

# DIAGNOSTIC EVALUATIONS FOR GI SYSTEM

Many modalities are available for diagnostic evaluation of GI system but majority of these tests and procedures are performed in OPD basis in special settings designed .

## 1. **STOOL TEST:**

A **stool test** involves the collection and analysis of fecal matter to diagnose the presence or absence of a medical condition.

### A. **Visual examination:-**

The patient and/or health care worker in the office or at the bedside is able to make some important observations-Color, Texture/consistency-formed.

### B. **Screening Test:-**

One of the most common stool tests, the **fecal occult blood test (OBT)**, can be used to diagnose many conditions that cause bleeding in the gastrointestinal system, including colorectal cancer or stomach cancer. Cancers, and to a lesser extent, precancerous lesions, shed abnormal cells into the stool. Cancers and precancerous lesions (polyps) that are ulcerated or rubbed by passing stool also may shed blood into the stool, which can be identified by a hemoglobin assay.

### C. **Microbiology Test:-**

Parasitic diseases such as ascariasis, hookworm, strongyloidiasis and whipworm can be diagnosed by examining stools under a microscope for the presence of worm larvae or eggs. Some bacterial diseases can be detected with a stool culture. Toxins from bacteria such as *Clostridium difficile* ("C. diff.") can also be identified. Viruses such as rotavirus can also be found in stools.

### D. **Chemical Test:-**

A fecal pH test may be used to determine lactose intolerance or the presence of an infection. Steatorrhea can be diagnosed using a fecal fat test, which checks for the malabsorption of fat.

## 2. **ABDOMINAL ULTRASONOGRAPHY:**

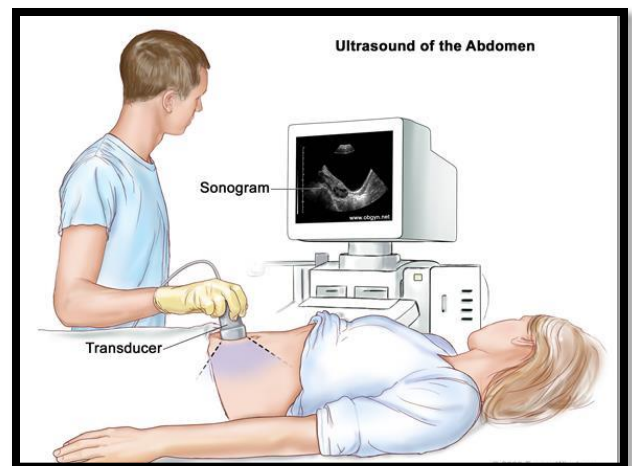
**Abdominal ultrasonography** (also called **abdominal ultrasound imaging** or **abdominal sonography**) is a form of medical ultrasonography (medical application of ultrasound technology) to

visualise abdominal anatomical structures. It uses transmission and reflection of ultrasound waves to visualise internal organs through the abdominal wall (with the help of gel, which helps transmission of the sound waves). For this reason, the procedure is also called a **transabdominal ultrasound**, in contrast to endoscopic ultrasound, the latter combining ultrasound with endoscopy through visualize internal structures from within hollow organs.

Abdominal ultrasound can be used to diagnose abnormalities in various internal organs, such as the kidneys,

liver, gallbladder, pancreas, spleen and abdominal

aorta. If Doppler ultrasonography is added, the blood flow inside blood vessels can be evaluated as well (for example, to look for renal artery stenosis).



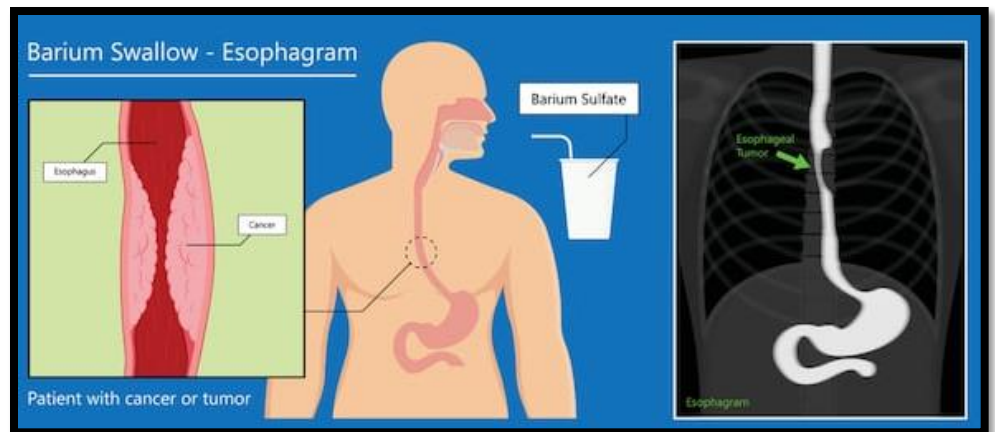
### 3. **IMAGING STUDIES:**

Numerous minimally invasive and noninvasive imaging studies, including x-ray and contrast studies, computed tomography (CT), three dimensional CT, magnetic resonance imaging (MRI), positron emission tomography (PET) are available today.

#### a. **Upper GI Tract Study:-**

An upper GI study delineates the entire GI tract after the introduction of a contrast agent. A radiopaque liquid (barium sulfate) is commonly used. A barium swallow is a test that may be used to determine the cause of painful swallowing, difficulty with swallowing, abdominal pain, bloodstained vomit, or unexplained weight loss.

Barium sulfate is a metallic compound that shows up on X-rays and is used to help see abnormalities in the esophagus and stomach. When taking the test, you drink a preparation containing this solution. The X-rays track its path through your digestive system.

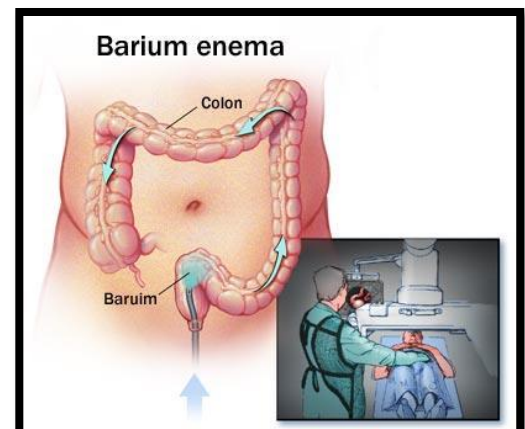


These problems can be detected with a barium swallow:

- Narrowing or irritation of the esophagus (for example, Schatzki's ring)
- Disorders of swallowing (dysphagia - difficulty swallowing), spasms of the esophagus or pharynx
- Hiatal hernia (an internal defect that causes the stomach to slide partially into the chest)
- Abnormally enlarged veins in the esophagus (varices) that cause bleeding
- Ulcers
- Tumors
- Polyps (growths that are usually not cancerous, but develop into cancer)
- Gastroesophageal reflux disease (GERD)

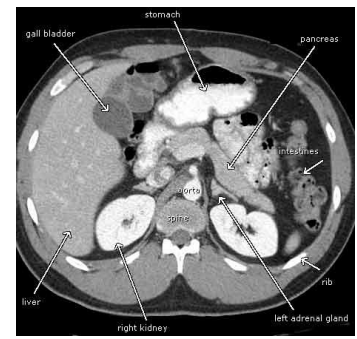
#### b. **Lower GI Study:-**

Visualization of the lower GI tract is obtained after rectal installation of barium. The barium enema can be used to detect the presence of polyps, tumors or other lesions of the large intestine and demonstrate any anatomic abnormalities or malfunctioning of the bowel. The procedure usually takes 20 to 30 minutes during which time x-ray images are obtained.



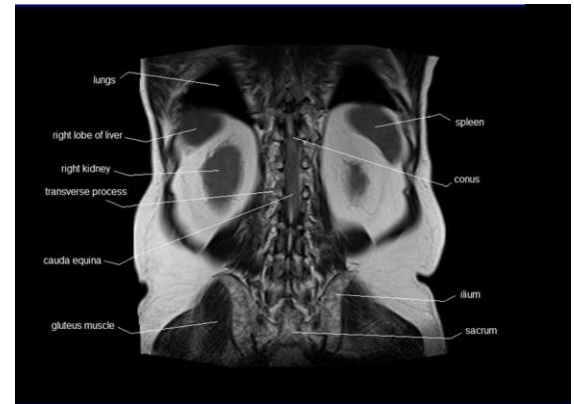
### c. Computed Tomography (CT):-

A CT scan, or computed tomography scan is a medical imaging procedure that uses computer-processed combinations of many X-ray measurements taken from different angles to produce cross-sectional images of specific areas of a scanned object, allowing the user to see inside the object without cutting.



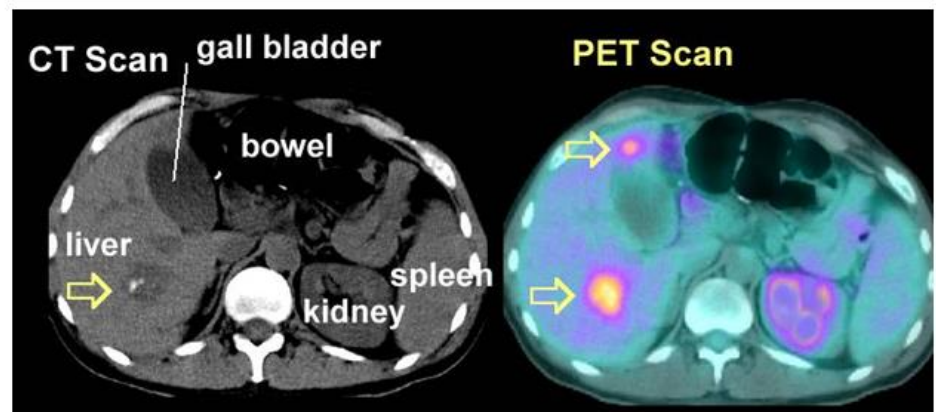
### d. Magnetic Resonance Imaging (MRI):-

MRI is used in gastroenterology to supplement ultrasonography and CT. This noninvasive technique uses magnetic fields and radio waves to produce an image of the area being studied. The use of oral contrast agents to enhance the images has increased the application of this technique for the diagnosis of GI diseases. It is useful in evaluating abdominal soft tissues as well as blood vessels, abscess, fistulas, neoplasms, and other sources of bleeding.



### e. PET Scan:

A positron emission tomography (PET) scan is an imaging test that helps reveal how your tissues and organs are functioning. A PET scan uses a radioactive drug (tracer) to show this activity. This scan can sometimes detect disease before it shows up on other imaging tests.



The tracer may be injected, swallowed or inhaled, depending on which organ or tissue is being studied. The tracer collects in areas of your body that have higher levels of chemical activity, which often correspond to areas of disease. On a PET scan, these areas show up as bright spots (Hot spots).

A PET scan is useful in revealing or evaluating several conditions, including many cancers, heart disease and brain disorders. Often, PET images are combined with CT or MRI scans to create special views.

## 4. ENDOSCOPIC STUDIES:

Endoscopic procedures used in GI tract assessment include fibroscopy/ esophagogastroduodenoscopy (EGD), small bowel enteroscopy, colonoscopy, sigmoidoscopy, proctoscopy, anoscopy and endoscopy through an ostomy.

### a. Upper Gastrointestinal Fibroscopy/ Esophagogastroduodenoscopy (EGD):-

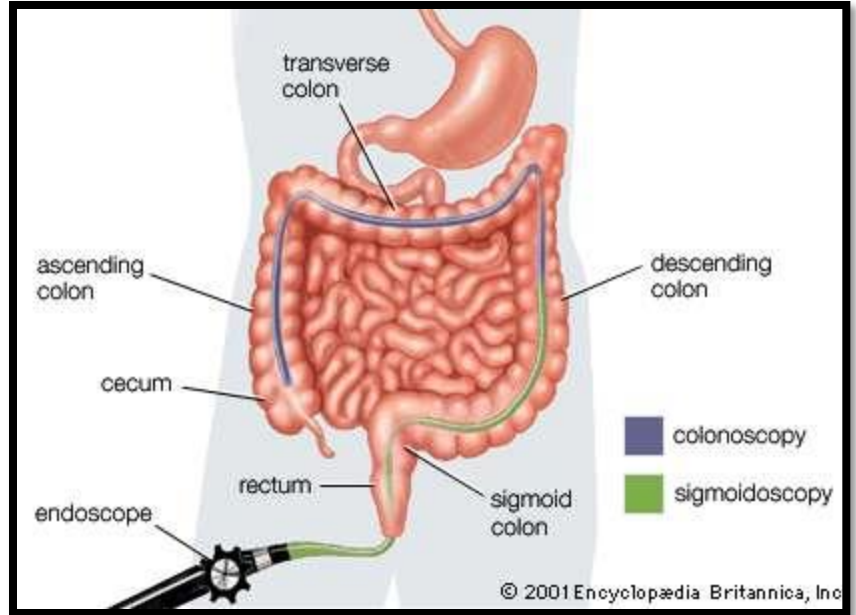
Fibroscopy of the upper GI tract allows direct visualization of the esophageal, gastric and duodenal mucosa through a lighted endoscope (Gastroscope). EGD is especially valuable when esophageal, gastric or

duodenal abnormalities or inflammatory or infectious process are suspected. This procedure also can be used to evaluate esophageal and gastric motility and to collect secretions and specimens for further analysis. Side viewing flexible scopes are used to visualize the common bile duct and hepatic ducts through the ampulla of Vater in the duodenum. This process is called **endoscopic retrograde cholangio pancreatography (ERCP)**, uses endoscopic in combination with x-ray techniques to view the ductal structures of the biliary tract.

**b. Colonoscopy and Sigmoidoscopy:-**

**Colonoscopy** the endoscopic examination of the large bowel and the distal part of the small bowel with a CCD camera or a fiber optic camera on a flexible tube passed through the anus. It can provide a visual diagnosis (e.g., ulceration, polyps) and grants the opportunity for biopsy or removal of suspected colorectal cancer lesions.

Colonoscopy can remove polyps smaller than one millimeter. Once polyps are removed, they can be studied with the aid of a microscope to determine if they are precancerous or not. It can take up to 15 years for a polyp to turn cancerous.



Colonoscopy is similar to **sigmoidoscopy**—the difference being related to which parts of the colon each can examine. A colonoscopy allows an examination of the entire colon (1200–1500 mm in length). A sigmoidoscopy allows an examination of the distal portion (about 600 mm) of the colon, which may be sufficient because benefits to cancer survival of colonoscopy have been limited to the detection of lesions in the distal portion of the colon.

**c. Anoscopy, Proctoscopy:-**

**Proctoscopy** is a common medical procedure in which an instrument called a proctoscope (also known as a **rectoscope**, although the latter may be a bit longer) is used to examine the anal cavity, rectum, or sigmoid colon. A proctoscope is a short, straight, rigid, hollow metal tube, and usually has a small light bulb mounted at the end. It is approximately 5 inches or 15 cm long, while a rectoscope is approximately 10 inches or 25 cm long.<sup>[1]</sup> During proctoscopy, the proctoscope is lubricated and inserted into the rectum, and then the obturator is removed, allowing an unobstructed view of the interior of the rectal cavity. This procedure is normally done to inspect for hemorrhoids or rectal polyps and might be mildly uncomfortable as the proctoscope is inserted further into the rectum. Modern fibre-optic proctoscopes allow more extensive observation with less discomfort.

