

Posterior Crossbites in Children

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According to some studies up to 10% of children have either anterior or posterior crossbites.¹ Most cases of posterior crossbites in the primary and mixed dentition are the result of a narrow maxilla accompanied by a mandibular shift, which upon closure causes a midline deviation. Factors involved in the etiology of crossbites include heredity, sucking habits and abnormal breathing due to enlarged tonsils and adenoids.

In the case of posterior crossbites, most clinicians agree that this abnormality should be corrected as early as possible with some authors suggesting that correction should take place no later than age 10 in order to avoid potential relapse or a dysfunction case later in life.² Since most children will visit either the general dentist or the pediatric dental specialist prior to age 10, it is essential that the dentist make the diagnosis and either refer the patient for treatment or treat the patient in his/her practice.

There are many different appliances designed to treat posterior crossbites, some removable and some fixed. My preference is to treat children early in the mixed dentition with fixed appliances, usually a quad-helix, although at times (especially in the older patient) I will select rapid palatal expansion as the appliance of choice.

As with all orthodontic treatment, orthodontic records should be obtained before making a diagnosis. In early treatment cases, the records that I obtain are a panoramic X-ray, study models (now digital) and photographs. I do not feel that a cephalometric radiograph is necessary unless there is a potential skeletal problem (i.e., Class II or Class III malocclusion) in addition to the posterior crossbite.

Case Study

The case study in this article is a 9 1/2 year old male patient who, in addition to a posterior crossbite, exhibits an anterior crossbite of the maxillary right central and the maxillary left lateral incisor (Figs. 1 and 2). I elected to treat this case with a quad-helix in the posterior segment, and simultaneously treat the anterior crossbites by bracketing the four incisors and placing an arch wire into these brackets. For this case I chose to take a maxillary arch impression and have all appliances including the archwires used made indirectly by Space Maintainers Laboratory (Fig. 3). Following the impression, we placed separating elastics between the second primary molar and the first permanent molar on the upper arch (Figs. 4 and 5).

We received back from the laboratory the quad-helix appliance on the model (Fig. 6) and the brackets and archwires (Fig. 7). At the initial treatment appointment, we first expanded the quad-helix about 12-15 mm and cemented it in place. Brackets were placed on the four incisors and the initial arch wire (Twist) was inserted into the buccal tube (ends turned up) and ligated to the four brackets (Figs. 8 and 9).

The patient was seen at four-week intervals. By the end of the second month the posterior crossbite was over corrected; the appliance was then made passive and left in place. We continued to see the patient,

changing the first arch wire to a utility arch (.016 x .016) provided by the laboratory (Fig. 10). Total treatment time was 7 months. Note in Figure 11 the over correction of the posterior crossbite.

I retain all posterior crossbites for a period of 10 months following expansion, no matter what type of appliance I have chosen to use for the correction. In the case of the quad-helix, I find that after we make the appliance passive the appliance itself can be used as the retention device. In the case of this patient, we made a Hawley retainer to hold the teeth because of both the anterior and posterior crossbite correction.

While I cannot say that this case will not require further orthodontic treatment after the permanent teeth erupt, it is certainly a necessary service to make this correction early while the patient is still in the mixed dentition.



Fig. 1: Patient's right side showing posterior crossbite and maxillary right central incisor crossbite.

References:

- 1 Cameron, A C, Widmer R P, *Handbook of Pediatric Dentistry*. Mosby; 2003
- 2 Slavicek, R, Gottlieb, E. *JCO interviews Dr. Rudolf Slavicek on Clinical and Instrumental Functional Analysis for Diagnosis and Treatment Planning, Part 1*. JCO Vol 22 Number 6, 1988: 358-370
- 3 Thilander, B et al. *The effect of early interceptive treatment in children with posterior x-bite*. Eur J Orthod 1984, 6:25-34



Fig. 2: Patients left side showing maxillary lateral in crossbite.

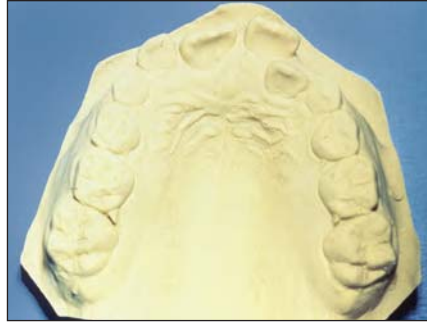


Fig. 3: Working model sent to laboratory.



Fig. 4: Separating elastic placed with separating elastic forceps.



Fig. 5: Separating elastic in place.

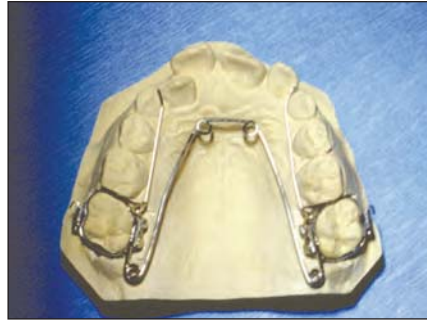


Fig. 6: Quad-helix received from Space Maintainers Laboratory on model.



Fig. 7: Anterior brackets and arch wires received from Space Maintainers Laboratory.

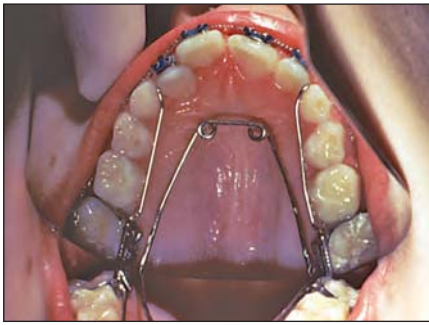


Fig. 8: Initial visit after cementation of appliance, bracket placement and insertion of the initial arch wire.



Fig. 9: Initial archwire after 1st visit.



Fig. 10: Utility archwire in place at 3rd visit.



Fig. 11: Anterior and posterior crossbite correction completed.

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Walt Pfitzinger, DDS, MS, began his practice of dentistry 35 years ago as a solo pediatric dentist. His practice has evolved into a group with four offices and consists of five general dentists, three pediatric dentists, an orthodontist, an oral surgeon, and an anesthesiologist.

A graduate of St. Louis University School of Dentistry, Dr. Pfitzinger received his advanced degree in pediatric dentistry from Marquette University. Always a student, Dr. Pfitzinger continues to improve his practice and teaching. He actively participates in courses led by world-renowned specialists in appliance therapy both in North America, Europe and Asia. He brings first-hand knowledge on what works and what doesn't with explanations and examples. Although removable appliances are an important adjunct to early orthodontic treatment and minor movement in adults, he also practices using fixed Straight Wire mechanics.