
Barium tests

Summary

- Barium tests are used to examine the digestive tract using a white powder called barium sulphate. This powder can be seen on x-rays.
 - For a barium swallow or barium meal, the barium sulphate powder is mixed with water (and sometimes flavouring) then swallowed. X-rays are taken as you swallow the mixture.
 - For a barium enema, the powder is mixed with water and introduced into the bowel through a tube inserted into the rectum. X-ray images are taken during the examination.
 - The radiologist looks for problems, including areas of narrowing, ulceration or damage to the digestive tract.
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The barium swallow, barium meal and barium enema are tests that help with diagnosing problems of the digestive system.

Barium is a white, 'radio-opaque' powder that is visible with x-rays. It is used to demonstrate the structure and the function of the organs that make up the digestive tract, such as the oesophagus, the stomach, duodenum, small bowel and large bowel.

Barium tests allow a radiologist (a medical practitioner who specialises in making a diagnosis from radiology examinations) to evaluate a wide range of problems that may be the cause of your symptoms including: areas of reflux, narrowing or ulceration to the digestive tract.

Other tests such as endoscopy or computerised tomography (CT) scan are now more commonly used than the barium test to examine the digestive tract.

Barium swallows and enemas

Barium (barium sulphate) powder mixed with water can be swallowed (flavouring may be added) or introduced to the bowel as an enema through a tube inserted into the rectum. The mixture passes quickly into your digestive tract, and its progress is followed by taking x-rays over different periods of time, depending on which part of your digestive tract the doctor wants to observe.

The images produced are created using a special type of x-ray machine called a fluoroscope, which projects the images onto a video screen.

A barium swallow is used to help diagnose a problem with swallowing or reflux. The examination allows the radiologist to observe and evaluate your swallowing motion. It is also used to examine the structure of your oesophagus.

The barium meal is used to evaluate and diagnose problems with the stomach and duodenum, and the barium enema is used to evaluate and diagnose problems affecting the large bowel.

Problems that may be diagnosed with barium tests

By reviewing the images taken during the barium swallow, meal or enema tests, a radiologist can evaluate and diagnose a wide range of problems which may include:

- abnormal shape of the digestive tract
- areas where the digestive tract has become narrow
- ulceration
- damage to the digestive tract lining.

Before having a barium test

If you are going to have a barium test, before the procedure, be sure to discuss the following with your referring doctor or with the radiology staff:

- **bowel habits** – if you are constipated, you will be given a laxative the night before the barium meal. For the enema, you will be given a specific diet and laxatives to ensure the bowel is clear. You will probably need to take the laxatives for two days before the test
- **eating** – you are not allowed to eat or drink anything for eight hours before the test. The radiologist can have difficulty making an accurate evaluation of the images if there are particles of food in the digestive tract
- **health conditions** – at the time of booking you will need to tell the radiology staff if you have insulin dependent diabetes so that you can decide together the best time for you to fast and have the test
- **pregnancy** – pregnant women should not have these tests.

Barium test procedure

When doing a barium test you may experience cramping. This can be uncomfortable and can make it difficult for the radiologist to accurately evaluate the images.

To prevent cramping, you may be given an injection of a medication that will help relax the muscles of your digestive tract. This medication may be given directly into a vein or into your muscles. Before giving you the medication, the radiologist may ask you if you have glaucoma. This medication is not recommended for people with glaucoma. If you have this condition an alternative medication may be used.

During the examination, you will be asked by the radiographer to stand or lie in a number of different positions while images are being taken. The x-ray machine is linked to a television monitor and photographs or video footage will be taken to record the examination. Generally, the procedure takes around 20 minutes.

For some examinations, the radiologist may require images to be taken over a period of a few hours (three to six hours) to observe the barium as it passes along the small or large bowel.

Barium swallow and barium meal – procedure

During a barium swallow, you will be asked to drink the barium so the radiologist can observe your swallowing and evaluate the structure of your oesophagus. This may include tilting your head up and down as you swallow so that images can be taken of how your oesophagus works when your head is in different positions.

The barium meal is used to evaluate your stomach. The test may be combined as a barium swallow and barium meal. The radiologist will take images of both your oesophagus and your stomach.

During a barium meal you will be asked to drink a mixture that is fizzy, or two substances. These drinks contain ingredients that cause gas to be produced, which expands your stomach and the duodenum. When the gas is combined with the barium it creates a coating on the inside of your stomach and allows the radiologist to evaluate the stomach lining. Many people feel the urge to burp during this part of the examination.

Barium enema – procedure

During a barium enema, the barium sulphate is introduced into your bowel through a tube inserted into your rectum. The fluid is moved around your large bowel while the radiologist watches using x-ray fluoroscopy.

Some barium may be drained and then replaced with air by the radiologist. This is so the whole of the large bowel can be viewed, and any changes caused by your condition can be seen. Some people find this part of the examination a little difficult or embarrassing, as you may experience cramps or flatulence (farting).

After a barium test

After a test involving barium, you can expect to experience:

- constipation
- light-coloured faeces (poo)
- flatulence (depending on the examination)
- blurred vision (for an hour or so), if you have been given a muscle relaxant. Do not drive until your vision

returns to normal.

Possible complications of barium tests

Barium examinations are safe tests, but complications can sometimes occur. These may include:

- If a section of the digestive tract has an undiagnosed break or split (perforation), the barium may leak into the abdominal cavity.
- If the bowel is obstructed, the barium can become impacted.
- The barium can lodge in the appendix and cause appendicitis.
- There may be side effects (such as blurred vision) from the medications used during the test.
- It is possible to accidentally breathe in the barium meal instead of swallowing it (this is very rare).

Self-care after a barium test

Be advised by your referring doctor or the radiology staff, but general suggestions include:

- Barium can cause constipation, so it is best to drink plenty of fluids for at least one full day following the test.
- Eat more fruit and other high-fibre foods than usual for the next day or two.
- See your referring doctor if you haven't had a bowel movement within three days of the examination.

Long-term outlook after a barium test

You will need to make another appointment with your doctor to discuss the results of your barium examination. If no abnormality or cause for your symptoms is found, you may require further tests. Treatment depends on the diagnosis.

Other tests for examining the digestive tract

Other tests are now more commonly used than the barium test to examine the digestive tract. These include:

- **flexible endoscopy** – an endoscope is a slender tube with a lens at one end and a telescope at the other. This is inserted through an orifice (such as the mouth or anus) or a small incision, and the doctor looks down the telescoped end for a magnified view
- **computed tomography (CT) scan** – the CT scan uses x-rays and digital computer technology to create an image of internal body structures. Nowadays CT can be used to replace an endoscopy – this test is called a virtual colonoscopy.

Where to get help

- Your **GP (doctor)**
- Radiology clinic staff

This page has been produced in consultation with and approved by:

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