Chapter 23
Endoscopic Diagnostic Procedures and Tests

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Objectives

1. Describe the different types of endoscopes and their components.
2. Discuss the indications for EGD, ERCP, enteroscope and colonoscopy.

- *GI Endoscopy* is defined as the direct visual examination of the lumen of the gastrointestinal tract.

Endoscopes

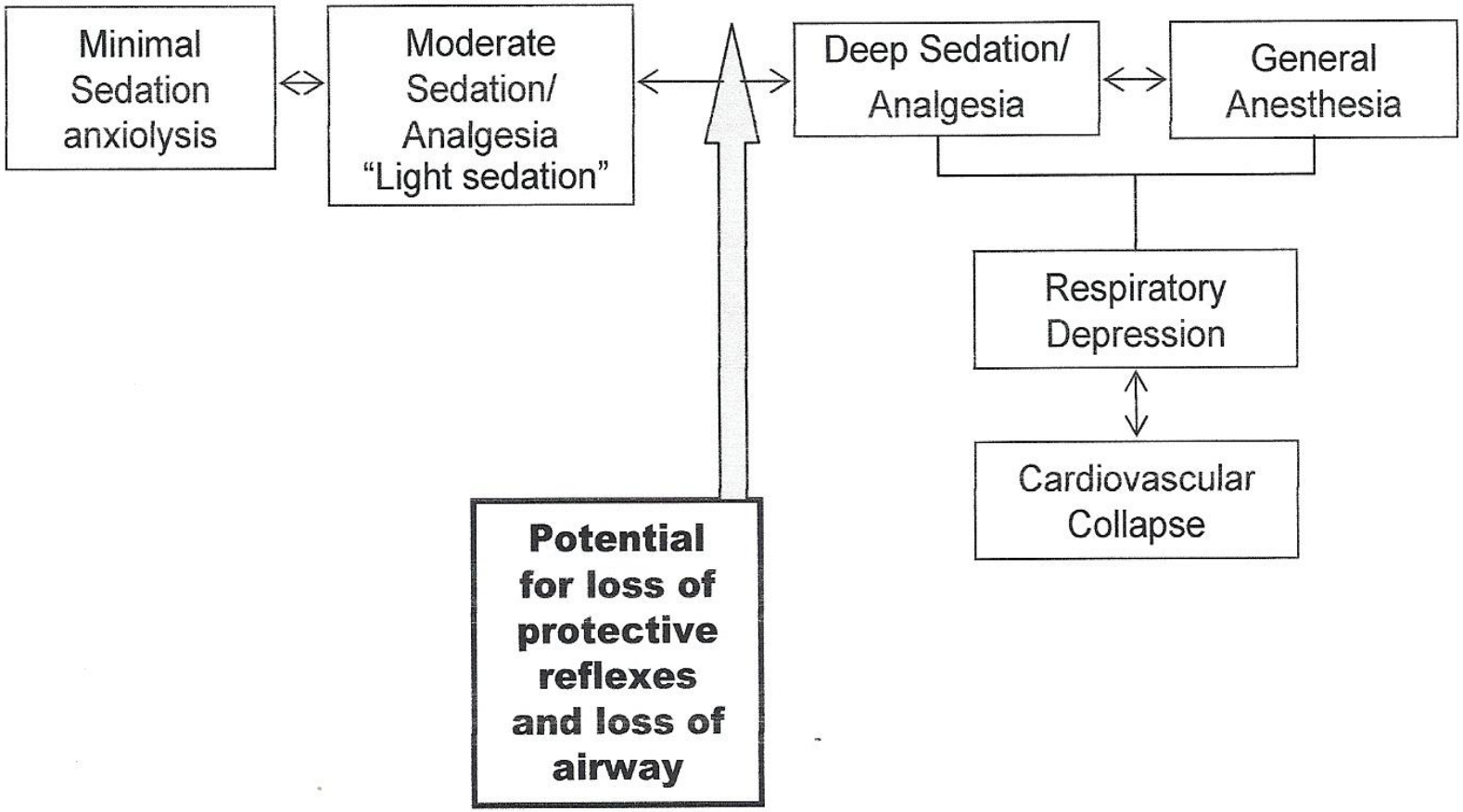
1. A flexible end-viewing or side-view endoscope
2. An anoscope
3. A proctosigmoidoscope or rectosigmoidoscope
4. A flexible sigmoidoscope
5. A colonoscope

Sedation and Analgesia

4 levels of continuum of sedation depth

- Minimal sedation
- Moderate sedation/analgesia
- Deep sedation/analgesia
- General anesthesia

ASA Sedation and Analgesia Continuum



Sedation

In the endoscopy setting, moderate sedation/analgesia is most often induced by IV benzodiazepines (Versed & /or Valium) and narcotics (Demerol, Morphine, Fentanyl)

Goal of moderate sedation includes the following:

1) Maintain intact protective reflexes
2) Allow relaxation to allay anxiety and fear
3) Minimize changes in vital signs
4) Diminished verbal communication

Sedation

5) Ensure cooperation
6) Decrease pain perception
7) Ensure easy arousal from sleep
8) Maintain patient ability to respond to commands
9) Provide some degree to retrograde amnesia

Monitoring

- Observe and document patient's response to medications and the procedure.

  i.e.: oxygen saturation, blood pressure, respiratory rate and effort, EKG, level of consciousness, warmth and dryness of skin, pain tolerance, abdominal distention
- Notify physician of any changes and be prepared to intervene in event of complications

Esophagogastroduodenoscopy (EGD)

Indications:

- dysphagia or odynophagia
- Dyspepsia
- Anemia
- Esophageal reflux – persistent despite therapy
- Persistent, unexplained vomiting
- Upper GI x-rays showing lesions that require biopsy

Esophagogastroduodenoscopy

More Indications:

- Suspected esophageal or gastric varices
- Suspected esophageal stenosis, esophagitis, hiatal hernia, gastritis, obstructive lesions and gastric or peptic ulcers
- Epigastric or chest pain
- Chronic abdominal pain
- Suspected polyps or cancer

Esophagogastroduodenoscopy

More Indications:

- Follow-up of patients with Barrett's esophagus, ulcers, or previous gastric or duodenal surgery
- Removal of ingested foreign bodies
- Caustic ingestion
- Oral aversion
- In conjunction with dilation of the upper GI tract

Esophagogastroduodenoscopy

More Indications:

- Placement of a feeding tube or removal of one
- Esophageal prosthesis placement
- Pre-surgical screening

EGD

Contraindications:

- ✓ Suspected perforated viscus
- ✓ Shock
- ✓ Seizures
- ✓ Recent M.I.
- ✓ Severe cardiac decompensation
- ✓ Thoracic aortic aneurysm
- ✓ Respiratory compromise

EGD

Contraindications (continued)

- ✓ Severe cervical arthritis
- ✓ Acute oral or oropharyngeal inflammation
- ✓ Acute abdomen
- ✓ Known Zenker's diverticulum
- ✓ Uncooperative patient
- ✓ Noncompliance with NPO guidelines

EGD

Possible adverse reactions:

- ✓ Respiratory depression or arrest
- ✓ Perforation of the esophagus, stomach or duodenum
- ✓ Hemorrhage related to trauma or perforation
- ✓ Pulmonary aspiration or blood, secretions or regurgitated gastric contents
- ✓ infection

EGD

More possible Adverse Reactions:

- ✓ Cardiac arrhythmia or arrest
- ✓ Hypotension
- ✓ Localized phlebitis related to IV diazepam
- ✓ Vasovagal response
- ✓ Allergic reaction to the IV medications

Endoscopic Retrograde Cholangiopancreatography (ERCP)

Indications:

- Evaluation of signs or symptoms suggesting pancreatic malignancy when results or ultrasonography and/or CT scan is normal or equivocal
- Evaluation of acute, recurrent or chronic pancreatitis of unknown etiology
- Before therapeutic endoscopy of the biliary tree

ERCP

More Indications:

- Unexplained chronic abdominal pain of suspected biliary or pancreatic origin
- Evaluation of jaundiced patients suspected of having treatable biliary obstruction
- Evaluation of patients whose clinical presentation suggests bile duct disease
- Pre-op or post-op evaluation to detect CBD stones in patients who undergo lap chole
- Manometric evaluation of the ampulla and CBD

ERCP

Contraindications:

- ✓ Uncooperative patients
- ✓ Recent M.I.
- ✓ Severe pulmonary disease
- ✓ Coagulopathy
- ✓ Pregnancy
- ✓ Pancreatitis (depending on clinical situation)

ERCP

Possible Adverse Reactions:

- ✓ Pancreatitis
- ✓ Biliary Sepsis
- ✓ Aspiration
- ✓ Bleeding
- ✓ Perforation
- ✓ Respiratory depression or arrest
- ✓ Cardiac arrhythmia or arrest

ERCP

Nurse should observe for and report:

- Rise in temperature/low-grade fever
- Chills
- Nausea and/or vomiting
- Abdominal pain or distention
- Tachycardia

Small Bowel Enteroscopy (SBE)

Indications:

- GI bleeding of suspected small bowel origin, with continued or intermittent blood loss, in whom a GI bleeding site has not been found despite testing.
- For patients with SB abnormality out of reach with a standard scope.

Contraindications are the same as for EGD.

SBE

- A small bowel enteroscope (250 cm in length) is passed through the esophagus, stomach and small intestine for its full length.
- Sonde or Peristalsis method uses a pediatric colonoscope as a push enteroscope to advance a long, thin, flexible Sonde enteroscope into the small bowel.
- Balloon enteroscopy

SBE

- ***Complications*** include: perforation, pancreatitis and gastric mucosal stripping.

Patients must be observed post procedure for significant abdominal distention due to the length of the procedure and amount of air insufflation.

Colonoscopy

Indications:

- Evaluation of active or occult lower GI bleeding, such as hematochezia, melena with a negative upper GI investigation, unexplained fecal occult blood and unexplained iron-deficiency anemia
- Evaluation of abnormalities found on radiographic examination

Colonoscopy

More Indications:

- Suspected cecal or ascending colonic disease
- Surveillance for colon neoplasia in patients who have had a previous colon cancer or previous colon polyps
- Screening in patients 50 years of age or older, in patients with a personal history of polyps or colorectal cancer

Colonoscopy

More Indications:

- And in patients with a first-degree (parent or sibling) family history of colon cancer
- Surveillance in patients with chronic ulcerative colitis (UC) of several years' duration
- Diagnosis of management of chronic inflammatory bowel disease
- Chronic, unexplained abdominal pain
- Confirmation of suspected polyps, rectal or colonic strictures or cancer

Colonoscopy

Contraindications:

- ✓ Fulminant ulcerative colitis
- ✓ Acute radiation colitis
- ✓ Suspected toxic megacolon
- ✓ Suspected perforation
- ✓ Acute, severe diverticulitis
- ✓ Presence of barium
- ✓ Imperforate anus

Colonoscopy

Contraindications:

- ✓ Massive Colonic Bleeding
- ✓ Shock
- ✓ Acute surgical abdomen or a fresh surgical anastomosis

Colonoscopy

- The objective is to reach the cecum as quickly and *safely* as possible then to meticulously inspect the colon during withdrawal. This is the time to perform therapeutic procedures such as polypectomy, dilatation, biopsy, etc.
- Major complications occur in less than 1% of patients undergoing colonoscopy.
- The 2 most common complications, ***perforation and hemorrhage***, most likely occur during or after polypectomy.

Colonoscopy

Other complications from colonoscopy include: medication reactions - cardiac arrhythmias or arrest, respiratory depression or arrest.

- explosion of colonic gases
- vasovagal reactions
- cardiac failure or hypotension r/t prep
- biopsy site bleeding is rare unless pt has coagulation issues or on blood thinning products.

Anoscopy

Indications:

Hemorrhoids and fissures (the most common cause of bright red rectal bleeding in adults)

Position:

Sims' left lateral or knee-chest position

or special proctologist tilt table to invert pt.

Proctosigmoidoscopy, a.k.a. Rectosigmoidoscopy

Indications:

- Melena or bleeding from the anorectal area
- Persistent diarrhea
- Change in bowel habits
- Passage of pus or mucus
- Suspected chronic inflammatory bowel disease
- Bacteriology and histological studies

Proctosigmoidoscopy, a.k.a. Rectosigmoidoscopy

Contraindications:

- ✓ Severe necrotizing enterocolitis
- ✓ Toxic megacolon
- ✓ Painful anal lesions
- ✓ Severe cardiac arrhythmia
- ✓ Uncooperative patients

Complications: Perforation, bleeding, abdominal discomfort and cardiac arrhythmias

Proctosigmoidoscopy, a.k.a. Rectosigmoidoscopy

More Indications:

- Surveillance of known rectal disease
- Rectal pain
- Screening for suspected polyps or tumors
- Foreign body removal
- As an adjunct to a barium enema
- Surveillance following rectal surgery

Flexible Sigmoidoscopy

Indications:

- Routine screening of adults over age 50
- Evaluation of suspected distal colonic disease when there is no indication for colonoscopy
- Inflammatory bowel disease
- Chronic diarrhea
- Pseudomembranous colitis
- Radiation colitis

Flexible Sigmoidoscopy

More Indications:

- Sigmoid volvulus
- Foreign body removal
- Lower GI bleeding
- Evaluation of the colon in conjunction with a barium enema

Contraindications same as Colonoscopy

Additional techniques
Capsule Endoscopy

- Small Bowel Enteroscopy by the Capsule Endoscopy

Capsule Endoscopy

- Capsule Endoscopy is one of the newest diagnostic tool for diagnosing difficult small bowel cases.
  - Non-invasive, diagnostic easy-to-perform alternative technique
  - Improved level of visual imaging of small intestine disorders, such as obscure bleeding, irritable bowel syndrome, Crohn's disease, celiac disease, chronic diarrhea, malabsorption and small bowel cancer.

Capsule Endoscopy

Contraindications:

- ✓ Known or suspected gastrointestinal obstruction
- ✓ Strictures or fistulas
- ✓ Patients with known difficulty swallowing
- ✓ Patients with cardiac pacemakers or automatic ventricular defibrillators

Capsule Endoscopy

- Dietary Considerations:
- Prep: NPO for 6 hours before test
- AFTER PILL INGESTION—Strict NPO for 2 hours
- 2 hours after pill ingestion, CLEAR liquids only
- 4 hours after ingestion, LIGHT meal.
- Test is complete in 8 hours.

Capsule Endoscopy

- Patient teaching:
- Watch the blinking light! Call if it stops.
- NO MRI with scout film
- Notify doctor if any symptoms of nausea, vomiting, abdominal pain or discomfort.
- Facilitates DIAGNOSTIC imaging only of SB
- Does not replace EGD/Colonoscopy

Additional Techniques
Endoscopy through an ostomy

Indications:

- To evaluate anastomotic site
- Identification of recurrent diseases
- Visualization or treatment of GI bleeding

Contraindications:

- Recent ostomy/bowel surgery
- Suspected bowel perforation
- Presence of large peristomal hernia
- Massive GI bleeding

Endoscopy through an ostomy

- Supine position and Drape ostomy site
- Scope held at a right angle to the abdominal wall to facilitate entry through the ostomy
- Maintain a tight seal around the endoscope as the enters the stoma to achieve adequate insufflation
- Post Procedure: Observe for Stomal Bleeding, vomiting, change in VS, abdominal rigidity, severe/persistent abdominal pain

Additional Techniques
Endoscopic Ultrasonography (EUS)

- Endoscope with Ultrasonography to enhance visualization of the GI tract without being obscured by intra-abdominal gas or bony structures
- Allows evaluation of histological structure of targeted lesions and walls of immediate GI tract organs and contiguous organs—i.e.: GB, pancreas, kidneys, left liver lobe, spleen, aorta, inferior vena cava and various tributaries of the extra hepatic portal vein system.

EUS

- Has many advantages for detecting and staging lesions in the wall of the GI tract
- With Needle Aspiration and Biopsy potential, EUS is a valuable tool in identification of gastrointestinal cancers and treatment decisions

REVIEW QUESTIONS

The endoscopes used in EGD can visualize the upper GI tract as far as the:

a. Pylorus
b. Ampulla of Vater
c. Proximal duodenum
d. Ileocecal valve

REVIEW QUESTIONS

Before sedation, according to ASA guidelines, the adult patient should be NPO from solids or full liquids for:

a. 2 hours
b. 6 hours
c. 12 hours
d. 24 hours

REVIEW QUESTIONS

The major complication(s) associated with ERCP is (are):

a. Perforation
b. Adverse effects of medication
c. Hemorrhage
d. Pancreatitis and sepsis

REVIEW QUESTIONS

The most common cause(s) of bright red rectal bleeding in adults and children is (are):

a. Inflammatory bowel disease
b. Perforation
c. Hemorrhoids and fissures
d. Bleeding ulcers and varices

REVIEW QUESTIONS

One contraindication for rigid proctosigmoidoscopy is:

a. Severe cardiac arrhythmias
b. Previous rectal surgery
c. Rectal bleeding
d. Rectal pain

REVIEW QUESTIONS

For proctosigmoidoscopy, the patient should be in the knee-chest or:

a. Prone position
b. Supine position
c. Right lateral position
d. Left lateral position

REVIEW QUESTIONS

Distention of the abdomen during colonoscopy is most likely caused by:

a. Excessive insufflation of air.
b. Excessive amounts of water used for irrigation
c. Perforation
d. Colonic distention

REVIEW QUESTIONS

Small bowel enteroscopy is indicated for patients with:

a. Peptic ulcers
b. Inflammatory bowel disease
c. Persistent blood loss with no identifiable source
d. Intestinal polyps