

Surgery Information

Outpatient Lumbar Hemi-Laminectomy for Lumbar Disc Herniation

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Surgical Management

Drawing of lumbar disc herniation on the right displacing the nerves



mri showing massive lumbar L4 -5 disc herniation
(second to last disc in the back)

LUMBAR HEMI-LAMINECTOMY

As you can see with these illustrations, the nerves in your spinal canal are severely compressed. Surgical intervention may be necessary, if you have not responded to medicines, therapy, and time. This procedure is called a lumbar hemi-laminectomy.

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The goal of the procedure is to decompress the spine so that the compression on the nerve root is lessened. Following the decompression the spine rarely must be stabilized with a fusion.

These operations are accomplished through an incision on back. The incision is typically placed in the midline. If your disc herniation is a far lateral herniation, Dr. Heilman may place the incision off to the side of your pain.

During the operation the vital structures of your back are protected by gently retracting them to the side as we approach the spine. Once the spine is exposed, special retractors hold the muscle out of the way, thus allowing completion of the operation. X-rays determine the exact level of the disc(s) to be removed. Usually only the disc fragments that have been extruded are removed as well as any further loose fragments within the disc space. Normally no more than 20 to 30 percent of the disc is removed with this operation. If the disc is totally removed, your spine would be unstable and require a fusion. The vast majority of patients do not need a fusion. Dr. Heilman will discuss the levels and type of decompression you will need.

A titanium rod construct is usually attached to the spine with screws if you are a smoker having a fusion, having a revision surgery, or require a multiple level fusion. This provides stability to the area and encourages healing of the fusion. This instrumentation normally stays in your back forever. Occasionally (5% of the time) the plate is removed after the fusion is healed. You will be placed into a lumbar plastic brace following surgery. It is very important to wear this collar at all times until your fusion is healed or directed otherwise by Dr. Heilman.

Most patients who do not require a fusion will go home either the same day or in the morning following surgery. A followup appointment should be scheduled 7 to 10 days following surgery.

If you have a fusion, typically you are in the hospital for 3 to 5 days and will return to the office for a follow-up visit in 7 to 10 days after surgery. Further follow-up visits are scheduled at 6 to 8 week intervals or until the fusion is completely healed. Over the 6 to 12 weeks following surgery, the bone graft will solidify with your existing spinal bones to provide stability to the operated levels of your spine.

The success of the operation is primarily dependent on two factors. First, the recovery of the nerve and spinal cord function depends on how much permanent damage was done prior to the operation. Most people have excellent return of nerve function for herniated disc involving 1 level. The more levels involved, the more difficult recovery is due the multiple nerve roots involved. If your problem involves spinal cord compression, the goal of the operation is to halt the progress of the

disease. In this situation, recovery of nerve function varies. The second goal of the operation is to provide stability to the spine if needed by a bone fusion. For this fusion to occur, you must restrict your lifting and sporting activities until the grafts have healed.

Once the fusion is healed, you may resume most activities that do not involve contact such as football. Unfortunately there are 5 levels in your lumbar spine, so there is a small chance that you could repeat the same injury at another level in your back over time. The incidence of this is low, but very real.

Advantages

A lumbar hemilaminotomy is a safe and effective procedure with more than 90% of the patients satisfied after full healing occurs. A small scar results, and blood loss is usually minimal. A rapid recovery is common for the vast majority of patients. Leg function usually returns to normal or close to normal if permanent nerve damage has not happened before surgery.

Pain is present after any surgery. The pain after this surgery is minimal. If you have a fusion, the bone donor site is the most common area of pain, but that is not debilitating. Narcotics will be used following the operation as indicated to make you comfortable. In many patients the narcotics cause nausea, so Tylenol or NSAIDS such as Advil are used.

Disadvantages

The primary disadvantage of a hemilaminectomy is there is still disc remaining which may herniate again. This happens 3 - 5% of the time and may require further surgery and a possible fusion. Revision surgery is possible, but is more difficult with this approach. When a fusion is performed, the natural motion is lost between the two vertebral segments in your back. This may promote permanent stiffness in your back. The greater number of levels fused, the greater the stiffness. Most hemilaminectomy patients have limited motion before surgery. The amount of increased stiffness following surgery varies. If stiffness occurs, it will be in all directions. This small loss of motion is typically not a concern for most patients who undergo fusion of one level if appropriate exercises are performed after surgery. However, loss of motion is a problem for patients who undergo fusion of three discs. Patients with three level fusions notice a definite reduction in motion of the back in all directions.

Accelerated degeneration of the discs above and below a fusion is possible. Degeneration occurs naturally in discs with the normal aging process and may occur more rapidly when a fusion has been performed.

Complications

The complication rate of lumbar hemilaminectomy is quite low. The most likely complication is a recurrent herniation (3-5% of the time). There are other complications such as scar forming around the nerve and arachnoiditis, a severe scarring inside the spine which is very rare. Although the infection rate with this operation is (less than 2%); infections of the spine do occur and may require further surgery and long-term antibiotics for 6 weeks to life. Another rare complication is dural tear which occurs when the surrounding sac around the nerves is thinned secondary to the compression from the disc and a leak develops at the time of surgery. A suture or graft to repair this leak is usually all that is necessary. Rarely further surgery is required if dural tear develops in the post operative period. Patients with a history of severe vomiting after surgery. **If you have had nausea with general anesthesia in the past, please let the anesthesiologist know, so that special precautions can be taken.**

If you require a fusion, the clinical success rate depends on many factors. The most prominent factor is getting the bone to heal. The bone fusion success rate of a single-level fusion is approximately 80%, and the fusion rate for two level fusion is approximately 60-70%. If pseudarthrosis occurs, then an additional spinal fusion may be necessary in the future. Other factors such as scar and multiple revisions and levels lower the success rate of a fusion following a laminectomy.

All other complications are exceedingly rare and occur in less than 1% of our patients. Rarely blood clots can develop in the legs or lungs which would require blood-thinning medicine.

Another rare complication is bleeding around the surgery area causing acute swelling around the spinal canal after surgery. This is a surgical emergency and is the reason you must remain in the hospital for 2 to 3 hours after this surgery. If you have acute return of pain, call our office immediately.

Bone Graft

If you require a fusion, bone must be removed from your pelvis. This is performed at the same time as the operation on your neck through an incision about one to two inches in length. This causes moderate pain in the region of the incision which typically lasts about one to two months. Rarely, ache in this region can be permanent. Numbness on the buttock beneath the incision can occur. Bone may be obtained from a bone bank. Often this alternative is suggested when multiple levels are fused or the patient's body size makes harvesting a bone graft difficult. The routine use of bone bank bone for one or two level fusions is discouraged. Several

literature reports indicate that allograft or bone bank bone does not heal as effectively as your own bone by at least 10 to 15%. The bone bank bone has been treated and studies in 1999 show it to be sterile and free of disease. However there is no guarantee the some new disease will not be found that is currently not detected today. Bone bank bone has been used safely for 20 years without any signs of rejection or disease transmission.

Internal Fixation (Instrumentation)

If you have a fusion, it may be necessary to use instrumentation. Considerable controversy exists regarding the use of plates and screws to stabilize the spine during a spinal fusion. In the past spinal fusions were performed without plates and screws so that immediate stability was not present. With newer instrumentation systems, immediate stability is achieved in the operating room which allows for an improved fusion rate and rapid mobility. The literature is full of contradicting opinions about when to use or not use instrumentation and how effective the fusion rate is improved. Dr. Heilman has recognized a marked reduction in the amount of pain patients experience after a fusion operation when instrumentation is used, and has seen far greater rates of bone fusion especially in two or higher levels of surgery.

Although there is a complication rate associated with any technique, the instrumentation complication rate is extremely low. The complications from this type of surgery may include plate or screw dislodgement after surgery, loosening of screws, and plate breakage. If a fusion is slow to heal or does not heal at all, excessive stress is placed across the instrumentation and breakage of the plate can occur. If the fusion does not heal and the plate breaks, some patients are asymptomatic. Also there is the potential for injury to the various structures within your spine.

Dr. Heilman believes the advantages of instrumentation greatly outweigh the disadvantages. However, fusions have been performed for years without plates and screws and plates can be avoided if you are willing to accept a lower success rate and bracing. Be certain to discuss any questions or concerns regarding the use of plates and screws with Dr. Heilman, so that together you can make an appropriate, educated decision regarding your surgery.

Important Pre-operative Considerations

Smoking is a major health hazard and delays the fusion of bone. This complication of delayed healing or pseudarthrosis (failure of the bone grafts to heal—see Complications, general) is markedly increased in smokers. If you smoke, the most important thing you can do for yourself is to quit as many months before surgery as possible. This will allow your bone grafts to heal as quickly as possible.

The second complication with smoking involves the lungs. Smokers have a higher risk of fluid collection and pneumonia with anesthesia. Lastly, your heart and lungs will work better after surgery if you quit smoking. This will allow improved rehabilitation.

Hospitalization

You will need to be pre-admitted to the hospital and have an interview with the anesthesiology department before surgery to discuss any problems with your health and general anesthesia.



Anesthesiology interview

You will be pre-admitted to the pre-op holding area on the day of surgery. Your family may be with you.



Pre-op holding and check in

You will be in recovery for 1 to 2 hours after your surgery. Your family will be able to visit you during the later stages of this time.



Recovery room

Hospitalization for an lumbar laminectomy is rarely more than one night. The operation itself is extremely well tolerated by most patients and causes minimal pain after the first night. Patients typically feel a mild degree of back pain, but the primary complaint of most patients is simply an achiness.

Usually the primary complaint after surgery is related to pain. Most patients have dramatic improvement in their leg pain.

If you require a fusion, the most common site of pain is at the bone graft site. Pain at this site will diminish rapidly but can persist to a lesser degree for a month or two (see Bone Graft).

Pain is controlled with oral medicines. If these measures are ineffective, then a P.C.A. pump, or patient control analgesia, will be used. In this situation, a computerized pump allows you to regulate the amount of pain medicine you receive through your i.v. lines. The pump will not allow you to overdose on this medication. The anesthesiology service will help manage your pain while your IV is in.

The combination of these medicines provides excellent relief of the minimal pain experienced by lumbar fusion patients.

Bandages remain in place until the first or second postoperative morning when they will be removed, and a light dressing will be applied.

Typically, a urinary catheter is not necessary as patients can walk to the restroom soon after surgery without difficulty. If you experience difficulty with urination (usually older males), placement of a catheter may be necessary. Removal of the catheter is typically quick, involves minimal pain affair and usually occurs on the morning after surgery.

Hospital Activity

A lumbar corsette will be provided to you prior to discharge. Use this when ever you are out of bed for the first few days following surgery. Once you arrive in your room, the nursing staff will assist you with sitting and walking until you are independent. Thereafter, you can stand and walk without concern.

The most important thing that you can do for yourself while in the hospital is to mobilize quickly. Patients who lie in bed and fail to be aggressive with mobilization seem to have more pain, a higher rate of complications and stay longer in the hospital. Your sitting and walking schedule will begin the night of surgery.

Keep your wound clean and dry until the fourth post operative morning. You will not be allowed to shower while in the hospital.

Discharge Requirements

You should be totally independent in rest room activities as well as walking in the halls to a distance of approximately 50 yards without difficulty, that is trips around the nursing pods at Texas Orthopedic Hospital. You must be able to control your pain with oral medicines.

Wound Care

A new, sterile dressing should be applied to your wounds each morning for five days after surgery. It is common to notice a small amount of bloody drainage for the first three days after surgery. You may stop any further bandaging after five days if your wound is dry. Expect a small degree of tenderness and swelling around the incision site. Also expect a moderate degree of redness at the incision site and extending to each side of the incision a few millimeters.

If your wound is still draining on the third morning after surgery, it is important that you provide local wound care. Twice a day the bandage should be changed, and the wound itself should be cleaned with a sterile Q-Tip dipped in hydrogen peroxide. You should avoid exposing your wound to water until all drainage stops for 24 hours.

The wound should be kept totally dry for at least four days after surgery. Thereafter, if no wound drainage is present, you may begin showering. 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 after this two week period, then a tub bath is fully acceptable. Remember: do not expose your wound to water if it is draining. Many patients experience dizziness the first time they are in the shower. Also an amazing number of patients fall after surgery while showering.

DO NOT SHOWER ALONE THE FIRST TIME AFTER SURGERY.

Small pieces of surgical tape across the wound should be left in place. Usually these tapes come off in the process of showering in the first two weeks. If any residual tape is in place two weeks following surgery, feel free to remove the pieces.

If you notice increased tenderness, swelling, redness, or drainage from the wound, notify the office immediately. If you notice any clear fluid draining from your wound or if severe headache develops, you should call immediately as well.

Once the wound is totally healed, about two weeks following surgery, a vitamin E crème or aloe vera from your local pharmacy will hasten maturation of your scar. It is important to use sun screen on your scars for 1 year. Failure to do so will lead to further scarring.

Diet

Your diet should be restricted to foods which are easy to digest for the few days after surgery. Drink plenty of liquids.

Showering

You may shower when your wound is dry, usually within 3 to 4 days. Do not take baths for 10 days.

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 muscles has developed. Rehabilitation of the spine to accomplish spinal fitness is absolutely necessary and rarely requires formal physical therapy.

During this period you should begin an aggressive walking program. While in the hospital, ambulation to a 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 with no upper limit to the distance.

The only other acceptable exercise during this period of healing is stationary bicycling.

Many physicians utilize physical therapy, but this seems to take much longer and is expensive as only one visit to physical therapy can be arranged on a single day. Dr. Heilman recommends that patients perform the following motion exercises every hour while awake all day long.

The back moves in four ways:

- 1) bending forward
- 2) unbending backward
- 3) tilting to the right
- 4) tilting to the left

Start with the first exercise above. The patient should bend the back forward until moderate tightness is encountered and maintain this position for five full seconds. Thereafter, return to neutral position; repeat this five-second activity five times.

These same series of exercises should be repeated for each of the four motions described above.

If you perform the exercises as instructed, near normal motion will be achieved in one to two weeks. Remember: do not start these exercises until instructed to do so by Dr. Heilman which will be when your fusion is healed.

After normal motion is achieved with the exercises described above, you may return to unrestricted activities. If you are a very active person further rehabilitation is recommended via a swimming program. Swimming three times a week will strengthen the neck muscles.

After normal motion is achieved, slowly return to routine activities. The return to recreational athletics should be slow and progressive. For instance, golfers should spend a month or so at the driving range progressing slowly using common sense. Once a half-hour of driving range activities is well tolerated, nine holes of golf is a reasonable step. Dr. Heilman and staff would be glad to discuss specific activities with you.

Driving

Avoid driving while taking pain medicine after surgery. Although this is a considerable imposition, it is unsafe to operate a vehicle when you are on pain medicine. During the healing period, you may ride in a car while others are driving. Prolonged trips in a car will produce moderate backache for the first few months after surgery. Expect slow increased tolerance to driving during the first three weeks following surgery.

Lifting

Lifting weights up to 20 pounds is acceptable during the healing process. Strenuous lifting must be avoided until a solid fusion is achieved.

Work

Patients who have sedentary jobs often return to work within seven days following surgery as long as transportation by others can be arranged. If your job involves heavy work, return to work will not be possible until a solid fusion has been obtained.

Expectations

Recovery from lumbar laminectomy is quite variable. Patients usually achieve a dramatic, remarkable reduction in their pain with minimal associated operative pain. The relief of leg pain present before surgery is usually immediate although numbness and weakness in the leg can require months to resolve fully. Occasionally, numbness in the leg can be permanent depending on the duration of symptoms prior to surgery.

Back pain resolves more slowly after surgery than leg pain. Three to five percent of patients do not achieve substantial relief in their back pain and may require a fusion.

Increased pain with prolonged sitting and driving is expected as well. If you slowly increase your exposure to these activities, you may expect decreased discomfort with time.

Some difficulty at sleeping is commonly described for the first month or so after surgery. Try to avoid naps during the day if you are having problems sleeping. It will help if you find a comfortable sleeping position. Dr. Heilman does not recommend sleeping medicine.

If you have had a fusion which has healed and adequate rehabilitation has begun, expect a dramatic reduction in your post operative pain. Approximately 30% have persistent backache with various activities early in the morning. However, according to most patients this discomfort is minimal in nature and represents a vast improvement over the preoperative pain level.

Despite an excellent technical result, a small percentage of patients will have persistent pain and are unhappy with their surgical result. This ranges from 3 to 5% of the patients who undergo a lumbar laminectomy. If this does occur, then you will be given the option to consider additional studies in hopes that a separate pain source can be identified.

Long-term Restrictions

There are no long-term restrictions associated with one level lumbar laminectomy operations. Bungee jumping and jobs requiring lifting and twisting as in heavy construction may not be possible. Riding horses and 4-wheel drive vehicles on

rough courses should be discussed with Dr. Heilman on a case-by-case basis. Be careful at amusement park rides. Use common sense.

Medications

The use of narcotic medications is a huge problem. Some patients come to our office having been over medicated. Narcotic tolerance and dependency develop extremely easily. In general, Dr. Heilman recommends that you discontinue narcotics two to four weeks before surgery.

Ample pain medicine will be given to you while in the hospital to ease operative discomfort. You will be discharged with a course of anti-inflammatory medicine as well as a moderate quantity of pain pills. Mild to moderate pain should be tolerated, and the pain pills should be used only when you are unable to cope with your discomfort. Due to the problems of narcotic addiction, no narcotic pain pills will be prescribed beyond one month after your operation.

Office Visits

Upon leaving the hospital, call Dr. Heilman's office to arrange the first postoperative visit which should be 7 to 10 days following surgery. In the office, an x-ray will be done if you had a fusion to assess the condition of your fusion. You will visit the office again in six or eight weeks following surgery for your second post-operative appointment (depending on the appearance of your initial x ray and your clinical condition). Further followup appointments are scheduled as needed.

You must complete the following consent

Please initial each page and sign below that you have read all pages of this handout. You may request an additional copy for your home use.

Glossary

Allograft Bone Graft - bone from a bone bank used for fusion

Ambulation - the act of walking

Anterior - in front of the body

Autograft Bone Graft - Bone harvested from the patient's pelvis

Disc - the soft cushion between two vertebrae

Fusion - growing together of the two bones surrounding an injured disc so that painful motion is stopped

Posterior - in back of the body

Pseudarthrosis - non-union or failure of bone to grow together

Vertebrae - the bones in one's spine which surround a disc

Single or One Level Fusion - fusion of the two vertebrae surrounding one disc

Two Level Fusion - fusion of the three vertebrae surrounding two discs

Three Level Fusion - fusion of the four vertebrae surrounding three discs

L5/S1 - lowest disc in the back

L4/L5 - first disc above L5/S1

L3/L4 - second disc above L5/S1

I have read all 16 pages of this handout _____

(Signature)

Date _____

(Witness)

Patient Informed Consent for Orthopedic Spinal Reconstructive Surgery

*Dr Alan E Heilman MD PA
Fondren Orthopedic Group LLP*

Patient Name _____

Age _____

Date _____

Date of Surgery _____

I have elected to have the following operation by Dr. Heilman and / or associates:

For the following diagnosis:

Dr. Heilman has explained this operation in full. I have had the opportunity to have second opinions offered to me. I understand the following: the intent of Dr. Heilman's surgery is to improve my condition so that I may be able to function better. Spinal surgery never allows a person to have a normal spine. 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 have been 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 disk, bone or implants at the level of surgery or at another level.

Rarely some patients are not better after surgery and their condition may worsen. If a fusion is performed, some permanent stiffness will occur. This stiffness may lead to the deterioration of adjacent levels or disks in my spine over time.

I have read the surgical handout 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 intra-operatively 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.

The risks of spinal surgery include 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 loosening and pain, scarring of nerve roots after surgery, chronic pain, injury to the 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, and bleeding into soft tissues causing compression of the nerves called a hematoma requiring emergency surgery.

Cervical operations have additional risks which include those listed above, and the risks of bleeding into the 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, and scarring.

DR. HEILMAN HAS DISCUSSED THESE RISKS WITH ME. DR. HEILMAN HAS EXPLAINED TO ME THE PROCEDURE I AM HAVING IN DETAIL AND HAS GIVEN ME AMPLE TIME TO ASK QUESTIONS ABOUT THE PROCEDURE. I HAVE NO FURTHER QUESTIONS AND WISH TO PROCEED WITH THE SURGERY.

Signed _____ Parent (if minor) _____

Witness _____ Date _____ Time _____