

## Lumbar Surgery Information Handout

Welcome to Capital Neurological Surgeons and thank you for trusting us with your neurosurgical care. Please take some time to review this handout and feel free to contact us with questions or concerns.

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### BASIC ANATOMY: LUMBAR SPINE

What is the lumbar spine? It is the last 5 unfused bones of the spine. There are 31 bones in the spine, 7 cervical, 12 thoracic, 5 lumbar, 5 fused sacral segments and the coccygeal fused segments. The spinal cord lives inside a large space inside the bone called **spinal canal**; however, there are only spinal nerves in the lumbar spine in the adult patient since the spinal cord ends in the thoracic spine. Each bone has two holes, one on the left and one on the right. These two holes create tunnels called **intervertebral foramen** on the side that nerves travel through to leave the spine and enter the arms. Each bone is connected to another bone in the front with an **intervertebral disc** and two **facet joints** in the back. This can create two very different problems:

1. **Disc herniation/slipped disc:** The disc can be injured and be slipped/herniated, which is seen in sudden injuries such as being hit or car accident or falls.
  2. **Lumbar Stenosis:** The disc can also dry out over a long period of time and old dried discs are weaker than young healthy discs. This creates stress on the intervertebral joint and the body responds by trying to make the joint stronger by adding bone. This is called *bone spurs* or *osteophytes*. Unfortunately, drying out discs is a part of aging and everybody will get this during their lifetime starting at age 40.
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### LUMBAR SPINE DISEASE: what is it and why does it hurt?

Lumbar spine disease can create pain in the back and legs. The three components of lumbar spine disease that can be addressed by surgery is

1. Pinched nerve
  - a. Pinched nerves create pain because they are squeezed by disc and bone spurs as they exit from the spine through tunnels on the side called **intervertebral foramen**. The pain is usually sharp and stabbing and electrical in nature. It can shoot into the buttocks and legs. Pinched nerves can also cause weakness of the legs and feet. Pinched nerves can also cause numbness and parasthesia, which is a feeling of pins and needles in the leg and feet. Numbness is usually a sign of a permanently damaged nerve and this usually does not improve with surgery.
2. Misalignment/instability of the spine
  - a. The most common misalignment of the lumbar spine is when the bones are slipped forward called **spondylolisthesis**. This can create severe strain in the muscle and joints

of the back but it can also pinch a nerve as it deforms the tunnel through which the nerves pass.

Symptoms that lumbar surgery cannot treat include

1. Arthritis
  - a. This is long term chronic inflammatory changes in the joint of the spine. 100% of all people will develop arthritis in the joints of their body as they age just as 100% of all people develop wrinkles in their skin as they age. This is a function of wear and tear on our bodies. Patients report this feels like a dull constant ache or grinding feeling in the back. Surgery does not change arthritis and cannot “cure” arthritis.
2. Myofascial syndrome
  - a. Muscles, tendons, ligaments, skin and the soft tissue that makes up the neck that wraps around the spine can all be damaged. Car accidents or falls can create severe myofascial pain. Patients report this feels like a tight squeezing feeling in the back, buttocks and legs. Surgery does not treat these symptoms.
3. Neuropathy
  - a. Nerves can have injury or even disease. Just as we can have disease of the bone, disease of the skin, disease of the lungs etc., we can have disease of the nerves and this is called neuropathy. Symptoms can feel like ice water running over the arms or even a burning numbness. This is largely permanent and surgery does not treat these symptoms.
4. Spinal nerve injury
  - a. Spinal nerve injury is permanent and can be life and limb threatening. Severe weakness, bowel and bladder incontinence (inability to control urination or bowel movements), numbness and neuropathic burning pains, are the common presenting symptoms.

So there is back pain that can be treated by surgery and there is back pain that cannot be treated by surgery. Patients should have an understanding of the cause of their pain so that they may have realistic expectations for surgery. So what is the surgery?

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SURGERY: Lumbar laminectomy/discectomy

The most common surgery of the lumbar spine is **laminectomy**. If a patient has spinal nerve compression due to **lumbar stenosis** or pinched nerves from *bone spurs, disc bulges or thickened ligaments*, then the surgeon can cut the bone (lamina) to create more room and shave down the bone spurs, which can decompress the pinched nerve. If the patient has a disc herniation, there will be a piece of disc that is outside of the normal location and now pressing on a nerve root. This is treated with a **discectomy**. Let's review the surgery in more detail.

Laminectomy/discectomy is performed under general anesthesia. There are risks to being under full anesthesia. There are concerns about patient's medical suitability for surgery in regards to the heart or lungs, so prior to any surgery, patients will need to be cleared for surgery by their family doctor. EKG

and labs as well as a chest x-ray may be requested. All reproductive age females will also have a urine pregnancy test provided.

The patient will be *intubated* during surgery. This means that a breathing tube will be inserted into the throat and this may cause a sore throat that should get better by 1-2 days after surgery. Patients also complain of severe dry mouth due to the anesthetics and this also resolves within 1-2 days. The surgery is performed by making a midline incision in the lower back. The large muscles of the lower back will need to be gently retracted aside to gain access to the spine. Even if the muscles are not cut, simply retracting them will cause pain and muscle spasms/cramps. Patients frequently notice that 2-3 days after surgery, their buttock/hip and legs go into painful cramps and hurt. Pain medicine and muscle relaxants prescribed after surgery can help reduce some of these pains. Rest and time will allow the pain and cramps to improve within 5-7 days, but it can take up to 4 weeks in some patients.

Once these muscles are carefully retracted, we can access the front of the spine. The lamina is resected with drills and sharp instrumentation. While great care is taken to avoid injury to the spinal nerves underneath the bone, damage to these vital structures is a rare but devastating risk of surgery which can result in paralysis or death. Tearing of the lining of the spinal nerves (known as dura) can create a **spinal fluid/cerebral spinal fluid (CSF)** leak, which can increase infection rates and this can result in meningitis which can result in death. CSF leaks occur at a rate of 1-3% overall and usually can be treated with a few sutures and a small amount of organic glue called Duraseal. Occasionally a tube called a lumbar drain may be required to be temporarily placed and the patient kept in the hospital for 3 days while the lumbar drain helps the CSF leak heal. Once the lamina is removed, the tunnels where the nerves pass are inspected and any bone spurs or thickened ligaments causing an obstruction are shaved with instruments. If there is a disc herniation with a fragment of disc pushing on a nerve root, it may require the surgeon to carefully retract the nerve root and remove the herniated fragment of disc. Once the nerves are well decompressed, the muscles are brought back to position and the skin closed with surgical staples. This is not a water tight closure, so the incision must be kept dry to avoid infection. If water gets into the wound, it can bring bacteria and germs into the wound and create an infection.

After surgery, the patient will remain in the recovery room for 1-2 hours and then they are taken to the ASU on the 4<sup>th</sup> floor. The phone number to the ASU is **916-453-4214**. Once in the private room, the patient may get up and walk around or use the rest room. For dinner, the patient is requested to sit in a chair to eat. No bedrest is recommended. If you are asleep, then be in bed. If you are not asleep, then don't be in bed. The patient is discharged the next day with their pain medicine prescriptions. They will have to call to make an appointment to see me two weeks after surgery for an incision check. Follow up visit schedules are 2 weeks after surgery and 3 months after surgery. Usually physical therapy is not required; however, if patients have difficulties with normal activities such as getting out of bed or getting to the bathroom, then physical therapy may be ordered at the 2 week visit.

For the first two weeks, the secret of success is rest and recovery. Almost half of the patients stop their pain medications one week after surgery and feel like exploring their new limits; however, I advise patients maintain a low and reasonable rate of activity and advance their activity as instructed. It is the responsibility of the patient to exercise restraint and allow their body to heal completely.