



# Patient Information

## MIS TLIF

Transforaminal Lumbar Interbody Fusion  
Using Minimally Invasive Surgical Techniques



Bringing world –class health care  
to your door-step





# MIS TLIF

## Table of Contents

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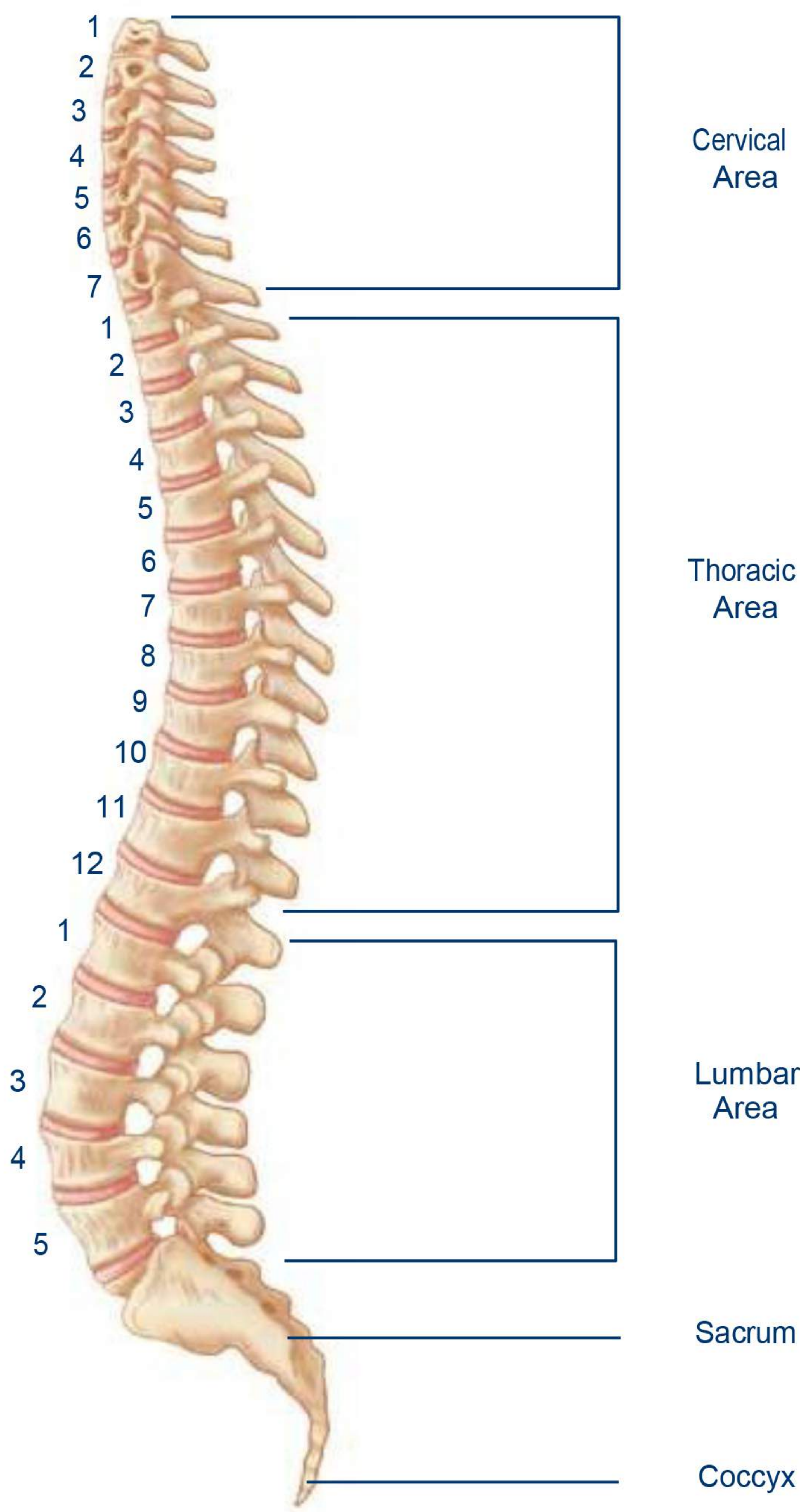
Anatomy of Spine .....	2
General Conditions of the Spine .....	4–6
MIS-TLIF Procedure .....	7–8
Post-Operative Expectations .....	9

The decision to receive medical treatment is individualized to the patient and the patient’s symptoms. The information presented within this brochure may not apply to your condition, treatment or its outcome, as surgical techniques vary and complications can occur. It is important to discuss the viability of this procedure with your physician to decide whether this treatment option is right for you.

This brochure is intended to be an educational resource only and is not meant to replace a conversation between a patient and their physician or member of their health care team. Please consult your physician for a complete list of indications, precautions, clinical results and other important medical information that pertains to this procedure.



# Anatomy of the Spine





# Anatomy of the Spine

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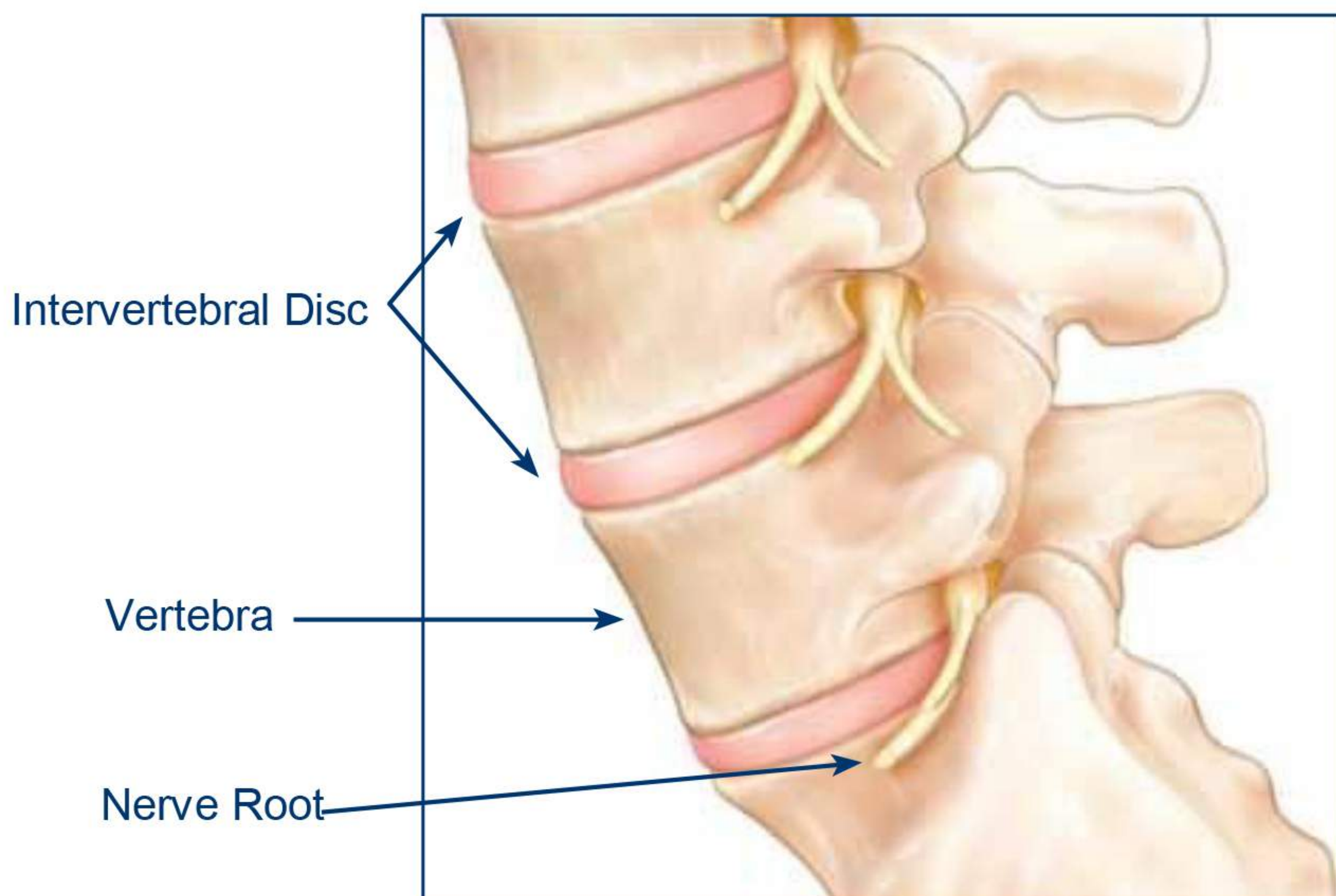
The spine is made up of vertebrae and is divided into 3 main sections:

- Cervical (7 vertebrae)
- Thoracic (12 vertebrae)
- Lumbar (5 vertebrae)

Below the lumbar spine is the sacrum which is comprised of 5 fused vertebrae. At the end of the spine is the coccyx, or the tailbone.

The vertebrae bear the weight of the upper body and provide points of attachment for muscles and ligaments. It also protects the spinal canal and provides exit points for spinal nerves.

The individual vertebrae are separated by intervertebral discs, which act as cushions or shock absorbers between the vertebral bodies.





# General Conditions of the Lumbar Spine

## What is Degenerative Disc Disease?

Degenerative changes in the spine may cause instability and pain in your back. Degenerative Disc Disease (DDD) involves the intervertebral disc and is part of the natural aging process. DDD can also result from torsional (twisting) injury to the lower back.

Healthy Discs



In the normal spine, your discs act as a cushion between vertebrae. Over time the discs can lose flexibility, elasticity, and height. When this happens, they lose their shock absorbing characteristics and can lead to abnormal motion or alignment of the spine, which may result in pain.

Degenerated Disc

Disc Degeneration  
with changes in  
bone structure



Symptoms include pain or numbness in the back or legs. This pain may increase with activities that involve sitting for extended periods, bending or twisting.



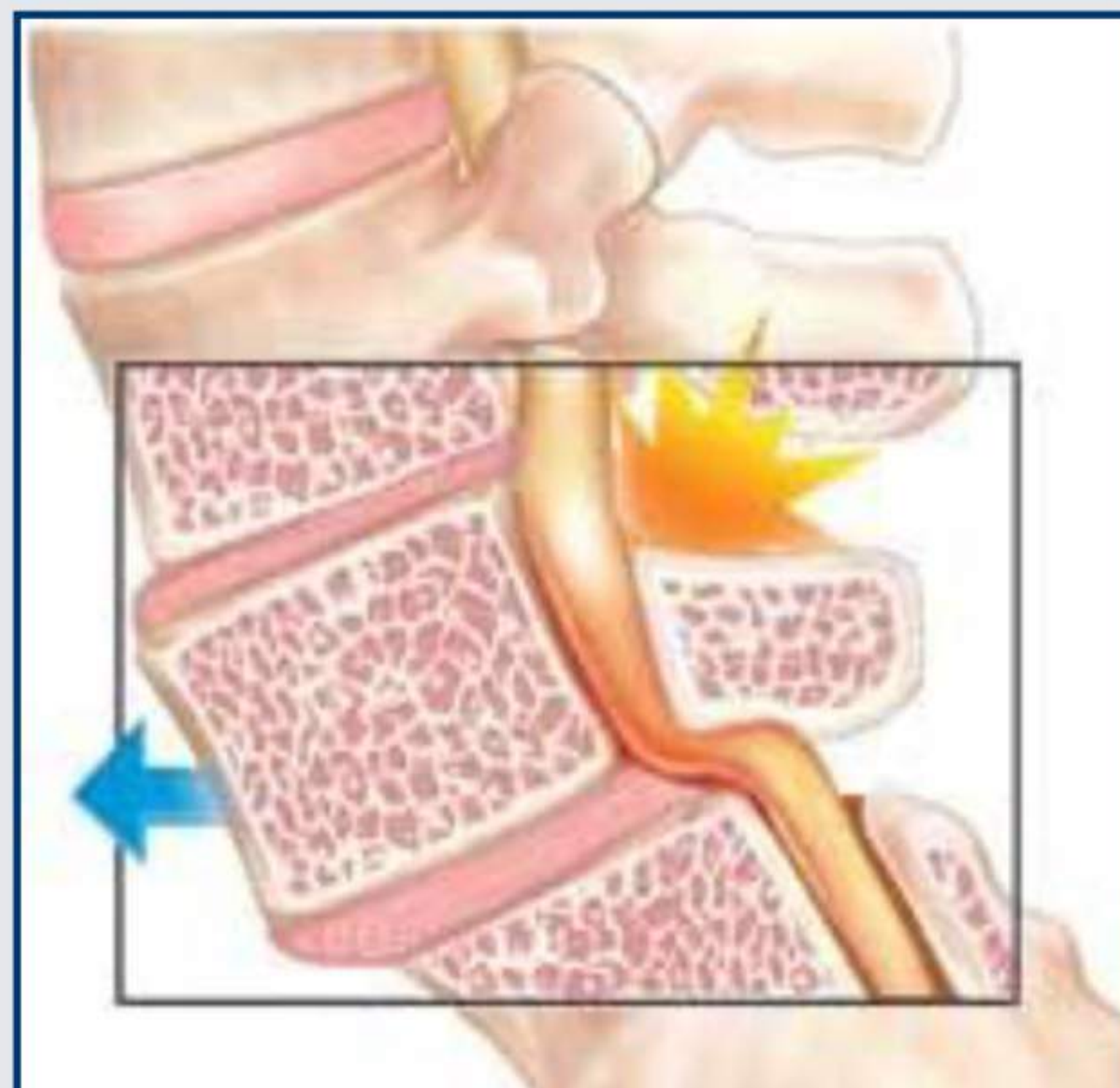
## What is Spondylolisthesis?

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Spondylolisthesis is a condition in which one of the vertebrae slips forward or backward. If left untreated, this can lead to deformity of the spine and narrowing of the spinal canal.



Normal spine segment



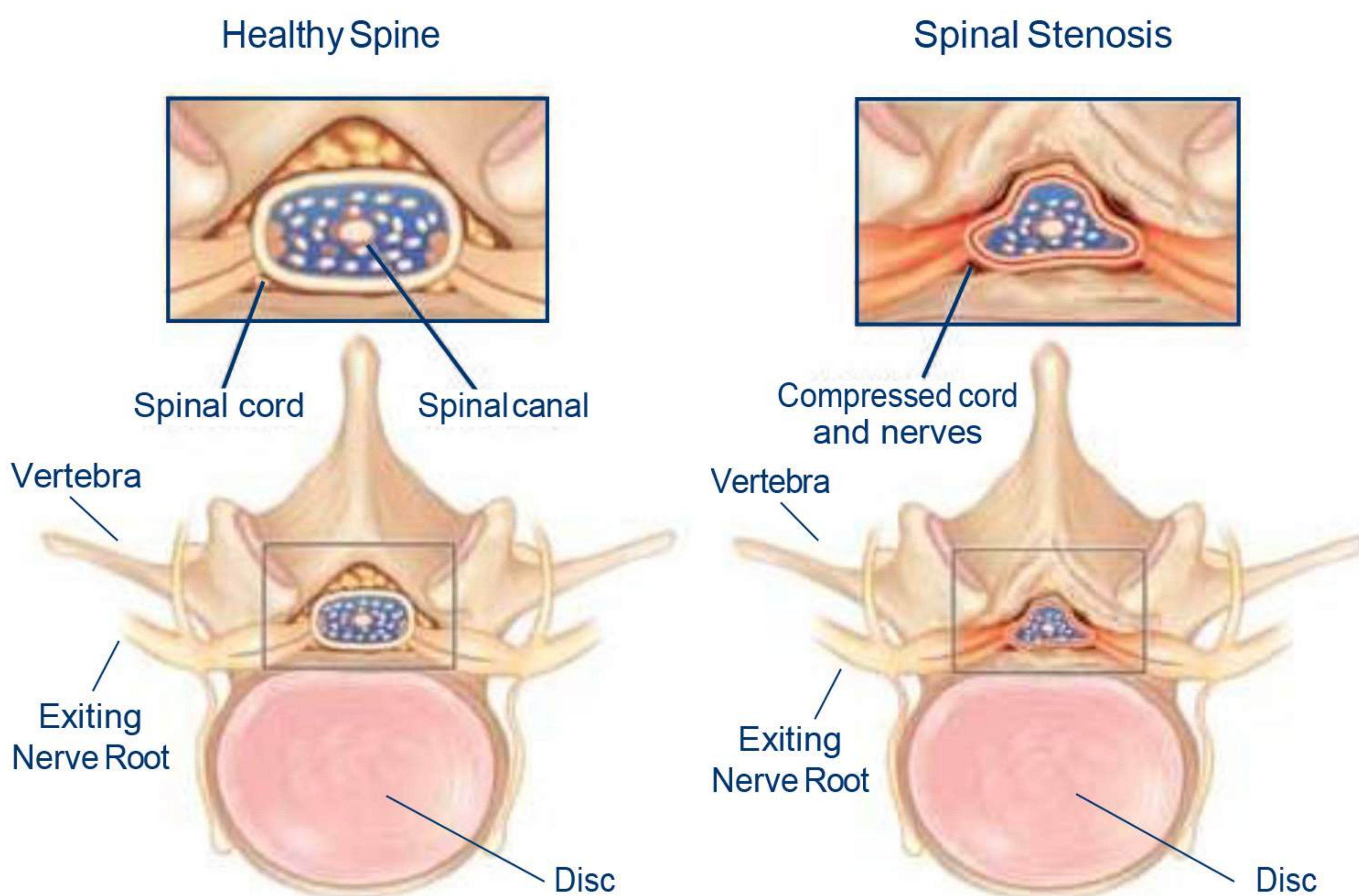
Displaced vertebra causing pressure on nerve

Typical symptoms include low back pain, muscle spasms, thigh or leg pain, and weakness. Interestingly, some patients are asymptomatic and only learn of the disorder after spinal radiographs.



## What is Lumbar Spinal Stenosis?

Spinal stenosis is the narrowing of areas in the spine where nerve roots and the spinal cord must travel. It is most commonly caused by age-related spinal degeneration. This narrowing can put pressure on the nerves and cause pain.



Symptoms often start gradually over time. Pain is likely to be present or worsen when you stand or walk, and lessen or disappear when you sit down or lean forward. Typically, people suffering from lumbar spinal stenosis will experience pain, tingling, weakness, or numbness that radiates from the lower back into the buttocks and legs.



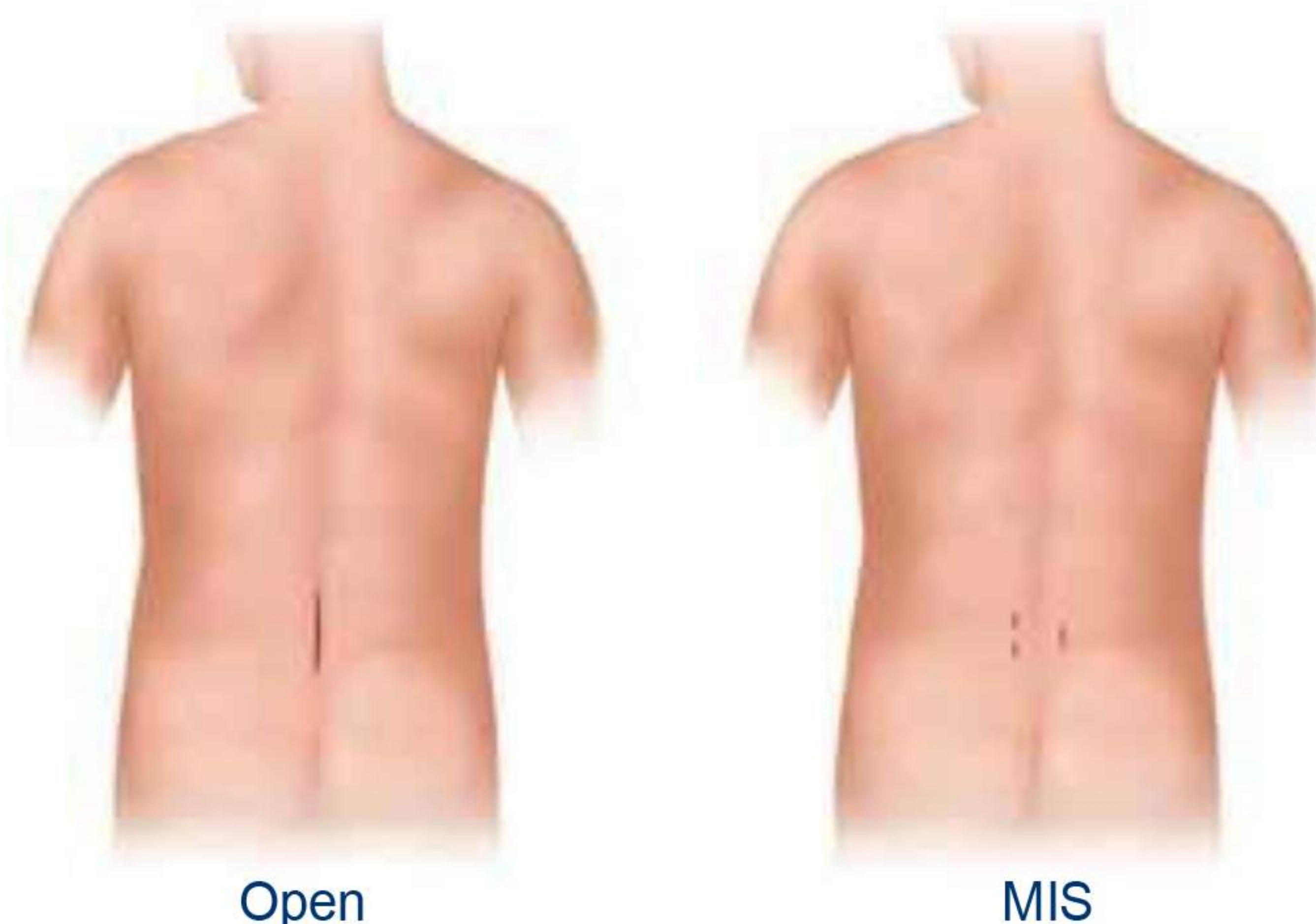
## What Is a Minimally Invasive TLIF?

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Transforaminal Lumbar Interbody Fusion (TLIF) is a form of spine surgery in which the lumbar spine is approached through an incision in the back. Fusion is a means of stabilizing the spine by fusing two vertebrae together. The transforaminal approach accesses the disc through the space between the vertebrae.

Minimally invasive surgery employs a strong understanding of anatomy combined with radiographic imaging to treat spinal conditions without undue injury to the surrounding soft tissues. The technique permits the surgeon to gently separate the muscles surrounding the spine rather than cut through them. This technique may result in smaller scars, less pain and quicker recovery.

However, due to the complexity and technical challenges of minimally invasive surgery, the procedure itself may take a longer period of time to complete. It is important to understand the potential risks associated with minimally invasive surgery and conditions that may require standard “open” treatment, such as high-degree scoliosis, tumors and some infections. The decision to receive minimally invasive surgery should be individualized to the patient and the patient's symptoms. It is important to discuss with your physician whether minimally invasive surgery is right for you.



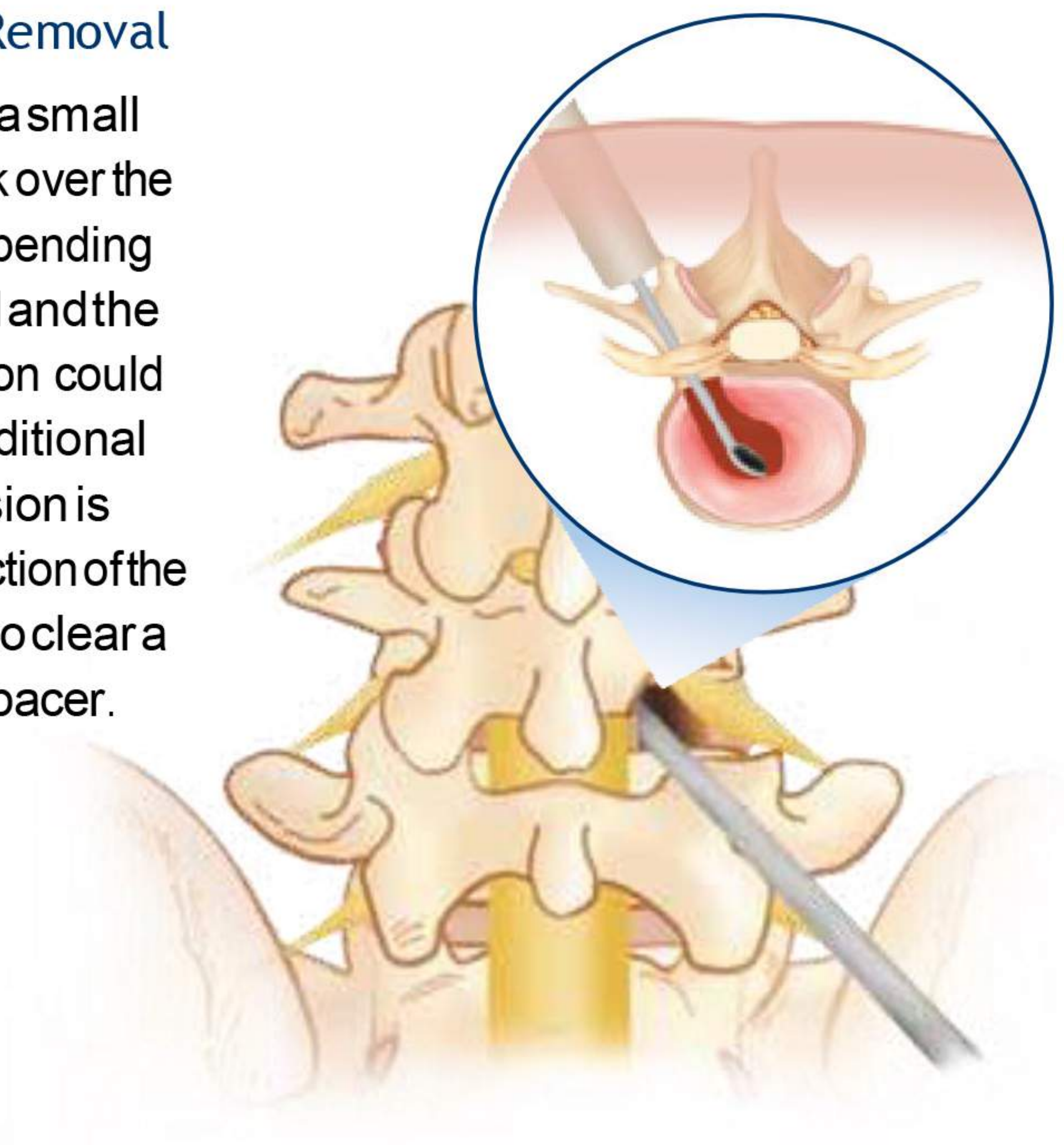
*Actual incision size may vary by procedure*



# How Is a Minimally Invasive TLIF Performed?

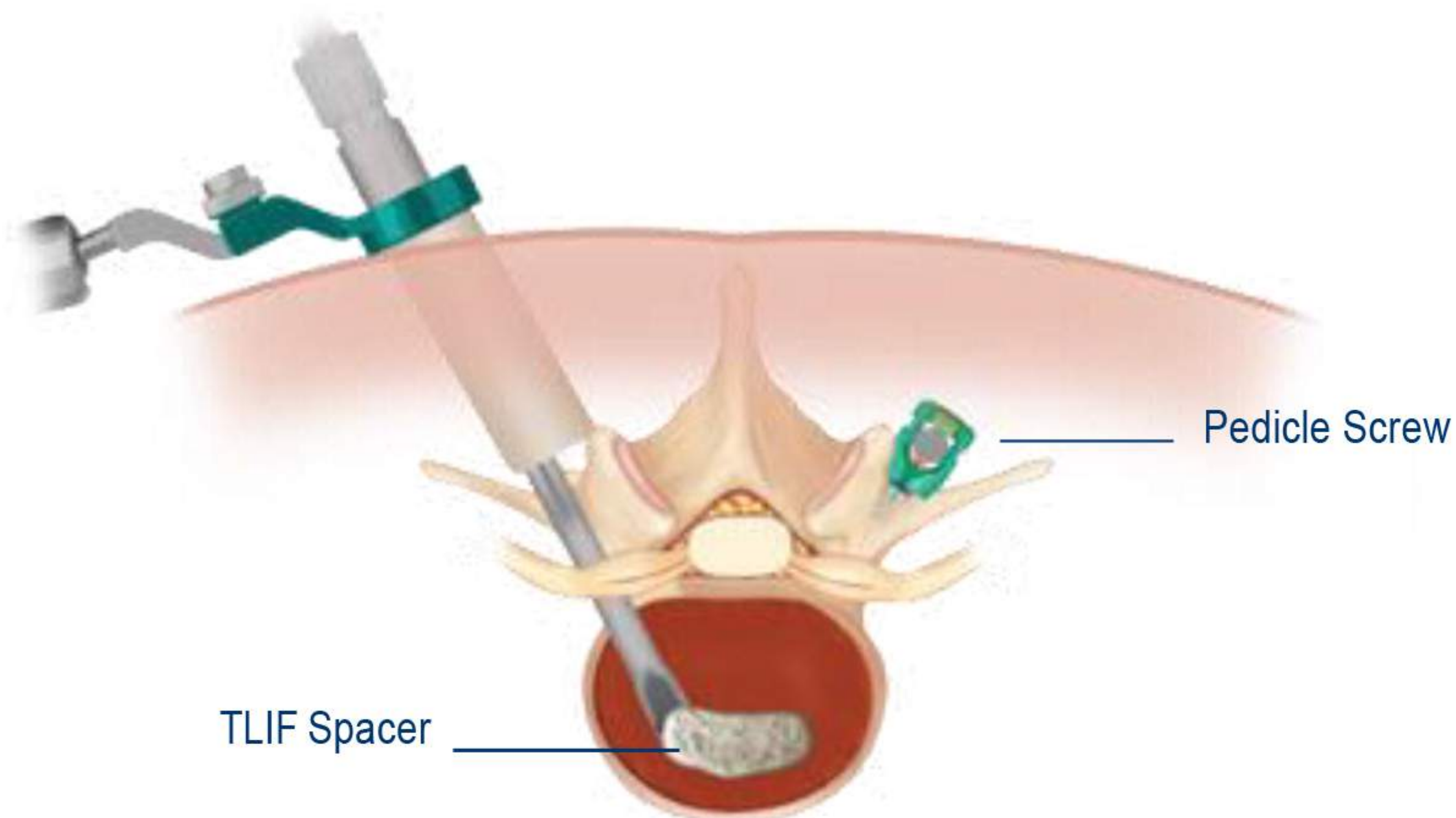
## Spinal Access and Bone Removal

First, the surgeon will make a small incision in the skin of the back over the vertebra(e) to be treated. Depending on the instrumentation used and the specific condition, the incision could be as small as 1 inch. In a traditional open TLIF, a 3 to 6 inch incision is typically required. A small section of the bone and disc are removed to clear a pathway for the interbody spacer.



## TLIF Spacer

An interbody spacer is inserted into the disc space to aid in supporting areas between the vertebrae where the disc has been removed. Its function is to stabilize the segment, which improves the overall alignment of the spine. This also provides more room for the nerves. The central chamber and surrounding area is packed with bone graft material to help promote bone growth between two vertebrae.





## Pedicle Screws/Rods

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With the goal of Minimally Invasive Surgery in mind, preparations are made to insert pedicle screws and rods which are used to screw the spinal column in place while fusion occurs.

The surgeon uses medical imaging to determine the precise screw location.

The screws are then inserted into the vertebrae to be fused

(as shown on page 8). Bone

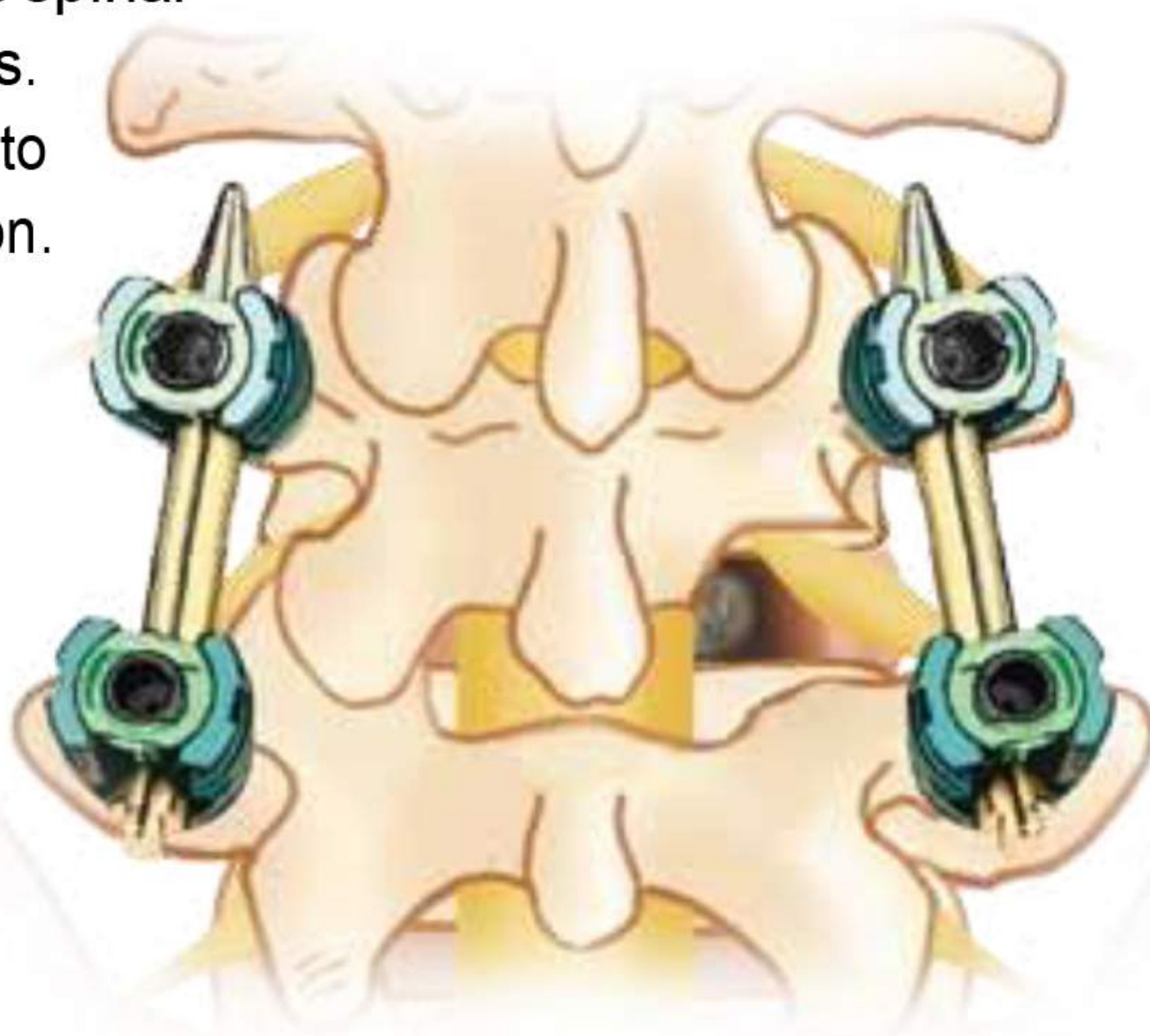
graft may be added along

the side of the vertebrae to

stimulate fusion. The surgeon

will then close the incision and

move the patient into recovery.



## What Should I Expect with My Recovery?

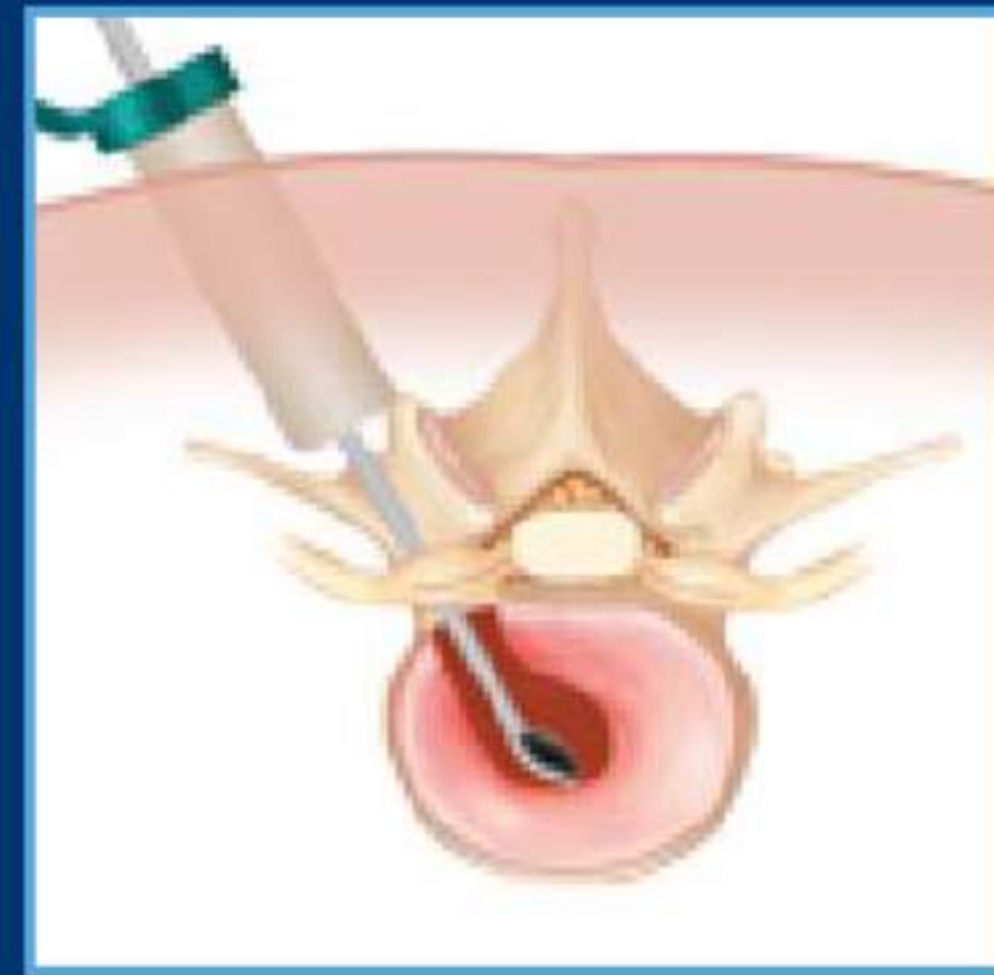
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A minimally invasive procedure typically allows patients to get out of bed the day of the surgery and may be discharged the day after surgery. Many patients will notice improvement of some or all of their symptoms and pain from surgery may diminish between 2 to 4 weeks after surgery. However, recovery time varies between patients.

It is the surgeon's goal for the patient to eventually return to his/her pre-operative activities. A positive attitude, reasonable expectations and compliance with your doctor's post-surgery instructions may all contribute to a satisfactory outcome.

The field of Minimally Invasive Surgery will continue to expand. However, certain techniques are highly technical and require training. As is the case with any surgical procedure, complications may occur. Such complications can include inadequate decompression, nerve injury, infection or persistent pain. Please consult your physician for a list of indications, precautions, clinical results and other important medical information that pertains to a minimally invasive TLIF procedure.





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