

# The Spring Jet for Slow Palatal Expansion

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**T**his article presents a new appliance designed to achieve fully controllable mechanics for slow maxillary expansion: the Spring Jet.\*

## Appliance Design

The active components of the Spring Jet are soldered or attached to the molar bands as with any traditional expander. The transpalatal arch is replaced by a telescopic unit with a nickel titanium coil spring and a lock screw (Fig. 1). Activation of the coil spring is achieved simply by moving the lock screw horizontally along the telescopic tube. A ball stop on the transpalatal wire allows the spring to be compressed.

The telescopic unit is placed high in the palate (Fig. 2), about 5mm up from the center of the molar bands, so that the line of force passes close to the center of resistance of the maxillary teeth. Other devices designed for slow maxillary expansion apply the transverse force at the level of the maxillary crowns, which tends to produce a tipping component at the molars and premolars.<sup>1-4</sup> While the higher placement avoids irritat-

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ing the tongue, the Spring Jet should be kept at least 1-1.5mm away from the palatal soft tissue as well.

Two different coil springs are available. We recommend using the 240g spring in the mixed dentition and the 400g spring in the permanent dentition. Because the force level of the spring tends to decrease as it opens, the lock screw is designed to maintain full spring compression, assuring a constant level of force throughout expansion.



Fig. 1 Spring Jet uses nickel titanium coil spring and lock screw.



Fig. 2 Telescopic unit should be about 5mm above level of molars, but 1-1.5mm away from palatal soft tissue.

## Case 1

A 16-year-old female presented with a Class II, division 1, subdivision right malocclusion and maxillary constriction (Fig. 3). Skeletally, she showed mandibular retrusion and a high angle.

The desired maxillary expansion was achieved in less than three months of treatment with the 400g Spring Jet (Fig. 4). Final correc-

tion of the malocclusion was accomplished with a multibracket appliance and a Jasper Jumper (Fig. 5).

## Case 2

A 24-year-old female presented with a Class I malocclusion and moderate crowding (Fig. 6). The patient's maxillary constriction was



Fig. 3 Case 1. 16-year-old female with Class II, division 1, subdivision right malocclusion and maxillary constriction before treatment.



Fig. 4 Case 1. After three months of slow expansion with Spring Jet.



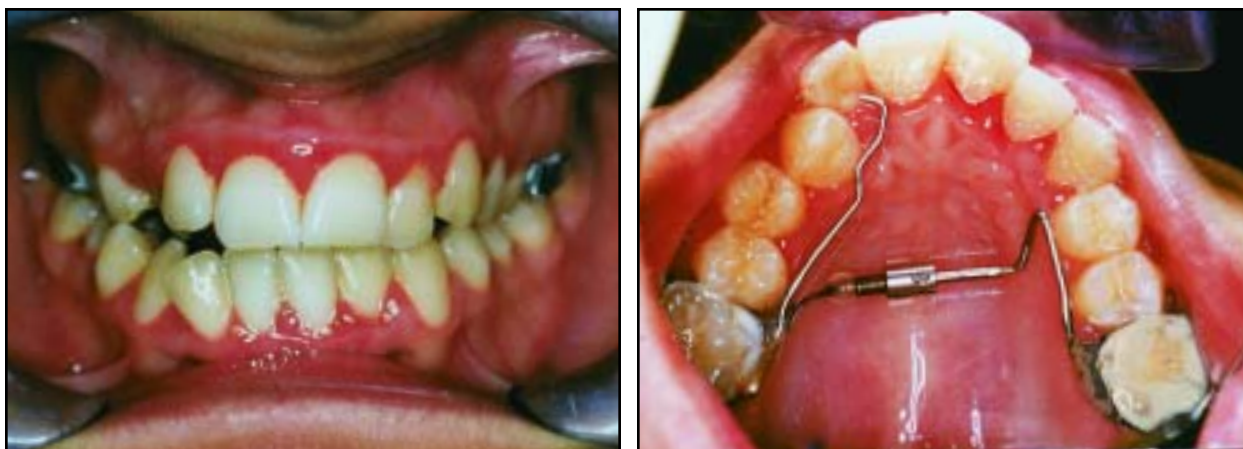
Fig. 5 Case 1. A. Class II correction with multibracketed appliance and four months' use of Jasper Jumper auxiliary. B. Patient after removal of appliances.



Fig. 6 Case 2. 24-year-old female with Class I malocclusion and moderate crowding at beginning of treatment.



**Fig. 7 Case 2. After three months of slow expansion with Spring Jet.**



**Fig. 8 Case 3. 18-year-old female with Class I malocclusion and moderate maxillary constriction before treatment; Spring Jet with asymmetrical arm to correct crossbite of maxillary right cuspid.**



**Fig. 9 Case 3. After three months of slow expansion with Spring Jet.**

alleviated with less than three months of expansion using the 400g Spring Jet (Fig. 7). Treatment was easily completed with lingual sectional arches and some interdental stripping.

### Case 3

An 18-year-old female presented with a Class I malocclusion and moderate maxillary constriction. A 400g Spring Jet was placed, with an asymmetrical arm to correct the crossbite of the maxillary right cuspid (Fig. 8). The desired expansion was achieved in three months (Fig. 9).

### Discussion

Patients with maxillary dental constriction are usually treated with adjustable palatal arches that require little cooperation. Such appliances can move both deciduous and permanent teeth and may accelerate the midpalatal suture's normal rate of expansion, particularly in young children.<sup>2,5-8</sup> Unfortunately, with previously available appliances, whether stainless steel or nickel titanium, it has been virtually impossible to maintain a constant force of expansion as the palatal arch rebounds to its passive shape.

The simple and comfortable Spring Jet allows a constant expansion force to be applied as long as necessary. After correction, the appliance can easily be inactivated and kept in place as a retainer. The molars will move with little change in angulation, and can be used for anchorage during correction of the other dental inclinations.

### REFERENCES

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## CORRECTION

In the article, "Efficacy of Open-Bite Treatment with the Thera-spoon," by Drs. Bennett, Weinstein, and Borislow (*JCO*, May 1999), the headings for the columns in Table 1 (p. 285) were inadvertently transposed. The Thera-spoon results are actually shown in the first two columns, and the tongue crib results in the third and fourth columns. The text of the article is correct.