

Introduction

Pain in the lower back and legs caused by unstable vertebrae or degenerated disks is a common condition that limits your ability to move and work.

Unstable vertebrae in the lower back and degenerated disks are common conditions that may cause one vertebra to slip over another. This condition can be very painful.

Doctors may recommend surgery to fuse and stabilize the back for people suffering from an unstable spine. If your doctor recommends surgical treatment for your condition, the decision whether or not to have surgery is also yours.

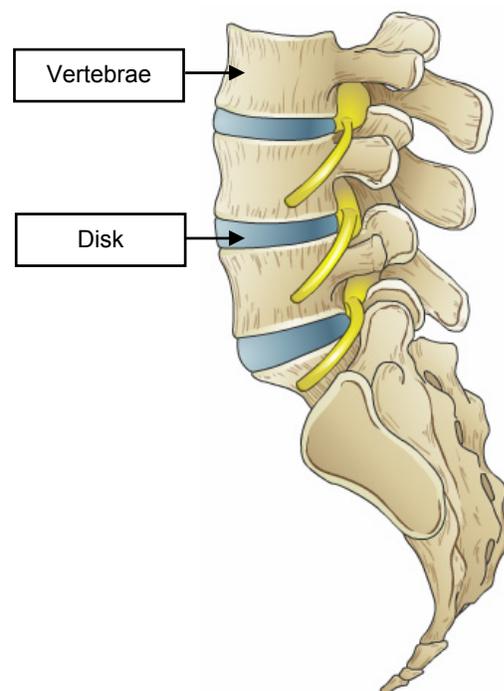
This reference summary will help you understand the benefits and risks of this surgery.

Anatomy

The spine protects the spinal cord and nerves that go to different parts of the body. The spine is formed of bones called vertebrae. The vertebrae are separated by softer cushions, or disks.

Symptoms and their Causes

A vertebra that slips out of place over another vertebra may press on nerves. This causes pain, weakness, and numbness in the back, and legs.



The pressure can be from the overgrowth of the joints that help hold the vertebrae together. These bony overgrowths can cause compression of the nerves. The pressure can also come from ligaments that help maintain the spine together. When these increase in size to help prevent the instability, the excessive growth can cause compression of the nerves. The pressure could also come from disk herniation. The most common cause of this condition is the aging of the spine.

However, there are other causes for an unstable spine.

- Spinal defects from birth can cause vertebrae to slip. Also, a fracture or crack in the vertebra may cause it to lose its position.
- Tumors and infections in or near the spine can also result in slippage of the vertebrae.
- Previous back surgery could also cause the spine to become unstable.
- Injuries, as in a car accident, may damage the vertebrae in the spine and make them unstable.
- Degeneration of the disks in the lower spine are also most commonly due to arthritis and wear and tear of these disks.
- Trauma, such as accidents, can hasten this degeneration.



Such disk degeneration could be accompanied by instability of the spine. With or without obvious slippage of the spine, disk degeneration could cause severe lower back pain.

Alternative Treatments

The pain from this condition is usually worse when standing, lifting or bending. Lying down may reduce the pain.

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Use of a lumbar corset may help with the symptoms. Physical therapy may also relieve the symptoms. Traction could also be used.

Medications can be helpful in decreasing the swelling and inflammation. The medication is sometimes administered in the back itself. If the pain is still bad enough to interfere with your lifestyle after trying exercise and medication, your doctor may recommend surgery.

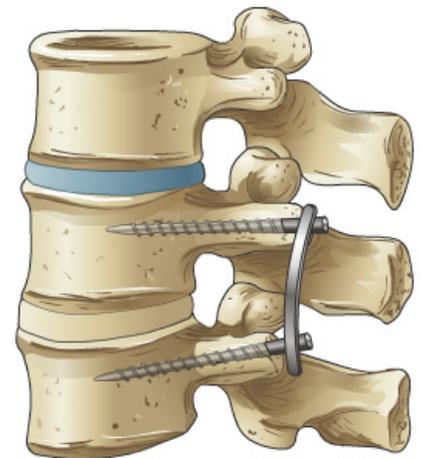
Disc replacement can also be done. Your doctor and you will decide which operation is best for you. This summary discusses the fusion operation. In the case of injury, such as a car accident, an operation may be necessary to prevent further damage to the spine and spinal cord.



Surgical Treatment

The operation is usually done under general anesthesia. The spine is approached from the back. There are three major objectives for this surgery.

- The first one is to remove any bone, ligaments, or disk causing pressure on the nerves.
- The second is to stabilize the spine by fusing the vertebrae so they no longer slip with movement.
- Finally, the operation aims at restoring the normal shape of the spine as much as possible. This is done through implantable devices that hold the fusion together.



Some surgeons take out most of the disk and replace it with bone or high-grade, medical-quality plastic to help strengthen the fusion. The bone can come from different sources. Some of it could come from the bone removed to take the pressure off the nerves. It could also be taken from the pelvic bone during the surgery.

Alternatively, a piece of bone is taken from the cadavers. It is tested for known diseases prior to placing it in your back.

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A genetically engineered material can also be used to promote bone formation. BMP, or bone morphogenic protein, is such a material.

Your doctor will discuss with you the source of the recommended fusion bone or material.

To hold the fused vertebrae together and help restore the shape of the spine, a variety of medical devices may be used. Screws that go into the vertebrae and that are connected with rods are an option. These are generally known as ‘pedicle’ screws.

The medical devices are needed to hold the vertebrae together while the bone fusion takes place. This takes about 3 months.

Some recent devices, specifically some screws, may NOT be fully FDA approved, except as experimental devices. However, these devices are recommended by most spine specialists to help create a solid fusion.

After the placement of the devices, the surgeon may put more bone or bone producing material on either side of the device to further strengthen the fusion.

After positioning the bone, some surgeons will insert a battery-powered device called a bone graft stimulator. The wires of the stimulator are close to the bone and the battery is right under the skin. This type of stimulator does not need to be taken out.

Your doctor will discuss with you the recommended devices. At the end of the surgery, the skin is closed. After the surgery you may be required to wear a corset or brace to help with the immobilization of the spine.



Bone graft stimulator

Your doctor will tell you how long you are likely to stay in the hospital after the surgery. This depends on several factors, such as your age and medical condition. Depending on how well you do, you may go home within 2 to 3 days.

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Risks and Complications

This operation is very safe. There are, however, several possible risks and complications, which are unlikely, but possible. You need to know about them just in case they happen. By being informed, you may be able to help your doctor detect complications early.

The risks and complications include those related to anesthesia and those related to any type of surgery. Risks of general anesthesia include nausea, vomiting, urinary retention, cut lips, chipped teeth, sore throat, and headache. More serious risks of general anesthesia include heart attacks, strokes, and pneumonia.

Your anesthesiologist will discuss these risks with you and ask you if you are allergic to certain medications.



Blood clots in the legs can occur due to inactivity during and after the surgery. These usually show up a few days after surgery. They cause the leg to swell and hurt. Blood clots can become dislodged from the leg and go to the lungs where they will cause shortness of breath, chest pain and possibly death. It is extremely important to let your doctors know if any of these symptoms occur. Sometimes the shortness of breath can happen without warning. Getting out of bed shortly after surgery may help decrease the risk of blood clots in the legs.

Some of the risks are seen in any type of surgery. They might occur from the spinal surgery or from the operation to remove a piece of bone from the pelvis, if it is performed. These risks include:

- Infection, deep in the disk space or at the skin level.
- Bleeding.
- A skin scar that may be painful.

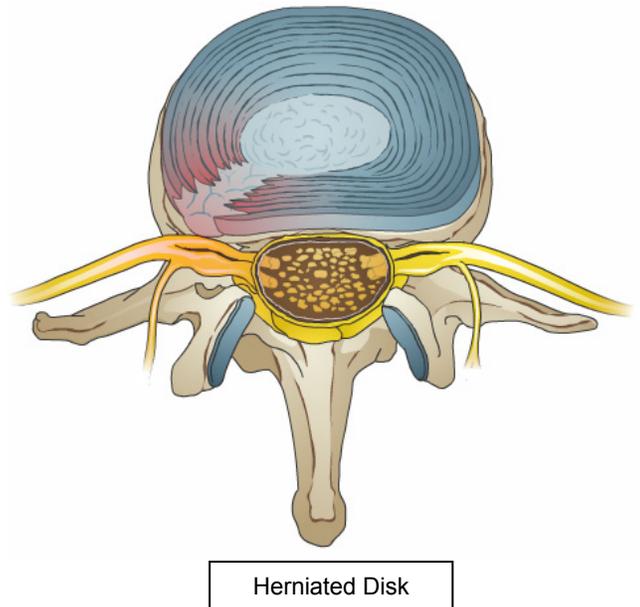


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The iliac crest incision, where the bone is taken out, tends to hurt a lot after the surgery. This rarely lasts for a long time, but is sometimes more painful than a spine incision.

Other risks and complications are related specifically to this surgery. These, again, are very rare. However, it is important to know about them.

- Fluids may leak from around the nerves.
- There is a very small chance that blood vessels may be injured in front of the spine, resulting in bleeding that could be life threatening.
- The bowels could also be injured in front of the spine.
- The nerves themselves could be injured, causing possible weakness, paralysis, bowel or bladder dysfunction, and decreased sensation. It is very rare, but sexual dysfunction may occur.
- A disk could rarely reherniate and scar tissue could form.
- The risk of having infections, such as AIDS or hepatitis, transmitted through a banked bone is very, very unlikely. Though very rare, this risk exists.
- Some of the risks are related to the use of implantable devices to hold the fusion. These are rare.
- One of the medical devices may crack before the bones are fused. This requires another operation to fuse the bones.
- If the metal device under the skin causes discomfort or stiffness, it may have to be removed.
- Also, if the medical device slips out of place, it may have to be removed.
- There is also the possibility that the operation may not help the symptoms, or may even make them worse.



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After the Surgery

No repetitive bending or twisting or heavy lifting is allowed in the few weeks following the operation. A brace or corset may have to be used for a few weeks to a few months to help immobilize the spine. The range of motion of your back will be limited by this operation.

Smoking may slow the rate of fusion of the bone, and may even be responsible for the total failure of the fusion. This is why it is very important to quit smoking months before such an operation.

After this period of relative rest, physical therapy may be necessary to allow you to resume your previous activities.

How much of your activities you will be able to resume depends on how well you are doing at the time of your follow-up.

Your doctor will tell you how long it will take before your back is healed and when you can go back to work. This depends on your age, type of work, and medical condition as well as other factors.

Summary

Spinal fusion surgery can help relieve your pain when other non-surgical treatments fail. This operation is very safe, with excellent results.

However, as you have learned, complications may happen. Knowing about them will help you detect them early if they happen.



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