

# CASE REPORT

## Correction of Class III Malocclusion with a Jasper Jumper

CLAUDIA DE MOURA FULY, DDS  
ANTÔNIO GERALDO DE OLIVEIRA, DDS, MS  
WEBER URSI, DDS, MS, DO

The Jasper Jumper\* was designed to produce light, continuous forces for the correction of Class II malocclusions, emulating the effects of devices such as headgears and activators.<sup>1</sup> It is similar in design to the Herbst\*\* appliance, but it is more flexible, easier to deliver, and more hygienic, while allowing more freedom of movement of the mandible. Like the Herbst, the Jasper Jumper functions without the need for extraordinary patient compliance.

Cope and colleagues hypothesized that the Jasper Jumper's mechanism for Class II cor-

rection involves the restraint of maxillary growth, maxillary dentoalveolar retraction, possible acceleration of mandibular growth, mesial movement of the mandibular arch, and lateral expansion of the maxillary molars.<sup>2</sup> According to Mills and McCulloch<sup>3</sup> and May and colleagues,<sup>4</sup> however, most of the treatment effect is dentoalveolar, with minimal influence on the skeletal components of the malocclusion. In their view, most of the overjet correction results from forward movement of the mandibular dentoalveolar complex and retraction of the maxillary dentoalveolar complex.

Clinical management of the Jasper Jumper in Class II treatment has been described by Jasper and McNamara,<sup>1</sup> Black-

wood,<sup>5</sup> and Cash.<sup>6</sup> In 1996, Pham and colleagues raised the possibility of using an inverted Jasper Jumper in the correction of Class III malocclusions with retrusive maxillae.<sup>7</sup> This article presents such a case.

### Diagnosis

A 12-year-old female in the late mixed dentition presented to the Graduate Clinic of Minas Gerais State University, Lavras, Brazil, for correction of a Class III malocclusion. Clinical examination showed facial symmetry with a slightly dolichofacial growth pattern, a retrognathic maxilla and normal mandible, a flat zygoma, excessive lower facial height, and a well-defined chin-throat angle (Fig. 1).

\*American Orthodontics, 1714 Cambridge Ave., Sheboygan, WI 53082.

\*\*Registered trademark of Dentaaurum, Inc., 10 Pheasant Run, Newtown, PA 18940.

Dr. Fuly is a Senior Resident and Dr. Oliveira is a Clinical Professor, Orthodontic Certificate Program, Lavras School of Dentistry, Brazil. Dr. Ursi is a Professor, School of Dentistry, São Paulo State University (UNESP) at São José dos Campos, Brazil, and in the private practice of orthodontics at Rua José Mattar, 144, São José dos Campos, SP 12245-450, Brazil.



Dr. Fuly

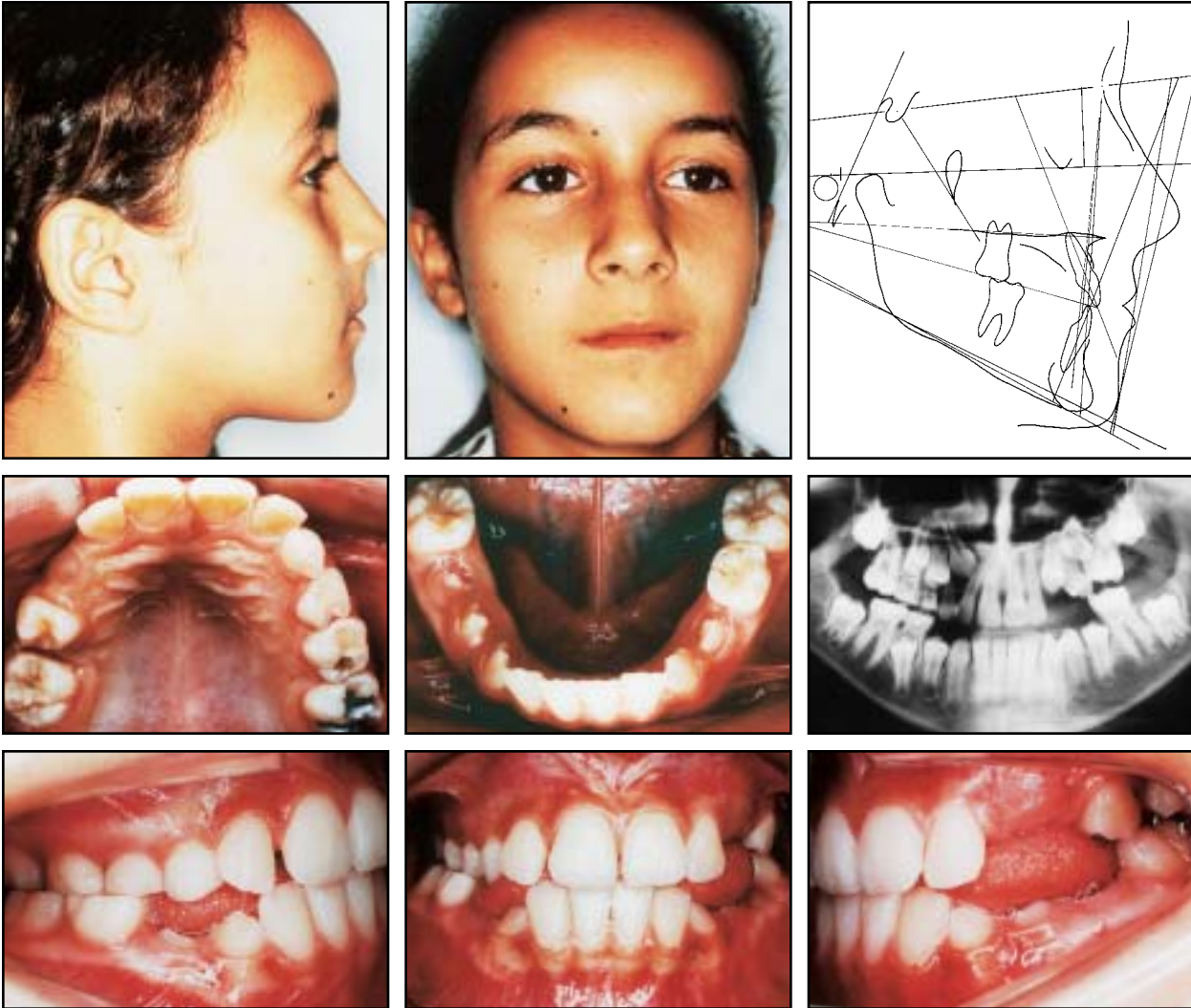


Dr. Oliveira

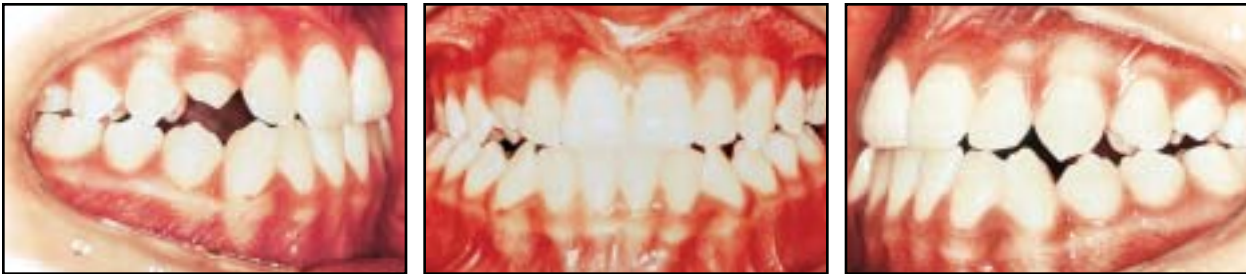


Dr. Ursi

**Correction of Class III Malocclusion with a Jasper Jumper** \_\_\_\_\_



**Fig. 1 12-year-old female Class III patient before treatment.**



**Fig. 2 After first phase of treatment (15 months).**

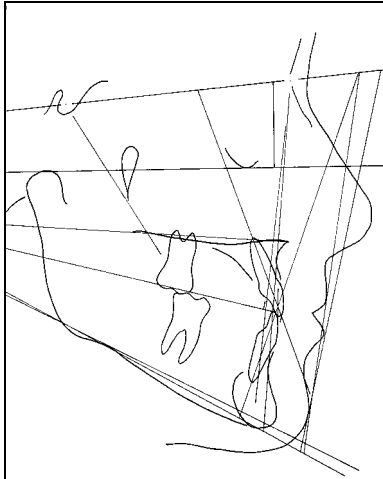


Fig. 3 After first phase of treatment.

Intraoral examination revealed a Class III molar relationship, a posterior crossbite, and the maxillary dental midline deviated to the left. There was minor crowding in the maxillary arch in the area of the left second premolar.

X-rays showed normal development of the permanent dentition, except for missing third molars, lack of space for normal eruption of the maxillary left second premolar, and excessive mesial crown inclination of the maxillary right canine.

The cephalometric tracing indicated a skeletal Class III malocclusion with an ANB angle of  $-2^\circ$ , a vertical growth pattern, normal lower anterior facial height, maxillary incisor protrusion, and mandibular incisor retrusion (Table 1).

### Treatment Plan

The objectives of treatment

TABLE 1  
CEPHALOMETRIC DATA

	Initial	After Phase I	After Phase II
SNA	$77^\circ$	$80^\circ$	$78^\circ$
SNB	$79^\circ$	$79^\circ$	$78^\circ$
ANB	$-2^\circ$	$-0.5^\circ$	$0^\circ$
FMA	$30^\circ$	$30^\circ$	$29^\circ$
SN-GoGn	$33^\circ$	$33^\circ$	$33^\circ$
U1-NA	$28^\circ$	$25^\circ$	$32^\circ$
U1-NA	6mm	4mm	7mm
L1-NB	$17^\circ$	$15^\circ$	$13^\circ$
L1-NB	2mm	3mm	3mm
Nasolabial angle	$123^\circ$	$121^\circ$	$112^\circ$
A-N Perp.	-7.5mm	-6mm	-5mm
P-N Perp.	-7.5mm	-6mm	-3.5mm
LAFH	61mm	62mm	62mm
Co-A	82mm	84mm	87mm
Co-Gn	112mm	114mm	117mm
U1-A Vert.	4mm	3mm	6mm
L1-APo	1mm	0.5mm	2mm
Y-axis	$91^\circ$	$91^\circ$	$91^\circ$
U1-PP	$115^\circ$	$113^\circ$	$120^\circ$

were to:

1. Correct the posterior crossbite.
2. Gain space for the maxillary left second premolar.
3. Monitor eruption of the maxillary right canine.
4. Correct the Class III malocclusion.

Due to the patient's stage of dental development, treatment was divided into two phases.

### Treatment Progress

In the first phase, the posterior crossbite was corrected with a removable Quad Helix.\*\*\* Open-coil springs were used to open space for the maxillary left

second premolar (Figs. 2,3).

The second phase of treatment involved sagittal correction of the Class III malocclusion. Leveling and alignment were accomplished with a Straight-Wire Appliance† and Andrews prescription, which reduced the existing dentoalveolar compensations and improved the negative overjet (Fig. 4).

The Jasper Jumper was then delivered (Fig. 5), using the following anchor units:

\*\*\*RMO, Inc., P.O. Box 17085, Denver, CO 80217.

†Registered trademark of Ormco/"A" Company, 1717 W. Collins Ave., Orange, CA 92867.

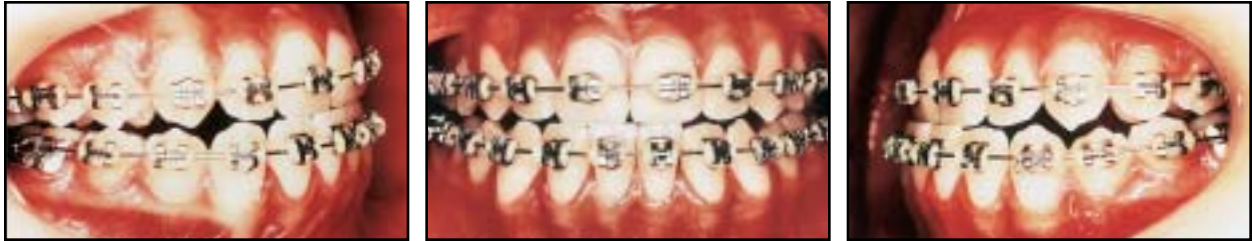


Fig. 4 After six months of leveling and alignment with Straight-Wire Appliance.



Fig. 5 Inverted Jasper Jumper in place.



Fig. 6 After four months of Jasper Jumper therapy. Note asymmetrical activation, used for one month to correct midline discrepancy.

- Maxillary arch—an .021" × .025" main archwire with bayonet bends distal to the canines, where Lexan beads were threaded onto the wire as anterior stops. To avoid flaring the incisors, lingual crown torque was placed in the archwire in the incisor region, and an omega loop was tied to the first molars. Brackets on the first and second premolars were removed to allow more mandibular freedom and patient comfort.

- Mandibular arch—a passive .021" × .025" archwire with omega loops tied to the first molars.

The distance from the mesial of the mandibular molar tube to the distal of the maxillary Lexan bead was 14mm; 12mm of advancement was added to this measurement, resulting in a size 26 force module. The patient was instructed in proper care of the Jasper Jumper and cautioned to avoid extensive

mandibular movements that might break the appliance.

The patient was seen at two-week intervals for four months, during which two modules were replaced due to breakage. To correct the upper midline, the appliance was activated asymmetrically by adding an extra Lexan bead to the right side (Fig. 6).

As soon as overcorrection and a positive overjet were achieved, the Jasper Jumper was

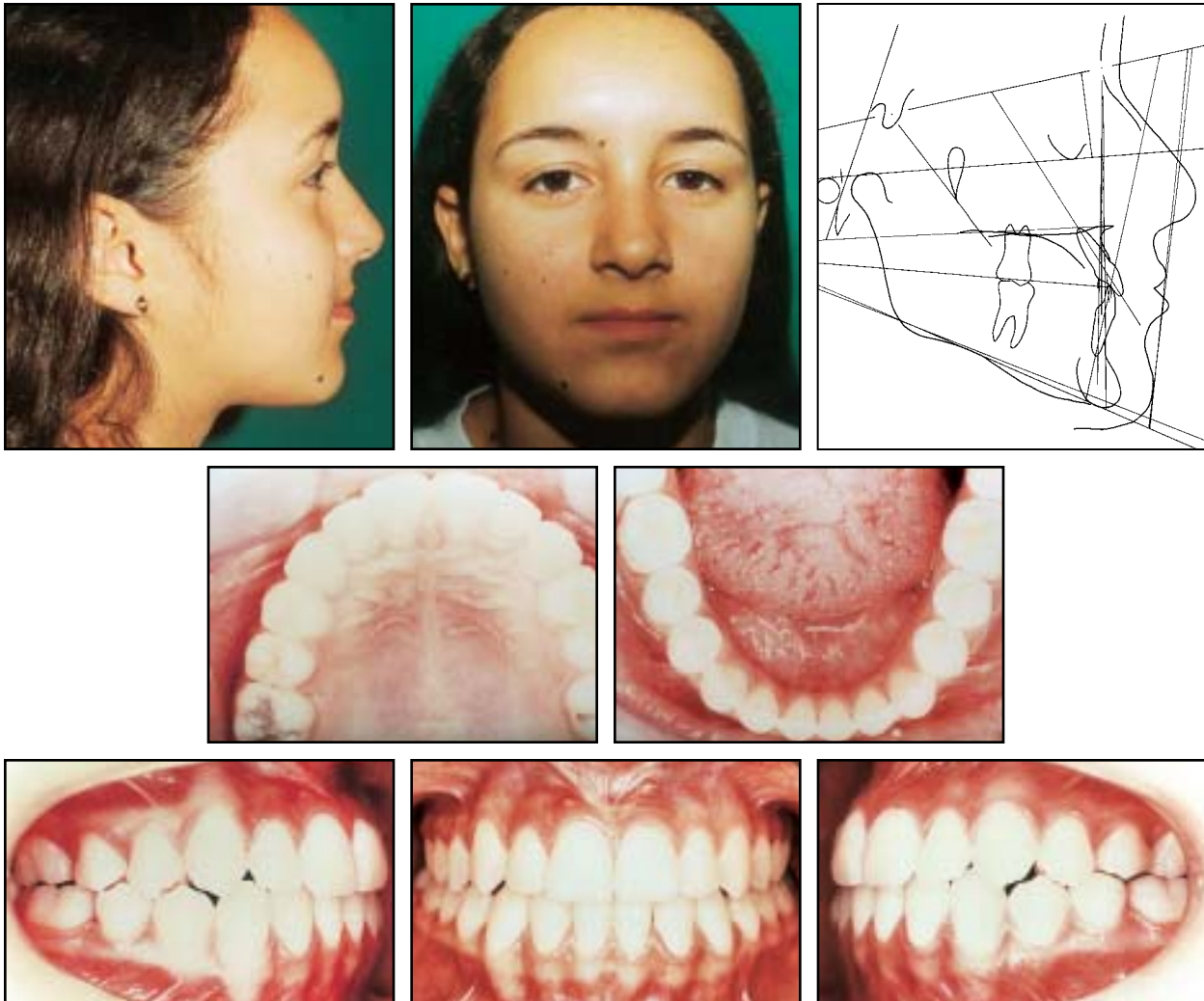


Fig. 7 After removal of fixed appliances.

removed. Brackets were then rebonded to the maxillary premolars, and the correction was allowed to settle for another month.

### Results

The final results were satisfactory, with a good sagittal re-

lationship, elimination of the negative overjet, and a positive impact on the nasolabial angle (Fig. 7).

Retention involved a modified Hawley appliance with a labial bow added across the mandibular incisors, as well as a bonded mandibular 3-3 lingual retainer (Fig. 8).

### Discussion

Cephalometric tracings indicated that while significant movement of the dentoalveolar complexes occurred, changes in the skeletal component of the malocclusion were of a lesser magnitude (Table 1). ANB increased by 2°, indicating some

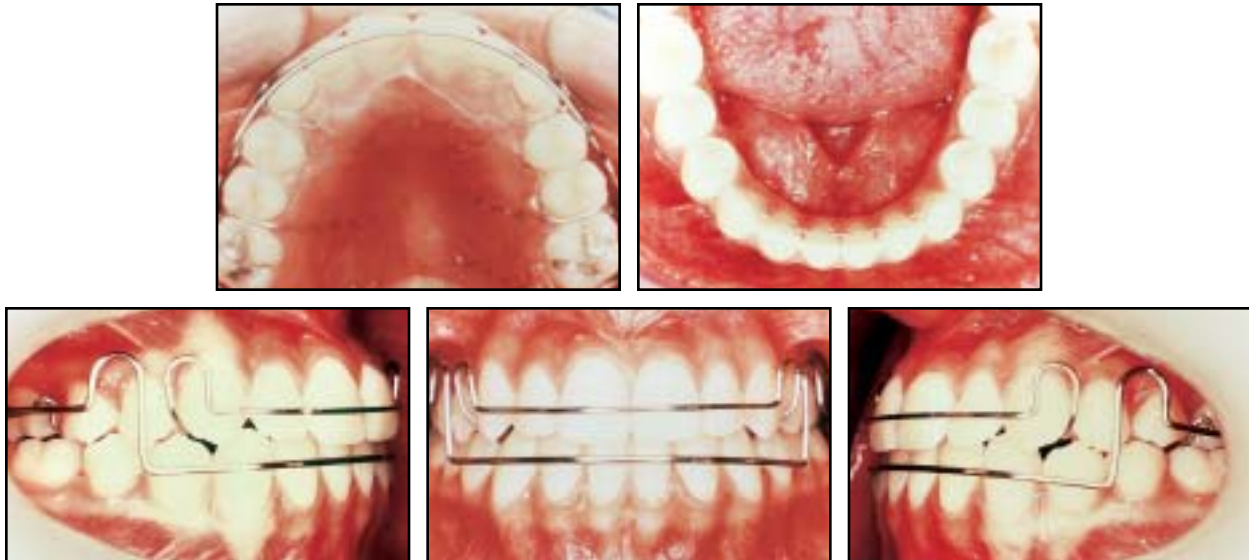


Fig. 8 Retention appliances.

skeletal impact of the appliance. A point was moved forward about  $1^\circ$  and B point backward about  $1^\circ$ . Vertical control was adequate; the maxillary incisors were proclined and the mandibular incisors slightly retroclined.

Class III elastics would have been detrimental in this case because of their extrusive component of force on the maxillary molars. This would have increased the mandibular plane angle even more on an already

high-angle patient.

Overall, the effects of the inverted Jasper Jumper were satisfactory in this case. The force system delivered an intrusive component to the mandibular molars, avoiding any increase in FMA. The impact on the patient's occlusion and profile were also positive.

In conclusion, an inverted Jasper Jumper can be useful in selected Class III malocclusions with slightly deficient maxillae.

## REFERENCES

1. Jasper, J.J. and McNamara, J.A. Jr.: The correction of interarch malocclusions using a fixed force module, *Am. J. Orthod.* 108:641-650, 1995.
2. Cope, J.B.; Buschang, P.H.; Cope, D.D.; Parker, J.; and Blackwood, H.O.: Quantitative evaluation of craniofacial changes with Jasper Jumper therapy, *Angle Orthod.* 64:113-122, 1994.
3. Mills, C.J. and McCulloch, K.J.: Case report: Modified use of the Jasper Jumper appliance in a skeletal Class II mixed dentition case requiring palatal expansion, *Angle Orthod.* 67:277-282, 1997.
4. May, T.W.; Chada, J.; LeDoux, W.R.; Wineberg, R.; Block, M.S.; and McMinn, R.W.: Skeletal and dental changes using a Jasper Jumper appliance, *J. Dent. Res.* 71 (ADR Suppl.), 1992.
5. Blackwood, H.O. III: Clinical management of the Jasper Jumper, *J. Clin. Orthod.* 25:755-760, 1991.
6. Cash, R.G.: Adult nonextraction treatment with the Jasper Jumper, *J. Clin. Orthod.* 25:43-47, 1991.
7. Pham, T.; Goz, G.; Bacher, M.; and Alfter, G.: New clinical application for the Jasper Jumper, *Fortschr. Kieferorthop.* 57:366-371, 1996.