table 1).

## 2.2. Treatment objectives

The treatment goals were to establish a Class I canine and molar relationship by aligning the maxillary and mandibular dental arches, to create ideal over jet and over bite, and to correct the lingual inclination of the maxillary incisors. A secondary objective was to stimulate mandibular growth and to improve the aesthetic profile of the patient. Hence a treatment plan was devised to align and level both arches to obtain perfect coordination, and then to

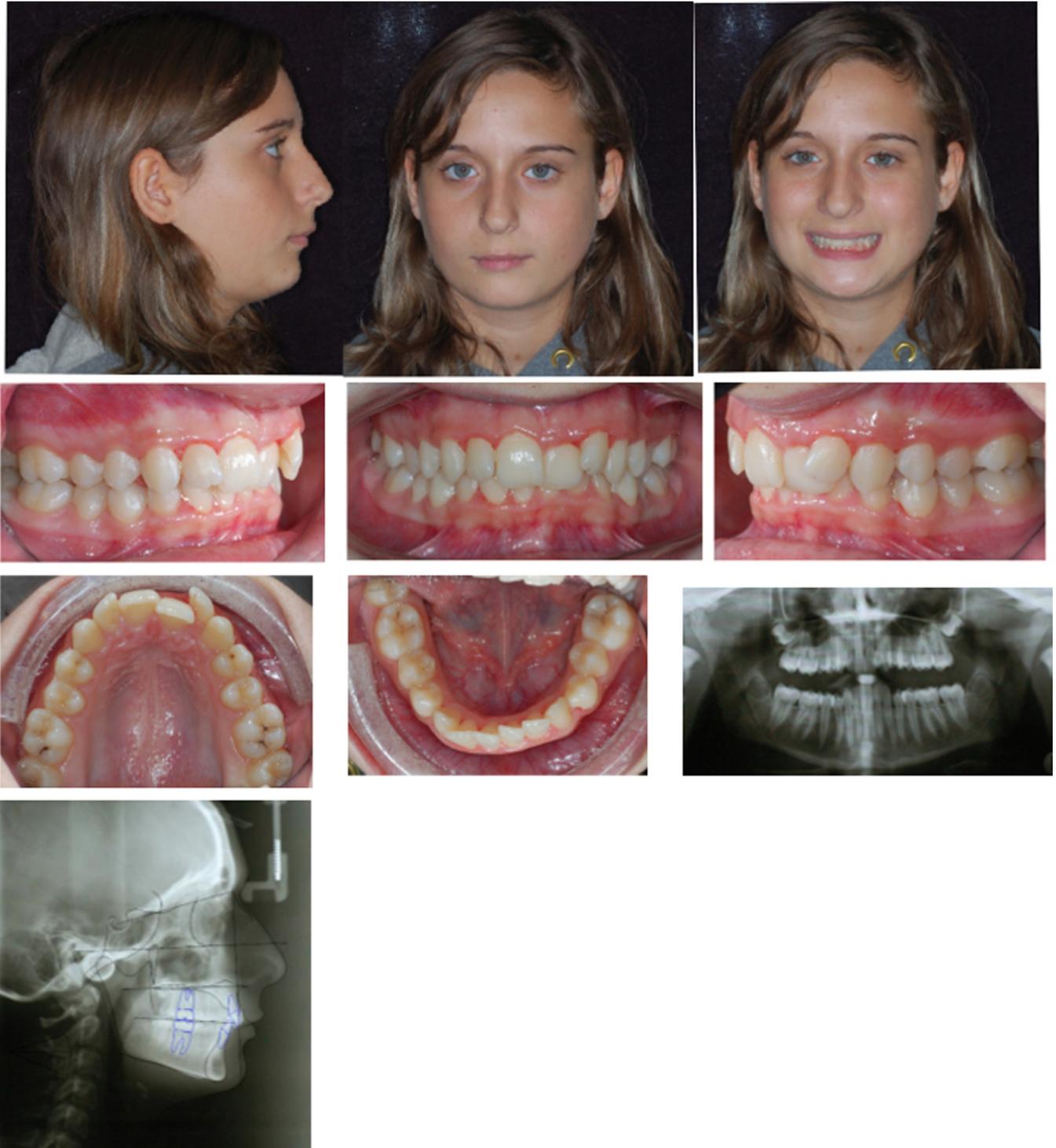


Fig. 1. Case 1: a 13-year-old female patient with skeletal and dental Class II relationship.

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