Mixed Dentition Treatment and Habits Therapy

Tsung-Ju Hsieh, DDS, MSD

Interception
- Anterior Crossbites
- Posterior Crossbites
- Interference’s with Normal Eruption
- Habit Therapy

Anterior Crossbites
- Types:
  - Dental
  - Skeletal
  - Functional
- Why Treat
  - To prevent abrasion
  - To reduce periodontal problem
  - To eliminate traumatic occlusion

When:
- 8-10 years if you get cooperation

How
- Finger spring appliance
- Fixed appliance
- Extraction of primary canines is sometimes necessary

Activate 1.5-2 mm/month to produce 1 mm/month of tooth movement
skeletal class III
- Age 5 yrs 2 mos
- Mid-face deficiency

skeletal class III
- Age 5 yrs 2 mos
- Facemask
- If applied at early age, skeletal change is more likely

skeletal class III
- Age 5 yrs 2 mos
- Before tx

- Age 7 yrs 10 mos
- After tx

skeletal class III
- Anterior Crossbites
- Posterior Crossbites
- Interference’s with normal eruption
- Habit Therapy
Posterior Crossbites

- Posterior Crossbites
  - Dental Crossbites
  - Skeletal Crossbites
    - Unilateral
    - Bilateral
      - Shift
      - No Shift

Posterior crossbite

- What is the incidence of posterior crossbite?
- Does posterior crossbite self-correct from primary dentition to mixed dentition?

Posterior Crossbites in the Deciduous and Mixed Dentition

- 515 children examined
- 7.7% has posterior crossbite in both primary and mixed dentition
- 90% were bilateral or unilateral with shift
- 10% true unilateral

Kutin and Hawes, AJODO 1969

Conclusions

- Posterior crossbite is not self-correcting
- Untreated primary dentition crossbite is likely to be followed by mixed dentition crossbite involving permanent first molars (but not always)
- Treatment of crossbite favors development of secondary dentition not in crossbite

Kutin and Hawes, AJODO 1969

Posterior crossbite

- Why treat
  - Eliminate
    - functional shifts
    - wear on the erupted permanent teeth
    - Possibly dentoalveolar asymmetry
  - Increase arch circumference and provide room for the teeth
  - Early tx is stable, relapse into crossbite is unlikely in the absence of a skeletal problem

Treatment Approaches

- Equilibration to eliminate mandibular shift (often primary canines)
- Expansion of constricted maxilla (dentally and midpalatal suture)
- Repositioning of individual teeth to deal with intra-arch asymmetries
Expander

- Rapid palatal expander
  - Bonded expander
  - Haas expander
  - Hyrax expander
  - Superscrew
- Slow palatal expander
  - W arch
  - Quad helix
  - Removable expander

Rapid Palatal Expander (RPE)

- Bonded expander
  - Less inferior displacement of maxilla because of the force of elevator muscles
  - Superior movement of posterior palate
  - Good for long face or open bite patients

Haas Expander

- More flexible than Haas expander
- 2.5-3 times more dental tipping than Haas Expander
- Less sutural expansion

Hyrax Expander
Superscrew

- Hyrax expander: maximal expansion: 7 mm
- Superscrew: maximal expansion: 22 mm

Rapid Palatal Expansion

- Open more anteriorly
- Chance of opening suture before age 15: 100%

Aging of midpalatal suture (frontal view)

Disadvantages of Rapid Palatal Expansion

- Risk of distortion of facial structures (wider nose) if done in primary or early mixed dentition
- More bulky
- More difficult to place and remove
- Cleaning problems
- Patient or parent must activate the appliance

Advantages of RPE

- Greater expansion across the canines
- Greater increase of arch perimeter
- Easier to open the midpalatal suture in late mixed dentition because of heavier force

Slow palatal expander
W arch

- 0.036 ss
- Activate point 1 to produce posterior expansion
- Activate point 2 to produce anterior expansion

Treatment of W-arch

- Activate 4-5 mm initially
- 2-3 months of activation
- 12-16 weeks of retention for stability
- Usually overcorrected to allow for some rebound
Quad Helix

- 0.038 ssw
- Bulky anterior helices can help stopping a finger sucking habit
- Perfect appliance for patient with poster crossbite and thumb sucking habit
- Greater range of action than W-arch but the force is the same as W-arch
- Soft tissue irritation may occur

Pre-Tx

Post-Tx
Removable Palatal Expander

- Patient compliance needed
- It doesn’t fit even if the patient doesn’t wear it for one day
- Takes a long time to correct crossbite

Alternative Expansion

- Removable appliance with jack screw “Schwartz Appliance”
- Can be made for unilateral or bilateral expansion
- Activated ¾ mm per week
- Problem is compliance

Rapid vs. Slow Expansion

- Rapid expansion:
  - 0.5 mm per day (2 turns per day)
  - 10-20 pounds
- Slow expansion
  - 1 mm / week
  - 2-4 pounds

Posterior Dental Crossbite

Unilateral
No Shift
• The side of the arch to be expanded has fewer teeth against the lingual wire than the anchorage unit.
Treatment Timing

- Should be treated as soon as diagnosed in mixed dentition
- Early treatment appears to be stable
- Uncorrected crossbites can lead to undesirable wear patterns and functional patterns

Skeletal Correction

- Rapid palatal expander
- Banded or bonded
- Works by expanding the midpalatal suture prior to suture closure
- More extreme cases require surgery
• Anterior crossbites
• Posterior Crossbites
• Interference with Normal Eruption
• Habit Therapy

Interferences
• Ankylosis
• Mesiodens or Supernumerary
• Midline Diastema
  – Large diastema can lead to crowding or impactions

Ankylosed tooth
• Ankylosed primary tooth with a permanent successor:
  – Delay the erupting permanent tooth or deflect it from the normal eruption path.
  – Tx: maintain it until an interference with eruption or drift of other teeth begins to occur, then extract it and placing a space maintainer.

Ankylosed tooth
• Ankylosed primary tooth without a permanent successor:
  – Create a large vertical occlusal discrepancy because alveolar bone is not formed in that area.
  – Tx: extract it.

How to Treat Diastema
• If less than 2 mm: a removable appliance with tipping (for esthetic reason only)
  – 50% of diastemas 1.8mm or less will close when canines erupt

How to Treat Diastema
• If more than 2 mm: usually requires fixed appliance therapy
• Frenectomy is sometimes required
• Close space before frenectomy to avoid scar tissue which prevents or delays ortho tooth movement!
Supernumerary tooth

- Most common location: anterior maxilla
- Earlier the supernumeraries can be removed, the more likely that the teeth will erupt normally without further intervention.

Habit Therapy

- Thumb sucking
  - Age 3: 50% suck thumb
  - Age 6: 6% suck thumb
  - Age 12: 1% suck thumb
- Treatment: reminder appliance may be helpful

Thumb sucking

- During primary dentition: no influence
- If it persists beyond the time that the permanent teeth begin to erupt:
  - Flared and spaced maxillary incisors
  - Lingually positioned lower incisors
  - Anterior open bite
  - A narrow upper arch
• 9Y old white female
• Overbite: -6mm
• Thumb sucking and reluctant to quit

Blue grass appliance

Tongue Thrust
• Common in young children
• 80% regress by adulthood (Tongue is close to full size by age 8: but mx and md still have growth)
• Treatment:
  – Start with instruction and follow with appliance if necessary
  – Greatest effect is probably resting posture
Summary of Early Treatment

- Anterior Crossbites
- Posterior Crossbites
- Interference’s with Normal Eruption
- Habit Therapy