

جامعة الانبار
كلية العلوم التطبيقية – هيت
قسم الفيزياء الحياتية

الاجهزة الطبية

Endoscopy 1

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Endoscopy

- History.
- What is endoscopy?
- Rigid endoscope construction and applications.
- Flexible endoscope construction and applications.
- Endoscope rigid/flexible processing.
- Endoscope rigid/flexible care and maintenance.
- Endoscope rigid/flexible inspection.
- Troubleshooting.

Brief History of Endoscopy

- In the early 1900s, the first attempts to view inside the body with lighted telescopes were made. These initial devices were often fully rigid. In the 1930s, semi-flexible endoscopes called gastroscopes were developed to view inside of the stomach.
- Fiber-optic endoscopy was pioneered by South African-born physician Basil Hirschowitz at the University of Michigan in 1957.
- Widespread use of fiber optic endoscopes began in the 1960s.
- A fiber optic cable is simply a bundle of microscopic glass or plastic fibers that literally allows light and images to be transmitted through curved structures.

What is Endoscopy?

- **Endoscopy** is the examination and inspection of the interior of body organs, joints or cavities through an endoscope to allow physicians to peer through the body's passageways.
- **An Endoscope** is a device using fiber optics and powerful lens systems to provide lighting and visualization of the interior of a joint. The portion of the endoscope inserted into the body may be rigid or flexible, depending upon the medical procedure.

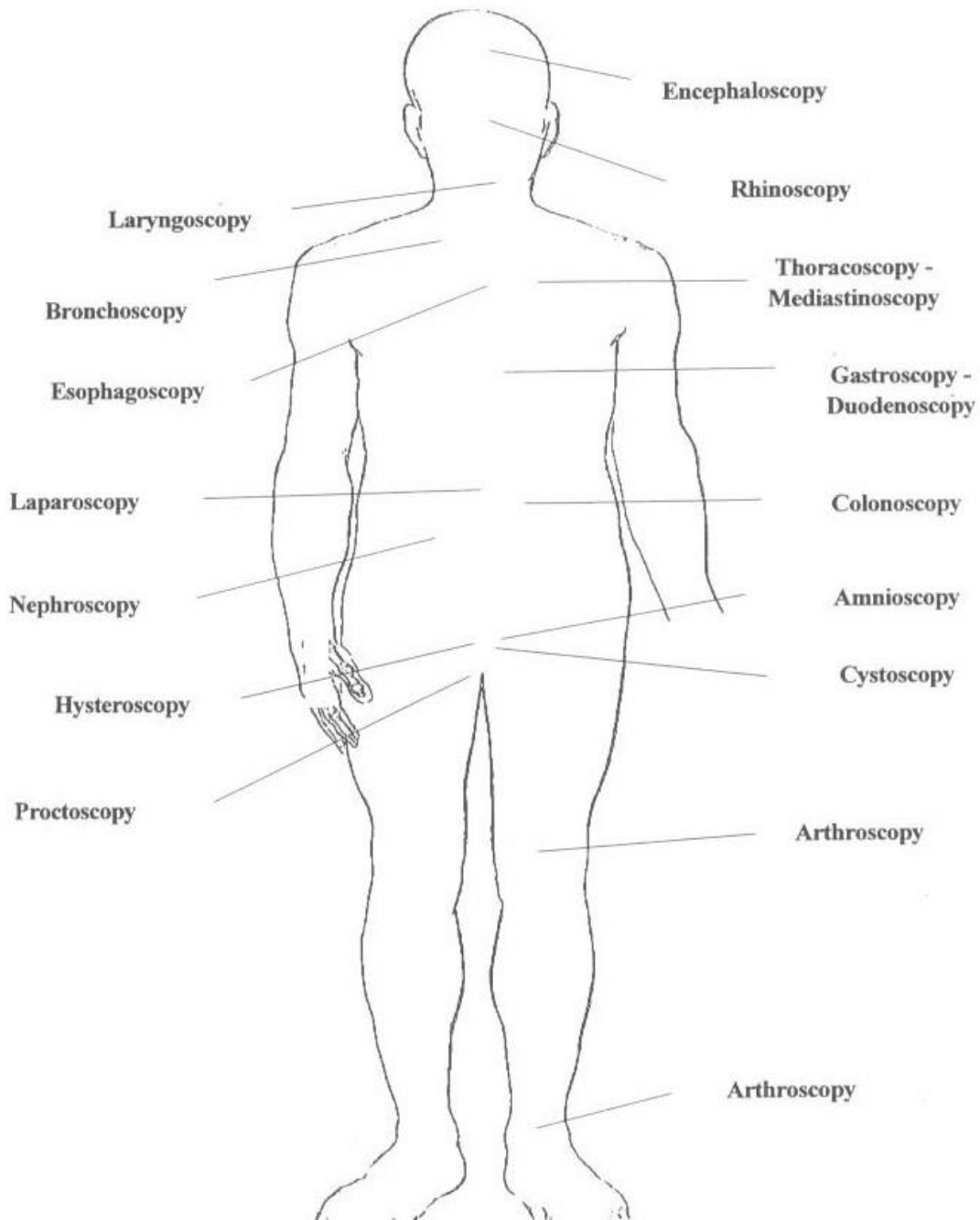


FLEXIBLE ENDOSCOPY



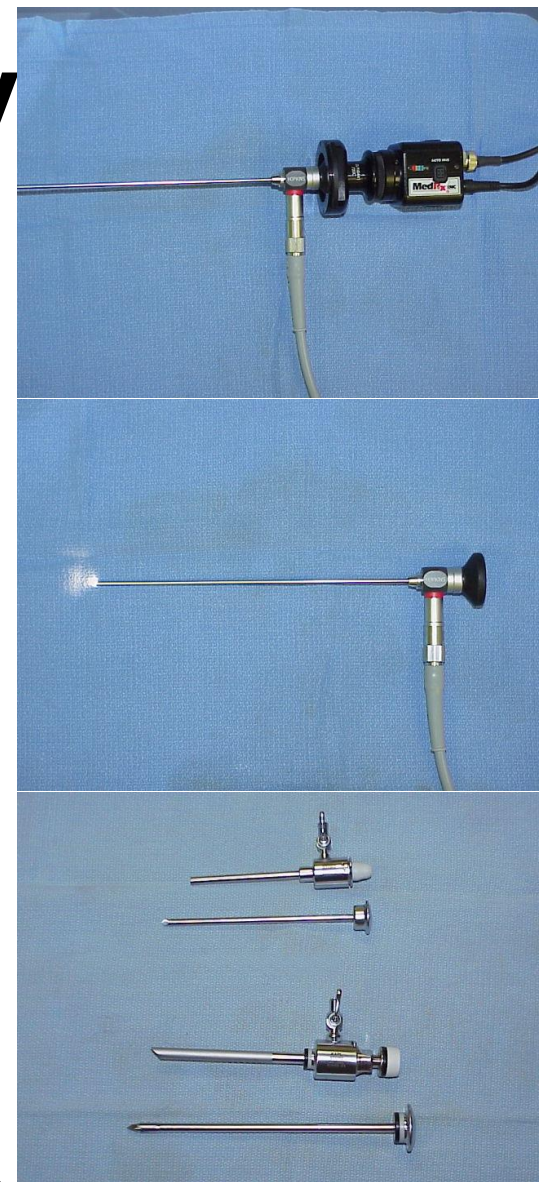
SURGICAL ENDOSCOPY

ENDOSCOPY



Rigid or Surgical Endoscopy

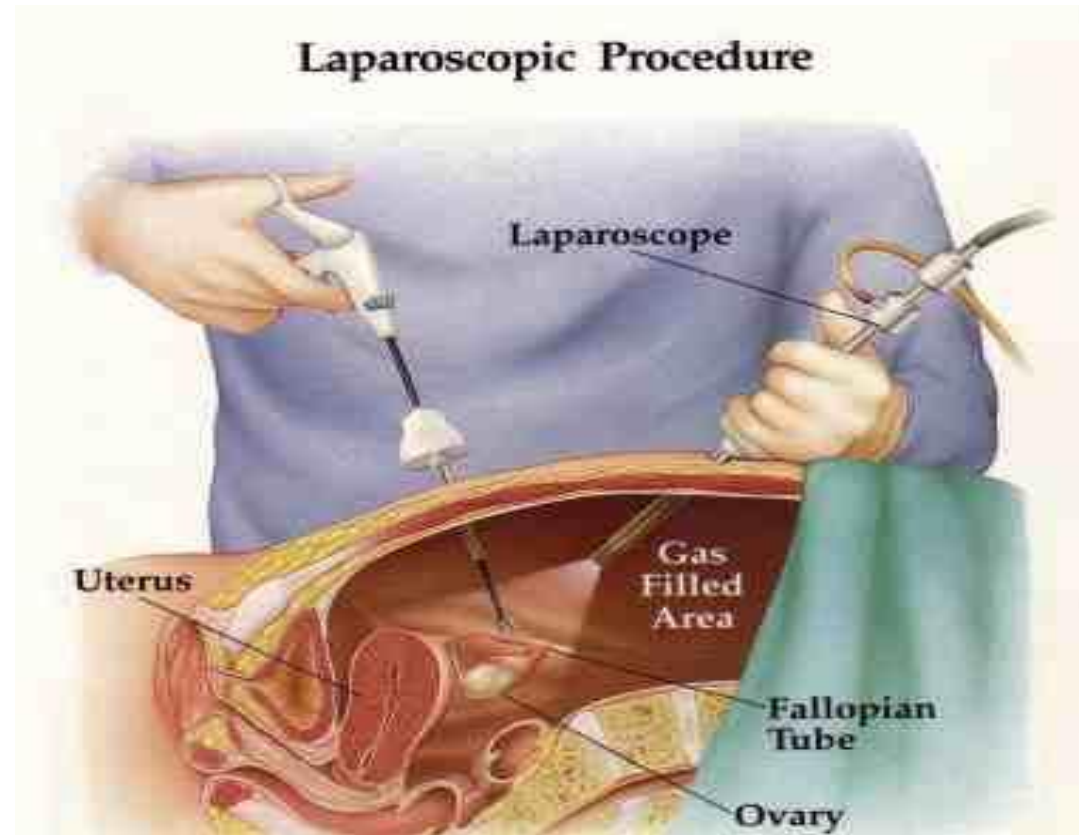
1. Laparoscopy.
2. Arthroscopy.
3. Endo-Urology.
4. Gynecology.
5. Proctoscopy.
6. other surgical applications
(gastrectomy, neurosurgery ,...etc)



ARTHROSCOPY

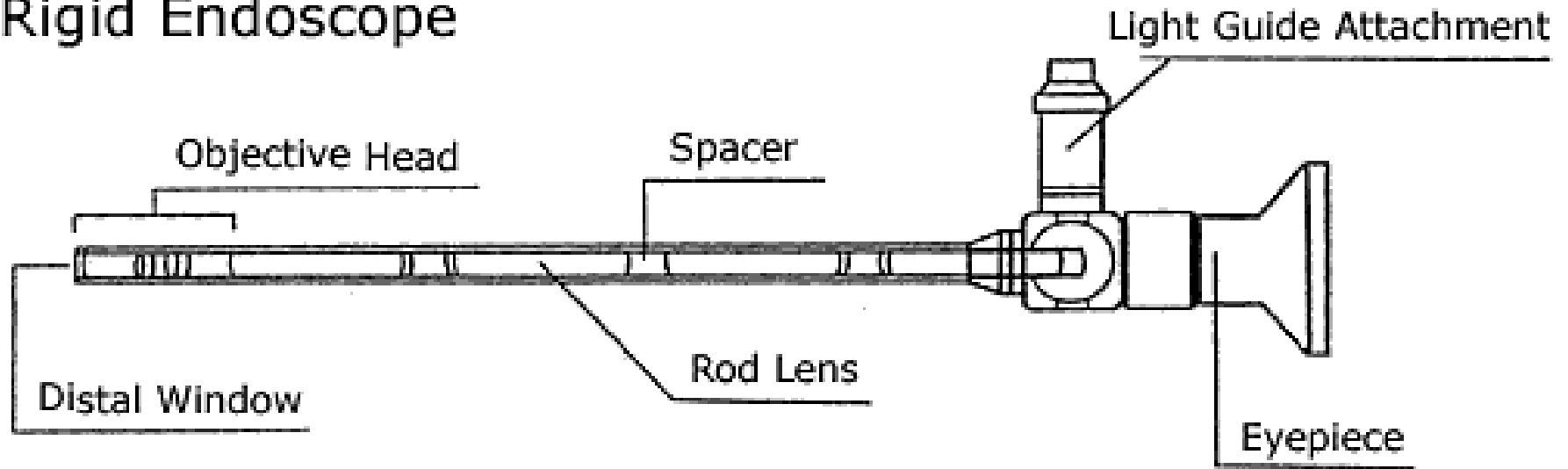


LAPAROSCOPY



RIGID ENDOSCOPE

Rigid Endoscope



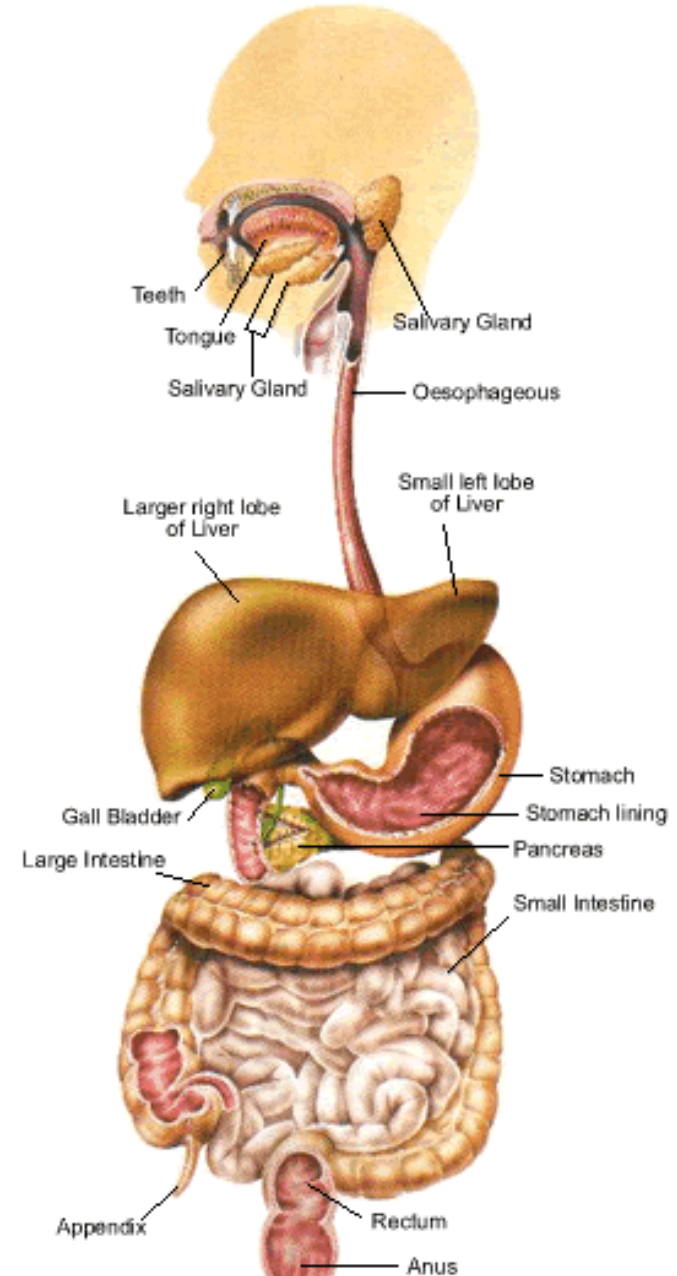
Care of Rigid Endoscope

- Rigid endoscopes must be handled with care, they are very delicate and can be damaged easily if dropped or hit against hard objects.
- Can be disinfected via gas sterilization or autoclaved if specified by manufacturer or soaked in 2-3% glutaraldehyde mostly used safe disinfection technique.
- **Glutaraldehyde** is a toxic chemical that is used as a cold sterilant to disinfect and clean heat-sensitive medical, surgical and dental equipment.

Digestive System

Flexible Endoscopy

1. UPPER GI ENDOSCOPY
2. LOWER GI ENDOSCOPY
3. RESPIRATORY ENDOSCOPY

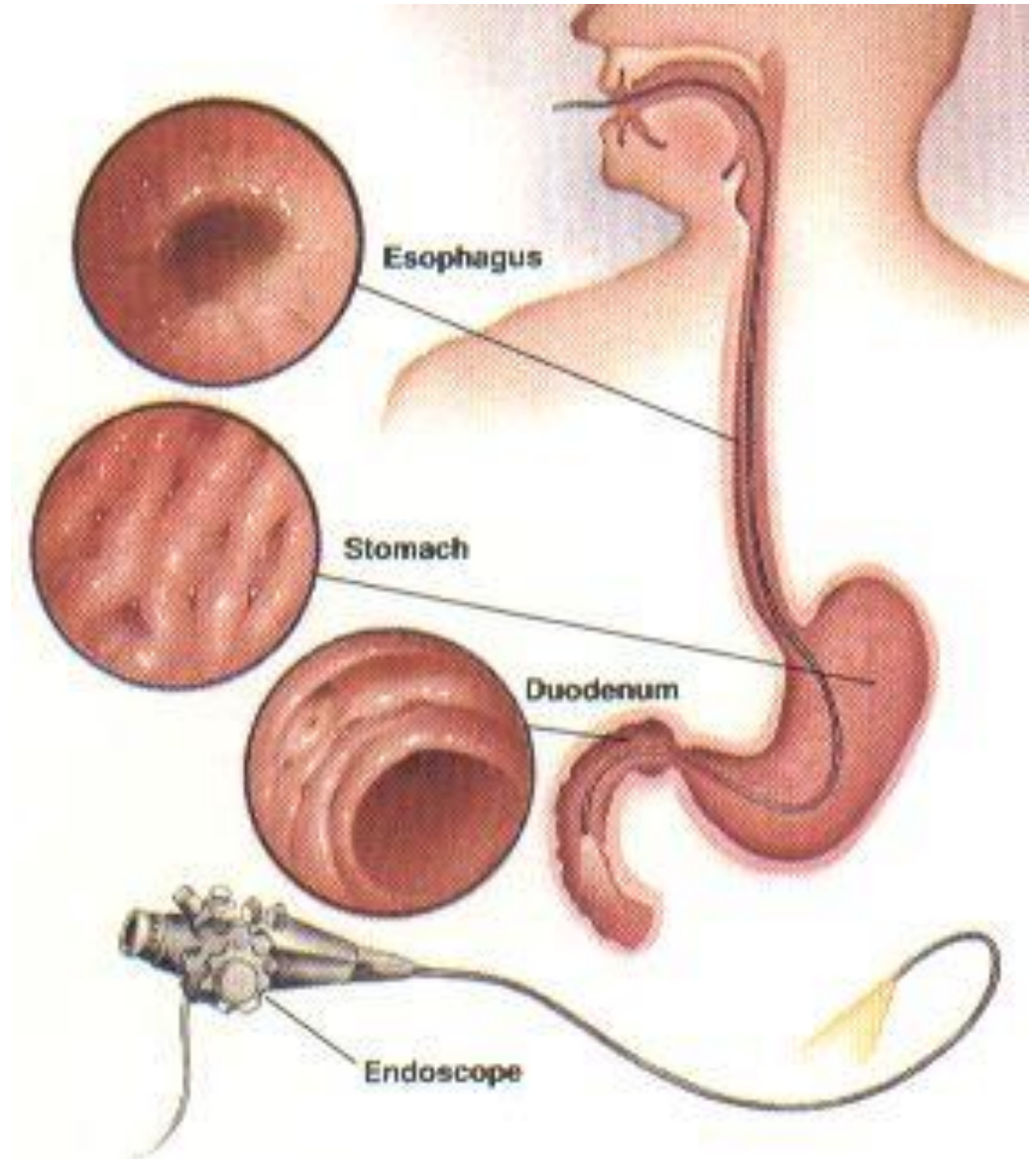
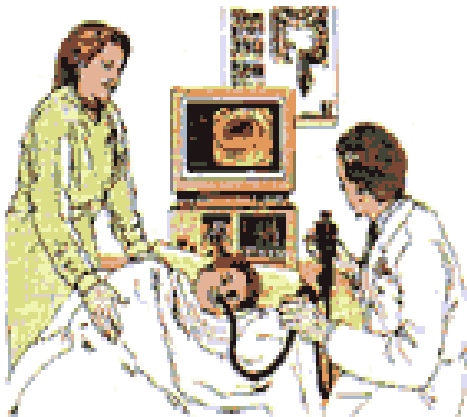


Upper GI Endoscopy

Gastroscopy

Duodenoscopy (ERCP)

Enteroscopy Procedures



Gastroscopy

Upper endoscopy (gastroscopy) enables the physician to look inside the esophagus, stomach, and duodenum and the first part of the small intestine. The procedure might be used to discover the reason for swallowing difficulties, reflux, bleeding, indigestion, abdominal pain, or chest pain.

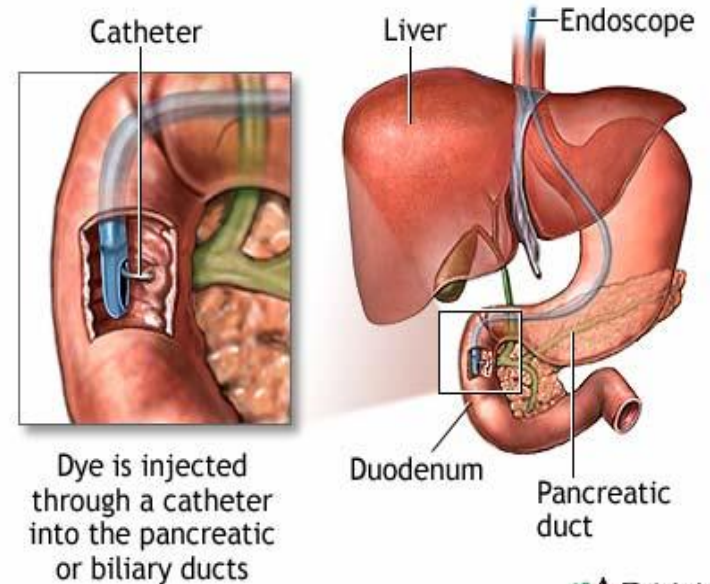
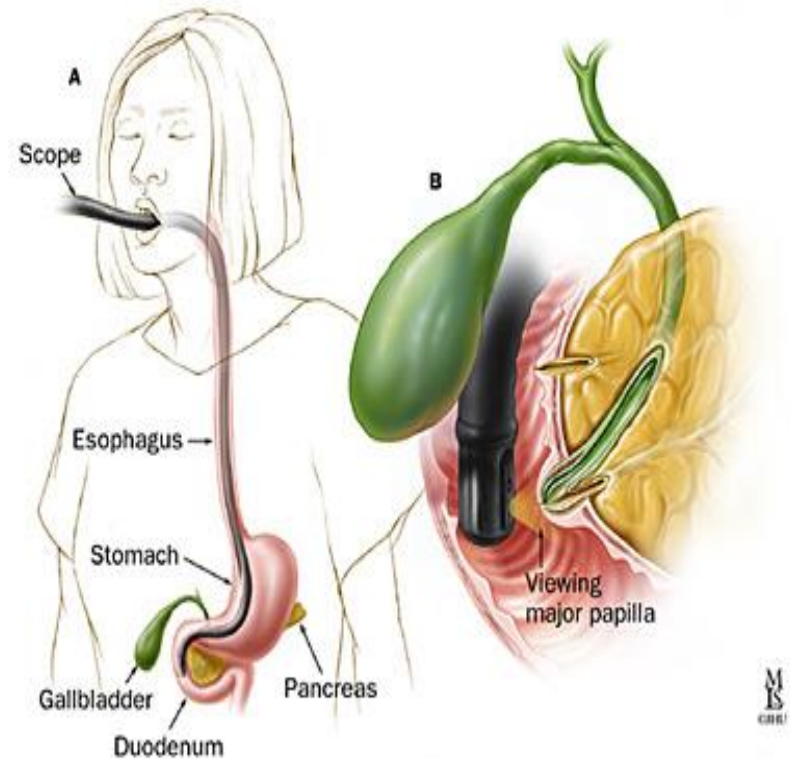
Gastroscopy Procedure

- It includes swallowing a thin, flexible, lighted tube called an endoscope . Right before the procedure the physician will spray the throat with a numbing agent that may help prevent gagging. The patient may also receive pain medicine and a sedative to help you relax during the exam.
- The endoscope transmits an image of the inside of the esophagus, stomach, and duodenum, so the physician can carefully examine the lining of these organs.
- The scope also blows air into the stomach; this expands the folds of tissue and makes it easier for the physician to examine the stomach.
- Gastroscopy takes around 10 minutes .

Duodenoscopy

ERCP

- It combines the use of x-rays and an endoscope, which is a long, flexible, lighted tube. Through it, the physician can see the inside of the stomach and duodenum, and inject dyes (CM) into the ducts in the biliary tree and pancreas so they can be seen on x-ray.

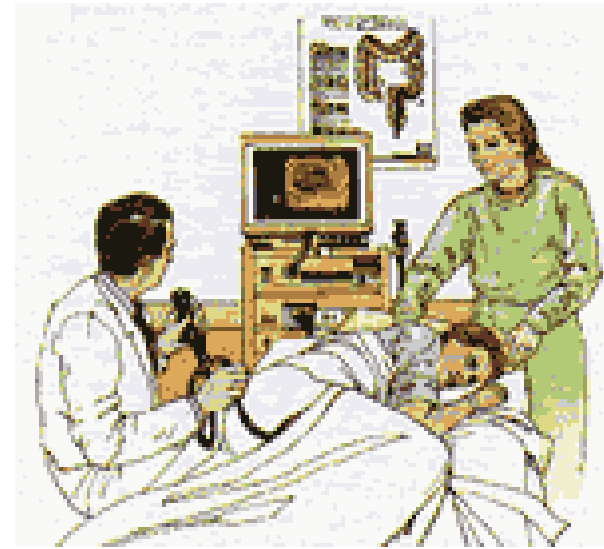


Duodenoscopy ERCP

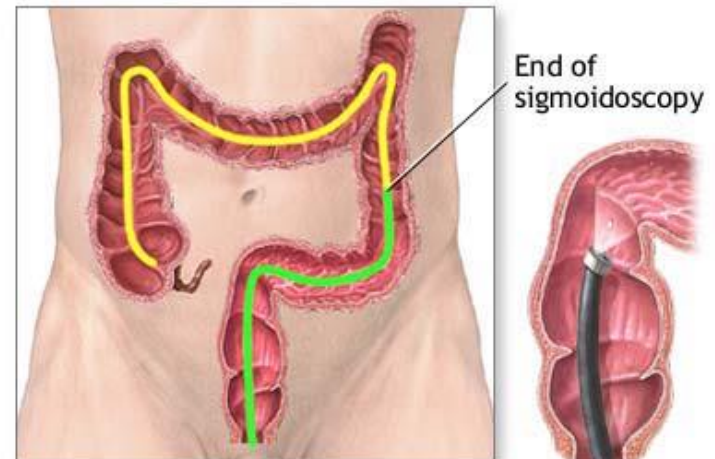
1. Endoscopic Retrograde Cholangio Pancreatography (ERCP) enables the physician to diagnose problems in the liver, Gallbladder, Bile Ducts, and Pancreas.
2. The liver is a large organ that, among other things, makes a liquid called bile that helps with digestion.
3. The **Gallbladder** is a small, pear-shaped organ that stores bile until it is needed for digestion.
4. The bile ducts are tubes that carry **Bile** from the liver to the gallbladder and small intestine. These ducts are sometimes called the **Biliary Tree**.
5. ERCP is used primarily to diagnose and treat conditions of the Bile Ducts including gallstones, inflammatory strictures (scars), leaks(from trauma and surgery), and cancer.

Lower GI Endoscopy

Colonoscopy



Sigmoidoscopy:
examination of the
sigmoid colon



Colonoscopy examines the entire length of the colon; sigmoidoscopy examines only the lower third

COLONOSCOPY

1. Colonoscopy lets the physician look inside the entire large intestine, from the lowest part, the rectum, all the way up through the colon to the lower end of the small intestine. The procedure is used to look for early signs of cancer in the colon and rectum. Colonoscopy enables the physician to see inflamed tissue, abnormal growths, ulcers, and bleeding.
2. If anything abnormal is seen in the colon, like a polyp or inflamed tissue, the physician can remove all or part of it using tiny instruments passed through the scope. That tissue (biopsy) is then sent to a lab for testing. If there is bleeding in the colon, the physician can pass a laser, heater probe, or electrical probe, or inject special medicines through the scope and use it to stop the bleeding.
3. Colonoscopy takes 30 to 60 minutes.

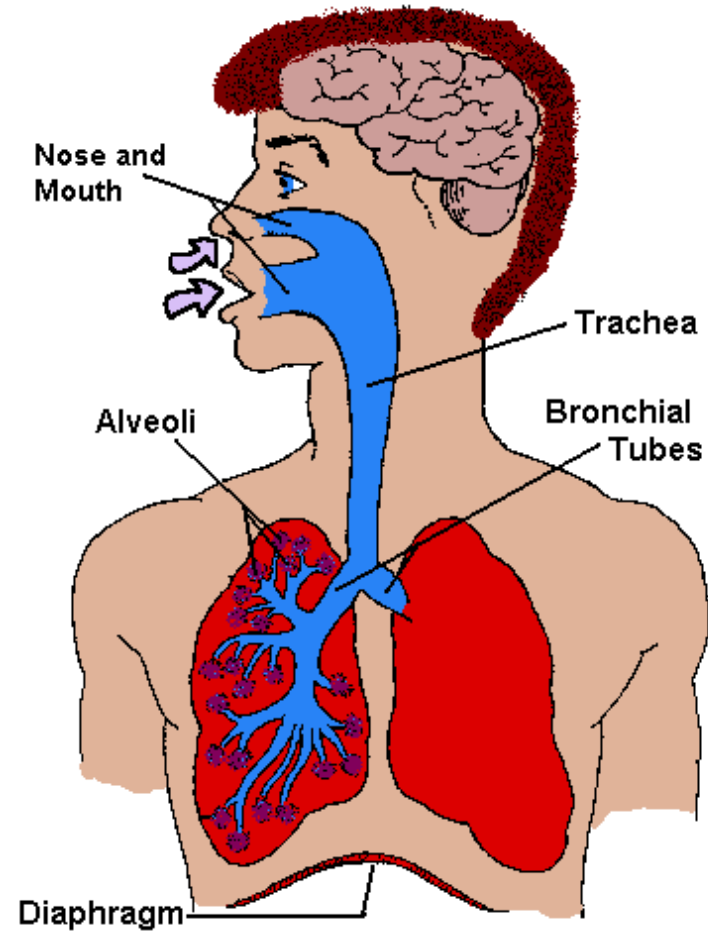
SIGMOIDOSCOPY

- Flexible sigmoidoscopy enables the physician to look at the inside of the large intestine from the rectum through the last part of the colon, called the sigmoid or descending colon. Physicians may use the procedure to find the cause of diarrhea, abdominal pain, or constipation. They also use it to look for early signs of cancer in the descending colon and rectum.
- With flexible sigmoidoscopy, the physician can see bleeding, inflammation, abnormal growths, and ulcers in the descending colon and rectum. Flexible sigmoidoscopy is not sufficient to detect polyps or cancer in the ascending or transverse colon two-thirds of the colon .

RESPIRATORY ENDOSCOPY

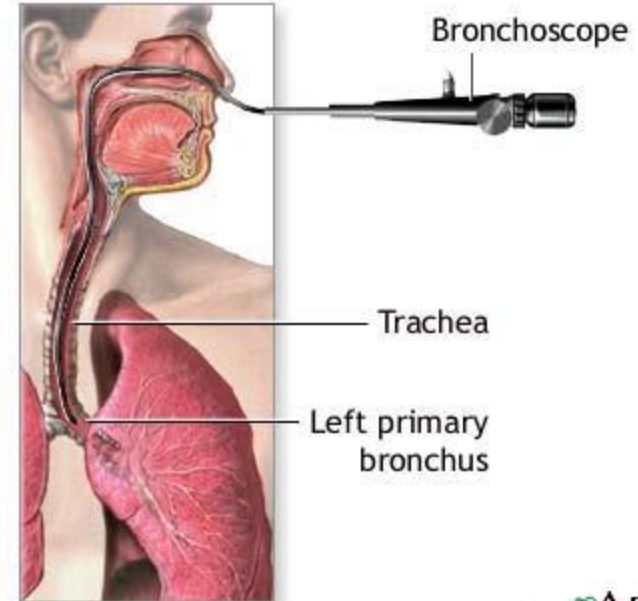
Bronchoscopy

Laryngoscopy



Bronchoscopy

- A bronchoscope is a tube with a tiny camera on the end which is inserted through the nose (or mouth) into the lungs. During a bronchoscopy procedure, a scope will be inserted through the nostril until it passes through the throat into the trachea and bronchi.
- A bronchoscope is used to provide a view of the airways of the lung. The scope also allows the doctor to collect lung secretions and lung tissue for biopsy for tissue specimens.



CYSTOSCOPY

- Cystoscopy is a procedure that uses a flexible fiber optic scope inserted through the urethra into the urinary bladder.
- The physician fills the bladder with water and inspects the interior of the bladder. The image seen through the cystoscope may also be viewed on a color monitor and recorded on videotape for later evaluation.

