

The following is a sampling of products offered by Zimmer Spine for use in Posterior Cervical Fusion procedures.

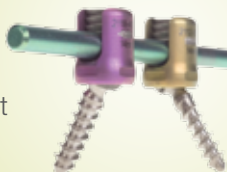
### NexPosure

*NexPosure*® MIS Access provides the first surgeon-designed system to access up to four levels of posterior cervical and upper thoracic anatomy minimally invasively. The *NexPosure* Portal's biased skirt, dual pivoting tube and radiolucent material make it an ideal choice for MIS posterior cervical and upper thoracic surgery.



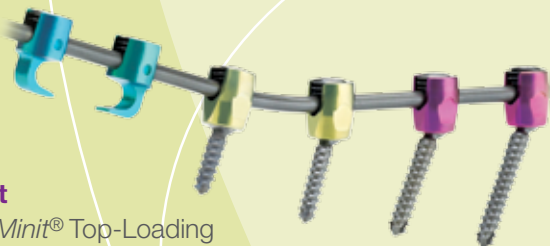
### Nex-Link

*Nex-Link*® Cervicothoracic Fixation System is an implant system used in the upper back and neck to stabilize higher segments of the spine.



### Minit

The *Minit*® Top-Loading System provides a simple and secure solution for providing rigid posterior fixation of the cervical and upper thoracic spine.



## Making an Informed Decision

The decision to have surgery is sometimes difficult. This publication is not intended to replace the experience and counsel of a physician. Rather, it is meant to educate and empower you as a patient. Your surgeon will be happy to answer any questions you might have. You may also call your surgeon's office and arrange to speak with someone who has had cervical surgery and can share that experience with you. It's just another way you can learn about the procedure and what to expect.

Your results may vary. The outcomes of spinal fusion depend on each patient's personal circumstances. As with any surgery, the outcome can depend on individual factors like weight, activity level, bone quality, and how well the physical therapy routine is followed after surgery. All patients may not experience every potential benefit. These points should be discussed with the surgeon before the operation.

<sup>1</sup> Data on file Zimmer Spine, Inc.

# Patient Guide to Neck Surgery

Posterior Cervical Fusion



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# Our Commitment to Patient Education

## Welcome to the Patient Guide to Neck Surgery, focusing on posterior cervical fusion.

At Zimmer Spine, we are committed to helping you learn more about neck pain and spinal fusion surgical procedures. The information presented here is for educational purposes only and is not intended to diagnose or recommend treatment for your neck condition. Only your surgeon can recommend posterior cervical fusion as a treatment option. Any questions or concerns you have should be discussed with your surgeon.

If you experience any of the following, you may not be a good candidate for cervical fusion surgery. Please talk to your doctor about your specific situation.

- Poor bone quality
- Pregnancy
- Obesity
- Infection
- Allergies to the implant or any of the implant materials
- Inability to follow the instructions of your doctor

### Living with Cervical Pain

It's estimated that 50 to 70 percent of Americans will suffer from neck pain at some point in their lives.<sup>1</sup> For most people, the pain will get better with conservative treatments. However, if you have persistent pain that radiates down your shoulders and arms, or significant weakness, numbness or tingling in your arms, hands or fingers, your doctor may recommend surgery.

You may have headaches that radiate to the back of the head, or you may lose your balance. Neck pain could be keeping you awake at night and may interfere with your job and the activities you love.

Many chronic neck pain conditions requiring surgery are due to degeneration of the cervical spine. Changes in the discs can lead to other problems, such as narrowing of the spinal canal, more commonly known as stenosis. Cervical degeneration is most often caused by aging and wear and tear.

Whiplash, most often from an automobile accident, is a frequent cause of injury-related cervical pain, and can result in damage to the facet joints and discs in the neck. Spinal deformities, tumors or other diseases can also play a role in cervical degeneration.

Cervical region

## Cervical Spine Anatomy

Neck pain comes from the cervical region, which is comprised of the first seven vertebrae at the top of your spine.



1 Each **vertebra** has a space called the spinal canal, which protects the **spinal cord** and the nerve roots. The nerve roots exit the spinal canal through the openings between the vertebrae on the side of the spine.

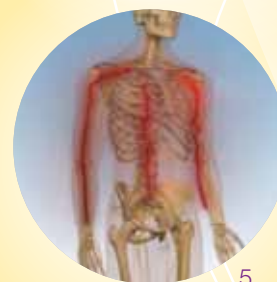
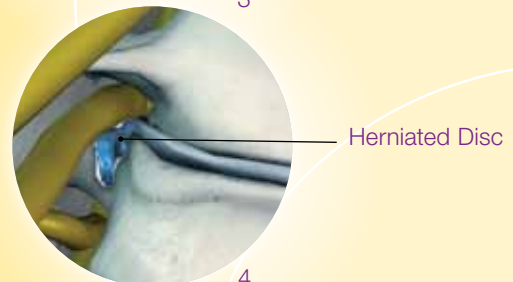
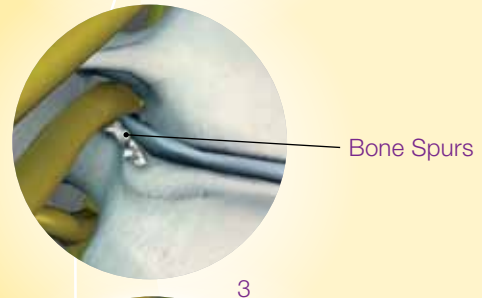
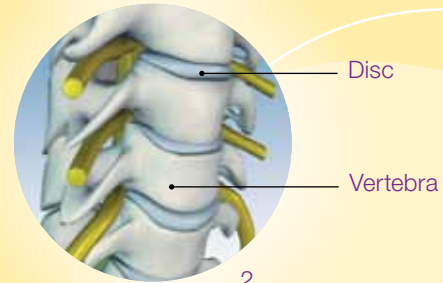
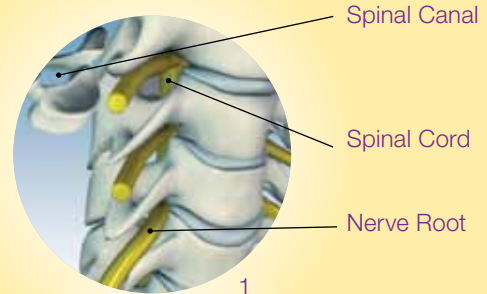
2 In a healthy spine, the vertebrae are separated by **discs** that act as cushions and allow the spine to move smoothly. Over time, with wear and tear, the discs may lose their cushioning effect and the ability to move freely. This is called **degenerative disc disease**. As the disc collapses, the spine may lose its normal alignment.

Discs do not have the ability to repair themselves like some other tissues in the body. That's why degenerative disc disease often continues to progress as time goes by.

3 **Bone spurs** may form which can grow into the spinal canal or openings and pinch the cord or nerve roots. This is called **spinal stenosis**.

4 A collapsed disc may also bulge, or **herniate**, through its outer layer. How much it protrudes will determine whether it bulges, herniates or separates from the rest of the disc, causing a **prolapse** or **sequestered fragment**. These terms refer to degrees of herniation and are associated with an increasing severity of symptoms.

5 This may press on the nerve roots as they exit the spinal canal or openings and cause pain, numbness or tingling or weakness in the arms, hands and fingers.





## Posterior Cervical Fusion

If you're already considering surgery, you've probably been through a host of nonsurgical treatments, including pain medications, exercise programs and physical therapy or chiropractic care. You may have worn a cervical collar to help limit neck motion and reduce nerve irritation. You might even have had injections to reduce inflammation and pain.

If these have failed to relieve your symptoms, your surgeon may recommend cervical fusion surgery.

### Potential Outcomes

Posterior cervical fusion surgery has been performed for decades, with continual advancements in techniques and instrumentation.

The goals of posterior cervical fusion surgery are to reduce pain, relieve swelling, irritation and pinching of nerves, provide stabilization and restore function. By stabilizing the cervical spine, you may regain the ability to return to your daily life activities.

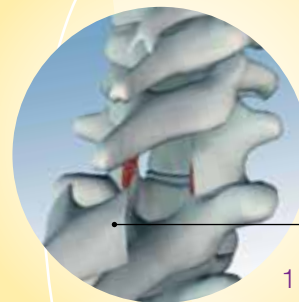
### Possible Complications

While unusual, complications can occur during and after surgery. Possible complications include but are not limited to continued pain, swelling, bleeding, loss of motion, delayed healing, nonunion and nerve damage. Although the surgery may be successful, some patients will still experience stiffness and pain.

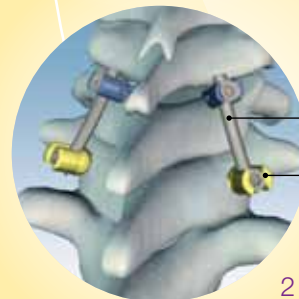


## Posterior Cervical Fusion Procedure

- 1 Posterior cervical fusion surgery requires that your surgeon perform the procedure through an incision in the **back of your neck**. During the procedure, your surgeon may remove part of the vertebra or bone spurs that are pinching the nerves. Removing the lamina portion of the vertebra completely is called a **laminectomy**. Removal of the lamina partially is called a laminotomy or hemilaminectomy.
- 2 **Rods** are secured to the posterior spine with **hooks or screws** to hold the vertebrae in place until the bone grafts have a chance to fuse together. The bone graft should set within the first 12 weeks after surgery, and in six months to a year, the fusion of the vertebrae should be complete, although in some cases fusion may take up to 18 months.



Removal of Lamina



Rods

Hooks or Screws



## Before and After Your Surgery

### Before the Procedure

Before the surgery, your surgeon may ask you to do a number of things to help make the procedure go smoothly and help your body heal:

- If you smoke cigarettes, you will be expected to stop for a period before and after your surgery, because smoking can interfere with a successful bone graft fusion.
- You'll be encouraged to eat healthy, well-balanced meals.
- And, of course, you'll want to follow all of your doctor's instructions.

### What to Expect After Your Surgery

After the surgery, you can expect to be in the hospital for several days. You will be encouraged to walk with assistance the first day after surgery and you will begin a program designed to help you get in and out of bed and care for your personal hygiene.

Because the bone graft takes a period of time to set, your doctor may ask that you wear a neck collar for a period of time. During this time, you will not be able to drive a car. After a sufficient period of rehabilitation, your surgeon will tell you when it is safe to resume your normal activities. Patients are typically able to return to many of the activities they enjoy.



The goal of posterior cervical fusion is to help relieve your symptoms and restore your quality of life.