



Lumbar Spinal Surgery

Lower back problems

If you have a lower back problem, you're not alone. Lower back problems are very common. Some are caused by aging or injury while others are the result of daily wear and tear of your spine. No matter the cause, back problems are often very painful and there are no magic cures. But treatment can help ease your pain and improve your quality of life.

When you have pain

Pain due to lower back problems is different for each person. For some, pain gets worse with certain activities, for others, it hurts all the time. The location of pain can also differ. Pain may be only in the lower back or, you may have pain in the buttocks and legs. You may also feel tingling, weakness, and numbness. Whatever your symptoms, a lower back problem often puts limits on your life. Doing even simple tasks, such as lifting groceries or bending to help your child, can be frustrating. In some cases, constant pain can even lead to depression.



Back pain can make it hard for you to do day-to-day activities.

Surgery can help

If other treatments haven't helped your symptoms, surgery may offer relief. Surgery often helps:

- Ease back and leg pain
- Reduce numbness or weakness
- Relieve pain during movement
- Improve your quality of life

Understand your role

For best results, plan to take an active role in your treatment and recovery. Talk with your doctor about what you hope, surgery will do for you. Also keep in mind:

- Recovery from spine surgery takes time, often several months
- You will be asked to limit activities that put stress on your back
- Physical therapy may be needed to improve your strength and mobility



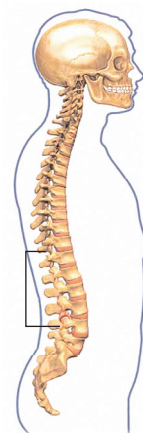
Learning about lower back problems

Vertebrae are bones that stack like building blocks to make up your spine. The lumbar spine contains the five bottom vertebrae in your back. When the lumbar spine is healthy, you can bend and move with comfort. But if part of the lumbar spine is damaged, it can be painful.

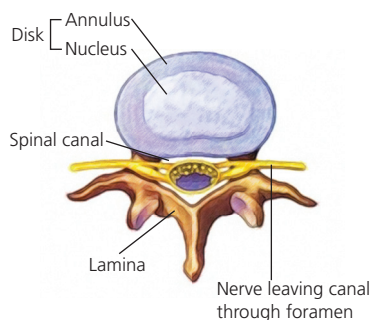
A healthy lumbar spine

In a healthy lumbar spine, all the parts work together.

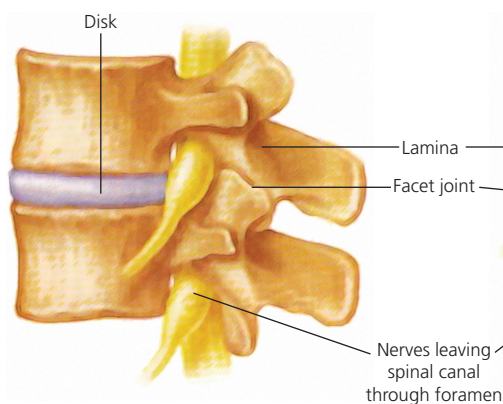
- ❏ Disks are soft pads of tissue that act as shock absorbers between the vertebrae. The firm and fibrous outer layer of a disk is called the annulus. The soft center of the disk is called the nucleus
- ❏ The spinal canal is a tunnel formed within the stacked vertebrae. The opening between the vertebrae on either side of the spinal canal is called the foramen
- ❏ Nerves run through the spinal canal. They branch out from the spinal canal through the foramen on each side
- ❏ The lamina is the arched part of each vertebra that forms the back of the spinal canal. Facet joints are the joints where the vertebrae meet



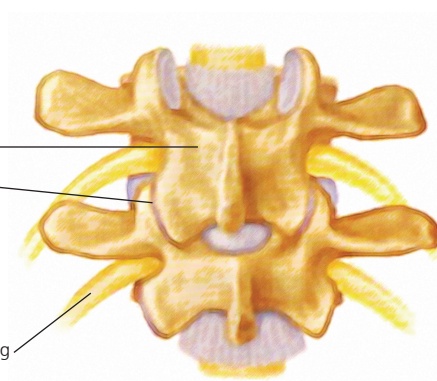
Top view of a vertebra



Side view of two vertebrae



Back view of two vertebrae



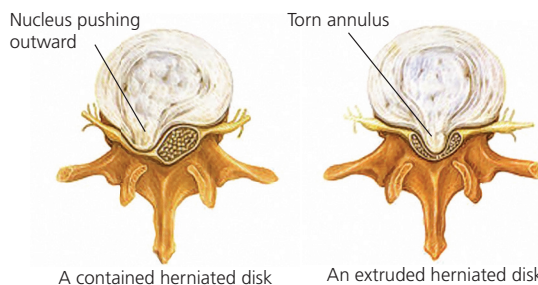
A painful lumbar spine

Lower back pain can be caused by problems in any part of the lumbar spine. A disk can herniate (push out) and press on a nerve. Vertebrae can rub against each other or slip out of place. This can irritate facet joints and nerves and can also lead to stenosis, a narrowing of the spinal canal or foramen.

Pressure from a disk

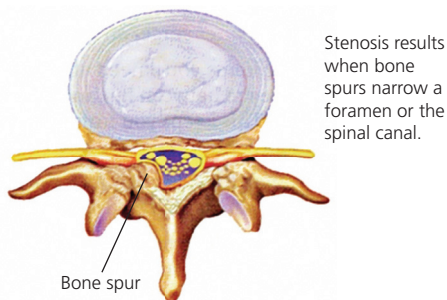
Constant wear and tear of a disk can cause it to weaken and push outward. A part of the disk may then press on nearby nerves. There are two common types of herniated disks:

- ▶ **Contained**, means the soft nucleus is protruding outward
- ▶ **Extruded**, means the firm annulus has torn, making the soft center squeeze



Pressure from bone

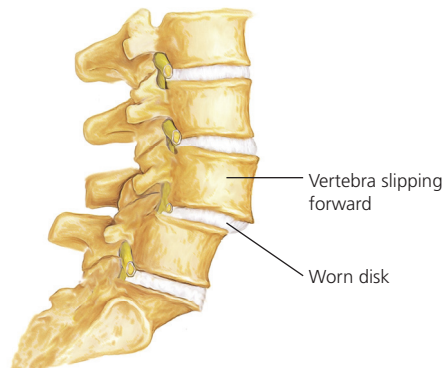
With age, a disk may get thin and wear out. Vertebrae above and below the disk may then begin to touch. This can put pressure on nerves. It can also cause bone spurs (growths) to form where the bones rub together. Stenosis results when bone spurs narrow the foramen or spinal canal. This also puts pressure on nerves.



An unstable spine

In some cases, vertebrae become unstable and slip forward. This is called spondylolisthesis. A slipped/slipping vertebrae can irritate nerves and joints. They can also worsen stenosis.

Spondylolisthesis can occur when a worn disk allows the vertebra above it, to slip forward.



Your medical evaluation

An evaluation helps your doctor learn more about your lower back problem. The evaluation includes a medical history and a physical exam. Certain tests may also be done. After the evaluation, your doctor will talk with you about the diagnosis. Then you can work together on a treatment plan that's right for you.

Medical history

Your doctor will ask questions about your health and any history of back problems. Be sure to mention:

- Health problems you may have, such as high blood pressure, heart disease, or diabetes
- Medications you take, including aspirin or ibuprofen. Also mention if you take herbal remedies or supplements
- If you smoke
- Whether back pain keeps you from doing things you like. Also, mention if it makes you feel helpless or depressed

Physical exam

Your doctor will check your spine in a variety of positions. This may include tests to check for pain, such as, raising your leg. Other tests measure your strength, reflexes, and whether you have any numbness.

Diagnostic tests

To help diagnose your spine problem, you may have to take the following tests:

- Imaging tests, such as X-rays, an MRI (magnetic resonance imaging), or a CT (computerised tomography) scan. These tests take pictures of bones, disks, and nerves
- Other imaging tests, such as a discogram, myelogram, or bone scan. Contrast dye is sometimes used for these tests
- Blood and urine tests
- EMG (electromyograms) to look for muscle and nerve damage



Non-surgical treatment

To help reduce back pain, your doctor may first prescribe a non-surgical treatment. This often includes limiting certain activities and having physical therapy (PT). You may also be prescribed medication.

Taking care of your back

Making some changes in your daily activities can help your back feel better. Try these:

- ❏ Learn how to reduce stress on your back while doing things like bending or walking
- ❏ Limit certain activities, such as lifting
- ❏ Improve your posture while sleeping or getting out of bed
- ❏ Use back supports, such as a lumbar roll, to relieve pain and keep the spine balanced



Learning how to bend properly can ease stress on your back.

Physical therapy

Physical therapy can help reduce back problems. A PT program may include:

- ❏ Exercises, such as walking, to improve your strength and mobility
- ❏ Education, to help you learn how to move without hurting your back
- ❏ Treatments, such as ultrasound, massage, heat, or cold
- ❏ Manual therapy, which helps improve movement of the spine



Walking is one of several exercises you may be given during physical therapy.

Medication

You may be prescribed medication to treat pain, muscle spasm and inflammation. Some medications are injected into joints or into areas near disks and nerves, while others are taken in pill form. Talk with your doctor about how your medications work. Also be sure to take pills as often as you're told – not just when you have pain.

Surgical treatment

If other treatments aren't improving your quality of life, your doctor may recommend surgery. Plan ahead for both, your surgery and recovery. Be sure to follow any instructions you are given. Also talk to your doctor if you have questions about surgery or how the procedure will be done.

Planning ahead

Planning ahead will help make your recovery easier and safer. Try these tips:

- ❏ Stop smoking. Smoking makes it harder for the bone to heal. Ask your doctor about quitting aids such as gum, patches, or medications
- ❏ Move the household items you'll need after surgery. Place them at your hip and shoulder level. This keeps you from needing to lift or bend
- ❏ Arrange for rides. You may not be able to drive for a week or more after surgery
- ❏ Get a pair of slip-on shoes with closed backs. That way, you don't have to bend to put on shoes
- ❏ Talk with your doctor about storing your own blood for surgery



Stop smoking before surgery.

Before surgery

Follow your doctor's instructions to prepare for surgery. Also, be sure to:

- ❏ Stop taking aspirin and ibuprofen at least a week before surgery. Ask if you should stop taking other medications, herbal remedies or supplements
- ❏ Arrange for an adult family member or friend to drive you home
- ❏ Don't eat or drink after midnight, the night before your surgery
- ❏ If you are told to take medication on the day of surgery, swallow it with just a sip of water



Don't eat or drink anything after midnight. This includes mints, gum and water.

The day of surgery

Arrive at the hospital on time. Before surgery, your blood pressure and temperature will be taken. You'll be given an intravenous line (IV) to provide fluids. You may also get medication to help you relax. Just before surgery you'll be given anaesthesia (medication to prevent pain). Local or regional anaesthesia numbs just the surgical area. General anaesthesia lets you "sleep" during the operation.



Reaching your spine

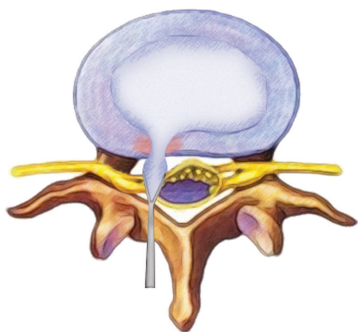
To operate on your spine, the surgeon will make an incision through your skin. The incision will be in your back (posterior approach) or in your abdomen (anterior approach). After surgery, the incision is closed with stitches or staples.

Posterior approach

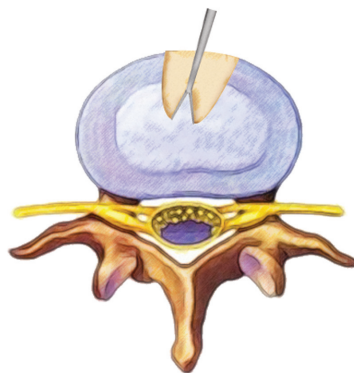
Your surgeon reaches the spine through your back. In some cases, a microscope is used to view damaged areas more clearly.

Anterior approach

Your surgeon reaches the spine through your abdomen. This is done when your surgeon needs access to the front of your spine.



Possible posterior incision site



Possible anterior incision site

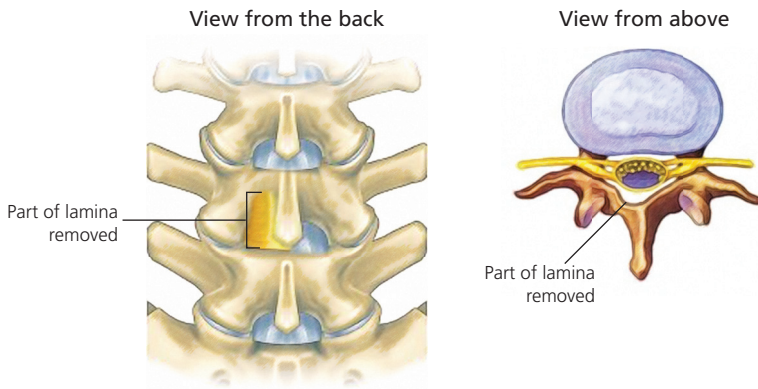


Decompression

Decompression is a type of surgery that takes the pressure off a nerve. This can be done by removing a bone from vertebrae. It can also be done by removing a portion of a disk. Sometimes, a combination of procedures are used.

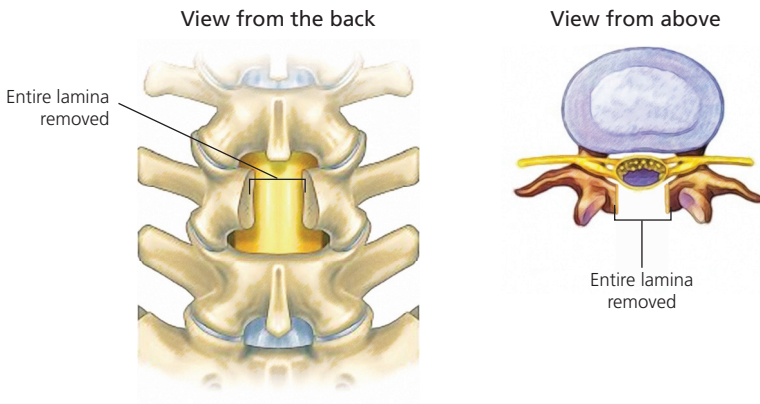
Laminotomy

A laminotomy removes a portion of the lamina – the bone at the back of the spinal canal. The small opening that is created is sometimes enough to take the pressure off a nerve. But in most cases, part of a disk or a bone spur that is pressing on a nerve is also removed.



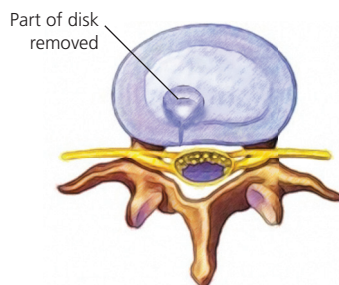
Laminectomy

A laminectomy removes the entire lamina. This helps relieve pressure when a disk bulges into a nerve. If needed, your surgeon can also remove any part of a disk or bone spur that presses on a nerve. He or she may also enlarge the foramen to ease pain caused by stenosis. After the procedure, the new opening in the spine is protected by the thick back muscles.



Diskectomy

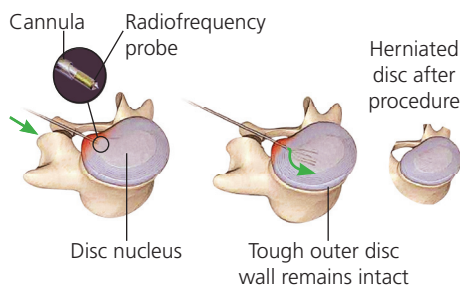
A diskectomy removes a portion of the damaged disk. Your surgeon may use a surgical microscope during the procedure (microdiskectomy). In most cases, a laminotomy must first be done to expose the disk. Then any part of the disk that presses on a nerve can be removed. Disk matter that is loose or may cause problems in the future is also removed. After surgery, there is usually enough disk remaining to cushion the vertebrae.



View from above

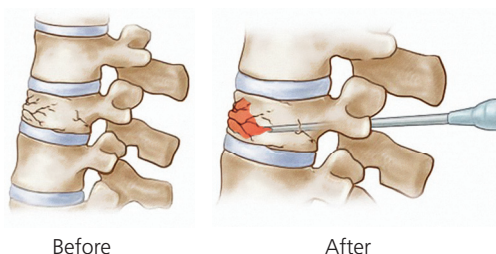
Nucleoplasty

Nucleoplasty procedure is done using coblation (controlled ablation) technology. Coblation utilises low-temperature, radio-frequency energy to dissolve tissues in the center of the spinal disc. Once the excess disc is "vapourised", it will cause a vacuum effect within the disc, causing the herniated disc to shrink back in.



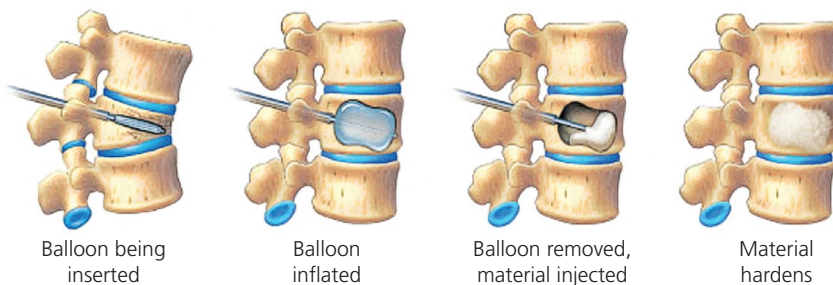
Vertebroplasty

In vertebroplasty, bone cement is injected into back bones (vertebrae) that have cracked or broken, often because of osteoporosis. The cement hardens, stabilising the fractures and supporting your spine. Vertebroplasty can greatly reduce pain and allow you to return to normal activity.



Kyphoplasty

In kyphoplasty, a balloon is first inserted through the trocar, into the fractured vertebra where it is inflated to create a cavity for cement injection. The balloon is removed prior to injecting cement into the cavity that was created by the balloon.



Risks and complications of decompression

Risks and possible complications of decompression surgery include:

- ❗ Infection
- ❗ Bleeding or blood clots
- ❗ Nerve damage
- ❗ Spinal fluid leak
- ❗ No improvement in pain or worsened pain
- ❗ Need for second surgery
- ❗ Paralysis (very rare)

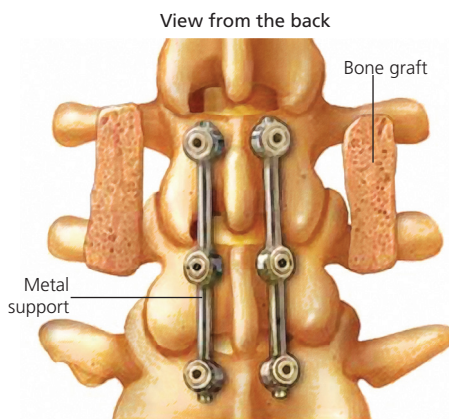
Fusion

Spinal fusion is a type of surgery used to make the spine more stable. It can also help ease lower back and leg pain. During the surgery, two or more vertebrae are locked together (fused) using a bone graft. This keeps the bones from shifting and pressing on nerves.

The fusion procedure

Fusion surgery can be done using several methods. Talk with your doctor if you have questions about the steps of your procedure.

- ❗ Part of a disk may be removed from between the vertebrae to be fused
- ❗ Bone graft is packed between the vertebrae. In time, the graft and nearby bone grow into a solid unit
- ❗ To keep the spine steady, metal supports may be used along with the bone graft. The supports are left in place after surgery
- ❗ The incision is closed with stitches or staples



During fusion surgery, bone graft is packed between two or more vertebrae.

Understanding bone grafts

Bone grafts are very small pieces of material used to “cement” vertebrae together. Grafts can come from your own body, a bone bank or artificial sources. In some cases, bone protein (BMP) may be used.

Risks and complications of fusion

Risks and possible complications of spinal fusion surgery include:

- ❏ Infection
- ❏ Bleeding or blood clots
- ❏ Nerve damage
- ❏ Bones not fusing or bone graft shifting out of place
- ❏ No improvement in pain or worsened pain
- ❏ Need for second surgery
- ❏ Spinal fluid leakage
- ❏ Paralysis (very rare)

Recovering in the hospital

After surgery, you'll be moved to the PACU (post-anaesthesia care unit). This is sometimes called the recovery room. You'll stay there until you're fully awake – often, for a few hours. Then you'll be moved to your hospital room. The length of your stay depends on what type of surgery you have had and how well you're healing.

Right after surgery

When you wake up from surgery, you may feel groggy, thirsty or cold. Your throat may be sore. For a few days, you may also have:

- ❏ Tubes to drain the incision
- ❏ An IV to give you fluids and medication
- ❏ A catheter (tube) to drain your bladder
- ❏ Boots or special stockings on your legs to help prevent blood clots



Controlling pain

You will likely experience some discomfort after surgery. Your nurse may give you pain medication, or you may have a PCA (patient controlled analgesia) pump. The pump lets you give yourself small amounts of pain medication. Some pain is normal, even with medication but if you feel very uncomfortable, tell your nurse.



Getting up and moving

Soon after surgery, you'll be encouraged to get up and walk. This helps keep your blood and bowels moving. It also keeps the fluid from building up in your lungs. To help you move, you may be given a brace to support your spine. You may also see a physical therapist. He or she will teach you ways to protect your spine while moving.



Recovering at home

Recovering from surgery takes time. To help speed your recovery, slowly increase your activities each day. Also, be sure to take all your medications as directed. As you feel better, you may be given exercises to improve your strength and mobility. Exercise can also help ease your pain.

Get back into action

Gradually increasing your daily activities is important for recovery. Try these tips:

- 🔗 Get in and out of bed safely. Your physical therapist can help you learn how
- 🔗 Make moving easier and safer. Use reachers, shower railings and elevated toilet seats. Avoid lifting heavy objects
- 🔗 Ask your doctor about driving and going back to work. You may be able to return to a desk job fairly soon. It may take longer for more active work
- 🔗 Speak with your doctor if you have questions about safe positions for sex

Take pain medication as directed

You'll be prescribed medication for your pain. Be sure to talk with your doctor about what your medication does and how long it takes to work. Also, keep in mind the following:

- 🔗 Don't wait for pain to get bad. Take medication on time, as directed
- 🔗 If you take pain medication for a long time, ask your doctor about how and when to stop. Never stop taking medications on your own



When to call your doctor

Call your doctor if you have any of these symptoms:

- 🚩 Increasing pain, redness or drainage from your incision
- 🚩 Fever over 100°F (37.7°C)
- 🚩 New pain, weakness or numbness in your legs
- 🚩 A severe headache
- 🚩 Loss of bladder or bowel control

Improve your strength with activity

An exercise programme supervised by your doctor can help you heal faster. It can also reduce pain.

- 🚩 Walking helps keep your back muscles strong and flexible. Start with short walks and add a few minutes each day
- 🚩 Water aerobics, exercises muscles with less stress on the back. Ask your doctor when it will be safe to wet your incision
- 🚩 A physical therapist can give you specific exercises to help your back heal

Use good body mechanics

To help protect your back, follow a few simple rules:

- 🚩 Lift with your legs. Hold objects close to your body and don't lift heavy objects until your doctor says
- 🚩 Don't slump or slouch when you sit
- 🚩 Keep your ears, shoulders and hips in line with each other at all times
- 🚩 Use your knees to bend down. Don't bend over from your waist
- 🚩 Turn with your feet, not your body



Walking is a great way to strengthen your back.



Lift with your legs, not with your back.







Keep follow-up appointments

Be sure to keep all your follow-up appointments. These let your doctor check how well you're healing. Your medication and activity levels may also be adjusted. Be sure to ask any questions you have during these visits. By working together, you and your doctor can help ensure a smooth recovery.




Your surgical checklist

Use the checklist below to help remind you what to do before and after your surgery. Ask your doctor to check the boxes that apply to you. After surgery, ease into activity safely, by walking. Try to walk a little more each week and follow all of your surgeon's instructions below:

Before your surgery

-  Have any tests that your doctor orders
-  Stop smoking
-  Stop taking medication as directed by your doctor
-  Stop eating and drinking as instructed before surgery

After your surgery

-  Schedule your first follow-up visit
-  Take care of your incision and shower as directed
-  Complete your physical therapy programme





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