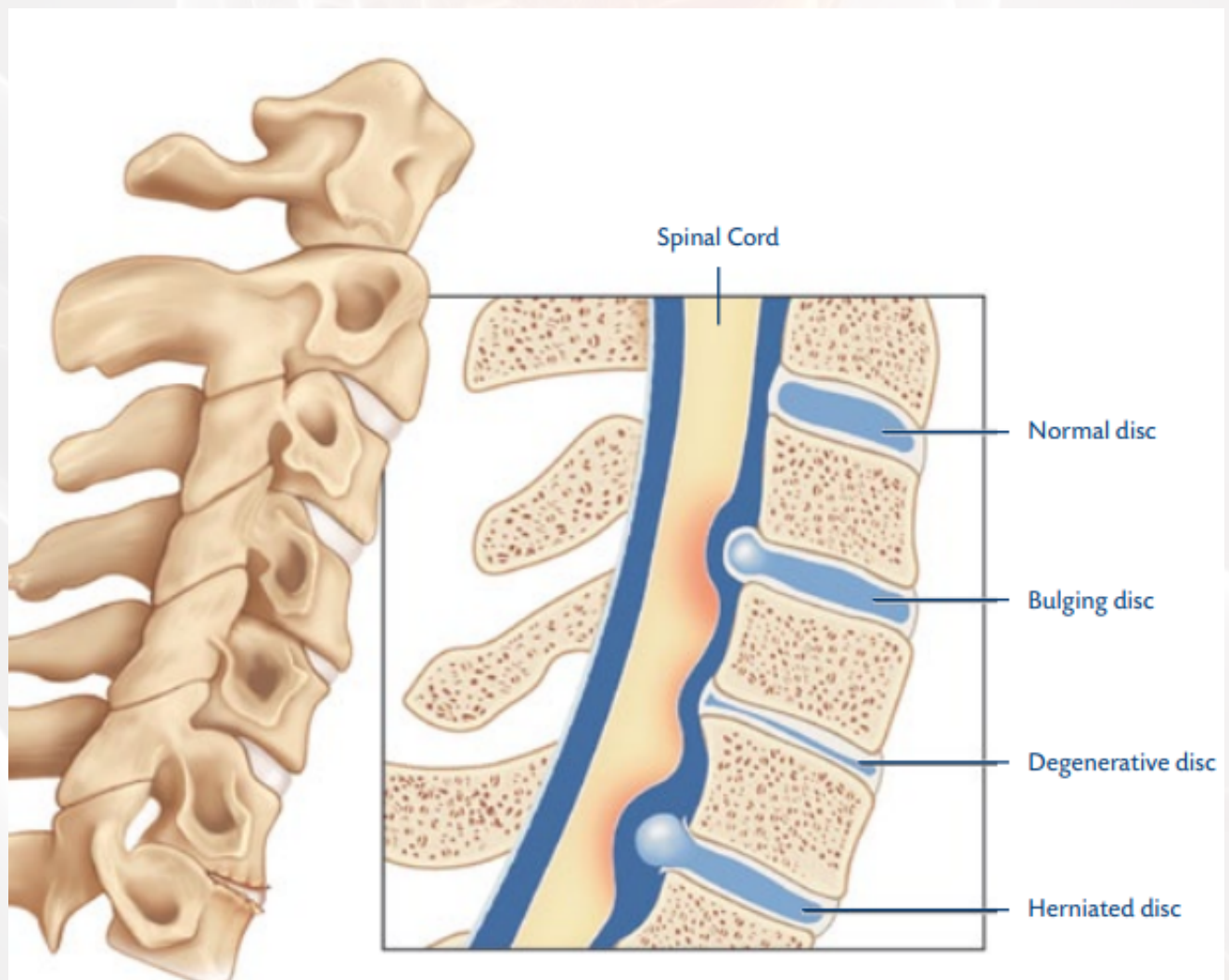


Posterior Cervical Decompression and Fusion (PCDF)



Patient Handout

Date: October 10, 2023

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1 What is Posterior Cervical Decompression and Fusion?

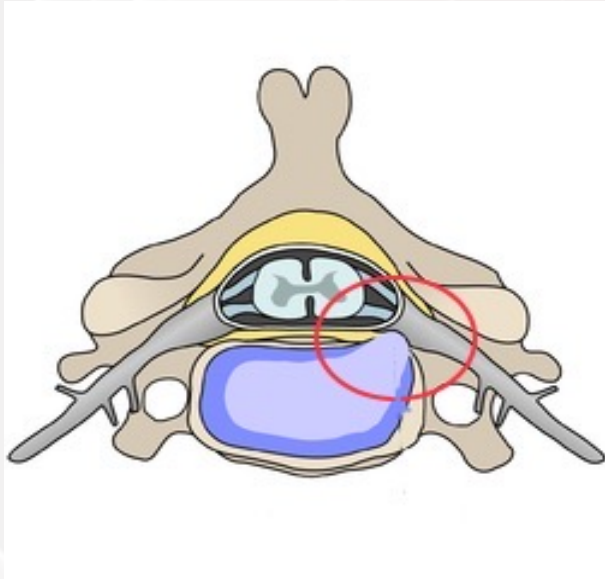
Posterior cervical decompression and fusion is a surgical procedure performed to alleviate neck pain and neurological symptoms caused by compression of the spinal cord or nerves in the cervical (neck) region. This surgical approach involves carefully accessing the cervical spine from the back of the neck and, when necessary, removing bone or tissue that is putting pressure on the spinal cord. Additionally, fusion techniques are employed to stabilize the spine and promote the healing and fusion of vertebral segments. This procedure aims to restore spinal health, reduce discomfort, and enhance the overall quality of life for individuals experiencing cervical spine issues.

2 Why is PCDF surgery performed?

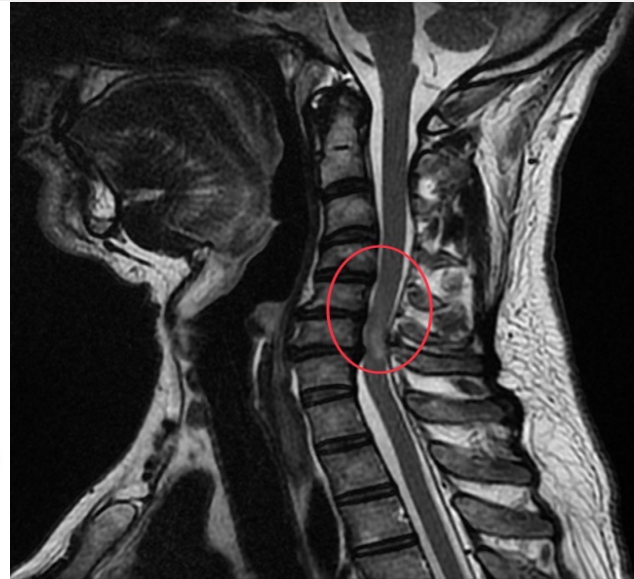
PCDF is performed to address a range of spinal conditions and their associated symptoms. Common reasons for undergoing this surgery include:

- **Spinal Stenosis:** When the spinal canal narrows due to bone spurs or degenerative changes, it can compress the spinal cord or nerve roots, leading to symptoms such as neck pain, weakness, numbness, and difficulty with balance. The surgery is performed to relieve this compression and alleviate symptoms.
- **Degenerative Disc Disease:** Over time, the cervical discs can wear down and herniate, resulting in nerve compression and pain. Decompression and fusion can help relieve the pressure, restore stability, and reduce discomfort.
- **Trauma or Injury:** In cases of traumatic injuries, such as fractures or dislocations of the cervical vertebrae, PCDF may be necessary to stabilize the spine and prevent further damage.
- **Tumors:** When tumors or abnormal growths develop within the cervical spine, surgery may be required to remove them and stabilize the spine.
- **Failed Conservative Treatments:** When conservative treatments like physical therapy, medication, and other non-surgical approaches have not provided sufficient relief, surgery may be considered as a more definitive solution.

Your surgeon will determine the specific reason for recommending PCDF based on your individual medical condition and symptoms.



Herniated Disc Compressing a Spinal Nerve



Cervical Stenosis with Spinal Cord Compression

3 Procedure Overview

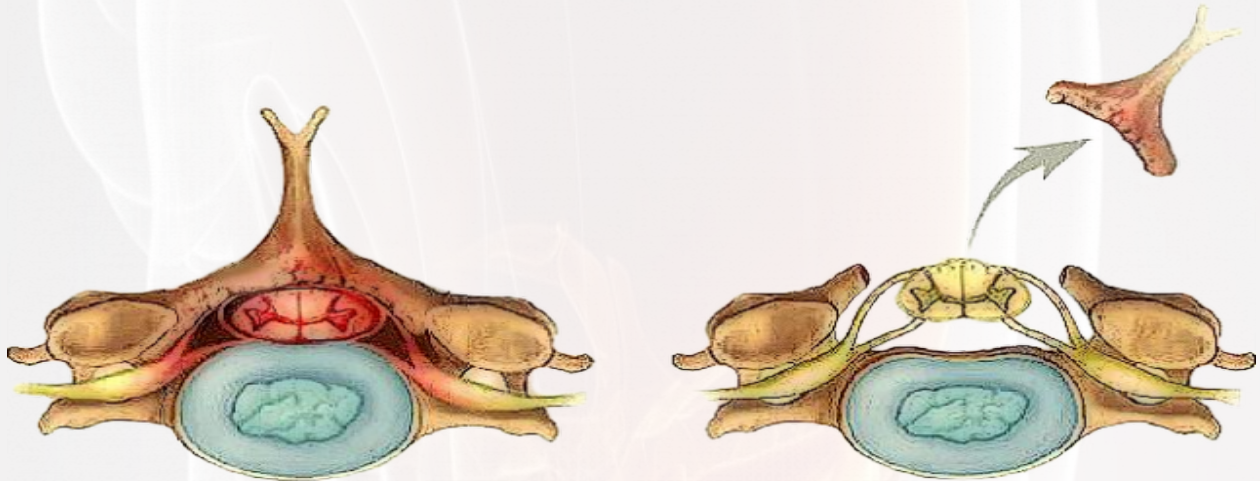
Before diving into different techniques, let's first understand the general steps involved in PCDF:

1. **Incision:** The surgeon will make an incision in the back of your neck to access the cervical spine. The size and location of the incision may vary depending on your specific condition.
2. **Decompression:** This step involves the removal of bone or tissue that is compressing the spinal cord or nerves. Decompression can be achieved through various techniques, which we will discuss in the following subsections.
3. **Fusion:** To stabilize the spine and promote fusion (joining of spinal bones), the surgeon may use screws, rods, and bone grafts. Fusion helps prevent further movement between vertebrae and can relieve pain by eliminating motion that causes discomfort.
4. **Closure:** The incision is closed with sutures and/or surgical glue.

Now, let's discuss the frequently used techniques in this procedure:

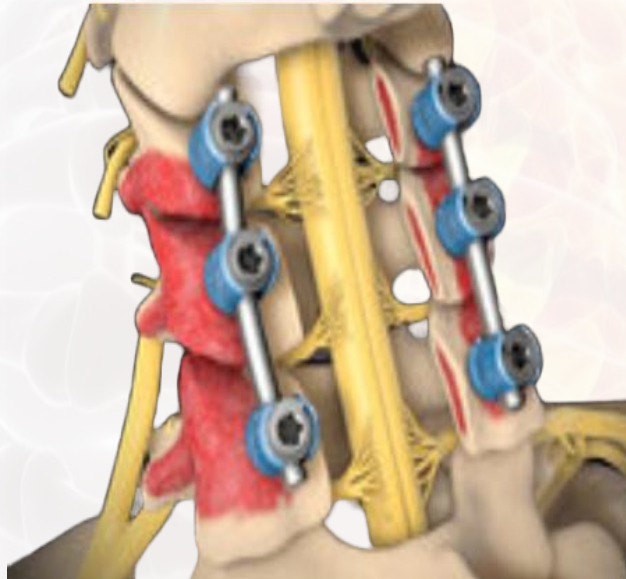
3.1 Decompression Fusion Technique

1. **Decompression:** The surgeon will remove the bone or tissue that is pressing on the spinal cord or nerves, creating more space within the spinal canal. This relieves pressure and can help alleviate symptoms like neck pain, numbness, or weakness. The specific method of decompression may vary based on your condition but often includes removing part of the lamina (laminectomy).



Laminectomy

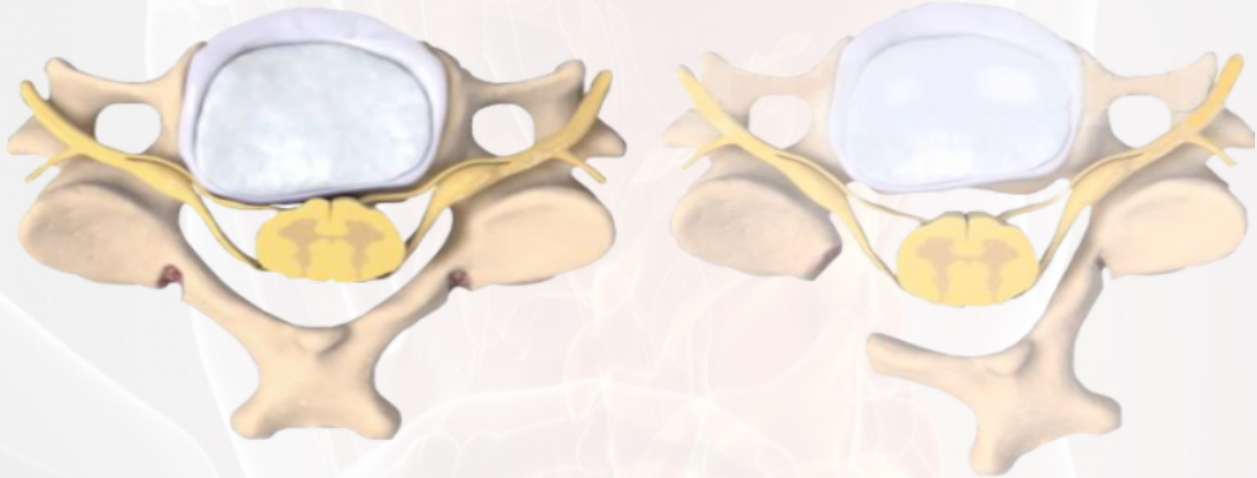
2. **Fusion:** After decompression, the surgeon will use screws, rods, and bone grafts to stabilize the spine. The bone grafts encourage the vertebrae to fuse together over time, providing long-term stability and preventing further compression.



Cervical Laminectomy and Fusion

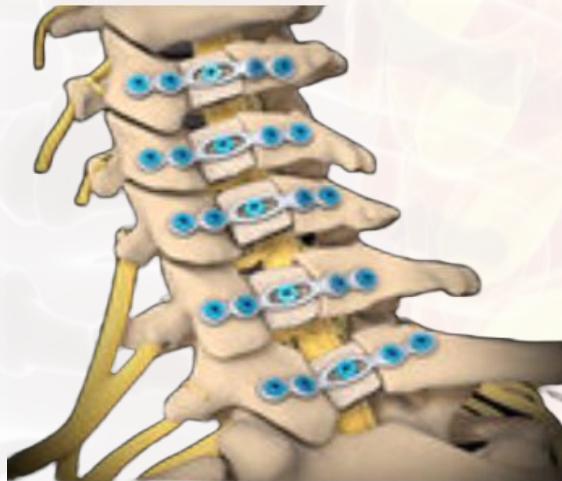
3.2 Laminoplasty Technique

1. **Decompression:** Instead of completely removing the lamina (as in a laminectomy), the surgeon makes strategic cuts in the lamina, creating a hinge-like effect that expands the spinal canal. This allows for decompression while preserving some of the protective bony covering over the spinal cord.



Laminoplasty Technique

2. **Fusion:** The surgeon may use screws, rods, and bone grafts to stabilize the spine and promote fusion.



Cervical Laminoplasty and Fusion

Your surgical team will determine the most appropriate technique based on your condition and discuss the details with you before the procedure.

4 Benefits and Risks of Your Operation

4.1 Benefits of PCDF

PCDF offers several potential benefits for your health and well-being, such as:

- **Symptom Relief:** PCDF surgery aims to alleviate neck pain, numbness, tingling, and weakness caused by nerve compression. You may experience significant relief from these discomforts by addressing the underlying issue.
- **Improved Function:** A successful PCDF can enhance neck and upper body function, allowing you to perform daily tasks and engage in activities you enjoy.
- **Prevention of Further Damage:** PCDF can help prevent or reduce further nerve damage. By addressing the root cause of your symptoms, the surgery aims to halt the progression of nerve-related complications as prolonged nerve compression can lead to irreversible nerve injury, potentially resulting in long-term sensory and motor deficits.
- **Resolution of Spinal Cord Compression:** If your symptoms are due to spinal cord compression, PCDF surgery can relieve this compression, stabilizing symptoms and potentially restoring normal sensation and function.
- **Enhanced Quality of Life:** Pain relief and improved mobility contribute to an enhanced quality of life, increased well-being, and overall better health.

Your surgeon will discuss how these potential benefits specifically apply to your individual medical condition and circumstances.

4.2 Risks of Not Having PCDF

For some patients, choosing not to undergo PCDF may have certain risks and consequences that you should carefully consider:

- **Persistent Symptoms:** Some symptoms, such as those from nerve root irritation, often but not always improve on their own. Other symptoms, particularly those related to spinal cord damage, may persist, or worsen over time. This could impact your comfort and ability to perform daily activities.
- **Progressive Nerve Damage:** Though the rate of progression varies substantially among people, spinal cord compression is typically a progressive process. In very rare cases, function can worsen rapidly, such as after a trauma to the head or neck. Surgery can be helpful in stabilizing symptoms and potentially reversing some damage, but some problems from spinal cord or nerve compression can become permanent if not treated. The more severely damaged the spinal cord is at the time of surgery, the worse overall function most patients ultimately can achieve.
- **Irreversible Nerve Damage:** In the minority of patients where nerve irritation does not resolve on its own, ongoing irritation can lead to progressive symptoms. If left untreated for a long time, it is possible that symptoms such as sensory changes or weakness may be less likely to recover.
- **Limited Mobility:** In some cases, untreated spinal problems may lead to limited mobility in your neck and upper body. This can affect your range of motion and hinder your ability to engage in various activities.
- **Reduced Quality of Life:** Persistent symptoms can diminish your overall quality of life, impacting daily enjoyment and social and recreational activities.

4.3 Risks of PCDF Surgery

While PCDF is generally safe, like any surgery, it carries potential risks and complications, including:

- **Persistent or New Onset Pain:** Some patients may experience persistent or new pain after surgery, which is usually managed with pain relief measures.
- **Pseudoarthrosis:** In some cases, the fusion may not fully heal, which is called pseudoarthrosis. Additional treatment may be needed if this occurs.
- **Revision:** Occasionally, a follow-up surgery, known as revision surgery, may be necessary to address specific issues or complications.
- **C5 Palsy:** C5 palsy can cause temporary weakness or numbness in certain muscles of the arm. It may improve with time and therapy.
- **Wound Complications:** Some patients may experience issues with the surgical wound, such as infection or delayed healing, which may require additional care.

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- **Other Neurological Complications:** Various neurological complications, such as spinal cord injury, transient neurological worsening, and progressive myelopathy, may occur.
 - **Hardware Complications:** Hardware used in the surgery, like screws or plates, can occasionally cause issues that may need further attention.
 - **CSF/Dural Tear:** In rare cases, there may be a tear in the covering around the spinal cord, called the dura, which can lead to cerebrospinal fluid leakage.
 - **Deep Vein Thrombosis (DVT):** Deep vein thrombosis is a blood clot in the legs, which can be managed with blood-thinning medication.
 - **Bleeding or Hematoma formation:** A hematoma or collection of blood near the surgical site may occur in rare cases and may require drainage or further treatment.
 - **Other medical problems** such as sepsis, heart attack, pulmonary embolism, or stroke may happen.
 - **Death:** Although extremely rare, it's important to note that, like any surgery, there is a small risk of complications that can be life-threatening.

Please note that this list is not exhaustive, and there are other very rare complications that can be difficult to anticipate. It is crucial to have an open and thorough discussion with your healthcare provider to fully understand the potential risks and benefits of PCDF surgery versus not undergoing the recommended procedure. Your surgeon can provide personalized guidance based on your medical condition and help you make an informed decision about your treatment options. If you have questions about any of these risks, it is important to discuss your concerns with your surgeon. It is also important to follow pre-operative and post-operative instructions diligently to minimize risks.

5 Expectations

5.1 In the Hospital

- You will be closely monitored by medical staff.
- Pain management will be provided.
- Physical therapy and mobility exercises may be started.
- Your surgeon will determine when you can be discharged based on your progress. Most patients either go home the same day or the morning after surgery. Occasionally, a longer stay is necessary.

5.2 Recovery

- Recovery times vary, but most patients can expect a gradual return to normal activities over several weeks. Within one or two months, most patients are feeling close to normal.
- Complete healing of bone graft may take up to 1 year.

5.3 Warning Signs After Surgery:

- Wound redness or drainage
- Fever above 101 F
- Severe difficulty swallowing
- A sizable blood clot or swelling in the neck
- New weakness or sensory changes in your arms or legs
- Swelling or pain in your legs

6 Note

This handout only provides a general overview of PCDF. Your healthcare team will provide personalized information and guidance based on your specific condition, comorbidities, and needs. If you have any questions or concerns, please do not hesitate to ask your surgeon or medical provider.