



B. Thomas Mazahery, M.D

Lumbar Spine Fusion Surgical Information Packet

As you prepare for surgery it is common to have many questions. This packet is provided to help answer some of the most commonly asked questions, and to help you prepare for a smooth and successful operative experience. Please feel free to contact Dr. Mazahery and his staff for any additional questions you may have.

Included in this Packet:

- 1. Preparing for Surgery.....pg. 2**
- 2. What to Expect During Your Hospital Stay.....pg. 4**
- 3. Post-Operative Care.....pg. 7**
- 4. Additional Information Regarding Spine Surgery....pg. 11**
- 5. Possible Complications of Spine Surgery.....pg. 15**
- 6. Frequently Asked Questions.....pg. 18**

Important Contact Information

- Dr. Mazahery’s Surgical Scheduler- Tiphiny (703) 810-5202 Ext. 1422
- Dr. Mazahery’s Physician Assistant- Sarah Hilton, PA-C (703) 810-5202
- Reston Hospital Pre-Operative Interview (703) 689-9005 Option #1
- Fairfax Hospital Pre-Operative Interview (703) 970-6565



Preparing For Surgery

There are important steps to follow prior to your surgery to ensure you are prepared for your surgical procedure. Below is a list of things which need to be completed before your surgery date.

1. Pre-Operative Labwork

- a. You will be given a prescription for labwork to be completed within 1 month prior to your surgery date
- b. We recommend that you complete your pre operative labwork at the hospital as certain labs can only be performed at the hospital
- c. Please ensure the results of this labwork are faxed to Dr. Mazahery's office at **703-810-5420**

2. Medical Clearance

- a. You may need medical clearance from your primary care physician within 1 month prior to your surgery date
- b. Please ensure your medical clearance is faxed to Dr. Mazahery's office at **703-810-5420**

3. Pre-Operative Hospital Interview

- a. You will need an appointment at the pre-operative department at the hospital to review your medical history in preparation for anesthesia.
- b. This pre-operative interview should be completed before your appointment for medical clearance with your primary care physician. This will ensure your labs are completed and available for your primary care physician to review. Call the hospital to schedule this appointment. Call Reston Hospital at **703-689-9005 Option #1** or Fairfax Hospital at **(703) 970-6565**.

During this time it is also important to consider the amount of time you will need off work after your procedure and discuss this with your employer. It is also important to plan ahead for what help you may need at home after surgery and discuss this with family and friends. Arranging this prior to surgery will help you be able to focus on your recovery post-operatively.



Preparing For Surgery

As your surgery date is approaching, review this checklist to ensure all the steps are completed.

2 Weeks Before Surgery:

- Pre-Operative Interview with Hospital Scheduled _____
and pre-operative labwork completed.
You will need to have a nasal swab pre-operatively to screen for MRSA/MSSA. This will be arranged through the pre-operative department at the hospital
- Pre-Operative Medical Clearance Completed/Scheduled _____

1 Week Before Surgery:

- Stop taking Aspirin and antiplatelet medications, such as Plavix. Stop taking anti-inflammatories (such as Advil, Ibuprofen, Aleve, Motrin, Voltaren, etc.) _____
- If Aspirin or antiplatelet medication is prescribed by your doctor, please consult this physician prior to stopping to make sure this is appropriate. _____

2 Days Before Surgery:

- Check with the hospital for arrival time day of surgery _____

Night Before Surgery:

- Do not eat or drink anything past midnight unless otherwise instructed by the anesthesiologist _____
- You will shower with a soap called Hibiclens the night before your surgery. This will be given to you by the hospital.



What to Expect During Your Hospital Stay

Day of Surgery:

1. Remember to **bring your MRI** if you did not leave it at the office prior to surgery
2. **Registration** at the hospital
 - a. The hospital will direct you where to go for registration
3. **Pre-Op Holding**
 - a. In pre-op holding you will be given a gown to change in to and given a bag for your personal belongings. You will meet your holding nurse who will review your chart and start your IV. You will be given pre operative medications. You will also meet with your surgical team including the anesthesiologist, nurse anesthetist, and surgical nurse. You will see Dr. Mazahery prior to your surgery. Your family member can stay with you until you are transferred to the operating room.
4. **Operating Room**
 - a. You will be taken to the operating room. Your family will be directed to the waiting room. Dr. Mazahery will meet them there when your surgery is complete.
5. **Recovery Room**
 - a. When your surgery is complete you will be transferred to the recovery room to be monitored. You are typically here for 1 to 2 hours. If you are having a same day surgery, you will then be transferred to secondary recovery, and your family will be notified when they can see you. If you are being admitted to the hospital, you will be transferred to your room and your family will see you at that time.



What to Expect During Your Hospital Stay

Hospital Post Operative Day #1:

Pain Management- We employ a multi-modal pain management approach. We give you medications in the pre operative holding area prior to your surgery to help reduce post operative pain. You will also be given pain medications during surgery. You will be given oral narcotic medications post operatively as needed. We also utilize anti-inflammatories as needed for breakthrough pain.

Physical Therapy- We strongly encourage early mobilization after surgery to help with your recovery. Your first session of physical therapy will start on post-operative day #1. The physical therapist will help you mobilize safely. You will be shown techniques to get in and out of bed and chairs, how to use a walker, and mobilize in the hallway and stairs.

Drain- You may have a drain in your incision post-operatively to help prevent fluid from collecting at the surgical site. This is not used in every surgery, and is typically removed on post-operative day #1 or #2.

Foley Catheter- You may have a foley catheter placed in your bladder during surgery to help prevent urinary retention. This is typically removed on post-operative day #1 or #2.



What to Expect During Your Hospital Stay

Hospital Post Operative Day #2:

Physical Therapy- You will have another session of physical therapy encouraging walking in the hallways and safety going up and down stairs.

Discharge planning- We will arrange what devices you may need at home, such as a walker, and have them available for you to take with you.

Home Medications- You will be instructed what home medications to resume or discontinue. You will be given prescriptions for pain medication to take at home.

Expected Length of Hospital Stay:

The amount of time you will be in the hospital depends on your individual surgery and post-operative recovery. Typical lengths of stay in the hospital are as follows:

Lumbar Discectomy- Same day discharge

Lumbar Fusion- 2 nights in hospital (may be less for minimally invasive surgery)

Post Operative Care

The post operative instructions are included below for your review:

HOME CARE AFTER LUMBAR SPINE FUSION

ACTIVITY

This is a major operation and you need to give your body time to heal. However, you should not be completely inactive after this operation. It is important to be out of bed and ambulating to reduce the risk of secondary medical issues. Below is a list of activities you should follow.

- You may **sleep** either on your side, stomach or back. You may use pillows for support placed behind your back or between your legs.
- You no longer need to wear the **compression stockings** once you are up, walking, and back to your normal activities.
- It is a good idea to **change positions** ever 30-60 minutes so your muscles do not get tight or fatigued in any one position.
- You are able to climb **stairs**.
- **Back brace-** Most often you do not need any bracing after surgery. If Dr. Mazahery feels it is necessary for you to have a brace post operatively, you will be given an off the shelf brace or possible custom brace while you are in the hospital.
- You should begin a **walking program** as soon as you leave the hospital. The walking program is the only exercise you should do until your first postoperative appointment. Adhering to the post operative walking program will **promote healing** of the soft tissues and muscles dissected during the operation, and will help **reduce your risk** of developing a **blood clot**. See the program description below.



HOME CARE AFTER LUMBAR SPINE FUSION

WALKING PROGRAM

Day 1: Walk the length of the hallway at home 3-4 times in the morning and again in the afternoon or evening.

Days 2-6: Increase the distance walked by a small amount each day.

Day 7: Walk to the end of the driveway and back in the morning and again in the afternoon or evening.

Day 8: Walk a half block in the morning and again in the afternoon or evening.

Day 9: Walk 1 block in the morning and 1 block in the afternoon or evening.

Day 10: Walk 1½ blocks in the morning and 1½ blocks in the afternoon or evening.

After Day 10: Continue to increase the distance you walk as tolerated.

LIMITATIONS

- Do not **drive** for 2 weeks or while taking narcotic pain medication. You may be a passenger for 30 minutes at a time. The doctor will let you know when it is safe to start driving again.
- **No lifting** over 5 lbs for the first 2 weeks after surgery. No lifting over 25 lbs for an additional 4 weeks (six weeks total).
- **No bending or twisting** at the waist. If you need to pick something up off the ground bend at your knees keeping your back straight.
- No sexual activity for 3 weeks.



HOME CARE AFTER LUMBAR SPINE FUSION

INCISION CARE

Caring for your incision at home is important to prevent infection. Please follow the steps below on incision care:

- If you have a dressing over your incision, **you may remove it when you are home**. When your incision is no longer draining it is preferred that you leave your incision open to air. You can cover your incision with a dry dressing if this is more comfortable, but you should change this dressing daily.
- Your incision has been closed with suture material under the skin and covered with steri-strips (small pieces of surgical tape) on the skin. The steri-strips will gradually peel off as they get wet when you take a shower. This is normal and expected.
- You can **shower** 3-5 days after your surgery depending on the extent of your surgery. No direct water pressure on the incision, but water can hit the top of you back and roll over the incision. Pat dry with a clean towel. No tub soaks.

PAIN MANAGEMENT AT HOME

You may have an occasional increase in the low back, leg pain and/or numbness after surgery during the healing phase. This is normal and is caused by inflammation (or swelling) of tissue in your low back. To reduce the pain, there are several approaches to try:

- Do not sit more than 30 minutes at a time the next 48 hours.
- Take the pain medicine as directed by your doctor.
- You can utilize Tylenol (as long as Tylenol/acetaminophen is not a component of your narcotic medication) to supplement your pain control if needed. You can also utilize non-steroidal anti-inflammatories, such as Advil/Aleve/Ibuprofen, to help reduce inflammation and assist with pain control. Do not exceed the recommended daily dosage of these medications.

Narcotic pain medicine causes constipation. Eat plenty of foods with roughage (bran, oat, fruit, applesauce) and drink a lot of fluids, especially prune juice to prevent constipation. You can also take over the counter stool softeners such as Colace.

You will be sent home from the hospital with a prescription for pain medication. You may need one additional refill of pain medication post operatively, but then we anticipate you will be able to discontinue the narcotic medications.



HOME CARE AFTER LUMBAR SPINE FUSION

CALL YOUR DOCTOR IF YOU HAVE ANY OF THE FOLLOWING

1. A temperature of 101 F (38.3 C) or greater on 2 readings taken 4 hours apart
2. An increase in pain, redness or swelling around your incision.
3. Drainage from your incision.
4. Develop difficulty urinating or controlling your bowel movements.
5. Increased swelling in your ankles or feet.
6. Increasing weakness of your legs
7. Redness, warmth and tenderness on the back of the calf on your lower leg.

RETURN TO WORK

Your return to work will depend on your recovery and type of work you do. You must discuss this with your doctor before you return to work.

FUTURE FOLLOW-UP VISITS

1st post operative appointment: This usually occurs 1 to 2 weeks after your surgery date. **Call Dr. Mazahery's office to confirm the date and time** of your post operative appointment. **703-810-5202**

IMPORTANT PHONE NUMBERS

Dr. Mazahery's office: (703) 810-5202, Monday through Friday 8:30am-5:00pm

For emergencies on nights and weekends, call (703) 810-5202 and ask to speak to the on call provider. You will need to leave your number so the doctor can call you back shortly.



Additional Information Regarding Spine Surgery

You have discussed your surgical procedure as well as risks and benefits with Dr. Mazahery. For additional information, and to review pictures and animations of surgical procedures please refer to Dr. Mazahery's website at:

www.thomasmazaherymd.com

Surgical procedures reviewed on Dr. Mazahery's website include:

Lumbar Discectomy
Lumbar Laminectomy
Transforaminal Interbody Fusion (TLIF)
Extreme Lateral Interbody Fusion (XLIF)
Anterior Lumbar Interbody Fusion (ALIF)
Posterior Lumbar Fusion

Additional Information Regarding Spine Surgery

Anatomy

Understanding your spine and how it works can help you understand why you have low back pain. Functions of the spine include protecting the spinal cord and nerves, providing flexibility and motion, and providing structural support for an upright posture.

Vertebrae- Your spine is made up of bones, called vertebrae, which are stacked on top of one another.

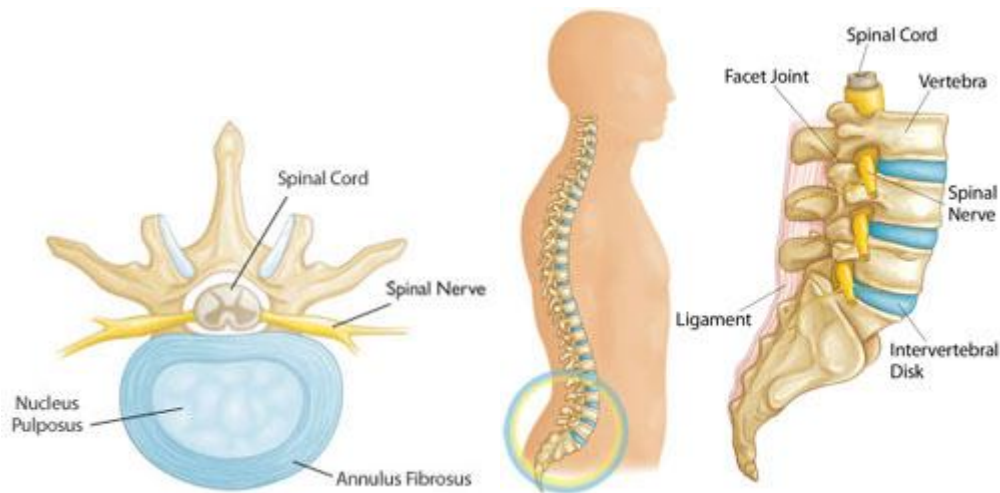
Intervertebral discs- The intervertebral discs are made of cartilaginous material and are located between the vertebrae to provide motion and cushioning between the vertebrae. The discs are made up of an outer layer called the annulus, and an inner material called the nucleus pulposus.

Additional Information Regarding Spine Surgery

Spinal Cord and Nerves- Sophisticated networks of nerves travel through the spinal canal carrying messages between your brain and muscles. Nerves branch out from the spinal cord through openings in the vertebrae.

Muscle and Ligaments- There are a number of muscle and ligaments that provide support and stability for your spine and upper body. Strong ligaments connect your vertebrae and help keep the spinal column in position.

Facet Joints- The facet joints work in conjunction with the intervertebral discs to allow motion in the spine.



Causes of Low Back Pain

There are many causes of low back pain. Back pain can occur after a specific movement such as lifting or bending. Sometimes there is no specific injury, but just getting older can cause degenerative changes in your spine that play a role in many back conditions.



Additional Information Regarding Spine Surgery

Causes of Low Back Pain

Over-activity/Muscle spasms

One of the more common causes of low back pain is muscle soreness from over-activity. Muscles and ligament fibers can be overstretched or injured and can cause pain and stiffness. Muscle spasms can develop that cause low back pain.

Disk Issues

There are a few different issues that can happen with the intervertebral discs that can cause back pain.

Annular Tear- There is an outer layer of the disc called the annulus which can develop a crack or tear. When this occurs it can cause inflammation and back pain. Annular tears typically improve over time as your body heals, and symptoms can be managed with anti-inflammatories, physical therapy, or cortisone injections.

Disc Herniation- Sometimes referred to as a “slipped” or “bulging” disc. This occurs if the central portion of the intervertebral disc, the nucleus pulposus, “leaks” outside the outer layer of the disc. A herniated disc can be caused by a trauma, but most commonly occurs without any specific injury. If the piece of disc that has leaked out causes compression on a nerve, you can have pain that radiates down your legs.

Disc Degeneration- As we age, the intervertebral discs can “wear out” and have decreased hydration. This can affect the ability of the disc to provide cushioning between the vertebrae. This can cause the vertebrae and facet joints to rub together and cause pain and stiffness. It is important to realize however, that disc degeneration does not always cause pain.

Additional Information Regarding Spine Surgery

Causes of Low Back Pain

Lumbar Spondylolisthesis

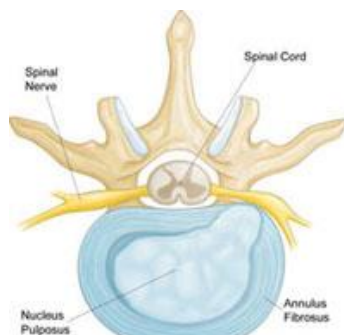
Changes from aging can make it hard for your joints and ligaments to keep your spine in the proper position. You can have too much motion in your facet joints, which can cause one vertebra to slip forward on top of another. If the vertebra slips forward too much it can cause decrease space for your nerves. This can cause compression on a nerve or crowding of the nerves.

Spinal Stenosis

Spinal stenosis is a narrowing of the spinal canal that causes compression on the nerves and spinal cord. This can result from degenerative changes in your spine causing bone spurs and thickened ligaments. Lumbar spondylolisthesis can also lead to stenosis. Symptoms of lumbar stenosis include back pain, leg pain, numbness/tingling, or weakness of your legs. You may also note cramping in your calves when walking.

Scoliosis

This is an abnormal curve of the spine that may develop in children, most often during their teenage years. It also may develop in older patients who have arthritis. This spinal deformity may cause back pain and possibly leg symptoms, if pressure on the nerves is involved.



Disc Herniation



Lumbar Stenosis



Possible Complications of Spine Surgery

As with any surgery, you need to consider the risks and benefits of the procedure before proceeding with surgery. Complications vary depending on the extent of your surgery, and your overall health prior to surgery. Below is a list of the possible complications to consider prior to surgery.

Anesthesia

You will require general anesthesia for your procedure. General anesthesia is typically safe for healthy individuals. Underlying medical conditions can increase your risks with general anesthesia. These risks include, but are not limited to, heart and lung issues, harm to your vocal cords or teeth, mental confusion, stroke, and death. You can discuss these risks further with the anesthesiologist prior to your surgery.

Blood Clots

There is a risk of developing deep venous thrombosis (DVT), or blood clots, during or after surgery. These blood clots typically develop in the legs or lungs (pulmonary embolism). Blood thinners are typically not used after spine surgery due to the risk of post-operative bleeding. It is important to minimize the risk of blood clots by early mobilization after surgery, as well as placing sequential compressive devices on your legs while immobile. Symptoms of a blood clot include pain, redness, warmth, and swelling, commonly around the calf. Also monitor for increased shortness of breath or fever.

Lung Problems

It is important to keep your lungs expanded after surgery. General anesthesia and immobility can decrease your lung function, which can predispose you to developing lung infections. Early mobilization and use of a breathing device called an incentive spirometer will help decrease this risk.

Dural Tear

The thecal sac (the area that encloses the nerves and spinal fluid) is covered by a thin tissue called the dura. The dura can tear during surgery causing spinal fluid leakage. This occurs in 0.3%-13% of primary surgeries and up to 17% of revision surgeries. Symptoms include headache that is worse with sitting up and relieved when laying down, sensitivity to light, and clear fluid leaking from the incision. A dural tear can be repaired during surgery. You may be required to lay flat after surgery to assist with the repair. Occasionally, additional surgery is needed to reinforce the repair of the dura.

Possible Complications of Spine Surgery

Nerve Injury/Spinal Cord Injury

Although rare, there is a risk of nerve and spinal cord injury when operating around these structures. Nerve injury can result in weakness, pain, numbness, and tingling of the muscles controlled by the nerves affected. Spinal cord injury can result in paralysis, but this is extremely rare and if there is a pre-operative concern your doctor will discuss this with you.

Sexual Dysfunction can be a result of nerve or spinal cord injury. This risk is higher with lumbar surgery requiring an anterior approach (ALIF) and occurs in up to 10% of cases. Men are at increased risk compared to women.

Recurrent Disc Herniation

Recurrent disc herniation has been reported in 5%-11% of patients after discectomy. Risk factors include traumatic event, young age, male sex, and a history of smoking. Symptoms of recurrent disc herniation include increased back pain and a recurrence of your pre-operative leg symptoms.

Infection and Delayed Wound Healing

As with any surgery, there is a risk of developing post-operative infection. Symptoms of infection at the surgical site include increased pain, redness, swelling, drainage, wound dehiscence, fever, and chills. Antibiotics as well as additional surgery may be needed to treat an infection. You may also have delayed wound healing due to seroma formation. A seroma is not an infection, but can cause increased drainage and delayed wound healing. Wound complications are increased if patients have risk factors such as obesity, diabetes, and vascular compromise.

Bleeding

You may require a blood transfusion during or after surgery from the expected blood loss from your procedure. There is up to a 25% chance of requiring a blood transfusion in reconstructive spine cases. Spine surgery also carries the risk of unexpected bleeding. Care is taken to avoid nearby blood vessels, but the risk of injury varies depending on the type of surgery you are having. The risk of vascular injury is 1 and 5 per 10,000 operations with a lumbar discectomy. This risk increases to 1%-7% with an anterior lumbar approach (ALIF). The risk of epidural hematoma are rare at 0.1%. Multiple level lumbar surgery or bleeding disorders have higher risk for these complications.

Possible Complications of Spine Surgery

Persistent Pain

Surgery is not a guarantee of resolution of your symptoms, and in rare cases pain can worsen after surgery. You can also have residual nerve pain after surgery due to inflammation, which may take time to resolve. It is important to discuss expected surgical outcomes prior to surgery.

Postlaminectomy Instability

During a decompression procedure it may be noted that there is instability of your spinal column that will require surgical fusion for stabilization. This may occur immediately during surgery, or months to years after your surgical procedure.

Implant/Hardware Failure

Screws, rods, cages, and plates may be implanted during a fusion operation. There is a risk that these implants may loosen, shift, break, or cause nerve irritation or damage and need to be removed or replaced.

Pseudoarthrosis

There is a risk that the bone graft and fusion does not fully heal. If the fusion does not fully heal and is causing pain or instability, there may be a need for additional surgery. There is a 20%-30% risk of pseudoarthrosis in one to two level instrumented fusions. This risk increases with the number of levels that are being fused. **Smoking greatly increases the risk of pseudoarthrosis.**

Adjacent Level Degeneration

There is a risk that when you fuse one segment of your spine, the segments above and below the fused area will see more stress. This increased stress may cause the areas surrounding the fusion site to breakdown. Studies have shown that there is a 25% chance of requiring additional surgery within 10 years to address adjacent level degeneration.



Frequently Asked Questions

What are the different types of bone graft?

There are various types of bone graft that can be used in a spinal fusion procedure. Discuss with Dr. Mazahery which is the best choice for you.

Autograft- This involves taking bone from one part of your body (commonly your iliac crest) and using it to help fuse another part of your body (a section of your spine). This technique has good fusion rates, but also has some disadvantages. The most common complication of this technique is persistent pain at the site the bone was taken from. This occurs in 25% of cases. There is also a risk of causing weakness and fracture at the harvest site. Due to these risks, harvested autograft is typically reserved for patients deemed to have decreased fusion potential.

Local Bone Autograft- In most fusion procedures, the bone that was removed from your spine while decompressing the nerves can be saved and used for bone graft. This depends on the amount of bone that is harvested, and may need to be supplemented with additional graft material.

Cadaver/Allograft Bone- This is bone that was donated from a cadaver. This type of bone graft is commonly used in spine surgery. The cadaver bone is an acellular bone matrix used as a scaffold to allow your own bone to grow through. Your bone will eventually completely replace this bone. There is no risk of rejection of the bone graft and risk of disease transmission from the cadaver bone is extremely low (less than 0.01%)

Synthetic Bone- These grafts are made from calcium materials and are available in a variety of sizes. These are often called “ceramics” and can be used to augment your own bone.

Bone Marrow- Bone marrow is located inside of your long bones and pelvis and contains stem cells. Bone marrow can be harvested during surgery with a needle and then combined with other graft material to increase healing potential.

Biologics or Proteins- There are proteins in our bodies that cause new bone to form. A common type is called bone morphogenic protein (BMP). BMP has been shown to promote fusions, but the side effects of BMP is still under investigation. A discussion of the risks and benefits of this graft material is important before surgery.



Frequently Asked Questions

What affects bone fusion?

There are multiple factors that can affect healing and bone fusion including general health, diabetes, vascular disease, and biomechanics. **Smoking** is the major modifiable risk factor that reduces bone healing.

Smoking- Smoking has been shown to **decrease** fusion rates by up to **500%**. Smoking **cessation** can help reverse this trend. It is highly encouraged to stop smoking, stop using smokeless tobacco, and even nicotine patches prior to your surgery to decrease your risk of healing complications. It is extremely important to tell Dr. Mazahery your history and current smoking, nicotine, and tobacco usage as it may affect the type of bone graft used during surgery.

What are the alternatives to spine surgery?

Many spine conditions can be managed with non-operative treatment options such as **medications, physical therapy**, and pain management including **epidural steroid injections**. Discuss with Dr. Mazahery the benefits of surgical versus non-surgical treatment options.

What are my activity limitations after surgery?

You will have some activity modifications and limitations immediately after spine surgery to allow for proper healing and recovery. Early mobilization and walking is encouraged after surgery. Specific limitations for immediate post operative recovery will be outlined in your discharge packet for your procedure.

The long term goal of spine surgery is for you to return to all your normal activities. After you have healed from your surgery, we encourage you to return to all the activities you enjoy including running, skiing, horseback riding, weightlifting, and many other sports!