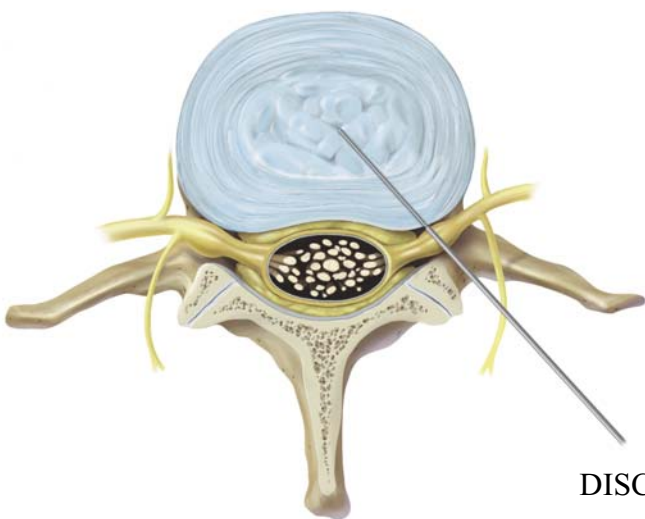


DISCOGRAPHY



NORTH AMERICAN
SPINE SOCIETY
PUBLIC EDUCATION
SERIES

WHAT IS A DISC?

The human vertebral disc is a unique structure in the spine that bears weight and allows motion. It is made of a central portion (the nucleus pulposus) which is surrounded by layers of tissue (the annulus fibrosis). The disc helps the spine support the body and allows movement between vertebra.

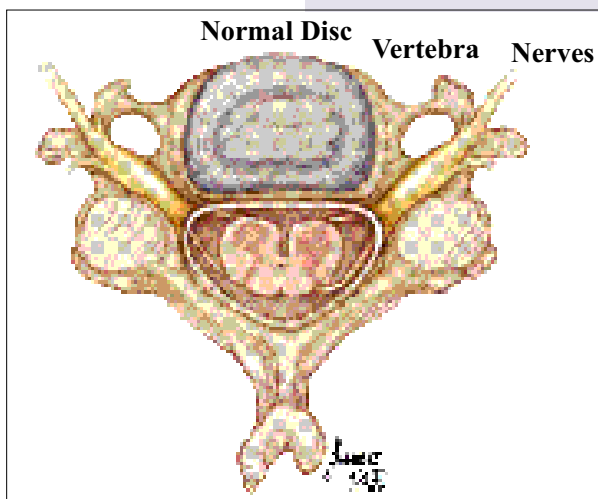
In a normal disc, there are nerves only in the outermost layers of the annulus fibrosis. The layers of the annulus may tear as a result of overloading the spine or lifting in an awkward position. These tears may trigger a series of events that can cause pain. As the disc tries to heal (which is a slow process), new nerve endings may form in the injured area.

The nucleus pulposus of the disc contains a lot of water, which lets it bear weight and transfer load much like pressing on a water balloon. The contents of the nucleus of an injured disc may leak out into the outer layers or all the way through those layers to the nearby nerve roots exiting from the cauda equina (the lower end of the spinal cord). The nucleus contains chemicals that are very irritating to nerve tissue. As this fluid leaks, it may come in contact with the sensitive nerve endings in the outer disc and cause pain. These chemicals may also make the nerve endings more sensitive, so movement that was not painful in a normal disc may cause pain in an injured disc. The irritating fluid from the nucleus may leak out of the disc and onto the nerve roots, producing

pain. These events in the disc may also trigger disc degeneration.

Discs degenerate in all adults as we grow older. Degeneration is associated with the loss of water in the disc and decreased disc height. These changes may be painful. Typical symptoms related to disc degeneration are neck or back pain and sometimes pain in the lower limbs. Severe degeneration may cause pain when the spine presses on nerve roots or forces more load onto the facet joints in the back of the spine. Disc degeneration is a common process, however, and is not always painful.

How can your health care provider determine if your pain is related to a disc? This is done by physical examination, imaging studies and diagnostic tests (such as discography) that provoke or relieve pain on a short-term basis.



WHY IS DISCOGRAPHY USED?

Although magnetic resonance imaging (MRI) is a very good tool for showing disc abnormalities, it does not allow your health care provider to directly determine if the abnormalities are causing your pain. Studies in which MRI was performed in people without back pain show that 35% to 52% of these patients had one or more abnormal discs. In a study of people without back pain but who were of the same age and occupation as a group of back pain patients, 76% had abnormal MRIs. These studies raise the question: If MRI shows that a back pain patient has an abnormal disc, is that abnormality related to the pain or just an abnormality similar to that seen in people without pain?

Discography is a very specific tool that may help your health care provider determine if the abnormal disc is causing your pain. Due to conflicting data on the benefits of discography, the use of discography is controversial among spine care physicians. However, many health care providers do find it is helpful in identifying the source of pain.

WHEN IS DISCOGRAPHY DONE?

Because discography is an invasive procedure (it involves putting needles into the disc), it is not performed early in the diagnostic and treatment process. Generally, patients who undergo discography have not gotten satisfactory pain relief from nonoperative measures such as medication, physical therapy and modified activities. They usually have had back pain for at least 4 to 6 months. Discography is usually used in patients who are being evaluated to determine a specific cause of pain so a new treatment plan (possibly including surgery) can be developed.

BEFORE THE PROCEDURE

You generally should not eat any solid foods after midnight before the discogram. A breakfast of clear liquids such as broth, clear juice, tea or gelatin may be allowed; ask your health care provider. You may want to wear comfortable clothing such as a warm-up suit, sweats, or shorts and a t-shirt to your discogram appointment. You may want to leave all valuables such as jewelry at home. It is a good idea to bring a book or something to help pass the time. The health care provider performing the procedure and/or a staff member will likely review the details of the procedure, as well as possible complications, with you. An informed consent form may be reviewed and any questions or concerns that you have can be addressed. You will probably be asked to complete a form and/or discuss with a medical staff member any history of allergic reaction to X-ray dye or xylocaine, allergies to medications, history of seizures or epilepsy, diabetes, and female patients will be asked if they are or may be pregnant.

HOW IS IT DONE?

The health care provider performing the discographic injections will likely talk to you about your symptoms and the details of the procedure. You may receive a light sedative to help you relax during the procedure. The following is a description of one method of performing discography; the exact procedure may vary depending on your medical history and the preference of the health care provider performing the test.

Discography is usually performed in a procedure room that has equipment for X-ray imaging of the discs as the test is performed. You will be asked to lay on one side and may be rolled slightly forward on a table. Pillows can be used to help you achieve the desired position. Your skin will be wiped at the site of the injection with a cleansing antiseptic agent. Typically, the lowest two or three lumbar disc levels are injected. The health care provider may inject an anesthetic into the skin to reduce the pain of the needles passing through tissue. In some cases, antibiotics are given intravenously before and after the procedure. A needle is inserted through the skin and muscle and comes to rest on the outer layer of the disc. During the process of placing the needles, imaging studies called fluoroscopy (similar to X-ray) are used to help the health care provider see where the needles are located along the path to the disc. A second needle is passed through the first one and into the center of the disc. This process is repeated at each level that is to be injected. In some cases, the

health care provider may decide to inject an additional level and will place needles at that location after the initial injections. Contrast (a liquid that shows up on X-ray), is injected into the center of each disc. If the disc is normal, the contrast remains in the center of the disc. If the disc is abnormal, the contrast spreads through the tears in the disc.

As each disc is injected, you may be asked to rate the intensity of the pain that the injection causes, if any. You may also be asked if the pain is similar to your usual symptoms in terms of location and the type of pain you are experiencing. This procedure is repeated for each disc that is injected. The pain provoked by the injection should be temporary.

CT scanning is often performed after disc injection. This gives your health care provider more information about the exact pattern of the spread of the contrast through or out of the disc. Widespread disc degeneration is identified by the contrast spreading throughout the disc space.

The injection procedure generally takes about 30 to 45 minutes. After the disc injections, you may be kept for observation for 30 minutes or more. It is advisable that you have someone drive you home. In some cases, pain from the injection can persist for several hours. There may be some residual muscle pain from passing the needles. If you experience intense pain, call your health care provider.

WHO SHOULD NOT HAVE THIS PROCEDURE?

There are a number of factors that indicate you should not have a discogram. If you have an allergy to dye, an active infection or a local infection at the site to be injected, you should discuss it with your health care provider. Psychological factors may be taken into consideration as well.

Potential Complications

There is a risk of complications associated with discography. The most common is discitis (an infection of the disc space.) On average, this occurs in about one out of 400 patients undergoing discography. Discitis usually results in very intense pain but can be treated with antibiotics. Other complications that have been reported (but are rare) include nerve root injury, urticaria (a vascular reaction on the skin), injection of dye into the dural sac (surrounding the spinal cord), bleeding, nucleus pulposus pulmonary embolism, nausea, headache and increased pain.

You should discuss the risks associated with discography and warning signs of complications with your health care provider before the procedure.

WHAT HAPPENS AFTER DISCOGRAPHY?

The discography results are reviewed and given to your health care provider. Similar to MRI and all other diagnostic tests, discography is not perfect. Due to the intricacies of interpreting the pain responses component of discography, the exact number of times the test is incorrect cannot be clearly determined. It has been reported that patients with severe pain sensitivity may be more likely to provide information that is not helpful in differentiating the disc as a pain generator. Therefore it is important for you doctor to combine the results of the discogram with results from other tests and physical examination to better determine if the disc(s) is causing your pain. This information may be used to determine if surgery may be beneficial. If so, the results are used to determine the best type of surgery for you, and which disc levels may be included in surgery.

NOTES

A stylized, vertical illustration of a human spine, rendered in a light purple and white color scheme. The vertebrae are depicted with thick, rounded outlines, and the intervertebral discs are shown as smaller, rounded shapes between the vertebrae. The illustration is positioned on the right side of the page, extending from the top to the bottom.

FOR MORE INFORMATION,
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