Feeding Infants with Cleft Lip and Palate: Tools and Techniques

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Cleft Lip and Palate Anatomy

Cleft Lip
- Unilateral or bilateral
- Incomplete: involves only the lip
- Complete: goes up into the nose

Cleft Palate
- Complete: Involves hard and soft palate
- Incomplete: soft palate only; can be quite small
- Soft palate is always missing
- There is free communication between mouth and nasal cavity

Cleft Lip and Palate
- Unilateral or bilateral
- Lip, hard palate and soft palate are involved
- There is free communication between mouth and nasal cavity
- Often with large premaxillary segment

Submucosal Cleft
- Little to no visual defect
- Defect is bony or muscular; below the visible tissue
- May see slight groove in palate and or bifid uvula
- Soft palate can not seal nasopharynx or oral cavity
Surgical Management in Infancy

- Goals of surgery:
  - Good functional result
  - Good cosmetic result
- Surgery must be timed with growth to achieve this balance
- Lip Repair: 3-6 months
- Palate Repair: 9-12 months
- Timing can vary between centers

Pre-surgical Strategies

- Improved function and aesthetics
- Taping
- Nasoalveolar molding devices
- Generally for more complicated CLP with premaxillary tissue
- Can impact feeding

Infant Sucking Mechanics

Positive Pressure

- Creating pressure brings milk into the baby’s mouth
- One kind of pressure is positive pressure or compression
- Babies with clefts usually show a rhythmic sucking pattern that creates compression
- But, compression is not very effective for obtaining milk by bottle or breast.

Infant Sucking Mechanics

Negative Pressure

- The second kind of pressure is negative pressure or suction
- This type of pressure is necessary for efficient milk transfer from bottle or breast
- To create negative pressure the baby must have a “sealed oral cavity”
- Most babies with CLP do not have a sealed oral cavity

The feeding problem in cleft lip &/or palate

- Inability to have a sealed oral cavity
  - Unable to create suction force
  - Affects ability to transfer milk from a “container”
- Importance of suction:
- Bottle:
  - Required for efficient/effective flow
  - Compression creates minimal flow
- Breast:
  - Draws breast into mouth and maintains position
  - Compression stimulates let down, but won’t produce adequate milk transfer

Poor Suction = Poor Milk Flow
Cleft Lip/Palate & Swallowing

- With cleft palate, there will be food in the nasal cavity
  - Liquids may come out the nose
  - Increased risk for ear infections
- Bolus control may not be optimal, which can lead to poor timing of swallow/breathe control
- With isolated clefts of lip and/or palate swallowing function typically intake
- Risk of swallowing dysfunction increases with concurrent genetic syndrome

Effect of Anatomy on Feeding

- There is wide variation in the presentation of clefts of the lip and/or palate
- For all types of clefts, the main problem underlying infant feeding difficulties is the inability to produce suction
- Secondary feeding issues relate to fluid management
  - Food into the nasal cavity
  - Timing of bolus movement with sucking and swallowing

Goals for Infant Feeding

- Must be effective and efficient
  - Baby gets as much food as possible (and know how much)
  - Does not take too much time
- Must be comfortable for baby (not stressed)
- Must be safe
- Must nourish the baby adequately
  - Fortification and/or tube feeding may be needed

VFSS Cleft Palate

Feeding Techniques and Tools

Feeding Position

- Elevated, so gravity helps food go down, less into nasopharynx
  - Upright cradle
  - Elevated sidelying
- Interplay of baby’s anatomy and feeding position need to be considered
Feeding Strategies

1. Occlude the cleft
2. Devices to assist milk delivery

- Occlude the Cleft: Cleft Lip
  - Cleft lip – fill the gap so baby can create suction
    - Breastfeed
    - Wide based nipple
    - Taping

- Occlude the Cleft: Cleft Palate
  - Cleft Palate
    - Obturator
    - NAM
  - Never fully occluded
  - Provides more palatal surface for compression

- Feeding Strategies: Assisted milk delivery
  - Special bottles designed to be effective for babies who can not create suction
  - Type 1: Feeder assists with flow by squeezing
    - Flow is determined by squeezing pattern and nipple flow rate
  - Type 2: Nipple has a one way valve so compression is more effective
    - Flow is determined by nipple flow rate
    - Work best with larger palatal surface
  - Parents must receive hands-on instruction in use
    - Parts and set up can be complicated
    - Important to match flow rate to baby’s suck/swallow/breathe pattern.

- Assisted Milk Delivery: Bottles / Nipples
  - Feeder controls flow, not baby
  - Nipple can be chosen for best flow
  - Squeeze pattern needs to be in sync with sucking (a “dance!”)
    - “squeeze → wait → squeeze → wait”
    - Deliver a mouthful not a stream

- Haberman Feeder

Mead Johnson CLP Feeder
Assisted Milk Delivery: Bottles / Nipples

- Makes compression more effective
- Feeder does not assist with flow
- 2 nipple sizes/flow rates, both have tricut
- Even lower flow nipple can be too much for some young babies

Pigeon Nipple

Assisted Milk Delivery: Bottles / Nipples

- Makes compression more effective
- Feeder does not assist with flow
- Multiple nipple flow rates to select from

Dr. Brown’s bottle with cleft palate valve

Feeding Strategies: Breastfeeding

- Prognosis for full breastfeeding is dependent on type and size of cleft
- Cleft lip – breastfeeding can work well
  - Breast tissue fills in “gap” to create adequate seal
- Cleft palate (with or without cleft lip) - rarely is baby fully nourished at breast
  - Lack of suction limits latch and milk transfer
- Breastfeeding options:
  - Nurse through let down
  - Hand express into baby’s mouth
  - Assisted flow at breast

Feeding Strategies: Breastfeeding

- Assisted milk flow at the breast
  - Tube and syringe
  - Hazelbaker finger feeder
  - Lact Aid
  - SNS?
  - Obturators not typically effective

Use of Breastmilk

- Despite poor chances for successful breastfeeding, breastmilk feeding is recommended
  - Generally the best food for infants
  - Particularly important for cleft palate, since high risk of ear infections
- Mom’s will need to pump to build/maintain milk supply
  - Begin immediately after birth (even if trying to do some breastfeeding)
  - Support as needed with milk building strategies

Successfully Feeding the Baby with CLP

- The baby has adequate nutrition for growth
- The feeding system is efficient
  - Balances time spent in feeding
    - Mom must also have time to pump
    - Baby needs time for adequate rest
  - Baby’s not expending too much energy or calories in feeding
- The feeding system is safe
- There is not just one answer – tools must be matched to baby’s specific anatomy and feeding characteristics