Posterior Cervical Laminectomy - Inpatient

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General Information

A cervical laminectomy is an operation to remove pressure on your spinal cord. A two to four-inch incision is placed on your neck in the midline, and a portion of the bone in the back of your spine is removed. The bone removal enlarges the space available for the spinal cord. In addition, pressure on the nerves which exit the spinal cord can be addressed. Bone spurs on the front side of the cord are left in place as it is unsafe to remove them and the spinal cord is allowed to migrate away from these bone spurs.

The cervical laminectomy is beneficial to relieve spinal cord pressure and to remove pressure on the exiting spinal nerves to relieve arm pain. Patients **must** understand that any patient with nerve pressure in the neck has developed significant degeneration and arthritis in the spine. Such a **patient actually has two underlying spinal problems**. The **first problem** is the spinal arthritis which causes neck pain. The **second problem** is the pressure on your spinal nerves which causes arm pain and/or leg weakness/numbness.

The laminectomy allows removal of the pressure on the nerves which helps arm pain and helps prevent worsening of leg weakness/numbness, if present. However, because the spinal degeneration/arthritis is not treated, **any neck pain present before the operation is likely to continue after the operation**,

Most patients complain of both neck and arm pain. Laminectomy is a reasonable approach if the patient's primary complaint is arm pain, and the patient feels that the neck pain present before surgery is tolerable. Sometimes a laminectomy is recommended to remove spinal cord pressure and preserve neurologic function. In either case, neck pain typically continues and does not diminish with the procedure. If neck pain itself is substantial and intolerable, then a fusion should be considered.

The primary reason to consider a laminectomy alone (to relieve only arm pain and tolerate neck pain) and avoid a fusion is that the recovery from a spinal fusion is quite prolonged. Patients who undergo cervical fusion require two to three months of recovery with considerable activity

restriction and prolonged brace wear whereas recovery from a laminectomy takes only four to six weeks.

Advantages

The primary advantage of the laminectomy is that the success rate of relieving arm pain is very high, approximately 90%. The length of the operation is typically short but depends on the number of disks operated upon, whether or not previous surgery has been performed and the severity of the pressure on the nerves. The average laminectomy lasts about two hours. Blood loss is minimal so that no blood donations are necessary before the operation. Hospitalization is brief; most patients can go home one to three days after surgery.

Disadvantages

The primary disadvantage of the laminectomy is that the spinal arthritis is not treated and various complications associated with persistence of the arthritis can occur (see complication section). Also, patients who undergo a laminectomy may experience persistence of their preoperative neck pain.

In patients with severe spinal cord pressure with weakness and numbness of the arms and legs, the laminectomy removes the pressure on the spinal cord and serves to prevent worsening of neurologic function. Typically, minimal to no improvement of neurologic function is seen because the spinal cord has developed permanent changes due to prolonged pressure.

Complications

Post-Laminectomy Syndrome: One possible complication is worsening of the neck pain present before surgery which is known as Post-Laminectomy Syndrome. This occurs in approximately 5-10% of patients who undergo a cervical laminectomy. If worsening of neck pain is substantial, then a fusion operation may be necessary in the future.

Recurrent Disk Herniation: It is impossible to remove the entire disk at the time of a laminectomy. Typically, only the portion of the disk which is pressing on the nerve is removed. The remaining portion of the disk can herniate again, causing arm pain to redevelop. This complication, known as recurrent disk herniation, can occur any time after surgery. Recurrent disk herniation occurs in 3-10% of patients who undergo laminectomy.

Post-Laminectomy Kyphus: One of the more difficult complications is known as post-laminectomy kyphus. In simple terms, the cervical spine begins to bend forward and the normal arch of the neck is lost. When this complication occurs, a fusion procedure of the spine is typically necessary. Fortunately, post-laminectomy kyphus is rare.

Other complications are exceedingly rare and occur in less than 1% of our patients. These complications include infection which is usually treated with additional surgery and prolonged antibiotics. Rarely blood clots may develop in the leg or lungs (see hospitalization section), which would require blood-thinning medicine.

Nerve injury resulting in weakness of the legs or even paralysis can occur at the time of a laminectomy, but is exceedingly rare. To date, no permanent nerve injury has occurred in my practice. However, it is a possibility that must be kept in mind when considering this surgical approach. Finally, leakage of spinal fluid can occur as a rare complication which may require additional surgery.

Hospitalization

After recovery from anesthesia, the nursing staff will assist you with sitting and walking, as well as going to the restroom. Patients should expect a walking program to begin the night of the surgery.

In general, hospitalization for a cervical laminectomy is approximately **one to three** days in length. The operation itself is well tolerated by most patients. Restriction of dietary intake will be necessary for a short period. You will likely receive only liquids the night of the surgery, and your diet will slowly progress thereafter. During the period of dietary restriction, intravenous fluids will be necessary. Typically, the intravenous fluids can be discontinued on the morning of the second postoperative day.

You will wake up from anesthesia with a collar or neck brace which is provided for your comfort. It is fine to remove the collar to wash your neck.

For the first one to two days after surgery, pain will be controlled **with PCA or Patient Control Anesthesia**. In this situation, a computerized pump allows you to regulate the amount of pain medicine you receive via your IV lines. In addition, we utilize Toradol, an injectable agent which requires a "shot" in the hip every six hours for the first two days. The combination of these medicines provides excellent relief of the pain experienced by cervical fusion patients. After the above measures cease, you will be placed on oral pain pills to control postoperative discomfort.

Bandages and surgical drains will stay in place until the drainage is minimal; at which point, they will be removed and a light dressing will be applied. Thereafter, your dressing will be changed each morning until you go home.

Most patients do not require a **urinary catheter**, but if you have a very long surgery a urinary catheter is used after surgery to avoid the difficulties associated with getting out of bed and going to the bathroom in the immediate postoperative period. This catheter is placed at the time of your surgery after anesthesia has been initiated and, therefore, there is no discomfort associated with its placement. Removal of the catheter is typically painless and quick, typically occurring on the second or third postoperative morning when the PCA is discontinued.

Frequent coughing and deep-breathing are important to clear the respiratory passages after surgery; these activities should be performed every hour while awake.

Activity in the hospital is a critical issue. **Quick mobilization is the most important thing that you can do for yourself while in the hospital.** Patients who lie in bed and fail to be aggressive with mobilization have more pain, a higher rate of complications, and spend longer in the hospital. Feel free to roll yourself in bed to obtain a more comfortable position. A trapeze (triangle of metal) will be placed over your bed so that you may pull your body upwards and change position more easily. Realize that your neck will be very stable, and you will not injure yourself during the mobilization process, no matter how aggressive. Again, aggressive mobilization will be rewarded handsomely with reduced pain and quicker discharge from the hospital.

Discharge requirements should be discussed. All patients must be on **oral medicines only** for 12 hours prior to discharge. No injections (shots) will be allowed during the last 12 hours of hospitalization. Finally, you should be totally independent in restroom activities as well as ambulating in the halls to a distance of approximately 50 yards without difficulty.

Hospitalization Summary: Throughout hospitalization, remember to cough and deep breathe every hour while awake and work hard to mobilize quickly with your walking program. The schedule below is followed as closely as possible.

Day 1 – AM Surgery. Rest until 4-6 PM, then begin ambulation program, frequent cough and deep breathing, liquids for dinner, PCA for pain.

Day 2 – Continue aggressive walking program, continue lung exercises, continued PCA for pain, advance diet.

Day 3 – Early AM. Remove all drains, IV, PCA, urinary catheter and change bandages. Advance diet and begin oral pain medicines. You may go home when you are independent, able to walk 200 feet, and are tolerating oral pain pills.

After Discharge from the Hospital

Wound Care

Leave the bandages on your wounds in place for two days after discharge from the hospital. Thereafter, you may remove the dressings. You will notice small pieces of surgical tape which should be left in place. If your wounds are dry, you may begin showering after you remove your dressing on the second day after hospital discharge. Exposure of the wound to water should be limited to a relatively brief shower (not tub bath) for the first two weeks following surgery. Once the wound is totally healed following this two-week period, then baths, whirlpools, and hot tubs are fully acceptable. As stated in the previous paragraph, do not expose your wound to water if it is draining.

If your wound is still draining at the time of discharge, you must provide local wound care. Twice a day, the bandage should be changed and the wound itself cleaned with a Q-tip dipped in hydrogen peroxide.

If you notice increased tenderness, swelling, redness, or drainage from the wound, notify the office immediately.

If any residual tapes are in place two weeks following surgery, then feel free to remove them. Expect a minimal degree of tenderness and swelling around the incision site. A minimal to moderate degree of redness at the incision site and extending to each side of the incision a few millimeters is to be expected.

Once the wound is totally healed (about two weeks following surgery), a vitamin E cream obtained from your local pharmacy will hasten maturation of your scar.

Brace Wear

As stated in the hospitalization section, the brace is provided for your comfort. Patients experience less postoperative pain when a collar is used because less muscle work is necessary to support your head. The collar may be removed as needed for personal hygiene.

The collar should be worn full-time for two weeks. Thereafter, you may use the brace intermittently to ease postoperative discomfort.

Diet

Your diet should be restricted to foods which are easy to swallow for the first three days after surgery. Many patients experience mild difficulty swallowing for the first few days after surgery which usually resolves quickly. The trouble swallowing is due to swelling of the tissues within your neck and is best managed with patience, as well as chewing your food a little better than usual.

Activities and Rehabilitation

Adequate rehabilitation is crucial for a successful result. Many patients with spinal injuries have suffered from spinal pain for months or years and considerable atrophy, or shrinkage, of the spinal muscles has developed. Rehabilitation of the spine to accomplish spinal fitness is *absolutely mandatory* for an excellent surgical result. Therefore, a progressive regimented rehabilitation program is mandatory.

During the first month after surgery, you should engage in an **aggressive walking program**. While in the hospital, ambulation to an approximate distance of 50 yards is typically achieved. Immediately, at the time of discharge, this ambulation program should be continued, walking more and more each day. In general, three to five episodes of exercise a day are recommended. There is no upper limit to the distance. The only other acceptable exercise during this period of healing is stationary bicycling.

During the second month after surgery, range of motion exercises are necessary to restore normal motion of your neck. The best approach here seems to be a home exercise program so that exercises can be performed several times a day. Many physicians utilize physical therapy, but this takes much longer (and is expensive) as only one to two episodes of therapy can be arranged on a single day. I recommend that patients perform the following motion exercises **every hour while awake, all day long**.

The neck moves in six ways:

1) bending forward
2) bending backward
3) turning or rotating to the right
4) turning or rotating to the left
5) tilting to the right
6) tilting to the left

Start with the first exercise above. The patient should bend the neck forward until moderate tightness is encountered and maintain this position for five full seconds.

Thereafter, return to neutral position and then repeat this five-second activity five times.

The same series of exercises should be repeated for each of the six motions described above. If you perform the exercises as instructed, near-normal motion will be achieved in one to two weeks.

After normal motion is achieved with the exercises described above, you may return to unrestricted activities. If you are a very active person, then further rehabilitation is recommended via a swimming program. Three episodes of swimming per week serves well to strengthen the neck muscles.

After normal motion is achieved, slow return to routine activities, such as **recreational athletics**, is recommended. All return to recreational activities should be slow and progressive. For instance, golfers should spend a month or so at the driving range, progressing slowly with common sense. Once a half-hour of driving range activities is well-tolerated, then nine holes of gold is a reasonable step. We will gladly discuss specific activities with you.

Avoid driving while you are wearing your collar for the first two weeks after surgery. This is a considerable imposition, but it is unsafe to operate a vehicle when you cannot turn your neck. During the healing period it is perfectly acceptable to ride in a car while others are driving. Prolonged trips in a car will produce moderate neck ache for the first few months after surgery. Expect slow, increased tolerance to driving during the first three months following surgery.

Lifting weights up to 20 pounds is acceptable during the first two months following surgery.

Regarding **work**, a different approach for each patient is necessary. Patients who have sedentary jobs often return to work within one to two weeks following surgery as long as transportation by others can be arranged. If your job involves heavy work, your return to work will not be possible for two to three months after surgery.

Expectations

Recovery from cervical laminectomy is quite variable depending on your diagnosis. Relief of arm pain present before surgery is usually immediate, although numbness and weakness in the arm(s) can require months to fully resolve. On occasion, numbness in the arm(s) can be permanent depending on the duration of symptoms prior to surgery.

Remember that a laminectomy is not designed to provide relief of neck pain. The increased pain in the neck due to surgery requires two to three months to return to the baseline level. Increased pain with prolonged sitting and driving is expected as well. As for the other activities described above, slowly increase your exposure to these activities and expect decreased discomfort with time.

Some difficulty **sleeping** is commonly experienced for the first month or so after surgery. Persist in the identification of a comfortable sleeping position and practice tolerance of sleeping difficulty without resorting to sleeping medicine.

Once adequate rehabilitation has been accomplished, expect a dramatic reduction in your preoperative pain. Despite an excellent technical result, a small percentage of patients who undergo cervical laminectomy will have persistent pain and be unhappy with their surgical result. If you are among this 5-10%, you will be given the option to consider additional studies in the hopes that a separate pain source can be identified.

Medications

The use of narcotic medications is problematic in that most patients come to our office having been over medicated. Narcotic tolerance and dependency develop extremely easily. In general, we recommend that you discontinue the use of narcotics two to four weeks before surgery. Ample pain medicine will be given to you in the hospital to ease operative discomfort. You will be discharged with a course of antiinflammatory medicine as well as a moderate quantity of pain pills. Mild to moderate pain should be tolerated, and the pain pills should be utilized only when you are unable to cope with your discomfort. Due to the problems of narcotic addition, **narcotic pain pills will not be utilized postoperatively beyond one month**.

Office Visits

Upon leaving the hospital, please call the office and arrange for your first postoperative visit three weeks following surgery. At that time, your wound will be inspected and a repeat neurologic exam will be performed. You will be seen again in the office at eight weeks

following surgery for your second postoperative visit. A third follow-up appointment to evaluate your final result will be necessary four months after surgery.

Glossary

Anterior:	in front of the body
Posterior:	in back of the body
Disk:	the soft cushion between two vertebrae
Annular Tear:	the tear in the outer portion of the disk (can occur by itself causing back pain or can be the path that the soft, inner disk pushes through when a herniation occurs
Herniation or (herniated disk):	a part of the soft, inside part of a disk (the nucleus) pushes outward (through the annular tear) and possibly causes nerve pressure and leg pain
Vertebrae:	the bones in one's spine which surround a disk
Fusion:	growing together of the two bones surrounding an injured disk so that painful motion is stopped
Ambulation:	the act of walking
Neurologic Function:	muscle control and sensation in the arms and legs controlled by the spinal cord

Patient Informed Consent for
Orthopedic Spinal Reconstructive Surgery

Dr. Alan E. Heilman, MD, PA
Fondren Orthopedic Group L.L.P.

Patient Name: ____ Age: ______________

Date: __________________________________ Date of Surgery: _____________________

I have elected to have the following operation by Dr. Alan Heilman and / or associates:
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For the following diagnosis:
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This operation has been explained in full by Dr. Heilman. I have had the opportunity to seek a second opinion. From my discussion with Dr. Heilman, I understand the following:

- spine surgery never allows a person to have a normal spine,
- the intent of this surgery is to improve my condition so that I may be able to function better,
- chronic pain is never desirable, but may be present after this surgery,
- pain improvement of varying percentages is hoped for and attained in most patients,
- no warranty or guarantees are given that pain or neurological function will return to normal,
- I may have continual pain after surgery and may require additional surgery for the removal of disc, bone, implants at the level of surgery or at another level,
- rarely, some patients are not better after surgery and their condition may worsen,
- if I have a fusion performed, some permanent stiffness will occur; this stiffness may lead to deterioration of adjacent levels or discs in my spine over time.

I have read the surgical hand-out given to me. I understand that Dr. Heilman will be the primary surgeon and any assistants will be under his direction. Normally, assistants are discussed prior to surgery, but Dr. Heilman may find intraoperatively that assistance is needed and arrange for this. I understand that Dr. Heilman may have to modify my surgery if additional findings are seen at the time of surgery. I have discussed and directed Dr. Heilman to repair these findings as needed. This may alter the levels of surgery, and it may necessitate a fusion, with or without instrumentation.

I understand the risks of spinal surgery including the following:

- death
- paralysis
- nerve damage
- spinal cord injury
- bleeding requiring a transfusion
- infection and possible osteomyelitis requiring further surgery and long term antibiotics
- sterility in males
- impotence in males
- blood clots in the legs requiring anticoagulation
- infection
- dural tear
- spinal fluid leakage
- stroke
- vascular injury
- hardware loosing and pain
- scarring of nerve roots after surgery
- chronic pain
- injury to major blood vessels
- abdominal herniation after anterior lumbar surgery
- recurrent herniation
- sympathetic pain
- degeneration or instability at adjacent or the same levels of surgery
- chronic changes in gait
- changes in flexibility of the spine
- weakness of muscles
- chronic numbness
- bleeding into soft tissues causing compression of the nerves and requiring emergency surgery

I further understand that, in addition to the risks listed above, the risks associated with cervical operations also include:

- bleeding into soft tissues of the neck causing compression of the trachea or breathing tube or nerves requiring emergency surgery
- swallowing difficulty
- Horner's syndrome with visual changes
- hoarseness
- scarring

THESE RISKS HAVE BEEN DISCUSSES WITH ME BY DR. HEILMAN. DR. HEILMAN HAS EXPLAINED TO ME THE PROCEDURE I AM HAVING IN DETAIL AND GIVEN ME AMPLE TIME TO ASK QUESTIONS ABOUT THE PROCEDURE.

I HAVE READ ALL PAGES OF THE PATIENT EDUCATION MODULE AND HAVE NO FURTHER QUESTIONS. I WISH TO PROCEED WITH THE SURGERY.

Signed ________________________________ Parent if minor __________________

Witness ________________________________ Date _________ Time ___________