WASHINGTON BRAIN & SPINE INSTITUTE

# Posterior Lumbar Spinal Fusion

*Preoperative Patient Information & Instructions*

**Provider: Lekhaj Daggubati, MD** | Phone: **301.718.9611**

| ROCKVILLE | TYSONS | FREDERICK | WHITE OAK |
|---|---|---|---|
| 3202 Tower Oaks Boulevard, Suite 100<br>Rockville, MD 20852 | 8605 Westwood Center Drive, Suite 201<br>Vienna, VA | 198 Thomas Johnson Drive, Suite 17<br>Frederick, MD 21704 | 11886 Healing Way, Suite 401<br>Silver Spring, MD 20904 |


## Purpose of This Document

This document explains your upcoming one-level posterior lumbar fusion. Please review this packet thoroughly with your family and bring it to your preoperative visit and on the day of surgery.

## Anatomy of the Lumbar Spine

The lumbar spine consists of five vertebrae (L1–L5) that bear the weight of the upper body. Each vertebra is separated by an **intervertebral disc** and connected behind by paired **facet joints**. The bones, ligaments, and discs work together to provide stability while permitting motion. The **spinal canal** carries the nerve roots (cauda equina) that supply the legs.

### The Problem: Instability or Severe Degeneration

Conditions that may require fusion include:

- **Spondylolisthesis** — one vertebra slips forward on another, narrowing the canal and causing instability.
- **Severe degenerative disc disease** with mechanical back pain.
- **Recurrent disc herniation** at the same level.
- **Spinal instability** following prior decompression or trauma.
- **Foraminal stenosis requiring complete facetectomy.**
- **Adult degenerative scoliosis** affecting a single mobile segment.

## The Procedure: One-Level Posterior Lumbar Fusion

**Lumbar fusion** is the surgical joining of two adjacent vertebrae into a single, solid unit, eliminating motion at that segment. Several techniques achieve this; your surgeon will choose the approach best suited to your anatomy:

- **TLIF (Transforaminal Lumbar Interbody Fusion):** the disc is approached from one side and replaced with a structural cage and bone graft.
- **PLIF (Posterior Lumbar Interbody Fusion):** the disc is approached from both sides.
- **Posterolateral fusion:** bone graft is placed along the transverse processes; no interbody device.
- **MIS TLIF:** minimally invasive version using tubular retractors and percutaneous screws.

### Surgical Steps

1. General anesthesia is induced and you are positioned face-down on a specialized spine table.
2. Fluoroscopy or navigation confirms the surgical level.
3. An incision is made over the affected level (small for MIS, longer for open).
4. The lamina and ligamentum flavum are removed to decompress the nerves.
5. The disc space is cleaned and a structural interbody cage filled with bone graft is inserted.
6. **Pedicle screws and rods** are placed in the vertebrae above and below the disc to provide stability while fusion occurs.
7. Bone graft material (your own bone, allograft, or bone substitute) is packed around the screws and disc space.
8. Hemostasis is achieved, a drain may be placed, and the incision is closed in layers.

### Enhanced Recovery After Surgery (ERAS)

Our practice follows ERAS protocols that prioritize early mobilization, multimodal pain control, and minimal narcotic use:

- Preoperative carbohydrate loading (if cleared by anesthesia)
- Multimodal preoperative analgesia (acetaminophen, gabapentinoid, celecoxib)
- Local infiltration with long-acting anesthetic (liposomal bupivacaine)
- Tranexamic acid to reduce blood loss
- Early mobilization on the day of surgery
- Goal: discharge home on postop day 1–2 for MIS, 2–3 for open

## Preoperative Medication Instructions

**CRITICAL — READ CAREFULLY**

Failure to follow medication instructions may result in cancellation or surgical complications.

### Medications to STOP

| Medication Class | When to Stop |
|---|---|
| **Aspirin (81 mg or 325 mg)** | 7 days before surgery |
| **Clopidogrel (Plavix), ticagrelor (Brilinta), prasugrel (Effient)** | 5-7 days before surgery |
| **Warfarin (Coumadin)** | 5 days before surgery — bridging may be required |
| **Apixaban (Eliquis), rivaroxaban (Xarelto), dabigatran (Pradaxa), edoxaban (Savaysa)** | 72 hours before surgery (per cardiology) |
| **NSAIDs (ibuprofen, naproxen, meloxicam, celecoxib, diclofenac)** | 7 days before surgery |
| **SGLT2 Inhibitors (Jardiance, Farxiga, Invokana)** | Hold 3-4 days prior to surgery (check with the anesthesia team) |
| **Fish oil, vitamin E, ginkgo, garlic, ginseng, turmeric, CBD** | 7 days before surgery |
| **GLP-1 agonists (Ozempic, Wegovy, Mounjaro, Zepbound)** | 1 week before surgery (anesthesia aspiration risk) |
| **Recreational marijuana, nicotine products** | Stop completely; nicotine impairs bone and wound healing |

**CRITICAL FUSION REQUIREMENT — NICOTINE CESSATION**

Nicotine in ANY form significantly impairs bone fusion and increases the risk of pseudarthrosis (failed fusion), infection, and revision surgery. Complete cessation is required at least 4 weeks before and 3–6 months after surgery. Surgery may be deferred for active smokers. Speak with our office about cessation resources, including nicotine-free options.

### Medications to CONTINUE

- Antihypertensives (with sip of water)
- Antiseizure medications
- Thyroid, reflux, and psychiatric medications

### Special Instructions

- ACE inhibitors / ARBs: hold morning of surgery.
- Diabetes medications: hold metformin; reduce insulin per anesthesia.
- Diuretics: hold morning of surgery.

## Preoperative Optimization Pathway

**Getting Ready for Surgery — Simple Steps for Less Pain & a Faster Recovery**

Patients who follow these steps tend to have **less pain, need less medication, heal faster, and return home sooner.** Please start as early as you can — ideally **4 weeks before** your surgery date.

### 1. Eat Well & Hit Your Protein Target

- **Eat more protein.** Include eggs, fish, chicken, dairy, beans, or a protein shake at every meal. Protein is what your body uses to heal wounds, knit bone, and keep muscle strong.

**Daily protein goal: about 1.5 grams per kilogram of body weight.**

Quick guide: a **150 lb person** should aim for roughly **100 g of protein per day**, spread across meals (about **25–35 g each**). Your care team can tailor this for you.

**Note:** patients with significant kidney disease (advanced CKD) should discuss protein targets with their nephrologist before increasing intake.

- **Choose healing foods.** Vegetables, fruit, and whole grains lower inflammation. Cut back on sugar, processed food, and alcohol.
- **Drink plenty of water** in the days before surgery. Clear liquids are usually allowed up to 2 hours before you arrive.
- **Carbohydrate drink.** Unless you are diabetic, a clear carbohydrate drink (such as ClearFast or unconcentrated Gatorade) **2–3 hours before** surgery reduces stress and nausea. Your team will advise on the specifics.

### 2. Plan for Comfort & Pain Control

- **We use several mild medicines together** so we can keep you comfortable while using as little opioid medication as possible.

- **Bring a full list of your medicines.** Some blood thinners, anti-inflammatories, supplements, and diabetes/weight medicines (including GLP-1 agonists such as Ozempic, Wegovy, and Mounjaro) may need to be paused.
- **Tell us if you take pain medication regularly.** A simple plan helps us keep you comfortable afterward and prevents withdrawal symptoms.

### 3. Helpful Supplements (Ask Us First)

- **Protein shake or powder** — the easiest way to reach your protein goal if appetite is low. Whey or plant blend with ~20–30 g per serving.
- **Vitamin D3** — low vitamin D is linked to slower bone healing and more pain after spine surgery. We may check your level and suggest a dose (often **1,000–2,000 IU daily**).
- **Iron** — only if you are anemic or low on iron. Correcting it before surgery lowers transfusion risk. We will test first.
- **Vitamin C and zinc** — support wound healing. A daily multivitamin usually covers both.
- **Calcium** — 1,000–1,200 mg daily, with vitamin D, supports bone fusion. Use dietary sources first (dairy, fortified plant milks, leafy greens) and supplement only as needed.

**STOP these supplements about 1 week before surgery**

**Fish oil, vitamin E, high-dose garlic, ginkgo, turmeric (high-dose), and CBD** — these can increase bleeding. Review every supplement with your surgeon before starting or stopping anything.

### 4. Keep Moving & Prepare Your Home

- **Walk every day.** A 20–30 minute walk builds strength and stamina. More active patients recover noticeably faster.
- **Practice the basics.** Rehearse getting in and out of bed, using a walker if needed, and slow deep breathing exercises with an incentive spirometer.
- **Set up your home.** Clear walkways, keep items within easy reach, and arrange a ride and a helper for the first day or two.

### 5. Other Important Steps

- **Stop smoking and nicotine.** This is the single most powerful change you can make. Quitting even 4 weeks before surgery greatly improves healing and lowers complications. Nicotine in any form (cigarettes, vapes, chewing tobacco, patches, gum) substantially impairs bone fusion and **must be stopped before and for at least 3 months after surgery.**
- **Control blood sugar.** If you have diabetes, work with your doctor to keep it well managed before surgery. Target HbA1c < 7.5% for elective cases.
- **Rest and relax.** Aim for 7–8 hours of sleep nightly. Worry can make pain feel worse — gentle breathing exercises (4-7-8 breathing), guided imagery, and mindfulness apps help.

- **Prevent infection.** You will be asked to wash with chlorhexidine (Hibiclens) antiseptic soap the night before and morning of surgery. **Please do not shave the surgical area** — this can cause micro-abrasions that increase infection risk.
- **Manage other conditions.** Keep blood pressure, heart, and breathing problems under good control with your regular physicians before surgery.

### 6. What to Bring on Surgery Day

- **Photo ID and insurance card.** Plus a list of all your medicines and doses.
- **Loose, comfortable clothing** and flat, non-slip shoes that are easy to put on.
- **Your CPAP machine** if you use one for sleep apnea, and any braces or walking aids.
- **A responsible adult** to drive you home and stay with you for the first 24 hours.
- **Leave valuables and jewelry at home.** Remove nail polish and contact lenses before arrival.

### Preoperative Physical Therapy ("Prehab")

We strongly recommend a **preoperative physical therapy evaluation and prehabilitation course** before surgery. Multiple randomized studies demonstrate that prehab improves postoperative pain scores, accelerates functional recovery, and reduces length of stay.

**Goals of preoperative physical therapy include:**

- **Core activation and lumbar stabilization** — transverse abdominis, multifidus, pelvic floor coordination
- **Hip mobility and posterior chain conditioning** — glutes, hamstrings, hip flexors
- **BLT body mechanics** — squat, hip-hinge, and lifting form review
- **Walking endurance baseline** — establishes a functional benchmark for postoperative comparison

Our office will coordinate this referral. If you have a preferred physical therapist, please let us know. **Sessions completed before surgery do not count against postoperative PT benefits** under most insurance plans, but we will verify this for your specific coverage.

### Day Before & Day of Surgery

**Day Before Surgery**

- **Nothing to eat after midnight.** Clear liquids (water, black coffee, apple juice) are allowed up to **2 hours before** arrival unless told otherwise.
- **Chlorhexidine (Hibiclens) shower** the night before — focus on the planned surgical area.
- Sleep in clean sheets and clean clothing.
- Pack your bag: ID, insurance card, complete medication list, CPAP if applicable, loose-fitting clothing for going home, slip-on shoes.
- **Do not shave** the planned surgical site at home.

**Day of Surgery**

- Arrive at the time given (usually 2 hours before surgery).

- **Repeat the chlorhexidine shower** the morning of surgery.
- Brush teeth but do not swallow water.
- Do **not** wear makeup, lotions, perfumes, nail polish, or jewelry.
- Wear loose, comfortable clothing.
- Bring this packet and your medication list.
- Have a responsible adult drive you home and stay with you for the first 24 hours.

### Your Countdown to Surgery

Keep this page handy — it shows what to do as your surgery date gets closer.

| 4–2 Weeks Before — BUILD STRENGTH | 1 Week Before — GET READY | 1–2 Days Before — FINAL STEPS |
|---|---|---|
| ✓ Stop smoking & nicotine | ✓ Confirm medicines to pause | ✓ Antiseptic (chlorhexidine) soap wash |
| ✓ Eat more protein (~1.5 g/kg/day) | ✓ Arrange ride & helper | ✓ Clear carbohydrate drink (non-diabetics) |
| ✓ Walk 20–30 min daily | ✓ Practice breathing exercises | ✓ Clear liquids up to 2 hours prior |
| ✓ Manage blood sugar & BP | ✓ Keep eating protein | ✓ Take pre-op medicines as instructed |
| ✓ Correct any anemia | ✓ Avoid alcohol | ✓ Rest & arrive on time |

**Questions?**

Call your care team at **301.718.9611**. Always follow the specific instructions from your surgeon and anesthesiologist — those instructions come first. This guide is for patient education and does not replace advice from your doctor.

## Risks and Potential Complications

### General Surgical Risks

- Bleeding requiring transfusion (more common than with decompression alone)
- Infection (1–3%)
- Anesthesia complications
- DVT or pulmonary embolism
- Cardiac, pulmonary, renal complications

### Fusion-Specific Risks

- **Pseudarthrosis (failed fusion)** — 5% risk; risk factors include smoking, diabetes, osteoporosis, NSAID use, multi-level surgery. May require revision.
- **Adjacent segment degeneration** — accelerated wear of the levels above and below the fusion; may require future surgery.
- **Dural tear / CSF leak** — 1–5%; may require repair and bed rest.

- **Nerve root injury** — 1–3%.
- **Cage migration or subsidence** — interbody device shifts or sinks into the bone.
- **Vascular injury** — rare, but recognized.
- **Death** — extremely rare for elective single-level fusion.

## Reason for Surgery

Lumbar fusion is recommended after appropriate conservative care has failed, typically including:

- Physical therapy (minimum 6–12 weeks)
- Medications (NSAIDs, gabapentinoids, muscle relaxants)
- Epidural steroid injections
- Activity modification

**Surgical indications include:**

- Mechanical back pain with documented instability
- Symptomatic spondylolisthesis
- Recurrent disc herniation at the same level
- Severe foraminal stenosis requiring facetectomy
- Progressive neurologic deficit

## Hospital Stay and Discharge Planning

- Expected stay: **1–2 days for MIS, 2–4 days for open**.
- PT/OT will work with you in the hospital.
- Most patients walk on the day of surgery or postop day 1.
- Most patients discharge home; some go to acute rehab if functional concerns.
- Plan a responsible adult to drive you home and help with daily activities for 1–2 weeks.

## Contact Information

**Provider:** Lekhaj Daggubati, MD

**Practice:** Washington Brain & Spine Institute

**Main Phone (All Locations):** 301.718.9611 — business hours

**After-Hours / Urgent Concerns:** 301.718.9611 — answering service will contact the on-call provider

### Clinical Office Locations

**Rockville:** 3202 Tower Oaks Boulevard, Suite 100, Rockville, MD 20852

**Tysons:** 8605 Westwood Center Drive, Suite 201, Vienna, VA

**Frederick:** 198 Thomas Johnson Drive, Suite 17, Frederick, MD 21704

**White Oak:** 11886 Healing Way, Suite 401, Silver Spring, MD 20904

**Emergency:** Call **911** or proceed to the nearest emergency department for life-threatening symptoms — severe difficulty breathing, sudden weakness or paralysis, loss of consciousness, seizure, severe sudden headache, chest pain, or stroke-like symptoms.