Clinical Considerations for VFSS and Fees

Introduction: Completion of clinical swallowing exams to detect dysphagia may lead in the direction of an instrumental exam of swallowing, such as Videofluoroscopic Swallowing Study (VFSS) or Fiberoptic Endoscopic Evaluation of Swallowing (FEES). This guide is designed to help you in your selection of either exam so that you can find out the information you need to make informed treatment decisions regarding dysphagia.

Why: Without imaging studies, SLPs operate based on what deficits they can observe during the clinical exam. A clinical exam has limitations in assessing specific oral, pharyngeal, and esophageal functions during swallowing. To choose one instrumental exam over the other, clinicians must know what can be learned from each type of instrumental exam and what clinical signs may influence this decision.

The largest need for an instrumental exam—regardless of which is chosen—is to view function that cannot be viewed (or perceived well) clinically, and we need to assess function to determine if there are deficits. Most clinicians find anatomical changes, such as those mentioned below, by surprise. That is, they are not suspected at the bedside in most cases.

A major clinical indication for either VFSS and FEES, therefore, is silent aspiration. Another is to determine changes in timing, coordination, and weakness in the pharynx that leads to penetration, aspiration, and residue.

Major clinical indications to proceed with a VFSS:

1. Specific concerns for esophageal problems
2. Specific concerns for oral problems
3. Assess for specific oral, pharyngeal, and esophageal anatomical changes contributing to dysphagia (e.g., Zenker's diverticulum, fistula).

Major clinical indications to proceed with a FEES:

1. Assess secretion management, integrity of the larynx, and surrounding structures
2. Need to assess fatigue or textures not viewable on VFSS
3. Assess for specific laryngeal and pharyngeal anatomical and sensory deficits contributing to dysphagia (e.g., paralysis, presence/absence of sensation)
4. Concurrent voice changes/dysphonia.
5. Pre- and/or post-op head and neck surgeries

Instruction: The information below will give you additional input on what the exams can provide regarding the patient's dysphagia.

How do you choose which instrumental exam to recommend?

Determine what clinical features found during your clinical swallowing exam may indicate VFSS or FEES as the next step in evaluating your patient's dysphagia (Brodsky et al., 2016, Carnaby-Mann Carnaby-Mann & Lenius, 2008). There are some symptoms or conditions that could be better evaluated with VFSS vs FEES, and vice versa. In some cases of dysphagia, it may not matter which exam you choose first and both exams may be necessary. Remember that each patient situation can be different, and you may wish to utilize both exams for a comprehensive evaluation of dysphagia.

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Consider The Benefits Of The Procedure

Benefits of VFSS:

- Radiation exposure is considered minimal and does not fall into the category of fluoroscopic procedures with risk of skin burn. Some procedures need to be followed and monitored (Hayes et al., 2009).
- VFSS can be used to assess kinematics of swallowing:
    - STAMPS software for spatiotemporal analysis (Lee et al., 2017)
    - Measure oral transit time – Important in assessing potential adverse effects on nutritional status due to energy expenditure caused by oral deficits (Soares et al., 2015). Note: There is no agreement here, but there IS standardization within research labs.
    - Measure pharyngeal transit time, airway closure, timing and duration of PES opening, and many other swallowing functions (Choi, et al. 2011; Martin-Harris, et al., 2005; Molfenter et al., 2012, Leonard et all, 2000)
- Residue can be measured utilizing special software via the normalized residue ratio scale (Pearson et al., 2012)
- The VFSS procedure and assessment has been standardized using the MBSImP- Modified Barium Swallow Impairment Profile, which allows for comparison between tests and a reliable way to rate swallowing impairments (Martin-Harris et al., 2008).

Benefits of FEES:

- Portable–can be done at the bedside in many different medical environments including the ICU, standard hospital floor, skilled nursing facility, inpatient rehab facility, and outpatient services. The exam is tolerated well (Cohen et al., 2003).
- FEES should be utilized for cases where patient postures or equipment (such as a halo brace or head of bed elevation restrictions in spinal cord injury cases) might make a VFSS impossible or limit the view.
- FEES is considered to have higher sensitivity to penetration and aspiration than VFSS (Fattori et al. 2016; Kelly et al. 2007, Langmore, 2003).
- Laryngeal function for voice can be observed, which may reveal valuable information regarding the physiology of swallowing and interpretations of findings, in addition to a more complete assessment (Langmore, 2017).

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What clinical questions about the patient's swallow physiology do you need to answer after completing the clinical swallowing exam?

Patient's complaints related to possible dysphagia:

- ☐ Difficulty with solids
- ☐ Difficulty with liquids
- ☐ Difficulty with pills
- ☐ Difficulty starting swallow
- ☐ Coughing, throat clearing, wet vocal quality when eating and/or drinking
- ☐ Excessive saliva/drool
- ☐ Regurgitation/Expectoration
- ☐ Behaviors during eating and drinking such as impulsiveness, hesitations, food avoidances…."
- ☐ Other _____

Observed symptoms of possible dysphagia:

- ☐ Cannot pass 3oz water swallow test
- ☐ Wet, altered, and/or absent voice quality before / during / after swallowing
- ☐ Observed difficulty chewing
- ☐ Difficulty managing secretions
- ☐ Other _____

Hypothesis testing – what do you believe could be causing the symptoms of dysphagia, and how can you find out? Which assessment would you start with?

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