Common Tests To Diagnose Digestive Motility Disorders

There are several tests which may be performed to help diagnose digestive disorders/diseases. The following is a list of some of the common methods used. Please note that no assessment method is foolproof, and your physician should evaluate results in conjunction with your symptoms and medical history. Test results can also vary from day to day and can be affected by many factors; results are a snapshot of a moment in time and must be viewed in this light:

24-Hour Ambulatory pH Monitoring: This test is used to monitor reflux and help diagnose GERD. A tube is passed through the nose and into the esophagus and remains there for 24-hours, as the patient returns home and is free to pursue a normal routine. Information regarding the frequency of reflux and the length of time it remains in the esophagus is then evaluated. (See https://www.medicinenet.com/esophageal_ph_monitoring/article.htm#how_is_esophageal_ph_monitoring_used for further details.)

Anorectal Manometry: This test can help determine the causes of fecal incontinence, constipation, or other disorders involving the rectum and/or anal sphincter. A small tube is passed through the anus, the anal sphincter, and the rectum, where a tiny balloon is then gradually inflated. As the muscles squeeze, a machine measures the pressure to help determine areas of muscle or nerve weakness. (For more details, see https://www.hopkinsmedicine.org/gastroenterology_hepatology/_forms/patient_info/Anorectal_Manometry.pdf.)

Antroduodenal Manometry: This is the test where a catheter is placed through the nose and then passed down the throat and into the stomach and small intestines to record muscle activity and muscle contractions. Abnormal patterns may indicate a motility disorder. (Additional information can be found at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3714419/.)

Balloon Expulsion Test: In this test, in which the patient will sometimes be instructed to undergo an enema beforehand, a small lubricated balloon is inserted into the rectum and gradually filled with water. The patient is then sent to a private room when he/she feels the need to defecate and the time necessary to expel the balloon is noted. Longer than normal expulsion times may indicate a defecatory problem (such as pelvic floor dysfunction). (For further discussion, see http://www.jnmjournal.org/journal/view.html?doi=10.5056/jnm14068.)

Bernstein (Acid Perfusion) Test: This test is used to assess acid reflux/GERD. A thin tube is passed through the nose and into the esophagus, where an acidic solution is introduced to assess irritation. This test has largely been replaced by the 24-hour ambulatory pH monitoring test. (See https://www.saintlukeskc.org/health-library/bernstein-test for more information and sample procedures.)

Biopsy: A biopsy is the removal of tissues or cells to determine abnormalities and signs of disease, as assessed by a pathologist. Procedures vary in accordance with the difficulty of accessing the site to be biopsied – from a simple sample extraction performed in a doctor's office to a quite complex surgical extraction (as in organ biopsies) which must be performed in a hospital setting. (See https://www.radiologyinfo.org/en/info.cfm?pg=biopgen for additional information.)

Colonic Barostat Testing: Colonic Barostat Testing is used to assess the muscle tone and contractions of the colon and evaluate for signs of dysmotility. A small bag is placed into the colon and gradually filled with air, as pressure and volume levels are monitored for changes and abnormalities. (For additional details, see https://www.sciencedirect.com/topics/medicine-and-dentistry/barostat.)

Colonoscopy: A colonoscopy is performed to assess the large intestines and determine abnormalities. Before the procedure, the patient will be instructed to cleanse the colon by ingesting laxatives (frequently in liquid form). During the procedure, the patient will be mildly sedated while a flexible scope with a small camera is inserted into the rectum and throughout the colon. Air is pumped in through the tube to gradually inflate the colon, and images are sent to a monitor for evaluation. If polyps are present, they may be removed, and tissue samples may also be taken if abnormalities are present. (For further information, see https://www.niddk.nih.gov/health-information/diagnostic-tests/colonoscopy.)

Computerized Tomography Enterography (CT Scan): This is an imaging test which uses intravenous contrast to get a better view of the small intestine and other abdominal tissues and structures to help determine such issues as tumors, blockages, inflammation, and sources of bleeding. The patient drinks a liquid, is administered the contrast, and then undergoes a series of scans which produce images (very much like x-rays). (See https://www.radiologyinfo.org/en/info.cfm?pg=ctenterography for further details.)

Defecography (Proctography): This test involves a series of x-rays performed as the patient defecates. A barium paste (which prompts the need to empty the bowels) is inserted into the rectum, and x-rays are then taken during various stages of defecation to help determine how well the pelvic floor muscles are functioning. (For sample instructions and additional information, see https://www.uwhealth.org/healthfacts/gi/4875.pdf.)

Digital Rectal Exam: A Digital Rectal Exam is frequently performed to check for causes of blood in the stool, hemorrhoids, prostate health, pelvic pain, and/or pelvic cancer. During the exam, the doctor inserts a gloved, lubricated finger into the rectum and manually searches for abnormalities. (See https://www.health.harvard.edu/bladder-and-bowel/digital-rectal-exam for more information.)

Electrogastrogram (EGG): For this test, electrodes are placed on the abdomen and stomach to monitor and record electrical activity or rhythm in the stomach. An irregular pattern may indicate improper function of the stomach muscles. (For additional information, see https://www.medicinenet.com/electrogastrogram/index.htm.)

Endoscopic Retrograde Cholangiopancreatography (ERCP): This test is used primarily to assess problems with the pancreas, bile ducts, liver, and gallbladder. The patient is sedated, and an endoscope is inserted through the mouth and into the upper small intestine, where a dye is then injected through the endoscopic tube to provide for easier viewing. Small stones can be removed and tissues samples for biopsy might be taken as well. (For further details, see https://www.hopkinsmedicine.org/healthlibrary/test_procedures/gastroenterology/endoscopic_retrograde_cholangiopancreatography_ercp_92,P07716.)

Esophageal Manometry: This test is typically used when one is experiencing difficulties or pain when swallowing to determine whether the esophageal sphincter and muscles are working properly and are moving food/liquids down into the stomach. It is similar to the antroduodenal manometry in that a tube is passed through the nose and into the stomach. A machine records the pressure and muscle contraction strength/patterns at various points to assess proper functioning. (See https://www.mayoclinic.org/tests-procedures/esophageal-manometry/about/pac-20394000 for additional information.)

Flexible Sigmoidoscopy (Proctosigmoidoscopy): A sigmoidoscopy is similar to a colonoscopy except that it is performed to evaluate the lower colon and rectum only and sedation is generally not necessary. Preparation is much the same as for a colonoscopy (laxatives for cleansing). During the test, a flexible tube with a small camera is inserted into the anus and through the rectum and lower colon where air is pumped in through the tube to gradually inflate the colon, and images are sent to a monitor for evaluation. If polyps are present, they may be removed, and tissue samples may also be taken if abnormalities are present. (For further information, see https://www.niddk.nih.gov/health-information/diagnostic-tests/flexible-sigmoidoscopy.)

Gastric Emptying Breath Test (GEBT): This test measures the rate at which food moves from the stomach into the small intestines. The patient fasts overnight and is then given a non-radioactive food containing a specific type of carbon which can be measured through a series of breath samples given at regular intervals. (For additional information, see https://www.uspharmacist.com/article/diagnostic-spotlight-gastric-emptying-breath-test.)

***Gastric Emptying Study/Scintigraphy (GES)*:** This test is considered the "gold standard" by which to diagnose gastroparesis. The patient ingests a small amount of radioactive material (that has been added to foods and/or liquids) and then a nuclear medicine technician, using a gamma camera, traces that material as it passes through the stomach and enters the intestines. Images of the substance's progression are taken at regular intervals. (See http://motilitysociety.org/wp-content/uploads/2016/11/Gastric-Emptying-Patient-Information-AMS-8-15-2005.pdf for additional information regarding preparation for the test; http://snmmi.files.cms-plus.com/docs/Guideline%20for%20Adult%20Gastric%20Emptying.pdf for information regarding preferred procedure and methods of testing.)

Hydrogen Breath Test: This test is one method of determining overgrowth of harmful bacteria (SIBO/SBBO) as well as problems with digestion and absorption. The patient fasts overnight and is then given a non-radioactive food containing a specific type of carbon which can be measured through a series of breath samples given at regular intervals. (For more information, see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4175689/.)

Magnetic Resonance Imaging (MRI): This is an imaging test which uses magnetic fields and radio waves rather than radiation to capture pictures of internal organs. The patient lies on a table and is surrounded by a tunnel-like rounded "tube" of sorts where the images are taken (sometimes after a contrast material is injected). The procedure itself is painless, but those with claustrophobia often find it difficult to be in a tightly enclosed space. The test is helpful in determining inflammation, blockages, and abnormalities of the organs and blood vessels. (See https://www.radiologyinfo.org/en/info.cfm?pg=bodymr for further information.)

"Sitz"/Radio-opaque Markers Test: This test is sometimes used to assess colonic motility/transit times. The patient ingests one or more capsules containing markers (rings), and as the markers pass through the colon, x-rays are taken to determine their progress. Delayed passage out of the system may indicate a problem in with colonic motility. It can also indicate possible mechanical obstructions in places where markers are retained. (Additional information can be found at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3271260/.)

Stool Sample: This test is used to assess bacteria, viruses, or parasites in stool. The patient is generally sent home to collect a small amount of stool in a container which is then brought back to the lab for testing. (See https://www.labcorp.com/help/patient-test-info/stool-culture for additional information and sample instructions.)

Tensilon (Edrophonium) Provocative Test: This test is used to help diagnose myasthenia gravis. Tensilon (Edrophonium) is delivered through a series of injections (via IV), and the patient is monitored for abnormal reactions during a number of movement tests which gauge muscle strength. (For more information, see https://www.healthline.com/health/tensilon-test.)

Ultrasound: An ultrasound uses high-frequency sound waves to capture images of internal organs. For this exam, a lubricant gel is placed on the skin and a wand glides through the gel to capture images. In some cases (as with esophageal exams), a small form of this device is placed on an endoscope and maneuvered down the throat or inserted into the vagina (vaginal ultrasonography) or rectum (anorectal ultrasonography). (See https://www.radiologyinfo.org/en/info.cfm?pg=genus for further details.)

Upper Gastrointestinal Endoscopy: This procedure is used to get a visual of your esophagus, stomach, and duodenum. Once sedated, the doctor places a long, thin, flexible tube with a camera attached which is maneuvered down the esophagus and into the stomach. The doctor is able to get a more accurate picture of inflammation, stomach contractions, blockages, bezoars, and/or undigested food. (See https://www.niddk.nih.gov/health-information/diagnostic-tests/upper-gi-endoscopy for additional information.)

Upper GI Series/Barium: For this procedure, the patient is instructed to drink a chalky liquid (Barium) and then must undergo a series of x-rays. This can sometimes highlight undigested food, blockages, and tumors. (For additional information, see https://www.niddk.nih.gov/health-information/diagnostic-tests/upper-gi-series.)

Wireless Capsule Monitoring/Smart Pill: This is an ingestible electronic device in capsule form which measures pressure, pH level, and temperature as it travels through the digestive tract. This information is then sent to a receiver, downloaded, and analyzed by a technician. Doctors use this information to evaluate progress through the digestive tract. (Please be aware that this test is not available in all locations and is not covered by some insurance companies. For additional information, see http://www.givenimaging.com/en-int/Innovative-Solutions/Motility/SmartPill/Resources-Patients/Documents/SmartPill-Patient-FAQs.pdf.)

X-ray (Radiography): X-rays use electromagnetic waves to capture black and white images of the inside of the body. They can help diagnose fractures and broken bones and obstructions and are frequently used to help obtain a visual of internal organs and tissues. During the test, the patient will stand or lie while a machine takes images of the appropriate body area. In some cases, a liquid (such as barium) must be swallowed or given as an enema or a contrast die may be injected through a vein to produce a better image. (For additional information, see https://www.healthline.com/health/x-ray.)

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