Videofluoroscopic Swallowing Studies

A web-based continuing education course prepared by:

Indicators and Protocols for Videofluoroscopy

LENGTH: 30 minutes

OVERVIEW:

This module will review the purpose of a videofluoroscopy as well as limitations of the procedure. It will also discuss several different protocols that have been described for performing the procedure.

Learning Objectives:

At the end of this module, the clinician learner will be able to:

1) List the main reasons for performing a videofluoroscopy

2) Understand the benefits of using a standard videofluoroscopy

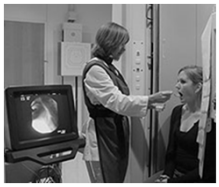
3) Identify reasons for beginning a videofluoroscopy with thin liquid

4) Identify the rationale for continuing a videofluoroscopy after evidence of aspiration

5) Describe the difference between standard diagnostic and therapeutic tasks in a videofluoroscopy

6) Understand the limitations associated with single tasks versus task repetitions in a videofluoroscopy

Indicators for Videofluoroscopy



- ✓ To provide evidence to support differential diagnosis
- ✓ To evaluate anatomy for structural anomalies
- ✓ To identify aspiration (and patient response)
- ✓ To identify post-swallow residue
- ✓ To observe and describe the physiology of the oropharyngeal swallow and determine why aspiration or residue are occurring
- ✓ To determine the suitability of specific interventions
- ✓ To evaluate treatment outcomes

VFSS is NOT simply a tool for aspiration detection.

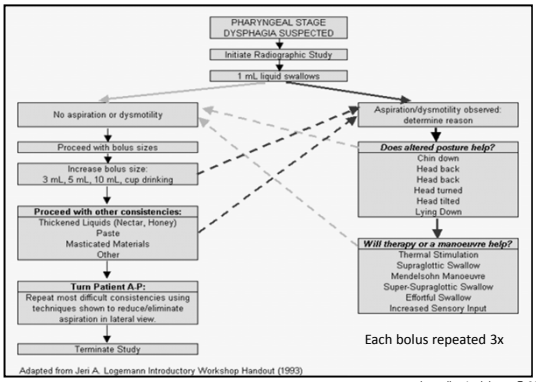
Things Videofluoroscopy CANNOT Detect

- Secretions in the pharynx
- Bolus flow with regular foods and liquids
- Aspiration between tasks, when fluoro is turned off
- Occurrence of aspiration unrelated to swallowing (e.g. of saliva during sleep; of refluxed gastric contents)
- Esophageal events (although an esophageal sweep may be included for screening purposes)
- Presence/absence of gastroesophageal reflux

A Standardized Protocol

- Promotes patient safety
- Allows (with objective measures) comparisons to normal and to other patient groups
- Allows comparisons over time, intervention

Logemann Protocol



Dysphagia 8: 209-214 (1993)

A Protocol for the Videofluorographic Swallowing Study

Dysphagia
© Springer-Verlag New York Inc. 1993

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A. Lateral view:

1. 5 cc of thick liquid by spoon
2. Thick liquid by cup (1 swallow)
3. 5 cc of thin liquid by spoon
4. Thin liquid by cup (1 swallow)
5. Modifications and other liquids as appropriate
6. 1 tsp or ¼ cookie
7. 1 tsp particulate solid food
8. Modifications and other foods as appropriate

B: A-P view:

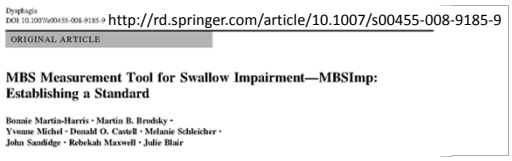
9. Thin liquid by cup, hold in mouth, then swallow
10. Modifications or other foods as appropriate
11. Thin liquid swallows as needed to image the esophagus

Ekberg Approach

- Separate diagnostic protocol performed by radiologist (standard)
- Subsequent therapeutic exam by SLP (non standard, explores compensatory maneuvers)

MBSImp (Martin-Harris)

- Modified Barium Swallowing Impairment Profile
  - an evidence-based, standardization of the MBS study in the adult population
  - provides the means for clinicians to communicate MBS study results in an evidence-based manner that is consistent, specific, and accurate


Dysphagia
DOI 10.1007/s00455-008-9185-9 http://rd.springer.com/article/10.1007/s00455-008-9185-9
ORIGINAL ARTICLE

MBS Measurement Tool for Swallow Impairment—MBSImp: Establishing a Standard

Bonnie Martin-Harris · Martin B. Brodsky · Yvonne Michel · Donald O. Castell · Melanie Schleicher · John Sandidge · Rebekah Maxwell · Julie Blair

MBSImp Protocol

Lateral View:

Thin Liquid:

1. 5ml tsp, bolus hold (not for scoring)
2. 5ml tsp, bolus hold
3. Single cup sip, bolus hold
4. Sequential swallow*

Nectar Thick:

5. 5ml tsp, bolus hold
6. Single cup sip, bolus hold
7. Sequential swallow*

Honey Thick:

8. 5ml tsp, bolus hold

Lateral View:

Pudding Consistency:

9. 5ml tsp, pt initiated

Solid:

10. ½ shortbread cookie (1x1x.25") coated w/ 3ml pudding by teaspoon

A/P View:

11. 5ml Nectar Thick via tsp, bolus hold
12. 5ml Pudding Consistency via tsp, clinician administered, pt initiated

* *Straw is treated as intervention/compensation if pt is not currently using one*

The Steele Lab VFSS Protocol

Diagnostic Exam:

- Saliva swallow
- Bolus "hold" challenge with large sip of thin liquid barium
- ≤ 7 Core Swallows (no maneuvers)
  1. Sip of thin liquid barium
  2. Sip of thin liquid barium
  3. Sip of thin liquid barium*
  4. Sip of thin liquid barium*
  5. Spoon of mildly thick barium
  6. Spoon of mildly thick barium*
  7. Spoon of mildly thick barium*

Therapeutic Exam:

- Other tasks to max of 17 (textures, maneuvers)
- May be inserted between the thin and extremely-thick sets of the diagnostic exam
- Ideal intent to "stress" the system and explore boundaries of safety

In Total:

Maximum of 17 tasks

* *Later tasks in each set may be omitted or modified in case of known safety or efficiency concerns on previous tasks*

A-P Views

- Allow observations of symmetry
- Allow easy continuation to screen the esophagus

Protocols for Pediatric Videofluoroscopy

- "Presentation and viscosity of the material must also be age appropriate. For example, sucking from a bottle should be examined in a 1-month-old, whereas thicker materials such as pudding and cookies are never used."

Newman, L.A. (2000). Optimal care patterns in pediatric patients with dysphagia. *Seminars in Speech and Language, 21*(4), 281-291.

Protocols for Pediatric Videofluoroscopy

- "VFSS of infants less than 18 months should assess sucking from a bottle. Barium, which is slightly thicker than formula, may not flow through a typical hole in the nipple… barium will through a cross-cut nipple."

Newman, L.A. (2000). Optimal care patterns in pediatric patients with dysphagia. *Seminars in Speech and Language, 21*(4), 281-291.

Protocols for Pediatric Videofluoroscopy

- "Many infants with dysphagia demonstrate deterioration in swallow function when allowed to suck continuously…. However, prolonged use of the fluoroscope exposes infants to excessive radiation. If the infant can suck well, he or she is allowed to finish 2 ounces with intermittent viewing of a swallow every 15 to 30 seconds."

Newman, L.A. (2000). Optimal care patterns in pediatric patients with dysphagia. *Seminars in Speech and Language, 21*(4), 281-291.

Key Messages

- VFSS is considered the gold standard in swallowing evaluation.
- The primary value of VFSS is as a tool to reveal the nature of pathophysiology in swallowing; to figure out what is wrong and what is contributing to negative functional outcomes like aspiration or residue.

Key Messages

- VFSS cannot detect:
  - saliva and pooled secretions
  - bolus flow with regular foods and liquids or without sufficient radio-opaque contrast material
  - aspiration between tasks
  - aspiration unrelated to swallowing
  - presence/absence of gastroesophageal reflux
  - esophageal events

Key Messages

- A standardized VFSS protocol:
  - promotes patient safety
  - allows objective comparisons to normal and to other patient groups
  - allows comparisons over time, across interventions

Key Messages

- Several standardized protocols currently exist:
  - Dr. Jeri Logemann
  - Dr. Jeffrey Palmer
  - Dr. Bronwyn Jones
  - Dr. Olle Ekberg
  - Dr. Bonnie Martin-Harris
  - Steele Swallowing Lab

Key Messages

- Anterior-posterior view is helpful to:
  - address questions about symmetry
  - determine whether continuation to explore the esophagus is warranted
  - view anatomical impairments such as pharyngeal pouches or diverticulae
  - rule out pharyngeal impairment related to patient report of food sticking in the pharynx

KNOWLEDGE CHECK

1. **True or False?**

   The standard protocols for videofluoroscopy developed and used by Dr. Jeri Logemann, Dr. Bonnie Martin-Harris (i.e., the MBSImp) and in the Steele Swallowing Lab all start with thicker liquids and then progress to thin liquids.

   A True

   B False

2. **Which of the following techniques is recommended as a way to limit radiation exposure during pediatric videofluoroscopy?**

   A Lower pulse rates

   B Lower frame rates

   C Acquisition of intermittent bursts of radiation, separated by pauses

   D Use of a nipple that allows faster bolus flow

Answer key found on the following page.

KNOWLEDGE CHECK ANSWER KEY

1. B False

2. C Acquisition of intermittent bursts of radiation, separated by pauses

EXPAND YOUR KNOWLEDGE

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