

PERCUTANEOUS DISCECTOMY BROCHURE

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PERCUTANEOUS DISC DECOMPRESSION

RELIEVE PAIN CAUSED BY CONTAINED HERNIATED DISCS AND PROTRUDING DISCS

PERCUTANEOUS DISC DECOMPRESSION

Percutaneous Disc Decompression is a minimally invasive, highly effective treatment for low back pain caused by contained herniated discs and protruding discs. It is designed to alleviate pressure on a compressed nerve by directly excising the disc that is pushing against the nerve root. Decompression of the nerve root helps to restore functionality and relieve pain.

ADVANTAGES

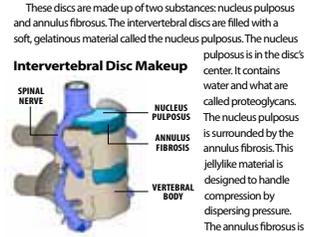
The minimally invasive nature of percutaneous discectomy provides compelling advantages over more invasive procedures such as open surgery. It permits contained herniated discs to be excised with minimal disturbance to surrounding skin, fascia and muscles, which promotes quicker recovery and lower risk of complications than more invasive treatments. It also allows the procedure to be performed in an outpatient setting.

Due to its minimally invasive nature, percutaneous discectomy provides an excellent alternative to more invasive procedures such as open discectomy in the treatment of displaced and deformed discs. In fact, in comparison to traditional open surgery, percutaneous discectomy has been shown to be an equally effective intervention in patients with small disc herniations. The small diameter of the probe used in percutaneous discectomy (maximum 1.5mm) allows the doctor to restrict the size of the cutaneous incision to only a few millimeters. A smaller incision reduces the risk of adverse effects to the nerve root and other structures, reduces blood loss, lowers the probability of infection, and results in less scarring than open surgery. Moreover, the specialized angle of approach used in percutaneous discectomy decreases the risk of damaging adjacent ligaments and muscles. Collectively, these attributes result in a shorter recovery time. In addition, according to a review, individuals who receive percutaneous discectomy report high satisfaction due to lowered usage of nonsteroidal anti-inflammatory drugs (NSAIDs).

DISC MAKEUP

In most people, the spine or vertebral column comprises 33 interlocking bones, or vertebrae, which are connected by fibrous bands called ligaments and divided into five regions: cervical, thoracic, lumbar, sacral, and coccygeal. The vertebral column provides support for the upper body as well as protection for the spinal cord, and furnishes attachment points for the ribs and muscles of the back. There are seven cervical (neck) vertebra, twelve thoracic (upper and mid back) vertebra, and five lumbar (lower back) vertebra. In between these vertebrae are discs that act like shock absorbers—they are called intervertebral discs. These

elastic intervertebral discs cushion the bones of the spine and promote flexibility.



These discs are made up of two substances: nucleus pulposus and annulus fibrosus. The intervertebral discs are filled with a soft, gelatinous material called the nucleus pulposus. The nucleus pulposus is in the disc's center. It contains water and what are called proteoglycans. The nucleus pulposus is surrounded by the annulus fibrosus. This jellylike material is designed to handle compression by dispersing pressure. The annulus fibrosus is made up of layer upon layer of collagen fibers. These layers are tightly packed together and make for a very tough and resilient structure that keeps the fluid from the nucleus pulposus from leaking out. Even though our discs are tough, strong structures, they can wear out over time or become damaged, resulting in cracks and tears (called fissures) or even start to bulge out. When this happens, pain can result.

COMMON DISC PROBLEMS

Percutaneous disc decompression is intended to alleviate painful pressure exerted by deformed and displaced discs. Two common disc problems that involve distortion and displacement of discs are protruding discs and herniated discs. A protruding disc occurs when excess pressure is put upon a disc, causing it to protrude out of place. A herniated disc occurs when a tear or softening in the outer fibrous layer (the annulus fibrosus) of an intervertebral disc forces the pliable inner material through the weakened part of the outer disc. Both protruding and herniated discs can produce pain by irritating adjacent nerves and compressing the spinal cord.

A common cause of herniated and bulging discs is Degenerative Disc Disease (DDD). This is a gradual deterioration of spinal discs that occurs due to a detrimental cascade of cellular, biochemical, structural and functional properties of spinal discs that typically occurs as part of the aging process. Patients with DDD experience degenerative changes that lead to tears within the annulus fibrosus. These tears promote the emigration of the soft inner nucleus pulposus through the outer covering of the disc. Herniated discs may compress adjacent nerve roots, leading to chronic, severe back or neck pain.

PERCUTANEOUS DISC DECOMPRESSION OVERVIEW

When a disc protrudes and herniates, it presses against a nerve. This pressure causes pain. Your interventional pain physician

BACK PANEL (MAIL PANEL)

FRONT PANEL

PAGE 1 PANEL

PAGE 2 PANEL

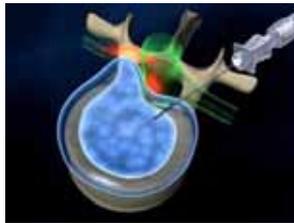
will use a special medical device to remove some of the nucleus pulposus. The material that has bulged out then moves back inward, replacing the material that has been removed, thus relieving pressure and the pain. This procedure is considered minimally invasive because a tiny puncture, similar to a simple injection, is all that is required for disc nucleoplasty.

Disc decompression may be performed with automated percutaneous lumbar discectomy (APLD), percutaneous lumbar laser disc decompression, mechanical disc decompression with Dekompressor®, and nucleoplasty.

CLINICAL RESULTS

APLD and laser disc decompression have been around for many, many years and have been used in large populations. While the traditional evidence with patient evaluations shows significant improvement, there are no large scale, scientific – meaning randomized, double-blind placebo controlled trials to prove their effectiveness. Average pain reduction has been reported as significant – and patient satisfaction has been high. High patient satisfaction has largely been due to the ease of the procedure, the lack of trauma or painful rehabilitation period, the fact that Percutaneous Discectomy does not diminish the effectiveness of any subsequent procedure – such as surgery, and in the rare instance that the procedure is not deemed a success, the patient is typically no worse off... there is no downside.

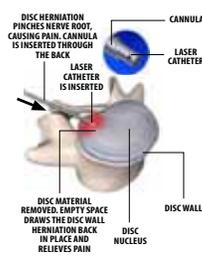
THE PROCEDURES



Automated percutaneous mechanical lumbar disc decompression (APLD)

Automated percutaneous mechanical lumbar disc decompression or APLD is performed with a remotely driven, suction-cutting probe in a cannula with a 2.8mm outer diameter with removal of one or 3 grams of disc material to reduce the intradiscal pressure and decompress the nerve roots.

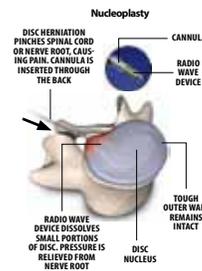
Percutaneous lumbar laser disc decompression



Percutaneous lumbar laser disc decompression is performed by delivery of laser energy to the nucleus pulposus by means of a laser fiber. The fiber is inserted through a thin needle via a posterolateral percutaneous approach under local anesthesia. The absorption of the applied laser energy leads to vaporization

of the water content of the nucleus pulposus and a change in its protein structure. The subsequent volume reduction causes a disproportionate decrease in intradiscal pressure, which in turn should theoretically decompress an entrapped nerve root.

Nucleoplasty, a minimally invasive procedure, uses radiofrequency energy to remove nuclear material and to create small channels within the disc. With Coblation technology, radiofrequency energy is applied to a conductive medium, creating the formation a highly focused plasma field to form around the energized electrodes. The plasma field is composed of highly ionized particles. The created channel is thermally treated, producing a zone of thermal coagulation. Thus, nucleoplasty combines coagulation and tissue ablation (patented Coblation technology) to form channels in the nucleus and decompress the herniated disc. Claims have been made over the past few years that nucleoplasty can produce satisfactory results with fewer serious complications.



Mechanical disc decompression with Dekompressor® utilizes a Dekompressor probe which is a mechanical high rotation per minute device designed to extract the nuclear material through an introducer cannula using an auger-like device that rotates at high speeds.

The Dekompressor system is a single-use probe intended for percutaneous discectomies under fluoroscopic imaging. The device removes a predetermined amount of disc material from the herniated disc, reducing pressure in the disc and the surrounding area. Using a cannula placement similar to that used for a standard discectomy, less pertinent scarring and less postoperative fibrosis may be expected with this device. The Dekompressor has been described as a minimally invasive technique with advantages over other techniques.

Percutaneous disc decompression procedures are relatively painless procedures since they are minimally invasive.

The patient usually receives light sedation to promote relaxation during the procedure, but remains awake. A special type of x-ray, called fluoroscopy, will be used by your doctor to guide the needle to the correct place. Using a small needle, the physician numbs the treatment area with local anesthetic. Subsequently, a larger needle is introduced into the affected disc. A special single-use probe is placed through this needle and excess disc material is suctioned from bulging or herniated discs, thereby removing harmful pressure from compressed nerves and providing pain relief. The patient may feel pressure during the procedure but should not experience pain. The total procedure time will be 30 to 45 minutes.

With APLD, the disc is extracted with laser disc decompression. Endoscopy is used under visualization and laser is used. With Dekompressor, similar to APLD, the disc material is removed. With disc nucleoplasty, Coblation technology is utilized to remove tissue from the center of the disc.

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Mechanical disc decompression with Dekompressor®



INDICATIONS

Indications of percutaneous mechanical disc decompression include the following:

- 1) Unilateral leg pain greater than back pain.
- 2) Radicular symptoms in a specific dermatomal distribution that correlates with MRI findings.
- 3) Positive straight leg raising test or positive bowstring sign, or both.
- 4) Neurologic findings or radicular symptoms.
- 5) No improvement after 6 weeks of conservative therapy.
- 6) Imaging studies (CT, MRI, discography) indicating a subligamentous contained disc herniation.
- 7) Well maintained disc height of 60%.

WHO IS THE RIGHT PATIENT?

Percutaneous Discectomy is a widely accepted treatment for patients with small contained herniations for whom open surgical discectomy offers a poor chance of success. It may also be a promising option for patients with large contained herniations for whom open surgery is not considered an appropriate treatment.

There are some medical conditions that may indicate that Percutaneous Discectomy is not right for you. Your diagnosing physician will know if these apply to you or not.

WHAT DO I DO WHEN I GO HOME?

After medical staff has determined you have recovered enough to go home, you will be discharged. A responsible adult will need to drive you home. Plan on resting in bed for up to three days after your procedure. Limit sitting or walking to just 30 minutes at a time. Also, limit driving, bending, twisting, and lifting more than 10 pounds for the next few weeks. Many patients have found that applying ice to the treatment area for one to two hours a day for the next three days helps with pain and soreness at the injection site. Take the medications as prescribed by your doctor.

It is important to remember that recovery time varies with each patient. Do not try to rush your recovery. Approximately two weeks after your procedure, you will begin a directed physical therapy program. Follow your doctor's or physical therapist's instructions regarding your exercise program.

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American Society of Interventional Pain Physicians, 81 Lakeview Drive, Paducah, KY 42001. 270.554.9412. <http://www.asipp.org/brochures/default.html>