

EARLY TREATMENT OF POSTERIOR CROSSBITE IN DECIDUOUS DENTITION



- CLINICAL CASES

Carla Lavado^{1*}; Ana Alves Sousa²; Francisco do Vale³

1. Especialista em Odontopediatria; Especialização em Odontopediatria da Faculdade de Medicina Dentária da Universidade do Porto ;2. Médica Dentista, Mestrado Integrado em Medicina Dentária pela Faculdade de Medicina da Universidade de Coimbra; 3. Especialista em Ortodontia; Coordenador da Pós-graduação em Ortodontia da Faculdade de Medicina da Universidade de Coimbra.

Clínica de Medicina e Reabilitação Dento-Facial Prof. Francisco Vale

INTRODUCTION

Posterior crossbite is one of the most prevalent malocclusions in the deciduous and mixed dentition. Unilateral crossbite is the most common form, occurring from 80% to 97% of the cases, and it is due to transverse endognathics of the upper jaw with functional deviation of the mandible to the side of the crossbite.

The aim of this study is to highlight the importance of the early treatment of maxillary endognathia. Two clinical cases treated in deciduous dentition, with transverse maxillary expansion, were described, where the therapeutic approach was adapted to the particularities of each child.

CASE 1

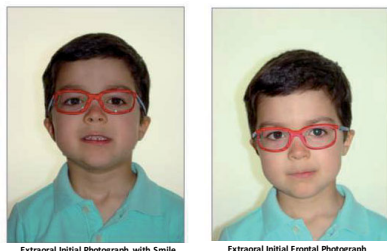
A 5-year-old male patient emerged at the Pediatric Dentistry / Orthodontics clinic, in order to evaluate dentition and facial growth.

CLINICAL HISTORY

- Healthy, without history of relevant pathology.
- He's never been hospitalized.
- Allergic rhinitis. Parents report episodes of snoring.
- No history of dental or maxillary trauma.
- Breastfeeding up to 6 months of age.
- No parafunctional habits.

EXTRAORAL EXAM

Mild Facial asymmetry in position of maximum intercuspation (PMI), with deviation of the chin to the left side in the mandibular closure - functional deviation.



Extraoral Initial Photograph with Smile

Extraoral Initial Frontal Photograph

FUNCTIONAL ANALYSIS

- Functional mandibular deviation to the left.
- Upper and lower lips with normal tonicity.
- Predominantly buccal breathing but with nasal permeability.

INTRAORAL EXAM

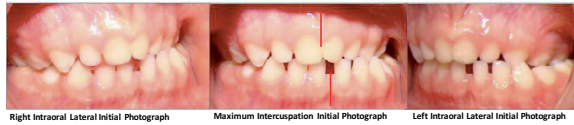
Sagittal plane: Chapman's terminal plane is flush bilaterally.

Vertical analysis: Overbite: 2mm

Anteroposterior analysis: Overjet: 1 mm.

Lower midline deviated to the left in PMI but centered with chin.

Transverse plane: Lateral and posterior left crossbite.



Right Intraoral Lateral Initial Photograph

Maximum Intercuspation Initial Photograph

Left Intraoral Lateral Initial Photograph

DIAGNOSIS

- ✓ Bilateral maxillary endognathia with functional deviation to the left at closure due to premature contact in the tooth 63.
- ✓ Left lateral and posterior cross-bite in PMI.



Extraoral Photograph (Mandibular Repositioning while Mouth Opening)



Intraoral Initial Photograph (tooth 63 prematurity)



Panoramic Radiograph

ORTHODONTIC-ORTHOPEDIC INTERCEPTIVE TREATMENT

Removable appliance like "Hawley Expander" with posterior bite planes.

- **Activation Period:** 1/4 of activation (0,25mm), 5/5 days, until an over-expansion of 1-2 mm is achieved.
- **Retention Period:** 6 months of night use without activation.



Superior view of Hawley Expander

Inferior view of Hawley Expander

FOLLOW-UP

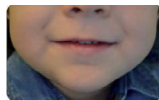
- 12 months after the appliance colocation, correction of posterior crossbite and mandibular repositioning are noticeable.
- It's currently in retention period, being the appliance used only at night to avoid relapses.



12 months after the treatment beginning photographs.



Intraoral photograph after 12 months - device expansion.



Extraoral photograph (noticing mandibular repositioning).

DISCUSSION

The treatments were successfully performed. There was a good collaboration between the parents and the patients allowing the correction of the crossbite in the predicted time. In the first case, a removable device was chosen as the parents ensured that the child adhered to the treatment. When there is this parental responsibility, the use of the removable device with posterior bite planes should be the first choice because, in addition to allowing a true orthopedic expansion (since the palatine suture has not yet started synostosis), it promotes neuromuscular reeducation, required for treatment stability. In the second case we opted for a fixed device since we were warned by the mother of the probable lack of collaboration with a removable one. At the end of the active treatment, the child was followed up by the speech therapist for neuromuscular re-education. The lateral deviation of the mandible, caused by the constriction of the arch, was corrected by promoting the correct closure of the mandible, correcting the crossbite and allowing the correct development of the dento-skeletal structures.

CASE 2

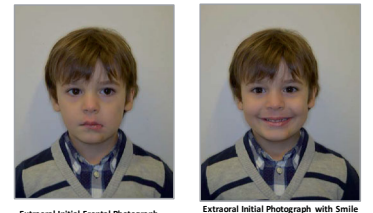
A 4-year-old male patient emerged at the Pediatric Dentistry / Orthodontics clinic in order to make a routine assessment.

CLINICAL HISTORY

- Healthy, without history of relevant pathology.
- He's never been hospitalized.
- Recurrent respiratory infections.
- Mother reports episodes of bruxism.
- No history of dental or maxillary trauma.
- Breastfeeding up to 6 months of age.

EXTRAORAL EXAM

Mild Facial asymmetry in position of maximum intercuspation (PMI), with deviation of the chin and lower lip to the left side in the mandibular closure - functional deviation.



Extraoral Initial Frontal Photograph

Extraoral Initial Photograph with Smile

FUNCTIONAL ANALYSIS

- Functional mandibular deviation to the left.
- Upper and lower lips with normal tonicity.
- Predominantly buccal breathing but with nasal permeability.

INTRAORAL EXAM

Sagittal plane:

- Chapman's terminal plane flush left.
- Chapman's terminal plane right mesial step

Vertical analysis: overbite: 4mm

Anteroposterior analysis: Overjet: 1mm.

Lower midline deflected to the left in PMI but centered with chin.

Transverse plane: lateral and posterior left cross bite.



Right Intraoral Lateral Initial Photograph.

Maximum Intercuspation Initial Photograph

Left Intraoral Lateral Initial Photograph

DIAGNOSIS

- ✓ Bilateral maxillary endognathia with functional deviation to the left at closure due to premature contact in the tooth 63.
- ✓ Left lateral and posterior cross-bite in PMI.

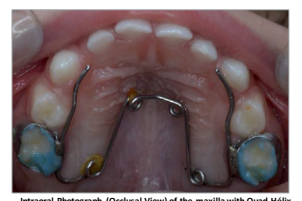


Panoramic Radiograph

ORTHODONTIC-ORTHOPEDIC INTERCEPTIVE TREATMENT

Fixed appliance - Quad-hélix.

- **Activation Period:** Controls from 4 weeks to 4 weeks (during 6 months).
- **Retention Period:** 6 to 12 months.



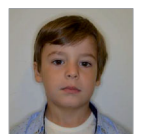
Intraoral Photograph (Occlusal View) of the maxilla with Quad-Helix

FOLLOW-UP

- 12 months after the beginning of the treatment, it is in retention period.
- The correction of the crossbite is visible, and the mandibular repositioning was accomplished by selective wears, in order to eliminate prematurities.



12 months after the treatment beginning photographs.



Extraoral Photograph 12 months after the treatment beginning.

CONCLUSIONS

The treatment of posterior crossbite should be started as soon as it is diagnosed. The functional asymmetry of the mandible can progress to structural asymmetry, since it conditions the symmetrical growth of the mandibular condyles and the tegumentary tissues. In cases where the definitive molar is expected to emerge in the oral cavity within six months, treatment may be postponed so that definitive molars can be included. It is agreed in the scientific literature that the early correction of unilateral posterior crossbites improves the functional alterations and eliminates the morphological and functional asymmetries of the mandible.

REFERÊNCIAS

1. Kulin G, Hawes RR. Posterior cross-bites in the deciduous and mixed dentitions. *Am J Orthod*. 1969; 56:491-504. 2. Egermark-Eriksson I, Carlsson GE, Magnusson T, Thilander B. A longitudinal study on malocclusion in relation to signs and symptoms of cranio-mandibular disorders in children and adolescents. *Eur J Orthod*. 1990;12:399-407. 3. Amiciele da Silva Andradia, Gustavo Hauber Gameiro, Moara DeRossi, Maria Beatriz Duarte Gavia. Posterior Crossbite and Functional Changes. *Angle Orthod*. 2008;79:380-4. Moyers R. Handbook of orthodontics. 2nd ed. Chicago: Year Book Medical Publishers, Inc. 1966. p. 332-41. 5. Thilander B, Lennarsson B. A study of children with unilateral posterior crossbite, treated and untreated, in the deciduous dentition - occlusal and skeletal characteristics of significance in predicting the long-term outcome. *J Orofacial Orthop*. 2002; 63(5):371-83.