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Series Presenter: Jennifer Dahms, MS, CCC-SLP, BCS-S

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Improving Pediatric Feeding Assessment Skills - Tongue Functioning

Jennifer Dahms, MS, CCC-SLP, BCS-S

Moderated by:
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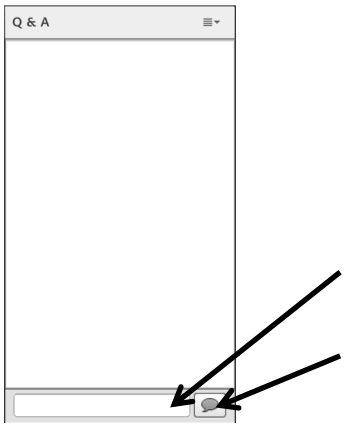

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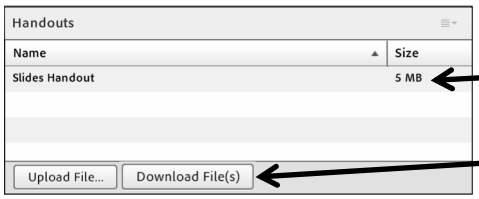

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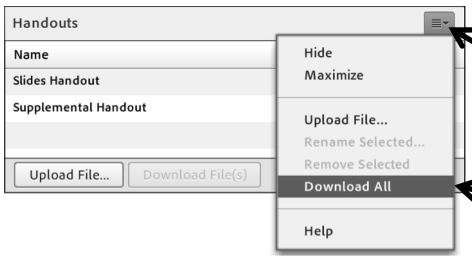

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Improving Pediatric Feeding Assessment Skills - Tongue Functioning

By Jennifer Dahms, MS/CCC-SLP, BCS-S

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Learning Outcomes

After this course, participants will be able to:

- Describe the basic areas of oral motor functioning for tongue movements.
- Describe the subtle/more descriptive areas of oral motor functioning for tongue movements.
- Identify disordered tongue movements via video examples.
- Identify the possible functional impact of disordered tongue movements via video examples.

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CONTINUED

Financial and Non-Financial Disclosures

- I am the owner of Valley Pediatric Feeding, LLC in Boise, Idaho and provide therapy services to children.
- I have been paid an honorarium from speechpathology.com for this presentation.
- I donate monetary funds to Smile Train, St. Jude Children's Research Hospital, and the Ronald McDonald House Charities of Idaho.
- I am an ASHA member, ISHA member, a member of the Dysphagia Research Society, a SIG 13 member, and a Board Certified Specialist in Swallowing and Swallowing Disorders.

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CONTINUED

Why are functional tongue movements important?

- Potter and Short (2009)
  - Appropriate tongue pressure is required for adequate oropharyngeal swallowing.
  - n=150 children and adolescents, ages 3-16 years, normal subjects
  - The researchers used the Iowa Oral Performance Instrument to measure tongue strength for elevation as compared to hand strength. Blocks of trials were completed.
  - Children's tongue strength increased with age with significant increases between 3-4 years, 5-6 years, and 6-8 years.

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CONTINUED

Why are functional tongue movements important?, cont.

- Potter and Short (2009), cont.
  - Sixteen-year-olds demonstrated tongue strength that was 3 times that of 3-year-olds.
  - There were no significant differences between genders; however, females showed more tongue strength over males at 10 years of age. Males surpassed females in tongue strength at ages 14 and 16.
  - What should we expect from children with disabilities?

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CONTINUED

Why are functional tongue movements important?, cont.

- Van Lierde et al. (2014)
  - These authors looked at tongue strength and endurance with boys and girls with unilateral cleft lip and palate.
  - n=25, with a mean age of 10.6 years with unilateral cleft lip and palate with gender and age-matched controls.
  - The researchers used the Iowa Oral Performance Instrument for measurements.
  - There were no differences in tongue strength and endurance with the test subjects and the controls.
  - What may we expect with this population?

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CONTINUED

Why are functional tongue movements important?, cont.

- Berggren et al. (2018)
  - This was an exploratory study on orofacial function with children with congenital myotonic dystrophy.
  - n=41 children with CMD, n=29 controls
  - The researchers used the Iowa Oral Performance Instrument to measure tongue strength.
  - Tongue strength was 3 ½ times less in the population with CMD than the controls.
  - Dysarthria correlated with lingual strength, age, and dysphagia.
  - Could we apply the same deficits to other populations?

13

CONTINUED

Tongue Movements

- Tongue elevation – lifting (internal and external)
- Tongue lateralization – shifting (internal and external)
- But….
  - There is so much more than just these two basic movements

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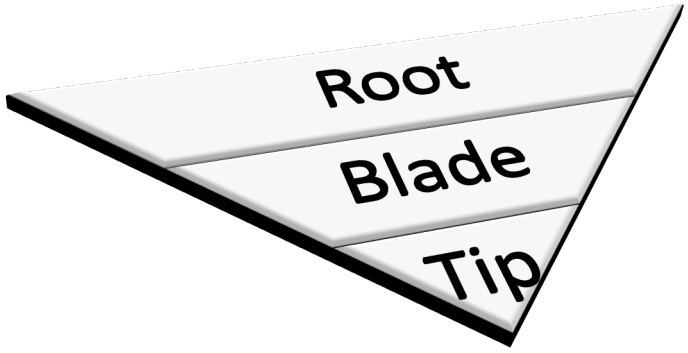
Tongue Movements, cont.



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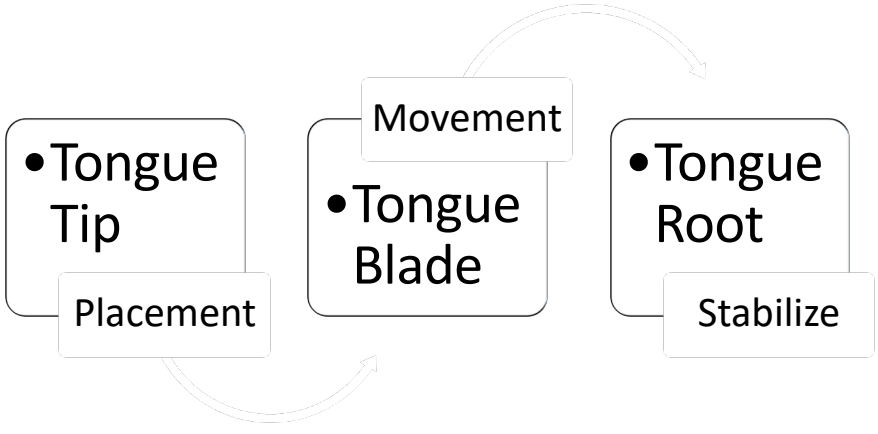
Tongue Movements, cont.



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The Basics

- Strength
  - Muscle resistance
- Range of motion
  - The distance
- Coordination
  - Smoothness of movement

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The Basics, cont.

- Accuracy of Movement
  - Shooting for the correct location
- Speed
  - The time it takes
- Dissociation
  - Movement of one structure in comparison to others

18

The Basics, cont.

- Endurance
  - Length of time a movement can occur

19

What do we see and feel?

- Tongue base movement
  - The suprahyoid muscular movement

20

What do we see and feel?, cont.

- Tongue elevation (blade and tip)
  - Lifting a bolus towards the palate

21

What do we see and feel?, cont.

- Bolus propulsion
  - The tongue's ability to push a bolus backwards against the palate (A-P movement)
- Bolus transit
  - Complete movement of the bolus posteriorly
- Tongue to palate contact
  - The ability of the tongue to make a complete seal

22

What do we see and feel?, cont.

- Tongue retraction
  - The ability to propel food or liquid into the pharynx
- Tongue shape
  - The description of what the tongue musculature looks like

23

What do we see and feel?, cont.

- Tongue resting position
  - What structures is the tongue positioning itself against

24

What do we see and feel?, cont.

- Tongue grooving
  - The line down the tongue at midline

25

What do we see and feel?, cont.

- Tongue cupping
  - The shape of the tongue for various feeding activities
- Tongue rolling
  - A description of how a tongue lateralizes
- Tongue tip placement of bolus
  - Placement of a bolus into a specific location

26

What do we see and feel?, cont.

- Repeated lateral tongue movement with chewing
  - The constant re-positioning of the bolus on the teeth in a dynamic fashion
- Complete bolus transfer (lateralization across midline)
  - The tongue's ability to collect the bolus and move it as a complete bolus

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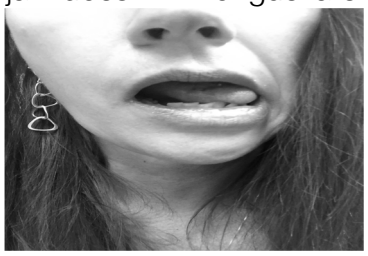
What do we see and feel?, cont.

- Bolus manipulation
  - What happens to the food
- Jaw shifting
  - What the jaw does with tongue lateralization



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What do we see and feel?, cont.

- Bolus control
  - What the tongue is doing with the food
- Bolus cohesion
  - How well food is mixed with saliva to keep it in a ball

29

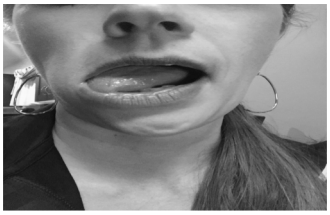
What do we see and feel?, cont.

- Tongue differentiation
  - How the different parts of the tongue move and work differently
- Transitional tongue movements
  - Moving from one type of movement to another (lateralization – rolling to tip movement)

30

What do we see and feel?, cont.

- Sweeping the sulci
  - Clearing the mouth



- Tissue displacement
  - The location and the degree of movement of the structure

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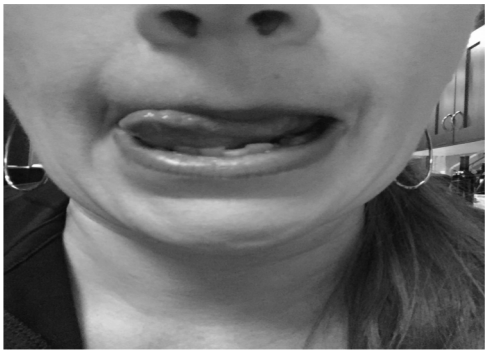
What do we see and feel?, cont.

- Clearing food from the lips
  - Refinement of external movements



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CONTINUED

The Abnormal Movements

- Tongue thrusting
  - Abnormal extension-retraction movement for bolus propulsion

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CONTINUED

The Abnormal Movements, cont.

- Excessive tongue retraction
  - Abnormal resting position

- Tongue tie
  - Abnormal structure
- Tongue tightness
  - In the base and within the tongue

34

The Abnormal Movements, cont.

- Abnormal tone in the tongue
  - Makes the tongue take on abnormal shapes
- Incomplete tongue to palate seal
  - Decreased propulsive force on the bolus
- Suckling movements
  - Incomplete transit of a bolus

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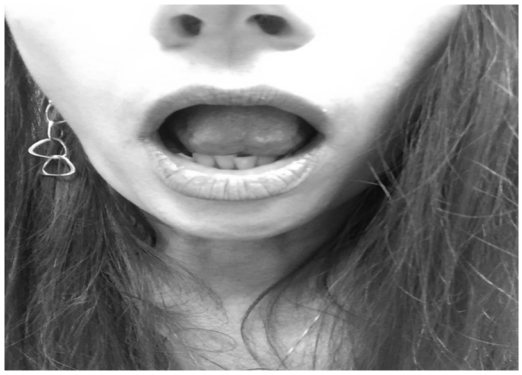
The Abnormal Movements, cont.

- Tongue bunching
  - The internal shape of the tongue



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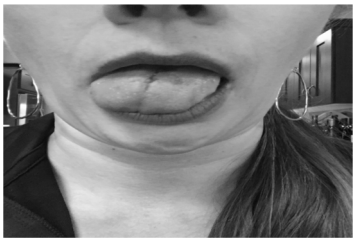
The Abnormal Movements, cont.

- Tongue dumping
  - Primitive lateralization of boluses
- Tongue protrusion for lateralization
  - Primitive pattern for lateralizing food



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The Abnormal Movements, cont.

- Misshaped / High palate
  - The impact of reduced tongue elevation
- Fasiculations
  - Neurological vs. fatigue

38

The Process

- Background information about each child
- No information about therapy or previous assessments
- Simulate coming into an initial assessment situation

39

Video #1

- Patient Background
- J. is a 10-year-old boy with Autism who has a history of being born prematurely and having G tube feedings for a period of time when he was a young child. He is non-verbal.
- He receives most of his nutrition via oral intake of a nutritional supplement.

40

Video #1, cont.

- Video Clip

41

Video #1, cont.

- What type of tongue lateralization did you see with J. in the video?

- A. Tongue blade lateralization
- B. General tongue rolling
- C. Tongue tip lateralization
- D. Both A and C

42

Video #1, cont.

- Discussion

43

Video #1, cont.

- What type of tongue lateralization was seen towards the right side of J.'s mouth?

- A. No tongue lateralization
- B. Tongue blade lateralization
- C. Tongue tip lateralization
- D. Both B and C

44

Video #1, cont.

- Discussion

45

Video #1, cont.

- Why is it important for J. to lateralize boluses to both sides of the mouth?

- A. The food needs to be mixed with saliva.
- B. He may experience fatigue when only chewing on one side of the mouth.
- C. The non-used side of the mouth may never learn the skill of lateralization.
- D. All of the above

46

Video #1, cont.

- Discussion

47

Video #2

- Patient Background
- R. is a 4-year-old boy who was hospitalized for strep throat, scarlet fever, pneumonia, and a viral infection when he was just over a year old. He ended up having an NG tube and subsequently a G tube placed for his nutrition and hydration. He still receives tube feedings to this day.
- He has a history of significant sensory processing dysfunction. He has received ST for a language delay and OT services for sensory integration therapy.

48

Video #2, cont.

- Video Clip

49

Video #2, cont.

- What deficit areas in regards to R.'s tongue did you see?

- A. Possibly tongue elevation
- B. Possibly tongue lateralization
- C. Possibly tongue protrusion
- D. No difficulties were noted

50

Video #2, cont.

- Discussion

51

Video #2, cont.

- What may be the reasoning behind R.'s one-sided management of food?

- A. A motor deficit
- B. A coordination deficit
- C. A sensory deficit
- D. I don't know

52

Video #2, cont.

- Discussion

53

Video #2, cont.

- Why is lateralization of food to only one side of the mouth ineffective for R.?

- A. It leads to inefficient eating due to excessive chewing.
- B. It leads to more saliva being added to the food.
- C. It leads to overly quick chewing on boluses.
- D. It leads to effective movements on a bolus.

54

Video #2, cont.

- Discussion

55

Video #3

- Patient Background
- P. is a 3 ½-year-old boy with Trisomy 21, hypothyroidism, a history of ASD, C-Diff enteritis, laryngomalacia, and hypertrophy of his adenoids and tonsils.
- He is eating only a select number of solid foods. He takes honey-thickened liquids due to oropharyngeal dysphagia as diagnosed on previous VFSS.

56

Video #3, cont.

- Video Clip

57

Video #3, cont.

- What is the primary type of tongue movement seen in the video with P.?

- A. Simple tongue elevation
- B. Tongue lateralization
- C. Tongue thrusting
- D. Tongue retraction

58

Video #3, cont.

- Discussion

59

Video #3, cont.

- Why does P. produce a tongue thrust swallow?

- A. I don't know.
- B. Quick muscle movements.
- C. Underlying weakness.
- D. Missing teeth.

60

Video #3, cont.

- Discussion

61

Video #3, cont.

- How would you expect tongue thrusting to impact P.'s swallow?

- A. It would not have any effect at all.
- B. He may have decreased control of a bolus.
- C. He may have reduced tongue to palate contact.
- D. Both B and C

62

Video #3, cont.

- Discussion

63

Summary

- Tongue functioning is important for a variety of oral motor feeding activities and swallowing. It is important to understand how each section of the tongue moves to achieve a goal and how each specific section's movements relate to the others.
- It is also important to understand how disordered tongue functioning impacts the entire feeding process and what deficits may be indicative of functional limitations.
- By observing many children eating, we can learn the range of normal skills and at what point a specific movement becomes problematic.

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Thank you!

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