Intrusion of Palatally Displaced Maxillary Lateral Incisors Using Nickel Titanium Closed-Coil Springs

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In patients with maxillary anterior crowding, the upper lateral incisors are often inclined palatally; moreover, such incisors are almost always extruded due to lack of contact with the opposing teeth. The resulting crossbite limits accessibility for bracket placement, so that initial alignment requires adequate space to be opened before the teeth are intruded and labial root torque is added.1 Although nickel titanium closed-coil springs are routinely used to intrude lateral incisors in these situations, most commercially available springs apply forces greater than 100g. A new spring* developed in our clinic at Ewha Womans University, called the EW spring, exerts a light, continuous force of less than 50g.

**Procedure**

A passive .016" × .016" stainless steel wire segment is bonded to the labial surfaces of the adjacent central incisor and canine with composite resin. One end of the EW spring is bonded to the labial surface of the extruded lateral incisor near the incisal edge, and the other end to the anchor-wire segment to generate an intrusive force (Fig. 1).

The technique is illustrated in a 12-year-old female patient who presented with upper anterior crowding and both upper lateral incisors in crossbite (Fig. 2). Conventional brackets and open-coil springs were first used to gain space for the lateral incisors. EW springs were then bonded to anchor-wire segments as described above (Fig. 3). Three months later, the upper lateral incisors had been significantly intruded (Fig. 4). After the intrusion auxiliaries were removed, a bracket was bonded to the left lateral incisor for incorporation into the main archwire; an .008" ligature wire was bonded to the surface of the right lateral incisor and tied to the archwire to bring the tooth into alignment (Fig. 5). Four weeks later, a conventional bracket was bonded to the upper right lateral incisor for final adjustments (Fig. 6).

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*EW Closed Coil Spring, JISCOP Co., Ltd., Gunpo-si, Gyeonggi-do, South Korea; www.jiscop.com.
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Fig. 2 12-year-old female patient with upper anterior crowding and crossbite of both upper lateral incisors before treatment.

Fig. 3 After opening of lateral-incisor spaces, EW springs and anchor-wire segments bonded to upper anterior teeth to begin intrusion of lateral incisors.

Fig. 4 Significant intrusion of upper lateral incisors after three months of treatment.
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Discussion

A bite plate or occlusal resin build-up is traditionally used to eliminate occlusal interferences during crossbite correction. This kind of bite opening is uncomfortable for many patients, however, and thus can be detrimental to a treatment that depends on patient compliance.

As shown in Figure 6, there was no evidence of root resorption in our patient. We believe the EW closed-coil spring, with its light, continuous force and lack of friction, is more efficient than conventional fixed-appliance systems for the intrusion of upper lateral incisors.

REFERENCES