Overcoming Obstacles in Ordering Instrumentals for the Assessment and Treatment of Dysphagia

Theresa Richard, MA, CCC-SLP, BCS-S

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Theresa Richard M.A. CCC-SLP, BCS-S - GSHA 2019

1. Cost and prevalence of dysphagia
"Economic and survival burden of dysphagia among inpatients in the United States" (Patel et al., 2014) describes a study that pulled data from 2009-2013 from the Healthcare Cost & Utilization Project (HCUP) and the National Inpatient Sample. The study looked at patients over 45 years old that had hospital stays of under 180 days. They found that 3% of patients have dysphagia, however the actual numbers may be much higher, as dysphagia is often under-reported and under-diagnosed in acute care. Of the 3% of adult US inpatients that had a dysphagia diagnosis: 50.2% male, 72.4% white, 74.6% age 65-90 years. Prevalence increased from 2.5% of admissions in 2009 to 3.3% in 2013. Also of note: The mean length of stay for these patients was 8.8 days in comparison to 5.0 days, total inpatient costs were $6,243 higher, they were 33.2% more likely to be transferred to a SNF/rehab instead of home, and 1.7 times more likely to die in the hospital

2. Costs associated with dehydration/UTIs/thickened liquids
Thickener itself does not directly cause dehydration, however, according to Daniels and Huckabee (2014), patients have a tendency to find thickened liquids not as palatable, therefore drinking much less than if it were a thin consistency. Patients that are not properly hydrated are at an increased risk for dehydration, malnutrition, electrolyte imbalance, sepsis, and/or a UTI. All 5 of those conditions equate for 78% of all 30 day re-hospitalizations. (Mor et. al, 2010) Each time a patient is re-hospitalized from a SNF within 30 days of their previous discharge, the SNF is responsible for footing the bill, so any of those 5 conditions can potentially cost a facility an extra $30,000. Also the cost to keep a patient on thickened liquids for one year can be $2,000-$7,000

3. SLPs miss silent aspiration completely 14% of the time. (Leder, 2002)

4. 70% of the time we are OVER-DIAGNOSING dysphagia at the bedside using clinical signs and symptoms that don't correlate. (Leder, 2002)

5. Runny nose is not correlated with aspiration. (Raphael, 1989).

6. Cervical Auscultation
Systematic review of 90 articles published by Lagarde et al. (2015) considered the reliability and validity of cervical auscultation in the assessment and diagnosis of pharyngeal dysphagia and found FIVE articles considered to range from "moderate" to "good", with the conclusion that: "Conflicting evidence is found for the validity of cervical auscultation.The reliability of cervical auscultation is insufficient when used as a stand-alone tool in the diagnosis of dysphagia in adults. There is no available evidence for the validity and reliability of cervical auscultation in children.Cervical auscultation should not be used as a stand-alone instrument to diagnose dysphagia."

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7. Palpation
There is no evidence in support of this procedure. Even when the larynx moves, we cannot complete objective assessment or even speculate further on any of the other 10 physiologic functions simultaneously co-occuring within the pharynx.

8. Pulse Ox
Britton & Roeske, et al. (2017) completed an analysis of available research on the use of pulse oximetry as a possible identifier of aspiration in adults. The studies selected all used a “gold standard” of swallow assessment (only 10 of 294 studies found) to confirm or deny possible aspiration reported by the clinicians using pulse oximetry. Their conclusion: “Current evidence does not support the use of pulse oximetry to detect aspiration" because “study findings were mixed with sensitivity ranging from 10 to 87%”. Furthermore, a 2000 study by Colodny demonstrated that oxygen saturations may vary across different groups of people without change as a function of aspiration, while a 2000 study by Leder found no significant differences in oxygen saturation levels based on aspiration status when recorded simultaneously with FEES. More recent research by Marian et al. (2017), using data from the prior Colony (2000) and Leder (2000) studies, reinforced these findings with their assertion that “measurement of oxygen desaturation is not a suitable screening tool for the detection of aspiration in stroke patients.”

9. Blue Dye Test
Donzelli et al. (2001), described a 50% false negative error rate and then only in individuals with gross aspiration as any of the variations used of the blue dye test do not consistently detect smaller volumes of aspirated material.

10. Gag Reflex
A Leder (1997) study published in the Dysphagia journal used videofluoroscopy to analyze the relationship between the gag reflex and aspiration risk, with the result that “19 of 20 (95%) patients without a gag reflex were observed to be without aspiration”, with the conclusion that, “the presence of a gag reflex does not protect against aspiration, and the absence of a gag reflex does not predict aspiration.”

Dispelling Myths About The Use Of FEES

Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is the label that Langmore, Schatz & Olsen coined in their 1988 paper describing the protocol they'd developed in the mid 1980s. Today, many endoscopes no longer contain fiberoptics, and there are several popular protocols that vary the approach originally described, but the term "FEES" has become synonymous with the use of endoscopy to evaluate swallowing.

Describing the history and current use of FEES in a recent paper, Langmore (2017, p.28) wrote that ". . . in some parts of the world, FEES is the primary procedure done on patients with suspected pharyngeal dysphagia, with other procedures following only when the diagnosis is incomplete. This procedure is often compared to the videofluoroscopic swallow procedure (VFSS), also known as the Modified Barium Swallow (MBS). Because VFSS was already an established procedure when FEES was first described, VFSS is often referred to as the 'gold standard.' However, others would argue that being there first does not make you better."

Although SLPs do argue that for a given patient at a given time, FEES or VFSS might be the better exam, it is safe to say that FEES has become an option to VFSS in the standard care of individuals with dysphagia today. Where resistance to FEES persists, sometimes myths regarding its usefulness or even safety persist, too. This handout is an attempt to dispel some of these myths.

Why: FEES has become a popular procedure due to its convenience and cost effectiveness in some situations. It can be used in a variety of settings, even while the patient is bedridden, in isolation, or in the ICU. FEES can be used with various populations including patients on a ventilator or with a tracheostomy, patients with head and neck cancer, and even pediatrics to name a few. FEES can also be a much more cost-effective option in some settings. However, some SLPs, physicians, nurses, and administrators have been misinformed or not entirely educated to the benefits of using FEES, therefore they are not allowing their patients to experience all of the benefits that FEES has to offer.

Instruction: Langmore (2017) describes FEES as a comprehensive procedure that includes 3 parts to the exam. This protocol has not undergone validity testing; therefore, it remains a guideline. FEES does not merely identify aspiration, but rather it examines:

1. anatomy, secretions, and movement of the structures by asking the patient to perform non-swallow, speaking and breath- holding tasks,
2. the direct evaluation of swallowing as the patient eats and drinks various bolus consistencies,
3. postural, dietary, and behavioral changes which can be trialed as problems occur.

How: Use this handout to help dispel some common myths about FEES to help advocate for its use for your patients.

Dispelling Myths About The Use Of FEES

Myth #1: VFSS is the gold standard test to assess swallowing function in individuals with known or suspected dysphagia.

Reality: According to Langmore (2017), four papers have been written using simultaneous VFSS/FEES studies. Taken together, these papers found that FEES is more sensitive to identifying the presence of bolus material than VFSS, and that raters consistently rated bolus penetration into the airway or amount of residual bolus material more severely than on VFSS (Rao, Brady, Chadhuri, Donzelli & Wesling, 2002; Kelly, Leslie, Beale, Payten & Drinnan., 2006; Pisegna & Langmore, 2016; and Kelly, Drinnan & Leslie. 2007).

According to Rao, et al. (2002), the sensitivity value (the true-positive rate) was higher when FEES was used as the gold standard for laryngeal penetration and pharyngeal residue. The specificity value, the true-negative rate, was higher for laryngeal penetration, aspiration, and pharyngeal residue when the VFSS was used as the gold standard. VFSS and FEES are equally effective, comparable, valid instrumental procedures for swallowing and both deserve to be considered the "gold" standard (Rao, 2002).

Myth #2: You don't see as much with FEES.

Reality: According to Pisegna & Langmore (2016), clinicians reported better visualization of anatomical sites on FEES than VFSS. FEES can be very reliable at determining laryngopharyngeal abnormalities in hospitalized dysphagia patients, with 79% of them presenting with abnormalities (e.g., arytenoid edema, granuloma, vocal fold paresis, diffuse edema, airway stenosis, ulcer) (Postma, McGuirt, Butler, Rees, Crandall, & Tansavatdi, 2007). According to Murray, Langmore, Ginsberg, & Dostie (1996) the accumulation of secretions observed during FEES is highly predictive of aspiration of food or liquid. Secretion severity correlates with aspiration and diet; patients with tube feedings and trachs had greater secretion severity (Donzelli, Brady, Wesling, & Craney, 2003).

Myth #3: FEES is painful.

Reality: Several studies have been performed and have found no significant difference in the comfort of FEES even compared to using an anesthetic, saline, or placebo (Leder, Ross, Briskin, & Sasaki, 1997; Singh, 1997; and Kamarunas, McCullough, Guidry, Mennemeier, & Schluterman, 2014). Cohen (2003) performed a study of 349 consecutive FEES exams where patients were asked to rate the level of discomfort with the procedure. 12.6% of patients stated there was no discomfort, 48.4% thought it was mild, 31.5% described moderate discomfort, and 7.5% said it was severe. 98% of the patients stated that they would repeat the test in the future. It is important to note that state regulations may not allow the use of lidocaine unless administered by a physician.

Myth #4: FEES is dangerous.

Reality: Langmore (2017) states that FEES has been shown to be extremely safe with all reported complications being minor and spontaneously resolved. In a prospective study of 1340 patients by Aviv et al. (2005), epistaxis occurred in 1 patient (0.07%) with no airway compromise. In a study by Cohen et al. (2003), mild epistaxis occurred in four patients (1.1%) with no episodes of airway obstruction or laryngospasm. A study of 300 acute stroke patients within two days of stroke (many on anticoagulants) showed no epistaxis, change in mental status, laryngospasm, or brady/tachycardia requiring special treatment (Warnecke, et al., 2009). A study of 2820 patients showed 4 cases of epistaxis (.14%), 3 cases of vasovagal syncope (.1%), and 2 cases laryngospasm (.07%) with all resolving spontaneously (Nacci, et al., 2016).

Dispelling Myths About The Use Of FEES

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Dispelling Myths about the use of Videofluoroscopic Swallowing Studies (VFSS)

Contributed by the MedSLP Collective

Introduction: "Clinicians evaluating and treating swallowing disorders use a videofluoroscopic radiology procedure to assess swallowing physiology in patients with symptoms of swallowing disorders (i.e. dysphagia) and estimate the degree of swallowing impairment from observations made during the exam. This procedure, the modified barium swallow (MBS) examination, captures sequential videoradiographic images of barium contrast- impregnated food and liquid as they are transported during the oral cavity, pharyngeal cavity, and esophagus in real time. Various volumes and textures of food and liquid are administered and clinical impressions of the presence and degree of swallowing impairment are obtained from the radiographic images. Judgments are also made regarding the coordination and timing of swallowing events." (Martin-Harris and Jones, 2009, pg. 2)

Why: Videofluroroscopic swallow studies (VFSS), also known as modified barium swallow (MBS) studies, dynamic swallow studies (DSS) or even, colloquially, as "cookie swallows", have long been established as a useful instrumental tool in the assessment of oropharyngeal dysphagia. Unfortunately, some SLPs, radiologists, physicians, nurses, and administrators have been misinformed or not entirely educated to the benefits of using VFSS; therefore, they are not allowing their patients to experience all of the benefits that VFSS has to offer. According to a recent survey of self-identified speech language pathologists who practice in the area of dysphagia, only 60% of respondents utilized the VFSS prior to beginning treatment, and only 40% conducted VFSS following treatment (Carnaby & Harenberg, 2013).

Instruction: Several approaches to VFSS have been published in the literature and are in clinical use today. Describing them all is beyond the scope of this handout, and each has strengths and limitations, primarily related to the content validity and test-retest and interrater reliability with which they are performed. To address these concerns, a decade ago, Bonnie Martin-Harris and colleagues published the results of their initial study describing the reliability and content validity of an approach to the MBS (Martin-Harris, Brodsky, Blair et al., 2008). "Their work established a standardized, reliable and valid method for performing, describing, interpreting, and reporting observations of the type and severity of the swallowing impairment obtained during videofluoroscopic imaging – the Modified Barium Swallow Impairment Profile (MBSImP©™)" (Bonilha et al., 2013, pg. 78). The MBSImP©™ includes three integral standardized components including training in swallowing physiology and impairment, data collection protocol, and scoring and interpretation. The MBSImP©™ standards were also used for the detection and documentation of swallowing impairment severity from the MBSSs. Although the interpretation of MBSImP©™ still requires that clinicians consider the results in the context of patient medical diagnoses, clinical presentation and preferences, this and other efforts to improve the quality of the examination have led to the VFSS having greater clinical validity than ever before.

How: You may be practicing in a setting where you've heard others say, or have even stated yourself, reasons why a patient may not be a good candidate for a VFSS or MBS. Use this handout to help advocate for the importance of a VFSS for your patient.

Dispelling Myths about the use of Videofluoroscopic Swallowing Studies (VFSS)

Myth #1: The VFSS uses too much radiation.

Reality: According to Tolbert (1991), background radiation exposure for the general population is estimated to be 60-130 millirems (mrem) per year. Mrem is a unit of absorbed radiation dose. A rem is a large dose of radiation, so a millirem is one thousandth of a rem. Rem is abbreviated from Roentgen Equivalent Man which is a measurement that correlates the dose of any radiation to the biological effect of that radiation (Steele and Murray, 2004). For the examiner, the VFSS procedure exposes the examiner to as much as 3 mrem which is below the regulatory limit of 5 mrem per year. For the patient, the mean duration of procedure for VFSS is 4 minutes and is not included in the list of fluoroscopic procedures that carry a risk of skin injury (Marx, 1996).

Myth #2: I already know they're aspirating, why expose them to radiation?

Reality: If it has not been ascertained why the patient is aspirating during the clinical exam, and an instrumental exam is not contraindicated, then it should be considered. Additionally, while some clinical tests can be used to screen for the risk of aspiration, they do not definitively indicate the presence or absence of aspiration (Brodsky, 2016). Furthermore, according to the ASHA Practice Portal, the clinical swallowing exam may form the basis for recommendations for the management of dysphagia—or it may serve as a tool for (a) identifying clinical presentations of dysphagia, (b) determining the potential need for additional instrumental evaluation, and (c) specifying diagnostic questions to be answered by any instrumental evaluations (American Speech-Language-Hearing Association, 2018).

Myth #3: The barium will not match what they serve on the trays.

Reality: Barium utilized in the exam may not match what is served on meal trays; however, the information gained from imaging the swallow serves as a knowledgeable assessment of what occurs in the physiology of the swallow. "The VFSS is beneficial not only in identifying whether aspiration has occurred but also in allowing assessment of amount and timing of aspiration as well as assessment of anatomy and pathophysiology of swallow function in the oral and pharyngeal phases. It provides clinically useful information on the influence of compensatory strategies and diet changes (Martin-Harris, Logemann, McMahon, Schleicher, & Sandidge, 2000)."

If a clinician is concerned about the inconsistencies of various barium formulations, products such as Varibar (Bracco Diagnostics, Inc., Monroe Township, N.J.) provide standardized barium concentration and viscosity ranges, which come premeasured and premixed, and can help to eliminate the potential for variability in results (Steele, Molfenter, Péladeau-Pigeon, Stokely, 2013).

Dispelling Myths about the use of Videofluoroscopic Swallowing Studies (VFSS)

Myth #4: It's only a moment in time.

Reality: Yes, a VFSS may only be 3-4 minutes long; however, the VFSS is not meant to assess every con-sistency or texture created, rather its purpose is to assess swallowing physiology. For example, the MBSImP©™ defines 17 components of the swallow. The protocol includes trials of thin liq-uids, nectar thick liquids (via tsp, cup and/or straw with a cued swallow and spontaneous swallow), pudding and cookie/cracker. Other consistencies may be tested, however through rigorous testing, it was determined that these consistencies allow for adequate observation of swallowing physiology. Nectar thick liquids are also assessed even in the absence of penetration/aspiration of thin liquids as the structural movements may increase with the thicker consistency liquid (Martin-Harris, 2008).

A complete VFSS requires a sufficient number of swallowing attempts to (a) make a clinically informed decision about route of intake, consistency of oral diet (if appropriate), exercises to improve swallowing function, and compensatory techniques to maintain patient safety while consuming an oral diet and (b) determine the need for additional assessments/interventions through interprofessional team referral(s). Clinicians additionally note the individual's tolerance of and response to the examination (e.g., following directions, fatigue, signs of stress related to medically complex patients, ability to repeat therapeutic interventions) (American Speech-Language-Hearing Association, 2018).

Myth #5: My patient just had pneumonia, I don't want them to get it again from having a VFSS.

Reality: Of course, pulmonary syndromes may occur after aspiration, depending on the amount and nature, frequency, and response (Jo et al., 2016). Jo et al (2016), retrospectively reviewed 696 charts of patients who had VFSS. They found that while 15 of the 696 individuals did have pneumonia within 3 days of the VFSS, only 7 of these were determined to be related to aspiration during the VFSS itself. The remaining pneumonias were determined to be due to aspiration of gastric contents or to aspiration of material prior to the VFSS.

Myth #6: I know the patient is aspirating secretions, he/she cannot complete a VFSS.

Reality: Just because someone may or may not be aspirating their own secretions does not eliminate them from participating in a VFSS. The patient can be suctioned immediately prior to the procedure, or a physician may consider a prescription for secretion management. Even if a patient is not deemed safe for immediate oral intake following the exam, the importance of the VFSS for identifying the physiologic impairments and establishing appropriate treatment cannot be understated (Martin-Harris et al. 2008). In some cases, endoscopic examination of swallowing (e.g., FEES) may be a better choice for these patients, but instrumental assessment is rarely, if ever, to be avoided simply because the problem is suspected to be severe.

Dispelling Myths about the use of Videofluoroscopic Swallowing Studies (VFSS)

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