

# Bicuspid Tubes

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**E**lastomeric ligatures have been found to produce 60g of static frictional force, while stainless steel ligatures produce nearly 200g.<sup>1</sup> Such friction may reduce the net force available for cuspid distalization<sup>2</sup> and interfere with leveling.

We have developed bondable bicuspid tubes,\* mounted on conventional bicuspid bracket bases, to virtually eliminate the friction associated with ligatures. Archwire insertion is facilitated by chamfering both the mesial and the distal openings (Fig. 1).

This article presents three cases in which leveling was accomplished more effectively because of the ability of the bicuspid tubes to slide readily along the archwires.

## Case 1

Even though the maxillary left first bicuspid was rotated distally, an .014" superelastic nickel titanium\*\* archwire<sup>3,4</sup> was easily inserted in the bicuspid tubes (Fig. 2). After two months, the rotation had been corrected and the inter-

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bracket span between the bicuspids had widened.

## Case 2

The patient presented with severe anterior crowding (Fig. 3). After four months of treatment with an .014" superelastic nickel titanium archwire, there was neither spacing nor flaring of the incisors.

## Case 3

Within two months of placement of an .014" superelastic nickel titanium archwire (Fig. 4), the cuspid had been uprighted distally and the space between cuspid and bicuspid had been reduced.

## Discussion

Although the bicuspid tubes need no ligation, they can make initial archwire placement difficult (Fig. 2). We recommend using an .014" superelastic nickel titanium initial archwire because of its low stiffness and wide working range.<sup>3,4</sup> We are currently working on a bicuspid tube with a hook to make it easier to attach power chain.



Fig. 1 Bicuspid tubes.

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A



B

Fig. 2 Case 1. A. Initial .014" superelastic nickel titanium archwire. B. After two months of leveling.



A



B

Fig. 3 Case 2. A. Initial .014" superelastic nickel titanium archwire. B. After four months of leveling.



A



B

Fig. 4 Case 3. A. Initial .014" superelastic nickel titanium archwire. B. After two months of leveling.

As these cases show, bicuspid tubes can reduce undesirable tooth movements and thus shorten treatment time. Studies have reported reductions of four to six months in treatment time with the use of low-friction self-ligating brackets.<sup>5-7</sup> Like self-ligating brackets, the bicuspid tubes also save chairtime in changing archwires. Bicuspid tubes are simpler, more durable, and less expensive, however, and they reduce the risk of soft-tissue perforation and infection.

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