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ONLINE CONTINUING EDUCATION FOR THE LIFE OF YOUR CAREER

Test Your Ability to Interpret FEES: Level I

Joy Hesse, MA, CCC-SLP

Moderated by:
Amy Hansen, MA, CCC-SLP, Managing Editor, SpeechPathology.com

Need assistance or technical support?

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How to earn CEUs

- Must be logged in for full time requirement
- Log in to your account and go to Pending Courses
- Must pass 10-question multiple-choice exam with a score of **80%** or higher
  - Within **7 days** for live webinar; within **30 days** of registration for recorded/text/podcast formats
- Two opportunities to pass the exam

CONTINUED

Test Your Ability to Interpret FEES: Level I

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Acknowledgment: Sarah L. Gray, MS, CCC-SLP

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Learner Outcomes

- Identify 3 contraindications for performing FEES examination.
- Identify patients that are appropriate referrals for FEES vs. patients appropriate for a modified barium swallow exam.
- Correctly identify and rate penetration and residue using the rating scales provided, after watching 3 FEES examinations.
- Identify normal anatomy during endoscopy as it relates to completing a FEES examination.

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CONTINUED

Purpose of FEES/Videostroboscopy Examination

- Flexible Endoscopic Examination of Swallow evaluates the function and structure of the aero-digestive tract during rest, during phonation, speech, and during swallowing as viewed through a flexible nasal endoscope.

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CONTINUED

FEES Includes 5 Components

1. Assessment of anatomy as it affects swallowing.
2. Assessment of movement and sensation of critical structures within the hypopharynx and laryngopharynx.
3. Assessment of secretion management.
4. Direct assessment of swallowing function for food and liquid.
5. Response to therapeutic maneuvers and interventions to improve the swallow.

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CONTINUED

What We Can See Endoscopically

- Presence/absence of Secretions
- Pharyngeal Pooling/Residue Before/During Exam
- Vocal fold Mobility
- Presence of erythema/edema of the posterior larynx
- Tongue base movement/hylolaryngeal movement
- Soft Palate movement
- Epiglottic movement before and after the swallow
- Pharyngeal Squeeze

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CONTINUED

Indications for Completing FEES/Videostroboscopy

- Need exam on that day
- Positioning in fluoroscopy is problematic- bedridden, contractures, obese, ventilator…
- Transportation to fluoroscopy is problematic- ICU, CCU, medically fragile patient
- Concern about excess radiation exposure
- Severe dysphagia with very weak or possibly absent swallow reflex and/or very limited ability to tolerate aspiration (brainstem stroke, tube fed for prolonged period of time, poor pulmonary status.
- Post-intubation or post-surgery especially CABG, carotid endarterectomy cervical fusion or any surgery where RLN was vulnerable. Endoscopy can visualize larynx directly for signs of trauma or neurologic damage and assess laryngeal competence.

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CONTINUED

Indications Continued

- Tracheostomy if you suspect laryngeal competence may be impacted.
- Need to assess fatigue or swallow status over an entire meal.
- Repeat exam to assess change; to assess effectiveness or need for maneuvers
- Therapeutic exam that requires time to try out several maneuvers, several consistencies, or use as biofeedback for patient/family

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When These Clinical Symptoms Are Present

- Hypernasal Voice
- Hoarse, breathy voice
- Wet vocal quality
- Rapid respiratory rate, effortful breathing
- Inability to handle own secretions

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Contraindications for giving topical anesthetics

✓1. Check to make sure they do NOT have an allergy to any medications with “caine”.

✓2. Check to see if they have had adverse reaction to topical anesthetics.

✓DO NOT perform flexible endoscopy on patient with recent trauma to the nose! Could have severe reaction called methemoglobinemia!

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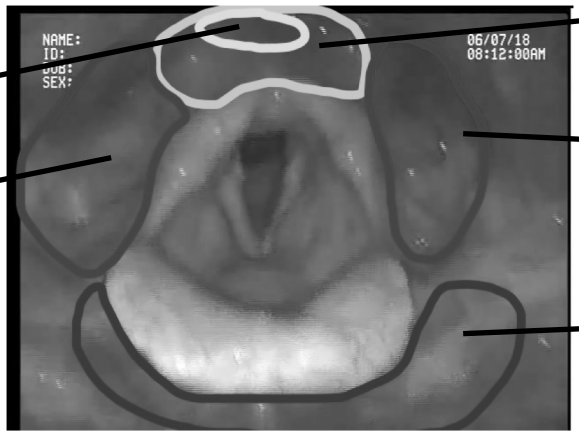
Appropriate Terminology For Pharyngeal Anatomy



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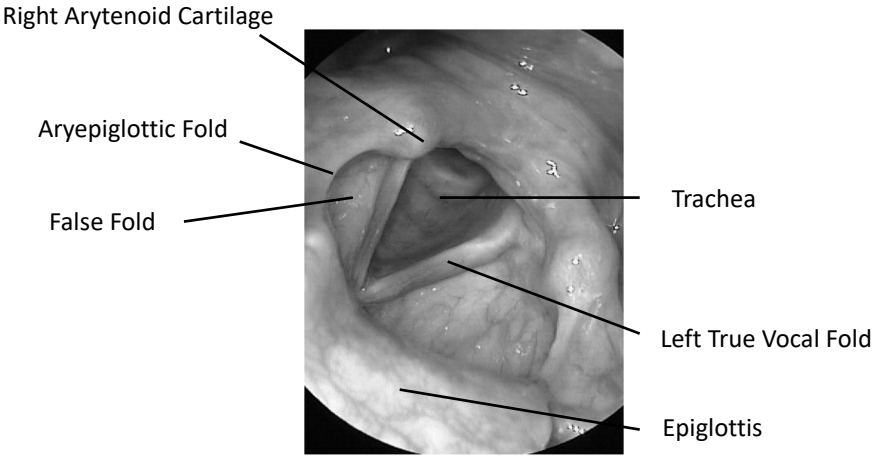
Laryngeal Anatomy



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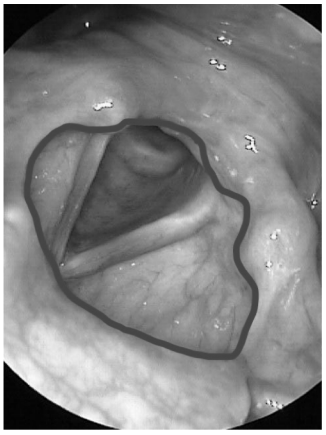
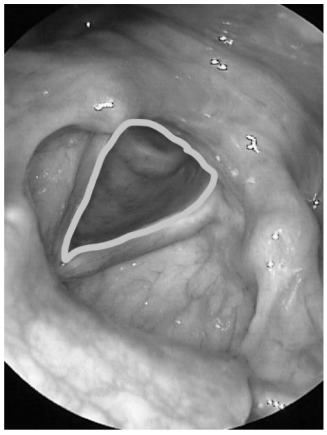
Penetration and Aspiration





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Penetration/Aspiration Scale (Pen/Asp)

PAS Scale	Score-Description
1	Material Does Not Enter Airway
2	Material enters the airway, remains above the TVFs, and is ejected
3	Material enters the airway, remains above the TVFs, is not ejected
4	Material enters the airway, contacts the TVFs and is ejected
5	Material enters the airway, contacts the TVFs and is not ejected
6	Material enters the airway, passes below the TVFS, is ejected into larynx or from the airway
7	Material enters the airway, passes below the TVFS, is not ejected into larynx or from the airway despite effort
8	Material enters the airway, passes below the TVFS, is not ejected into larynx or from the airway, no effort made to eject
	Rosenbeck, Robbins, Roecker, Coyle, & Wood (1996)

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CONTINUED

Yale Pharyngeal Residue Severity- Vallecula Residue (Neubauer et al, 2015)

1	**None**	**0%**	**No Residue**
2	Trace	1-5%	Trace Coating
3	Mild	5-25-%	Epiglottic Ligament Visible
4	Moderate	25-50%	Epiglottic Ligament Covered
5	Severe	> 50%	Filled to Epiglottic Rim

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Mild Vallecular Residue

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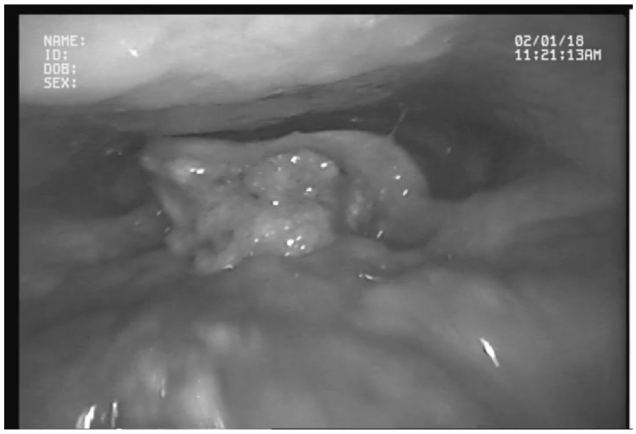
CONTINUED

Moderate Vallecular Residue



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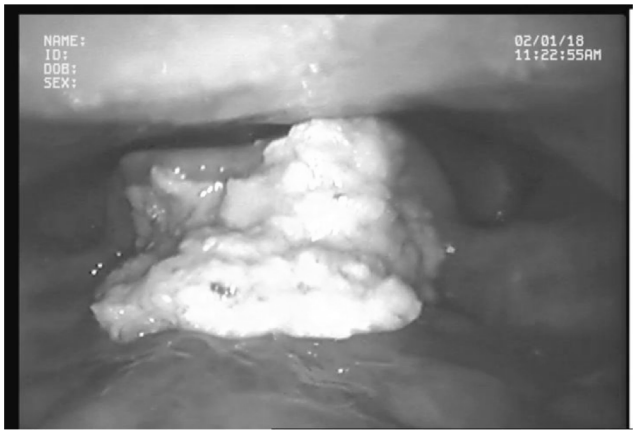
Severe Vallecular Residue



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Yale Pharyngeal Residue Severity Scale-Pyriform Sinus Residue (Neubauer et al, 2015)

1	**None**	**0%**	**No Residue**
2	Trace	1-5%	Trace coating
3	Mild	5-25%	Up wall to ¼ full
4	Moderate	25-50%	Up wall to ½ full
5	Severe	> 50%	Filled to aryepiglottic Rim

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Complete Endoscopy Procedure

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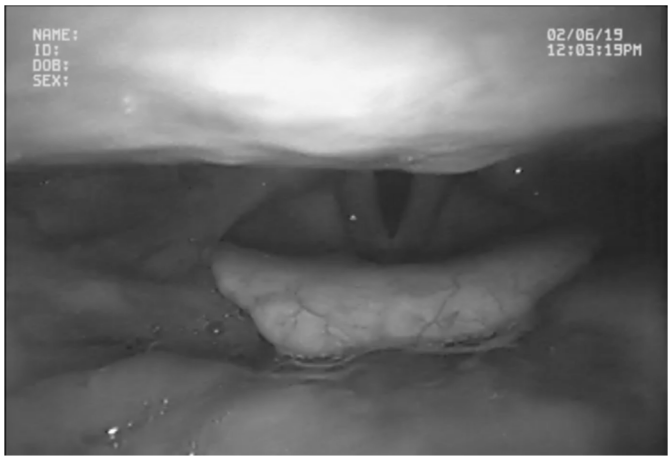

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Case Study #1

Throat Complaints Mr. Hackett is a 75 year old male referred for evaluation of dysphagia. The patient reports that he has had food sticking in his throat for the past year. No specific antecedent injury, illness, or event marked the onset of this problem. Initially this began is an intermittent problem but has subsequently become somewhat more frequent.

He reports having undergone EGD which is reportedly normal. His swallow study was also normal. The patient's voice quality in general is good. He is a singer and does report some morning raspiness of the voice but otherwise no major changes. He is on omeprazole 20 mg once a day for reflux. His reflux symptom index today is 12.

Past Medical History

Coronary artery disease I25.10 (414.00)

PVC (premature ventricular contraction) I49.3 (427.69)

Hypercholesteremia E78.00 (272.0)

Surgical History

nasal surgery: 2005

Orbital fracture repair

Kidney Stone Removal

Tonsillectomy and Adenoidectomy

Rotator Cuff Repair

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CONTINUED

Speech Therapy Exam

- Oral Motor Exam- Within normal limits
- Voice: Mild breathiness, no roughness, is a singer and has noticed reduced range and vocal fatigue
- Modified Barium Swallow Study was reportedly normal

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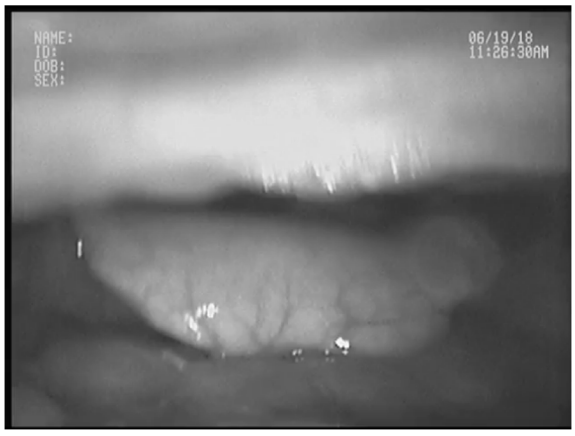
CONTINUED

FEES Case Study #1



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CONTINUED

Interpretation Case 1

- Pen/Asp Scale Rating: 1 no penetration or aspiration.
- Vallecular/pyriform reside: Vallecular Residue 4 and Pyriform Sinus Residue 1
- Compensatory Strategies: Chin tuck was not helpful, alternating textures was successful in reducing/eliminating residue from valleculae.

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CONTINUED

Recommendations

- Patient presenting with mild pharyngeal phase dysphagia characterized by moderate pooling in the valleculae.
- Compensatory Strategies:
  - Alternate Textures
- Rehabilitative Strategies:
  - Masako, Base of Tongue Strengthening (base of tongue retractors)
  - Effortful Swallow (pharyngeal wall constrictors)

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Case Study #2

Patient is a 65 year old female presenting with concerns about throat pain for the past 6 months. She indicates that she has some choking issues when drinking liquids. She may cough around aerosol sprays. She reports some intermittent sharp pains in the left side of her neck. She has quit smoking not too long ago and is now vaping frequently. Her reflux symptom index score is slightly elevated at 14 with 10 or less in the normal range.

Past Medical History

Stroke (I63.9)

CAD (coronary artery disease) I25.10 (414.00)

Guillain Barré syndrome G61.0 (357.0)

Anxiety and depression F41.9 (300.00)

BCC (basal cell carcinoma) C44.91 (173.91)

Surgical History

Nasal surgery, Hysterectomy, Open Heart Surgery, Skin Cancer Removal, Knee replacement, Cholecystectomy, Appendectomy, C-Section , Tonsillectomy

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Speech Pathology Exam

- Voice: mild roughness and mild breathiness
- Oral Motor Exam: Normal movement of the tongue and palate, no asymmetry noted of the facial musculature.

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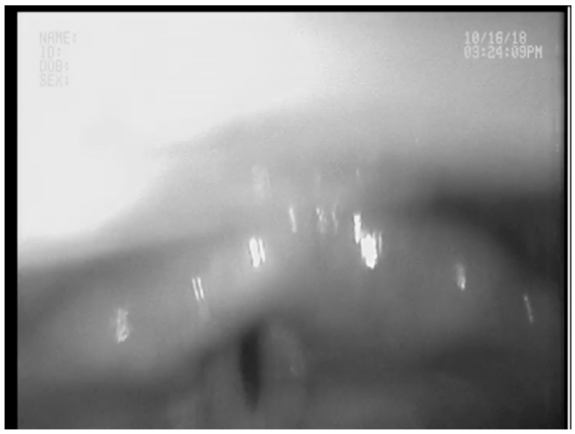
CONTINUED

Case Study #2 (clip 2)



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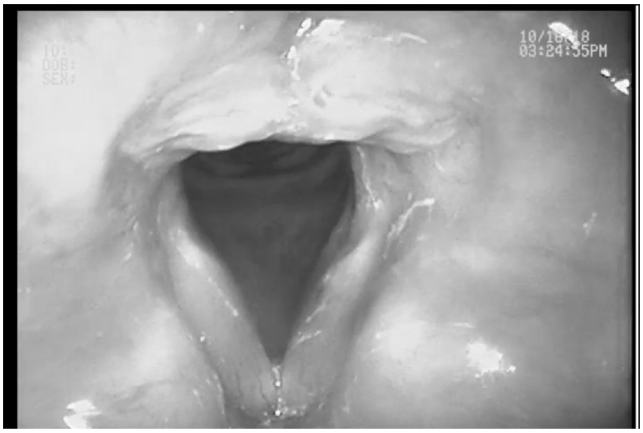
Case Study #2



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CONTINUED

Interpretation

- Pen/Asp Scale: penetration to the level of the true vocal folds, before/during the swallow. Cough is triggered inconsistently. Therefore rating is 3.
- Vallecular/pyriform sinus Residue Scale: 2 trace coating

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CONTINUED

Recommendations

- Patient presenting with moderate pharyngeal phase dysphagia characterized by reduced epiglottic inversion, delayed swallow onset.
- Compensatory Strategy: Chin tuck was helpful in eliminating deep penetration to the level of the vocal folds. There continued to be trace penetration into the laryngeal vestibule.
  - cough re-swallow
- Rehabilitative Strategies: Mendelsohn, Effortful swallow

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Case Study #3

Patient is an 85 year old male living in an independent living facility with his wife. He has had increasing difficulty swallowing per family report although due to decreased cognitive status he is largely unaware of difficulty. He is on a mechanical soft diet with thin liquids at home. Family is concerned because he wakes up with a lot of phlegm and coughs throughout his meals as well as several minutes after each meal.

Past Medical History

Coronary artery disease I25.10 (414.00)

Parkinson's disease

Prostate Cancer

Hypercholesteremia E78.00 (272.0)

Surgical History

Open Heart 2015

Internal Hemorrhoid

Tonsillectomy and Adenoidectomy

Mitral Valve 2015

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Speech Pathology Evaluation

- Voice moderate-breathiness, significantly reduced intensity
- Oral Motor Exam: Tongue fasciculations, reduced range, speed, strength of movement of the tongue and lips, normal movement of the palate

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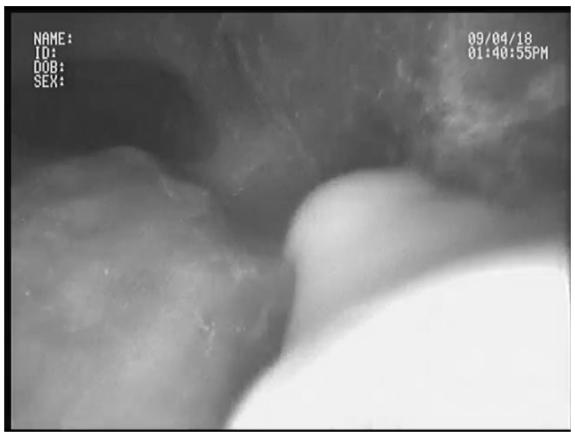
Case Study #3 FEES



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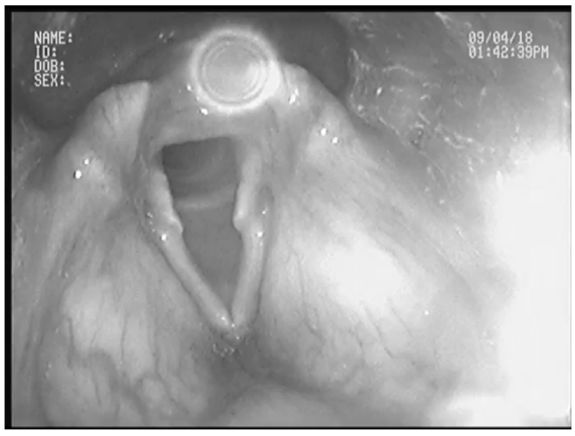
Case Study #3 (clip 1)



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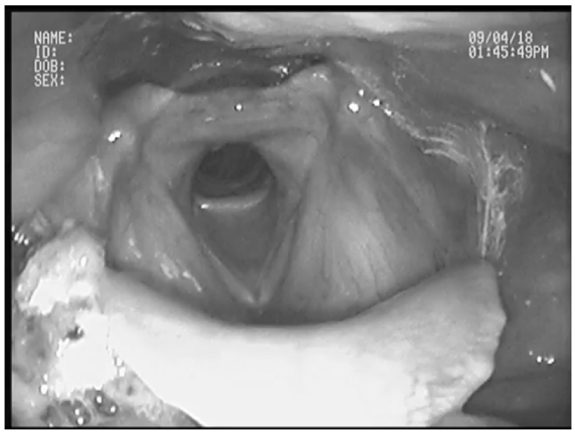
Case Study #3 (clip 2)



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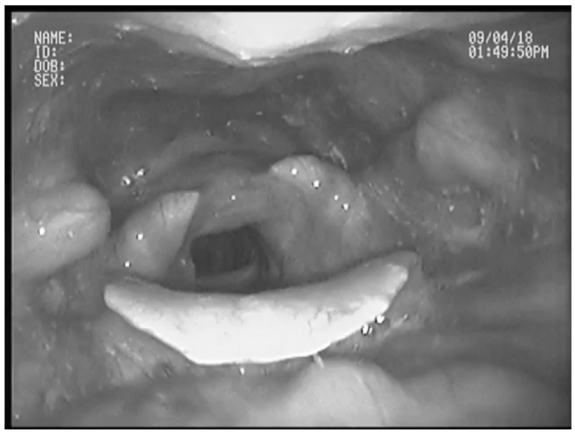
Case Study #3 (clip 3)



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Interpretation

- Penetration/Aspiration Scale: 5, liquid wash after cracker resulted in silent aspiration, cued cough was effective in clearing.
- Vallecular/Pyriform Residue: Vallecular is 5 and pyriform sinus is 5.

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Thin Liquid Trials

- Thin liquid trialed noting adequate oral phase, swallow inconsistently triggered between valleculae and pyriforms without compensatory strategy. Cued throat clear was effective. Additional liquid trials of thin liquid throughout solid trials noting mild residue along right pharyngeal wall to pyriform and in the valleculae after pudding trial. Liquid wash after solid trial resulting in silent aspiration, cued cough was effective for clearing. Head turn to the left was successful in eliminating aspiration and clearing residue.

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CONTINUED

Nectar Trials

- Adequate oral phase, swallow triggered near valleculae. Moderate residue noted in valleculae with trace coating of pharyngeal walls. Patient independently triggered a second swallow which cleared residue, no penetration/aspiration noted.

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CONTINUED

Puree Trials

- Pudding texture trialed, oral phase adequate, moderate delay as pudding spilled along right laryngeal pharyngeal wall into pyriform before triggering swallow. All trials swallowed in piecemeal fashion. No frank penetration or aspiration noted but patient at risk for aspiration with larger bites.

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CONTINUED

Mechanical Soft Trials

- Swallow triggered aryepiglottic fold, piecemeal swallow, independent secondary swallow clearing majority of residue.

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CONTINUED

Regular Trials

- Piecemeal swallow, triggered at valleculae. Majority of preswallow spill remained in valleculae except with larger bites which began to spill toward the right pyriform before the swallow was initiated. Penetration before and after the swallow, no frank aspiration remained after swallow. However, there was silent aspiration of thin liquid wash to clear severe residue. With compensatory strategy of left head turn there was less residue and no aspiration of wash.

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CONTINUED

Recommendations

Patient presenting with moderate pharyngeal phase dysphagia characterized by delayed swallow onset, decreased pharyngeal sensation, decreased pharyngeal stripping all exacerbated by reduced cognitive status.

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CONTINUED

Recommendations continued

1. Train compensatory strategies:
   - head turn to the left, small bites, swallow prior to next bite, slow rate, monitor vocal quality
2. Rehabilitative strategies:
   - Patient would benefit from LSVT to improve laryngeal adduction resulting in improved voice and airway protection.

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CONTINUED

References

1. A Penetration Aspiration Scale. Rosenbek, J.C., Robbins, J.A., Roecker, E.B. et al. Dysphagia (1996) 11: 93. https://doi.org/10.1007/BF00417897
2. The Yale Pharyngeal Residue Severity Scale- An Anatomically Defined and Image Based Tool. Neubauer, P.D., Rademaker, A.W. & Leder, S.B. Dysphagia (2015) 30: 521. https://doi.org/10.1007/s00455-015-9631-4