

EXAMPLES OF DIAGNOSTIC TESTS USED IN THE DIAGNOSIS OF GASTROINTESTINAL DISORDERS

Diagnostic Procedure	Method and Result	Representative Uses
UPPER GI (esophagus, stomach, and duodenum)		
Esophagogastroduodenoscopy, esophagoscopy, gastroscopy	Fiber-optic endoscope is inserted into oral cavity and further into esophagus, stomach, and duodenum to permit visualization of lining and lumen of one area.	Detects tumors, ulcerations, polyps, esophageal varices, inflammation, and obstructions; provides biopsy of tissues in upper GI tract
Barium swallow	Series of X-rays of esophagus is taken after barium sulfate is ingested to increase contrast of structures; normally done with upper GI series	Determines abnormalities of pharynx and esophagus, especially to determine cause of dysphagia; identifies tumors, hiatal hernia, and diverticuli
Upper GI series	Series of X-rays of stomach and duodenum is taken after barium sulfate is ingested to increase contrast.	Determines cause of epigastric pain; detects ulcers, polyps, gastritis, tumors, and inflammation in upper GI tract
Esophageal function studies Acid reflux Acid clearing	Slender tube, through which dilute hydrochloric acid solution is passed, is inserted from oral cavity into stomach. A pH probe is placed in the esophagus. The pH at the level of the gastroesophageal sphincter is measured periodically to detect acid reflux. Hydrochloric acid solution is then given again, and patient swallows until the acid is cleared from esophagus.	Detects gastroesophageal reflux. Acid clearing normally occurs in less than 10 swallows. If more are required, patient may have severe esophagitis from chronic gastric acid reflux (gastroesophageal reflux disease or GERD).
Gastric analysis Basal gastric secretion	When patient is fasting, tube is inserted into nose and routed along esophagus to sample stomach contents. Acid levels are periodically monitored through this <i>nasogastric (NG) tube</i> to determine basal levels of gastric secretion.	Identifies cause of ulceration of gastric lining; may be increased acid levels. If no increased acidity with ulceration is present, a malignancy may exist.
Gastric acid stimulation	Chemical stimulus is administered and acid levels are monitored to determine results of gastric acid stimulation test.	
Arteriography (celiac and mesenteric)	Catheter is inserted into femoral artery and threaded to celiac trunk or a mesenteric artery, where contrast medium is injected; X-ray films are then taken.	Determines cause of bleeding in gastrointestinal tract or blockage of blood supply
LOWER GI (colon)		
Barium enema	Barium sulfate enema is administered to provide contrast in intestinal lumen, and X-ray film series is taken.	Determines cause of abdominal pain and bloody stools; detects tumors and obstructions of bowel; identifies polyps and diverticula
Sigmoidoscopy Colonoscopy	Fiber-optic tube is inserted into rectum for viewing of anus, rectum, and sigmoid colon; colonoscopy allows viewing of the entire large intestine to cecum; biopsy of intestinal tissue can be performed.	Detects tumors, polyps, and ulcerations of intestinal lining. Polyps are removed with scope.
LIVER, PANCREAS, GALLBLADDER		
X-ray of abdomen	Radiodense tissues appear in white on negative film image.	Detects abdominal masses and obstructions
Computerized tomography of liver, pancreas, gallbladder	Cross-sectional radiation is applied to provide three-dimensional images of liver, gallbladder, and pancreas	Identifies tumors, pancreatitis (acute, chronic), hepatic cysts and abscesses, and biliary calculi (stones); determines cause of jaundice
Ultrasonography of liver, pancreas, gallbladder	Liver, pancreas, and gallbladder are examined by means of sound waves emitted by transducer placed on abdomen. Sound waves deflect off dense structures and produce echoes, which are amplified and graphically recorded.	Detects polyps, tumors, abscesses, hepatic cysts, and gallstones; determines cause of jaundice
Cholangiography Intravenous or percutaneous	Intravenously administered dye is concentrated in liver and released into bile duct; X-ray films are taken. Percutaneous method involves insertion of needle with catheter into bile duct, using ultrasonography for guidance; dye is then administered through catheter.	Identifies biliary calculi obstructing ducts

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Liver Biopsy	Needle is inserted through small skin incision and into liver; liver tissue is removed by excision or aspiration	Liver tissue is examined for evidence of cirrhosis, hepatitis, tumors, and granuloma.
Endoscopic retrograde cholangiopancreatography (ERCP)	Duodenoscope (fiber-optic tube) is inserted into oral cavity and threaded through stomach to the duodenum; through scope, catheter is inserted into duodenal ampulla for dye injection; X-rays are then taken to visualize the bile duct system.	Detects calculi, tumors, or cysts of pancreatic or bile ducts; determines presence of pancreatic tumor

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