Esophagoscopy Procedure

2.0 Contact Hours
California Board of Registered Nursing CEP# 16140
American Medical Education Center

Disclaimer: This packet is intended to provide information and is not a substitute for any facility policies or procedures or in-class training. Legal information provided here is for information only and is not intended to provide legal advice. Each state or facility may have different training requirements or regulations. Participants who practice the techniques do so voluntarily. Information has been compiled from various internet sources as indicated at the end of the packet.
Title: Esophagoscropy Procedure
Self Study Module 2.0 CONTACT HOURS
Suggestion: Read through these questions before the module as they will be the SAME questions on the required online exam.

Choose the Single Best Answer for the Following Questions and Place Answers on Form:

1. During upper endoscopy, which organ system is not imaged?
   a. Duodenum
   b. Stomach
   c. Esophagus
   d. Trachea

2. Which type of food particle often requires removal via an esophagoscope?
   a. Fishbone
   b. Seeds
   c. Apple peel
   d. Raw vegetables

3. Which of the following gastrointestinal disorders does not require investigation by esophagoscope?
   a. GERD
   b. Esophageal varices
   c. Barrett esophagus
   d. Biliary colic

4. Patients with which disorder of the esophagus should not undergo esophagscopy?
   a. Stricture
   b. Achalasia
   c. Varices
   d. Zenker diverticulum

5. Esophagoscopy in the USA is generally performed under what type of anesthesia?
   a. Spinal block
   b. Conscious sedation
   c. Topical anesthesia
   d. General anesthesia

6. For esophagoscopy, the patient is placed in what position?
   a. Trendelenberg
   b. Supine
c. Left lateral decubitus
d. Lithotomy

7. During esophagoscopy, the doctor says he has entered the stomach. What physical finding is suggestive of that?
a. Red mucosa
b. Distended lumen
c. Rugae
d. Presence of acid

8. During esophagoscopy, a stricture is visualized. Dilatation of the stricture may be done with-
a. Savory dilators
b. Fingers
c. Scope
d. Nasogastric tube

9. In a patient with achalasia, the operator will sometimes inject the patient with what substance to relax the lower esophageal sphincter?
a. Acetylcholine
b. Botulinum toxin
c. Epinephrine
d. Serotonin

10. In a patient with bleeding esophageal varices, all of the following can be injected except-
a. Vasopressin
b. Epinephrine
c. Octreotide
d. Dopamine
Self Study Module 2.0 CONTACT HOURS

Objectives

At the completion of this program, the learners will:

1. List the indications for esophagoscopy.
2. Discuss the contraindications for esophagoscopy.
3. Describe the technique of esophagoscopy.
4. Explain the potential complications of esophagoscopy.
5. List the equipment used for performing esophagoscopy.

Esophagoscopy is a very common procedure performed both in hospitals and in outpatient clinics. The procedure entails use of a flexible endoscope, which is inserted via the oral cavity. Sometimes the esophagoscope is inserted via the nasal passages, and passed into the esophagus. Today, most esophagoscopes are connected to an external video monitor and dynamic images can be seen by staff as well as the operator. Esophagoscopy allows one to visualize the esophageal mucosa and the upper pharynx.\textsuperscript{1,2}

Per se, esophagoscopy entails only imaging the esophagus but this is uncommon. In most cases, this endoscopic procedure is done to explore the stomach and duodenum, and hence it is also known as upper endoscopy or esophagogastroduodenoscopy.\textsuperscript{3}

The procedure is commonly performed in one dedicated minor operating room, which has all the equipment. In fact, the procedure is usually performed by an endoscopy team, which consists of the operator, an anesthesia nurse or anesthesiologist, scrub nurse or surgery technologist and a circulator. This team is kept consistent so that no deviations in technique occur, enhances efficiency and allows for faster turnover.

Indications

Esophagoscopy is routinely performed as an elective procedure in an outpatient setting, although in some hospitalized and emergency room patients, there may be a need to perform the procedure as an emergency (eg bleeding esophageal varices). In such scenarios, esophagoscopy is done as a therapeutic measure to arrest the bleeding. In most emergent cases involving esophagoscopy, the operating room is always prepared for the worst case scenario and appropriate resuscitation equipment, blood, fluids and drugs should be made available. The general indications for esophagoscopy are as follows:

- Removal of an impacted food bolus or particle (eg fish bone is very common).
- Removal of an impacted foreign body (eg small toys, broken plastic forks or spoons, battery, beads, safety pins, needles, etc).
- Evaluation of patients with gastroesophageal reflux disease (GERD).
- Evaluation of patients with non-cardiac chest pain.
- Screening and surveillance of Barrett esophagus. This disorder can progress to a malignancy and biopsies are frequently required.
- Surveillance and treatment of esophageal varices.
- Evaluation of a patient who has difficulty swallowing.
- Management of patients with esophageal strictures. This includes use of bougie to dilate the stricture.
- Evaluation and management of patients who have painful swallowing disorders.
- Evaluation and biopsy of a patient with an esophageal mass (e.g., cancer).
- Management of esophageal cancer. Because these patients are not always surgical candidates and have difficulty swallowing, stent insertion is often done.
- Evaluation of the esophagus after a patient has a barium swallow study, which is abnormal.
- Evaluation of a patient who is suspected of having a tracheo-esophageal fistula.
- Evaluation of a patient with a suspected perforation of the esophagus, which is not visualized on a barium swallow.
- Treatment of GERD with an implanted device via the scope.
- Treatment of Zenker diverticulum with the use of a stapling device.

**Contraindications**

Esophagoscopy is a relatively safe procedure but complications are not uncommon when the procedure is done when not warranted by inexperienced physicians. The procedure should not be done in the following conditions:

- In patients with hemodynamic instability (low blood pressure, shock). These individuals should preferably be stabilized first. It is dangerous to bring such patients to the operating room for a procedure. Instead, the procedure may be done at the patient’s bedside, since esophagoscopy is a portable procedure.
- Patients with respiratory distress and choking episodes. Individuals who are in respiratory distress may be a great risk when sedated. The introduction of the scope may also initiate wheezing or severe coughing. In such cases, the procedure should be cancelled until the patient is stable. If the procedure is emergent, then the patient should be informed about the possibility of being intubated.
- Patients who are unable to provide consent should not undergo the procedure, unless there is a life-threatening emergency. In such scenarios, two physicians must clearly state the reasons for the procedure in the chart. The hospital administrator must also be informed to avoid any litigation issues later on.
- Patient with a known Zenker diverticulum should not have esophagoscopy. There is a high chance of perforation. These patients are best evaluated with a barium swallow.
- In any patient in whom there is a possibility of esophageal perforation, the procedure should not be done.
- If there is no monitoring equipment.
- Unavailability of antidotes to the drugs for sedation, CPR kit, or resuscitative equipment.
- Lack of properly trained staff dedicated to sedation of patient.

Relative contraindications to esophagoscopy include the following:

- Patients who have a coagulopathy should not undergo esophagoscopy. Dilatation or biopsy in such cases can lead to uncontrolled bleeding. The coagulopathy must be corrected prior to the procedure.
- Patients who have neck trauma, or recent head and neck surgery may not be able to undergo the procedure.
- Similarly, patients with a neck brace of C-spine collar may not be able to undergo the procedure.
- Esophageal diverticulum located in the mid esophagus.
- Patient with a known history of not tolerating the procedure.

**Preprocedure Preparation**

It is important to understand that esophagoscopy, though a minor procedure also needs to be treated like any other surgical procedure. The patient’s history and physical exam must be documented in the medical chart. A list of medications and patient allergies must be listed. A thorough exam of the head and neck area, including the oral cavity must be done prior to the procedure and documented. The neck should be palpated for presence of lymph nodes, when a stomach or esophageal cancer is suspected. If dentition is poor, it should be mentioned in the chart. As far as preoperative blood work is concerned, one needs to obtain a total blood count, electrolytes and coagulation profile. Most physicians will also obtain an ECG and a chest x-ray. Other blood work may depend on patient co-morbidity.

A valid consent must be in the chart. The doctor or nurse should have explained the benefits, risks and potential complications and alternatives to the patient.6

There is no need for preoperative antibiotics.

**Anesthesia**

In most hospitals in the USA, esophagoscopy is performed under some type of sedation. Moderate sedation is required because the procedure can be discomforting. The sedation is usually achieved by administering a combination of a fast acting narcotic (fentanyl) and a benzodiazepine (midazolam). In countries outside of the USA, the procedure is commonly done without the use of any type of sedation. In such cases, topical anesthesia is used to numb the oral cavity but the results are not desirable or comfortable for the patient.4

General anesthesia is rarely required in adult patients. However, children and anxious patients may require general anesthesia.
It is vital that one member of the staff be dedicated to administering anesthesia and monitor the patient. In most cases, a combination of intravenous fentanyl and midazolam will suffice. Antidotes to these drugs must be present in the room. Prior to initiating the procedure, an intravenous line must be placed and fluids started. The patient must be attached to a pulse oximeter. The blood pressure should be measured every 3-5 minutes and the patient’s GCS must be monitored as protocol established in the operating room. The anesthesia staff must speak to the patient every few minutes to assess the degree of sedation. If the oxygen saturation at room air is less than 95%, nasal oxygen may be provided. In many cases, complications result not from the actual procedure but from the anesthesia.\(^5\)

**Equipment**

- Biopsy forceps
- Dental protection device
- Esophagoscope with video monitor
- Gauze
- Gloves
- Gown
- Irrigation fluid (saline or water)
- Lidocaine gel
- Lubricating gel
- Sterile container for specimen
- Suction
- Syringes to insufflate with air
- Topical lidocaine

**Position of Patient**

For esophagoscopy, the patient should be dressed in a hospital gown. The head of bed should be elevated to 45 degrees. The patient is usually placed in a slight left lateral decubitus position. The procedure is best done in the patient’s bed, which has side railings because the operating room bed does not offer this protection. The hands should be at the patient’s side. The operator usually stands on the patient’s left side. The anesthesia staff stands on the patient’s right side. The surgery technologist delivering the equipment stands next to the operator.

**Technique**

Once the patient is sedated, the esophagoscope is then gently inserted into the oral cavity under vision. Then the scope is advanced by visualizing the epiglottis and vocal cords. There is usually some resistance as the scope passes through the upper esophageal sphincter. However, if resistance persists, the scope should never be advanced blindly. Once the esophagus is in the upper esophageal lumen, small amounts of air insufflation are required to open up the distal lumen. The air is injected
via a syringe from the side port of the scope. The amount of air injected is usually between 5-20 cc. Excess air can cause stomach bloating.

When advancing through the esophagus, the mucosa is inspected and all findings are documented by obtaining images. From the esophagus, the scope is passed via the lower esophageal sphincter in the stomach. The stomach is identified by the presence of rugae. The pylorus is visualized and then the scope is rotated 180 degrees and the lower esophagus sphincter is now seen from the stomach side.

**Diagnostic and Therapeutic Procedures**

1. If there are any abnormal masses or unusual lesions, forceps can be passed through the port and a biopsy is obtained. Prior to the biopsy, images of the lesion should be obtained. After the biopsy is obtained, the site should be rechecked to make sure there is no bleeding.

2. Esophagoscopy is also useful for banding of varices. There are a variety of clips and bands available depending on the size of the varices. The varix is usually pinched and the band is applied at the base.

3. If the patient has ingested a foreign body or a piece of food particle has become stuck, it may be retrieved with the use of forceps, basket, snare or net.

4. Endoscopy also allows the operator to cauterize bleeding vessels.

5. Endoscopy also offers application of endoclips to close varices. If the patient has a stricture or a ring of fibrous tissue, dilatation can be performed using a balloon or savory dilators.

6. If the patient is suspected of having Barrett disease, biopsies are obtained from multiple sites of the esophageal mucosa.

7. If the individual has achalasia, botulinum toxin can be injected at the lower esophageal sphincter. This is a temporary treatment to relieve dysphagia.

8. If the varices are bleeding in the esophagus, one may use vasopressin, epinephrine or octreotide injections.

9. In patients with esophageal cancer, stents can be employed to open the lumen.

10. Small minute esophageal perforations in high-risk patients can also be sealed by application of stent across the hole.

**Post Procedure**
Once the procedure is completed, the scope is removed. On the way out, the mucosa and all biopsy sites are visualized to ensure that there is complete hemostasis. The sedative drug infusions are stopped and the patient is allowed to recover. Most patients require observation for a few hours in the post anesthesia recovery unit. Slight nausea and belching is common during the recovery period. Since esophagoscopy is an outpatient procedure, patients are discharged home. However, because the patient receive moderate sedation, it is important that someone drive the patient home.

There is no pain after the procedure. However, some people may complain of a sore throat for a few hours or a vague ache around the back of the throat. This can be relieved with ice chips.

Patients are told to rest for the first day and can resume all their activities within the next 12-24 hours. When patients are discharged, they are told to watch out for difficulty swallowing, blood in the stools, fever and unusual chest pain.

**Follow Up**

Patients are usually followed by up by their regular healthcare providers. If biopsies were obtained, the results usually take 5-7 days. If the esophagoscopy was normal, the patient and the family are usually notified after the procedure so there is no need for follow up. Patients who underwent esophagoscopy for treatment of variceal bleeding are usually closely monitored because re-bleeding can recur.

**Complications**

Esophagoscopy is a relatively safe procedure. However, complications occur in 1 in every 1000 procedures. This is a gross under estimate, as many complications are not reported because the procedure was performed outside of hospital premises. The mortality after esophagoscopy is 1-3 deaths per every 10,000 procedures. The most common cause of mortality is unrecognized or delayed recognition of esophageal perforation. Common complications of esophagoscopy include the following:

1. Bleeding is rare but can occur. Bleeding may be due to either damage to the oral cavity or dentition or may occur after a biopsy. The bleeding in most cases is mild but if the bleeding is due to a slipped clip from a varix, the patient may require a return to the operating room for assessment.

2. Infection is a very rare complication of esophagoscopy but can occur. This is more likely in patients on long-term steroids or those who are immune compromised. These patients may need antibiotics depending on the type of organism involved.

3. Perforation of the esophagus is a real complication. The esophagus is most commonly perforated in the neck area. The perforation usually presents with vague signs and symptoms. The patient may complain of difficulty swallowing, have a fever or may complain of neck pain. In such cases, it is important to obtain a barium swallow as
soon as possible. If the diagnosis is delayed, a CT scan of the neck and chest area is useful to determine the extent of mediastinitis. In most cases, the perforation is at the junction of the cricopharyngeus muscle in the neck. The treatment of the perforation depends on the location, patient age, and comorbidity. If the perforation is in the chest, it must be surgically repaired. Patients too ill for surgery may undergo stent placement. For perforations in the neck area, clinical judgment is required. The small perforations with no leak can be managed conservatively with antibiotics and total parenteral nutrition for a few weeks. Some larger neck perforations may require drainage of the neck. It is important to remember that esophageal perforations, if missed carry a very high morbidity and mortality. Consultation from a thoracic surgeon is prudent.

4. Cardiopulmonary problems can occur in patients with a prior history of heart or lung problems. Thus, patients should be optimized and cleared by the internist prior to the procedure. Both heart attacks and respiratory failure have been reported after esophagoscopy.

5. Adverse reactions to medications have been reported. Some patients may develop an allergic reaction. However, the most common adverse reactions to the medications include hypotension and hypoxia. Thus, these patients have to be closely monitored and antidotes to both fentanyl and midazolam must be available in the room.

6. Overall, the most common complications of esophagoscopy include aspiration, hypoventilation, hypotension, over sedation and airway obstruction. These complications account for more than 50% of all major complications. All are preventable if due caution is exercised during the procedure.

Certification in Endoscopy

In the last 2 decades, endoscopy is being performed by a variety of healthcare professionals in differing specialties. Because these procedures have high reimbursements, the procedure is often performed for trivial reasons. As a result, the American Society for Gastrointestinal Endoscopy (ASGE) has now established indications, limitations, contraindications and alternatives for endoscopic procedures.

Moreover, because of many deaths from anesthesia, knowing the principles of conscious sedation and use of trained personnel are necessary. In order to correctly interpret endoscopic findings, the society has also recommended competency training in upper endoscopic procedures.

In addition, the ASGE has announced that physicians who want to perform endoscopy must have done a minimum of 100 upper endoscopic procedures during their training. This is the minimum number required for competency in upper gastrointestinal endoscopy. Hospital accreditation committees are strongly urged to ensure that they evaluate credentials of all new physicians who want to perform this procedure.

Recent Advances
In the last decade, advances in endoscopy have led to the development of thinner and more flexible instruments. The latest is the transnasal esophagoscope. This ultrathin 4 mm flexible scope can be inserted via the nasal passages to view the entire esophagus. It is an extremely versatile scope, is well tolerated and very safe. It has been marketed for use outside the hospital and in doctor’s offices. There is one major limitation of this scope—it has very small side ports and the small caliber does not allow for larger instruments to be passed for any type of therapeutic procedures. At the moment, it is only useful for diagnosis of visible lesions. Because of the inability to perform biopsy, the instrument has a major drawback.\textsuperscript{12}

An additional innovation in endoscopy is the esophageal capsule. This capsule, which is the size and shape of a small pill, has a tiny built in camera which is swallowed by the patient. As the pill moves down the throat, multiple images are obtained. The procedure does not require any type of sedation and is relatively a safer alternative for high-risk patients. Unfortunately, the endoscopy capsule can miss important areas as it tumbles through the esophagus. Its rate of passage is not under control and hence there is a good chance of missing minute pathological lesions. Moreover, the capsule does not offer any ability to treat or biopsy the lesions.\textsuperscript{13}

At the moment, capsule endoscopy is just another fancy tool, which is well tolerated but has not replaced the esophagoscope.

References


Copyright Status

This information has been summarized and adapted from multiple sources as seen on the reference list. This is intended for informational use only and is not for sale. This is not intended to replace facility policies and procedures. This is not intended to be used as medical advice nor as advocacy for any medications, but is only considered an educational tool. Please consult your medical provider for questions or medical advice.

Some of the information at this packet is in the public domain. Unless stated otherwise, documents and files on web servers can be freely downloaded and reproduced. Accordingly, other parties may retain all rights to publish or reproduce these documents or to allow others to do so. Some documents available from this server may be protected under the United States and foreign copyright laws. Permission to reproduce may be required.

This is the end of the module: Please complete the online exam and evaluation. If you have any questions or concerns, please contact at http://www.americanmedicaleducationcenter.com/contact/