

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 occur anywhere in the spine but most commonly involves the cervical or lumbar spine.

Instability of the spine means the spine is no longer moving appropriately. The spine is meant to move together like a unit, but when the bones become misaligned this can cause the bones or vertebra to slide back and forth on each other. Each time this occurs it irritates and often compresses the nerves as the spine was not meant to move this way.

Spinal stenosis and instability 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 and x-rays. X-rays are important to show the spine in the standing position as shifts between the vertebrae are often not seen on MRI since MRI is typically obtained while the patient is lying down. Spinal stenosis also occurs in varying degrees but moderate to severe stenosis can require surgery. The most successful way to treat spinal stenosis and instability is often using a decompression and fusion procedure. This procedure will result in relief of compression on the nerve roots and stabilize the spine to stop the abnormal motion.

How is the procedure performed?

An incision is made vertically on the center of the low back. Dr. Hoffman 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. Hoffman will enlarge the spinal canal by removing the lamina or arch of bone that overlies the sac holding the nerves. She will then remove any disc herniation or overgrown soft tissue to alleviate the compressed nerves. Dr. Hoffman will then follow the nerves as they leave the tunnel or foramen of the spine. Once she has confirmed the tunnel is also wide and the nerve is no longer compressed on its way out of the spine, she will turn his attention to addressing instability in your spine. 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. Hoffman 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. Once the general surgeon has exposed to the spine, your spine surgeon will perform the spinal portion of the operation. Once the spine surgeon has completed their 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/nurse anesthetist

- First assist: a physician assistant, or orthopedic resident (all have trained to be a surgical assistant; be advised ONLY Dr. Hoffman will perform the operation). The role of the first assist consists of assisting with positioning, draping, suction, retraction and wound closure.

- Scrub nurse or tech: responsible for handing the surgeon any instruments or items needed for 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

- Neurophysiologist: responsible for monitoring the nerve roots and spinal cord during surgery. This is done via EMG (electromyography). Monitors are placed for this purpose once the patient is asleep. They are removed before the patient wakes up from anesthesia. You will meet your neurophysiologist the morning of surgery. Neural monitoring during spine surgery is standard during fusion procedures.

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 the standard of care for spinal surgery.

How big is the incision?

A single level incision is approximately 3.5 inches long. For a multilevel surgery, the incision can be longer as each level requires an additional 2 inches.

How long will my surgery take?

This depends on the amount of levels involved and the severity of compression. Typically, the procedure takes 2-4 hours once an incision is made. However, there is significant amount of time spent in the operating room prior to the procedure in preparing for anesthesia, making sure the patient goes to sleep safely, and in positioning the patient appropriately. Similarly, awakening from anesthesia takes a variable amount of time. Therefore the time in the operating room is often significantly longer than the duration of the surgery itself.

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?

This is patient specific and depends on a number of factors such as the patient's medical health and the number of levels involved in the surgery. The average length of stay in the hospital is typically 2-3 days if the surgery was done from the back or posterior only. If you required a procedure where the surgeon needed to work in the front of the spine (through the abdomen) and back of the spine, typical hospital stay is 4 or 5 days.

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 smokers, diabetics, patients with autoimmune disease (lupus, rheumatoid arthritis, etc.) and obese patients. The risk of infection after a lumbar decompression and fusion surgery is approximately 1.75%. If you get an infection, you may require an additional surgery to clean out your wound, as well as antibiotic medications.

Will I lose range of motion?

You will lose some flexibility in the spine, but will still be able to move through the remaining discs and the hips. Many patients report improved range of motion after surgery as their difficulty with range of motion prior to surgery was due to pain.

Where does the bone graft come from?

The bone graft comes from the bone that is decompressed or removed from your spine to alleviate pressure on the nerves (lamina, bone spurs). If necessary, your surgeon will add bone graft from a donor or a protein called Bone Morphogenetic Protein-2 (BMP-2). The use of BMP-2 would be discussed with you prior if Dr. Hoffman is planning to use it. BMP-2 is typically only used when performing anterior approach through the abdomen. She will also notify you if she plans to take bone graft from your hip. Hip grafts are reserved for specific situations and most of the time are not necessary.

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. The cautery instrument used in your procedure to control bleeding generates less heat and is accompanied by saline which helps to keep the tissue cool. There is no significant evidence to support claims of 98% satisfaction with laser spine surgery. If a laser were that successful, your surgeon would of course use one.

Is there a risk of paralysis with the procedure?

Only if you are working at L1 or higher. The spinal cord ends at L1 in most people. Most lumbar decompression and fusion surgeries occur below L1. When working on the lumbar spine below the level of the spinal cord there is a small risk of injury to individual nerve roots which would affect one specific part of your leg or foot. This may result in pain, numbness or weakness in one part of the leg or foot which may be temporary or occasionally permanent. In order to help avoid this complication the nerve roots and spinal cord are monitored by the neurophysiologist during surgery. X-rays are also done at the end of the procedure to check all hardware.

When will my symptoms improve?

Leg pain usually improves first. In some patients, relief is immediate and in 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 few days to a week. The more you walk, the better the back will feel. Remember the purpose of the surgery is to alleviate leg pain (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 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 correlating 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, 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.

If I am having surgery for a large disc herniation, can I re-herniate?

The risk of a recurrent disc herniation is approximately 5-10% at a level that is not fused. If the level with the disc herniation is being fused, it cannot re-herniate. The reason this can happen is because the original disc herniation has caused a break or tear in the annulus (outer part of the disc). Even though the gel deep inside (nucleus pulposus) that is sticking out is removed, there is still a hole in the outer part of the disc. In 5-10% of patients, more disc material can herniate through that hole. There are measures to help

decrease this risk. Abide by your restrictions even if you feel better and think you can bend, lift and twist. Recurrent disc herniation also tends to be more common in females (it is not known why) and in obese patients. Over time, the tear or hole in the outer part of the disc may scar or calcify and this can also prevent a recurrent disc herniation. As you get further and further out from surgery, the risk goes down dramatically.

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. Hoffman control my pain?

Dr. Hoffman is committed to minimizing your post-operative pain. 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. Pain control begins before surgery as your anesthesia team will begin to give you medication through your intravenous line prior to surgery. These medications are also continued during the operation. 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 will 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. Anti-inflammatory medication is prohibited during the first 12 weeks after surgery as it can interfere with bone healing and affect the healing of the bone fusion.

Will I need to wear a brace after surgery?

A brace is given following lumbar decompression and fusion surgery. This is worn when out of bed.

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, but 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. The ability to control pain after surgery is much more successful if the patient slowly decreases or weans off the narcotic pre-operatively. Please be advised if you have a pain management physician or an outside provider who prescribes your pain medication, you will need to continue to get your medication from them. Narcotics cannot come from multiple providers and pain management physicians usually have an opioid agreement on file as this is now required by most insurance companies. Obtaining prescriptions from more than one provider would violate this agreement and could result in dismissal from the pain management physician or refusal to write any more prescriptions. The pharmacy may also refuse to dispense the medication. 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. Patients must take the medication as directed. 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 with regard to bowel/bladder function after surgery?

A Foley (bladder) catheter may be used during surgery. 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. The Foley catheter is typically left in place 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?

Nutrition is vital to healing-especially protein. Make sure you drink plenty of fluids. Narcotic pain medicine can sometimes suppress appetite. If you have no appetite, please try a Boost protein shake over ice. Nutrition aids specifically with wound healing and return of stamina.

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

This is not typical as most patients are discharged home. Occasionally, a rehab facility may be chosen if the patient needs more care but this is determined on a case by case basis. 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. If you do not have an appointment scheduled, please call 301-657-9876.

How do I take care of my incision?

No baths, pools or hot tubs until cleared by your physician or physician assistant. You can uncover the incision 72 hours after surgery. If the incision is dry, you can leave it open to air. Once you are 72 hours from surgery, you can shower. Focus on the front of the body primarily. If the back gets a little wet, pat dry gently but do not rub the incision. Do not apply any ointments or creams to the incision. 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. Please resist the urge to scratch the incision as this can cause an infection. You can take an anti-histamine such as Benadryl, Claritin, Zyrtec etc. to help with this. Typically, the incision is closed with a nylon skin suture. This is removed at the post-operative visit. Removing the sutures is typically painless and most patients will remark that they do not really feel anything during the removal.

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.

What do I need to do regarding short term disability while I recover from my procedure?

Please check with your human resources department regarding what they require for temporary disability. If your employer requires documentation or forms filled out, our office will provide the necessary information. Some patients may return to work sooner than others depending on their job requirements and speed of recovery. All disability matters are handled by contacting our office. Physician approval is required prior to returning to work.

How can I get in touch if I have a question or concern?

The best way to get in touch is through our dedicated line at **301-657-9876**. Messages will be directed to Dr Hoffman and she or a member of her team will call you back in a timely manner. Our main phone number will be directed through an on-call service after hours, on weekends and holidays. This line is reserved for emergencies only. If your call is not of an urgent nature, please call during normal business hours.