Mixed Dentition Treatment and Habits Therapy

Tsung-Ju Hsieh, DDS, MSD

Interception

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

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- Posterior Crossbites
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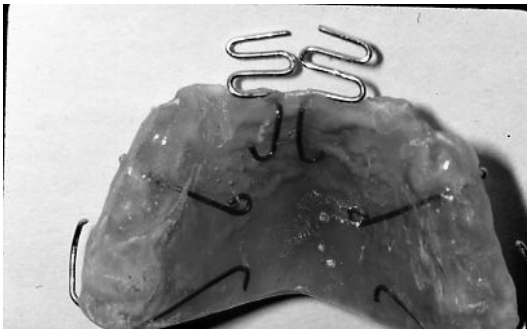
Anterior Crossbites

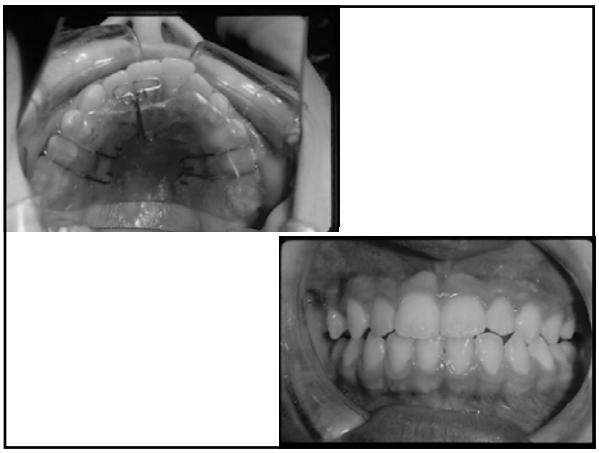
- Types:
  - Dental
  - Skeletal
  - Functional

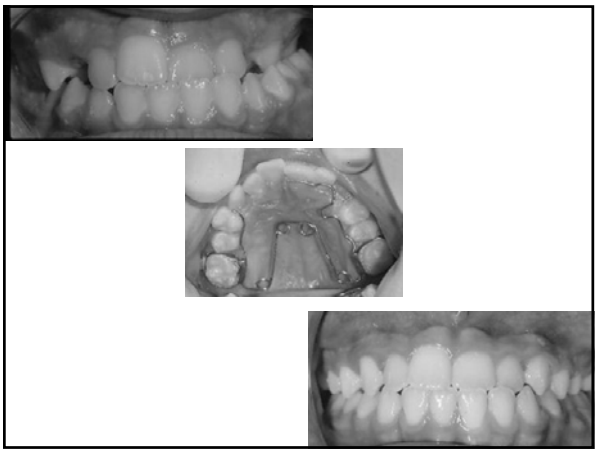
- Why Treat
  - To prevent abrasion
  - To reduce perio problem
  - To eliminate traumatic occlusion

- When:
  - 8-10 years if you get cooperation
- How
  - Finger spring appliance
  - Fixed appliance
  - Extraction of primary canines is sometimes necessary



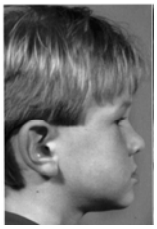
- Activate 1.5-2 mm/month to produce 1 mm/month of tooth movement





skeletal class III

- Age 5 yrs 2 mos
- Mid-face deficiency



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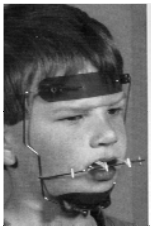
skeletal class III

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



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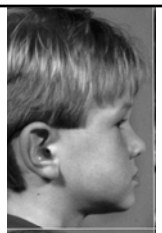
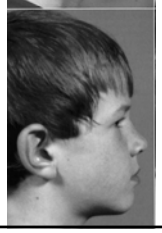
skeletal class III

- Age 5 yrs 2 mos
- Before tx



- Age 7 yrs 10 mos
- After tx



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- Anterior Crossbites
- Posterior Crossbites
- Interference's with normal eruption
- Habit Therapy

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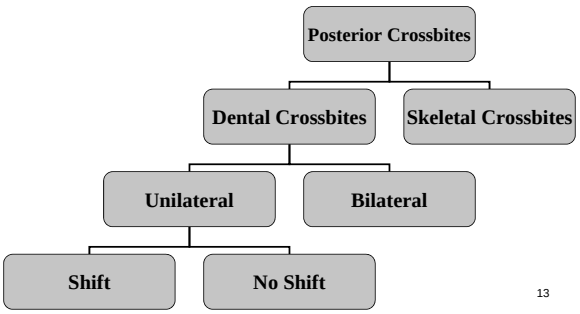
Posterior Crossbites



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Posterior crossbite

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

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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

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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

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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

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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

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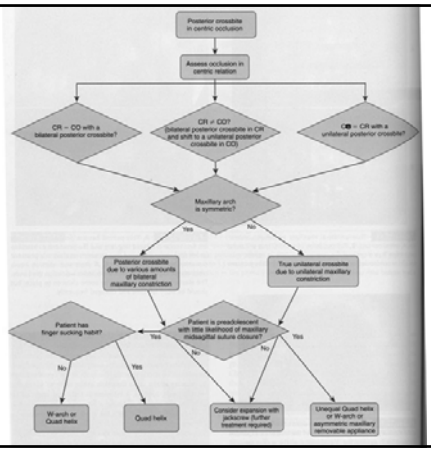

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Expander

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

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Rapid Palatal Expander (RPE)

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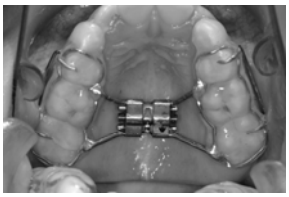
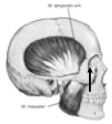
Bonded expander

- 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





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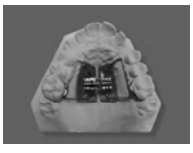
Haas Expander

- More tissue irritation



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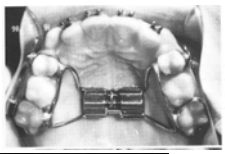
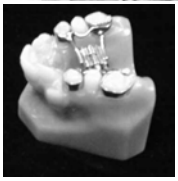
Hyrax Expander

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





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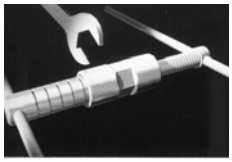
Superscrew

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



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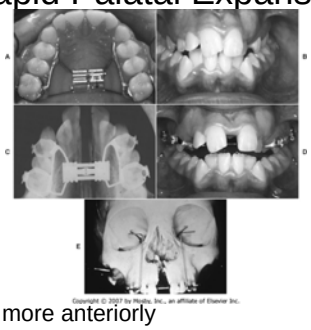
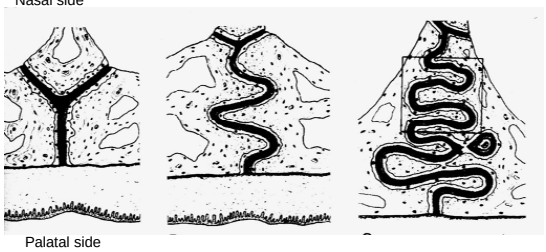
Rapid Palatal Expansion



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

Aging of midpalatal suture (frontal view)

Nasal side



Palatal side

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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

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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

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Slow palatal expander

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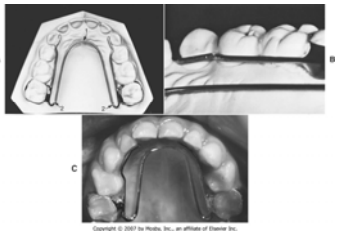
W arch

•0.036 ssw

•Activate point 1 to produce posterior expansion

•Activate point 2 to produce anterior expansion



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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

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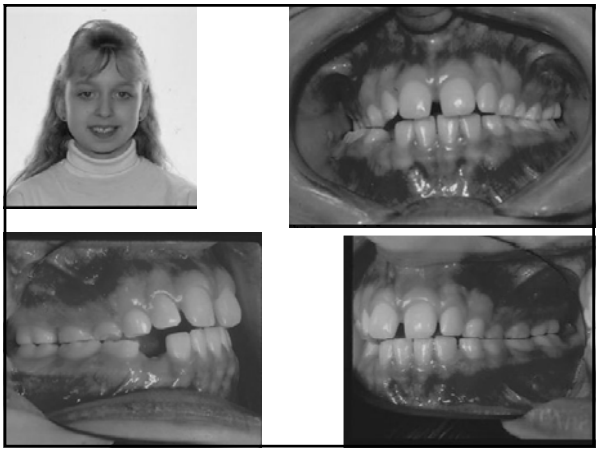
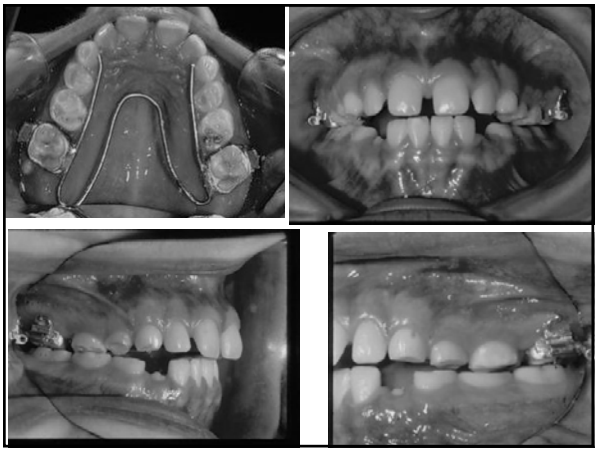
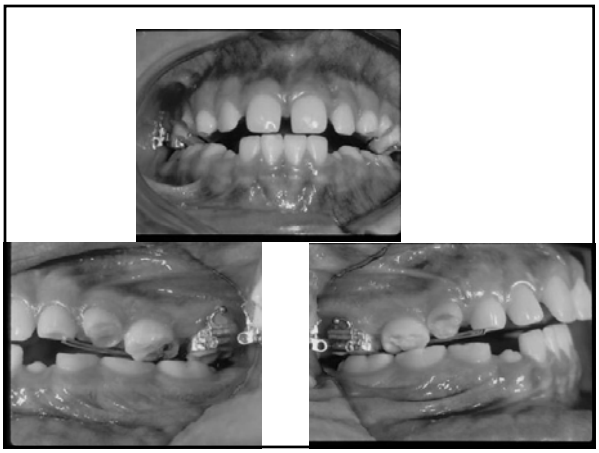
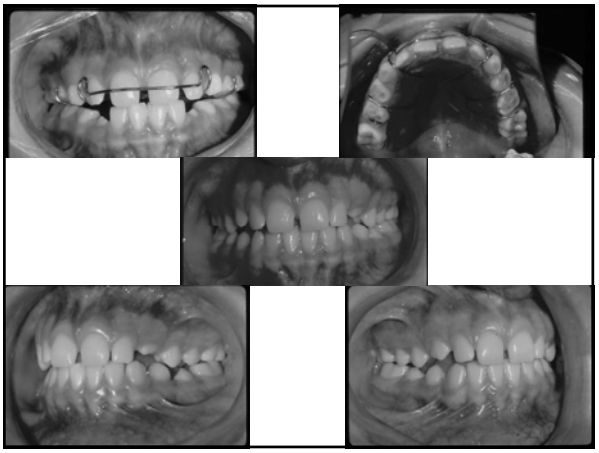


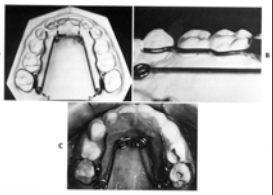






Quad Helix

- 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



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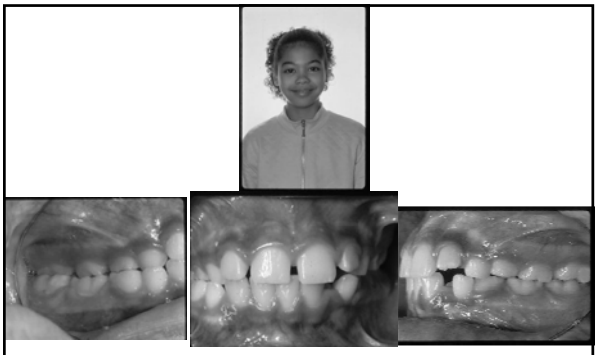

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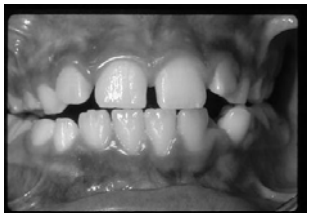

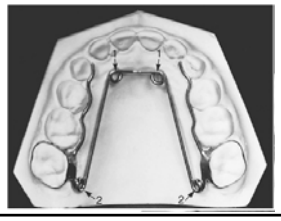

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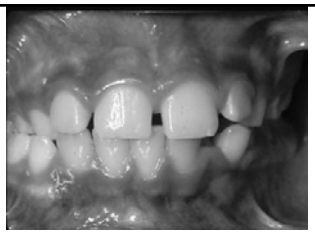
Pre-Tx



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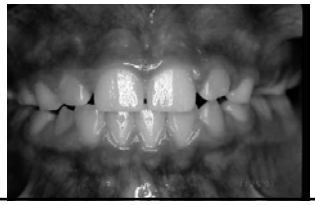

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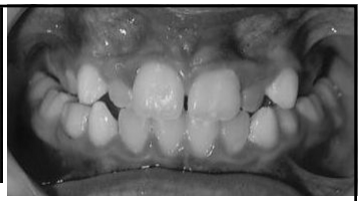

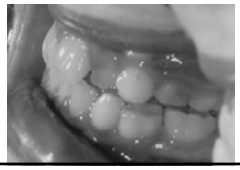

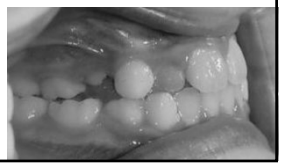

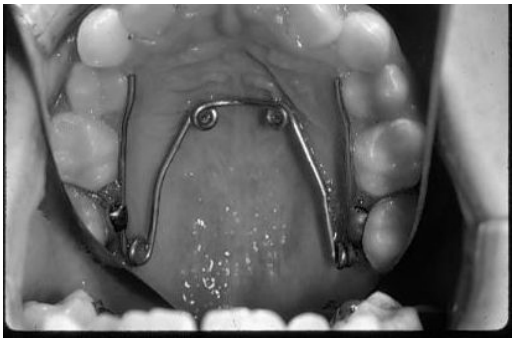

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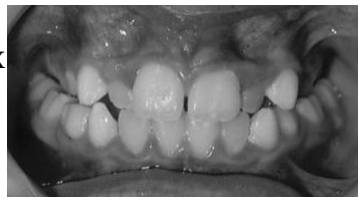

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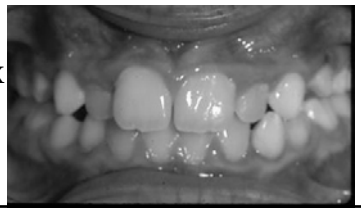

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Removable Palatal Expander

- 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

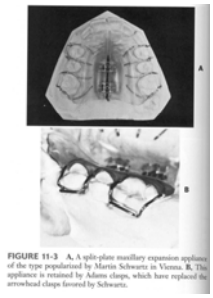

FIGURE 11-3 A, A split-plate maxillary expansion appliance of the type popularized by Martin Schwartz in Vienna. B, This appliance is retained by Adams clasps, which have replaced the arrowhead clasps favored by Schwartz.

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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

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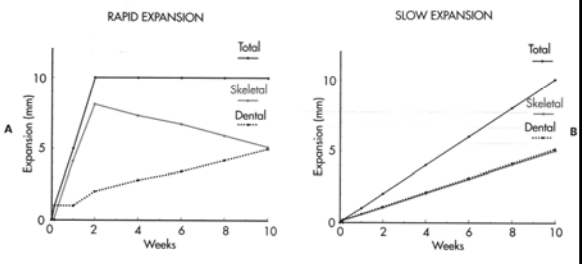
Rapid vs. Slow Expansion



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Posterior Dental Crossbite

Unilateral
No Shift

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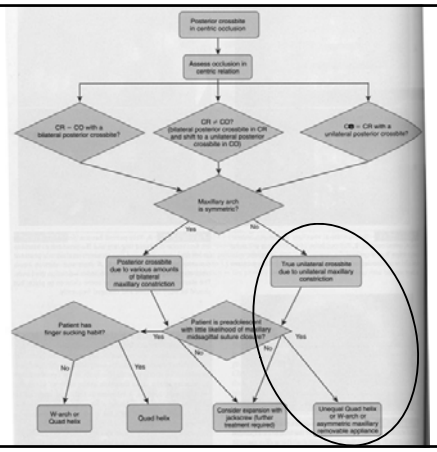

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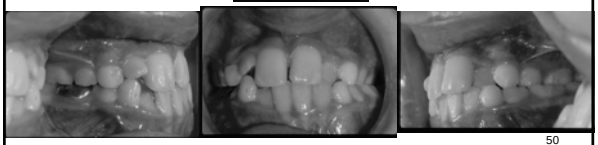
Approach 1



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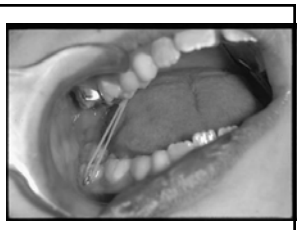

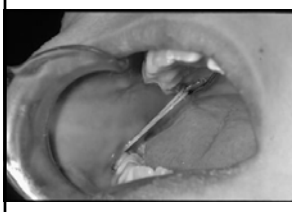

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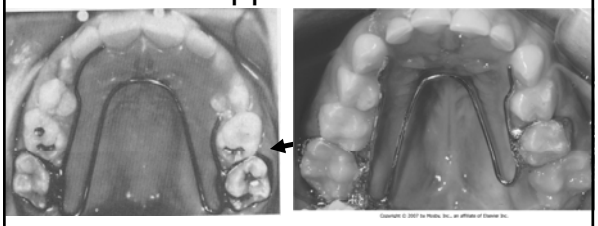
Approach 2



- The side of the arch to be expanded has fewer teeth against the lingual wire than the anchorage unit.

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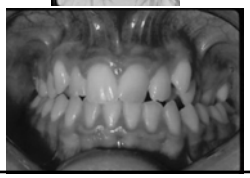
Approach 3



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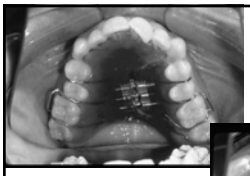

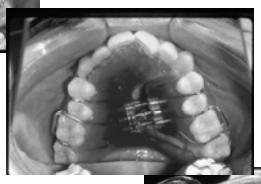

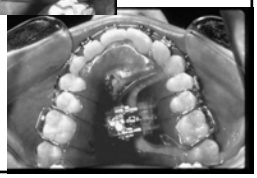

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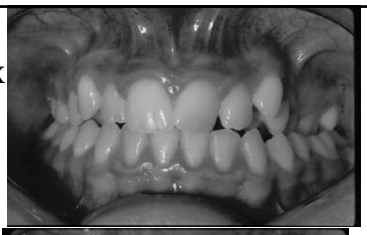

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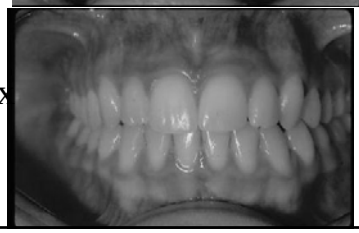

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Posterior Crossbite

Skeletal

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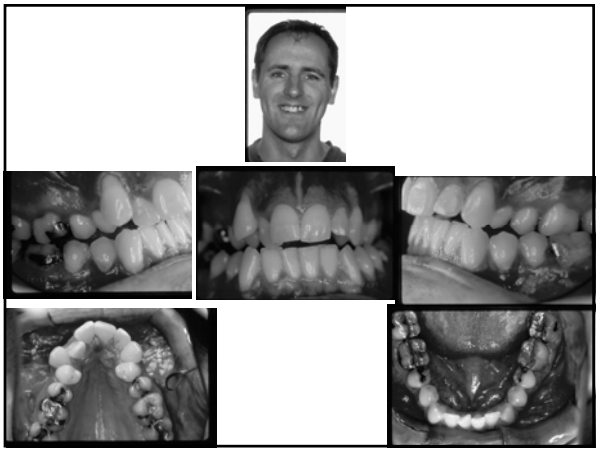

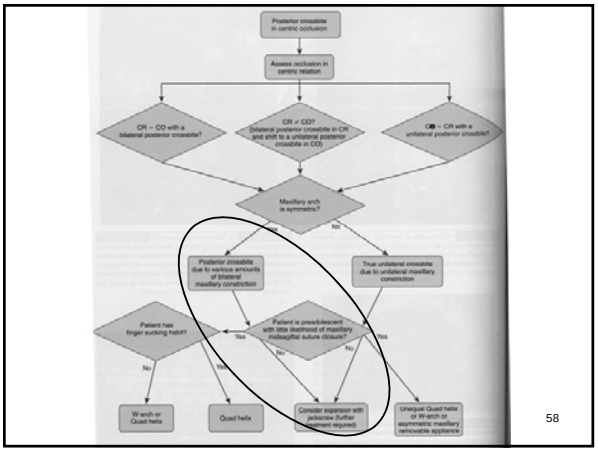

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Treatment Timing

- 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

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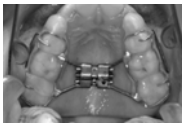
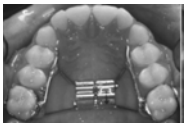
Skeletal Correction

- Rapid palatal expander
- Banded or bonded
- Works by expanding the midpalatal suture prior to suture closure
- More extreme cases require surgery





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- Anterior crossbites
- Posterior Crossbites
- Interference with Normal Eruption
- Habit Therapy

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Interferences

- Ankylosis
- Mesiodens or Supernumerary
- Midline Diastema
  - Large diastema can lead to crowding or impactions

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Ankylosed tooth

- Ankylosed primary tooth <u>with</u> 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.

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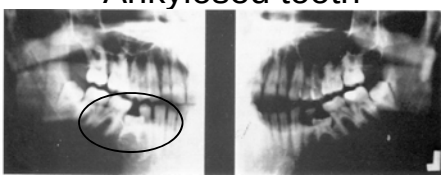
Ankylosed tooth



- Ankylosed primary tooth <u>without</u> a permanent successor:
  - Create a large vertical occlusal discrepancy because alveolar bone is not formed in that area.
  - Tx: extract it.

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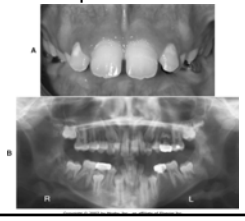
How to Treat Diastema

- 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



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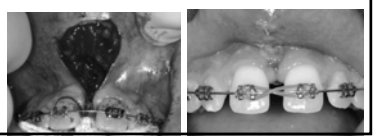
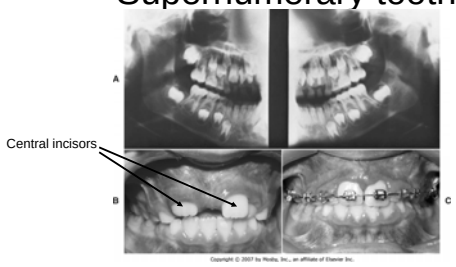
How to Treat Diastema

- 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.

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

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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

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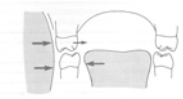
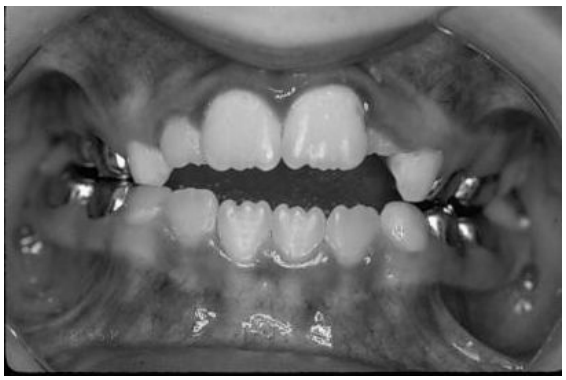
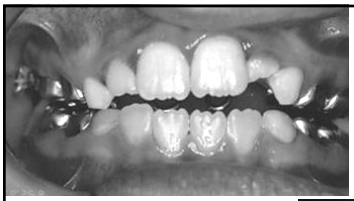
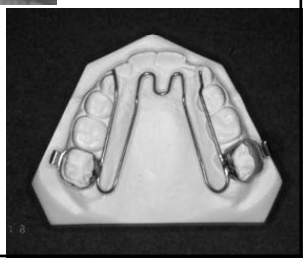
Thumb sucking

- 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

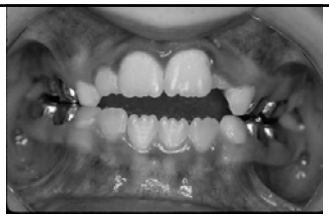




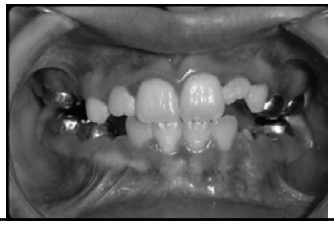




Pre-Tx



Post-Tx



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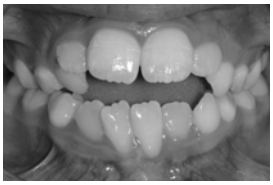
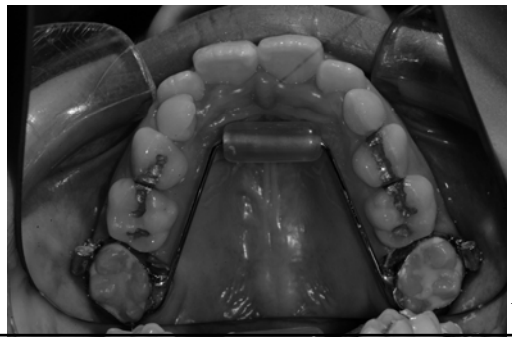
- 9Y old white female
- Overbite: -6mm
- Thumb sucking and reluctant to quit



Blue grass appliance



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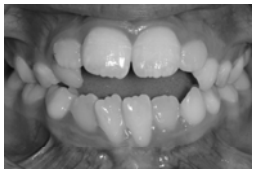

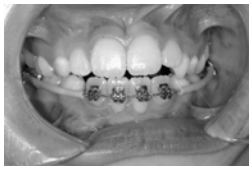

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Tongue Thrust

- 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

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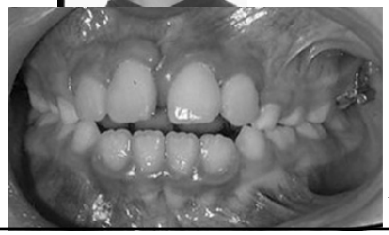

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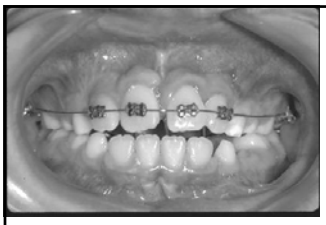
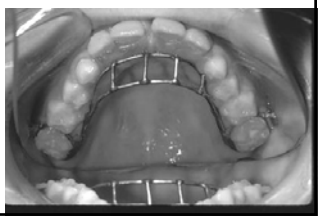
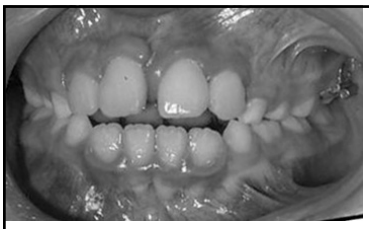
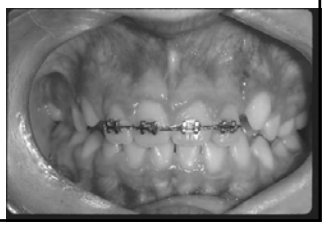


Tongue crib







Summary of Early Treatment

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

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