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Improving Pediatric Feeding Assessment Skills

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Improving Pediatric Feeding Assessment Skills - Swallowing Skills

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

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Improving Pediatric Feeding Assessment Skills – Swallowing Skills

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 swallowing function.
- Describe the subtle/more descriptive areas of swallowing function.
- Identify disordered swallowing in various video examples.
- Identify the possible functional impact of disordered swallowing.

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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 is functional swallowing important?

- Duncan et al. (2018)
  - This study was a retrospective review of children under the age of 2 who had oropharyngeal dysphagia concerns.
  - n=412, mean age of 8.9 months
  - The authors looked at the reliability of clinical evaluation for predicting aspiration when compared to VFSS.
  - The clinical evaluation is not sensitive to predicting aspiration (sensitivity was 44%). VFSS should be completed in cases of persistent symptomatic children.

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CONTINUED

Why is functional swallowing important?, cont.

- Duncan et al. (2018), cont.
  - How does this information impact what we do when we complete our clinical evaluations?

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CONTINUED

Why is functional swallowing important?, cont.

- Almeida et al. (2018)
  - These authors completed a study on digital cervical auscultation with videofluoroscopic swallow study to identify children with silent aspiration with oropharyngeal dysphagia.
  - n=32 children, median age of 6 years
  - 8 children were identified as being aspirators and 10 were identified as non-aspirators.
  - Aspirators had an ascending pattern of acoustical sounds where non-aspirators had a flat pattern.

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Why is functional swallowing important?, cont.

- Almeida et al. (2018)
  - Digital cervical auscultation was able to identify silent tracheal aspiration.
  - How does this information impact the clinical use of cervical auscultation?

11

Why is functional swallowing important?, cont.

- Mishra et al. (2018)
  - The authors indicated that physiological evidence in terms of airway protection with children with spastic cerebral palsy is limited.
  - They looked to quantify feeding, swallowing, and cough impairment with children with spastic CP compared to a control group.
  - n=11 subjects, n=10 age-matched controls
  - The researchers used standardized liquid, puree, and solid consistencies, completing surface electromyography and respiratory plethysmography.

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Why is functional swallowing important?, cont.

- Mishra et al. (2018)
  - Clinical feeding in this study was assessed with the Dysphagia Disorder Survey.
  - Children with spastic CP had more clinical signs of feeding difficulties, more frequent post-swallow inhalation with liquids, and lower cough volume acceleration. This gives us some information about very specific physiological deficits with this population.
  - What types of concerns regarding swallowing should we be aware of with this population?

13

Why is functional swallowing important?, cont.

- Weckmueller et al. (2011)
  - These authors wanted to develop normal temporal measurements of a variety of swallowing activities. This was a retrospective study.
  - n=15 normal pediatric subjects, age range of 2 months to 48 months
  - In terms of pharyngeal measures, the researchers looked at onset of laryngeal closure, time of bolus arrival at the valleculae, pharyngeal delay, pharyngeal transit, and UES opening.

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Why is functional swallowing important?, cont.

- Weckmueller et al. (2011), cont.
  - Durations that increased with age included time of laryngeal closure, UES opening, and pharyngeal delay; however, no significant differences were noted in terms of age. This could be an adaptation that children naturally develop as they grow and age.
  - Different feeding methods were used (i.e., cup vs. bottle) and led to some differences in measures as well.
  - These results may lead to a better definition for swallowing measures in the typical population.

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Why is functional swallowing important?, cont.

- Weckmueller et al. (2011), cont.
  - What might we think about if a child has delays beyond the timing measures from this study in regards to his/her videofluoroscopic swallow study?

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Swallowing Movements

- Intake
- Gathering
- Propelling
- Protection
- Movement

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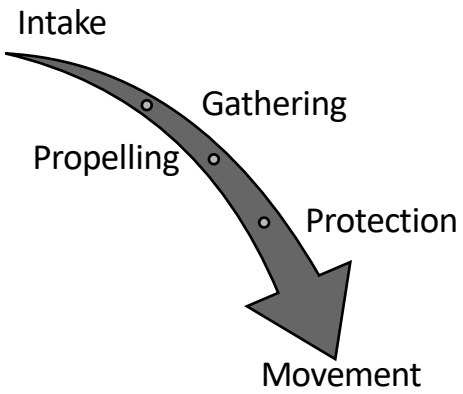
Swallowing Movements, cont.



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The Basics

- Oral Preparation
  - Chewing, bolus manipulation, and collection
- Bolus Propulsion
  - Movement of food or liquids towards the pharynx
- Velopharyngeal Closure
  - The flow of the bolus downward

19

The Basics, cont.

- Airway Protection
  - The direction of the bolus away from the airway
- Bolus Clearance
  - How well a bolus stays together and moves as a unit into the esophagus
- Endurance
  - Length of time a movement can occur

20

What do we see and feel?

- Oral transit
  - The movement of the bolus through the mouth
- Bolus transit
  - The movement of the bolus through the system
- Anterior oral containment
  - Keeping the bolus in the mouth

21

What do we see and feel?, cont.

- Posterior oral containment
  - Controlling a bolus before it enters the pharynx
- Timing of velopharyngeal closure
  - Separation of the mouth and the nose when the bolus passes
- Pharyngeal contraction / stripping / shortening
  - Movement of the bolus from the top to the bottom

22

What do we see and feel?, cont.

- Epiglottic inversion
  - Closure of the top of the airway

23

What do we see and feel?, cont.

- Timing of swallow
  - How the process moves forward

- Laryngeal excursion
  - The movement of the hyoid/larynx in relationship to airway closure

24

What do we see and feel?, cont.

- Airway closure
  - The levels of closure to protect the lower airways
- PE Segment opening
  - Cricopharyngeal relaxation
- Esophageal clearance
  - Movement of the bolus with gravity and peristalsis

25

The Abnormal Movements

- Signs of aspiration
  - What tells us what is going wrong (the number of levels that impact the safety of the swallow)
  - Incoordination of the swallow (the timing of all of the movements for swallow completion)
  - Poor airway closure (the airway protection at all of the possible levels)

26

The Abnormal Movements, cont.

- Signs of aspiration, cont.
  - Delayed PE segment opening (inability for the bolus to pass to the esophagus at the right time)
  - Decreased hyolaryngeal movement (the superior and anterior movement of the hyoid and larynx)
  - Pooling (where the bolus is being retained in the pharynx)

27

The Abnormal Movements, cont.

- Signs of aspiration, cont.
  - Oral and pharyngeal residue (how well the system can clear the bolus)
  - Penetration (entrance of the bolus into the airway)
  - Actual aspiration (movement of a bolus below the vocal folds)
  - Secondary or clearing swallows (the response to residue / retention)

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The Abnormal Movements, cont.

- Signs of aspiration, cont.
  - Protective response (knowing the presence of a substance)

29

The Abnormal Movements, cont.

- Signs of aspiration, cont.
  - Decreased laryngeal excursion
  - Gulping
  - Status of lung health
  - Wet vocal quality

30

The Abnormal Movements, cont.

- Retrograde flow
  - Upward movement of the bolus within the esophagus
- Esophageal stasis
  - The lack of movement in the esophagus

31

The Process

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

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Video #1

- Patient Background
- W. is a 14-year-old boy who was born very prematurely and spent several months in the NICU. He received a G tube as an infant and continues to receive 100% of his nutrition from his feeding tube. He was diagnosed with Failure to Thrive, Autism, and growth delays. He has global developmental delays.

33

Video #1, cont.

- Video Clip

34

Video #1, cont.

- What difficulties did you see with W.'s swallowing?

- A. Bolus cohesion difficulties
- B. Posterior oral containment issues
- C. No swallow response
- D. Signs of aspiration

35

Video #1, cont.

- Discussion

36

Video #1, cont.

- Would you refer W. for instrumental assessment?

- A. Yes
- B. No
- C. I don't know

37

Video #1, cont.

- Discussion

38

Video #1, cont.

- What do you suspect is the reason behind W.'s slurping?

- A. Poor containment
- B. A non-responsive swallow
- C. Compensatory movements
- D. A delayed swallow

39

Video #1, cont.

- Discussion

40

Video #2

- Patient Background

- K. is a 5 ½-year-old girl with spastic cerebral palsy secondary to CMV.
- She has a history of slow weight gain with ultimate G tube placement.
- She has a visual impairment.
- She had been receiving Baclofen via her G tube but was recently placed with a Baclofen pump.

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Video #2, cont.

- Patient Background, cont.

- She had a videofluoroscopic swallow study completed in 2013 which revealed a functional swallow but with impaired tongue elevation, decreased anterior hyolaryngeal excursion, and disordered epiglottic inversion.

42

Video #2, cont.

- Video Clip

43

Video #2, cont.

- Which word best describes the timing of K.'s swallow?

- A. Delayed
- B. Timely
- C. Early
- D. Non-existent

44

Video #2, cont.

- Discussion

45

Video #2, cont.

- How would you describe K.'s efficiency with intake of liquids?

- A. Adequate
- B. Limited
- C. Poor
- D. Functional

46

Video #2, cont.

- Discussion

47

Video #2, cont.

- What could be contributing to K.'s difficulties with swallowing?

- A. Delayed sensory response
- B. Motoric issues related to tongue movements
- C. Ineffective anterior oral containment
- D. Possibly both sensory and motoric components

48

Video #2, cont.

- Discussion

49

Video #3

- Patient Background

- A. is a 14-year-old girl who was typically-developing up until age 1 ½ years when she sustained a head injury.
- She has been diagnosed with spastic cerebral palsy, global developmental delays, constipation, scoliosis, and she has a history of G tube feedings. She now is a full oral eater.

50

Video #3, cont.

- Video Clip

51

Video #3, cont.

- What possible signs of aspiration were seen with A. in the video?

- A. Wheezing
- B. Coughing
- C. Choking
- D. Gulping

52

Video #3, cont.

- Discussion

53

Video #3, cont.

- How would you describe the timeliness of A.'s swallows?

- A. Relatively timely
- B. Significantly delayed
- C. Non-rhythmical
- D. Excessively slow

54

Video #3, cont.

- Discussion

55

Video #3, cont.

- What may you suspect is the reasoning behind A.'s swallowing difficulties?

- A. Decreased tongue elevation
- B. Pharyngeal residue
- C. Limitations in PE segment opening
- D. Increased vallecular space

56

Video #3, cont.

- Discussion

57

Summary

- Swallowing is a complex skill that requires many areas of the oropharyngeal system to work together with exact timing and accuracy of movements.
- A breakdown in the timing and movement of the structures for swallowing can lead to significant difficulties with controlling a bolus for a child's overall safety.
- We do not have the luxury of all of our patients being able to explain the difficulties that they are having with swallowing. We must rely on our keen observation skills and knowledge base to understand the interconnections of the swallowing mechanism.

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Summary, cont.

- Every child is not the "perfect" patient where we can see everything that is truly happening with a his/her swallow. We may need to base our judgments on inferencing what is occurring with the swallow.

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Thank you!

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- **All photos and videos taken by Jennifer Dahms, MS/CCC-SLP, BCS-S

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