

Spine Surgery

The Baylor Scoliosis Center is dedicated to giving new hope to people dealing with the pain and disfigurement of scoliosis and spinal disorders – even those who previously thought their condition was untreatable.



 **BAYLOR**
Scoliosis Center

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Your Spine Surgery

The spine consists of thirty-three small bones called vertebrae. They are stacked one above the other with a soft intervertebral disc between each pair of vertebrae. The intervertebral disc consists of a soft jelly-like substance in the center called the nucleus pulposus. It is surrounded by multiple layers of collagen called the annulus fibrosus. The disc connects and allows movement between vertebrae, and acts as a shock absorber of the spine. The vertebrae surround and protect the spinal cord and nerve roots. The spinal cord goes down the spinal column, and nerve roots exit in little channels called foramina located under lamina.

Lumbar spinal stenosis is a condition whereby there is narrowing of the spinal column. This narrowing can become so severe that it causes compression of the spinal cord or spinal nerves. This causes the painful symptoms of lumbar spinal stenosis, including low back pain, buttock pain, leg pain and numbness. It is made worse with walking and relieved by resting. This can also cause weakness and unsteadiness in walking. Spinal stenosis can happen anywhere down the length of the spinal column, but usually affects the lumbar (lower back) or the cervical (neck) portions of the spinal column. Spinal stenosis has a number of possible causes; for example, degenerative (wear and tear), disc prolapse or congenital (since birth). It can be caused by a combination of these factors.

Spinal stenosis has a number of possible causes, the most common being degeneration and arthritis of the disc and facet joints. Congenital stenosis is a condition where patients are born with a relatively smaller spinal canal making them more prone to pinching of the nerves and spinal cord.

Lumbar disc herniation is commonly known as a “ruptured disc” or “slipped disc”. A disc herniation occurs with the outer fibrous annulus of the disc tears and the inner nucleus ruptures out. Herniations can occur suddenly or develop slowly over time, and can be present without causing symptoms. Typical activities that cause acute disc herniations include heavy lifting or bending. Disc herniations can lead to irritation of the spinal cord and spinal nerves; this irritation comes from inflammatory chemicals, as well as, structural pinching of the nerves. Symptoms of irritated and pinched nerves present as sciatica and include pain, numbness and sometimes weakness in the legs. One or both of the legs can be affected to varying degrees. Along with leg symptoms there can be significant back pain.

Spondylolysis is a condition where there is a fracture in a region of the vertebral bone called the pars. There is a pars region on both the left and right sides of the bone and it connects the front part of the vertebrae to the back part. This fracture typically is caused from repetitive extension and is considered a stress fracture; however, it can occur from surgery or trauma. Spondylolysis can be difficult to detect on x-rays and is best seen on a CT scan. Oftentimes, these fractures occur in childhood and do not cause symptoms. Spondylolysis can cause back pain later in life and can lead to spondylolisthesis.

Spondylolisthesis occurs when the vertebral body above the disc slides forward in relation to the vertebral body below the disc. This can be caused by facet and disc degeneration and arthritis, as well as, from degeneration at a disc level that has spondylolysis. It typically occurs at the base of the lumbar spine. When spondylolisthesis occurs, the nerves that are behind the disc can be pinched as they travel to lower levels in the spine or as they exit the spine in the neuroforamen. This can result in pain, weakness and numbness in the legs; typically there is also significant back pain that can be related to activity. Just as with spondylolysis, spondylolisthesis can be asymptomatic initially, but develop progressive pain over time.

Causes of Nerve Compression

- Bulging or collapsed disks
- Thickened joints
- Loosened ligaments and bony growth that can narrow the spinal nerve openings (foramen).

Pre-operative Spine Testing

Standing Spine X-rays provide detail of the bone structures in the spine, and are used to rule out instability (such as spondylolisthesis), tumors, and fractures. Images of bones are made by directing an X-ray beam through the body. X-rays should not be taken of women who may be pregnant.

CT scans (computerized tomography) are specialized X-ray which show the bony vertebrae in detail. The spinal canal can be imaged and assessed for specific conditions. With their excellent bony detail, CT scans are very useful for assessing fractures. CT scans should not be performed on pregnant women.

CT scans with Myelogram provide important information about the spine and nerve roots. A myelogram requires introduction of radiographic contrast media (dye) into the sac (dura) surrounding the spinal cord and nerves.

MRI (magnetic resonance imaging) is a non X-ray study which allows an evaluation of the spinal cord and nerve

roots. It produces detailed images of discs, the spinal cord, and other soft tissue, and is a great aid in assessing certain conditions. The scan is performed while the patient is lying in a fairly tight tunnel for 45-60 minutes. There is no radiation with the magnet, so the scans may be performed on pregnant women. However, they are not performed with patients with a pacemaker or certain types of metal in the body because of the magnetic field.

Discography, or discogram, is a diagnostic tool used to determine the structural integrity of a disc (or discs) and to find out if a particular disc is responsible for your back pain. The results of a discogram are used to confirm a diagnosis, not treat back pain. A radiopaque dye is injected through a spinal needle into the center of the disc. The dye is then evaluated for leaks occurring outside the disc walls. At this time, the patient’s symptoms (e.g., tingling sensation) may be experienced due to the pressure created by the dye injection and these symptoms are evaluated.

Surgery

Your doctor has recommended spinal surgery on your back to correct your present condition. The physicians on the medical staff at Baylor Plano perform three common surgeries: Decompression, discectomy and fusion. These surgeries are sometimes performed alone or in combination with each other depending on the patient's specific diagnosis. The goal of these surgical treatments is to take pressure off the nerves and spinal cord and to stabilize unstable segments of the spine.

Surgery for Spinal Conditions

Decompression

The most common surgery for lumbar stenosis is a laminectomy and foraminotomies. During a laminectomy the roof of the spinal canal where the nerves reside is removed, allowing for relief of pressure on the nerves. A foraminotomy is when the neuroforaminal tunnel where the nerve exit the spine is widened. If a partial laminectomy is performed it is termed a laminotomy. Laminotomies are done when there is pinching of the nerves on only one side of the spinal canal.

Discectomy

During a discectomy, generally a partial laminectomy is performed allowing for the nerves to be visualized. Once this is done the nerves can be protected and a disc herniation can be removed. Typically only the injured or herniated part of the disc is removed, every effort is made to leave as much healthy disc as possible. Oftentimes a foraminotomy is performed along with a discectomy to ensure that pressure is relieved from a nerve.

Fusion

A spinal fusion is a procedure that causes the body to grow two bones into one and fuse together; this fusion eliminates motion between these two bones. This is commonly done in the setting of spinal instability to prevent the spine from becoming more unstable and causing more pain and nerve compression. The success rate of spinal fusion is often increased with the use of instrumentation. Instrumentation is a process of placing metal implants, typically screws and rods, to hold the bones in place and allow the body to grow new bone. The screws and rods stay in the patient forever unless there is an infection or a new problem in the spine that requires removal. Once the bone is fused the screws and rods should never break.

An interbody fusion is a surgical technique that removes the majority of a disc and in its place bone graft material is placed. This allows the body to grow new bone across that disc space. This technique also increases the success rate of a spinal fusion surgery. There are risks and benefits for this technique and appropriate patient selection is imperative for good results. There are three general types of interbody fusion: ALIF, TLIF and LLIF.

ALIF

Anterior lumbar interbody fusion (ALIF) is a surgery where an incision is made in the abdomen and the intestines and vasculature are protected to the side which allows visualization of the spinal disc. The disc and cartilage can then be removed allowing for placement of bone graft material. The bone graft material is often placed within a cage. The cage allows the bone graft material to be contained in the desired location, as well; it can help him recreate normal spinal anatomy. This is one of the most powerful interbody fusion techniques. Commonly screws and possibly a small plate are placed to help stabilize the cage.

TLIF

Transforaminal lumbar interbody fusion (TLIF) is a type of posterior lumbar interbody fusion that allows for the disc to be removed and bone graft material inserted from a posterior direction. The TLIF requires that a facet joint is removed to visualize the disc underneath. Once it is visualized it can be removed and a cage containing bone graft material can be inserted. This technique can be very useful for patients who have significant nerve pinching within the neuroforamen. The cage inserted with a TLIF is typically smaller; however, it does not require an anterior approach to the spine.

LLIF

Lateral lumbar interbody fusion (LLIF) is a technique during which bone graft and a cage are inserted at selective levels in the lumbar spine. An incision is typically made on the patient's left side and the intestines are protected while the musculature and nerves are retracted visualizing the disc from the side. The disc can then be removed and a cage inserted that contains bone graft material. This can be a good option for patients who have had prior spine surgeries, particularly ALIFs.

Lumbar Decompression Surgery Risks

All operations have risks. Complications occur rarely, but include the following:

- Nerve damage
- Blood clots
- Spinal fluid leak
- Bleeding
- Infection such as redness, swelling, pain, or drainage
- Worsening of the back pain
- Allergic reaction to anesthesia

Preparing for Surgery

Once you have decided to have surgery, there are a lot of tests to complete to make sure that you are healthy enough for a complex surgery and to evaluate your spine in order to plan your surgery in detail. For medical clearance, you will need a chest X-ray, EKG and blood work. In some cases a cardiac stress test and/or pulmonary function tests are also done. These tests will be done during the pre-operative testing period, and the care coordinators will assist in making these arrangements. When the schedule is finalized, you will receive a letter with your pre-operative testing schedule and appointments.

A medical examination is required to make sure you're healthy enough for surgery. Medical clearance prior to surgery is completed by an internal medicine physician along with a cardiologist, hematologist, or pulmonologist if necessary. **Please remember to bring your medication list to all appointments.**

Five days prior to surgery: As with any surgery, infection is a serious concern. In order to help prevent infection, the following is required prior to surgery:

Bathing with Hibiclens and using nasal swabs with Bactroban antibiotic ointment

You will need to begin washing your neck, chest, abdomen, sides, and back with Hibiclens antiseptic skin cleanser. Hibiclens is in a green bottle/box and can be purchased over the counter at most pharmacies or grocery stores. It is a strong antibacterial soap. You will need to use this daily before surgery. You may use a regular soap or body wash after using Hibiclens.

We will provide you with a prescription for Bactroban (a cream/ointment) and will require you to lightly swab each nostril twice daily, including the morning of surgery, beginning five days prior to surgery. If there is not a pharmacy number on file for you, one will be requested by our care coordinators.

Pre-Operative Visits

All patients are required to have a pre-op visit prior to surgery. At this visit, we will discuss the details of your surgery and any risks and complications, along with post-operative care while you are in the hospital. The physician will answer any questions you may have regarding your surgery. Write down your questions so they can be addressed at this visit. We want to make every effort to make sure our patients understand their surgery and recovery time fully.

You will meet with the care coordinator to discuss final details of arrival time, location and surgery times. At your pre-op visit you will be asked to sign permits for surgery, anesthesia, blood and blood products. Someone must attend this visit with you. This could be a family member or someone very close to you that will be around during your surgery.

Medications to Stop Prior to Surgery

The following medications must be discontinued at the appropriate time prior to surgery or there is the risk your surgery will be canceled/rescheduled for your safety. It is crucial that you provide us with an accurate list of all medications you currently take when you schedule your surgery. Also, if there are any changes in medications from the time you schedule surgery to your date of surgery, please notify us so we can update your medication list.

Stop all anti-inflammatories (NSAIDS) and aspirin-containing medications two weeks prior to surgery. If you are taking **Coumadin (warfarin), aspirin, or anti-platelet medication**, for heart or blood clotting conditions, please discuss with our office prior to discontinuing. We may need to speak with your physician so we can determine how they should be managed before and after surgery.

Remember to check the labels of all your medications, even those you purchase over the counter, to be sure you are not taking any aspirin or anti-inflammatory drugs. Tylenol does not promote bleeding and is generally fine to take in place of aspirin or other anti-inflammatory medications before surgery.

Please note that there are many over the counter medications, herbals, vitamins and supplements that affect your surgery and recovery negatively. **You must stop all herbs and dietary supplements four weeks prior to surgery.**

If you are unsure about any medication, please contact our office. We will review the medication in question and advise you whether to discontinue.

Things to Do Before Your Surgery

- Stop taking medications listed
- Stop taking any herbs or dietary supplements
- If you smoke, you should stop or at least cut down before surgery
- Arrange for family and/or friends to help you when you go home from surgery
- Arrange for two to six weeks off work
- Start skin preparation with Hibiclens and nasal swab with Bactroban five days prior to surgery date
- Do not eat or drink anything after midnight before surgery



Day of Surgery

On the day of surgery, you will be asked to arrive approximately two hours prior to your operation. You will check in on the second floor of Baylor Regional Medical Center at Plano and then be taken to a room in day surgery. While in day surgery, you will be prepared for your surgery. The nurses will then place an IV in your arm for surgery. You will meet the anesthesiologist. Your surgeon will meet you there before surgery. Remember, the scheduled time of your surgery is really just an approximation. We will do our best to keep you informed of any changes in time. During your surgery, a nurse will notify your family when surgery actually begins and call them during surgery with updates. The physician will meet with your family and let them know how surgery went, and when they can see you in the ICU.

What to Expect Following Surgery

You will wake up in the post-operative recovery area, called the PACU. Your blood pressure, heart rate, and respiration will be monitored, and your pain will be addressed. Once awake, you will be moved to a room on the 3rd or 6th floor where you'll increase your activity level (sitting in a chair, walking). If you've had a fusion, a brace may need to be worn.

Pain: You will feel discomfort and pain at the operative site immediately after surgery. You will be given pain medications by IV and mouth for pain relief to make sure you are comfortable and to help you move. However, the soreness and stiffness in your back and/or limbs will continue for some time. Please ensure you take regular pain relief. The original pain in your leg usually improves immediately, but if it doesn't, tell the nurses and your doctor.

Tingling/Numbness: A degree of tingling and/or numbness in your limbs may be experienced after surgery and may take some time to subside.

Drains: Some patients will have a drain tube near the surgical site to help prevent any collection of fluid at the operation site. The drain is usually removed in 24 to 48 hours.

Drips: You will have a IV in your arm to receive fluids and antibiotics during and after surgery. The fluids will be stopped when you are drinking sufficient fluids and after the doctor has stopped the prescribed antibiotics.

Catheter: A catheter will be inserted into your bladder under anesthesia to drain your bladder during and immediately after surgery. This catheter will keep you comfortable, so you will not have to get out of bed to go to the toilet on the first day. The catheter is removed the day after surgery.

Calf compressors: Following your surgery, you will have inflatable compressors on your calves to reduce the risk of deep vein thrombosis (DVT). You may also be given a pair of anti-thrombotic stockings.

Diet: You will not be able to drink or eat initially. You will be allowed only sips of fluid and crushed ice. Once bowel sounds are present, you will start on a post-operative diet and gradually increase to a full diet.

Bowels: It is common not to have bowel movements for the first few days. Once you have started on a full diet, you will be given medications to help with bowel movements.

Sleeping: You may have difficulty sleeping for the first few nights.

Activity: Physical therapy personnel will see you the day after surgery and get you out of bed and walking.

Discharge from the Hospital

You will be able to go home one to three days after your operation. How long you have to spend in hospital depends on the type of surgery you had and your state of health.

You can be discharged when:

- Your vital signs are stable
- You can ambulate with or without use of a walker
- You can eat without having nausea
- You can take pain medications by mouth
- You have resumed normal bladder activity
- Your drains are removed and your wound is healing.

Once You Are Home

It is important to take things easy at first. Assistance at home is usually needed for at least the first week after surgery.

Do not smoke. Smoking delays healing by increasing the risk of complications (e.g., infection) and inhibits the bones' ability to fuse.



Pain: It can take up to six weeks to get over the general pain and tiredness after your operation. The pain medication will not make you pain free, but it should make the pain tolerable. After surgery, pain is managed with narcotic medication. Because narcotic pain pills are addictive, they are used for a limited period (four to eight weeks). Thereafter, pain is managed with acetaminophen (e.g., Tylenol). Narcotics (pain medications) also can cause constipation, so drink lots of water and eat high fiber foods. Take a stool softener (Colace) daily. Do not go longer than three days without a bowel movement when on narcotics. Laxatives (e.g., Dulcolax, Senokot, Milk of Magnesia) can be bought without a prescription.

If you have had a fusion: Do not use non-steroidal anti-inflammatory drugs (NSAIDs) (e.g., aspirin, ibuprofen, Advil, Motrin, Nuprin, naproxen sodium, Aleve) for six months after surgery. NSAIDs may cause bleeding and interfere with bone healing.

Once You Are Home

Activity: At first, you will limit yourself due to stiffness and soreness. After the first several weeks, however, you will become more active. Fatigue is common, so gradually return to your normal activities. Let pain be your guide. Walking is encouraged. Start with a short distance and gradually increase to one or two miles daily. A physical therapy program may be recommended after your first post-operative visit.

Avoid sitting for long periods of time. Do not lift anything heavier than ten pounds (e.g., gallon of milk). Do not bend or twist at the waist, as these activities will increase pain and muscle spasm. Housework and yard work are not permitted until after the first follow-up office visit. This includes gardening, mowing, vacuuming, ironing, and loading/unloading the dishwasher, washer, or dryer.

Stair climbing, riding as a passenger in a car or taking public transportation is permitted in most cases. Driving is usually allowed after the first office visit with your doctor, approximately two to four weeks after surgery. If you are taking less pain medication and can function, call your doctor about driving sooner.

Postpone sexual activity until your follow-up appointment unless your surgeon specifies otherwise. As your back heals, you may feel ready to have sex. This is usually fine. Choose a position that puts as little pressure on your back as possible. Side positions or lying on your back are generally acceptable. Avoid putting pressure on your back or arching your back during sex.

Wound: Your incision is closed with dissolvable stitches. However, if you have staples in your wound they need to be removed in-office ten to fourteen days from the date of surgery. You may remove the dressing and shower four days after surgery unless instructed otherwise. You do not need to place another dressing on the incision. Steri-Strips will cover the incision and they will fall off ten to fourteen days after surgery. You can get Steri-Strips wet.

Some swelling around the incision(s) or drain site can be normal. Fluid can accumulate under the skin, which can be bothersome. This area of swelling should be watched daily. Over time, it should slowly decrease. If the swelling worsens, or if the incision begins to drain, please call your doctor's office. Also call if the incision becomes very red, swollen and hot to the touch, or if a fever greater than 101.0 by mouth occurs. This may be a sign of infection and may need to be evaluated and treated right away.

Returning to Work

Typically, if you have a sedentary job, you may return to work in one to two weeks. A person with a more strenuous job may have to remain off work for two to four months.

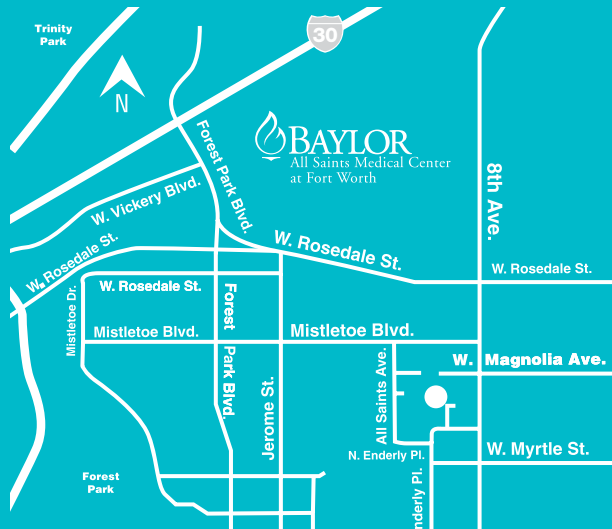
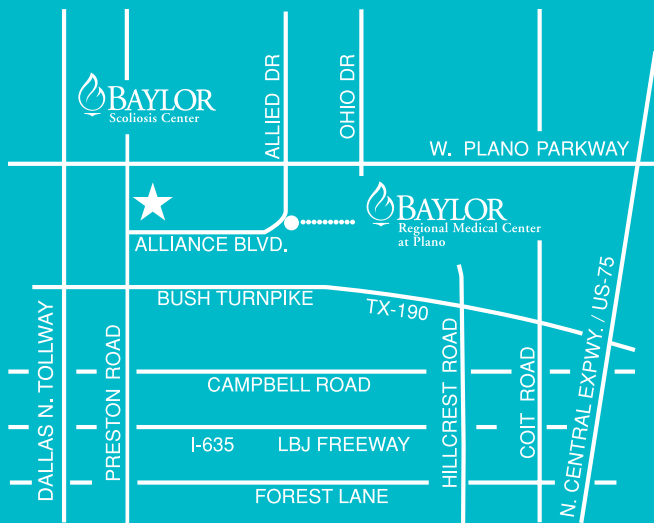
Follow-up Appointments

Follow-up is very important after any spinal surgery. Your cooperation in returning to see your doctor at the listed times is appreciated. Your surgeon may require X-rays when you return to see him. The doctor will be able to update you on your activity allowances at each office visit.

The follow-up appointment schedule is as follows: One to two weeks after surgery, followed by appointments three, six, and twelve months after surgery. This may vary based on your individual needs.

Call our office if you:

- Have drainage and/or odor from your wound
- Have increased redness/swelling at the incision site, or unexplained increasing incision pain not relieved by bed rest or ice
- Have fever greater than 101 degrees with/without sweats or chills
- Have new/unfamiliar pain or weakness in the arms or legs
- Have difficulty with urination or bowel movements, or pain or numbness in the rectal, vaginal or scrotal area.



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