AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION

Knowledge and Skills for Speech-Language Pathologists Performing Endoscopic Assessment of Swallowing Functions

Special Interest Division 13, Swallowing and Swallowing Disorders (Dysphagia)

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About This Document

These guidelines were developed by the American Speech-Language-Hearing Association (ASHA) Special Interest Division 13, Swallowing and Swallowing Disorders (Dysphagia), Task Force on Training Guidelines for Endoscopic Evaluation of Swallowing Functions. Members responsible for development of the document are Michael Crary (chair), Claire Miller, Joseph Murray, Cathy Pelletier, Adrienne Perlman, Paula Sullivan, and Susan Langmore. Monitoring vice presidents for professional practice in speech-language pathology were Nancy Creaghead (1997–1999) and Alex Johnson (2000–2002). Janet Brown provided valuable input. Michelle Ferketic served as ex officio.

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Introduction

This Knowledge and Skills document is an official statement of ASHA. The ASHA Scope of Practice states that the practice of speech-language pathology includes providing services for patients with dysphagia. Individuals who practice independently in this area must hold the Certificate of Clinical Competence in Speech-Language Pathology and abide by the ASHA Code of Ethics, including Principle of Ethics II Rule B, which states: “Individuals shall engage in only those aspects of the profession that are within their competence, considering their level of education, training, and experience.” In addition, it is essential that speech-language pathologists providing services to individuals with dysphagia be familiar with ASHA dysphagia policy documents that define current practice and prerequisite knowledge and skills. Finally, speech-language pathologists providing highly specialized or specialized skills in dysphagia delivery are responsible for establishing a systematic plan for the documentation and achievement of proficiencies.

Purpose

Evaluation and treatment of swallowing disorders is included in the scope of practice for speech-language pathologists (American Speech-Language-Hearing Association [ASHA], 2001). More than 50% of practicing speech-language pathologists are involved in the clinical management of dysphagia according to the ASHA Omnibus Survey (ASHA, 1999b). Clinical evaluation of dysphagia typically begins with a noninstrumental examination. Subsequently, an instrumental procedure may be indicated. Two imaging procedures typically considered are fluoroscopy and endoscopy (ASHA, 1992). The videofluoroscopic examination is more commonly used in clinical practice and has frequently been described in peer-reviewed literature. This procedure is taught through a variety of means, including university coursework, regional workshops, and on-the-job training. Fiberoptic endoscopic assessment of swallowing functions is gaining widespread use as an instrumental procedure among speech-language pathologists who engage in the clinical management of dysphagia. Like videofluoroscopy, endoscopic assessment of swallowing function is a procedure that requires an advanced level of training and demonstration of knowledge, technical skill, and interpretative proficiency. Therefore, it is important that knowledge and skill requirements for clinical use of this procedure are clearly identified.

Terminology

Langmore, Schatz, and Olson (1988) are generally credited with the first published description of the procedure they termed Fiberoptic Endoscopic Evaluation of Swallowing (FEES). This is the common reference term for these procedures. Subsequently, many investigators have described variations on this procedure

(Aviv, Martin, Keen, Debell, & Blitzer, 1993; Bastian, 1991; Leder & Sasaki, 1997; Wilson, Hoare, & Johnson, 1992). Each of these procedural variations has been accompanied by different nomenclature (Aviv: Fiberoptic Endoscopic Evaluation of Swallowing with Sensory Testing [FEESST]; Bastian: Videoendoscopic Evaluation of Dysphagia [VEED]; Leder: Fiberoptic Endoscopic Evaluation of Dysphagia [FEED]). However, only the inclusion of sensory testing by Aviv and colleagues (Aviv et al., 1993, 1998) has significantly changed the basic procedure advocated for the endoscopic assessment of swallowing functions. Therefore, the steering committee of Division 13 has recommended that the term Fiberoptic Endoscopic Assessment of Swallowing Function (FEES) be used as a generic identifier of these procedures, with the exception of the laryngopharyngeal sensory testing procedure described by Aviv.

Description of the Procedure

Use of fiberoptic endoscopic instrumentation allows inspection of functions of the swallowing mechanism at the velopharynx, oropharynx, pharynx, and larynx. It does not permit any systematic evaluation of oral or esophageal components of swallowing. Endoscopic assessment of swallowing function is not a screening examination but a comprehensive assessment of the upper aerodigestive functions of swallowing. It includes five components:

1. assessment of anatomy involved in the pharyngeal stage of swallowing,
2. assessment of movement and sensation of critical structures within the pharynx,
3. assessment of secretions,
4. direct assessment of swallowing function for food and liquid, and
5. response to therapeutic maneuvers and interventions to improve the swallow.

The purpose of the procedure is the comprehensive evaluation of the pharyngeal stage of swallowing, leading to recommendations regarding the adequacy of the swallow, the advisability of oral feeding, and the use of appropriate interventions to facilitate safe and efficient swallowing. Following is a brief synopsis of the procedure. This description is intended to be merely introductory, not comprehensive or instructional. More detailed descriptions may be found in Langmore (2001) and Murray (1999).

Endoscopic assessment of swallowing function is a portable procedure that may be completed in the clinic office, at bedside, or wherever the patient needs to be examined. A fiberoptic endoscope is passed transnasally and permits inspection of swallowing mechanisms and functions from the velopharynx to hypopharynx and larynx. Status of standing secretions in the hypopharynx and frequency and effectiveness of spontaneous swallowing are noted, and potential implications for aspiration are taken into consideration as the examination proceeds. The patient is then directed to perform various tasks to evaluate the sensory and motor status of the pharyngeal and laryngeal mechanism. Sensation in the hypopharynx and larynx can be tested directly, and thresholds can be quantified if the appropriate equipment is used (FEESST procedure). The ability to maintain volitional closure of the vocal folds is assessed as a potential airway protection mechanism (Kidder, Langmore, & Martin, 1994; Martin, Logemann, Shaker, & Dodds, 1993). Food and liquid boluses are then presented to the patient so that the integrity of the pharyngeal swallow can be determined. Observations are made over several swallows to assess various foods and liquids and to evaluate the effect of fatigue, specific directions, and/or compensatory adjustments during swallowing. Passage of the bolus and

movement of the structures cannot be observed during the swallow because tissue surrounds the end of the endoscopy, causing a brief condition referred to as "white-out." Preceding the swallow, the premature spillover of any material into the pharynx or larynx can be observed. At the completion of the swallow, the presence of any bolus residue material provides the examiner with certain clinical information regarding the nature of the pharyngeal swallowing impairment. Data relating to the relative timing of the endoscopically observed events during normal swallows are reported in Perlman and VanDaele (1993).

Roles

The role of the speech-language pathologist in performing these procedures is delineated in a separate document: "Roles of the Speech-Language Pathologist and Otolaryngologist in the Performance and Interpretation of Endoscopic Examinations of Swallowing" (ASHA, 1999c).

Knowledge and Skills for Conducting Endoscopic Assessments of Swallowing Function

Individuals must demonstrate that they have attained the basic knowledge and skills related to service provision for dysphagia (ASHA, 1990, 1992) as described below. Suggestions for verifying knowledge of items 1–6 below include observation, written or practical examination, or other form of knowledge evaluation by supervisor at host institution; a structured interpretative examination for items 7–12 is recommended. This examination may be provided by the mentor at the host institution, by an instructor in a formal course, or by another appropriate mechanism.

Suggestions for verifying skills: A local mentor qualified to perform the procedure can directly observe. It is recommended that a three-step process be followed for acquiring technical skill for the procedures listed below: (1) observation, (2) practice under direct supervision, and (3) independent practice with indirect supervision. No specific number of procedures has been identified as equivalent to a minimal skill level; however, the number of procedures at each level that were necessary for the individual to demonstrate her/his competence should be well documented.

Knowledge

1. Know normal and abnormal aerodigestive physiology for respiration, airway protection, and swallow.
2. Recognize anatomical landmarks as viewed endoscopically.
3. Recognize altered anatomy as it relates to swallowing function.
4. Recognize changes in anatomy and physiology of the swallow over the life span.
5. Identify the indications and contraindications for an endoscopic exam.
6. Identify the elements of a comprehensive endoscopic swallowing exam.
7. Detect and interpret abnormal findings in terms of the underlying anatomy and pathophysiology.
8. Apply appropriate treatment interventions, implement postural changes, and alter the bolus or method of delivery to determine the effect on the swallow.
9. Use the results of the examination to make appropriate recommendations and to guide treatment of the patient.
10. Make appropriate recommendations or referrals for other examinations as needed.
11. Know when to re-evaluate swallowing function.

12. Use endoscopy as a biofeedback tool and to educate patients, family, and staff using the endoscopic images either during or after the examination.

Skills

A comprehensive list of roles, range and scope of 6skills, and knowledge base needed to provide service to patients with dysphagia is included in "Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Dysphagic Patients/Clients" (ASHA, 1990). Knowledge and skills needed in the use of fiberoptic endoscopic evaluation of swallowing were first described in "Instrumental Diagnostic Procedures for Swallowing" (ASHA, 1992). The "Graduate Curriculum on Swallowing and Swallowing Disorders (Adult and Pediatric Dysphagia)" identifies specific educational outcomes that are intended to provide students with basic competencies relevant to swallowing and swallowing disorders (ASHA, 1997). Specific skills pertaining to endoscopic evaluation of swallowing are described, and suggestions are given below for verifying those skills.

1. Operate, maintain, and disinfect the equipment needed for an endoscopic examination.
2. Apply topical anesthetic when clinically appropriate and permitted by the licensing regulations of individual states.
3. Insert and manipulate the endoscope in a manner that causes minimal discomfort and prevents unpleasant complications.
4. Manipulate the endoscope within the hypopharynx to obtain the desired view.
5. Direct the patient through appropriate tasks and maneuvers as required for a complete and comprehensive examination.
6. Interpret and document findings in a written report.
7. Formulate treatment and management strategies based on test results.

Suggested Training Curriculum

The following curriculum is suggested in order to guide clinicians, mentors, faculty members, or instructors at a workshop through the areas of knowledge needed to understand swallowing as viewed endoscopically and to be able to use endoscopy effectively in dysphagia evaluation and management. It is anticipated that this curriculum will need to be updated regularly as new research and developments in the field advance this area of practice.

A. Introduction of flexible fiberoptics into medicine
   1. History of endoscopy
   2. Rationale for performing endoscopic evaluations
      a. Indications and contraindications for the procedure
      b. Objectives, goals of the examination
      c. Role of the speech-language pathologist; scope of practice

B. Evaluation of anatomy of the aerodigestive system
   1. Nasal passage
   2. Velum and nasopharynx
   3. Oropharynx and tongue base
   4. Hypopharynx
   5. Larynx

6. Subglottic region
7. Anatomical protections against aspiration

C. Evaluation of the physiology of the aerodigestive system
1. Movement of the tongue base
2. Epiglottic inversion
3. Velopharyngeal competence
4. Pharyngeal wall movement
5. Laryngeal movements
   a. Adduction on volitional cough
   b. Airway closure for breath hold, effortful breath hold
   c. Phonatory adduction
   d. Arytenoid abduction
6. Sensory function

D. Anatomical abnormalities
1. Nasal stenosis
2. Velopharyngeal incompetency
3. Palatal cleft
4. Pharyngeal stenosis
5. Postsurgical presentations
6. Mucosal changes (e.g., postradiation, connective tissue disease)
7. Pharyngeal, laryngeal lesions
8. Edema/erythema
9. Indirect evidence of reflux
10. Variance of normal anatomy

E. Neurologic vs. mechanical disruption
1. Characteristics of movement dysfunction
2. Unilateral vs. bilateral deficits
3. Postsurgical disruptions
4. Congenital birth defects
5. Distinction from normal aging
6. Tracheostomy and ventilator issues

F. Behavioral disorders
1. Psychogenic dysphagia with no overt etiology
2. Psychogenic dysphagia in cases of additional (primary or secondary) etiology

G. Endoscopic equipment
1. Flexible endoscope
2. Light source
3. Camera and adapter
4. Video recorder and monitor
5. Time-date generator
6. Video printer
7. Optional: Air pulse generator for sensory testing (FEESST)
8. Miscellaneous supplies
   a. 4x4 gauze pads, alcohol prep pads, tissues
   b. Lubricant
   c. Topical anesthesia, nasal spray
   d. Green or blue food color
   e. Food, liquid
   f. Spoons, cups, straws, etc.

H. Use of anesthetics[1]
   1. Use of anesthetics is not mandatory. However, speech-language pathologists who perform flexible endoscopy for purposes of assessing swallowing function may find it beneficial and necessary to use topical anesthetics (note: one does not want to use a spray as it can pass to the pharynx) to optimize patient comfort, decrease gagging behavior, and perform a thorough and complete examination. In these instances, the speech-language pathologist must be familiar with state licensure board regulations regarding scope of practice in her/his state and care setting.
   2. Care should be taken to assure that only the nasal passage, not the pharynx, is anesthetized. All patients should be in the upright position for administration of the anesthetic.
   3. Before administering the medication(s), the speech-language pathologist should check the patient's medical record for drug allergies, should question the patient about drug allergies, and should query the patient's physician if necessary about the safety of administering the drugs. There should be provisions for medical treatment in the case of adverse patient reaction to the test or medication.

I. Protocol for endoscopic swallowing procedure
   1. Patient preparation
      a. Patient consent
      b. Patient posture/positioning
      c. Optional application of topical anesthesia and nasal decongestant
   2. Technical considerations
      a. Optional defogging
      b. Endoscope handling, orientation
      c. Scope insertion, placement, maneuvering techniques
   3. Examination protocol: Many clinical protocols have been described for the endoscopic assessment of swallowing functions. General components follow without reference to any specific published or unpublished protocol.
      a. Positioning a scope for optimum view of velopharynx, oropharynx/hypopharynx, larynx during swallow function examination
      b. Evaluation of structures at each point in the examination
      c. Evaluation of basic movement abilities at each point in the examination. This includes completion of any specific maneuvers by the patient to examine individual movements (e.g., falsetto to evaluate pharyngeal wall medialization, breath hold or valsalva to evaluate vocal fold closure, etc.)
      d. Sensory testing
      e. Administration of liquid and/or food to assess swallowing functions. This may include maneuvers performed by the patient to evaluate impact of such maneuvers on swallowing safety (i.e., head turn, chin down, breath hold, etc.)

J. Interpretation of salient findings in terms of underlying deficit(s)

[1] The technical report "Sedation and Topical Anesthetics in Audiology and Speech-Language Pathology" discusses four factors that need to be addressed in development of safe practice for procedures requiring medication of patients for sedation or topical anesthesia (ASHA, 1992).

In general, interpretation follows a consistent format:

1. Anatomical/structural deviations
2. Movement deviations
3. Sensory deficits
4. Specifics of swallowing function/dysfunction
5. Interpretative assessment of swallowing safety

K. Treatment and management of patients during endoscopic evaluation

1. Therapeutic portion of the diagnostic examination
2. Involvement of the patient, caregivers, other medical staff; education of patient and other significant persons
3. Repeat examinations - to monitor change, continued need for specific behavioral interventions, or diet
4. Biofeedback as a treatment technique

L. Use of endoscopic swallowing assessments with different populations and diagnoses

1. Pediatrics
2. Head and neck cancer
3. Traumatic injuries
4. Neurogenic disorders, neurosurgical sequelae
5. Chronic respiratory disease
6. Post thoracic/cardiac surgery
7. Medically compromised patients

M. Use of endoscopic swallowing assessments in different settings

1. Critical care patients
2. Acute care patients
3. Rehabilitation settings
4. Long-term care settings
5. Home health
6. Outpatients

N. Universal precautions

1. Gloves
2. Eye protection - optional
3. Endoscope highlevel disinfection
    a. cleaning and sterilizing agents
    b. biohazard receptacles
4. Endosheaths

O. Topical anesthesia, nasal decongestant, and disinfectant

Monitor to ensure that no medication used has exceeded its expiration date. The supply and security of medications stored and used is ultimately the responsibility of the speech-language pathologist. The drugs should be stored in a closed cabinet. Each facility should have an established policy for monitoring the storage and use of medications in these procedures.

P. Adverse/allergic reactions

Practitioners must be able to recognize and understand appropriate treatment for the following conditions:

1. Tachycardia associated with epinephrine
2. Vasovagal response
3. Nasal inflammation
4. Nasal turbinate hypertrophy
5. Implications of blood thinners and hemophilia

6. Dosage and side effects of any nasal decongestants or anesthesia used in the procedure

Q. Possible contraindications for performing endoscopic assessment of swallowing functions
1. Patient is not sufficiently alert to be fed orally.
2. Patient has severe nasal or pharyngeal stenosis.
3. Patient is agitated and/or combative.
4. Patient has movement disorder of sufficient severity to preclude safe completion of examination by endoscopy.
5. Patient has a history of epistaxis.
6. Patient has a bleeding disorder.
7. Patient has an acute cardiac condition that predisposes patient to cardiac irregularities.

R. Indications for performing endoscopic assessments of swallowing functions
Practitioners must be able to recognize and understand appropriate indications for performing endoscopic and/or fluoroscopic assessments, specifically:
1. Indications for an instrumental procedure following a clinical examination[2]
2. Indications for endoscopic assessment vs. or in addition to fluoroscopy as the preferred imaging procedure

S. Validity of endoscopic assessment as a diagnostic procedure and evaluation of dysphagia treatment outcomes after using endoscopy as a primary evaluation and management tool. Practitioners must be aware of the following:
1. Sensitivity of the procedure for abnormal findings compared to the fluoroscopy and/or clinical, noninstrumental procedures
2. Effectiveness of treatment/management of dysphagia after using endoscopy as an evaluation/management tool

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[2] The document “Clinical Indicators for Instrumental Assessment of Dysphagia” provides guidelines for the use of instrumentation in the assessment, diagnosis, management, and treatment of patients with oral, pharyngeal, and upper esophageal dysphagia. Indications and contra-indications for the use of instrumentation are discussed (ASHA, 1999a).

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