Upper GI Series

National Digestive Diseases Information Clearinghouse

U.S. Department of Health and Human Services

NATIONAL INSTITUTES OF HEALTH

NIDDK
NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES

What is an upper gastrointestinal (GI) series?

An upper GI series uses x rays to help diagnose problems of the upper GI tract, which includes the esophagus, stomach, and duodenum. The duodenum is the first part of the small intestine.

What problems can an upper GI series detect?

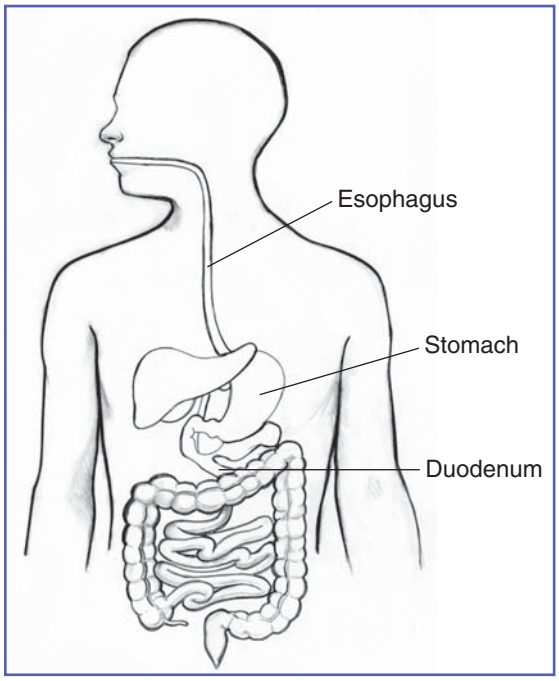
An upper GI series can help detect

- ulcers
- abnormal growths
- scars or strictures—narrowings of the GI tract
- hiatal hernia
- diverticula—bulges in the wall of the esophagus or intestine
- esophageal varices—enlarged veins in the esophagus

When is an upper GI series used?

An upper GI series can be used to help determine the cause of

- abdominal pain
- nausea
- vomiting
- swallowing difficulties



An upper GI series uses x rays to help diagnose problems of the esophagus, stomach, and duodenum.

- gastroesophageal reflux—a condition in which food and digestive juices rise from the stomach into the esophagus
- unexplained weight loss

How to Prepare for an Upper GI Series

The upper GI tract must be empty prior to an upper GI series. Generally, no eating or drinking is allowed for 8 hours before the procedure. Smoking and chewing gum are also prohibited during this time.

Patients should tell their doctor about all health conditions they have—especially allergies to medications or foods—and about all medications they are taking.

Women should let their doctor know if they are pregnant. Developing fetuses are particularly sensitive to x rays. Special precautions can be taken to minimize exposure, or the doctor may suggest an alternate procedure such as upper GI endoscopy.

How is an upper GI series performed?

An upper GI series is conducted by a radiology technologist or a radiologist—a doctor who specializes in x-ray imaging—at a hospital or outpatient center.

While sitting or standing in front of an x-ray machine, the patient drinks barium liquid, which is often white and has a chalky consistency and taste. The barium liquid coats the lining of the upper GI tract and makes signs of disease show up more clearly on x rays. X-ray video, called fluoroscopy, is used to view the barium liquid moving through the esophagus, stomach, and duodenum.

Additional x rays and fluoroscopy are performed while the patient lies on an x-ray table. To fully coat the upper GI tract with barium liquid, the technologist or radiologist may press on the abdomen or ask the patient to change position. Patients hold still in various positions, allowing the technologist or radiologist to take x rays of the upper GI tract at different angles. If a technologist conducts the upper GI series, a radiologist will later examine the images to look for problems.

What is a double contrast study?

The double contrast study gets its name from the combination of air and liquid barium working together to create a more detailed view of the stomach lining. The patient swallows gas-forming crystals, which are activated when they mix with the barium liquid. The gas expands the barium-coated stomach, exposing finer details of the stomach lining, and additional x rays are taken.

Recovery from an Upper GI Series

Patients may experience bloating and nausea for a short time after an upper GI series. Not eating before the test and the test itself may cause one to feel tired. For several days afterward, barium liquid in the GI tract causes stools to be white or light colored. Unless otherwise directed, patients may immediately resume their normal diet once they leave the hospital or outpatient center.

What are the risks associated with an upper GI series?

Mild constipation from the barium liquid is the most common complication of an upper GI series. Rarely, barium liquid causes bowel obstruction, a life-threatening condition that blocks the intestines. Drinking plenty of liquids after an upper GI series flushes out the barium and helps reduce the risks of constipation and bowel obstruction.

Although infrequent, barium can cause an allergic reaction, which is treated with antihistamines. Some barium liquids contain flavorings, which may also cause an allergic reaction.

The risk of radiation-related damage to cells or tissues from an upper GI series is low. People who have recently undergone other x-ray tests should talk with their doctor about potential risks.

Patients who experience any of the following rare symptoms should contact their doctor immediately:

- severe abdominal pain
- failure to have a bowel movement within 2 days after the procedure
- inability to pass gas
- fever

Points to Remember

- An upper GI series uses x rays to help diagnose problems of the upper GI tract, which includes the esophagus, stomach, and duodenum.
- The upper GI tract must be empty prior to an upper GI series. Generally, no eating or drinking is allowed for 8 hours before the procedure. Smoking and chewing gum are also prohibited during this time.
- An upper GI series is conducted by a radiology technologist or a radiologist at a hospital or outpatient center.
- During the procedure, the patient drinks barium liquid and x-ray pictures and x-ray video, called fluoroscopy, are taken.
- After the procedure, patients may experience bloating and nausea and feel tired.
- Possible risks of an upper GI series include mild constipation, bowel obstruction, an allergic reaction to barium, and cell and tissue damage from radiation exposure.

Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports basic and clinical research into many digestive disorders.

Participants in clinical trials can play a more active role in their own health care, gain access to new research treatments before they are widely available, and help others by contributing to medical research. For information about current studies, visit *www.ClinicalTrials.gov*.

For More Information

Fact sheets about other diagnostic tests are available from the National Digestive Diseases Information Clearinghouse at *www.digestive.niddk.nih.gov,* including

- *Colonoscopy*
- *ERCP (Endoscopic Retrograde Cholangiopancreatography)*
- *Flexible Sigmoidoscopy*
- *Liver Biopsy*
- *Lower GI Series*
- *Upper GI Endoscopy*
- *Virtual Colonoscopy*

American College of Gastroenterology
P.O. Box 342260
Bethesda, MD 20827–2260
Phone: 301–263–9000
Fax: 301–263–9025
Email: info@acg.gi.org
Internet: www.acg.gi.org

American Gastroenterological Association
4930 Del Ray Avenue
Bethesda, MD 20814
Phone: 301–654–2055
Fax: 301–654–5920
Email: member@gastro.org
Internet: www.gastro.org

Acknowledgments

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This publication was reviewed by M. Brian Fennerty, M.D., Oregon Health and Science University.

You may also find additional information about this topic by visiting MedlinePlus at *www.medlineplus.gov.*

This publication may contain information about medications. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1–888–INFO–FDA (1–888–463–6332) or visit *www.fda.gov*. Consult your doctor for more information.

National Digestive Diseases Information Clearinghouse

2 Information Way
Bethesda, MD 20892–3570
Phone: 1–800–891–5389
TTY: 1–866–569–1162
Fax: 703–738–4929
Email: nddic@info.niddk.nih.gov
Internet: www.digestive.niddk.nih.gov

The National Digestive Diseases Information Clearinghouse (NDDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1980, the Clearinghouse provides information about digestive diseases to people with digestive disorders and to their families, health care professionals, and the public. The NDDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about digestive diseases.

This publication is available at *www.digestive.niddk.nih.gov.*

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

NIH Publication No. 10–4335
December 2009