

Resonance Disorders and Velopharyngeal Dysfunction: Part II. Assessment and Intervention

Ann W. Kummer, PhD, CCC-SLP

Perceptual Assessment

Resonance:

The following speech samples can be used:

- Best assessed by evaluating connected speech (spontaneous or reading)
- Can also use prolonged vowels, particularly /ah/

Need to determine:

- Type of resonance (normal oral resonance, hypernasality, hyponasality, cul de sac resonance or mixed resonance).
- Severity (mild, moderate or severe)

Nasal Emission, Weak Consonants, Compensatory/Obligatory Errors, Etc:

The following speech samples can be used:

- Articulation test
- Repetition of pressure-sensitive phonemes (pa, pa, pa, pa, etc.)
- Repetition of sentences that are loaded with pressure-sensitive phonemes
- Counting from 60-70
- Connected speech (spontaneous or reading)

Need to determine:

- Presence and type of nasal emission (unobstructed or obstructed)
- Consistency of nasal emission and whether it is phoneme-specific
- Effect on pressure consonants and utterance length

Supplemental Methods:

- Use straw or listening tube
- Determine stimulability with change in articulation



Straw



Listening Tube

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Intra-Oral Exam

- Can evaluate oral structure and function
- Cannot assess velopharyngeal function
- Say /aaaaah/, not /ahhhh/ and have patient stick the tongue out and down as far as possible
- Look for:
 - presence of an oronasal fistula (if there is a history of cleft palate)
 - stigmata of a submucous cleft (if there is no history of cleft palate)
 - velar length and mobility during phonation
 - position of uvula during phonation (skewed indicates either enlarged tonsil or unilateral paralysis/paresis)
 - enlarged tonsils
 - dental or occlusal abnormalities
 - sign of oral-motor dysfunction (particularly if patient is syndromic)



Intra-Oral Exam
Say /aaaaah /, not /ahhhh/

Instrumental Assessment

Nasometer (Kay/PENTAX, A Division of PENTAX Medical Company, 2 Bridgewater Lane, Lincoln Park, NJ 07035-1488; Tel: (973) 628-6200)

- Analyzes acoustic energy emitted through the oral cavity and nasal cavity during the production of speech
- Computes a ratio of the acoustic data acquired by the two microphones.
- Ratio is called nasalance (the acoustic correlate of perceived nasality) and is displayed as a percent, with higher percentages representing increased nasalance.
- Nasalance score can be compared to normative data



Aerodynamic Instrumentation

- Uses pressure transducers and flow transducers
- Can be used to measure air pressure and airflow during production of a small speech segment
- Gives an estimate velopharyngeal orifice size during speech production

Videofluoroscopy

- A multi-view, radiographic procedure which uses a lateral, anterior-posterior, base, and sometimes other views to assess velopharyngeal closure during speech
- Studies are interpreted by both a radiologist and a speech pathologist

Nasopharyngoscopy

- An endoscopic procedure that allows the examiner to view the nasal surface of the velum and the velopharyngeal port during speech
- Requires a flexible fiberoptic nasopharyngoscope and best to also have a camera, monitor and recorder
- Can be done by a physician or speech pathologist who is trained in this procedure
- Interpretation should be done by speech pathologist and the surgeon



Nasal surface of Velum. Note Eustachian tube on the left.

Treatment of Velopharyngeal Dysfunction

Surgery

Retropharyngeal augmentation

- Injection of a substance in the posterior pharyngeal wall
- Can use fat, collagen (Demalogen, Simetra) or Radiesse (hydroxyl apetit)
- Good for small, localized gaps or irregularities of the posterior pharyngeal wall

Pharyngeal flap

- Flap is elevated from the posterior pharyngeal wall and sutured into the velum to partially close the nasopharynx in midline
- Lateral ports are left on either side for nasal breathing
- Good for midline gaps or deep (AP) gaps

Sphincter Pharyngoplasty (sphincteroplasty)

- Posterior faucial pillars, including the palatopharyngeus muscles, are released and sutured together on the posterior pharyngeal wall to form a sphincter
- A posterior flap may also be raised to further narrow the port
- Good for lateral gaps (due to bowtie closure) or narrow coronal gaps

Prosthetic Devices

Palatal Obturator

- To close or occlude an open cleft or fistula

Palatal Lift

- To raise the velum when velar mobility is poor
- Used for velopharyngeal incompetence, as in dysarthria

Speech Bulb Obturator

- To occlude nasopharynx
- Can be combined with an obturator
- Used with velopharyngeal insufficiency

Limitations of Prosthetic Device:

- requires insertion and removal
- needs to be replaced periodically with kids to compensate for growth
- can be lost or damaged
- is often uncomfortable, so compliance can be a problem
- improves but doesn't correct the problem

Many centers use prosthetic devices only on a temporary basis or when surgery is not an option.

Speech Therapy- See Therapy Handout

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For more information:

Kummer AW. *Cleft Palate and Craniofacial Anomalies: Effects on Speech and Resonance*. Clifton Park, NY: Thomson Delmar Learning, 2001.

Or for more handouts, go to:

<http://www.cincinnatichildrens.org/svc/find-professional/k/ann-kummer.htm>