Discography (Discogram)

Discography uses imaging guidance to direct an injection of contrast material into the center of one or more spinal discs to help identify the source of back pain. It also is used to help guide the treatment of abnormal intervertebral discs – sponge-like cushions located between the vertebrae of the spine.

Your doctor will instruct you on how to prepare, including any changes to your medication schedule. Tell your doctor if there's a possibility you are pregnant and discuss any recent illnesses, medical conditions, allergies and medications you're taking, including herbal supplements and aspirin. You may be advised to stop taking aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs) or blood thinners several days prior to your procedure. You also may be told not to eat or drink anything after midnight before your procedure. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown. Plan to have someone drive you home.

What is a discogram?

A discogram, or discography, is an interventional diagnostic imaging test that helps determine whether a specific intervertebral disc (http://www.radiologyinfo.org) may be the source of back pain.

Intervertebral discs are sponge-like cushions between the vertebrae (http://www.radiologyinfo.org) , or bones, of the spine. Discs act as a sort of shock absorber for the spine and help provide flexibility.

Each disc has a strong outer layer called an annulus (http://www.radiologyinfo.org) and a center part, called a nucleus (http://www.radiologyinfo.org) , made of a soft, rubber-like material. When discs bulge or rupture, they may press on the nerves of the spinal column and cause pain or weakness.

In a discogram, a contrast liquid (http://www.radiologyinfo.org) is injected into the center of one or more spinal discs using x-ray guidance. This injection may temporarily reproduce the patient's back pain symptoms. As part of the procedure, an x-ray or CT scan also may be performed to obtain pictures of the injected disc.

What are some common uses of the procedure?

A discogram is typically performed to help diagnose the cause of back pain and to guide the treatment of abnormal discs. The procedure also may be performed prior to surgery to help identify discs that need to be treated or removed.

How should I prepare?

Prior to your procedure, your doctor may test your blood to check your kidney function and to determine if your blood clots normally.

Tell your doctor about all the medications you take, including herbal supplements. List any allergies, especially to local anesthetic (http://www.radiologyinfo.org) , general anesthesia (http://www.radiologyinfo.org) , or contrast materials (http://www.radiologyinfo.org) . Your doctor may tell you to stop taking aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs (http://www.radiologyinfo.org)) or blood thinners before your procedure.

Tell your doctor about recent illnesses or other medical conditions.

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Your doctor will likely tell you not to eat or drink anything after midnight before your procedure. Your doctor will tell you which medications you may take in the morning.

Plan to have someone drive you home after your procedure.

The nurse will give you a gown to wear during the procedure.

Women should always tell their doctor and technologist (http://www.radiologyinfo.org) if they are pregnant. Doctors will not perform many tests during pregnancy to avoid exposing the fetus (http://www.radiologyinfo.org) to radiation. If an x-ray is necessary, the doctor will take precautions to minimize radiation exposure to the baby. *See the Radiation Safety (https://www.radiologyinfo.org/en/info/safety-radiation) page for more information about pregnancy and x-rays.*

If you have not already provided your radiologist with prior relevant imaging exams (e.g., MRI of lumbar spine), bring them with you on the day of your procedure.

What does the equipment look like?

This exam typically uses a radiographic table, one or two x-ray tubes, and a video monitor. Fluoroscopy converts x-rays into video images. Doctors use it to watch and guide procedures. The x-ray machine and a detector suspended over the exam table produce the video.

This procedure may use other equipment, including an intravenous (http://www.radiologyinfo.org) line (IV), ultrasound machine and devices that monitor your heart beat and blood pressure.

The CT scanner is typically a large, donut-shaped machine with a short tunnel in the center. You will lie on a narrow table that slides in and out of this short tunnel. Rotating around you, the x-ray tube and electronic x-ray detectors are located opposite each other in a ring, called a gantry. The computer workstation that processes the imaging information is in a separate control room. This is where the technologist operates the scanner and monitors your exam in direct visual contact. The technologist will be able to hear and talk to you using a speaker and microphone.

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.

Most x-ray images are electronically stored digital files. Your doctor can easily access these stored images to diagnose and manage your condition.

Fluoroscopy uses a continuous or pulsed x-ray beam to create images and project them onto a video monitor. Your exam may use a contrast material to clearly define the area of interest. Fluoroscopy allows your doctor to view joints or internal organs in motion. The exam also captures still images or movies and stores them electronically on a computer.

How is the procedure performed?

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

A nurse or technologist (http://www.radiologyinfo.org) will insert an intravenous (http://www.radiologyinfo.org) (IV) line into a

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vein in your hand or arm so that sedative medication can be given intravenously. You must be awake during the procedure in order to communicate any of the symptoms that you are experiencing during the test.

Your doctor may provide medications to help prevent nausea and pain and antibiotics to help prevent infection.

You will be positioned on the examining table on your side, rolled forward slightly. Pillows may be used to help keep you comfortable and in position.

The doctor or nurse may connect you to monitors that track your heart rate, blood pressure, oxygen level, and pulse.

The area of your body where the IV is to be inserted will be shaved, sterilized and covered with a surgical drape. Hair at or near the site of the discography procedure will also be shaved.

Your doctor will numb the area with a local anesthetic (http://www.radiologyinfo.org) . This may briefly burn or sting before the area becomes numb.

Guided by real-time x-ray images (fluoroscopy (http://www.radiologyinfo.org)), the physician will insert a needle through your skin into the center of the disc being examined. Once the needle is inside the disc, a contrast material is injected and the needle is removed.

During the procedure you may be asked to describe your pain in terms of location, distribution and severity. If the injected disc is the source of your back pain, you may feel pain similar to what you experience on a day-to-day basis. The process may be repeated for additional discs. In order for the discogram to be considered an objective test, the operator cannot disclose what level is being injected and when the injection is taking place.

The doctor applies pressure to prevent any bleeding and covers the opening in the skin with a bandage. No sutures are necessary.

The doctor or nurse will remove your IV line before you go home.

After the injections are complete, an x-ray or CT scan may be performed to further analyze the injected disc(s). When contrast material spreads outside a disc, it may indicate that there are fissures (http://www.radiologyinfo.org) in the outer ring of the disc.

You will be taken to an observation area for at least 30 to 60 minutes.

This procedure is usually completed within one hour, depending on how many disc levels your doctor wants to evaluate.

What will I experience during and after the procedure?

You will feel a slight pinch when the nurse inserts the needle into your vein for the IV line and when they inject the local anesthetic. Most of the sensation is at the skin incision site. The doctor will numb this area using local anesthetic. You may feel pressure when the doctor inserts the catheter into the vein or artery. However, you will not feel serious discomfort.

You may feel pain or discomfort during needle insertion as the needle is guided towards the disc of interest.

You will be asked and reminded to remain very still during the procedure.

As the contrast material (http://www.radiologyinfo.org) passes through your body, you may feel warm. This will quickly pass.

You may have some pain at the injection site for several hours after you go home. You may apply an ice pack to the area on and off for 20 minutes at a time. You may also take your usual pain medications as prescribed by your doctor. If the pain is severe and is associated with fever, then you should immediately see a physician.

Who interprets the results and how do I get them?

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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.

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

- A discogram assesses whether or not a specific intervertebral disc is involved in causing your back pain symptoms.
- 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.
- CT scanning is painless, noninvasive and accurate.
- A major advantage of CT is its ability to image bone, soft tissue and blood vessels all at the same time.
- Unlike conventional x-rays, CT scanning provides very detailed images of many types of tissue as well as the lungs, bones and blood vessels.

Risks

- Any procedure that penetrates the skin carries a risk of infection. The chance of infection requiring antibiotic treatment appears to be less than one in 1,000.
- There is a very slight risk of an allergic reaction if the procedure uses an injection of contrast material (http://www.radiologyinfo.org) .
- 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.
- 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.*
- The radiation dose for this procedure varies. *See the Radiation Dose (https://www.radiologyinfo.org/en/info/safety-xray) page for more information.*
- Doctors do not generally recommend CT scanning for pregnant women unless medically necessary because of potential risk to the unborn baby.
- Nursing mothers should wait for 24 hours after contrast material injection before resuming breastfeeding.
- The risk of serious allergic reaction to contrast materials that contain iodine is extremely rare. Radiology departments are well-equipped to deal with any allergic reaction.
- A discogram is generally a safe procedure. However, there is a risk of the following complications:
    - infection of the injected discs
    - temporary worsening of chronic back pain
    - headache
    - nausea
    - injury to blood vessels or nerves in and around the spine
    - bleeding
    - temporary numbness or weakness
    - nerve damage

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- paralysis.

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 a discogram?

Because a discogram is an invasive test, it is not typically used for the initial evaluation of back pain. A discogram is usually recommended after conservative treatment, such as medication or physical therapy, over a period of four to six months fails to alleviate back pain. Because a disc can be damaged without causing pain, the results of a discogram are usually combined with other test results to determine a treatment plan.

In some cases, MRI (http://www.radiologyinfo.org) or CT (http://www.radiologyinfo.org) scanning is a better alternative to a discogram for the diagnosis of back pain.

In the majority of cases, plain radiographs, spine MRI (https://www.radiologyinfo.org/en/info/spinemr) or spine CT (https://www.radiologyinfo.org/en/info/spinect) (when MRI cannot be performed) are the primary exams indicated for the diagnostic evaluation of lower back pain. Other tests, such as myelography or discography, are often used in some situations to address specific clinical questions prior to performing surgical procedures.

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