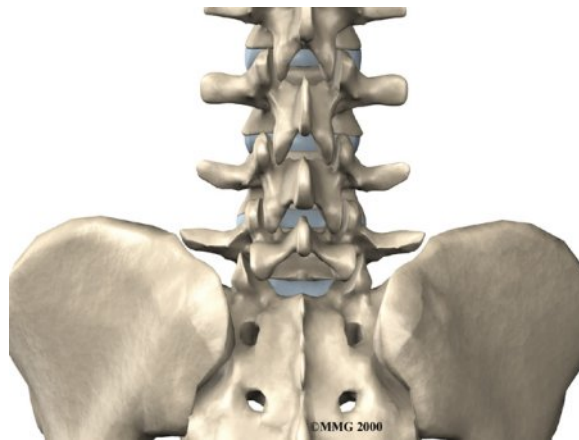


PREMIER SPINE CARE

John M. Ciccarelli, M.D.

Lumbar Spinal Fusion

A Patient's Guide to Surgery



Based upon your symptoms, physical exam and radiographic films, a lumbar spinal fusion procedure has been recommended for you. **The goal of this procedure is to return you to optimum health and send you home typically 2 days after your operation on your way to recovery.**

The following information should help you understand what will be involved with the surgery. This guide is not intended to take the place of the orthopedic spine team's explanation, but is designed to answer some common questions and make you familiar with common terms and procedures related to lumbar spinal fusion surgery.

Basic Information

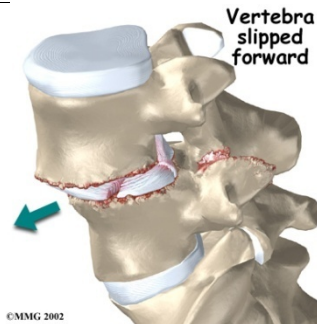
A posterior lumbar fusion is the most common type of fusion surgery for the low back. A fusion is a surgical procedure that joins two or more bones (in this case vertebrae) together into one solid bone. The procedure is called a posterior fusion because the surgeon works on the back, or posterior, of the spine.

Posterior fusion procedures in the lumbar spine are typically used to treat:

- ~Spinal instability
- ~Certain cases of severe degenerative disc disease
- ~Fractures in the lumbar spine
- ~Frequent recurrent lumbar disc herniations

Spinal instability conditions that are commonly treated with spinal fusion surgery are **spondylolysis** and/or **spondylolisthesis**. **Spondylolysis** is a defect or crack in the bony ring of the spinal column. This defect is most commonly thought to be a stress fracture that happens from repeated strains on the bony ring. Spondylolysis can lead to the spine slippage when a stress fracture occurs on both sides of the bony ring. This slippage is called **spondylolisthesis**. The back section of the bony ring separates from the main vertebral body, so the injured vertebra is no longer connected by bone to the one below it. In this situation, the bone on top is then free to slip forward over the one below causing pain or nerve pressure.

SPONDYLOLISTHESIS

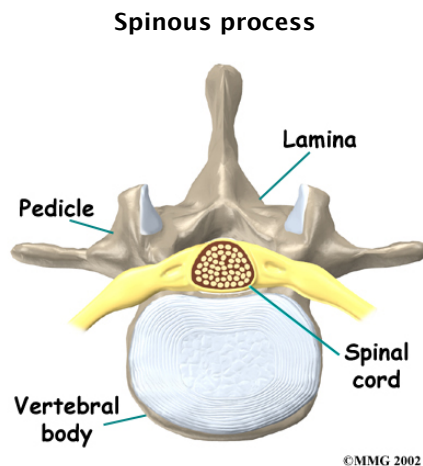


Other procedures are usually done along with the spinal fusion surgery to take the pressure off nearby nerves. They may include removing bone spurs (Decompression) and injured portions of one or more discs in the low back (Discectomy). Most surgeons also apply metal screws and rods, called instrumentation, to hold the bones securely while they fuse. Additional Inter-vertebral body spacers may also be utilized for additional support or fusion depending on your anatomy at the time of surgery.

Anatomy

What parts of the back and spine are involved?

Surgeons perform this procedure through an incision in the low back. The incision reaches to the spinous processes, the bony projections off the back of the vertebrae. The surgeon must move aside the muscles along the spine, called the paraspinal muscles. The fusion itself involves the lamina bone, the protective roof over the back surface of the spinal cord. In some cases, the surgeon may enlarge the neural foramina, the tunnels where the nerve roots leave the spinal cord.

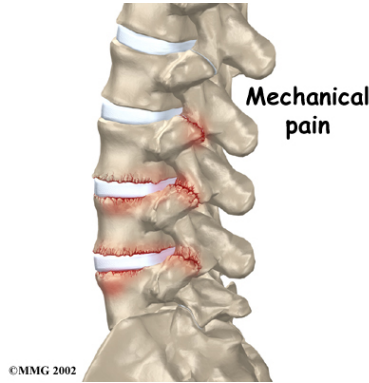


Rationale

The main goal of the spinal fusion (also known as an arthrodesis) is to stop movement of one or more vertebrae. Keeping the fused section from moving helps stop mechanical pain. Mechanical pain occurs when damaged discs and joints that connect the vertebrae become inflamed from excessive motion between the vertebrae. This type of pain is commonly felt in the low back and may radiate into the buttocks and upper thighs.

Too much vertebral motion also affects the spinal nerves. They begin to rub where they pass through the neural foramina and become swollen and irritated. Also, the neural foramina narrow when a vertebra slides too far forward or backward over the vertebra below. This immediately pinches the nerves where they pass through the neural foramina. Nerve swelling, irritation, and pinching produce radicular or sciatic type pain. This type of pain often radiates down one or both legs below the knee. Fusion stops this harm to the nerves.

By fusing the vertebrae together, surgeons hope to slow down the process of degeneration at the fused segments and prevent future problems.



Members of the Health-Care Team:

You will meet a number of health professionals during this time. Their goal is to help you recover and return you to your prior activities as soon as possible. A brief description of each of these professionals follows:



John M. Ciccarelli, M.D.

Fellowship-Trained Orthopaedic Spine Surgeon (Dr. John Ciccarelli). This is the physician who will perform the surgery and direct your care afterward. Please feel comfortable asking questions of your surgeon – ***communication is an essential element towards recovery.***

Physician Assistant (Jason Douglas) The physician assistant (PA) is a licensed professional who practices medicine under the supervision of a physician. The physician assistant will assist the surgeon during your procedure. The PA can answer questions and will follow you in the hospital after surgery as well as help to facilitate your discharge from the hospital and answer any questions you may have.

Medical Assistant (Laura Landon) The medical assistant is your main channel of communication between you and the physician or PA once you are discharged from the hospital. She is able to answer many simple questions you or your family may have and will forward any more complex questions appropriately. She will arrange and organize your surgery and pre-operative testing.

IMPORTANT: Prior to surgery it is important to stop all over the counter (non-prescription) medications, vitamins, and herbal supplements. These medicines are not regulated by the FDA and may interact adversely with some Anesthetic agents you may receive at the time of surgery. These need to be discontinued at least a full week prior to surgery. Your surgical team will also request that any Aspirin, NSAIDs (aleve, advil, etc), or prescription blood thinners be stopped 1 week prior to surgery and you will need to remain off these for 3 weeks after surgery. This would be requested as part of your pre-operative clearance obtained from your primary care physician or other medical specialist. Do NOT stop these medications unless cleared by your primary medical specialist and be sure to inform your surgeon if these cannot be stopped for underlying medical conditions. Inability to medically stop blood thinners prior to surgery will result in your surgery being cancelled or delayed.

Arrival at the Hospital

- Plan to arrive at the hospital at least 2 hours before your scheduled surgery time.
- Eating or drinking after midnight the night before surgery is **NOT** permitted unless otherwise instructed.
- You will be checked in by the admissions department and given an ID bracelet.
- Results from your laboratory work will be reviewed again.
- If you have a primary medical doctor clearance letter, it will be collected and reviewed.
- Your family will be directed to the surgery waiting area.
- After your preparation, you will go to the holding area located next to the Operating Rooms.

These instructions may be modified when you are contacted by the hospital the day before surgery.

Pre-Operative Holding Area

- This is an area just outside the Operating Room.
- Here, you will meet your pre-operative nurse and anesthesiologist.
- You will see your surgeon and/or his physician assistant here to go over any last minute questions or concerns.
- An intravenous(IV) line will be inserted, and you will be given antibiotics and fluids. Often times you will be given a medication to help you relax.

Surgical Procedure

What happens during the operation?

Patients are given a general anesthesia to put them to sleep during most spine surgeries. During surgery the patient usually kneels face down on a special operating table. A urinary bladder catheter is placed for all lumbar spinal fusion surgeries to help keep the bladder drained throughout the operation. These catheters are typically removed the day after surgery. The operative time can vary from 2-4 hours depending on the number of spinal levels involved.

An incision is made down the middle of the low back. The tissues just under the skin are separated. Then the small muscles along the sides of the low back are lifted off the vertebrae, exposing the back of the spinal column.

The surgeon first removes any pressure from nearby nerves. This may involve removing part or all of the lamina bone. (The lamina forms the back portion of the bony ring covering the spinal canal.) Then the surgeon takes out any disc fragments and scrapes off nearby bone spurs. In this way, the nerves inside the spinal canal are relieved of additional tension and pressure. The nerve roots are then checked to see if they move freely in the spinal canal. To prepare the area to be fused, the surgeon shaves a layer of bone off the back surfaces of the spinal column. The cut bone bleeds. The surgeon may then harvest bone graft or bone marrow from the

back part of the pelvis bone. The surgeon lays the bone graft material over the back of the spinal column. When the bone graft contacts the bleeding area, the body heals (or fuses) the bones together just as it would a fractured bone.

During posterior spinal fusion, the surgeon also fixes the bones in place using a combination of metal screws and rods. This instrumentation (or hardware, as it is sometimes called) holds the vertebrae to be fused together and prevents them from moving. The less motion there is between two bones trying to heal, the higher the chance they will successfully fuse. The use of instrumentation has increased the success rate of spinal fusions considerably.

Another technique that may be used together with a posterior spinal fusion is a **Posterior Lumbar Interbody Fusion** or **PLIF**. In this procedure, the surgeon works on the spine from the back (the posterior) and removes a spinal disc in the lower (lumbar) spine. The surgeon inserts a spacer or cage device filled with bone graft into the space between the two vertebrae where the disc was removed (the interbody space).

The goal of the PLIF procedure is to provide potential extra support and to allow a fusion site to form in the front of the spinal column as well as the back. Your surgeon may also request consent to perform this procedure in addition to your posterior lumbar instrumented fusion. The decision to perform the PLIF procedure is made by your surgeon depending on your underlying problem, spinal anatomy, and various other factors at the time of surgery.

Following completion of the spinal fusion procedures, a drainage tube may be placed in the wound. The muscles and soft tissues are put back in place, and the skin is stitched or stapled together.



Recovery Room/PACU

- Your vital signs will be checked frequently, the surgical dressing will be checked and your symptoms will be assessed.
- You will receive pain medication as needed.
- The IV fluids will be continued.
- You will not be allowed to eat or drink immediately after surgery.
- An anesthesiologist will discharge you from the Recovery Room after you are completely awake and stable, which usually takes one to two hours.
- The surgeon will discuss your surgery and your condition with your family, if you desire, during this time.
- You will then be taken to the inpatient floor for your stay in the hospital.
- Your family will be informed which room you have been assigned and will join you there.

After Surgery

The nursing staff will assess you on arrival to the floor and monitor your progress. Your IV line will be removed after you are tolerating fluids, have no nausea, and post-operative antibiotics are completed. You will slowly be allowed to resume your normal diet. Often times we will start with liquids and advance to solids as tolerated. Soreness in the throat is common after a breathing tube. After surgery, patients are typically placed on a PCA (pain pump) to control postoperative pain. Early mobilization and ambulation are encouraged and will be assisted by a physical therapist or nurse. The wound drain tube and bladder catheter are typically removed within 24 to 48 hours. Patients usually stay in the hospital after surgery for up to 2-3 days. During this time, a physical therapist helps patients learn safe ways to move, dress, and do activities without putting extra strain on the back. Patients may be instructed to use a walker for the first day or two. Your surgeon or his PA will be rounding each day helping to facilitate your progress and address any issues. Try to write down questions that come up while in the hospital so that these can be discussed when the physician/PA are visiting with you. Before going home, patients are provided a discharge instruction sheet and shown how to help control pain and avoid problems. Remember to arrange your transportation home prior to this day. You will not be allowed to drive yourself home. If you anticipate a problem with your arrangements for transportation home, please notify the staff the day of surgery.

Office follow-up is made typically 3 weeks after discharge to allow assessment of surgical incision healing.

Rehabilitation/Recovery

Rehabilitation after posterior lumbar fusion can be a slow process. Lumbar fusions typically take a minimum of 6 months to fully heal.

Activity, **NOT** bed rest, is encouraged during all phases of your recovery and healing. A home walking regimen is encouraged and prescribed for the first 12 weeks after surgery. Patients should avoid excessive bending, lifting, and twisting for up to six weeks and strenuous work activities are typically avoided for the first 6-8 weeks after surgery.

Light work activities, bending, lifting, and twisting are allowed after this 6-8 week period. Activities are gradually increased over the next several months until solid fusion occurs approximately 6 months after surgery.

Permanent work or activity restrictions may or may not be prescribed depending on the patient's employment or activity level. It is important to understand that restrictions do **NOT** prevent re-injury!

Physical therapy is typically reserved for the later stages of fusion healing so that excessive stress is not placed on the operative fusion too early after surgery. Physical Therapy may also be utilized to help with final spinal reconditioning/strengthening.

Other information you will need such as pertinent telephone numbers, directions, and maps will be provided along with this information in your pre-operative surgical package.

If you have specific questions that are not addressed in these materials, please call our office at 913-322-2700. Our office hours are 8:00 AM - 4:30 PM.

Thank you for entrusting us with the care of your spine. We understand this is a stressful time for you and will make every effort to make the experience as pleasant as possible.