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What is going on with my spine?

Spinal stenosis refers to narrowing around the nerves in the spine. There are 2 specific compartments that can become narrow. The central canal, or middle of the spine, where the sac that holds the nerves and spinal cord is located can be narrowed (central stenosis) or the nerve tunnels, or neural foramen, where the nerves leave/exit the spine can be narrowed (foraminal stenosis).

In the lumbar spine, the nerves that exit go to the legs. The culprit responsible for the narrowing is often arthritis which can cause bony overgrowth in the spinal compartments. Stenosis can also be the result of a large disc herniation, overgrown soft tissue such as ligaments, spinal instability, or an overgrowth of the fat layer immediately next to the nerves.

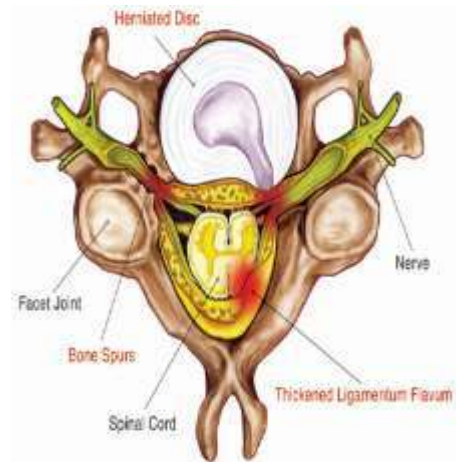
Spinal stenosis can cause a variety of symptoms which can include pain down the legs, numbness/tingling, muscle weakness, and fatigue in the legs when walking. The diagnosis can be suspected based on physical exam but is confirmed with an MRI. Spinal stenosis also occurs in varying degrees but moderate to severe stenosis can require surgery.

How is the procedure performed?

An incision is made vertically on the center of the low back. Dr. Donnally will perform careful dissection in a minimally invasive manner through the soft tissue down to the spine. An x-ray is used to make sure this is done in the correct location. Dr. Donnally will enlarge the spinal canal by removing the lamina or arch of bone that overlies the sac holding the nerves. He will then remove any disc herniation or overgrown soft tissue to alleviate the compressed nerves. Once he has confirmed the nerve tunnel widened and the nerve is no longer compressed on its way out of the spine, the wound will be irrigated with antibiotic containing fluid and closed.

The vertebra or bones will require stabilization. This is done by carefully placing specially made screws into the bone. The heads of the screws at different vertebra are then connected with rods to provide stability across the intended vertebra. By placing the hardware, the bones will be locked in this position and therefore will no longer move abnormally. The surgeon will then pack bone graft alongside the hardware. The bone taken from your decompression/laminectomy will be used for this purpose. This will create the bone fusion. Occasionally, Dr. Donnally may add bone graft from a donor or bone growth factors to help the bones fuse together. Final x-rays of the spine are taken. The wound is irrigated with antibiotic containing fluid and closed. Antibiotic powder is also placed in the wound bed prior to closure as this prevents infection.

SOME patients may also require an anterior approach (through the abdomen or stomach) as well to work on the front of the spine. This is typically reserved for patients with high grade instability with substantial shifts between vertebra. If this is required, a general surgeon will perform the approach



through the abdomen. The general surgeons that work in our operating rooms perform this approach every day and work hand in hand with the orthopedic team. Once the general surgeon has exposed to the spine, Dr. Donnally will perform the spinal portion of the operation. Once the spine surgeon has completed his portion of the case, the general surgeon will close the abdomen.

Who will be with me in the operating room?

The operating room team is well versed in spine surgery. Your surgeon will lead the team which will include the following:

- **Anesthesiologist**
- **Physician Assistant**- A PA is essential to giving you optimal care in that it is like I am operating with 4 skilled hands instead of just 2. During the case, my PA will help with suctioning blood to help me see your spinal roots better and retraction of tissues to give me more leverage. They make the case more efficient so that we can finish sooner and get you ready for physical therapy (walking) the same day as your surgery.
- **Neuromonitoring Specialist**- Once intubated, a specialist will place many tiny needles into muscles on your arms, legs and head. This allows me to monitor your spinal cord and the spinal roots/nerves. I am able to monitor any issues and decompression in real time. They are a critical tool that keeps the surgery safe.
- **Scrub nurse or tech**: responsible for giving the surgeon instruments needed in the procedure.
- **Circulator nurse**: responsible for obtaining any items the surgeon requests as well as putting information in the medical record via the computer regarding the case.
- **Medical Device Specialist**- supplies the screws/cages/rods for fusion cases.

What type of anesthesia will be used for my procedure?

All spine surgery is done under general anesthesia. This is required because we are working next to nerves, spinal cord, etc. and patients need to remain still during the procedure. This can only be achieved with general anesthesia and is standard practice during spinal surgery.

How big is the incision?

A two level incision is approximately 3 inches long. For a multilevel surgery, the incision can be longer as each level requires an additional 1-2 inches.

How long will my surgery take?

The procedure takes approximately 3 to 5 hours once incision is made.

Do I need to stop any medications prior to surgery?

All blood thinning medications need to be stopped at least a week prior to surgery.

- This includes but is not limited to NSAIDs (non-steroidal anti-inflammatory drugs) such as ibuprofen (Motrin, Advil), aspirin, celecoxib (Celebrex), meloxicam (Mobic), etodolac (Lodine), prescription blood thinning drugs like warfarin (Coumadin), rivaroxaban (Xarelto), apixaban (Eliquis).
- If you are taking any medications for autoimmune disease, they may need to be stopped as they affect the immune system and can increase the risk of infection. These medications

should be discussed with either your surgeon, physician assistant, primary care physician or rheumatologist.

Will I need to stay in the hospital?

The length of stay in the hospital is patient specific and determined by various factors such as the patient's overall medical health and the number of levels decompressed. I use muscle sparing techniques and the most up-to-date medication protocols to maximize patient recovery.

- Same day: 1 level decompressions
- Next day: ACDFs, 2 level decompressions, fusion
- 2 night stays: All posterior cervical procedures; Some lumbar fusion procedures (once passing gas can go home!)

What is the infection risk?

The risk of infection is very low, however anytime you make an incision on the body the risk does exist. This risk is elevated in diabetics, patients with autoimmune disease (lupus, rheumatoid arthritis, etc.) and obese patients. The risk of infection after a lumbar fusion surgery is approximately 5%.

Will I lose range of motion?

Your spine was already degenerative and losing its motion at this surgical site. Therefore, loss of range of motion is not expected to be any worse than what it is now. In fact, many have increased range of motion as their pre-surgery pain improves!

Will I need plates, rods, screws or bone grafting?

Yes, these help stabilize the spine while your bone fuses (grows new bone) at this level. They are all MRI safe, will not trigger a metal detector, and never need to come out! (Exceptions being revisions for infection)

Can the surgery be done with a laser?

No. Contrary to what many patients have heard, the laser instrument is only used for cautery and a traditional incision is required regardless of whether a laser is used or not. Lasers are available at the hospital and can be effective for other types of surgery (eye surgery, urology, dermatologic, etc.). The laser also generates a significant amount of heat, which can increase scarring and damage to the soft tissue. If a laser were that successful, your surgeon would of course use one.

Will a medical team be involved in my care?

Dr. Donnally may call upon a medical team to perform a medical clearance prior to surgery. This is decided on a case by case basis and determined based on age, type of surgery and the patient's overall medical health. If the patient spends the night in the hospital, a hospitalist or internist may be consulted to manage the patient from a medical standpoint. We are fortunate to have a medical team that exclusively cares for our patients while in the hospital. They will manage the "non-spinal" aspects of your care. They also typically do the pre-operative clearance as it is helpful for the medical team to meet the patient prior to surgery. This allows them to get to know the patient, review their medical needs, and allows continuity of care after surgery in the hospital.

Is there a risk of paralysis with the procedure?

No unless we are working at L1 or higher. The spinal cord ends at L1 in most people. Most disc herniations and instability is below L1 and the surgery does not involve working around the spinal cord.

When will my symptoms improve?

Leg pain usually improves first. In some patients, relief is immediate and others it is more gradual. The likelihood of alleviating leg pain is approximately 90-95%. This often depends on the severity of compression, how much the nerve was irritated, and how long the problem went on before surgery.

Numbness/tingling is typically the *slowest* symptom to improve. It does not always resolve in every patient but can take up to 18 months before you can say whether or not it has resolved or improved. In some patients, numbness/tingling may improve immediately. While **the purpose of the surgery is *not* to alleviate back pain**, incisional back discomfort improves each week. Most patients find their incisional pain to be at its worst for the first 2 days. The more you walk, the better the back will feel.

Remember the purpose of the surgery is to alleviate “leg issues” (also known as sciatica or radiculopathy). Unrealistic expectations, such as having the perfect back or perfect life are not helpful to healing. The surgery can help improve function and decrease pain, but it is important to remember the surgeon **is fixing something that is already broken and cannot create a spine that is “as good as new.”** This is an important concept as typically in patients with stenosis the spine is often arthritic overall and surgery is only recommended for moderate to severe compression with directly related symptoms.

Should I go to physical therapy?

The decision on whether to order physical therapy or not is decided on a case by case basis. The most important therapy is walking and this can be done at home. It is more about frequency than distance. Walk every 20-30 minutes. This will help minimize back pain as prolonged sitting causes the back muscles to stiffen up. Typically, physical therapy is **not** prescribed **until** at least 6 weeks post op.

At 6 weeks, many restrictions are lifted. Starting outpatient physical therapy too early can actually cause increased pain as the muscles need time to heal. Do not start lifting weights or resume gym activities until released by your care team.

What are my restrictions after surgery?

It is very important to abide by your restrictions. No bending, lifting, or twisting until released by your care team. These restrictions typically stay in place for 6 weeks after surgery. Your surgeon or physician assistant may permit you to do some light lifting but this will be discussed at your office visits. Walk every 20-30 minutes. Walking is the most important part of recovering from a spinal operation. The more you walk, the better the incision will feel and the better you will feel. Stamina is decreased after any type of surgery and walking helps energy levels come back and will decrease post-operative fatigue.

How will Dr. Donnally control my pain?

Dr. Donnally trained and published on the newest protocols for pain management following spine surgery. It all starts in Pre-OP with a “pain cocktail” that will start to treat you even before the surgery starts! Protocols for pain control have been developed based on evidence-based medicine on what works best while also minimizing side effects and abuse potential. The hospital team, which includes surgeons, medical physicians and anesthesiologists, has developed a protocol for pain control based on these studies. You will also be given medication to prevent post-operative nausea, and an intravenous

antibiotic to prevent post-operative infection. After surgery, patients will usually receive a narcotic script as this is typically needed short term following spine surgery. You can also be given a script for a stool softener to prevent constipation as this often occurs following anesthesia and is a side effect of narcotic pain medication. While anti-inflammatory medication such as *ibuprofen* is prohibited at least a week prior to surgery, you are **not** restricted from taking it **after** surgery for pain control unless advised not to do so for a medical reason (ex. you already take a prescription blood thinner such as warfarin/Coumadin, history of severe kidney disease).

Will I need to wear a brace after surgery?

Yes, a brace is a great way to provide additional stability and pain relief in the 1st 6 weeks. You do not need to wear it at night if it is bothersome.

What if I have increased numbness after surgery?

It is not uncommon to experience numbness/tingling after surgery since it is the slowest symptom to resolve. Initially, the numbness may be of greater intensity than before surgery, but increased numbness will subside over time as you heal. Please report any new locations of numbness or new sensations. Be aware this typically occurs from nerve manipulation and will decrease with time.

If I take narcotic pain medicine, do I need to be aware of anything specific?

While narcotics can be an effective option for pain relief, they are meant to be taken short term only. For decompression and fusion surgery, we will only prescribe narcotic pain medicine for a maximum of 12 weeks. Patients should try to begin decreasing usage or use Tylenol after their first post-operative visit and rely less on the narcotic pain medicine. Narcotics also cause a variety of side effects including but not limited to fatigue, nausea, constipation, sweating, flushing, and confusion. You are not permitted to drive a vehicle until you discontinue use of narcotic pain medication.

If you are taking narcotics prior to surgery, it would be helpful to either decrease your use or wean off the medicine. Patients who take narcotics prior to surgery, develop tolerance to the medication as the pain receptors in the brain and nervous system become used to having the medication present. These patients tend to have lower pain level tolerance and it becomes increasingly difficult to control their post-operative pain as they require more and more pain medication to achieve the same level of pain control than prior to surgery. Lastly, the rules regarding dispensing narcotics change frequently and many insurance companies have their own rules regarding the quantity a patient may have at a time and when refills can be obtained. For your protection, you will receive a narcotic prescription or refill only when you request it and it is deemed medically appropriate by your physician or physician assistant. Refills will not be considered over the weekend, at night through the on-call service or on holidays.

What can I expect regarding bowel/bladder function after surgery?

A Foley (bladder) catheter may be used during surgery depending on the number of spinal levels involved in the procedure. This catheter will not be placed until you are asleep. Some patients however, are slow to urinate after having surgery. This is thought to be a result of the effects of anesthesia on the smooth muscle in the bladder and will typically resolve on its own. Anesthesia will give you plenty of intravenous fluids during the operation to facilitate urination after surgery. No patient will be discharged home until they have urinated on their own. Some patients have difficulty urinating immediately following surgery. This is not uncommon and as stated will resolve with time. If this occurs, the recovery room nurse will monitor your progress and assist with voiding techniques. Occasionally, this may require

temporary placement of a urinary catheter after the surgery- If a Foley catheter was placed this is usually left in overnight to give the bladder time to recover from anesthesia and make it easier for the patient to urinate on their own once it is removed.

After surgery, you may also develop **constipation** from inactivity, anesthesia and pain medication. Take your stool softener twice a day while on pain medication. If you are passing gas, a bowel movement will usually follow. If you need to facilitate it further, you may choose to take a gentle laxative like Miralax, Milk of Magnesia or Sennokot. We do **not** recommend *Dulcolax* as it typically causes a significant amount of abdominal cramping which in turn can increase discomfort in the incisional area. If you are very uncomfortable, a Fleet Enema or Magnesium Citrate usually does the trick.

How important is nutrition?

Having a calcium rich diet is important. Nutrition is vital to healing-especially protein. Make sure you drink plenty of fluids. Narcotic pain medicine can sometimes suppress appetite. Nutrition aids specifically with wound healing and return of stamina.

I recommend carbohydrate loading the day before the surgery! This will provide you extra fuel during the surgical day in a day where you likely will not have 2 of your 3 meals!

Will I need to go into a rehabilitation facility after surgery,

This is not typical as most patients are discharged home. The most important rehabilitation after surgery is frequent walking. The risk of infection is also lower when patients go home after surgery.

When will I have my follow up appointment?

The post-operative appointment is 2-3 weeks after surgery. This is typically already set up at the time the surgery is booked.

How do I take care of my incision?

On post-op day 2, take off your bandage and shower. After the shower, place a new bandage over the wound. Keep the incision covered for at least 2 weeks. No baths, pools or hot tubs until cleared by your physician. Do not apply any ointments or creams to the incision, these aren't needed. Notify the office of any drainage or changes to the incisional appearance. It is not uncommon for the incision to feel warm to the touch, exhibit bruising or itch. You can take an anti-histamine such as Benadryl, Claritin, Zyrtec etc. to help with this.

Do I need to monitor my temperature after surgery?

It is *common* to run a low-grade temperature after any type of surgery. Notify the office if you have a temperature over 101.5 degrees.