Disclosures:

Selena Reece is a paid employee of Carolina Speech Pathology, LLC (a mobile FEES provider and ASHA Approved CEU Provider). Ms. Reece received financial assistance with travel expenses for providing this lecture.

There are no non-financial relationships to disclose.
FEES Misconceptions

FEES is not the gold-standard.

FEES is painful.

You can’t see aspiration during the swallow on FEES.

You have to numb the patient to do FEES.

A physician must be present for FEES.

Any others?

Learning Objectives

1. Discuss the benefits and challenges of FEES.
2. Describe the fundamental differences between FEES and MBSS.
3. List the structures observed from an endoscopic view.
FEES: Where did it all begin?

- Old School: Laryngeal Mirrors
- Early 70's ENT’s began using flexible laryngoscopy
- Dr. Logemann (1983): The Modified Barium Swallow Study (MBSS)
  - Dr. Martin-Harris (2008): MBSImP
- Dr. Langmore (1988): Fiberoptic Endoscopic Evaluation of Swallowing (FEES)
  - Dr. Aviv (1998): FEEST

Which is the Gold Standard?

**Gold Standard** - 100% sensitivity and specificity (no false-negatives or false-positives) or as close to this as can be reasonably achieved

True or False? MBSS is the the Gold Standard.
Simultaneous FEES and MBSS

Many studies were done at different times showing excellent agreement between the two tests.

Simultaneous Studies are best


More Research

Systematic Review/Meta-analysis:

“FEES had a slight advantage over VFSS to detect aspiration, penetration, and residues. Prospective studies comparing both tests against an appropriate reference standard are needed to define which test has greater accuracy.”

What’s on the horizon for swallowing diagnostics?

- 3-D Capabilities with FEES or MBSS
- High Resolution Pharyngeal Manometry (HRPM)

Training Protocols

- All clinicians working in dysphagia management should understand:
  - Swallowing Anatomy and Physiology
  - Principles of Exercise Science and Neurorehabilitation
  - Normal Swallowing
  - Aging Swallow and/or Pediatric Swallowing
- ASHA’s Knowledge and Skills Requirements are a good place to start
- Competency vs Certification
- Check your state regulations - some states have specific training recommendations or requirements for a physician to be involved
Training for Instrumental Swallowing Assessments

- **MBSS Training:**
  - No ASHA Recognized Certification
  - Facility specific
  - Mentorship/Supervision
  - MBSiMP

- **FEES Training**
  - No ASHA Recognized Certification
  - State requirements
  - Facility specific
  - Mentorship/Supervision
  - FEES Training Course

FEES Equipment

Four Major Components:

- Flexible Nasoendoscope
- Camera (can be external or distal chip)
- Light Source
- Video/Audio Recording
FEES Equipment: Things to Consider

- Scope Ergonomics
- Slow Motion and Frame-by-Frame Playback
- High Definition
- Archiving/Storage
- Communication with EMR
- Customer Service (How are repairs handled? Are there loaners?)
- Cleaning Process (Check with your Infection Control Department)

Main FEES Equipment Vendors

- NDOhd by Altaravision
- Olympus
- Atmos
- Optim
- Pentax
- JedMed
- Cogentix
- Karl Storz
Comfort During FEES

- Good tolerance of FEES

- Lidocaine:

Possible Complications

- Sneezing, Runny Nose (uncommon)
- Epistaxis (uncommon)
- Laryngospasm (rare)
- Vasovagal Episode (extremely rare)
Proceed with Caution

Combative Patients (Cotton Swab Test)
Recent facial fractures - check with MD
High INR (increased risk of bleeding) - check with MD
O2 delivery method - know what you’re dealing with

Making Diagnostic Decisions

“With signs of dysphagia, clinician goes from observer to detective.” - Dr. Susan Langmore
Advocating for Instrumentals

- You can’t treat what you can’t see
- Reimbursement, the rules are changing
- Cost
  - Cost savings of getting people off tube feeds and additional nursing care
  - Cost savings of getting people off thickened liquids
  - Medicare reimbursement for FEES is more than double that for MBSS
  - Having FEES saves on transport and radiology expenses
    - Barrett, et al. (2013). DRS Meeting Presentation

Other Tidbits

- NPO status may lead to muscle disuse atrophy
- NPO does not prevent aspiration pneumonia
- Altered diets may result in decreased intake resulting in malnutrition and dehydration.
- Clinical Swallowing Evaluations are not enough
Making Diagnostic Decisions

Both tests are can be used to:

- Identify laryngeal penetration and aspiration that occurs before, during, or after the swallow
- Identify residual that is present after the swallow
- Identify underlying physiology that may contribute to swallowing changes.
- Determine diet recommendation for “safe” po intake
- Determine compensatory techniques for achieving optimal po intake
- Determine appropriate intervention for swallow rehabilitation

The Lateral View

Only MBSS:

- Visualization during the height of the swallow
- Analysis of the oral and esophageal phase
- Allows view of submucosal changes (osteophytes, cervical hardware)
- Completeness of BOT retraction, UES opening, and extent of aspiration
The Superior View

Only FEES:

- Visualization of vocal folds and glottic closure
- Visualization of surface anatomy (edema, erythema, granulation tissue)
- Visualization of secretions
- Accurate analysis of bolus location
- View of bolus path
- Identification of true swallow onset

MBSS is preferred when:

- There is a potential esophageal component (esophageal sweep)
- There is suspicion for submucosal changes
- The patient is extremely combative
- There are recent facial fractures
FEES is preferred when:

- There are vocal quality changes along with swallowing complaints
- There is concern regarding airway protection
- Assessment of secretion management is needed
- Need to test for fatigue (no time limit)
- Need to test specific food items (no barium)
- Abnormal anatomy is suspected
- Pt cannot be transferred (physical status, bariatric, ICU, isolation)
- Pt may benefit from biofeedback during education

When either test is appropriate

Decisions may be based on other factors

- How soon can I get a FEES vs a MBSS?
- What is the patient’s preference?
- What is the cost difference?
FEES: What are we looking at?

The Endoscopic View: Nose

- Middle nasal concha
- Middle nasal meatus
- Bulging septum
- Airway to nasopharynx
- Inferior nasal concha
- Inferior nasal meatus
- Floor of nasal cavity
The Endoscopic View: Nose

Passing the scope through the nose:

The Endoscopic View: Velopharyngeal Port
Endoscopic View: Hypopharynx

The Endoscopic View: Hypopharynx
Endoscopic View: Larynx and Airway

Endoscopic View: Pharyngoesophageal Segment
FEES Protocol

There is no standardized protocol for FEES.

We follow the Langmore Protocol, which includes 3 components:

1. Anatomy and Physiology Assessment
2. Swallowing Assessment
3. Intervention Implementation

FEES Interpretation

Address what happens with the swallow of the boluses tested.

Address underlying physiology impacting overall swallow function (confirm with A and P exam).

Test the intervention strategies (compensatory techniques, trial exercises using biofeedback)
FEES Rating Scales

- Secretion Rating Scale
- Penetration Aspiration Scale
- Yale Residue Scale
- Reflux Finding Score

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Summary

FEES is an effective tool for assessing swallowing physiology and function.

FEES is accessible and cost-efficient.

FEES is well tolerated by most patients with minimal risk for complications.
References


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