

Barium tests

The barium meal, barium swallow and barium enema are tests that help doctors examine the digestive system. Barium is a white, 'radio-opaque' powder that is not transparent to x-rays or other forms of radiation. It is used to show up the organs of the digestive system during x-ray.

Barium tests allow a radiologist to evaluate a wide range of problems, 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 is mixed with water and can be swallowed (flavouring may be added) or introduced 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.

All images are generated using a special type of x-ray machine called a fluoroscope, which projects images onto a video screen.

A barium swallow is used to help diagnose swallowing or reflux problems. It literally allows the doctor to watch your swallowing motion. It is also used to examine your oesophagus. A barium enema is used to diagnose problems affecting your large bowel.

Problems that may be diagnosed with barium tests

By looking at the x-rays, the doctor is able to see a wide range of problems including:

- Abnormal shape of the digestive tract
- Areas where the digestive tract has become narrow
- Ulceration
- Damage to the digestive tract lining.

Medical issues to consider

Before the procedure, you need to discuss a range of issues with your doctor including:

- **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 x-rays will be easier to read if there are no food particles in the digestive tract.
- **Health conditions** – tell your doctor 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.

Test procedure

In many barium tests, you may be given an injection to relax your muscles. This may be given directly into a vein (IV) or into your muscles (IM). This will help with the cramping feeling and provide a better test result. The radiologist may ask you if you have glaucoma, in which case this drug is not recommended and an alternative may be used.

You will be asked by the radiographer to stand or lie in a number of different positions while x-rays are taken. The x-ray machine is linked to a television monitor and photographs or video footage can be taken if necessary. Generally, the procedure takes around 20 minutes.

Sometimes you may need to have follow-up x-rays. In some cases, several x-rays may be required, over three to six hours, in order to examine the small intestine and colon (large bowel).

Barium swallow – procedure

You may be asked to swallow the barium so the doctor can observe your swallowing. You may also be asked to swallow barium with your head tilted (head down) on the x-ray machine to help the doctor understand how your oesophagus works.

In some barium meals, the drink is fizzy because it contains ingredients that cause gas. This gas helps to expand your stomach and duodenum. (You may have to resist the urge to burp.) You may have to swallow other substances to create this gas.

The gas allows the barium to coat the inside of your stomach so the radiologist can get a clear view of the stomach lining.

Barium enema – procedure

The barium sulphate goes into the bowel through a tube inserted into the 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. This can be difficult or embarrassing, as you may experience cramps or flatulence (farting).

After the test

After the procedure, you can expect:

- Constipation
- Light-coloured faeces
- Flatulence (depending on the examination)
- Blurred vision, if you have been given a muscle relaxant – you should not drive until your vision returns to normal.

Possible complications

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 meal 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 drugs used during the test.
- It is possible to accidentally breathe in the barium meal instead of swallowing it (this is very rare).

Taking care of yourself at home

Be advised by your doctor, 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 than usual for the next day or two to help move your bowels.
- See your doctor if you haven't had a bowel motion within three days.

Long-term outlook

You will need to make another appointment with your doctor to discuss the results of your barium examination. A negative result may require further tests if symptoms persist. Treatment depends on the diagnosis.

Other tests

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 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 doctor

Things to remember

Barium tests are used to examine the condition of the digestive tract using a white, 'radio-opaque' powder called barium sulphate.

- For the barium meal, the powder is mixed with water (and sometimes flavouring), swallowed and then x-rays are taken.
- For a barium enema, the powder is mixed with a fluid and introduced through a tube inserted into the rectum.
- The images allow the radiologist to evaluate a wide range of problems, including areas of narrowing, ulceration or damage to the digestive tract.

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

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