Treatment Strategies for Children with Complex Cleft and Craniofacial Differences

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Disclosures

- Mandulak
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- Beaulieu
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- Brockman
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- Sanford Keller
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Objectives

- Review core elements of speech intervention programming for children with cleft palate/craniofacial disorders, including principles of motor learning and supporting oral airflow for sounds.
- Discuss targets for speech intervention and potential speech goals for children with cleft palate/craniofacial disorders.
- Identify strategies for teaching air-pressure and non air-pressure sounds to children with cleft palate/craniofacial disorders.

Cleft Palate Speech

Errors

Obligatory – result of structural or physiological difference, as well as presence of maxillary appliances

- Nasal Air Emission
- Turbulence/Nasal Rustle
- Reduced Intra-Oral Air Pressure
- Weak Oral Consonants

Cannot be corrected by speech intervention;
However if the error impacts intelligibility and physical management will not be taking place within 6 months you may consider teaching compensatory adaptations to improve clarity.

Cleft Palate Speech

Errors

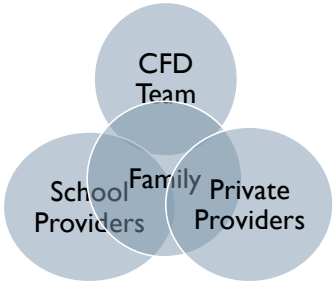
Compensatory Adaptation – closest possible approximation to a sound. They sound close to the target sound but they look incorrect.

- Articulatory Inversion (upside down /f/)

Compensatory Maladaptive – they are employed to constrict air thus creating pressure, but more than likely produced in the wrong place resulting on poor speech

- Glottal stops – stop made at glottis "uh uh"
- Nasal Snorts/nasalized phonemes – airflow forced out the nose accompanied by attempts sound production (s, z)
- Pharyngeal Fricatives – fricatives and affricates made at the larynx (ch)
- Posterior Nasal Fricative – fricatives and affricates made at the pharynx (sh)
- Mid Dorsum Palatal Stops – stop with the mid tongue

Intervention takes a TEAM



Why do we provide intervention?

- To teach correct placement (p) and manner (m) of speech sounds
- To correct/eliminate or re-teach P and M for maladaptive compensatory articulation patterns
- To teach P and M before and after surgical intervention
- Speech intervention's purpose is to teach and correct P and M.

Speech intervention DOES NOT correct structure

INTERVENTION : MYTHS AND REALITY

Intervention Myths Vs. Reality

- Babies and Toddlers are too young for speech intervention
- Speech intervention is not needed until after initial palatal repair (experts do not always agree)
- Discourage speech until after initial palate repair or errors will be learned
- Babies and toddlers need oral motor therapy because they have weak or lazy muscles
- All children with clefts need speech intervention
- Speech intervention will not be effective until after secondary surgery
  - Speech intervention is not needed following secondary surgery for speech
- Give them time and they will grow out of it

Golding-Kushner, Therapy Techniques for Cleft Palate Speech and Related Disorders

Case Study: Toddler with Cleft Palate

- 2 years, 1 month
- Cleft diagnosis: Median incomplete cleft palate
- Surgeries: Repaired with intact palate
- Sounds produced: vowels, M, N, W, NG
- Errors: Glottal stops, nasalized sounds
- Behavior: Active, enthusiastic, avoids direct imitation of sounds, eager to explore the room
- What should I target?

Goals

- Supporting manner, placement, and understandability
  - Use of oral airflow
  - Facilitation of early air-pressure sounds
  - Use of non-air pressure sounds in words to increase understandability

Targets

- Imitation of actions and gestures in play
- Use of M, N, H, W, Y in functional words to increase understandability
- Early air-pressure sounds P and B

Strategies

- Use placement of nasal sounds (M) to support oral sounds (B)
- Target anterior sounds as children often use posterior placement (glottals)
- Target nasal and low-pressure consonants, then high-pressure consonants
- Provide visual cues, specific verbal cues, tactile cues

Remediating Nasalized Phonemes

- Upstairs/downstairs sounds (nasal vs. oral airflow)
- Nasal occlusion and release
- Use one sound to facilitate another
- (M to B)

Low Tech Biofeedback Materials

- Mirror
- Tactile Cue
- Feathers

Preschool Intervention: Case Study

- Almost 3 year old male
  - Repaired unilateral cleft lip and palate
- Never received any speech intervention
- Issues with PLACE … not manner
  - Articulation ... Not resonance
  - Airflow – YES, but ...

Preschool Intervention: Case Study

- Targets
  - Bilabials (anterior sounds)
  - Alveolars (anterior sounds)
  - Airflow for fricatives
    - Not the actual fricative itself (i.e. targeting /s/ from an articulation standpoint – but to eliminate stopping // facilitate oral airflow)
    - NOT because of VPD

Case Study: Bilateral Complete CL/P

- 4 years
- Cleft Diagnosis: Bilateral Cleft Lip and Palate
- Surgeries: Initial repairs, intact palate
- Sounds produced: A, I, U, OO, Y, N, D & S
- Error: Glottal stops
- Behavior: Compliant

Goals

- Supporting oral manner (oral production), and placement
  - Use of oral airflow
  - Remediate glottal stops

Targets

- Oral air flow for H
- Non air-pressure sounds M, N, W and Y
- Early Air pressure sounds P and B

Strategies

- Use oral manner for H to support oral air flow
- Target non air pressure
- Target anterior air pressure sounds P and B to avoid posterior productions
- Use normal volume and effort as increased effort reinforces glottal productions

Teaching Tips for Sound Production Early Air Pressure Sounds /P/ & /B/

- CAUTION:
  Do not encourage the child to use excessive energy when releasing air from the lips as this may add or reinforce maladaptive compensatory errors.

Remediating Glottal Stops

- Start with /h/ regardless of age if glottal stops are being employed (vocal folds cannot make contact when prolonging /h/).
- Ex. Initial /p/ Phhhha/pa and p…hhhho
- Whisper sound production in isolation (vocal folds cannot make contact while whispering).
- Target voiceless sounds (vocal folds are abducted when producing voiceless sounds).
- Add voicing

Case Study

- 5 years 6 months
- Cleft Diagnosis: Cleft Palate Only, Oral Motor Dysfunction
- Surgeries: Initial repair (late) in China by US team
- Sounds produced: M, N, H, W, Y, P, B, T, D, K, G
- Error: Pharyngeal Fricatives
- Behavior: Compliant

Goals

- Supporting placement
  - Use of oral placement rather than pharyngeal
  - Remediate pharyngeal fricatives
  - Support placement and manner in words, phrases and conversation (stabilize existing repertoire)

Targets

- Stabilize existing repertoire in words and phrases
- Increase repertoire to include: F, L, voiced and voiceless Th
- Oral placement of Sh, Ch, J, S and Z

Strategies

- Principles of motor learning to support speech sound repertoire (100-200x). Don't be afraid to back up ☺
- Use sounds to facilitate oral rather than pharyngeal placement (ttt…ssss, sh…ssss, th…ssss)
- Consider voicing

Remediating Pharyngeal Fricatives

S

- Produce a loud /t/ ttttttttt
- Produce /t/ with teeth closed in order to produce /ts/ production
- Increase prolonged /tsssssssss/
- Start with /ts/ + vowel = /tsssssseeee/
- Fade /t/ when possible

Remediating Pharyngeal Fricatives

Sh and Ch

- Stick tongue out and blow /th/
- Pull tongue back to /s/
- Pull tongue back further to /sh/
- Move from /sh/ to /ch/ by stopping and releasing airflow

- Can also be used for nasal pharyngeal fricatives

FYI

Remediating Mid Dorsum Palatal Stops

- Bring tongue tip to underside of upper lip
- Blow and release tongue /t/ and /d/
- Move to teeth for placement
- Move behind central incisors
- Move to alveolar ridge

Babies and Intervention

- Our first goal is to model methods of speech sound stimulation, elicitation of sounds and reinforcement of desired responses for parents and caregivers.
- Parent training and participation in intervention is critical.
- Home programs should be taught to incorporate materials found in the home, as well as integrating techniques during daily activities such as meal times, bath times, and tummy time.
- If the child does not respond to on going speech stimulation provided by the family within 6 months, a more direct treatment approach with a licensed speech language pathologist is indicated.

Babies and Intervention 8-12 Months or Pre-Palatal Repair

- For babies not producing vowels, start with sustained vowel productions (ah or ooh).
- For babies not using their lips, model vowel sequences with /w/, such as "oowee or owee".
- For babies using their lips (producing sounds such as /w/), but perhaps not using lip closure, you may model /m/ in prolongation "mmmmmm" then in chaining "mamama".
- To encourage babies to move or play with their tongue, you may model either face to face or in the mirror, sticking tongue in and out, raspberries, motor boat, lip smacks and pops.

Babies and Intervention
8-12 Months or Pre-Palatal Repair

- For babies doing a lot of tongue exploration (sticking tongue in and out, raspberries or motor boat) but not yet producing tongue tip sounds, you may model /n/ in prolongation "nnnnn" then in chaining "nanana", as well as /l/.
- Play with sustained aspiration "hhhhhhhh" to support oral air flow
- Open and close mouth during sustained aspiration of "hhhh" to achieve /p/
- For vocal babies using non air pressure sounds plus vowels, 12 months or older with unrepaired palates, you may model and target first words such as: hi, hello, hey, honey, mama, mommy, more, me, mine, no, whoa, wow.

Babies and Intervention
12+ Months or Post Palatal Repair

- For babies using non air pressure bilabial sounds /m/, you may model /p/ and /b/ chained with vowels (bababa).
- For babies using non air pressure lingual-alveolar sounds /n/, you may model /t/ and /d/ chained with vowels (dadada).
- For babies producing voiced sounds, nasal /m/ and /n/, modeling a voiced air pressure consonant /b/ and or /d/ may be your first target.

Babies and Intervention
12+ Months or Post Palatal Repair

- For babies having difficulty with oral air flow in coordination with sound production, you may model /p/ in initial position with aspiration followed by lip closure "phhhhhhhhhhp". If the baby has trouble with /p/ in initial position start with aspiration followed by lip closure "hhhhhhp"
- Introduce /k/ and /g/ only if glottal stops are not being produced. If glottal patterns emerge due to introduction of velar sounds, target a different sound.

Thank you!

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References

- Chapman, K. L., Hardin-Jones, M. A., Schulte, J., & Halter, K. A. (2001). Vocal development of 9-month-old babies with cleft palate. Journal of Speech, Language, and Hearing Research, 44, 1268–1283.
- Golding-Kushner, K. (2001). Therapy Techniques for Cleft Palate Speech and Related Disorders. Clifton Park, NY: Thompson.
- Hill, M.A. (2018). Embryology Book. Textbook of Embryology 8. Retrieved from https://embryology.med.unsw.edu.au/embryology/index.php/Book_-_Text-Book_of_Embryology_8
- The LEADERS Project. English Cleft Palate Directory. Retrieved from Leadersproject.org on 8/23/17.
- Paradise, J. L., Bluestone, C. D., & Felder, H. (1969). The universality of otitis media in 50 infants with cleft palate. Pediatrics , 44, 35–42
- Parker SE, Mai CT, Canfield MA, Rickard R, Wang Y, Meyer RE, Anderson P, Mason CA, Collins JS, Kirby RS, Correa A; for the National Birth Defects Prevention Network. Updated national birth prevalence estimates for selected birth defects in the United States, 2004-2006. Birth Defects Research (Part A): Clinical and Molecular Teratology 2010;88:1008-16.

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