# Deciduous Dentition-Anchored Appliance for the Correction of Anterior Crossbite: Case Report

School of Dentistry

#UTHealth Houston

Paloma R Nguyen, DMD; Elsa Echeverri, DDS

# CASE REPORT

This case report details the interceptive orthodontic treatment rendered to patient who presented to the Graduate Pediatric Dentistry Clinic at the University of Texas Health Center Houston.

A 10-year-old male presented for initial visit with a chief complaint of anterior crossbite. An unremarkable medical history was reported, no medications or known allergies. Dental history significant for rehabilitation under general anesthesia at age 7 with extraction of carious # 3, 14, 19, and 30. Clinical exam revealed healthy gingival tissues, disproportionate gingival heights on the central incisors, maxillary midline shift, moderate mandibular dental crowding, unerupted microdont #7, facial attrition on #9, and anterior crossbite from #8-9 with #23-25.







Figure 1. Initial extraoral photographs. a) Lateral view: Straight facial profile, nasolabial angle >90 degrees, competent lips, mental sulcus present; b) Anterior view: Square facial shape, symmetric, equal middle and lower thirds greater than the upper 1/3 of face; c) Anterior view-smile: low slime line, dark buccal corridors.







Figure 2. Initial intraoral photographs. a) Right: Flush terminal plane occlusion, Right Canine: Class I; b) Upper dental midline 3mm R of face, uneven gingival margins (apparent excess #9), lower dental midline coincident with face, anterior crossbite from #8-9 and #23-25; c) Left: Flush terminal plane occlusion, L Canine: Class I.

# DIAGNOSIS and OBJECTIVES

**Diagnosis:** crossbite of dental origin, maxillary midline deviation, moderate mandibular dental crowding, partial anodontia complicating bodily tooth movements, uneven gingival margins.

**Objective:** correct crossbite achieve adequate overbite/overjet relationship through interceptive orthodontics using of the following:

- Nance appliance with orthodontic bands on # A and # J for anchorage
- Brackets on all maxillary teeth to tip the incisors in labial direction
- Open bite with mandibular turbos to overcome anterior crossbite

## TIMELINE OF CARE

#### Diagnostic Records



### 2- week follow-up Enameloplasty #24, 25 to reduce occlusal interference Turbo's reduced





Aug. 2021 Sept. 2021 Oct. 2021

1-month follow-up 2-week follow-up

Anterior edge to edge (patient sliding into crossbite Overlay utility wire (0.40) placed and ligated with ligature wire to existing UAW at #C, 8 and



#### 6-month recall

Removed overlay wire and coi UAW: 0.018 NiTi

Nov 2021 Dec. 2021



#### De-bond

Jan. 2022

#8 labially positioned (likely 2/2 forces placed by power chain)
Midline shift Mx to R (less significant)





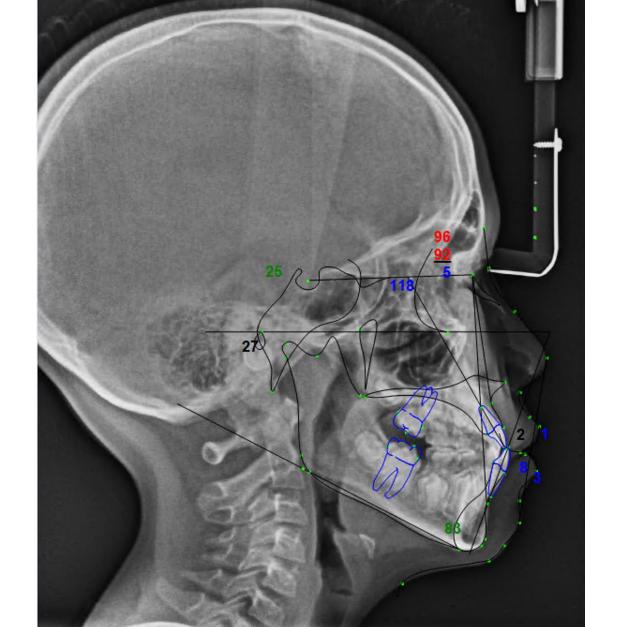


Figure 4. Initial cephalometric radiograp

June 2021



Appliance delivery and Turbos: # K, L, S and T

UAW: 0.012 NiTi

#### bracket bonding Nance delivery Bonded #B-C, #8-10 and #H-I

1 -month follow-up Anterior edge to edge (patient sliding into crossbite) Limited overbite

UAW: 0.018 NiTi



Utility wire overlay

delivery Anterior edge to edge Overlay utility wire placed and ligated with ligature wire to existing UAW at #C, 8 and H UAW: 0.018 NiTi



Nov. 2021

#### 2-week follow-up

#9 crossbite no longer noted Removed ligature wire between #C and 8 and replaced to the distal of #C to ensure engagement of coil spring. **UAW: 0.018 NiTi** 

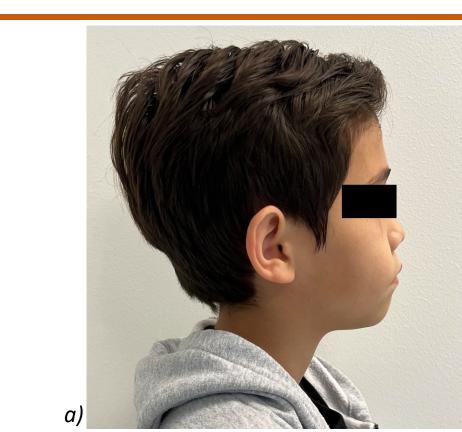


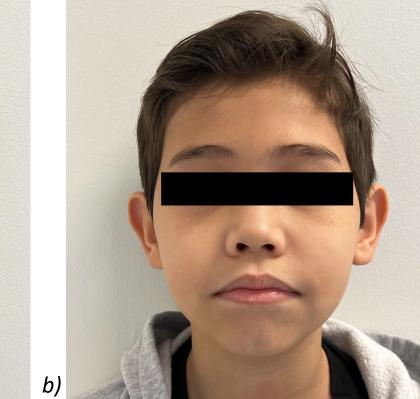
#### 1-month follow-up

Adequate overbite/overjet Midline shift to the R on Mx Removed and replaced UAW, coil springs placed #C-8 and power chain from #8-J. UAW: 0.018 NiTi

# DISCUSSION

- This report demonstrates the use of a deciduous dentition-anchored appliance to correct an anterior crossbite in the setting of missing permanent first molars.
- Follow-up for this case includes active monitoring of the development and eruption of tooth #7, and mesialization of #2, 15, 18 and 31.
  - In the presence of a flush terminal plane, we expect that the patient will end in a Class I molar relationship with the forward growth of the mandible and a shift of his teeth.
- Treatment is indicated for anterior crossbites as soon as a diagnosis is made in order to avoid attrition, damage to the periodontium, tooth mobility, restricted skeletal growth, TMJ dysfunction and loss of esthetics.
- Early correction of anterior crossbite allows for more harmonious and balanced muscular function and proper development of dental alveolar anatomy.
- Intervention is also important to maintain a high level of self esteem at this critical age, avoid bullying by peers, and promote proper psychological health and social development.
- A high level of patient compliance is required when considering the use of orthodontic appliances and case selection is critical.
- Patient and family cooperation played an important role in the success of this case.







Final extraoral photographs noting changes. a) Lateral view: convex facial profile; b) Anterior view: square facial share and symmetry remained consistent; c) Anterior view-smile: high slime line.







Figure 6. Final intraoral photographs. a) Right: Flush terminal plane occlusion, Right Canine: Class I; b) Upper dental midline 3mm right of face, uneven gingival margins (excess #9), lower dental midline coincident with face, 50% overbite, 3mm overjet; c) Left: Flush terminal plane occlusion L Canine: Class I.