

## **Therapy Techniques for Speech Sound Disorders Associated with Repaired Cleft Palate Transcript**

Therapy techniques for speech sound disorders associated with repaired cleft palate. This presentation was compiled by ASHA Special Interest Group 5, Craniofacial and Velopharyngeal Disorders. The objective of this presentation is to provide a practical guide for the treatment of school-aged children with velopharyngeal dysfunction or other speech disorders associated with repaired cleft palate. In this presentation, we will discuss foundational concepts as well as evidence-based therapeutic strategies for speech-language pathologists. To get started, let's discuss a few foundational concepts.

Velopharyngeal dysfunction. This is an umbrella term used to encompass velopharyngeal insufficiency, velopharyngeal incompetence, and velopharyngeal mislearning. In other words, velopharyngeal dysfunction is any situation in which the velum does not fully separate the oral cavity from the nasal cavity for non-nasal speech sounds. Velopharyngeal dysfunction may have structural underpinnings, functional underpinnings, or both. Of note, referral to a craniofacial team is essential for assessment and treatment of velopharyngeal dysfunction.

Now let's briefly discuss the difference between obligatory and compensatory speech sound errors. Obligatory errors are passive errors. These are speech sound distortions caused by a structural or a functional difference of the velopharyngeal port. It is important to note that speech therapy alone will not be sufficient for remediation of these speech errors. Surgical or prosthetic management will be required. Examples of obligatory speech errors include persistent hypernasality and passive nasal error mission.

Compensatory speech errors are active errors, which should absolutely be addressed in speech therapy. These are learned misarticulations that some children with cleft palate or velopharyngeal dysfunction develop secondary to structural or functional differences. Compensatory errors typically persist after surgical correction of the palate and require speech therapy for remediation. A few examples of compensatory errors include glottal stops, nasal fricatives, and pharyngeal fricatives. Again, compensatory errors are responsive to speech therapy. We will discuss compensatory errors in more detail later in this presentation.

But before getting into practical application, let's discuss the research that informs the treatment approaches that we will discuss. Recent studies have shown the following approaches to be effective for speech sound disorders associated with repaired cleft palate. Motor phonetic approach. You may find it helpful to think of this as a traditional articulation approach, combined with a motor planning approach. The focus with a motor phonetic approach is correcting placement and refining movement during articulation. In addition to traditional articulation strategies, elements of motor planning may be incorporated, such as repetition, visual cues, and structured practice of transitions between speech sounds. Then we have the linguistic phonological approach, which targets conceptualization of speech sounds using a linguistic approach. Examples of strategies used in a linguistic phonological approach include metaphon, minimal pairs, and cycles approach. Combined approaches incorporate elements of both the

motor phonetic approach and the linguistic phonological approach. An excellent example of combined approaches is enhanced MLU teaching with a phonological emphasis.

In addition to these approaches, consider the following general therapy guidelines for working with students with repaired cleft palate or associated speech disorders. One, do not incorporate non-speech oral motor exercises, as these are not effective for this population. Later in this presentation, we will discuss generating oral airflow. It is important to note that oral airflow or blowing is taught as a precursor for shaping oral airflow into oral speech sounds. Blowing should not be incorporated as a non-speech oral motor exercise.

Two, target more visible phonemes and more easily cued phonemes first. For example, you might consider starting with bilabials P and B if the student is found stimulable.

Three, rename the target sound, if necessary, to facilitate new motor learning.

Four, obtain target phoneme in isolation with 100% mastery before advancing to higher levels of the hierarchy.

Five, use phonetic placement with multi-sensory cues to provide auditory, visual, and tactile feedback. These will be discussed in more detail later in the presentation.

Six, if velopharyngeal insufficiency or velopharyngeal incompetence is present, use nasal occlusion to teach oral airflow or prevent nasal escape. Fade from nasal occlusion as oral placement for target phoneme emerges.

Seven, possible biofeedback tools include a small mirror placed under the nose, a tissue in front of the mouth, seascape, or a listening tube or straw between the nose and the ear.

Eight, speech therapy is appropriate if compensatory articulation errors are present, even if the child has an insufficient velopharyngeal mechanism. Therapy may begin before surgical intervention.

Nine, Compensatory articulation and obligatory errors may co-occur, requiring a combination of surgical management and speech therapy to address. As previously discussed, a referral to the cleft team will be essential for diagnosis and treatment.

Let's move on to therapy goals. There are three overarching goals which should be addressed in therapy for this population. First, establishing correct articulatory placement and airflow. Then we will teach place, manner, and voicing with emphasis on nasal versus oral production. You may find that a discussion of anatomy and physiology may be helpful for conceptualization, but also for student buy-in, especially in your early sessions. A third goal to approach would be remediation of compensatory speech errors, teaching new motor planning for these learned misarticulations.

In our remaining time, we will discuss the remediation of three common compensatory errors: glottal stops, nasal fricatives, and pharyngeal fricatives. As a reminder, you will notice elements of motor phonetic and linguistic phonological approaches interspersed throughout. First, glottal stops. These are caused by a constriction of the glottis and is often substituted for pressure consonants. Glottal stops tend to be very ingrained and difficult to remediate.

The first thing to do when working on the remediation of glottal stops is to generate oral airflow. A quick but important note, generating oral airflow is not a non-speech oral motor exercise, which we know is ineffective in treating this population. Instead, consider the task of generating oral airflow from a more phonological approach. Is the student able to generate oral airflow? Can we generate oral airflow with or without nasal occlusion? For our students with repaired cleft palate, you may find nasal occlusion helpful for establishing oral airflow or maintaining oral airflow for students who may be waiting on a velopharyngeal surgery.

Biofeedback is extremely helpful. For younger and older students alike, you may consider using a tissue, holding it in front of your students' mouth so that they can see the puffs of air as they're producing their pressure consonants. Packing peanuts are also a good biofeedback tool to incorporate. For our younger ones, whistles and kazoo's can sometimes be helpful therapy, biofeedback tools as well. Once oral airflow is established, we begin shaping these into oral speech sounds. Identify which speech sounds are misarticulated for glottal stops in your student's speech.

As discussed, glottal stops are frequently substituted for oral pressure consonants. Work through each of these sounds one at a time. Consider starting with bilabials, as these are easier for our students to visualize. You may consider beginning with oral airflow, shaping into a P or a B, prompting your students to catch and release puffs of air to generate a loud P sound. You may also consider using nasal occlusion to shape nasal sounds into oral sounds. For example, using nasal occlusion while articulating M will create a B sound. Similarly, using nasal occlusion and prompting for N will produce a D sound. Whispering may also be helpful for the remediation of glottal stops, as this cue can help students relax at the level of the glottis.

As with all speech therapy, trial and error is very important. Effective strategies will vary from student to student. After you establish correct articulatory placement for each of the speech sounds that have been substituted for glottal stops in isolation, target at all positions of the word initial medial and final position, scaffold from isolation to consonant-vowel and vowel-consonant combinations. After solidifying and isolation, we can move on to word level, phrase level, sentence, and finally conversation level.

Now let's discuss nasal fricatives. Nasal fricatives are a forceful frication through the nose. They're often substituted for sibilant sounds. Of note, nasal fricatives are different from passive nasal air emission. For the production of the nasal fricative, there is forceful airflow through the nose. Similarly to the remediation of glottal stops, we're first going to start by generating oral airflow. Nasal occlusion will be especially helpful for ingrained nasal fricatives, as it cues oral airflow. You can generate oral airflow using the same strategies discussed previously in regards to glottal stops. However, do be cautious to not become over-reliant on nasal occlusion. As students may become dependent on this cue. Scaffolding away from nasal occlusion will be essential for students who are capable of sustaining oral airflow without nasal occlusion.

Of note, for our students with active velopharyngeal insufficiency, who may be waiting on a surgery, nasal occlusion will be essential as we're targeting compensatory errors prior to a surgery. Now that we've generated oral pressure, we're going to identify which speech sounds are misarticulated for nasal fricatives. Nasal fricatives are often substituted for sibilant sounds. An excellent strategy for production of S, commonly substituted by nasal fricatives is the exploding Prompt your student to produce the T in isolation. Then practice this single sound in repetition, slowly extending into an S

sound. Again, use nasal occlusion and biofeedback as necessary. Once established, expand to other speech sounds. After establishing correct articulatory placement for all speech sounds that have been substituted by nasal fricatives, target in isolation, consonant vowel and vowel consonant combinations, expanding to word, phrase, sentence, and finally conversation level.

Finally, let's discuss pharyngeal fricatives. This is the frication produced at the level of the pharynx, often produced for fricative or affricate sounds. You may have noticed some patterns. As we've done before, we'll begin with the generation of oral airflow with biofeedback. Once oral airflow has been established, we'll begin shaping into our speech sounds. Beginning with TH may be useful, as this is an easily visible fricative. Nasal occlusion and biofeedback will be helpful for establishing correct articulatory placement. And once again, once correct articulatory placement is established, expand from isolation to sound, consonant vowel, word, phrase, sentence, and conversation level.

Please feel free to refer to our poster for discussion of additional compensatory errors, as well as articulatory or phonological differences. Articulatory and phonological differences include other common errors seen in children with left palate or velopharyngeal dysfunction that requires speech therapy intervention. On the poster, you will also find more detailed explanations of approaches and strategies discussed in this presentation.

To conclude, providing speech therapy for students with velopharyngeal dysfunction or cleft-related speech differences should primarily consist of establishing correct articulatory placement and remediating compensatory speech sound errors. Research has shown motor phonetic approaches, linguistic phonological approaches, and combined approaches to be effective for the treatment of speech sound disorders associated with repaired cleft palate. Additionally, strategies such as incorporation of biofeedback and nasal occlusion may be helpful throughout the process.