

READER'S FORUM

Jee JH, Ahn HW, Seo KW, Kim SH, Kook YA, Chung KR, Nelson G

***En-masse* retraction with a preformed nickel-titanium and stainless steel archwire assembly and temporary skeletal anchorage devices without posterior bonding.**

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It is always an enjoyable experience to read a well-designed scientific article that has not lost a touch with our daily clinical realities. By leaving posterior dentitions minimally disrupted when they are in good occlusal relationship, one can easily see the merits of the proposed approach. I want to thank the authors for both interesting and practical information which can be readily translated into an orthodontic practice.

Q1. One of the challenges in clinical orthodontics is to maintain congruent arch forms between the upper and the lower throughout the treatment. Given the amount of extraction space to be closed and the design of the preformed C-wires, which include a nickel-titanium (NiTi) wire component, it may be difficult to maintain the coordinated archforms during retraction. What clinical procedures would the authors recommend in order to minimize the amount of deviation of the canines, which may result in positional discrepancies between the second premolars and the canines at the conclusion of space closure?

Q2. Both the Figure 9B and the Table 1 (SN-U1 of about 95° at T1 in both Conventional and Preformed

C-wire groups) seem to present a rather under-torqued maxillary incisor position at the end of retraction. Would it be described as the intended results according to the authors' preference? If not, was it recovered during the short period of fixed appliance therapy following the extraction space closure? Besides changing the vectors of retraction force by adjusting the height of the retraction hooks, what do the authors recommend to improve the anterior torque control?

Q3. The authors reported that the total retraction time was reduced by 3.2 months from the conventional to the preformed C-wire group. This fact was later explained that it could be attributed to simultaneous distalization of the maxillary canines along the NiTi archwires in the preformed C-wire group only. However, it was not clear in the article how the retraction period was defined and also whether the reported time difference in space closure was for the maxillary arch only, or for both the maxillary and mandibular arches. Obviously, if it is for the latter, it would make it even more impressive results since there was no reason why one group should do better than the other in the mandibular arch as it was treated with the same biomechanics for the both groups. The authors' comments would be appreciated.

Questioned by

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A1. When we use a sectional approach during space closure, the canine is easy to be intruded and displaced

buccally. Because it is not simple to change the preformed archform of a NiTi wire, we usually apply a very light force with adjunctive elastics. After the NiTi archwire is engaged with the brackets on the anterior dentitions, de-crowding and aligning are progressed toward the extraction space by a very weak retraction force applied to the retraction hooks. In other words, one of the purposes of the gentle retraction force between the posterior temporary skeletal anchorage device and the retraction hook is to prevent anterior flaring and to guide the de-crowding movement to the posterior direction. Usually, de-crowding, aligning and retraction all happen at the same time with concurrent improvement of the archform, as shown in Figure 7G-I.

A2. The presented case was intended to obtain controlled tipping of the anteriors. Nevertheless, there is certain difficulty to control the anterior torque when it is combined with a sectional approach. To improve anterior torque control, we can use pre-torqued NiTi wires or apply gable bends on the stainless steel wire section in addition to lengthening the height of the retraction hooks. In a previous study,¹ retraction of the 6 anterior teeth showed

a translation tendency after 20° gable bends. When a 30° gable bend was applied with longer hooks (10 mm), even lingual root movement of the 6 anterior teeth was observed (Figure 1).

A3. The retraction period was defined from the bonding of the appliance to the completion of space closure on the maxillary arch. Spontaneous leveling and retraction of the upper anterior teeth would contribute to the treatment of the lower arch to some degree, such as faster resolving of single tooth crossbite on the anterior region. Even though the same biomechanical set up was used in the mandibular arch, the preformed C-wire allowed more expedient de-crowding, which helped to eliminate any existing ‘locking’ of the lower anteriors. It should be also noted that the preformed C-wire represents more user friendly approach, reducing patient chair time at each visit. We appreciate your comments and further study would cover this topic in more detail.

Replied by

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Reference

1. Mo SS, Kim SH, Sung SJ, Chung KR, Chun YS, Kook YA, et al. Factors controlling anterior torque during C-implant-dependent en-masse retraction without posterior appliances. *Am J Orthod Dentofacial Orthop* 2011;140:72-80.

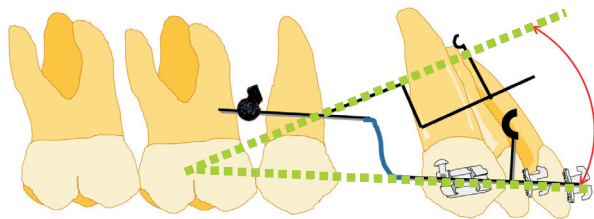


Figure 1. Application of a gable bend adds additional torque control over the maxillary anterior teeth.

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