

Patient guide to
ALIF



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About the lumbar spine

Your spine is made up of 33 bones called **vertebrae**. The vertebrae are positioned one on top of another from the base of the skull to the pelvis.

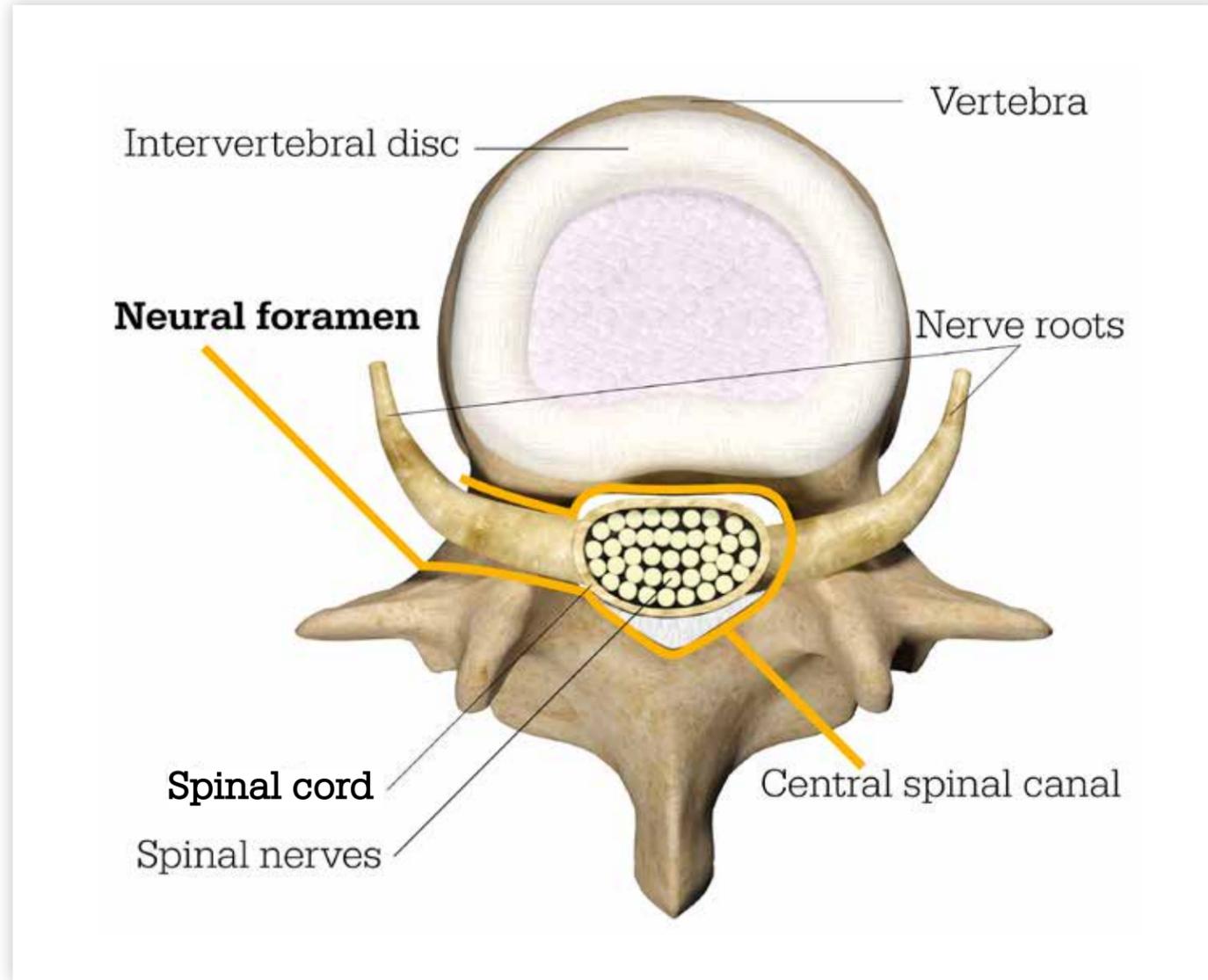


Figure 1: Lumbar vertebra

A shock-absorbing structure called an **intervertebral disc** sits between each vertebrae. The intervertebral disc is composed of a thick outer ring called the annulus that provides most of the strength, and a softer center called the nucleus that provides the shock absorbing function. Each spinal segment (defined as two vertebrae separated by one intervertebral disc) is connected by two small moving surfaces called **facet joints**.

Together, the vertebrae and discs form the spinal column. The spinal column supports the weight of the head and upper body, serves as an attachment point for muscles and ligaments allowing you to perform daily activities, and most importantly, protects the spinal cord.

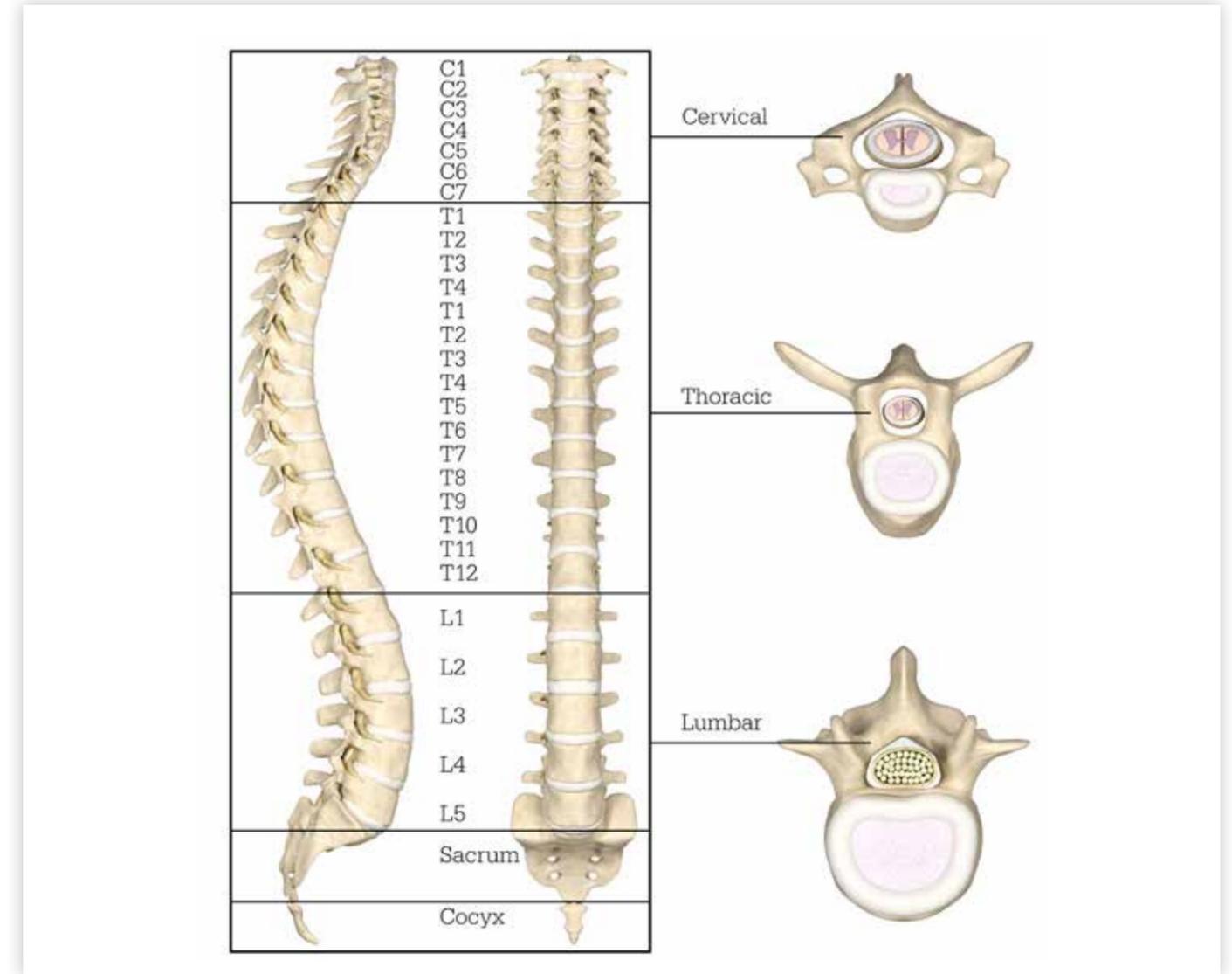


Figure 2: Spinal column

Five vertebrae make up the lower back (or lumbar) region of the spine. When the bones or discs in the lower back become diseased or injured, it can affect your ability to move and function normally.

What are some possible reasons for my pain?

Degenerative Disc Disease

Degenerative disc disease (DDD) is the progressive deterioration of one or more of the **intervertebral discs** in your spine that can occur due to normal aging. Injury, daily wear and tear, and genetics can also contribute to this condition. Lumbar disc degeneration consists of deterioration of a lumbar disc, which may then become narrowed or may **herniate**.

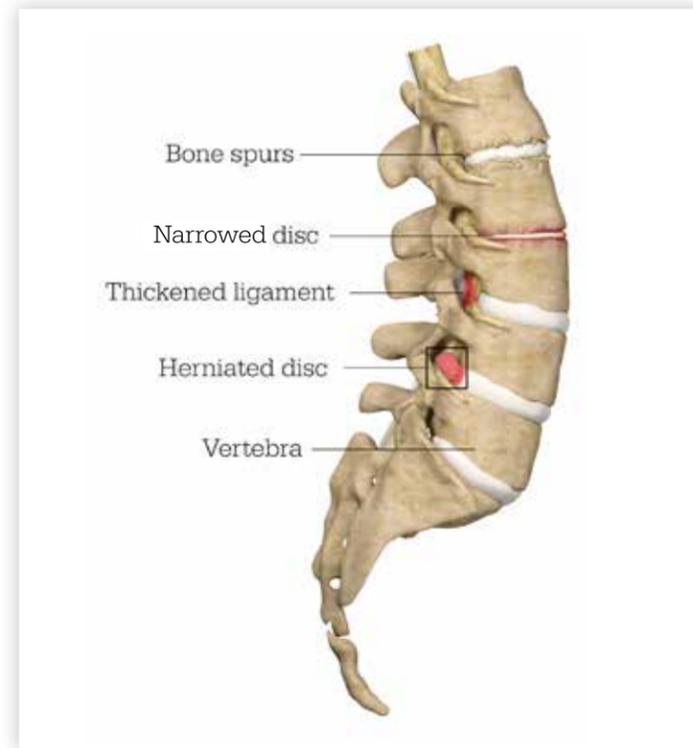


Figure 3: Degenerative lumbar spine

Herniated disc

A lumbar disc herniation occurs when a small portion of an intervertebral disc moves into an abnormal position, putting pressure on the spinal nerves. If this happens, this pressure can lead to symptoms including: pain, numbness, tingling, and/or weakness in one or both legs.

Lumbar spinal stenosis

Lumbar spinal stenosis is a narrowing of the space through which the spinal cord and nerves pass. Stenosis can affect either the central **spinal canal**, the area of the lumbar spine that contains the **theical sac**, or the **neural foramen**. When either of these spaces is compressed, the nerves may begin to function abnormally. Degenerative changes in the spine, including collapsed discs, **bone spurs**, fluid-filled cysts and thickened ligaments are the most common causes of spinal stenosis.²

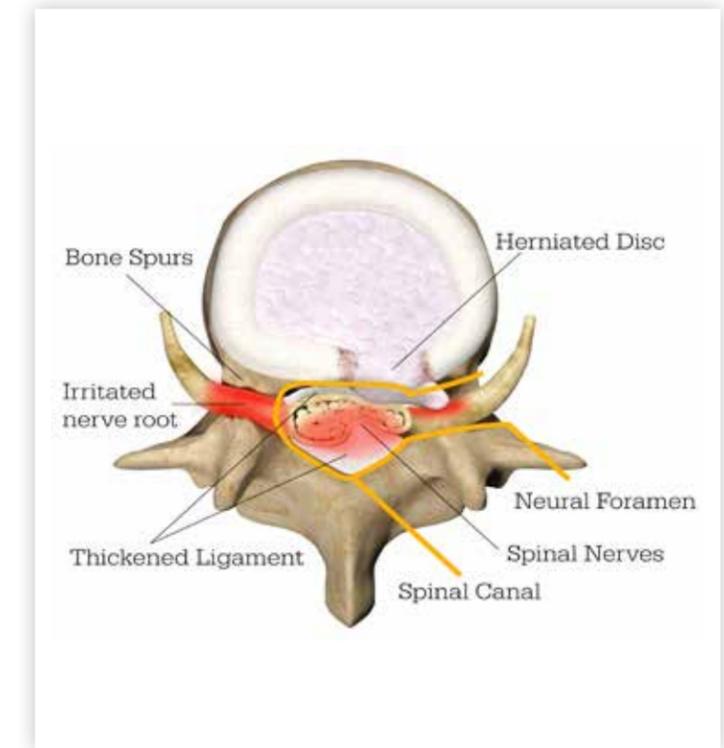


Figure 4: Spinal stenosis

Spondylolisthesis

Spondylolisthesis is defined as a slippage of one spinal bone (**vertebra**) relative to an adjacent vertebra. Usually, one vertebra shifts forward relative to the vertebra immediately below it. Although there are many risk factors for spondylolisthesis in adults, degenerative disc disease is among the most common. It may also be caused by a malformation of a vertebra that is present since birth (congenital deformity), repetitive stress on the bone due to certain activities, or sudden injury (acute trauma). Back pain may accompany this condition, and if the slip results in pressure on (compression of) the nerves, leg symptoms can also develop.

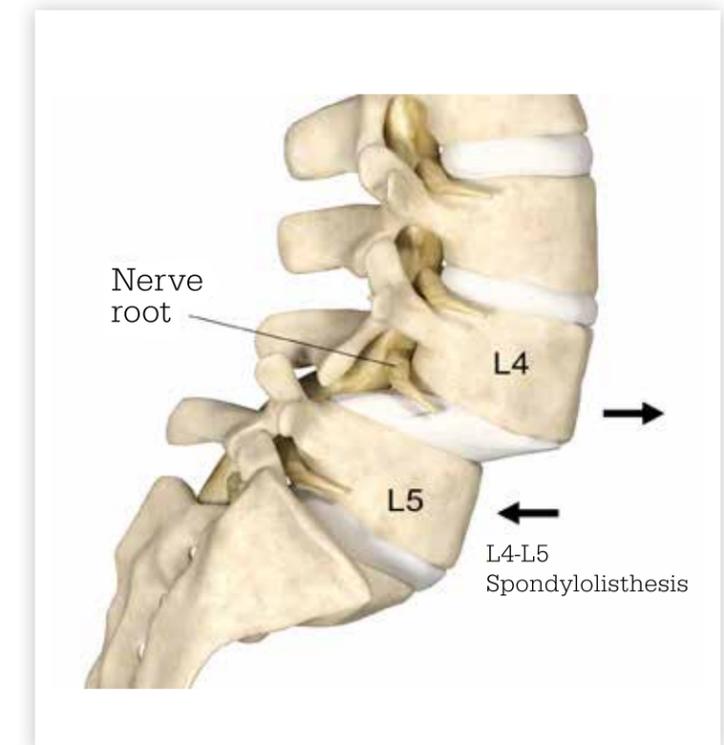


Figure 5: Spondylolisthesis

What are some of my treatment options?

Physicians may utilize anti-inflammatory and/or pain medications, bracing, physical therapy or spinal epidural injections to treat lumbar spine symptoms. Surgery may be considered for patients whose symptoms do not improve, but usually only if they have associated neurological symptoms or deformity of the spine.

What is an ALIF?

An Anterior Lumbar Interbody Fusion (ALIF) procedure is a type of lumbar spine surgery that surgeons perform through an incision made on the front (anterior) of the abdomen to remove a damaged, or degenerated intervertebral disc that may be the source of back or leg pain. This procedure is intended to restore or maintain space between the vertebral bodies, relieve pressure and create more room for the spinal nerves. It is called an anterior procedure because the spine is approached from the front of the abdomen and through the belly. Your surgeon may work together with a surgical approach specialist (either a vascular or general surgeon) to access the spine from the front.

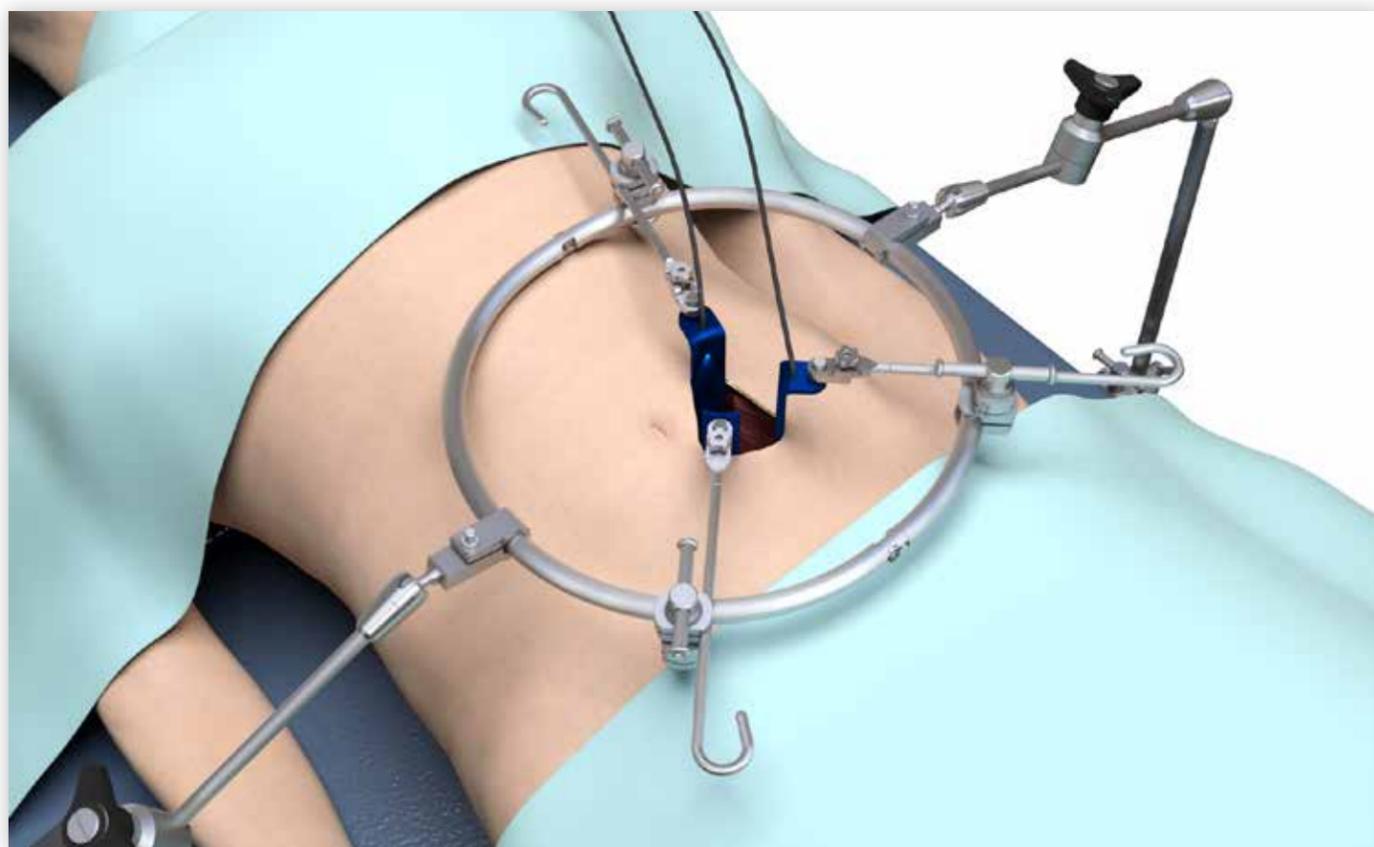


Figure 6: Surgical approach to the anterior lumbar spine

How should I prepare for surgery?



Start now. Take care of yourself. Preparing for spine surgery begins a few weeks before the actual surgery. The checklist below outlines some common tasks that your surgeon may ask you to complete in the weeks prior to your surgery date. Check with your surgeon to discuss your specific pre-surgery instructions and risks.

- Complete all preadmission testing and evaluations, as instructed by your doctor. Ask your surgeon if or when to stop your routine medications.
- Most patients will be asked to walk around following surgery. Be sure to pack safe, slip-on shoes, and shorts or a robe for walking the halls of the hospital unit. You may also want to pack a button up shirt and pants that are easy to take on and off, such as sweat pants.
- Arrange for transportation home. You may travel home from the hospital by car, either reclining in the front passenger seat or lying down in the back seat.
- Identify a person who will be able to help you with basic activities of daily living, shopping and other chores. You may consider planning to have a friend or relative stay with you for a few days.
- Choose and talk to a physical therapist to learn some important activities for after surgery.

What typically happens during surgery?

1. Incision

Your surgeon makes an incision to one side on the front of the lower abdomen, usually just left to the middle of the body. Through this incision, he/she can gain exposure to the front of the lumbar spine and locate the degenerated disc material between the vertebrae.

2. Intervertebral disc removal

Your surgeon will then use surgical instruments to remove the intervertebral disc. He/she will then place a piece of **donor bone** or an implant made of metal or plastic and filled with **natural bone material** between the vertebrae to help add stability and aid in the fusion process over time.

4. Surgical closure

Your surgeon will close the incision and dress it with a wound covering at the conclusion of the surgery. Some patients require a brace for a short period of time after surgery. As with any surgery, spinal surgery carries certain risks. Your surgeon will explain all the possible complications of the surgery, as well as side effects.

What implants could be used during my surgery?

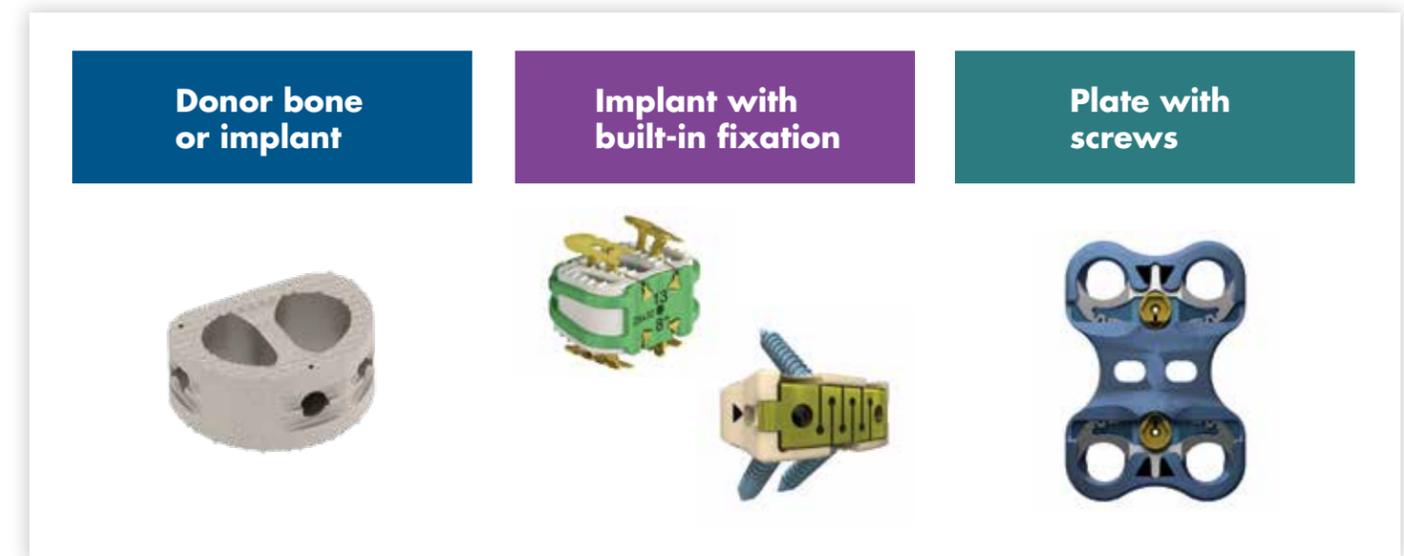
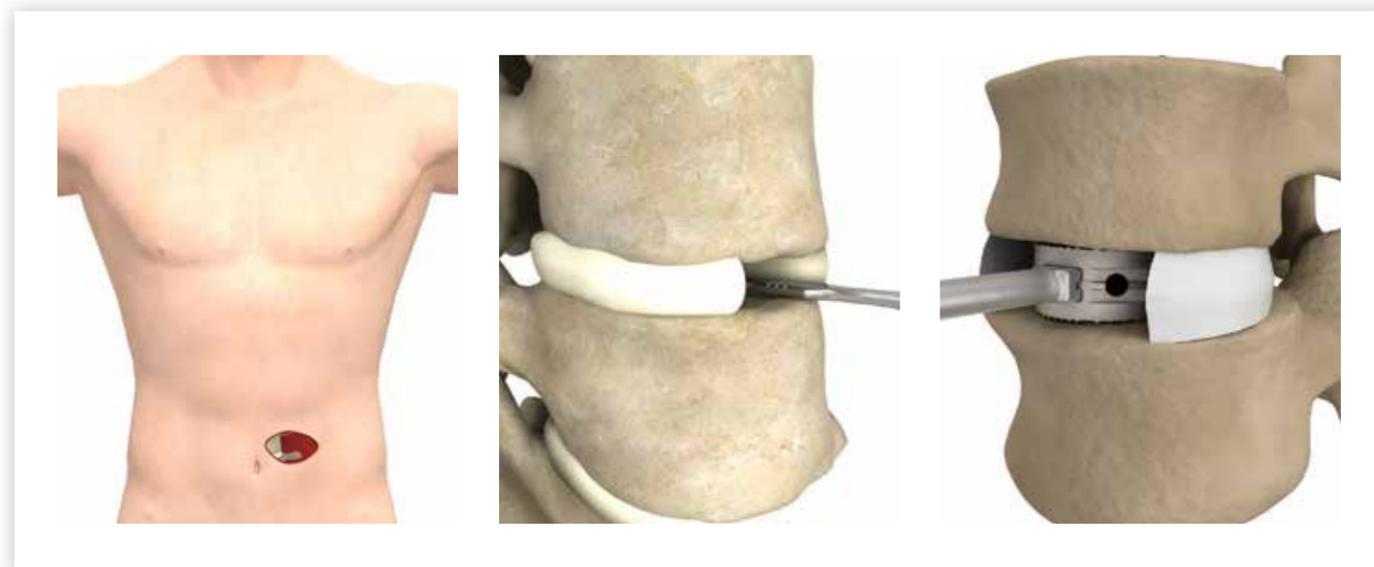


Figure 7: Implants typically used in ALIF procedures

3. Stabilization

Depending on the type of implant used, your surgeon may apply a metal plate onto the front of the vertebral bodies. He/she will then place screws through the plate to secure the plate to the vertebra, which is designed to provide additional support while **spinal fusion** occurs. If successful, **spinal fusion** takes place in the weeks and months following surgery, and can be assessed by your surgeon using imaging studies (e.g. x-rays) taken during follow up visits.



What does recovery look like?

Recovering from lumbar spine surgery

In the days following your procedure, your surgeon, nurses and physical therapists will closely monitor your condition and progress. Although the recovery process varies for each patient, here is what you might expect in the days following surgery:

After spine surgery, some patients are able to go home the same day or the next day, so most of the recovery time is spent at home. You may be asked to walk the day of or day after your surgery.

It may be easier to wear shirts that have zippers or button up the front, rather than those that go on over the head during the initial recovery period.

In some cases, surgery through the abdomen may disrupt normal digestion. These patients may be instructed to follow a liquid-only diet until digestion returns to normal.

It is normal to feel pain following the surgery, so your doctor may prescribe pain medication.

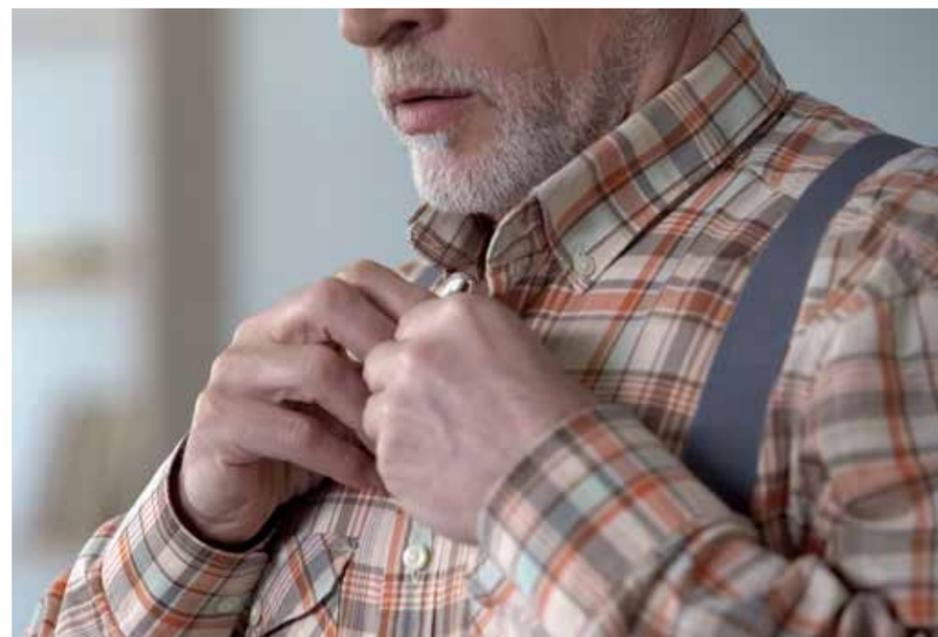
Driving must be avoided while taking certain medications or muscle relaxants. Speak to your doctor about any medications he or she prescribes for you.

All patients are advised to move carefully. Certain activities like lifting anything heavy and bending over should be avoided immediately following surgery. Your surgeon will tell you when it is safe to resume normal activities.

Some patients may be required to wear a back brace to avoid unsafe movement and to provide stability. If this happens, you will be shown how to put the brace on and take it off, and be given instructions on when to wear it.

Physical therapy may be helpful as you return to normal activity during the recovery period. The amount of physical therapy that is needed will be determined for each patient based upon individual goals and progress. Work with your physical therapist to determine what activities are right for you.

Smoking or any type of nicotine intake increases the risk of complications and may interfere with the bone-healing process required for a successful fusion. Speak with your doctor to better understand the risks associated with smoking or nicotine intake.



Frequently asked questions

These FAQs are not a substitute for medical advice from your doctor. Please be sure to speak with your doctor about any questions regarding your specific symptoms, diagnosis and treatment options.

Q: Can I shower after surgery?

A: Depending on the size and location of your surgical incision and what kind of dressing is applied to the surgical site, you may have special instructions for showering. Your surgeon may ask you to wait to shower after surgery for anywhere from one to three days. Don't soak in water (e.g., bathtubs, swimming pools) until your doctor says it's okay. As always, ask your doctor what is best for you.

Q: Will I have a scar?

A: Yes. Due to the nature of surgery in general, you will have a scar. Your surgeon may recommend a topical treatment to help reduce scar formation.

Q: When can I drive?

A: It is typical for surgeons to advise that patients only return to driving once they are no longer taking pain medication(s) and once they feel comfortable turning the head in all directions. Please ask your doctor prior to driving.

Q: When will I be able to return to work?

A: This will depend on the nature of your job. People with labor intensive jobs may take longer to get back to work, while people with desk jobs may be able to return sooner. The amount of time can range anywhere from two to twelve weeks. Ask your doctor about the best plan for you to get back to work.

Q: Can I travel?

A: In general, your surgeon will recommend waiting until you feel comfortable enough to travel. As always, ask your doctor what is best for you.

Q: How long will I have restricted activities?

A: Many surgeons recommend that their patients wait twelve weeks before returning to normal activities. Please ask your doctor when you can resume normal activities, as every person is different.

Glossary

Bone spurs: bony projections that can develop as a result of the natural aging process

Degenerative disc disease: the progressive breakdown of the intervertebral discs throughout the spine that can occur as we age

Donor bone: bone graft that comes from a donor and is referred to as allograft bone. Allograft bone usually comes from bone banks that harvest the bone from cadavers

Facet joints: surfaces, or joints between the spinal bones that allow for motion

Herniated disc: the shift of an intervertebral disc into an abnormal position

Intervertebral disc: soft structure found between each of the spinal bones that acts as a shock absorber

Natural bone material: bone material that can come either from a patient's own body (autograft) or be donated (see donor bone) from a bone bank after being harvested from a cadaver (allograft)

Neural foramen: opening through which the spinal nerves pass on their way from the spinal canal to the arms or legs

Spinal fusion: permanent connection of two or more vertebrae in the spine, eliminating motion between them. Spinal fusion involves techniques that are designed to mimic the normal healing process of broken bones

Thecal sac: soft tubular structure that contains the spinal nerves

Vertebra(e): spinal bones

Our mission

At Stryker, our goal is to bring products to market that help make spinal surgery simpler, faster and effective. Our products are used in procedures that are clinically proven to help people lead healthier, more active lives. Together with our customers, we are driven to make healthcare better.



References:

1. Meyer F, Borm W, Thome C. Degenerative Cervical Spinal Stenosis: Current Strategies in Diagnosis and Treatment. Deutsches Arzteblatt International. 2008. 105(20): 366-372.
2. Genevay S, Atlas SJ. Lumbar spinal stenosis. Best Practice and Research in Clinical Rheumatology. 2010 Apr;24(2):253-65.

In general, surgical treatment options presented by your surgeon are aimed at relieving pressure on nerve roots in an attempt to address pain.

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The information presented is for educational purposes only. Stryker is not dispensing medical advice. Please speak to your doctor to decide if spinal surgery is right for you. Only your doctor can make the medical judgment regarding which products and treatments are right for your own individual condition. Spinal surgery carries certain risks. Your surgeon will explain all the possible complications of the surgery, as well as side effects. Each spinal surgery patient will experience a different post-operative activity level, depending on his/her own individual clinical factors. Your doctor will help counsel about how to best maintain your activities in order to recover properly from your surgery. Such activities include not engaging in high-impact activities that could de-stabilize any instrumentation that may have been implanted.

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