

CASE REPORT

Use of a Modified Quad Helix in Early Interceptive Treatment

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Oral and sucking habits can lead to the development of such problems as anterior open bite, maxillary constriction, and posterior crossbite.^{1,2} If these pathological conditions remain untreated during the growth period, the result may be a skeletal mandibular asymmetry, which can contribute to uneven condylar growth.³⁻⁷ Therefore, many clinicians recommend early intervention to correct the underlying problems.

This report shows a simple method of interceptive treatment in the early mixed dentition, using a modified Quad Helix.*

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Diagnosis

A 7-year-old female in the mixed dentition presented with a persistent thumbsucking habit, which had caused a constricted maxillary arch and anterior open bite (Fig. 1). Clinical examination revealed a unilateral crossbite on the left side from molar to canine. The patient had a Class I molar and canine relationship on the left side and a Class II relationship on the right. The mandible deviated 2.5mm toward the left side in centric occlusion, resulting in significant dental and facial midline shifts.

Panoramic radiography indicated a normal eruption sequence and no apparent condylar hypertrophy. Cephalometric values were within normal limits.

Appliance Design

To correct the thumbsucking habit and resolve the transverse, vertical, and functional deficiencies, we used an anterior modified Quad Helix, made of .036" stainless steel wire soldered to bands on the first permanent molars (Fig. 2). The lingual arms of the appliance were extended to the deciduous cuspids, and the anterior helices were brought as far forward on the palate as possible.

Spurs for thumbsucking prevention were formed from three segments of .032" stainless steel wire, soldered to the anterior bridge of the Quad Helix. The wire segments were inclined lingually to avoid impingement on the sublingual mucosa.⁸⁻¹⁰

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Fig. 1 7-year-old female with anterior open bite and unilateral posterior crossbite before treatment.



Fig. 2 Anterior modified Quad Helix appliance.

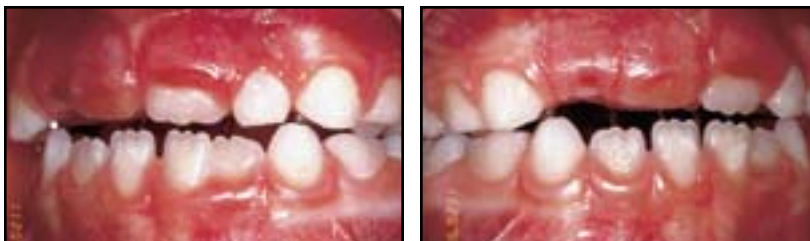


Fig. 3 After four months of active treatment.



Fig. 4 After four months of wearing passive Quad Helix.



Fig. 5 One year after removal of Quad Helix.

Treatment Progress

Initial activation of the Quad Helix, produced by simple finger pressure, was equivalent to half the buccolingual width of the banded molars and to the incisal edges of the primary canines on each side. Adequate expansion was achieved in four months (Fig. 3).

The Quad Helix was maintained in the expanded but passive position for another four months. After eight months of total treatment time, the cross-bite and open bite had been corrected (Fig. 4).

Relapse was successfully avoided with an overexpansion of 2mm. One year after active treatment, the patient still shows a stable Class I occlusion with no facial or dental midline deviations (Fig. 5).

Conclusion

The Quad Helix is one of the most versatile appliances that can be used in the early mixed dentition, because it is easy to use and well tolerated by patients. The modified appliance shown here is simple to fabricate and place. It can simultaneously correct posterior crossbite, through lateral expansion, and anterior open bite, by means of a habit-preventing metal segment soldered to the anterior bridge.

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