

Modified Quad Helix for Class III Treatment

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Skeletal Class III discrepancies can be treated in growing patients with facial masks to protract the maxilla¹ or chin cups to restrain mandibular growth.² Orthopedic appliances such as the Fränkel FR-33 or the Class III twin block⁴ can also be used.

In adult patients, if the skeletal discrepancy is not severe enough to require orthognathic surgery, dentoalveolar correction can often be achieved with orthodontic treatment. Fixed appliances are generally used to procline the maxillary anterior teeth and retrocline the mandibular anterior teeth. It is not always possible to place brackets, however, if the patient has a reverse overjet and deep overbite. In addition, the maxilla is often narrow as well as short, producing a posterior crossbite.

This article describes a modified Quad Helix appliance⁵ that proclines the maxillary anterior segment to correct an anterior crossbite and facilitate bracket placement. It also expands the maxilla to correct a posterior crossbite.

Case Report

A 12 1/2-year-old female presented with the chief complaints of irregular teeth and an "awkward bite". Clinical examination showed a Class III incisor relationship on a Class III skeletal base, along with mild crowding of both the maxillary and mandibular anterior segments (Fig. 1, Table 1).

The patient was happy with her facial appearance and wished to avoid surgery. We felt a sufficient dentoalveolar correction could be achieved with fixed appliances. However, the patient recognized that further unfavorable skeletal growth could necessitate a surgical-orthodontic approach.

Because of the anterior crossbite, brackets could not be placed on the labial surfaces of the maxillary incisors. Therefore, a modified Quad Helix was used prior to placement of a maxillary preadjusted edgewise appliance.

An impression was taken of the maxillary arch with bands on the first permanent molars. The Quad Helix was constructed in the laboratory using .036" stainless steel wire.

The appliance was activated by expanding its loops, as with a conventional Quad Helix. In addition, the arms contacting the palatal surfaces of the incisors were activated by advancing them 2-3mm. Although the wire was large, the force was kept within acceptable limits because it was distributed over a number of teeth and because the arms added flexibility.

The appliance was attached with glass ionomer cement (Fig. 2). The mandibular arch was aligned simultaneously with a preadjusted edgewise appliance. Light Class III intermaxillary elastics were used to help correct the incisor relationship.

The Quad Helix was removed every six to eight weeks, reactivated, and recemented until the crossbites were corrected and the maxillary incisors could be bracketed (Fig. 3).

Treatment was completed in 21 months (Figs. 4 and 5). □

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FIGURES



Fig. 1 12 1/2-year-old female Class III patient before treatment.



Fig. 2 Modified Quad Helix appliance cemented in place after activation.



Fig. 3 Improvement in incisor relationship before placement of maxillary fixed appliance.



Fig. 4 After 21 months of treatment.

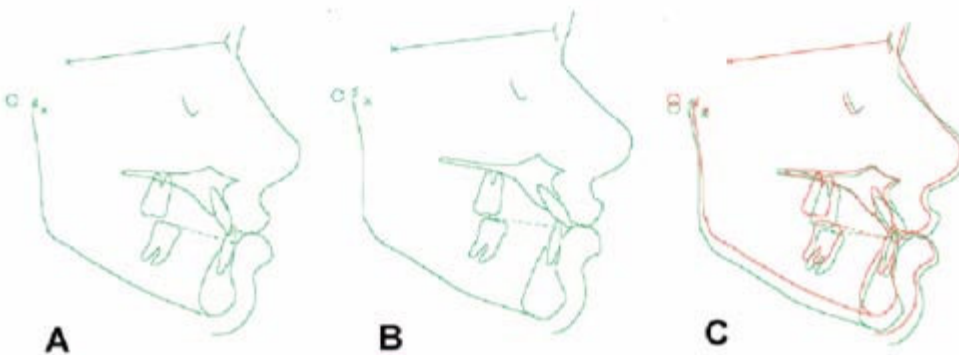


Fig. 5 Cephalometric tracings. A. Before treatment. B. After treatment. C. Superimposition.

TABLES

**TABLE 1
STEINER ANALYSIS**

	Pretreatment	Post-Treatment
SNA	81.5°	82.5°
SNB	84.0°	83.5°
ANB	-2.5°	-1.0°
1-NA	3.5mm	8.0mm
1-NA	22.0°	38.0°
T-NB	2.0mm	1.5mm
T-NB	19.0°	14.5°
Po-NB	2.0mm	4.5mm
1-T	141.0°	128.5°
OP-SN	12.0°	9.0°
MP-SN	44.0°	43.5°

Table. 1

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FOOTNOTES

1 RMO, Inc., P.O. Box 17085, Denver, CO 80217.