Galactography (Ductography)

Galactography uses mammography and an injection of contrast material to create pictures of the inside of the breast's milk ducts. It is most commonly used when a woman has experienced a bloody or clear discharge from the breast nipple but has an otherwise normal mammogram. It's important not to squeeze the nipple prior to the exam as there may only be a small amount of fluid and it is necessary to see where it is coming from to perform the exam.

Tell your doctor about any breast symptoms or problems, prior surgeries, hormone use, medical conditions, and if there's a possibility you are pregnant. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown. Don't wear deodorant, talcum powder or lotion under your arms or on your breasts as these may appear on the mammogram and interfere with correct diagnosis.

What is Galactography (Ductography)?

Galactography is an x-ray (http://www.radiologyinfo.org) examination that uses mammography (http://www.radiologyinfo.org) , a low-dose x-ray system for examining breasts, and a contrast material (http://www.radiologyinfo.org) to obtain pictures, called galactograms, of the inside of the breast's milk ducts (http://www.radiologyinfo.org) .

An x-ray exam helps doctors diagnose and treat medical conditions. It exposes you to a small dose of ionizing radiation (http://www.radiologyinfo.org) to produce pictures of the inside of the body. X-rays are the oldest and most often used form of medical imaging.

The breast is composed primarily of three structures: fat, lobules (http://www.radiologyinfo.org) (that make the milk) and milk ducts (that carry the milk from the lobule to the nipple). While mammography, ultrasound (http://www.radiologyinfo.org) and magnetic resonance imaging (http://www.radiologyinfo.org) (MRI) are excellent ways to image the breast; they do not visualize the inside of the breast's milk ducts to the same degree as galactography.

What are some common uses of the procedure?

The most common use of galactography is to evaluate a woman who has a bloody or clear discharge from her breast nipple and an otherwise normal mammogram.

Galactography is typically NOT called for in women with the following conditions:

- A discharge that is milky, blue-green, green, or gray is usually not a cause for concern, especially if it comes from multiple ducts in the breast.
- A discharge that is from both breasts in a woman who has not had children may indicate a side effect from a drug, or may be related to a pituitary problem located in the brain.

How should I prepare?

Very little preparation is necessary for this procedure. The only requirement is that the nipple not be squeezed prior to the exam, as sometimes there is only a small amount of fluid and it is necessary to see where that fluid is coming from to perform the exam.

Tell your doctor about all the medications you take. List any allergies, especially to iodine contrast materials (http://www.radiologyinfo.org) . Tell your doctor about recent illnesses or other medical conditions.

Always inform your doctor or x-ray technologist (http://www.radiologyinfo.org) if there is any possibility that you are pregnant.

As in mammography, do not wear deodorant, talcum powder or lotion under your arms or on your breasts on the day of the exam. These can appear on the galactogram as calcium spots.

In addition, before the examination you will be asked to remove all jewelry and clothing above the waist and you will be given a gown or loose-fitting material that opens in the front.

What does the equipment look like?

This exam is performed using a mammography unit.

A mammography unit is a box with a tube that produces x-rays. The unit is used exclusively for breast x-ray exams and features special accessories to limit x-ray exposure to only the breast. The unit features a device to hold and compress the breast and position it so the technologist can capture images at different angles.

Other equipment needed for this exam may include small wires called dilators (http://www.radiologyinfo.org) , a small catheter (http://www.radiologyinfo.org) (a plastic hollow tube) and a blunt-tipped tube that is inserted into the milk duct in the nipple to inject a tiny amount of contrast material.

How does the procedure work?

X-rays are a form of radiation like light or radio waves. X-rays pass through most objects, including the body. The technologist carefully aims the x-ray beam at the area of interest. The machine produces a small burst of radiation that passes through your body. The radiation records an image on photographic film or a special detector.

Different parts of the body absorb the x-rays in varying degrees. Dense bone absorbs much of the radiation while soft tissue (muscle, fat, and organs) allow more of the x-rays to pass through them. As a result, bones appear white on the x-ray, soft tissue shows up in shades of gray, and air appears black.

In galactography, a small amount of contrast material is injected into the milk duct, and a mammogram is performed so that the inside of the milk duct can be seen.

If there is a filling defect (black area) in the milk duct, it often indicates a small mass. Most of these are papillomas (http://www.radiologyinfo.org) , which are non-cancerous masses of the milk ducts. They may be pre-cancerous, and sometimes are removed. Less than 10 percent of filling defects will be cancer.

The galactogram will not only find the small mass, but will also show where it is located in the breast, to help the surgeon find the area.

In some cases, there are no filling defects. Rather, the ducts lead to cysts (http://www.radiologyinfo.org) in the breast, a sign of fibrocystic (http://www.radiologyinfo.org) change. These cysts may cause a bloody discharge, but generally are not worrisome.

How is the procedure performed?

Your doctor will likely do this exam on an outpatient basis.

The patient is seated or placed on her back with the breast exposed. The nipple is cleansed, and a tiny amount of fluid is squeezed from the nipple to identify the duct with the discharge. The milk duct may be dilated to permit a small catheter (a plastic, hollow tube) or blunt-tipped tube to be inserted into the milk duct. Occasionally a warm towel will be placed on the breast to help the milk duct become more visible and to allow easier access to the milk duct. A small amount of contrast material is then injected, and a mammogram is obtained. A second injection and mammogram may be performed.

You must hold very still and may need to hold your breath for a few seconds while the technologist (http://www.radiologyinfo.org) takes the x-ray. This helps reduce the possibility of a blurred image. The technologist will walk behind a wall or into the next room to activate the x-ray machine.

When the examination is complete, the technologist may ask you to wait until the radiologist confirms they have all the necessary images.

The procedure normally takes between 30 minutes to an hour.

What will I experience during and after the procedure?

The dilation of the milk duct can sometimes be uncomfortable; however it is usually not painful. The nipple may be squeezed to identify the milk duct with the discharge.

Who interprets the results and how do I get them?

A radiologist (https://www.radiologyinfo.org/en/info/article-your-radiologist) , a doctor trained to supervise and interpret radiology examinations, will analyze the images. The radiologist will send a signed report to your primary care or referring physician (http://www.radiologyinfo.org) who will discuss the results (https://www.radiologyinfo.org/en/info/all-about-your-radiology-report) with you.

The report may be given directly to you at the time of the exam.

You may need a follow-up exam. If so, your doctor will explain why. Sometimes a follow-up exam further evaluates a potential issue with more views or a special imaging technique. It may also see if there has been any change in an issue over time. Follow-up exams are often the best way to see if treatment is working or if a problem needs attention.

What are the benefits vs. risks?

Benefits

- Galactography can find small cancerous and non-cancerous masses that cannot be identified in any other way so that they may be removed at an early stage.
- A galactogram identifies the location of the tumors in the breast for the surgeon.
- No radiation stays in your body after an x-ray exam.
- X-rays usually have no side effects in the typical diagnostic range for this exam.

Risks

- There is always a slight chance of cancer from excessive exposure to radiation. However, given the small amount of radiation used in medical imaging, the benefit of an accurate diagnosis far outweighs the associated risk.
- The radiation dose for this procedure varies. *See the Radiation Dose (https://www.radiologyinfo.org/en/info/safety-xray) page for more information.*
- It is possible to injure the duct, either during the process of placing the catheter or while injecting contrast material. This almost always heals by itself.

- It is possible to miss the area of concern, or to put the catheter into the incorrect duct, potentially delaying diagnosis.
- There is always a possibility of infection of the breast, or mastitis, but this is uncommon.
- Women should always tell their doctor and x-ray technologist if they are pregnant. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy and x-rays.*

A Word About Minimizing Radiation Exposure

Doctors take special care during x-ray exams to use the lowest radiation dose possible while producing the best images for evaluation. National and international radiology protection organizations continually review and update the technique standards radiology professionals use.

Modern x-ray systems minimize stray (scatter) radiation by using controlled x-ray beams and dose control methods. This ensures that the areas of your body not being imaged receive minimal radiation exposure.

What are the limitations of Galactography?

If there is no discharge at the time of the exam, the duct with the discharge cannot be identified, and the test will not be able to be performed. In addition, some ducts are quite small, and may not be able to be dilated. If the incorrect duct is injected, an incorrect diagnosis can be made. Not all breast tumors occur within the ducts, and a tumor may be present that is not identified on the galactogram.

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