

Overlay Mechanics with the Tip-Edge PLUS Bracket

Part 2 Class II and III Nonextraction Treatment

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In conventional nonextraction treatment, using elastics for anchorage, orthodontists have found it challenging to maintain mandibular incisor positions in Class II cases or maxillary incisor control in Class III cases. The most common solution in edgewise mechanics has been to place a full-size archwire as early in treatment as possible,¹ but it is difficult to complete leveling and alignment with a rigid, full-size wire.

Overlay mechanics can efficiently resolve this dilemma. A previous article described the use of Tip-Edge PLUS* brackets with overlay mechan-

ics in a Class I crowded case.² The present article will describe how to manage Class II and Class III nonextraction cases with the same system.

Case 1

An 11-year-old female patient presented with a Class II, division 1 malocclusion (Fig. 1). The mandibular incisors were normally positioned, but the maxillary incisors were severely protruded, with an overjet of 9.2mm.

The treatment goal was to retract the maxillary incisors while maintaining the mandibular incisor positions. A fixed piston-type upper molar distalizer³ was used for five months, while the

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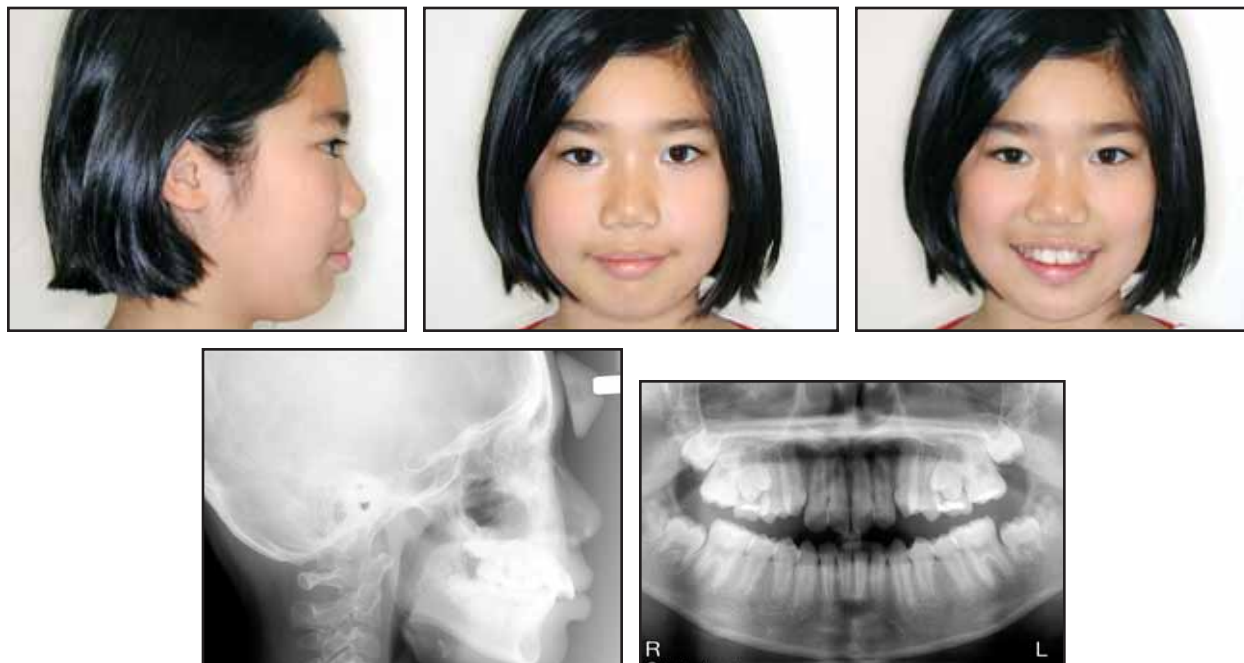


Fig. 1 Case 1. 11-year-old female patient with Class II, division 1 malocclusion before treatment (continued on next page).



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Fig. 1 (cont.) Case 1. 11-year-old female patient with Class II, division 1 malocclusion before treatment.



Fig. 2 Case 1. Fixed-piston maxillary distalization appliance combined with mandibular PLUS brackets.

mandibular teeth were leveled and aligned with PLUS brackets and an .018" superelastic nickel titanium archwire (Fig. 2). This lower archwire

was followed by an .016" × .022" nickel titanium wire in the Tip-Edge slots and an .012" nickel titanium wire in the hidden, "deep tunnel" slots



Fig. 3 Case 1. .016" × .022" nickel titanium archwire placed in main slots, with .012" nickel titanium wire in hidden slots.



Fig. 4 Case 1. Maxillary transpalatal bar used for distal molar rotation, with overlay wire in incisor brackets.



Fig. 5 Unesthetic appearance of conventional overlay wire ligated to main archwire.



Fig. 6 Case 1. .012" nickel titanium overlay wire used only on four maxillary incisors, allowing posterior segment to drift distally.

(Fig. 3). When the maxillary molars reached an overcorrected Class I relationship, a transpalatal bar with a distal rotational adjustment was placed, and PLUS brackets were bonded to the four maxillary incisors (Fig. 4).

Although an overlay archwire is an ideal way to prevent mesial root tipping while intruding the maxillary incisors during retraction, it looks unattractive when two conventional wires are ligated together (Fig. 5). The PLUS system is not only more esthetic, but is also more comfortable for the patient, because the second wire is tucked behind

the main archwire. In this case, an .018" reverse-curve nickel titanium archwire was inserted into the main slots and an .012" nickel titanium wire into the deep channels (Fig. 4).

Only one month later, the upper incisors were aligned, and PLUS brackets were bonded to the maxillary canines and premolars. At this time, an .0215" × .025" nickel titanium archwire was placed in the lower main slots and an .012" nickel titanium archwire in the hidden slots to prepare for Class II elastics (Fig. 6). In the maxillary arch, power chain and an .020" round archwire



Fig. 7 Case 1. Lingual cleats bonded to maxillary first premolars to control rotations during space closure.

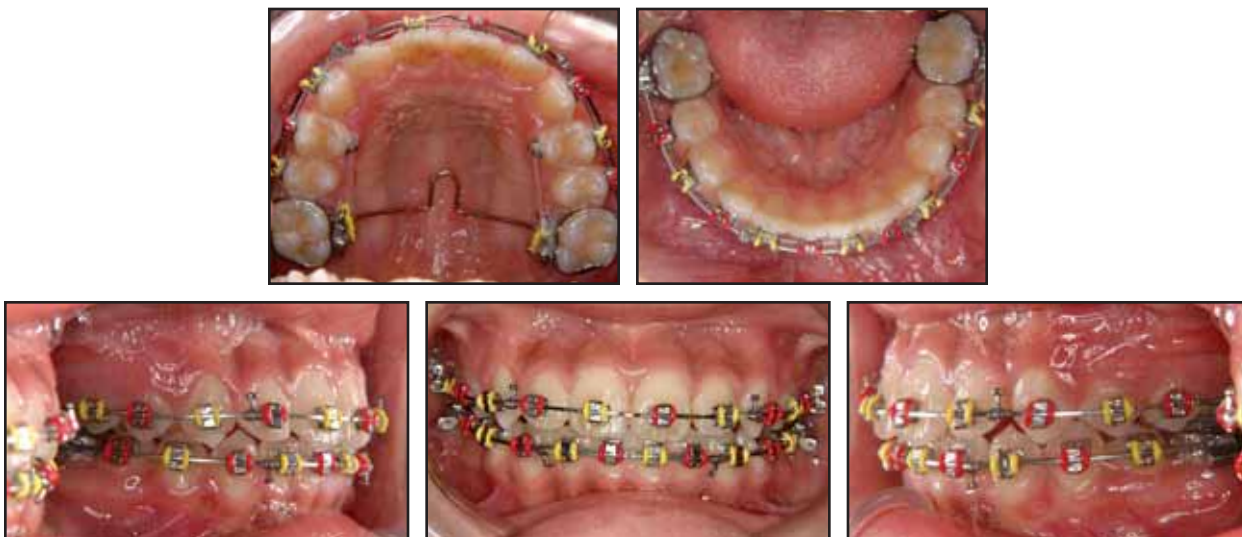


Fig. 8 Case 1. .021" × .025" stainless steel archwire placed in main slots, with .014" nickel titanium wire in hidden slots.

were used to retract the incisors, while the sectional .012" nickel titanium wire in the hidden slots was used to prevent distal root tipping and control rotations (Fig. 7).

Once the maxillary spaces were closed, the case was finished with an .021" × .025" nickel titanium main archwire, with an .012" nickel titanium

wire in the deep channels, followed by an .021" × .025" stainless steel main archwire, with an .014" nickel titanium wire in the deep channels (Fig. 8).

Total treatment time was 17 months (Fig. 9). Superimpositions showed that the PLUS system maintained lower incisor anchorage control.

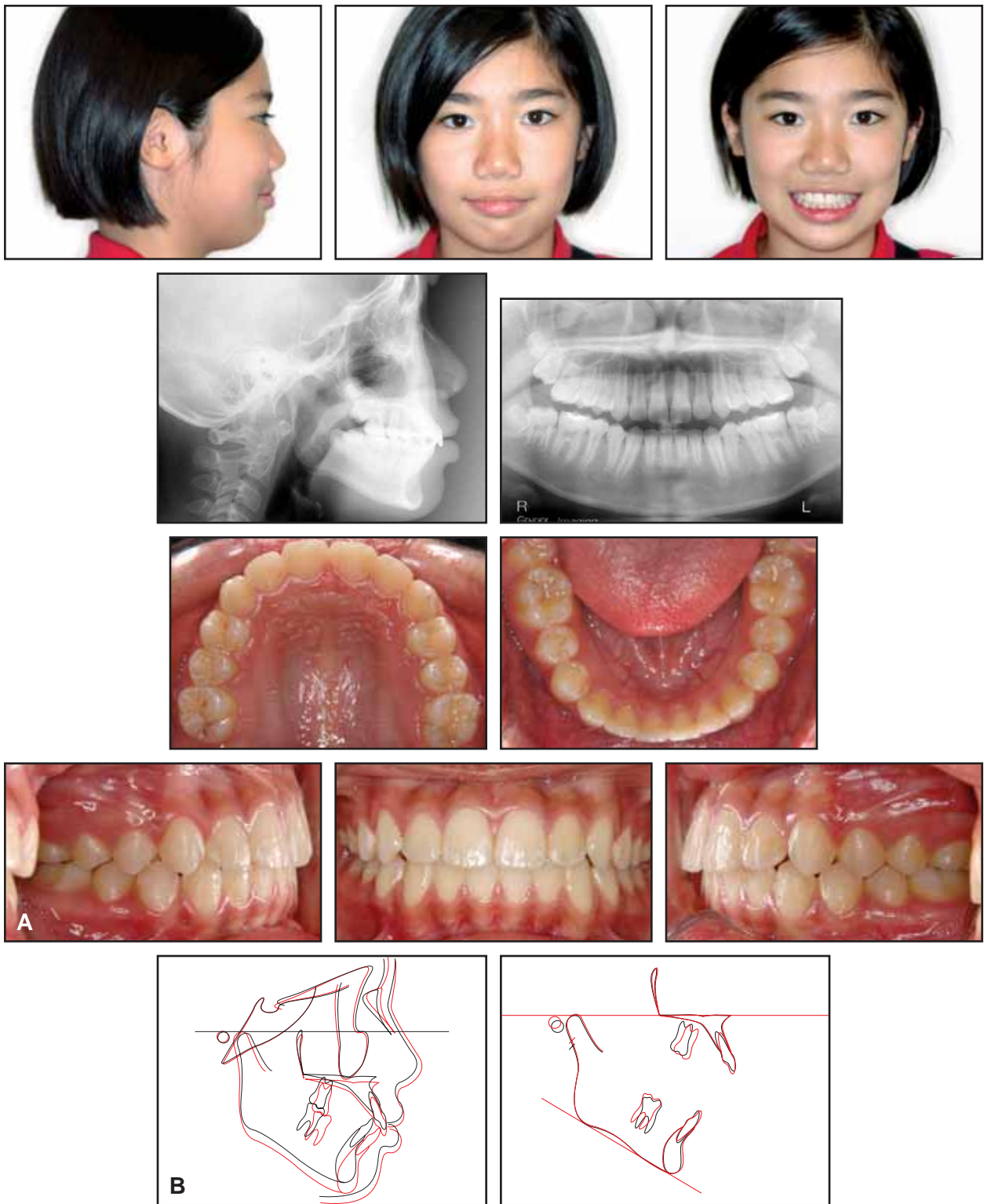


Fig. 9 Case 1. A. Patient after 17 months of treatment. B. Superimposition of cephalometric tracings before and after treatment, showing lower incisor anchorage control with PLUS system.

Case 2

A 14-year-old female patient presented with a severe Class III tendency accompanied by ante-

rior and buccal crossbite (Fig. 10). The Wits appraisal of -7.4 indicated a skeletal component of the malocclusion.

The aim of treatment was to retract the



Fig. 10 Case 2. 14-year-old female patient with severe Class III tendency and anterior and buccal crossbite before treatment.

mandibular incisors while keeping the maxillary incisors from flaring. A maxillary expansion appliance was used to correct the transverse discrepancy, while PLUS brackets with hooks for cross-elastics were bonded for mandibular leveling and alignment (Fig. 11).

PLUS brackets were then bonded in the maxillary arch, and the bite was closed with vertical elastics to bonded maxillary lingual hooks (Fig. 12). Torque control was achieved with a canine-to-canine .014" nickel titanium wire in the hidden slots, while power chain was added to an .021" ×



Fig. 11 Case 2. Maxillary expansion appliance, with bondable hooks for cross-elastics on mandibular brackets.

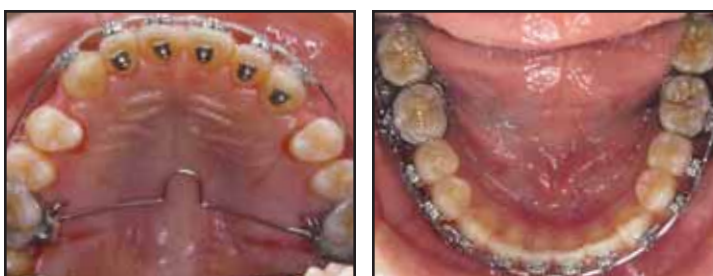


Fig. 12 Case 2. Crossbite corrected with elastics from bonded lingual hooks on maxillary anterior teeth to mandibular bracket hooks.

.025" stainless steel archwire in the Tip-Edge slots for space closure (Fig. 13).

Total treatment time was 23 months. The

final results showed good interdigitation, with Class I molar and canine relationships and a well-balanced profile (Fig. 14).

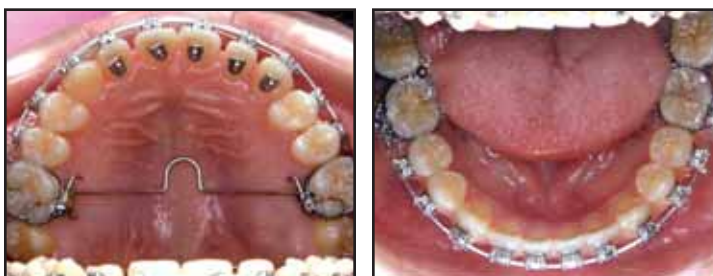


Fig. 13 Case 2. Class I elastic force used to close maxillary spaces.



Fig. 14 Case 2. A. Patient after 23 months of treatment, showing improved incisal display in smiling (continued on next page).

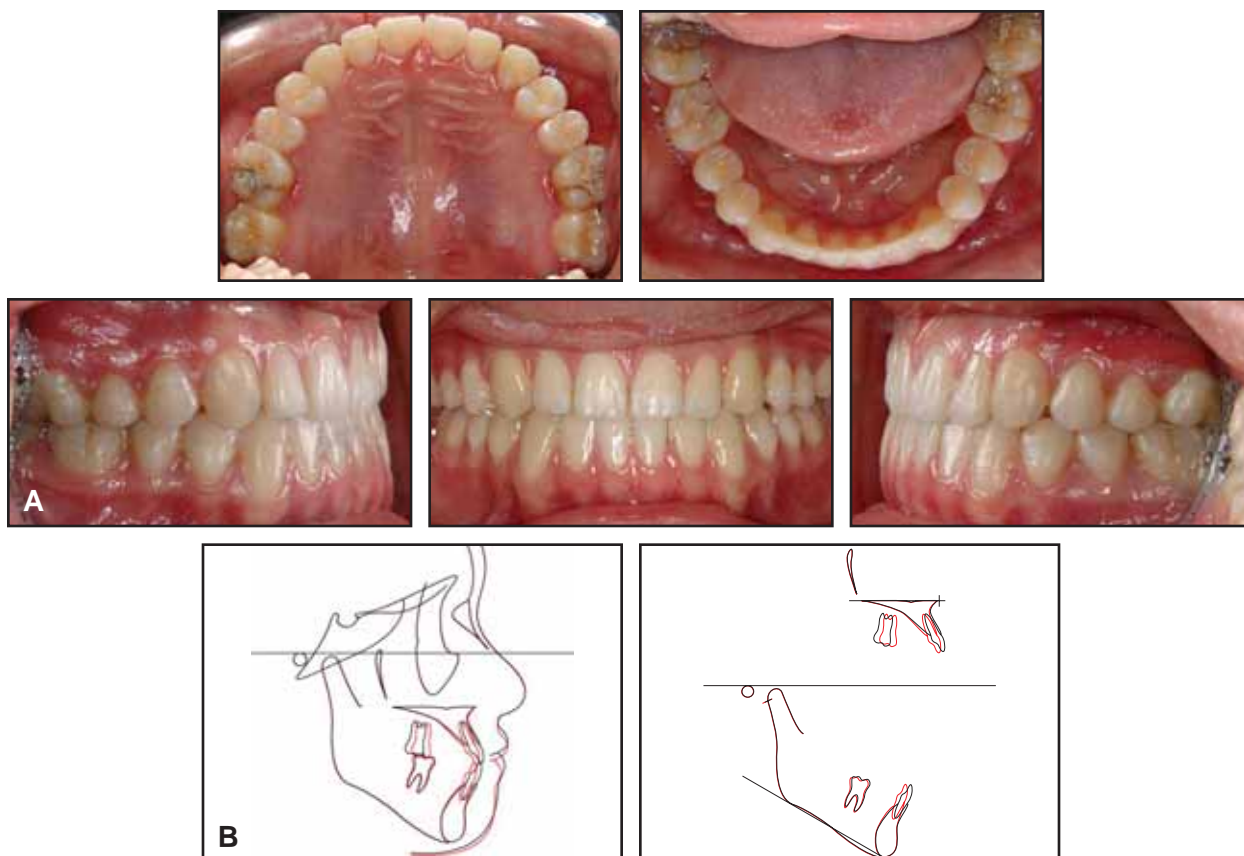


Fig. 14 (cont.) Case 2. A. Patient after 23 months of treatment. B. Superimposition of cephalometric tracings before and after treatment, showing lower incisor anchorage control with PLUS system.

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