



Esophageal Endoscopy

Esophagoscopy is an important tool in the otolaryngologist's armamentarium in the diagnosis and workup of dysphagia, esophageal disorders and reflux disease.

Rigid esophagoscopy is traditionally performed for surveillance of synchronous tumors in patients with head and neck squamous cell carcinoma. The rate of squamous cell carcinoma of the esophagus has been declining, reflective of the decline in smoking and alcohol abuse. However, rates of esophageal adenocarcinoma have been increasing dramatically, concurrent with the rise in gastroesophageal and laryngopharyngeal reflux disease [1].

Dysphagia and reflux history are the primary indications to perform esophagoscopy. Rigid esophagoscopy, performed on an anesthetized, often intubated patient in the operating room, entails the placement of a long, rigid hollow esophagoscope with or without magnification. Rigid esophagoscopy can be used to evaluate the esophagus for lesions, tumors, areas of narrowing, other causes of swallowing difficulties or used to remove foreign bodies. Transoral placement of the rigid metal tube under direct vision decreases the risk of tooth and jaw injury followed by slow advancement along the posterior pharynx through the cricopharyngeus into the esophagus. Tactile feedback can help prevent inadvertent perforation as can always maintaining the lumen within the field of view. Anatomic narrowing, tumors, diverticuli, and scar tissue can also increase the risk of perforation. Through the scope, biopsy of lesions, removal of foreign bodies, dilation of areas of stenosis, and full evaluation of the esophagus can be performed.

This traditional rigid esophagoscopy has been largely replaced and/or supplemented by office based, non-sedated flexible Trans-Nasal Esophagoscopy (TNE).

A 2008 AAO consensus concluded: Compared with traditional sedated esophagogastroduodenoscopy (EGD) TNE has nearly the same sensitivity and specificity, costs less than sedated EGD, is safe, and preferred by patients over traditional EGD [2].

Postma et al. demonstrated findings in over 50% of 592 complete exams during screening for reflux, globus, or dysphagia: esophagitis, hiatal hernia, Barrett's metaplasia and candidiasis being the most common findings [3].

In addition, Howell et al. demonstrated that these TNE procedures resulted in findings that led to a positive change in management further solidifying the role of TNE in the otolaryngology patient population [4].

Bush and Postma categorized indications into 3 categories: Esophageal, Extraesophageal, and Procedural [5].

Esophageal indications: include dysphagia, refractory GERD especially male >50, foreign body evaluation and removal, esophageal screening

Extraesophageal indications: Laryngopharyngeal reflux, globus, chronic cough, head and neck cancer screening



Procedural indications: laryngopharyngeal and esophageal biopsy, botulinum toxin injection, esophageal and tracheal balloon dilation, percutaneous endoscopic gastrostomy, tracheoesophageal puncture, and placement of wireless pH-monitoring devices

Procedure: Topical anesthesia and decongestant is sprayed into the nasal cavity. Pledgets containing a decongestant and topical anesthetic are placed in both nostrils for ten minutes. After removal, a q-tip with a coating of 4% lidocaine may be placed in each nostril both to add a little extra anesthetic as well as determine which side is easier to pass the scope. The TNE scope is then inserted visually inspecting each space below the inferior or middle turbinate. The TNE, with some lubrication on the tip of the scope (not the optics), is then advanced using visual cues to avoid touching the mucosa as well as tactile feedback to ensure no pressure is exerted on the mucosal structures. The TNE is advanced to the nasopharynx. The patient is instructed to breathe nasally as the lever control is used to articulate the scope 75 degrees as it is passed into the oropharynx. The patient is then instructed to tip their head forward slightly, phonate 'e', and during phonation, the TNE is passed into the hypopharynx as close to midline as possible. The patient is then instructed to swallow and as the patient swallows, the TNE is slowly advanced through the cricopharyngeus (CP). Eructation can also facilitate opening of the CP in difficult cases. Difficulty passing the TNE may indicate cricopharyngeal dysfunction or possible diverticulum. The entire length of the esophagus is then examined for mucosal or submucosal lesions with four known extraesophageal areas of compression: Cricoid cartilage, Aortic arch, L Mainstem Bronchus/L Atrium and Diaphragm. The TNE is then passed into the stomach which is examined for the presence of food materials, bile, blood, ulcerations, and gross lesions. Retroflexion allows for examination of the undersurface of the gastroesophageal junction (GEJ), monitoring for hiatal hernia or ulceration. TNE is primarily a screening tool of the esophagus and not meant to provide a complete evaluation of the stomach and/or intestines and patients should be counseled on this and referred to GI if there are concerning findings and/or symptoms. The stomach should be suctioned of any air that was placed prior to its removal. Withdrawal of the TNE into the distal esophagus then allows for visualization of the lower esophageal sphincter (LES). Mucosal lesions or irregularities can then be biopsied with either a 1.8mm cup biopsy forceps or brush biopsy. The TNE is then slowly withdrawn using pulses of air insufflation if required. Retroflexion within the cervical esophagus can allow examination of the undersurface of the CP, potentially increasing the yield of findings. Additionally, during the evaluation, if the lens becomes obscured by mucus, or if mucus, food, or bile obscure visualization of the mucosa, sterile water can be used to flush the field distal to the tip of the TNE. Air insufflation is only used when the esophagus is collapsed and only with very brief pulses.

Complications are very uncommon and include failure to pass the scope, discomfort in the nose and throat, epistaxis and vaso-vagal reaction. No major complications have been reported in the otolaryngology literature. There are very few relative contraindications which can include significant cardiopulmonary disease and a known diverticulum, which can make passing the TNE difficult. Anti-coagulation use is not a contraindication but can increase the risk of epistaxis, though rarely.

Upon removal of the TNE, the video is then reviewed with the patient. This allows for close examination of the CP area, often missed during intubation of the esophagus, as well as review of the entire length of the esophagus, GEJ, and proximal stomach.



Preparation/Post-TNE Instructions: Prior to the procedure, there is very little preparation required. People should refrain from eating for at least 3 hours prior to the procedure. Stasis of food within the stomach may indicate gastroparesis or outlet obstruction. For 24 hours, people should avoid eating or drinking red food or beverages to avoid possible confusion of a bleeding issue during the TNE. After the procedure, people are free to leave and are instructed to wait one hour prior to resuming their normal diet. Rare chest pain, increased heart rate, fever, worsening swallowing problems, or bleeding should prompt a call to the physician who performed the test.



References:

- 1) McGarey PO, O'Rourke AK, Owen SR, et al. Rigid Esophagoscopy for Head and Neck Cancer Staging and the Incidence of Synchronous Esophageal Malignant Neoplasms. *JAMA Otolaryngol Head Neck Surg.* 2016;142:40-5.
- 2) Amin MR, Postma GN, Setzen M, Koufman JA. Transnasal esophagoscopy: a position statement from the American Bronchoesophagological Association (ABEA). *Otolaryngol Head Neck Surg.* 2008;138:411-4.
- 3) Postma GN, Cohen JT, Belafsky PC, et al. Transnasal esophagoscopy: revisited (over 700 consecutive cases). *Laryngoscope.* 2005;115:321-3.
- 4) Howell RJ, Pate MB, Ishman SL, et al. Prospective multi-institutional transnasal esophagoscopy: Predictors of a change in management. *Laryngoscope.* 2016;126:2667-2671.
- 5) Bush CM, Postma GN. Transnasal Esophagoscopy. *Otolaryngol Clin North Am.* 2013;46:41-52.