



Fistulogram/Sinogram

A fistulogram uses a form of real-time x-ray called fluoroscopy and a barium-based contrast material to produce images of an abnormal passage within the body called a fistula. Similarly, a sinogram assesses an abnormal passage called a sinus that originates or ends in one opening, often on the skin. Both examinations are used to assess and diagnose the size and shape of fistulas and sinuses and any related abscess and/or infection.



You will be instructed on how to prepare. You may be asked to refrain from eating or drinking anything for several hours before the examination, but you should be allowed to take medications with small amounts of clear fluid up to two hours prior. Tell your doctor if there's a possibility you are pregnant and discuss any recent illnesses, medical conditions, medications you're taking and allergies, especially to contrast materials. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.

What is a Fistulogram/Sinogram?

A fistulogram is an x-ray procedure used to view a fistula, an abnormal passage between two or more anatomic spaces or organs or a pathway that leads from an internal cavity or organ to the surface of the body. A sinogram is a similar procedure done to assess a sinus, an abnormal passage or cavity that originates or ends in one opening, often on the skin. Contrast material is used to help identify the start of the fistula/sinus, its pathway and what organs are involved.

What are some common uses of the procedure?

A fistulogram/sinogram is used to diagnose and assess the size and shape of fistulas and sinuses and prepare a treatment plan.

Fistulas usually involve hollow organs like the intestines, bladder, urethra and vagina. They often form as

a result of infection or inflammation related to surgery, injury or radiation therapy. They may also be related to inflammatory bowel conditions such as Crohn's disease and ulcerative colitis.

Fistulograms are used to assess many types of fistulas, including those that form between:

- two loops of intestine
- the anal canal and skin near the anus
- the vagina and another body part such as the colon, rectum, small intestine or bladder.

Fistulograms may also be used to assess abscess collections post-drainage and to determine whether there is a persistent communication from the collection to any surrounding structures.

Additionally, fistulograms are used to assess deliberately created fistulas in people receiving kidney dialysis. Repeated dialysis can cause scarring and damage to the vein, and veins exposed to arterial pressure and turbulent blood flow can become narrowed due to thickening of the blood vessel. A fistulogram is needed to assess the problem with the dialysis access. These procedures are known as Fistula/Graft Declotting and Interventions.

Sinuses can occur throughout the body and may be related to infection or injury. Symptoms may be mild, such as a discharge of clear fluid from the skin, or more serious, such as abscess formation. A sinogram can show the extent of the problem and help develop a plan for future care.

How should I prepare?

You should inform your physician of any medications being taken and if there are any allergies, especially to iodinated contrast materials. Also inform your doctor about recent illnesses or other medical conditions.

Women should always inform their physician and x-ray technologist if there is any possibility that they are pregnant. Many imaging tests are not performed during pregnancy so as not to expose the fetus to radiation. If an x-ray is necessary, precautions will be taken to minimize radiation exposure to the baby. See the Safety page for more information about pregnancy and x-rays.

Instructions are typically provided prior to your exam. You may be asked to refrain from eating for six hours before the procedure but you may usually drink small amounts of clear fluid with medications up to two hours before the procedure.

What does the equipment look like?

The equipment typically used for this examination consists of a radiographic table, one or two x-ray tubes and a television-like monitor that is located in the examining room. Fluoroscopy, which converts x-rays into video images, is used to watch and guide progress of the procedure. The video is produced by the x-ray machine and a detector that is suspended over a table on which the patient lies.

The radiologist typically will introduce contrast material into the fistula/sinus with a thin plastic tube

called a catheter.

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. Once it is carefully aimed at the part of the body being examined, an x-ray machine produces a small burst of radiation that passes through the body, recording 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, such as 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.

Until recently, x-ray images were maintained on large film sheets (much like a large photographic negative). Today, most images are digital files that are stored electronically. These stored images are easily accessible for diagnosis and disease management.

Fluoroscopy uses a continuous or pulsed x-ray beam to create a sequence of images that are projected onto a fluorescent screen, or television-like monitor. When used with a contrast material, which clearly defines the area being examined by making it appear dark (or by electronically reversing the image contrast to white), this special x-ray technique makes it possible for the physician to view joints or internal organs in motion. Still images or movies are also captured and stored electronically on a computer.

How is the procedure performed?

You may be asked to change into a hospital gown. You also may receive an intravenous (IV) line in your arm for the delivery of painkillers and/or sedatives to help make you more comfortable during the procedure.

You will be taken into the x-ray room where the technologist will position you on the x-ray table. You may be asked to wear a lead shield to help protect certain parts of your body. The x-ray machine will be positioned so that the radiologist can easily view the contrast material-enhanced fistula/sinus.

The area around the fistula/sinus will be cleaned with an antiseptic solution. Occasionally, a local anesthetic is injected into the area.

The radiologist will use the x-ray equipment to guide the catheter into the fistula/sinus or artery/vein using a needle and guide wire. When the catheter is in the correct place, the radiologist will inject contrast material through the catheter. X-rays will be taken to show where the fistula/sinus goes or where the blockage is located in a dialysis-related fistula.

You must hold very still and may be asked to keep from breathing for a few seconds while the x-ray picture is taken to 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 all the x-rays have been taken, the catheter will be removed. If your fistula/sinus has an opening on the outside of the body, your wound site will be cleaned and your skin will be covered with a sterile dressing. A nurse may apply pressure over the puncture site for several minutes to prevent any bleeding. You may receive one or two stitches at the puncture site. If your fistula/sinus is inside your rectum or vagina, you will be able to use the bathroom to pass any remaining contrast.

Depending on departmental policy, some hospitals will allow a guardian to accompany the child into the x-ray room. The guardian will be asked to wear a lead apron to protect certain parts of his or her body. A lead shield may also be used to protect their child's reproductive organs as much as possible from radiation exposure.

Children in the hospital who cannot be brought to the x-ray room can be x-rayed at their bedside with a portable device.

The x-ray technologist will position the child, and then walk behind a wall or into the next room to activate the x-ray machine. The child must remain still to reduce the possibility of blurring the image. Older children will be asked to hold their breath and stay still for a few seconds during the x-ray, while infants may need to be gently restrained.

See the Children and Radiation Safety page for more information.

What will I experience during and after the procedure?

You may experience slight discomfort when the IV line is placed in your arm or when local anesthetic is injected in the area of your fistula/sinus. You may feel a warm sensation as the contrast material is injected into your fistula/sinus. While you may experience discomfort during the procedure, there is usually no pain.

If you are a dialysis patient with narrowing in a deliberately created fistula, the radiologist may put a catheter with a balloon at the tip into the area of stenosis. The radiologist will inflate the balloon to stretch the narrowing and enlarge the fistula. You may feel some pressure in that area when this happens. Sedation medicine is usually given for this portion of the procedure.

The procedure itself will take approximately 30 minutes, and you should expect to spend about an hour in the x-ray department. You may be asked to stay in the facility for one to two hours to recover. During this time, your nurse will check your fistula or sinus area for any bleeding.

There may be some restrictions on your activities for 24 hours after your procedure. For instance, you may be advised to avoid: driving or using any heavy machines; drinking alcohol or taking any medicines that make you drowsy; lifting anything heavy; or wearing tight clothes or jewelry that will press on your wound.

You can return to your normal activities 24 hours after your procedure.

Who interprets the results and how do I get them?

A radiologist, a physician specifically trained to supervise and interpret radiology examinations, will

analyze the images and send a signed report to your primary care or referring physician, who will discuss the results with you.

What are the benefits vs. risks?

Benefits

- Radiologic examinations can often provide enough information to avoid more invasive procedures.
- A fistulogram/sinogram can give your doctors precise information to help develop the best treatment plan for you.
- Fistulograms/sinograms provide real-time images that may be evaluated immediately.
- No radiation remains in a patient's body after an x-ray examination.
- 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, the benefit of an accurate diagnosis far outweighs the risk.
- Women should always inform their physician or x-ray technologist if there is any possibility that they are pregnant. See the Safety page for more information about pregnancy and x-rays.
- You may experience minor pain, bruising and/or infection from the catheter insertion that may require treatment with antibiotics.
- Rarely, you may experience an allergic reaction to the contrast material. This could result in a rash, hives, itching, nausea, fainting or shortness of breath. Medication may be given to relieve this. Contact your doctor if you have any of these symptoms.
- There may be a small amount of bleeding from the fistula/sinus for a short time after the procedure.

What are the limitations of Fistulogram/Sinogram exams?

Fistulograms/sinograms may not be possible in every patient due to medical and/or technical reasons.

The procedure may fail to define the presence of disease upstream or downstream from the fistula, which may be necessary for appropriate treatment planning.

The procedure may fail to provide the anatomic location of the fistula within the gastrointestinal tract. Edema, debris, or a large abscess may hinder fistulograms by blocking the flow of contrast material. Fistulograms are not recommended if sepsis is present—a potentially life-threatening response to infection.

Often, information concerning potential fistulas or sinuses and their communications can be obtained from CT scans performed after ingestion of oral contrast. Contrast-enhanced CT may be able to identify connections from the bowel to any surrounding structures or skin.

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