

Cervical Laminectomy and Fusion

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Overview

- Cervical laminectomy and fusion is performed through the posterior, or back, aspect of the neck area.
- The primary indication for the procedure is pressure on the spinal cord resulting in a condition known as cervical myelopathy.
- The objective of this procedure is to preserve spinal cord function by relieving the pressure on the spinal cord and fusing, or stabilizing, the affected areas in order to prevent future problems.

Who performs the procedure?

Cervical laminectomy and fusion is best performed by a **fellowship-trained spine surgeon**. Ask your surgeon about their training, especially if your case is complex or you have had previous spinal surgery.

What to expect before the procedure:

- In the weeks prior to your surgery, **pre-operative testing** will be conducted either by your primary care physician or the pre-admission testing department of the hospital.
- One week prior to surgery, you will need to **stop taking aspirin, NSAIDs** or other medications that thin your blood and may increase bleeding.
- If you smoke, it is important you stop well before surgery and **avoid smoking** for a period of at least 6 months afterwards, as this will impede proper healing.
- You will be given instructions and supplies to **cleanse** the back of your neck, the day prior to your procedure.
- You are to have **nothing to eat or drink after midnight** on the night before.

What to expect during the procedure:

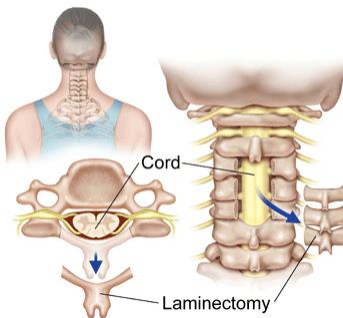
- Just before the procedure starts, you will have an intravenous (IV) line started so you can receive fluids and medications to make you relaxed and sleepy. The procedure is performed under **general anesthesia** (you are asleep). Medications will be given through the IV to put you to sleep and a tube is inserted in your throat to supplement your breathing. **IV antibiotics** are administered and monitors are placed to check your heart, blood pressure, and oxygen level. Once you are asleep, a Foley catheter is inserted into your bladder.
- The procedure typically lasts **about 2 hours**, depending on the specifics of the case. This is what to expect once the procedure begins:

1. Surgical approach

- You are positioned face down (prone) on a specialized, cushioned operating table.
- The back of your neck area is cleansed with a special solution to kill the germs on the skin.
- An incision is made in the midline, overlying the affected area.
- The spinal muscles are then gently elevated off the spine.

2. Decompression

- The lamina is removed in order to relieve the pressure off the spinal cord and nerve roots.



3. Placement of Bone Graft and Instrumentation

- If cervical laminectomy alone is performed, there is a risk of developing instability that may lead to pain and deformity (chin falling forward to the chest).
- Therefore, the spine is stabilized with screws and rods to maintain the alignment of the spine and to allow the bones to fuse together.
- Bone graft is added around the instrumentation to promote the fusion. The bone graft is obtained from the decompression portion of the procedure (ie your own bone).



MRI on the left demonstrates severe spinal cord compression.
Post-operative radiographs following cervical laminectomy and fusion (Dr. Lemma).

4. Closure

- A drain is placed and the incision is closed. Skin staples are used to close the skin.
- A small dressing is applied over the incision and a neck brace is applied on your neck. You will then be taken to the recovery area.

What to expect after the procedure:

- Patients are typically admitted to the hospital for a **2 night stay**.
- In the recovery area, you will be observed until you recover from the anesthesia, then transferred to the floor.
- You will be encouraged to get out of bed and move around as soon as you are able to.
- Pain pills on an empty stomach may result in nausea, so initially IV pain medications are self-administered through a PCA, or **patient-controlled analgesia**.
- IV fluids will be continued until you can drink fluids well by mouth.
- Once you are able to drink normally, your diet will be advanced to your **normal diet** and you will be switched to pain pills.
- **Physical therapy and occupational therapy** will see you prior to your discharge from the hospital to make sure you are comfortable walking, escalating stairs and performing other activities of daily living.
- For most cases, a **soft neck brace for a period of 2 weeks is all that is needed**. Some patients, however, may require a hard cervical collar for 6 weeks.

Recovery and rehabilitation at home:

- Keep in mind, everybody is different, and therefore the amount of time it takes to return to normal activities is different for each individual.
- Discomfort should decrease a little each day. Most patients are able to return to typical activities by **6 weeks**. You will not be able to drive a car for 2 - 6 weeks, depending on the specifics of your case.
- **Refrain for smoking**, as nicotine is a direct toxin to bone healing/fusion.
- **Do not take any NSAIDs or aspirin** as these, too, are detrimental to the fusion process.
- Neck range of motion exercises are initiated once the neck brace is removed.
- Signs of infection such as **swelling, redness, wound draining, or fever > 101.5°F** should be brought to our attention immediately.
- You will be seen in the office at **2 weeks**, then at regular intervals thereafter.
- It should be noted that the time to fusion may vary. It usually takes **approximately 3 months** but may take up to 6 to 9 months for the fusion to take.
- You will be seen in the office at **2 weeks**, then at regular intervals thereafter. Radiographs will be obtained periodically to assess the fusion.

What are the expected outcomes following cervical laminectomy and fusion?

The results of surgery are variable since some people have more extensive disease than others. In general, however, most patients can expect the following:

- **Surgery reliably halts the progression of cervical myelopathy.** The amount of recovery of neurologic function such as weakness, balance, coordination, or bowel/bladder incontinence depends on the amount and duration of the compression, as well as the presence of any permanent damage to the spinal cord.
- Surgery is very effective in reducing the pain in the arms and shoulders caused by nerve compression, however some neck pain may persist.

What are the possible risks?

In skilled hands, cervical laminectomy and fusion is a very safe procedure. However, no surgery is without possible risks. These risks can be minimized by choosing an experienced surgeon to perform your procedure, and by adhering to your surgeon's instructions before and after your procedure. General complications of any surgery include bleeding, infection (1%), blood clots, and reactions to anesthesia. Specific complications related to cervical laminectomy and fusion may include but are not limited to:

- **Nerve injury or persistent pain.** Although the risk is very low, particularly in the hands of an experienced surgeon, any spine surgery comes with risk of injury to nerves or the spinal cord. Damage may result in numbness, weakness or even paralysis.
 - To help manage this risk, spinal cord function is monitored during the procedure by use of **intra-operative neuromonitoring**. By measuring electrical signals in the brain and extremities, the surgeon receives real-time feedback on spinal cord and nerve function, thus enabling moment by moment adjustments to the surgery and anesthesia as necessary.
 - It is important to note that a common cause of persistent symptoms is spinal cord damage due to the compression itself, not the surgery. Severe spinal cord compression may permanently injure the spinal cord and nerve roots rendering it unresponsive to surgery. **Like heavy furniture on the carpet, the compressed nerves do not spring back.**
- **Vertebrae failing to fuse (non-union).** Non-union following posterior fusion is extremely rare, but may occur in higher-risk individuals. There are many reasons why bones do not fuse together. Common ones include smoking, osteoporosis, immune-deficiency/chronic steroid use and malnutrition. **Smoking is by far the greatest factor that can prevent fusion** as nicotine is a toxin that inhibits bone-growing cells.

It is important to note that not all patients who have a nonunion will need to have another fusion procedure. As long as the joint is stable, and the patient's symptoms are better, additional surgery may not be necessary.