LUMBAR DISCECTOMY

A guide for patients

Lumbar discectomy is a surgical procedure to remove part of a disc that is pressing on spinal nerves in the lower (lumbar) back.

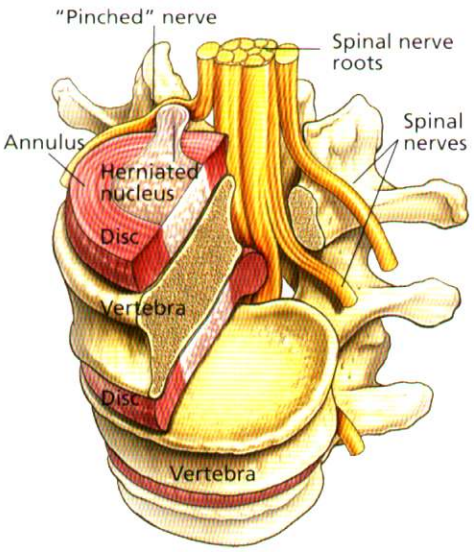
Discs are soft but strong, thick cushions made of cartilage that sit between each vertebra of the spinal column, as shown in the illustration (right).

Discs play a vital role in absorbing the daily shocks and forces that are placed on the spine during lifting, bending, running, walking, sitting, sports and other daily activities. They also maintain the correct spacing between vertebrae and help to protect them.

Each disc is composed of a strong outer wall of fibres called the annulus. In the middle is a softer gel-like core called the nucleus.

Although discs are tough and resilient to the mechanical forces placed on them, they can become weakened and damaged through age or trauma caused by excessive pressure, such as heavy lifting. This damage is called "herniation", which is an abnormal protrusion of the soft nucleus into or through the firmer annulus. Disc herniation can occur in four ways:

1. **degeneration:** the disc becomes weak and thinner, and may shrink (typically due to age), but the nucleus does not break through the outer wall of the disc
2. **prolapse:** the disc has a pronounced bulge that may put some pressure on the spinal canal or a spinal nerve
3. **extrusion:** the nucleus ruptures through the annulus but remains in one piece
4. **sequestration:** the nucleus ruptures through the annulus and fragments of it are separated from the disc.



When a disc herniates, the protrusion may press into the spinal canal or on a nearby spinal nerve, compressing or "pinching" it.

If a disc is compressing a spinal nerve, the most common symptoms are:

- sciatica – pain in the lower back and hip radiating down the back of the thigh and into the leg
- pain in one or both legs
- dull to severe aching pain in the lower back or buttocks
- numbness, tingling or weakness of one or both legs
- problems with urinary or bowel continence.

Symptoms can range from mild and intermittent to severe and debilitating. In the most serious cases, bladder and bowel control may be impaired or lost.

Also, if the disc nucleus ruptures through the annulus, chemicals in the nucleus can irritate nearby spinal nerves and aggravate symptoms. Once damaged, a herniated disc does not heal and become normal again. However, those parts of the herniated disc that are pressing on a spinal nerve or the spinal canal can be surgically removed (discectomy).

SPINAL CORD AND NERVES

The spinal cord and spinal nerves are protected by bony vertebrae, as shown below. Each spinal nerve courses through a hole between the vertebrae called the intervertebral foramen. Each foramen must be wide enough so that its spinal nerve is not compressed.

At the first lumbar vertebra (L1), the structure of the spinal cord changes, becoming a bundle of nerve roots called the cauda equina. The cauda equina courses through the five lumbar vertebra (L1 to L5) and ends in the sacrum (tailbone).

Cauda equina syndrome: This is caused

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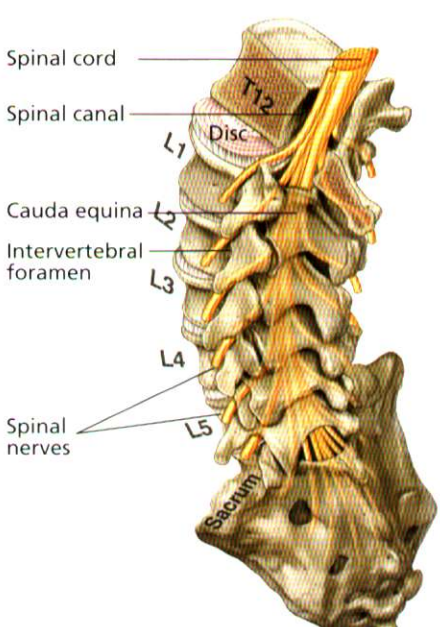

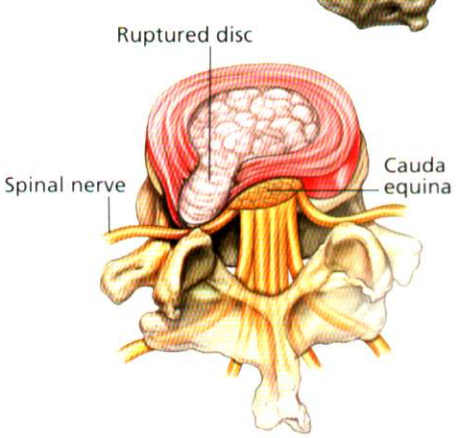

IMPORTANT: Fill in all details on the sticker below

DEAR SURGEON: When you discuss this pamphlet with your patient, remove this sticker and put it on the patient's medical history or card. This will remind you and your patient that this pamphlet has been provided. Some surgeons ask their patients to sign the sticker to confirm receipt of the pamphlet.

TREATMENT INFORMATION PAMPHLET

PEEL HERE

PROCEDURE: _____

PATIENT'S NAME: _____

DOCTOR'S NAME: _____

EDITION NUMBER: _____ DATE: D D / M M / Y Y Y Y

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by a large herniation of a lumbar disc, most commonly at L4 and L5. If nerves of the cauda equina become severely compressed by a herniated disc, blood flow to them is reduced, and nerve function is impaired. Paralysis and loss of bowel control and bladder control can soon follow. Cauda equina syndrome is a medical emergency, and surgery is needed to stop the pressure caused by the herniated disc on the cauda equina. Fortunately, this serious complication is rare.

DIAGNOSIS

- Diagnostic imaging can provide important information about the discs, vertebrae, other spinal structures and any abnormalities. Magnetic resonance imaging (MRI), computer tomography (CT), X-ray examination and myelograms can often reveal the anatomy of a herniated disc and the precise location of nerve compression. One or more of these tests may be necessary for accurate diagnosis.
- Your surgeon will examine you to determine your strength, reflexes, ability to feel pain, and ability to move. You will be asked about pain, numbness, weakness, previous similar symptoms, and any bowel or urinary problems. Blood tests may be needed.

YOUR MEDICAL HISTORY

Your surgeon needs to know your medical history to plan the best treatment for you. Tell your surgeon about any health problems you have. Some may interfere with treatment, surgery, anaesthesia or recovery. Before surgery, tell your surgeon if you have had:

- any allergy or reaction to antibiotics, anaesthetic drugs or other medicines, surgical tapes or dressings
- prolonged bleeding or excessive bruising when injured, or a family history of excessive bleeding
- recent or long-term illness, and any previous surgery.

Give your surgeon a list of **ALL** medicines you are taking and have recently taken. Include medicines prescribed by your family doctor and those bought "over the counter" without prescription. Include long-term treatments such as blood thinners (warfarin, coumadin, Plavix [clopidogrel], Asasantin, among others), aspirin (including that contained in cough syrups), arthritis medication or insulin. If you need surgical treatment, your doctor may ask you to stop taking some medications for a week or more before surgery, or you may be given an alternative dose.

Smoking: As smoking interferes with healing, patients who smoke must stop for at least three weeks before surgery and three weeks after surgery. It is best to quit. After surgery, smokers have increased risks of infections, heart and lung complications, and deep venous thrombosis (DVT).

TREATMENT OPTIONS

- **"Wait and see"** – Damaged or inflamed tissues may heal with time. Over several weeks or months, or sometimes longer, symptoms can subside. Patients with mild symptoms often do well without surgery.
- **Medications** – Oral medications such as various analgesics (paracetamol, codeine, tramadol, Digesic, Endone) can provide short-term pain relief. Non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids can reduce inflammation and provide pain relief. Anticonvulsant medication (Tegretol, Epilim, Neurontin, Lyrica) and some antidepressive medication can also be used to treat nerve pain.
- **A nerve sheath injection (foraminal block)** – This is the use of local anaesthetic with cortisone injected in the area of the compressed spinal nerve. This treatment can provide significant medium-term relief. While relief typically lasts for days or weeks, this can be long enough for symptoms to subside and for surgery to be delayed or avoided.
- **Epidural steroid injection (ESI)** – This delivers pain-relieving anti-inflammatory medication close to the source of pain. ESIs can be very effective, but relief tends to be temporary, ranging from one week to one year.
- **Physical therapy** can be helpful if symptoms are not severe. Mild exercise can assist muscle tone, core strength, fitness, posture and flexibility of the spine.
- **Discectomy** – For patients whose symptoms persist and who require surgery, the most common procedure is discectomy. Not all of the disc is removed, only that part of the disc which is causing the problem. Surgery can often be an appropriate first option in patients with severe or worsening symptoms.

The modern microdiscectomy technique using magnification provided by an operating microscope or operating loupes is a minimally invasive or "keyhole approach" that has become the standard procedure in recent years.

CANDIDATES FOR DISCECTOMY

When deciding if surgery is an appropriate option for you, your general health and the severity of symptoms are the most important factors to consider. For most patients, surgery is an option if they have a compressed spinal nerve and have:

- severe, persistent leg and lower-back pain that significantly limits normal daily activities
- weakness or numbness of legs or feet
- difficulty walking or standing, or
- bowel or bladder control problems.

Surgery is typically not an option when:

- symptoms are improving
- pain is not severe
- leg and lower-back symptoms are not due to a compressed spinal nerve
- reasonable doses of medication are sufficiently relieving pain
- physical therapy or exercise reduces pain and discomfort
- another medical condition is likely to complicate surgery.

A decision to have surgery: As you make the decision whether or not to have surgery, make sure that you understand the risks, benefits and limitations of discectomy.

There can be risks if you do not have surgery to relieve compression of a lumbar spinal nerve because further damage to it may occur. In some patients, the most serious complications can include further pain, numbness, paralysis or loss of bladder or bowel control.

Your surgeon cannot guarantee that treatment will meet all your expectations and that it has no risks.

Only you can decide if surgery is right for you. If you have any questions, ask your surgeon.

ANAESTHESIA

Lumbar discectomy is usually performed under general anaesthesia. Modern anaesthesia does have risks, although the complication rates are low. Your anaesthetist can provide more information.

Give the anaesthetist a list of the medications you are taking. Make known any problems that you or a blood relative may have had with any anaesthetic. Inform your anaesthetist about any recent or long-term illness, and any previous surgery.

Lumbar Discectomy Surgery

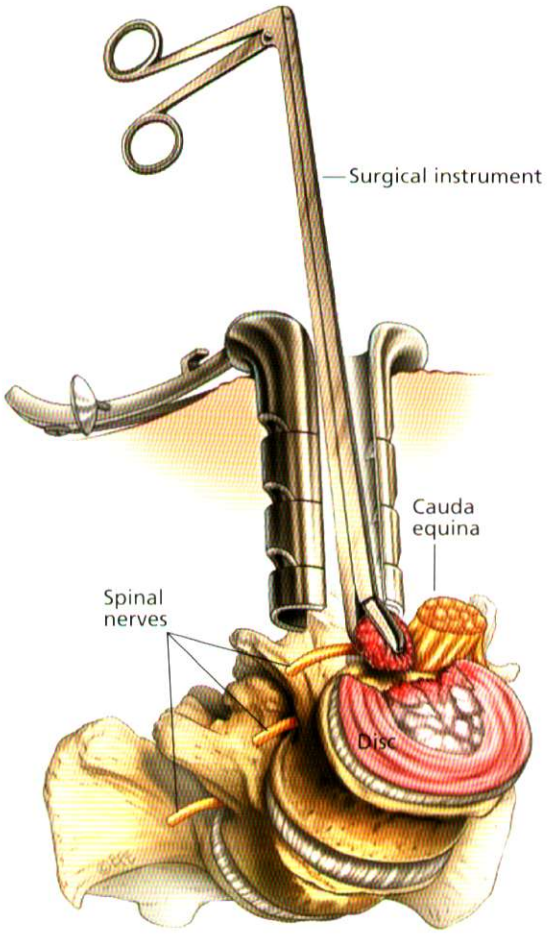
The aim of discectomy is to remove the portion of the herniated disc that is causing symptoms. A skin incision of about two to three centimetres is made over the spine, directly opposite the herniated disc. Muscle tissue is moved aside so the surgeon can see the vertebrae. A microscope is positioned over the area, giving the surgeon a greatly enlarged image of the operating field. Alternatively, your surgeon may use high-powered operating loupes (magnifying glasses) to enhance vision.

Spinal nerves are carefully moved or avoided. When the surgeon locates the herniated disc, small instruments are used to remove just enough of the disc to decompress the spinal nerves. Not all the disc is removed. Any loose disc fragments are removed. The hole or rupture in the disc is not closed because it is not possible to surgically repair it. (While the disc will heal over time, it will not grow back into a normal disc.)

The muscles are moved back into their normal position above the spine. The skin incision is closed with staples or sutures. The procedure normally takes one to two hours.

Modern discectomy is less invasive than previous discectomy procedures. Most discectomies are now performed as microdiscectomies.Technology has greatly improved the surgical instruments and the magnified views available to the surgeon.

Different types of discectomy procedures have been developed, and you may have heard terms such as laser discectomy, endoscopic discectomy and percutaneous discectomy. Your surgeon can explain whether any of these will apply to your treatment.



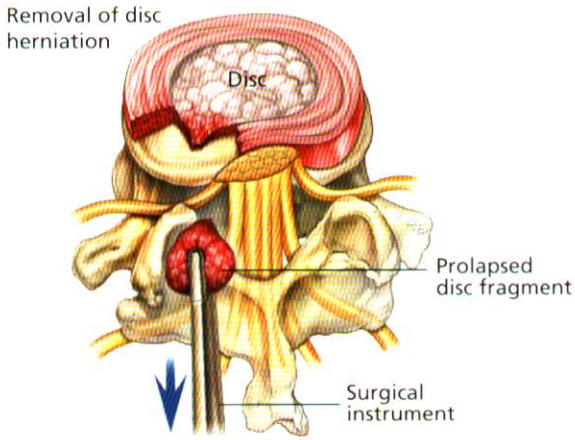
The surgeon uses small instruments to remove the prolapsed fragments that are compressing the nerve. Viable disc is left untouched, as much as possible.

Prognosis

Most patients will have relief of leg and buttock pain, but fewer have relief of back pain. Some patients will have immediate pain relief, while in others resolution of pain may occur slowly over several weeks or months. Muscle strength usually improves but may not be completely restored. Numbness often takes many months to improve.

Improvement of discomfort, pain, numbness, weakness and other symptoms are usually related to how long the patient had symptoms prior to surgery, and whether or not one or more spinal nerves have been damaged. The likelihood of benefits from the surgery depends on many factors. Your neurosurgeon can provide an assessment of the chances of success in your case.

If spinal nerve compression is due to ageing, symptoms may recur several years after surgery because the degenerative process of the discs continues. The patient may need to have surgery again.



AFTER THE SURGERY

As you awaken in the recovery area, nursing staff will check your blood pressure, pulse, leg strength and general well-being. You may have a urinary catheter to help empty your bladder.

Expect to have some pain at first. People have different levels of pain perception and tolerance. You will be given medication to relieve pain. As aspirin and anti-inflammatory pain relievers may increase the risk of bleeding in the operated site during healing, take these only on the advice of your surgeon.

With assistance, walk as soon and as often as possible. Walking helps to improve recovery and reduce the risk of blood clots in the deep veins of the legs (deep venous thrombosis, DVT).

Most patients are discharged two or three days after surgery. You are discharged when you:

- have stable vital signs
- can walk on your own
- can eat and drink without becoming nauseous
- have normal control over your bladder
- have recovered normally from the anaesthetic, and the operated area is healing well.

Some discomfort in your legs may remain for a few days after surgery. This is due to swelling of the operated site.

This pamphlet is intended to provide you with general information. It is not a substitute for advice from your surgeon and does not contain all the known facts about herniated discs and surgical treatment.

If you are not sure about the benefits, risks and limitations of discectomy, or terms used in this pamphlet or anything else, ask your surgeon. Read this pamphlet carefully, and save it. Some technical terms are used that may require further explanation by your surgeon. Write down questions you want to ask. Your surgeon will be pleased to answer them. You can seek the opinion of another surgeon if you are uncertain about advice that you are given. Use this pamphlet only in consultation with your surgeon.

Talk to your Neurosurgeon

Consent form: If you are having a surgical procedure, your surgeon will ask you to sign a consent form. Before signing, read it carefully. If you have any questions, ask your surgeon.

RECOVERY AT HOME

- Bending and twisting should be minimised as much as possible.
- Do not carry anything heavy.
- If you must lift and carry something, carry it at a level between your hip and shoulder.
- Dressing is easier with slip-on shoes.
- Daily light exercise and walks help to reduce pain and hasten recovery. Increase slightly the distance walked daily. Have reasonable goals. Don't do too much too quickly.
- For at least one or two weeks after discectomy, get assistance at home.
- To relieve pressure on the back, do not sit or stand in one position for long periods.
- Don't sleep too much, but get adequate rest. A firm mattress provides good back support. You may find that you wake-up having a sore back. A warm shower or brief walk may help to relieve it.
- Your surgeon can advise you about your return to work. It depends on how quickly your back symptoms are resolving, your general recovery from surgery, and your occupation.
- A specific rehabilitation program may be recommended.

Possible Complications of Discectomy

All surgical procedures are associated with some risk. Despite the highest standards of surgical practice, complications are possible.

It is not usual for a surgeon to dwell at length on every possible side effect or rare, but serious, complications of any surgical procedure. However, it is important that you have enough information to weigh up the benefits, risks and limitations of spinal surgery. Most patients will not have complications, but if you have concerns about possible side effects, discuss them with your surgeon.

While most patients have a good outcome, every patient is different. Your surgeon can provide you with advice about likely outcomes in your case.

The following list of possible complications is intended to inform you, not to alarm you. There may be others that are not listed.

General risks of surgery

- Infection of the operated site that requires treatment with antibiotics.
- Excessive bleeding; rarely, a blood transfusion may be needed.
- A blood clot that develops in a leg (deep venous thrombosis, DVT) may travel to the lungs, causing pulmonary embolism. This complication is not common but can be life threatening.
- Complications related to the anaesthetic.
- Unforeseen complications, such as pneumonia, stroke or heart attack, may or may not be directly related to the surgery or anaesthesia but could result in death, although this is rare.

Specific risks of discectomy

- A tear in the thick tissue covering the spinal nerve roots (dural tear) is the most common risk of discectomy procedures. A tear allows cerebrospinal fluid to leak out. It may occur in about one of every 20 patients. While a leak usually heals quickly after surgical repair done at the time of the original operation, further surgery may be needed.
- Although the discectomy may be a surgical success, your surgeon cannot predict with certainty how the compressed spinal nerves will heal after surgery. Pain, numbness and muscle weakness may not improve with surgery or may improve only slightly.
- Despite the surgeon's expertise and care, further damage to a spinal nerve may be caused by the surgery in a very few cases. If the nerve is already damaged, the surgery could increase the injury to it, causing increased pain, numbness and weakness in the legs, loss of bladder and bowel function (incontinence), and impotence in males.
- Scar tissue can form near a spinal nerve during healing. It can restrict the free movement of the nerve and can press on it, causing pain or discomfort.
- The disc may herniate again and cause more symptoms at some later time. This happens in about 10 to 15 patients of every 100.
- A blood clot in the wound and spinal canal may require drainage and a return to theatre.
- Temporary or permanent paralysis of the legs (paraplegia) occurs very rarely. The most likely cause is probably due to formation of a haematoma (large blood clot) in the spinal canal that compresses the cauda equina, damaging it. Sometimes the cause is not known. If the legs suddenly become weak and numb and urine cannot be passed, urgent surgery may be needed to remove the clot.
- Raised, itchy and reddened scars from the skin incision (keloid or hypertrophic scars). These can be annoying but are not a threat to health.
- People who have had previous spinal surgery in the same area (revision surgery) have greater risks of complications primarily due to the formation of scar tissue around the nerve roots.

Report to your Surgeon

When you are recovering from the surgery, contact your surgeon if you have any of these signs or symptoms:

- fever greater than 38°C or chills
- redness or increasing pain at the incision
- persistent drainage or ooze from the incision
- stitches or staples come out
- pain, swelling or redness in one of your legs
- increasing pain or numbness in your legs, back or buttocks
- the bandage becomes soaked with blood
- a severe headache, or
- if you have any questions or concerns.

Go immediately to the nearest hospital emergency department if you:

- have sudden shortness of breath, which may or may not be accompanied by chest pain (this could be a sign of a blood clot in the lungs, pneumonia or other heart and lung problems)
- lose control of your bowel or bladder, or if you are unable to urinate
- are unable to move your legs (this is a serious sign of nerve compression or cauda equina syndrome).

COSTS OF TREATMENT

Your surgeon can advise you about costs. It is best to get an estimate of fees from your surgeon prior to consenting to treatment. It is better to discuss costs with your doctor before treatment rather than afterwards.

Your Surgeon

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