Jasper Jumpers in Class II Correction: A Case Report

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Jasper Jumpers

Jasper Jumpers (Fig. 1) are a type of fixed functional appliance that are designed to be added to full fixed appliances. Typically, Jasper Jumpers are used in the correction of Class II malocclusions with the advantages of improved aesthetics, comfort and safety as compared to a headgear. In addition, the appliance is fixed and produces a continuous force without the requirements of patient compliance. Consequently, Jasper Jumpers are used with full-fixed appliances and have been demonstrated to be more efficient than a two-phase approach.\(^2\)

Class II Division 1 Treatment

An 13-years-old female presented for treatment of a Class II Division 1 malocclusion (ANB of 4° and Wits of 1 mm) (Fig. 2). This patient exhibited a mild overbite, moderate overjet, unilateral posterior crossbite, mild crowding, and a midline deviation. From the cephalometric analysis, these findings were noted: skeletal findings included (SNA 81°, SNB 77°, FMA 24°) labially-inclined maxillary incisors (1-SN 112°).

A non-extraction treatment plan was developed to involve resolution of the crossbite, overjet and Class II relationship. Sufficient arch length from the leeway space was available to resolve the crowding without expansion or extraction.\(^3\)

Appliance Placement

A fixed pre-adjusted (.022" slot) appliance was placed with light superelastic wires (.018") to begin arch leveling. A fixed maxillary rapid palatal expander was used to separate the mid-palatal suture to resolve the crossbite. The appliance was activated twice per day for twenty-one days followed by stabilization with the same appliance for three months. Initially, a J-hook straight-pull headgear was used to reduce the maxillary incisor protrusion along with Class II elastics supported by a mandibular .018 x .025" stainless steel arch wire. Unfortunately, the patient's general compliance with treatment was poor as she did not comply with elastics, headgear, oral hygiene, or returning for regular appointments.

Jasper Jumpers

After the sixteen months of treatment, Class II correction was insufficient and Jasper Jumpers were added. Rectangular stainless steel arch wires (Maxillary .018 x .025" and Mandibular .019 x .025") were placed. Stainless steel ligature was laced from first molar to first molar to prevent the opening of spaces between the mandibular teeth. The mandibular first premolar brackets were removed to provide clearance for the Jasper Jumpers. Bayonet bends were placed distal to the canines in the mandibular arch wire (Fig. 3). The plastic ball stops and Jasper Jumpers (size 6) were slid onto the arch wire and the wire was tied to place. The maxillary ends of the Jasper Jumpers were installed by sliding the supplied steel pins through the Jumpers and into the buccal headgear tubes of the maxillary first molars. About 3-4 mm of the ball-end portion of the pin was left extending out of the distal of the buccal tube. The mesial extension was bent back, over the buccal tube. The patient was cautioned to support his chin when yawning and to avoid any activity that would cause her to open her mouth wide (i.e., eating large pieces of food, screaming, etc.) to prevent breakage of the Jasper Jumpers.
Two months after placement of the Jasper Jumpers, the patient presented with a late TMJ click and pain in both joints. She reported that symptoms suddenly appeared after she had been struck in the mandible during cheerleading for athletics. In addition, she admitted to constant gum-chewing and excessive opening of her mouth during cheering. Home-care instructions included the use of analgesics, soft diet, elimination of gum-chewing. No subsequent TMD symptoms were noted by the patient during or after orthodontic treatment.

Case Completion and Retention

After five months with Jasper Jumpers, an end-on anterior dental relationship was noted and the Jasper Jumpers were removed. The first premolar brackets were replaced, second molars were banded, and the lower arch re-leveled with a .018" superelastic wire. Intermaxillary "triangular" elastics were used to maintain intercuspation. Artistic positioning bends were placed in 0.18" stainless steel arch wires. Upon removal of fixed appliances, Hawley retainers were fabricated and the patient was instructed to wear them 24 hours a day for one year, nightly for a second year and then at least once a week indefinitely. Treatment was completed in 27 months with a total of 24 treatment appointments despite the patient lack of cooperation (Fig. 4).

Upon evaluation of the cephalometric tracings (Fig. 5), no skeletal improvement (ANB 4° and Wits 1 mm were maintained) and favourable facial esthetics were noted without a significant change in mandibular plane angle (FMA 24°-25°).

Conclusions

Lingual tipping of the maxillary incisors along with mandibular growth assisted in the correction of this patient’s overjet, however, the negative effect of labial tipping of the mandibular incisors (IMPA increased from 91° to 98°) may be partially attributable to the Jasper Jumpers (Fig. 5). Mandibular lingual crow torque (bent into the arch wire or by the use of – 10° mandibular anterior brackets) combined with a mandibular large dimension arch wire (.021 x .025 stainless steel) are recommended to reduce this adverse response for future patients treated with Jasper Jumpers.5,6

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Arch Wire Sequences

Mx and Mn .018" superelastic
Mx .018" stainless steel Mn .019 x .025" stainless steel
Mx and Mn .018" superelastic
Mx and Mn .019 x .025" stainless steel
Mx and Mn .018" stainless steel

Pre-treatment – Price, Shannon 7/3/96

Post Treatment – Price, Shannon 12/01/98
Fig. 1 A. Jasper Jumpers are fixed functional appliances that are added to full-fixed appliances for the resolution of Class II malocclusions. Jasper Jumpers provide a continuous force and are, therefore, not compliance-dependent.

Fig. 1 B Prototype of a new version of Jasper Jumpers called Gentle Jumpers.

Fig. 2 Pre-treatment records for 13-years old female Price, Shannon presenting with a Class II Division I malocclusion.
Fig. 3. Technique for placing Jasper Jumpers directly on the mandibular arch wire.

Fig. 4. Post-treatment records. 27 months of fixed pre-adjusted appliances with a total of 24 visits. Note: patient exhibits some generalized decalcification resulting from poor co-operation with oral hygiene during treatment.
Pre and Post Treatment Records

**B. Maxillary superimposition.**
Reduced anterior protrusion.

**C. Mandibular superimposition.** Mandibular growth was exhibited, however, adverse labial tipping of the mandibular incisors was attributable to the Jasper Jumpers.

**Fig. 5. Superimpositions:**
- **A. Cranial base superimposition.** Significant growth and improved facial esthetics were demonstrated during treatment.
- **B. Maxillary superimposition.**
- **C. Mandibular superimposition.**

**References**


