**COMPREHENSIVE SWALLOW-VOICE ASSESSMENT (CSA™)**

1. ***Purpose***

The purpose is to assess the oral, pharyngeal, laryngeal, tracheal, and esophageal physiology of the upper aerodigestive tract as it pertains to swallow disorders, voice disorders, reflux disorders, and cough disorders. The three purposes of the CSA procedure as it pertains to swallow disorders is to: 1) rule out aspiration; 2) delineate the nature, extent and severity of oral, pharyngeal, and/or esophageal dysphagia and 3) assess the stimulability for potential evidence-based swallow interventions. In terms of voice disorders, the three purposes of the CSA procedure is to: 1) Identify the cause(s) of the voice disorder; 2) delineate the nature, extent, and severity of the voice disorder; and 3) assess the stimulability for potential evidence-based voice interventions. In addition, precautions associated with this procedure and the corresponding contingency plans are discussed. A Comprehensive Swallow-Voice Assessment™ is an algorithm combining a battery of tests in order to obtain a physiological assessment of the upper aerodigestive tract. This algorithm includes the Clinical Swallow Exam, (Logemann, 1998), the Fiberoptic Endoscopic Evaluation of Swallowing (Langmore, 1988), modified Transnasal Endoscopic Esophageal Swallow Assessment (Arnold, 2004), a perceptual/qualitative analysis of voice (Stemple, Glaze, & Klaben, 2000), a brief acoustic/quantitative analysis of voice (Stemple, Glaze, & Klaben, 2000), an abbreviated stroboscopic examination of glottic closure (Hirano & Bless, 1993), and the Reflux Finding Score (Belafsky, Postma, & Kaufman, 2001). If at any time during the CSA™ procedure signs and/or symptoms of medical pathology are identified which were previously unknown, these will be reported to the attending physician who may order further definitive medical workup(s) if indicated in his/her opinion.

Interdisciplinary Team members may include:

CSA™ trained, certified and licensed Speech-Language Pathologist

Referring Physician

Medical Director

Agency based Speech-Language Pathologist

Dietary

Nursing

Respiratory Therapist

Physical Therapist

Occupational Therapist

Social Services

Pharmacist

Certified Nursing Assistant or Patient Care Technician

1. ***Procedure***
   1. Verify Physician Order for CSA™.
   2. In conjunction with patient’s physician, determine whether or not a procedure involves potential risks to the patient’s health and safety by reviewing the medical record including history, medications, labs, etc. and dietary restrictions.
   3. Preceding the procedure the SLP Endoscopist will perform the physical exam and document initial vital signs.
   4. Prior to performing procedure, the SLP will wash hands, don gloves, mask and Protective eye wear in accordance with the relevant infection control guidelines.
   5. The distal array of the endoscope may be submerged in water or an appropriate lubricant jelly (no more than 5cc per naris) as necessary to improve passing of the flexible fiberoptic endoscope.
   6. Immediately preceding CSA™ procedure, the SLP Endoscopist may spray a .05% solution of Oxymetazoline HCl to the nasal turbinates as a vasoconstrictor if the turbinates appear edematous or if mucosa appears dry.
   7. Using Universal Precautions throughout the procedure, the flexible fiberoptic endoscope is passed generally along the floor of the nose to the Velopharyngeal port, into the pharynx, and then into the esophagus to just above the LES to examine the anatomy prior to the initiation of p.o. trials.
   8. The patient may be asked to dry swallow, hold breath, cough, and phonate to assess vocal fold adduction, prior to giving p.o. trials.
   9. The scope may be passed into the esophagus to screen for discolorations, masses, webs, narrowing, etc. prior to administering p.o. trials containing contrast material.
   10. As indicated, measured quantities of food, liquid, and/or medication/placebo consistencies are given to the patient to swallow. Some materials are dyed with green food coloring for contrast. Boluses of varying amounts from 1 to 30 ml may be utilized.
   11. If aspiration or significant laryngeal penetration occurs during the CSA™ procedure with or without response from the patient (e.g. coughing and/or throat clearing), the SLP Endoscopist may propose specific positioning, therapeutic techniques, therapeutic maneuvers, modalities, manual therapies and/or various food/liquid/medication consistencies to eliminate and/or minimize the risk of aspiration.
   12. When the procedure is completed and scope removed, the SLP Endoscopist will examine the oral cavity for a final inspection of oral residue.
   13. The vital signs will be obtained upon completion of procedure to ensure patient is stable and comfortable. In addition, a third set may be obtained and documented by the end of the visit as needed.
   14. The scope should be wiped down with germicidal wipes. The scope will then be placed in Cidex OPA for 15 minutes. Then the scope will be rinsed with water and then placed in scope dryer tube.
   15. Gloves, contaminated materials, and disinfecting wipes will be properly disposed.
   16. The SLP Endoscopist completes evaluation, documentation, and discusses recommendations with the physician, agency/facility based SLP, nursing staff, and family as indicated.
   17. The original endoscopy report may be sent, upon request, to the physician for review and will remain in the patient’s medical record.

**NOTE**: This procedure is subject to modification depending on the needs of the Patient and the professional judgment of the SLP Endoscopist.

3. ***Precautions***

1. History of Hemophilia/Free Bleeding

2. SPO² ≤ 90%

3. Level of Consciousness

4. Follow Universal Precautions

4. ***Contraindications***

1. Thrombocyte Count > 999,000 mm³ or < 50,000 mm³

2. PT/INR = critical value > 30 sec

3. Vital Signs:

Systolic > 164 mmHg

Diastolic > 90 mmHg

Systolic < 88 mmHg

Diastolic < 40 mmHg

Resting Pulse >100 bpm

Resting Pulse < 50 bpm

Resting Respiration > 38

Resting Respiration < 10

5. ***Emergency Medical Contingency Plans***

**A.**  **Epistaxis**

* Apply Direct Pressure.
* Elevate (Keep patient sitting upright).
* Airway Safety (Maintain Cervical Flexion).
* Apply a natural vasoconstrictor (e.g. Ice Pack to Bridge of Nose).
* Administer an over the counter chemical vasoconstrictor (e.g. 0.05% Oxymetazonline HCl).
* Monitor Vital Signs as indicated.
* If Necessary, activate EMS in accordance with agency/facility protocol.

1. **Mild Vasovagal Response (Fainting):**
   * Place patient in supine position
   * Open the airway and mind your ABCs
   * Elevate Knees.
   * Be sure pulse is taken for a full ten seconds prior to considering chest compressions.
   * After patient regains consciousness, place patient in position of comfort.
   * Obtain Vital Signs.
2. **Laryngospasm**
   1. Tell patient “You are having a muscle spasm in your throat. Like a muscle spasm in your leg, it will pass. Try to relax.”
   2. If patient looses consciousness, then manage as if a faint (Once patient looses consciousness, all the muscles including the muscles of the larynx will relax and the airway will open).
3. **Anaphylaxis to topical anesthetic.**
   1. We avoid this risk completely by not using topical anesthesia.
   2. Leder, S.B., Ross, D.A., Briskin, K.B., & Sasaki, C.T. (1997). A prospective, double-blind, randomized study on the use of a topical anesthetic, vasoconstrictor, and placebo during transnasal flexible fiberoptic endoscopy. *Journal of Speech, Language, and Hearing Research, 40*, 1352-1357.

Bibliography:

Arnold, R.J. (2004). *Esophageal dysphagia, the speech-language pathologist, and total endoscopic dysphagia assessment.* Paper presented at the Speech and Hearing Association of Alabama Annual Conference, Birmingham.

Arnold, R.J. (2010). *FEES, patient safety and emergency medical contingency plans.* Paper presented at the American Speech-Language Pathology Association Annual Conference, Philadelphia.

Arnold, R. J., Bausek, N., Gaskill, C. S., Johnson, L. F., Aldarondo, S., Aull, C., Midani, M., Midani, T., Midani, R., Brown, A. S., & Wallace, A. (2024). Aerodigestoscopy (ADS): The Feasibility, Safety, and Comfort of a Comprehensive Procedure for the Evaluation of Physiological Disorders of the Aerodigestive Tract. *Journal of Clinical Medicine*, *13*(24), 7578. https://doi.org/10.3390/jcm13247578

Groher, M. (1997). *Dysphagia: Diagnosis and management,(*3rd edition*).* Boston: Butterworth- Heinemann.

Langmore, S.E. (2001). *Endoscopic evaluation and treatment of swallowing disorders.*

New York: Thieme.

Langmore, S.E., Schatz, M.A., & Olsen, N. (1988). Fiberoptic endoscopic examination of swallowing safety: A new procedure. *Dysphagia* 2, 216-219.

Logemann, J. (1998). *Evaluation and treatment of swallowing disorders, (*2nd edition*)*.

Austin, TX: Pro-ed.

Mann, G. (2002). *MASA: The Mann assessment of swallowing ability.* Clifton Park, NY:

Singular-Thomson Learning.

Murray, J. (1999). *Manual of dysphagia assessment in adults.* San Diego: Singular

Publishing Group, Inc.

Postma, G.N., Belafsky, P.C., & Aviv, J.E. (2007). *Atlas of transnasal esophagoscopy.*

Philadelphia, PA: Lippincott, Williams, & Wilkins.

Sanders, M.J. (Ed.). (2006). *Mosby’s paramedic textbook (* 3rd edition)*.* St. Louis, MO: Mosby Lifeline.