VB SPINE

Patient Guide to

MIS PLIF

Minimally Invasive Posterior Lateral Interbody Fusion

Table *of Contents*

About The Lumbar Spine 4

What Are Some Possible Reasons for My Pain? 6

What Is A Minimally Invasive Posterior Lumbar Interbody Fusion (Plif)? 8

How Should I Prepare for Surgery? 9

What Typically Happens During Surgery? 10

What Does Recovery Look Like? 12

Frequently Asked Questions 14

Glossary 15

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.

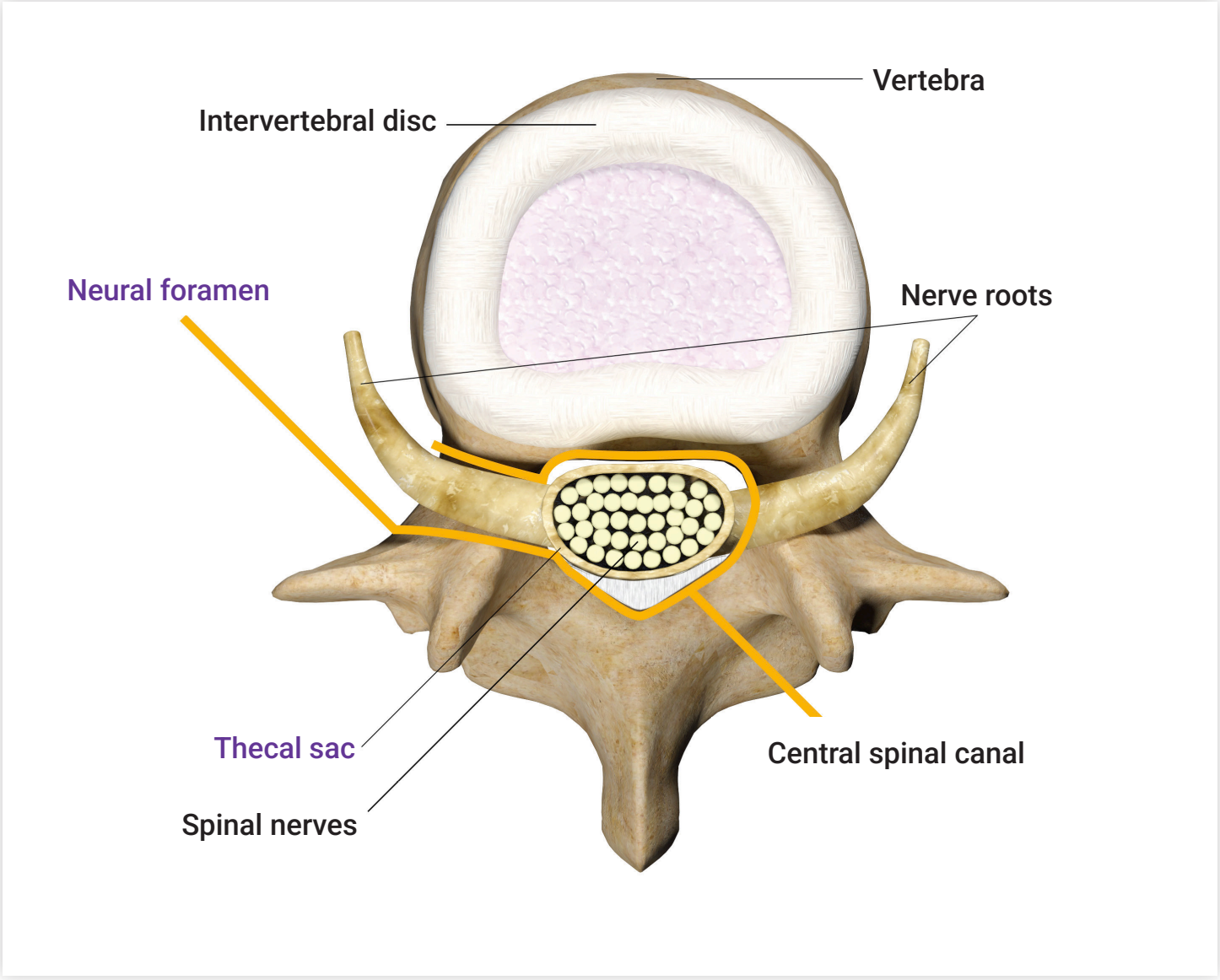


Figure 1: Lumbar vertebra

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.

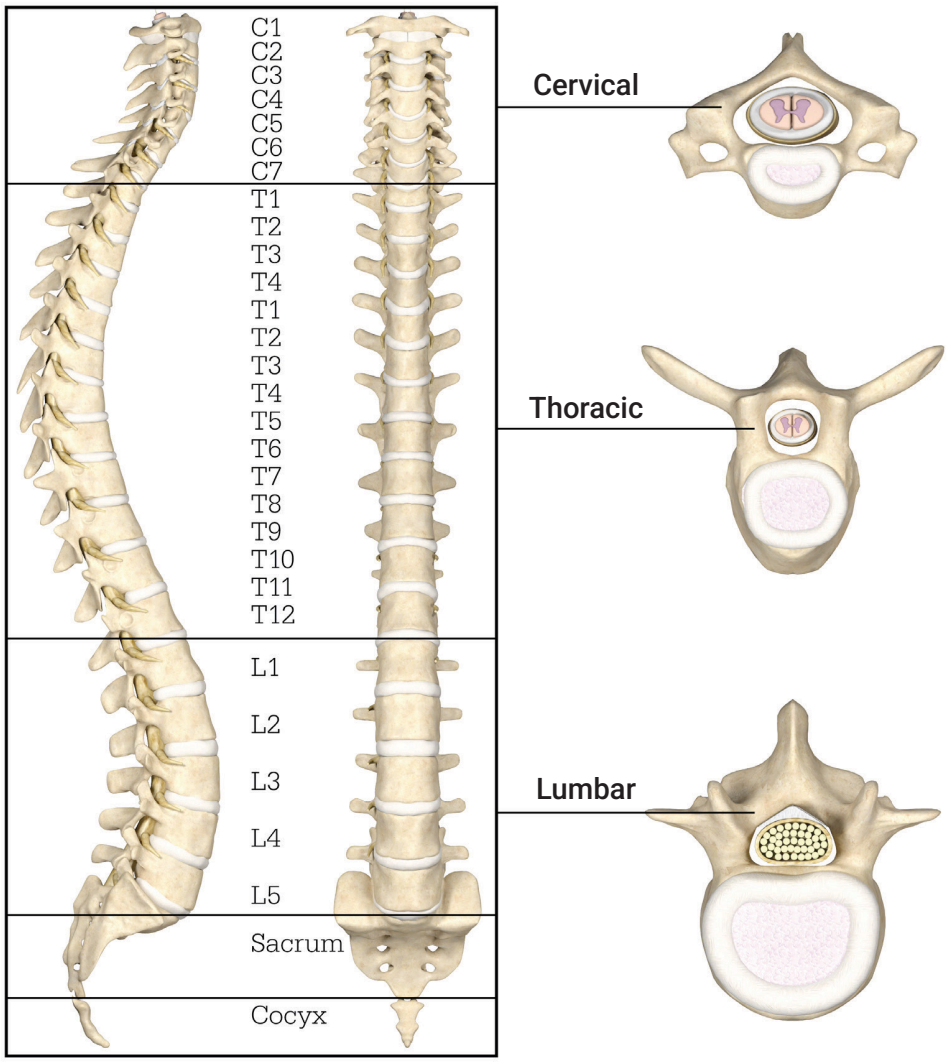


Figure 2: Spinal column

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.[1] Lumbar disc degeneration consists of deterioration of a lumbar disc, which may then become narrowed or may **herniate**.

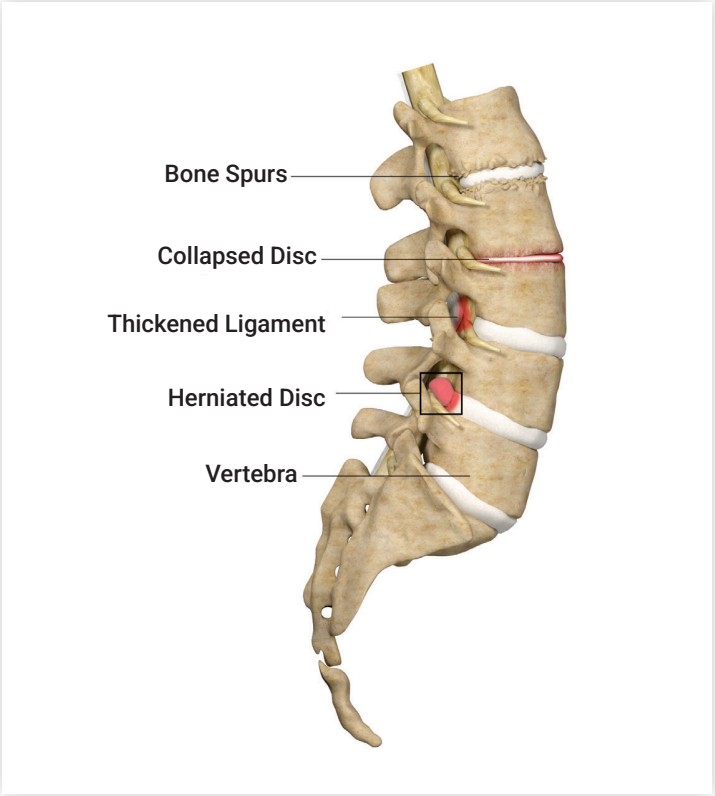


Figure 3: Degenerative lumbar spine

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 **thecal 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]

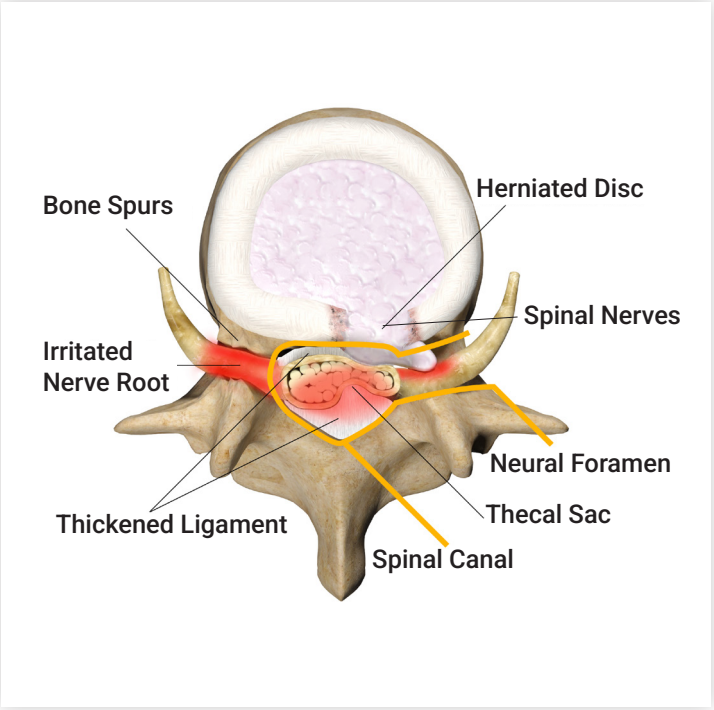


Figure 4: Spinal stenosis

Spondylolisthesis[3]

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.[3] 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).[3] Back pain may accompany this condition, and if the slip results in pressure on (compression of) the nerves, leg symptoms can also develop.[3]

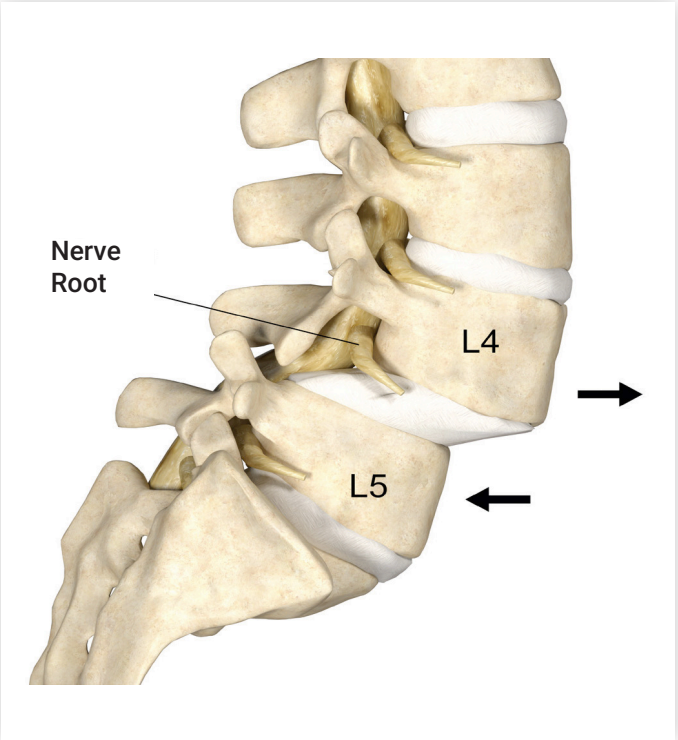


Figure 5: Spondylolisthesis

Words in bold: see Glossary for full definition

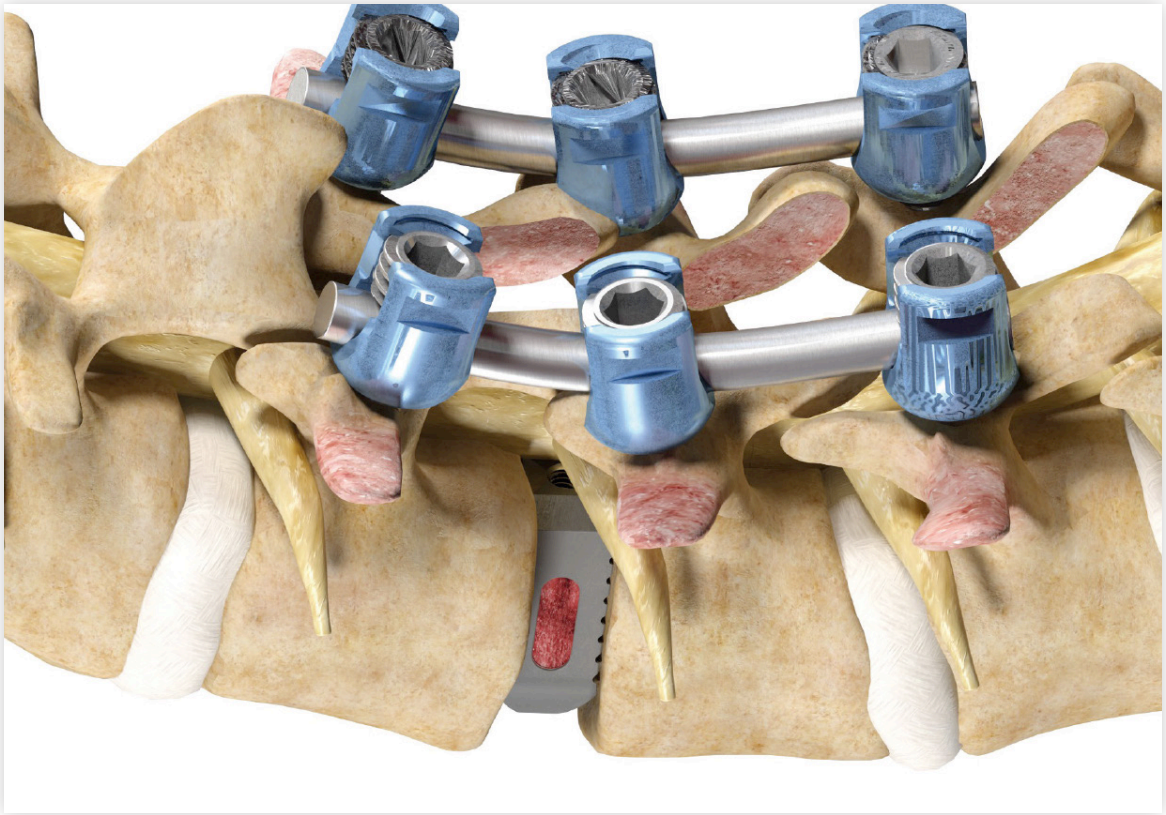
What Are Some of My Non-Surgical Treatment Options?

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 and/or who have associated neurological symptoms or deformity of the spine.

What Is A Minimally Invasive Posterior Lumbar Interbody Fusion (PLIF) Surgery?

A posterior lumbar interbody fusion, or PLIF is performed to remove a worn out, or degenerated **intervertebral disc** with the goal of permanently **fusing** or "connecting" the surrounding spinal bones, called **vertebrae**. It is called a posterior procedure because the spine is approached through an incision on the back, and the word "interbody" means the space between the vertebral bodies.

Using a less or minimally invasive surgical technique, this procedure can be done with a smaller incision than traditional open spinal surgeries that use a larger incision and may help avoid disrupting or damaging the low back muscles.[4]



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 you 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. Access

A short incision is made at the midline of the lower back. A device, called a fluoroscope, that projects live x-ray images onto a screen is typically used to help pinpoint the position on the spine where the surgery will be performed. Once the necessary location in the spine is exposed, your surgeon places a device called a retractor into the incision to hold the soft tissue out of the way and allow him/her to see the surgical site during the procedure.

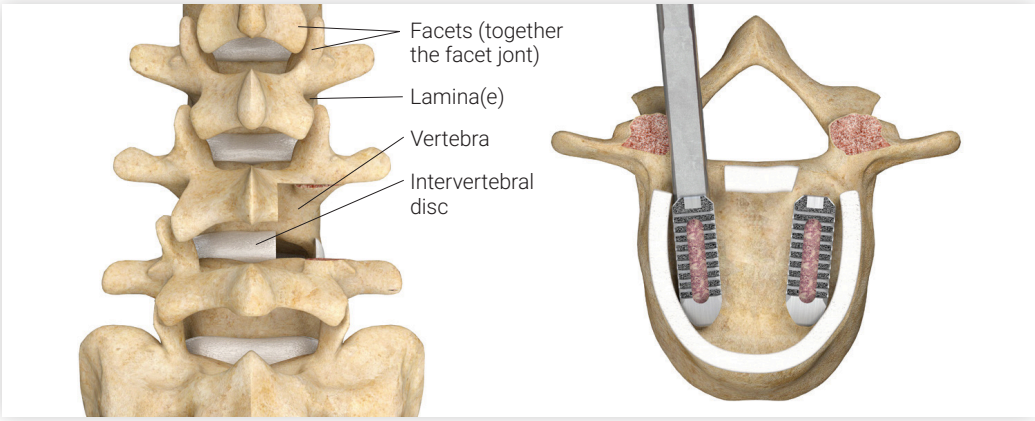
2. Stabilization

Next, the **vertebrae** are prepared for the insertion of spinal implants. Either a drill or a sharp instrument called an awl is used to make holes in the bones connecting the back of the vertebrae to the vertebral bodies in the front of the spine. These bones are called pedicles, and the instrumentation placed into them are called pedicle screws. These screws may be placed into the vertebrae above and below the removed disc on both sides of the spine. For a single level posterior lumbar interbody fusion, this means four screws are placed, two on each side. With the screws in place, your surgeon can now move on to the discectomy, or **intervertebral disc** removal.

3. Intervertebral Disc Removal and Implant Placement

Cutting instruments are used to remove portions of the spinal bones called **laminae** and **facets** as needed from the back of the vertebrae on each side to allow your surgeon to see the degenerated intervertebral disc. These removals are called laminectomies and facetectomies. The disc space is spread apart by inserting a spreader or by applying pressure between the pedicle screws using a device called a distractor. Your surgeon will then use surgical instruments to remove the intervertebral disc.

He/she will then place one or two pieces of **donor bone** or implant(s) 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. Compression

To help provide stability to the spine while the fusion occurs, rods are inserted between the upper and lower screws on both sides to connect them. A device called a compressor can be used to squeeze the upper and lower vertebral bodies together, which can help allow for a tight fit of the implants in the disc space. This pressure, called "compression," is intended to aid in the **spinal fusion** process. Small screws called blockers are then inserted to tighten the screws and rods in the compressed position.

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.

Surgical Closure and Summary

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.

A minimally invasive surgical, or "MIS" approach can be performed with potentially less operative blood loss and shorter hospitalizations than traditional open surgery.[4]

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?

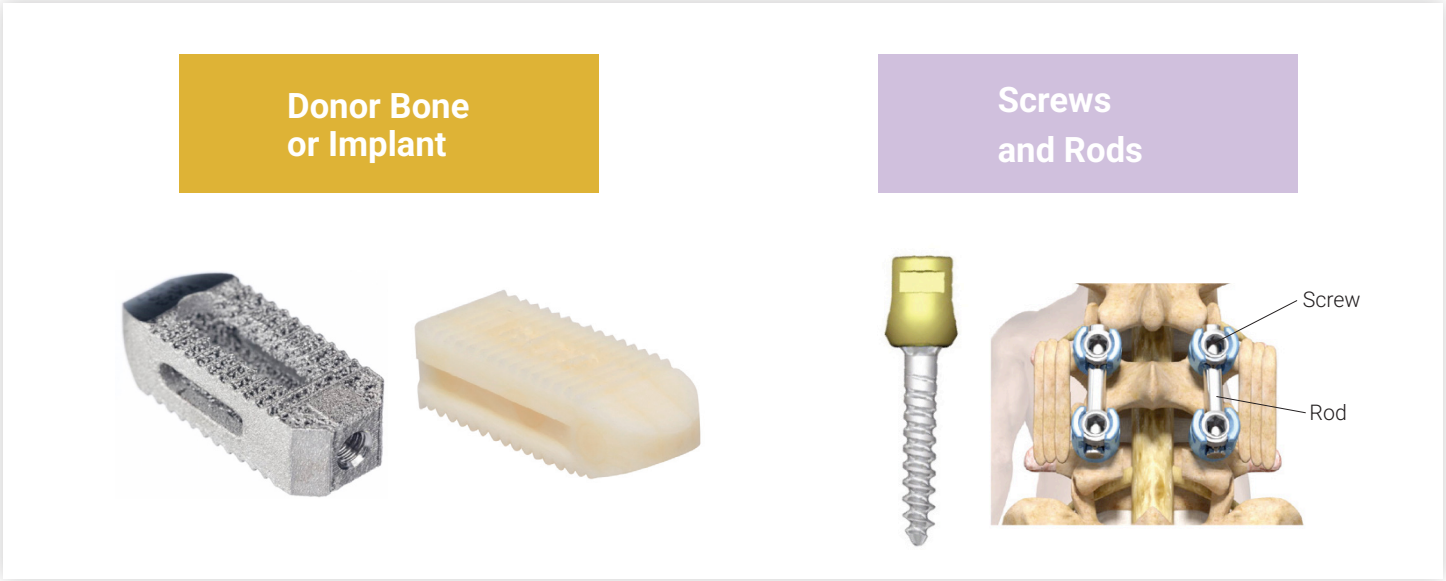


Figure 7: Implants typically used in MIS PLIF procedures

What Does Recovery Look Like?

Recovering from Lumbar Spine Surgery

In the days following your procedure, your surgeon, nurses and physical therapists will 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 back 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.
- 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 help 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 can increase the risk of complications and may interfere with the bone-healing process required for a successful fusion.5 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

Allograft: bone material that comes from a donor of the same species, i.e., human

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

Facetectomy: partial surgical removal of the facets, the surfaces or joints between the spinal bones

Herniate/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

Lamina(e): bone(s) at the back of the spine protecting the spinal canal

Laminectomy: surgical removal of the entire lamina, a bone at the back of the spine

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 canal: the hollow passage formed by the foramen of the vertebrae through which the spinal cord runs

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

Stenosis: a narrowing of the space for the spinal cord or nerves

Thecal sac: soft tubular structure that contains the spinal nerves

Vertebra(e): spinal bones

References:

1. Choi YS. Pathophysiology of degenerative disc disease. Asian Spine J. 2009;3(1):39-44.
2. Genevay S, Atlas SJ. Lumbar spinal stenosis. Best Practice and Research in Clinical Rheumatology. 2010 Apr;24(2):253-65.
3. Gagnet P, Kern K, Andrews K, Elgafy H, Ebraheim N. Spondylolysis and spondylolisthesis: A review of the literature. J Orthop. 2018 Mar 17;15(2):404-407.
4. Sidhu GS, Henkelman E, Vaccaro AR, et al. Minimally invasive versus open posterior lumbar interbody fusion: a systematic review. Clin Orthop Relat Res. 2014;472(6):1792-1799.
5. Patel RA, Wilson RF, Patel PA, Palmer RM. The effect of smoking on bone healing: A systematic review. Bone Joint Res. 2013;2(6):102-111.

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

Some of the images in this brochure depict VB Spine's products. Please speak to your doctor if you have questions about these products or anything else in this brochure.

The information presented is for educational purposes only. VB Spine 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.

VB Spine or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: . All other trademarks are trademarks of their respective owners or holders.

Global ID: SPINE-GSNPS-BROC-2280368
Content ID: GEN-BR-43_32817
Copyright © 2025 VB Spine