Fiberoptic Endoscopic Evaluation of Swallowing (FEES)

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Outline

• Carmin will review: ASHA position statement and guidelines, training protocol, contraindications, rationale, equipment, anatomy review, exam procedure

• Gwen will review: pediatric perspective, how the SLP can partner with ENT, candidates for FEES, VFSS vs. FEES, SLP role during FEES, joint interpretation, use of strategies during FEES.

• Jenn will review: endoscopy, tips to improve compliance, and will review studies

» Long way to go, short time to get there

(The Bandit et al, 1977)
FEES – What is it?

• An instrumental assessment which involves passing a flexible endoscope transnasally to obtain a superior view of the pharynx and larynx
• Evaluates the structure & function of the upper aerodigestive tract both at rest and at work
• Enables visualization of the base of tongue, nasopharynx, hypopharynx, and larynx
• Allows for assessment of secretions and secretion management
FEES Outcomes

• Identification of normal and abnormal anatomy and physiology of the swallow
• Evaluation of the integrity of airway protection as it relates to swallowing function
• Evaluation of the effectiveness of compensatory techniques (postures, maneuvers, bolus modifications) in improving swallowing safety and efficiency
It is the official position of the American Speech-Language Hearing Association that fiberoptic endoscopy is an imaging procedure that may be utilized by speech-language pathologists to evaluate swallowing function. Fiberoptic endoscopy may also be utilized as a therapeutic aid and biofeedback tool during the course of swallowing treatment. The assessment and management of dysphagia falls within the scope of practice of speech-language pathology. Speech-language pathologists with expertise in dysphagia and specialized training in fiberoptic endoscopy are professionals qualified to use this procedure independently for the purpose of assessing swallowing function and related functions of structures within the upper aerodigestive tract. The procedure is not intended to replace the fiberoptic examination performed by the otolaryngologist to assess the integrity of the laryngeal and pharyngeal structures. Physicians use endoscopy for functional evaluation of swallowing and/or to assess the integrity of the laryngeal and pharyngeal structures in order to render a medical diagnosis. Within interdisciplinary settings, these medical diagnoses and swallowing function assessment procedures can be accomplished through the combined efforts of these related professionals. Care should be taken to use this examination only in settings where medical personnel are available to ensure patient safety.
ASHA guidelines re: FEES training

• Speech-language pathologists performing FEES must undergo sufficient training to demonstrate the knowledge and skills needed to perform and interpret the procedure. Each speech-language pathologist is ethically responsible for achieving the appropriate level of training to provide these services competently. It is recommended that institutions develop a written list of competencies for performing FEES and that an individual's competencies be verified in writing and maintained on file. In some institutions, a credentialing or privileging process may be required. In some states, the use of endoscopy may be specifically addressed by the speech-language pathology licensure law.

• According to ASHA's knowledge and skills document referenced above, the following process was recommended in order to acquire skill in performing FEES: 1) observation; 2) practice under direct supervision; and 3) independent practice with indirect supervision.
Sample FEES training protocol

- 12-15 hours classroom training
- Scope 10 normals supervised
- Perform 15 FEES supervised
- Perform 50 FEES in order to train others

Documentation of training must be recorded, signed and kept in your file
Contraindications

- Severe agitation and possible inability to cooperate with the examination
- History of vasovagal episodes (sudden drop in heart rate and blood pressure which leads to reduced blood flow to the brain causing a brief loss of consciousness)
- Severe movement disorders (dyskinesia)
- Severe bleeding disorders and/or recent severe epistaxis (nosebleed)
- History of recent trauma to the nasal cavity or surrounding tissue and structures secondary to surgery or injury
- Bilateral obstruction of the nasal passages
- History of frequent fainting
Rationale for FEES

• Limited availability for VFSS in settings such nursing homes or small hospitals and clinics
• Poor reliability on bedside evaluation: 40% of aspirators are missed
• Some patients are poorly suited to VFSS: obese, medically fragile, unable to transport to radiology, body habitus does not permit adequate view of the airway
• No radiation exposure
• Several studies showed that FEES is equal to or even better than videofluoroscopy in detecting aspiration and severity of residues (Langmore et al, 1991, Leder et al, 1998, Kelly et al, 2007)
Basic equipment

- Fiberoptic endoscope
- Light source
- Camera
- Video recording system
- Monitor
Anatomy review

Abducted VFs

Adducted VFs
Exam procedures

• Application of topical anesthetic - to use or not to use?
  – Use varies from SLP to SLP, institution to institution
  – Can be administered superficially to nasal passages
  – Must have MD order
  – Typically use 2% viscous lidocaine
  – Some patients may have an allergic reaction

More than 80% reported no or only mild discomfort during FEES without use of topical anesthesia or a vasoconstrictor, ”. (Warnecke et al, 2009)

No change comfort scores, ease of exam or quality of view with or without topical nasal anesthesia. (Kamarunas, et al 2013)
Exam procedures

- Pass the scope transnasally
Exam procedures

• Structural and functional assessment
  – Check the structural and functional integrity of base of tongue, velum, pharynx and larynx (look around)
  – Symmetry
  – Appearance of the tissues
  – Lesions
  – Pooled secretions
    • studies have shown pooled secretions have a high correlation with aspiration risk (Murray et al, 1996)
  – Any food residue
  – VP closure
  – Pharyngeal wall movement (falsetto)
  – Laryngeal adduction / abduction (phonation, inhale/sniff, forced breath hold, cough)
Exam procedures

• Test swallows
  – Completed with materials that are visible in the pharynx (some SLPs add food coloring to foods / liquids)
  – Selection and sequential presentation of materials is similar to that of the CSE or VFSS
  – During each swallow a period of “white out” occurs at the point of maximal pharyngeal constriction
  – After the swallow structures are visible and should be assessed telling the patient “don’t swallow” as the pharynx and larynx are inspected
Food coloring or not?

  – FEES maintains both high intra- and interrater reliability in detecting the critical features of pharyngeal dysphagia and aspiration using either blue-dyed or non-blue-dyed foods. The endoscopist, therefore, can be assured of reliable FEES results using regular, non-dyed food trials
Salient Findings

• Spillage before the swallow
• Residue after the swallow
  – Valleculae
  – Pyriform sinuses
  – Pharyngeal wall
• Laryngeal penetration
• Aspiration
• Patient reaction to residue, penetration or aspiration
• Impact of maneuvers and compensations
Figure A.2. View of the larynx when positioned over the laryngeal surface of hypopharynx with some material with vestibule (penetration).

Figure A.3. Spillage of liquid (milk) around vestibule to the pyriform sinuses. Note that

Figure A.4. Residue of pureed bolus of liquid on the subglottic shelf and on the