

## Articulation and Resonance

In the population with VCFS/22q11.2 Deletion Syndrome

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## Articulation and Resonance

- Population with VCFS
  - Hypotonicity of velopharynx
  - Palatal differences
  - Motor planning deficits
  - Late diagnosis
  - Inappropriate speech therapy

## Articulation and Resonance

- Hypotonicity of the Velopharynx
  - Velo = Velum
  - Pharynx = Lateral and posterior pharyngeal wall
  - Possible history of nasal regurgitation during feeding
  - Global hypotonicity
  - History of recurrent ear infections

## Articulation and Resonance

- Palatal differences
  - History of cleft palate
  - Possible submucous cleft palate/occult submucous cleft palate
  - “Deep nasopharynx”
  - Poor movement (velopharyngeal hypotonicity)

## Articulation and Resonance

- Motor Planning Deficits
  - Inability to execute
    - Release of air
    - Initiation of voicing
    - Velopharyngeal closure
    - Use of tongue/lips for oral articulation

## Articulation and Resonance

- Late Diagnosis
  - Established use of abnormal articulation
  - Possible behavior and cognitive challenges

## Articulation and Resonance

- Inappropriate Speech Therapy
  - Blowing exercises
  - Non-speech Oral motor exercises (NSOME)
    - Tongue elevation
    - Massage

## Articulation and Resonance

- | <b>Articulation</b>  | <b>Articulation Disorders</b>   |
|--|---|
| <ul style="list-style-type: none"> <li>• Production of speech sounds               <ul style="list-style-type: none"> <li>– Nasals                   <ul style="list-style-type: none"> <li>• m,n,ng</li> </ul> </li> <li>– Stops                   <ul style="list-style-type: none"> <li>• p,b,t,d,k,g</li> </ul> </li> <li>– Sibilants                   <ul style="list-style-type: none"> <li>• s,z</li> </ul> </li> <li>– Affricates                   <ul style="list-style-type: none"> <li>• sh,ch,j</li> </ul> </li> <li>– Fricatives                   <ul style="list-style-type: none"> <li>• f,v,th</li> </ul> </li> <li>– Vowels</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Glottal Stops/Pharyngeal Stops</li> <li>• Nasal Fricatives/Velar Fricatives</li> <li>• Overuse of nasal sounds</li> <li>• Limited vowel development</li> <li>• Final consonant omission</li> <li>• Initial consonant omission</li> </ul> |

## Articulation and Resonance

- | <b>Resonance</b>  | <b>Abnormal Resonance</b>   |
|---|---|
| <ul style="list-style-type: none"> <li>– Coupling and uncoupling of the oral cavity and nasal cavity</li> <li>– Achieved by rapid “opening and closing” of the velopharynx during speech</li> <li>– Velum</li> <li>– Lateral pharyngeal walls</li> <li>– Posterior pharyngeal wall</li> </ul> | <ul style="list-style-type: none"> <li>• Hypernasality               <ul style="list-style-type: none"> <li>– Too much nasal airflow on vowels</li> </ul> </li> <li>• Nasal air emission               <ul style="list-style-type: none"> <li>– Bursts of air found on consonants</li> </ul> </li> <li>• Hyponasality               <ul style="list-style-type: none"> <li>– Lack of nasal airflow on vowels</li> </ul> </li> </ul> |

## Articulation and Resonance

- Population with VCFS/22q11.2 Deletion Syndrome
  - Resonance imbalance only
  - Articulation disorder only
  - Articulation disorder and resonance imbalance

## Articulation and Resonance

- | <b>Treatment for Articulation Disorder</b>  | <b>Treatment for Resonance Imbalance</b>  |
|---|---|
| <ul style="list-style-type: none"> <li>• Early treatment (1-3 years)               <ul style="list-style-type: none"> <li>– Frequent and shorter therapy sessions</li> <li>– Language and articulation focus</li> <li>– Set up use of oral cavity</li> <li>– Repetition</li> </ul> </li> <li>• Child treatment (3-5 year)               <ul style="list-style-type: none"> <li>– Early diagnosis and when possible treatment of velopharyngeal dysfunction</li> <li>– Appropriate therapy post surgery</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Appropriate Surgical Intervention               <ul style="list-style-type: none"> <li>– Appropriate pre-operative study</li> <li>– Recognition of limitations of the velopharynx</li> </ul> </li> </ul> |

## Articulation and Resonance

- Consider
  - Not all speech therapy is beneficial
    - i.e. blowing therapy
  - Not all surgeries will provide results
    - i.e. “Furlow” palatoplasty
  - Attendance for speech therapy is mandatory
    - Regular attendance makes a big difference
  - Homework by family is mandatory
    - Each morning and evening family must also work on therapy
  - Cognition and behavior influence speech therapy
    - Attention to task; refusal to participate