1

Disclosures

Sherri Coker, RN, MS, CCC-SLP

Financial: Paid presenter; Contracting SLP with SA Swallowing Services.

Non-financial: None

2

Need for Instrumental Evaluations

Indications for an instrumental exam:

- Determine safety and efficiency of swallowing
  - ➢nutritional compromise
  - ➢pulmonary compromise
  - ➢airway safety (e.g., choking)
- Identify disordered swallowing physiology
- Assist with differential medical diagnosis

American Speech-Language-Hearing Association. (n.d.). Adult Dysphagia. (Practice Portal). Retrieved 3/28/23 from www.asha.org/Practice-Portal/Clinical-Topics/Adult-Dysphagia/.

3

Need for Instrumental Evaluations

Indications for an instrumental exam:

- Diagnosis associated with a high r/f dysphagia
- Previous dysphagia with a suspected change
- Chronic degenerative condition

American Speech-Language-Hearing Association. (n.d.). Adult Dysphagia. (Practice Portal). Retrieved 3/28/23 from www.asha.org/Practice-Portal/Clinical-Topics/Adult-Dysphagia/.

4

"Diagnosing and treating dysphagia without an instrumental swallow study is like…"

. . . driving a car without a steering wheel.
. . . taking a trip without a map or trip planner.
. . . treating a possibly broken bone without an x-ray.
. . . diagnosing diabetes without a blood test.
. . . asking a mechanic to tell you what's wrong with your car over the phone.
. . . trying to say you're Superman without x-ray vision.
. . . playing "Pin the Tail on the Donkey".
. . . buying a car, or anything, sight unseen.

SASS 2023

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Need for Instrumental Evaluations

General **contraindications** for an instrumental exam

- Patient is:
  - Not medically stable
  - Not alert
  - Not following simple commands
  - Pt. has anatomical deviations (e.g., head/neck, digestive tract)

American Speech-Language-Hearing Association. (n.d.). Adult Dysphagia. (Practice Portal). Retrieved 3/28/23 from www.asha.org/Practice-Portal/Clinical-Topics/Adult-Dysphagia/.

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Swallow Screening

Purpose:

- Determine the likelihood of dysphagia and ***the need for further swallowing assessment*** or
- Need for referral to other medical professional/services

American Speech-Language-Hearing Association. (n.d.) Adult Dysphagia. (Practice Portal). Retrieved 3/28/23 from www.asha.org/Practice-Portal/Adult-Dysphagia.

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YALE Swallow Protocol

A revised 3-ounce water swallow challenge on 3,000 hospitalized patients with 14 distinct diagnoses and referenced with FEES.

- Correctly predicted aspiration 96.5% of the time
- Negative predictive value of 97.9%
- False negative rate of ≤2.0%

Suiter, D. & Leder, S.B. (2008). Clinical utility of the 3-ounce water swallow test. Dysphagia, 23, 244-250.
https://www.asspllc.com/wp-content/uploads/2014/12/Yale-Swallow-Protocol.pdf

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Bedside Swallow Evaluation

2017 Study: "The Accuracy of Bedside Swallow Evaluation for detecting Aspiration in survivors of Acute Respiratory Failure".

- 14% with negative BSE aspirated during FEES.
- 48% of the patients with abnormal BSE had no aspiration on FEES.
- 6% of the patients kept NPO had no aspiration on FEES.
- *No consistency on BSE was a good predictor of aspiration on FEES*

Lynch YT, Clark BJ, Macht M, White SD, Taylor N, Wimbish T, Moss M. The accuracy of the bedside swallowing evaluation for detecting aspiration in survivors of acute respiratory failure. J Crit Care. 2017 Jun;39:143-148. doi: 10.1016/j.jcrc.2017.02.013. Epub 2017 Feb 15. PMID: 28259057; PMCID: PMC5481987. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5481987

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Types of Instrumental Evaluations

- Modified Barium Swallow Study (MBSS)
- Flexible Endoscopic Evaluation of Swallowing (FEES)

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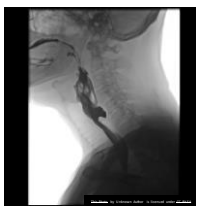
Modified Barium Swallow Study (MBSS)

"The modified barium swallow study (MBSS) is a widely used video-fluoroscopic evaluation of the functional anatomy and physiology of swallowing that permits visualization of bolus flow throughout the upper aerodigestive tract in real time."



Martin-Harris B, Canon CL, Bonilha HS, Murray J, Davidson K, Lefton-Greif MA. Best Practices in Modified Barium Swallow Studies. Am J Speech Lang Pathol. 2020 Jul 10;29(2S):1078-1093. doi: 10.1044/2020_AJSLP-19-00189. Epub 2020 Jul 10. PMID: 32663427; PMCID: PMC7844610.

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Modified Barium Swallow Study (MBSS)

Goals of the MBS:

- Identify/distinguish type & severity of swallowing impairment
- Determine safety of oral intake
- Test evidence-based interventions
- Make oral intake recommendations & treatment planning

Martin-Harris B, Canon CL, Bonilha HS, Murray J, Davidson K, Lefton-Greif MA. Best Practices in Modified Barium Swallow Studies. Am J Speech Lang Pathol 2020 Jul 10;29(2S):1078-1093. doi: 10.1044/2020_AJSLP-19-00189. Epub 2020 Jul 10. PMID: 32663427; PMCID: PMC7844610.

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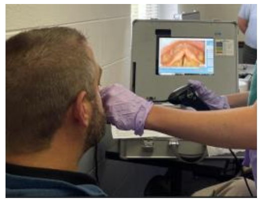
Flexible Endoscopic Evaluation of Swallowing (FEES)

Flexible endoscopic evaluation of swallowing (FEES) … requires the use of a flexible laryngoscope that is passed transnasally and positioned to view the base of tongue, pharynx, and larynx before/during/after the swallow.



Tutorial on Clinical Practice for Use of the Fiberoptic Endoscopic Evaluation of Swallowing Procedure With Adult Populations: Part 1 Susan E. Langmore et al., 2021. https://doi.org/10.1044/2021_AJSLP-20-00348

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Flexible Endoscopic Evaluation of Swallowing (FEES)

Goals of FEES:

- Assess swallow physiology and function for individuals with dysphagia
- Assess the presence and severity of dysphagia
- Evaluate the effect of specific interventions…to see if they improve safety and efficiency of the individual's swallowing.

Langmore, 1998; Langmore et al., 2021, Am J Speech Lang Path

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"Gold Standard" Assessments

- FEES and MBSS each have unique advantages, disadvantages and clinical indications.
- Both exams have significant value in the SLP's toolbox, and clinical research continues to demonstrate this value, particularly when compared to non-instrumental bedside screening assessments.

https://www.sassplc.com/fees-faq/fees-vs-mbss-comparisons/

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	FEES	MBSS
Swallow Stages Assessed	Pharyngeal stage before, during, & after the swallow. Inferences are made about the oral (containment) & esophageal stages (reflux). Primarily from the superior view.	Oral, pharyngeal & cervical esophageal stages. Primarily from the lateral view.
Where can it be performed?	Any location: hospital, SNF, OP clinic, pt's home; bedside, wheelchair, chair	Hospital radiology suite, mobile radiology van, & sometimes with portable C-Arm fluoroscope at bedside
Which pts cannot have the exam?	Very few patients. Problems may occur with craniofacial trauma, dementia, brain trauma, confused or comatose pts	Pts unable to leave bed, room, or ward, or unable to position in upright position. Ventilator, intensive care, uncooperative pts.

https://www.sassplc.com/fees-faq/fees-vs-mbss-comparisons/

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	FEES	MBSS
What are the best indicators for the exam?	Pt complaints of choking on food; suspicion of aspiration/larynx penetration. Pt. need for diet consistency up or downgrade.	Pt complaints of oral stage preparation problems; suspicion of aspiration or larynx penetration; c/o food sticking in throat.
What are the limitations of the exam?	Some pts will not/cannot tolerate nose insertion with nasoendoscope. "White out" period at moment of swallow. May miss seeing aspiration /penetration. Does not address oral & esophageal stages.	To reduce radiation exposure, fluoro is turned on & off with each swallow trial & prone to miss behaviors after the swallow. Unable to view laryngeal surface anatomy, Barium is mixed with foods changing viscosity
Bonus	Secondary assessment of velopharyngeal closure and/or laryngeal/pharyngeal surfaces & functions, Bilateral cavity residue; therapy biofeedback	Screening of esophagus to lower esophageal sphincter during swallow.

https://www.sassplc.com/fees-faq/fees-vs-mbss-comparisons/

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Salient Findings of Instrumental Studies

- **Loss of Bolus Control**
  - Material "splashes" over the tongue base or lower
- **Delay**
  - Amount of time bolus is in the pharynx prior to pharyngeal swallow
- **Pharyngeal Residue**
  - Bolus remains in hypopharynx after the swallow

Langmore 2001

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Laryngeal Penetration

- Material enters the laryngeal vestibule, over the rim of the larynx, and may move to the level of the true vocal folds.

Rosenbek et al., 1996; Langmore, 2003

- Possibly a sign – periodic or continuous – of laryngeal airway protection inefficiency.
- EVERYONE penetrates (and aspirates).

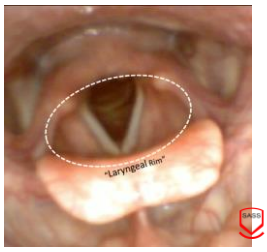
Huxley et al., 1978, Am J. Med; Gleeson et al., 1997

❖If penetration does not result in aspiration, it should NOT be grounds to alter diet or undertake major intervention.

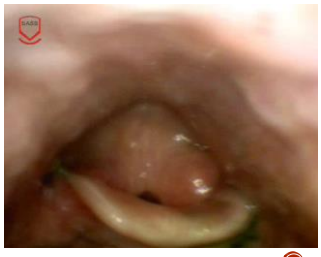
Ashford, unpublished

19

Where does Penetration Begin?



Murray, 1999



Video

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Aspiration

- If bolus material falls below the vocal folds to the subglottic area, trachea, or further.
- Crosses the plane of the vocal fold edge

• Rosenbek et al., 1996

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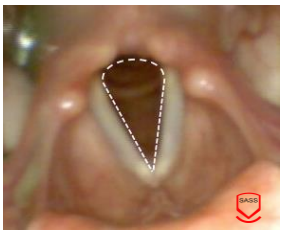
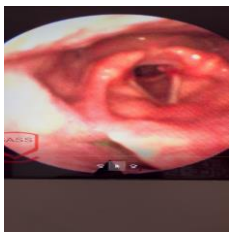
Aspiration



Murray, 1999

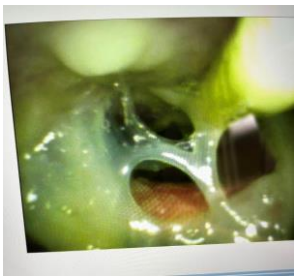


22

Why We Should LOOK

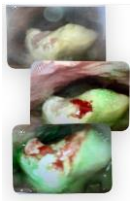
23

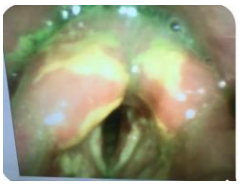
NPO for 3 weeks



24

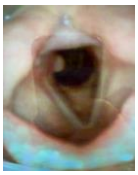
Laryngeal Candidiasis (Yeast)

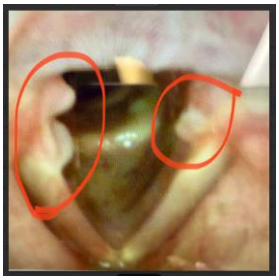




25

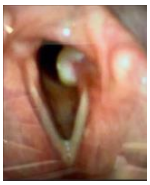
Granulomas

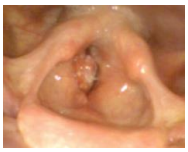


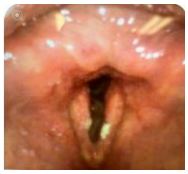


26

Suspicious Lesions







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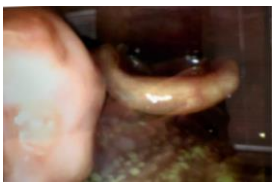
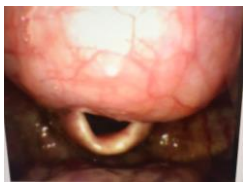
Suspicious Lesions - Masses





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Unusual Findings – Foreign Objects

"In the middle-age group, foreign body of the larynx are uncommon… Sudden development of hoarseness of voice should raise a suspicion of a *laryngeal foreign body*."

"**Early diagnosis** and intervention is the key in such cases as delay can lead to catastrophic complications and long-term sequelae."

Hadia, Mahendra S. MS; Sanedhani, Sunil MS, ENT; Chadha, Vinit MS, ENT; Harshvardhan, Rathod S. MBBS; Prakash, Mishra MS, ENT. Laryngeal Foreign Bodies Among Adults. Journal of Bronchology & Interventional Pulmonology 22(2):p 143-147, April 2015. | DOI: 10.1097/LBR.0000000000000056

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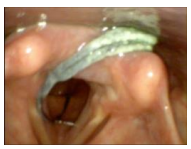
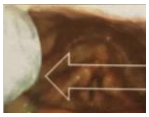
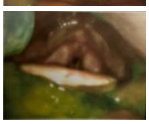
Foreign Objects



Suture





Nasal Trumpet

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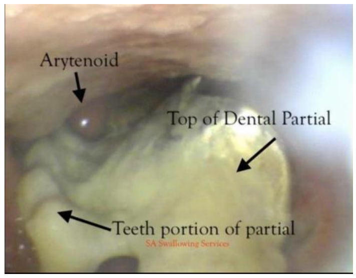
Foreign Objects



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Recap: Why Instrumental Evaluations?

Instrumental procedures are the only method that provides visualization of:

- swallowing **physiology** &
- laryngeal, pharyngeal, and upper esophageal **anatomy**

… which help diagnose dysphagia.

https://www.asha.org/practice-portal/clinical-topics/adult-dysphagia/#collapse_5

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Recap Why Instrumental Evaluations?

"International consensus (ICON) on assessment of oropharyngeal dysphagia"

- Review of the literature by 5 experts in 4 different continents
- Each answered questionnaire re: the work-up of Oropharyngeal Dysphagia
- Individual answers were presented and discussed during the world ENT conference that was held in Paris in June 2017.

Espitalier F, Fanous A, Aviv J, Bassiouny S, Desuter G, Nerurkar N, Postma G, Crevier-Buchman L. International consensus (ICON) on assessment of oropharyngeal dysphagia. Eur Ann Otorhinolaryngol Head Neck Dis. 2018 Feb;135(1S):S17-S21. doi: 10.1016/j.anorl.2017.12.009. Epub 2018 Feb 1. PMID: 29396225.

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Recap Why Instrumental Evaluations?

Results:

Recommendation to perform either a FEES or VFSS:

- For initial objective assessment of oropharyngeal dysphagia
- Evaluating for presence of aspiration during obj. assessment
- To highlight … oropharyngeal food residue during deglutition

Espitalier F, Fanous A, Aviv J, Bassiouny S, Desuter G, Nerurkar N, Postma G, Crevier-Buchman L. International consensus (ICON) on assessment of oropharyngeal dysphagia. Eur Ann Otorhinolaryngol Head Neck Dis. 2018 Feb;135(1S):S17-S21. doi: 10.1016/j.anorl.2017.12.009. Epub 2018 Feb 1. PMID: 29396225.

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Keep Up The Good Work!!!

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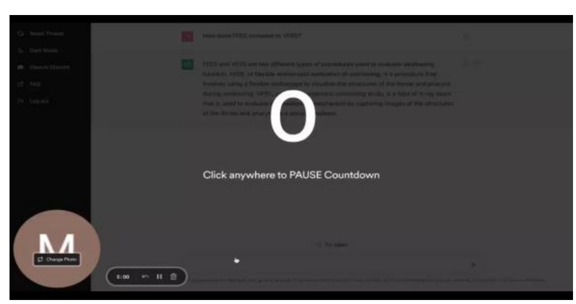

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