

CASE REPORT

A Simple Method for Aligning Retroclined or Ectopic Teeth

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Tying severely retroclined lateral incisors or ectopic teeth into the main archwire can be both difficult and problematic.¹ First, the forces used to create space in the arch can oppose those needed to align the teeth. This can cause binding and notching of the wire at the locations of the most misaligned teeth, resulting in increased friction and thus negating the archwire's superelastic properties.^{2,3} Potentially harmful forces are also placed on the anchorage unit when aligning ectopic teeth.⁴ Furthermore, bonding brackets to the buccal

surfaces of ectopic teeth can result in premature occlusal contacts that can dislodge the brackets.

Although one method of avoiding these biomechanical problems has been recommended,⁵ the development of self-ligating attachments suggests another strategy, which we describe here.

Diagnosis and Treatment Plan

A 10-year-old girl presented with the chief complaint of unesthetic dental appearance (Fig. 1). Although she had experienced a

trauma to the maxillary left central incisor, there was no contraindication to orthodontic therapy. Intraoral examination revealed mild maxillary skeletal constriction, crowding in the maxillary arch, and partial closure of the maxillary left lateral incisor eruption space due to the migration of adjacent teeth. A Class I molar relationship was present (Table 1), but the mandibular dental midline was deviated to the left. The maxillary right canine was erupting ectopically, and the right lateral incisor was in crossbite and severely retroclined relative to the



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A Simple Method for Aligning Retroclined or Ectopic Teeth



Fig. 1 10-year-old female patient with Class I occlusion, maxillary constriction and crowding, ectopically erupting maxillary right canine, and retroclined maxillary right lateral incisor in crossbite before treatment.

**TABLE 1
CEPHALOMETRIC DATA**

	Pretreatment	Post-Treatment	Norm
SNA	79.9°	79.7°	82.0°
SNB	77.7°	77.5°	80.9°
FMA (MP-FH)	31.5°	29.7°	26.0°
ANB	2.2°	2.2°	1.6°
U1-SN	108.8°	116.7°	101.3°
L1-MP	84.7°	94.5°	95.0°

other upper incisors.

Two treatment options were considered. The first involved extraction of the maxillary premolars to resolve the crowding and allow the canines to erupt without flaring of the incisors. The second option was to expand both arches by means of fixed appliances, with no extractions.

To maintain the patient's profile, and because the maxillary expansion was expected to produce sufficient space for alignment, the second option was chosen.

Treatment Progress

Leveling and alignment were begun in the mandibular

arch with full fixed appliances (Fig. 2). Eight weeks later, the upper right canine had erupted enough to bond the maxillary teeth. We used self-ligating Bidimensional brackets⁶ (Time 2*) except on the retroclined lateral incisor, where we bonded a stainless steel cleat to the lingual surface (Fig. 3). An extremely thin, flexible archwire (.012" nickel titanium) was inserted through the bracket slots and bent

*American Orthodontics, 1714 Cambridge Ave., Sheboygan, WI 53081; www.americanortho.com.



Fig. 2 Self-ligating brackets bonded in lower arch for initial leveling and alignment.

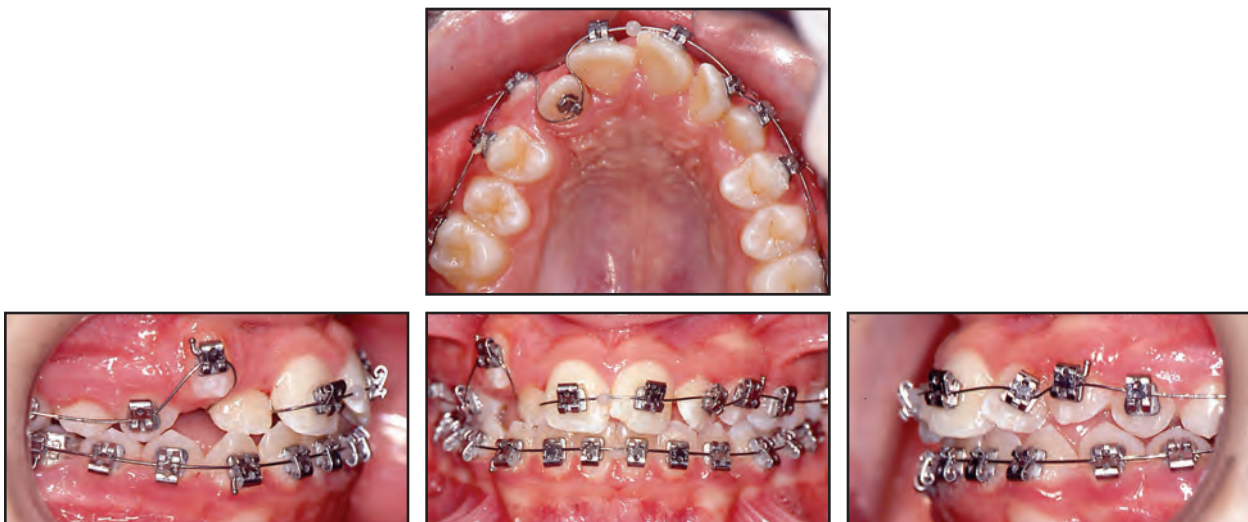


Fig. 3 After eight weeks of treatment, self-ligating brackets bonded in upper arch, with stainless steel cleat bonded to lingual surface of right lateral incisor.

A Simple Method for Aligning Retroclined or Ectopic Teeth

around the cleat to progressively align the teeth.

This method has several advantages. The forces used are extremely light, but effective because friction is controlled. Binding is prevented by limiting the wire to one-point contacts

with the brackets and by increasing the interbracket distances. The use of a lingual cleat reduces the possibility of bond failure, since it is unnecessary to tie ligatures that would press on the archwire. This system is both comfortable for the patient and

straightforward for the clinician, who need only cut off the excess wire at the most distal of the banded teeth during each follow-up visit.

Once the ectopic canine and retroclined lateral incisor had been brought into the arch (Fig.



Fig. 4 After 20 weeks of treatment, ectopic maxillary right canine and retroclined right lateral incisor nearly in position.



Fig. 5 After nine months of treatment, maxillary right lateral incisor bracket rotated 180° for correction of root inclination.

4), the lateral incisor was bonded with a self-ligating Time 2 bracket with an .018" × .025" slot. The archwire sequence was: .012" and .014" nickel titanium* for leveling and alignment; .016" × .025" nickel titanium HA* to correct rotations and provide initial torque control; and .018" × .022" stainless steel SG** for fine torque control and finishing.

After nine months of treatment, the bracket on the maxillary right lateral incisor was rotated 180° to correct the root inclination (Fig. 5). In the Bidimensional technique, the lateral incisor bracket typically has a torque of 8°; rotating it produced a torque of -8°, which permitted overcorrection of the radicular inclination. Torque

*American Orthodontics, 1714 Cambridge Ave., Sheboygan, WI 53081; www.americanortho.com.

**Dentsply GAC International, 355 Knickerbocker Ave., Bohemia, NY 11716; www.gacintl.com.

could be controlled by using a full-size archwire (Fig. 6).

Treatment Results

After 24 months of treatment, the patient had Class I canine and molar relationships with a minor Class III tendency on the right (Fig. 7). Overbite and overjet relationships were ideal. Cephalometric evaluation indicated an increase in maxillary and mandibular incisor inclination, but no change in ANB (Table 1).

Upper wraparound and lower Hawley retainers were delivered.

Conclusion

This case demonstrates that severely misaligned teeth can be quickly and efficiently brought into the arch by using self-ligating brackets with thin, resilient nickel titanium archwires bent around cleats bonded to the lingual sur-

faces of the most misaligned teeth. A self-ligating bracket can be rotated and used with a full-size archwire for fine torque control.

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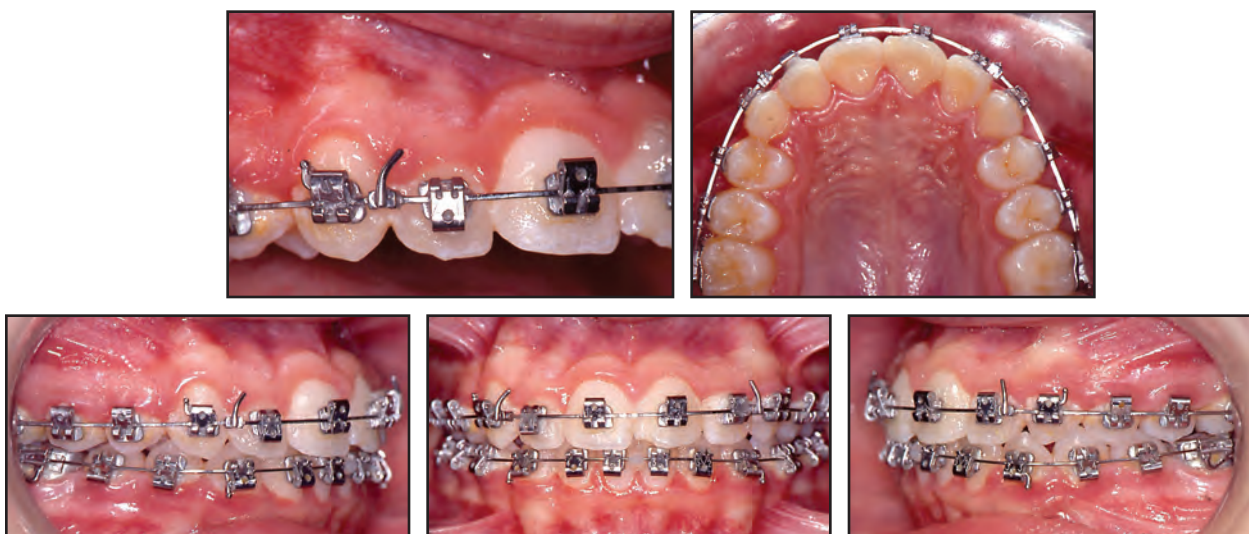


Fig. 6 Improvement in maxillary right lateral incisor torque eight weeks later.

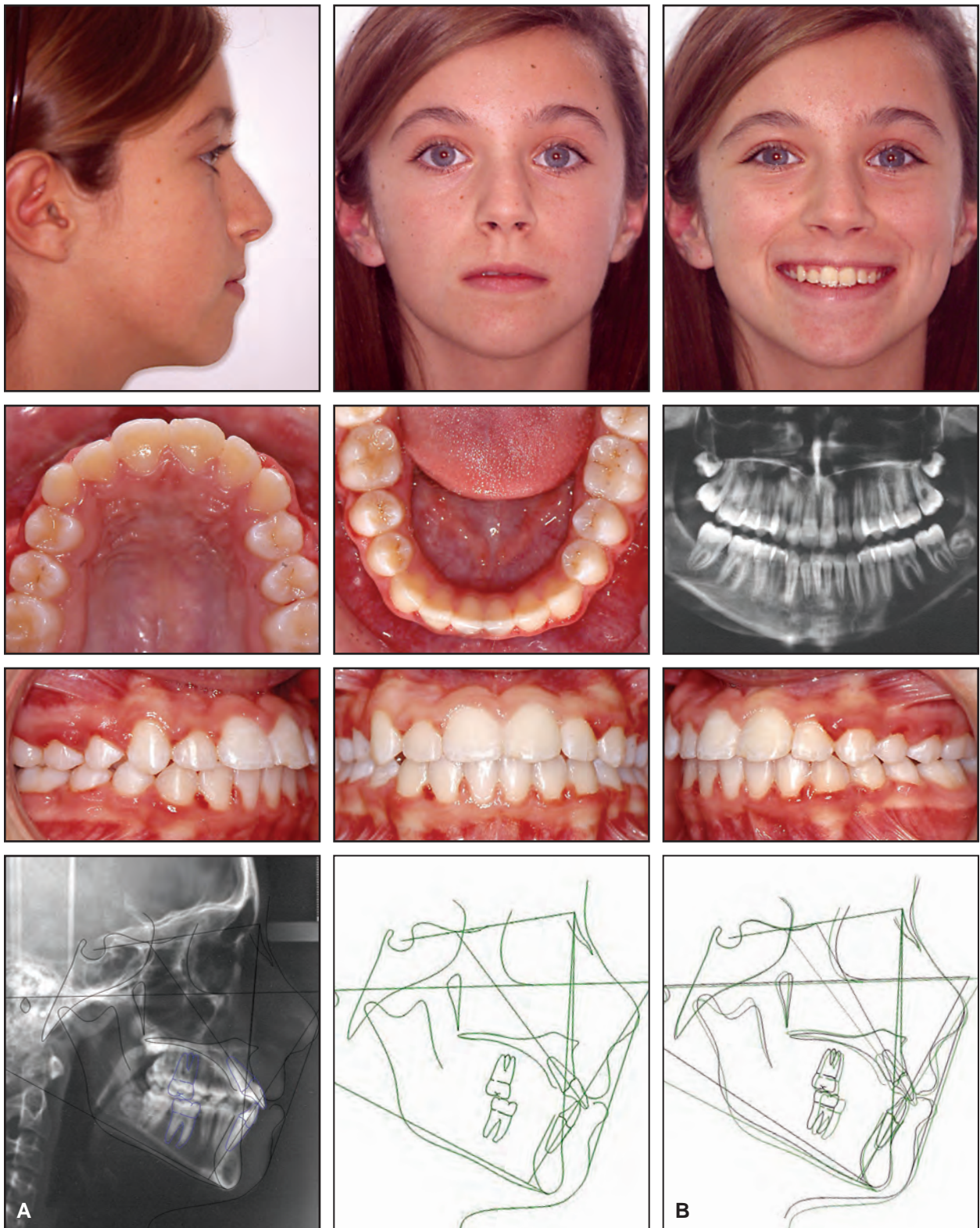


Fig. 7 A. Patient after 24 months of treatment. **B.** Superimposition of pre- and post-treatment cephalometric tracings.