WASHINGTON BRAIN & SPINE INSTITUTE

Lateral Lumbar Interbody Fusion (LLIF / XLIF / OLIF)

Postoperative Patient Instructions & Recovery Guide

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Welcome to Your Recovery

You have undergone lateral lumbar interbody fusion. Recovery from fusion takes 3–6 months as the bone heals. Adherence to activity restrictions and lifestyle factors significantly affects the success of your fusion. This explains expected recovery, including some symptoms unique to the lateral approach.

Expected Recovery Timeline

Timeframe	What to Expect
Days 0–2 (hospital)	Walk with PT. Multimodal pain control. Some anterior thigh discomfort or hip flexor weakness is common from psoas dissection.
Week 1	Home recovery. Anterior thigh symptoms typically peak in the first week, then improve. Continue daily walking.
Weeks 2–4	Anterior thigh pain and hip flexor weakness improve. Return to light desk work for many.
Weeks 4–6	Most return to office work. Anterior thigh symptoms continue to resolve.
Weeks 6–12	PT begins (often hip flexor strengthening). Walking distance increases. Most thigh symptoms resolve.
3–6 months	Bone fusion progresses. Most return to most activities. Resume light/moderate exercise.
6–12 months	Solid fusion typically achieved. Final activity clearance.

ANTERIOR THIGH SYMPTOMS — WHAT TO EXPECT

Most patients experience some anterior (front) thigh symptoms after lateral fusion: pain, numbness, tingling, or hip flexor weakness ("weak leg lifting"). These symptoms come from the psoas dissection and lumbar plexus traction. They typically peak in the first 1–2 weeks and resolve over 6–12 weeks. Severe or progressive weakness should be reported. Physical therapy targeting hip flexors helps recovery.

Activity Instructions

What You CAN Do

- **Walk** — start with short walks (5–10 min) multiple times daily; advance gradually.
- **Climb stairs** carefully using a handrail.
- **Shower** after 48 hours.
- **Sit upright** in 20–30 minute intervals; change position frequently.
- **Light household tasks** — no vacuuming, mopping, heavy chores.
- **Sleep** in any comfortable position; pillow between knees for side-lying often helps.

What to Be Cautious of —BLT Rule

Bend, **L**ift, **T**wist — these motions stress the fusion and can compromise healing. **Follow your body.**

- **Minimize bending at the waist for 6 weeks.** Squat or hip-hinge to reach low items.
- **No lifting greater than 15 pounds for ~4 weeks**; then 15–25 lbs through 3 months.
- **No rapid twisting** the trunk for 6 weeks.
- **No driving** until your follow-up appointment.
- **No swimming, bathtubs, hot tubs** for 4 weeks.
- **No high-impact exercise** for 12 weeks.
- **No nicotine in any form** for at least 3 months — preferably permanently.
- **No NSAIDs for 3–6 months** — impairs fusion.

Orthofix Bone Growth Stimulator

An **Orthofix bone growth stimulator** may be prescribed as an adjunct to support your fusion. This is a non-invasive external device that delivers a low-level pulsed electromagnetic field (PEMF) or capacitive coupling signal across the fusion site to enhance bone formation. Evidence supports its use particularly in patients with risk factors for pseudarthrosis (smoking history, multi-level fusion, prior pseudarthrosis, diabetes, osteoporosis, revision surgery).

- **Wear the device as prescribed** — typically **2–4 hours daily** for 3–9 months postoperatively, depending on the model.
- **Be consistent.** Daily, uninterrupted use provides the greatest benefit.
- **Position the device over the fusion site** as instructed; the device produces no sensation during use.
- **Charge the unit nightly** so it is ready for the next day.

- **Compliance tracking** — most modern units record usage data that we may review at follow-up visits.
- **Insurance coordination** is handled by our office and the device manufacturer; the device is delivered directly to your home with training.
- Continue daily use until your surgeon confirms solid fusion on follow-up imaging.

Brace (If Prescribed)

- Wear whenever out of bed (standing, sitting, walking).
- Remove when lying down or showering.
- Typical duration: 4–8 weeks.
- Wear over a thin shirt for skin protection.

Return-to-Activity Milestones

Milestone	Timing	Details
Walking	Day 1+	Short walks daily, build progressively. Walking is the best therapy.
Showering	POD #2	Remove dressing; pat dry. No submersion for 4 weeks.
Brace	6 weeks	Wear when out of bed; remove at night and during showers.
Driving	2–3 weeks	Once cleared at first follow-up and off opioids.
Desk work	4–6 weeks	Return to seated work with frequent position changes.
Light physical activity	3 months	Light yardwork, golf putting, gentle stretching.
Sexual activity	4–6 weeks	When comfortable; avoid positions that strain the back.
Manual labor / lifting	4–6 months	After fusion is confirmed on X-ray. Lift with legs, not back.
Low-impact sports	3–4 months	Swimming (after wound healed), cycling, walking.
High-impact sports	6–12 months	Only with surgeon clearance and confirmed fusion.

Going Home — Your Discharge Instructions

What to Expect in the First 2 Weeks

Most patients experience moderate soreness around the incision, some fatigue, and a gradual return of energy. **Pain is normal and expected** — most patients describe a 5–7/10 the first few days, improving steadily. Your job is to follow the medication schedule below, walk regularly, eat enough protein, and protect the surgical site. Call us with any concerns — even minor ones. We would rather hear from you than have you worry.

Your Discharge Medications

You will be sent home with the following medications. **Specific doses on your prescription bottle take precedence over this general guide.** Take medications as prescribed.

Medication	Dose & Schedule	Important Notes
Oxycodone (5 mg)	1 tablet every 4–6 hours as needed for severe pain (pain ≥ 7/10)	Take only when acetaminophen and an NSAID together are not controlling pain. Stop as soon as you are able — typically within 5–10 days. Do not drive or drink alcohol while taking. Causes constipation — use the bowel regimen on the next page.
Cyclobenzaprine (Flexeril) 5–10 mg	1 tablet at bedtime as needed for muscle spasm	Can cause significant drowsiness — take only at bedtime to start, and do not drive after taking. May be increased to three times daily under direction. Stop when muscle spasm resolves, usually within 1–2 weeks.

Layered (Multimodal) Pain Control with Over-the-Counter Medications

Use these in combination with the prescription medications above. **The goal is to control pain with the least amount of opioid possible** — these medicines work through different mechanisms, so combining them is more effective than any single one alone.

Medication	Dose & Timing	Notes
Acetaminophen (Tylenol) 500–1000 mg	1–2 tablets (500 mg each) every 6 hours **around the clock for the first week**, then as needed. Do not exceed 3,000 mg in 24 hours.	Safe for most patients. Use the regular Tylenol (not extra-strength) and add it up carefully. Do not combine with other products that contain acetaminophen (Norco, Percocet, NyQuil, etc.) without counting the dose.
Ibuprofen (Advil, Motrin) 400–600 mg	1 tablet every 6–8 hours with food, as needed.	**Avoid NSAIDs (ibuprofen, naproxen, aspirin, meloxicam, celecoxib) for the first 3 months** after fusion surgery. NSAIDs impair bone fusion. After 3 months and with surgeon clearance, they may be resumed. Take with food. Avoid if you have kidney disease, ulcers, or bleeding disorders.
Naproxen (Aleve) 220–440 mg	1–2 tablets every 12 hours with food, as needed (alternative to ibuprofen — do not combine the two).	Longer-acting NSAID — convenient for steadier coverage. Same restrictions as ibuprofen.

Recommended pattern for the first week

Acetaminophen 1000 mg every 6 hours, around the clock (set a timer; do not skip doses). **Use the opioid only when these together are not controlling pain** — typically for severe pain at night or before

walking. **Take cyclobenzaprine at bedtime** for muscle spasm.

Bowel Regimen

Opioids and anesthesia almost always cause constipation. Start a softener on day 1; if no bowel movement by day 3, escalate as below. Do not wait for severe symptoms.

- **Days 0–2 (baseline):** Take **docusate sodium (Colace) 100 mg twice daily** while taking opioids. Drink 2–3 liters of water daily, eat fiber and walk frequently.
- **If no bowel movement by POD #3:** Add **senna (Senokot) 2 tablets at bedtime** AND **MiraLAX (polyethylene glycol) 17 g** (one capful) in 8 oz of water once daily.
- **If no bowel movement by POD #5:** Add **bisacodyl (Dulcolax) 10 mg** — either suppository or oral tablet.
- **If no bowel movement by POD #7: call our office.** We may add additional measures (magnesium citrate, enema, or evaluation for obstruction).

Stop the bowel regimen once you are off opioids and having regular bowel movements again.

Showering & Wound Dressing

You may shower starting on postoperative day 2. Remove the surgical dressing before showering — the incision can get wet. Let warm water run gently over the incision; **do not scrub**, do not use a washcloth or loofah directly on the wound. Pat dry with a clean towel. **Do not submerge** in a bathtub, hot tub, or pool for at least 3–4 weeks. Do not apply ointments, peroxide, alcohol, or lotion to the incision unless specifically directed. If Steri-Strips are present, let them fall off on their own (7–14 days).

Call about the wound if you see...

Redness spreading beyond the incision, drainage of pus or cloudy fluid, opening of the wound edges, increasing pain or swelling, fever over 101.5°F, or any clear fluid leak (possible CSF leak).

Your Brace

Aspen LSO lumbar brace — to be worn whenever you are out of bed (sitting, standing, walking) for **6 weeks postoperatively.** May be removed when lying down and during showering. The brace supports the lateral interbody construct during early bone healing.

- **Wear over a thin shirt** (cotton T-shirt) to protect the skin from rubbing.
- **Inspect the skin daily** under the brace for redness, breakdown, or pressure sores.
- **Tighten or loosen** as instructed — too tight can impair breathing; too loose offers no support.
- **Clean the brace liner** per the manufacturer's instructions (most have washable liners).

Driving

Do not drive until cleared at your first postoperative follow-up appointment (2–3 weeks). You may not drive while taking opioid pain medication, cyclobenzaprine, or other sedating medications. Riding as a passenger is fine immediately.

Once cleared to drive, start with short trips in familiar areas. **Do not drive while taking opioid pain medication, cyclobenzaprine, or other sedating medications.** Riding as a passenger is fine immediately.

Return to Work

Desk work: 4–6 weeks. Light physical work: 3 months. Manual labor / heavy lifting: 4–6 months with clearance. These are typical ranges — your individual return-to-work clearance depends on your job demands, recovery, and surgeon assessment at follow-up. **Bring any disability forms or return-to-work letters to your follow-up appointment** and we will complete them at that time.

Follow-Up Appointments

- **First postoperative visit at 2–3 weeks.** Wound check, suture or staple removal if needed, medication review, and review of recovery progress.
- **Second postoperative visit at 6–8 weeks.** Activity advancement, return-to-work clearance, and (for fusion cases) X-rays to assess early fusion.
- **Third visit at 3-6 months.** X-rays to assess fusion, NSAID restriction lifted if fusion is progressing.
- **One-year visit.** Final imaging and long-term plan.

Call **301.718.9611** during business hours to schedule or reschedule. Our after-hours answering service will reach the on-call provider for urgent issues.

Recovery Optimization Protocol

Targeted nutrition, sleep, and stress management substantially accelerate recovery and reduce complications. The following protocols are evidence-based and apply throughout your recovery period.

Postoperative Nutrition

- **Protein: ~2 g/kg/day** to support bone and soft-tissue healing during fusion (e.g., 70 kg patient: ~140 g/day).
- **Vitamin D 2000 IU daily** — essential for calcium absorption and bone formation.
- **Calcium 1000–1200 mg daily** — through dairy, fortified plant milks, leafy greens, or supplementation as needed.
- **Vitamin K2 (90–120 mcg/day)** — directs calcium into bone and is often deficient. Found in fermented foods, egg yolks, and supplements.
- **Vitamin C (500–1000 mg/day)** — supports collagen synthesis.
- **Magnesium (300–400 mg/day)** — supports bone matrix formation.
- **Zinc (15–30 mg/day)** — accelerates wound healing.
- **Hydration: 2–3 liters of water daily.** Aids wound healing, prevents constipation, and supports kidney clearance of pain medications.
- **Foods that support healing:** lean proteins (eggs, fish, poultry, Greek yogurt, legumes), leafy greens, berries, nuts, seeds, fatty fish (salmon, sardines), olive oil, whole grains.
- **Foods to limit or avoid:** alcohol (impairs healing, interacts with pain medications), ultra-processed foods, refined sugars, trans fats, excessive caffeine, sugary drinks.

Bone Fusion Nutrition Optimization

Because NSAIDs are restricted for 3–6 months after fusion, an **anti-inflammatory diet provides a natural compensatory strategy** while also supporting bone formation. Emphasize:

- **Omega-3 fatty acids** — fatty fish (salmon, sardines, mackerel) 2–3 servings/week, or fish oil supplement 1–2 g EPA+DHA daily (resume after the initial 2 weeks of bleeding-risk avoidance)
- **Polyphenol-rich foods** — berries, dark leafy greens, green tea, dark chocolate (70%+), olive oil
- **Spices with anti-inflammatory properties** — turmeric (with black pepper for absorption), ginger, cinnamon. Note: high-dose turmeric supplements should be discussed with our office as they can affect bleeding.
- **Fermented foods** — yogurt, kefir, sauerkraut, kimchi — support gut health, which influences systemic inflammation
- **Maintain blood glucose control** — chronically elevated blood sugar impairs bone formation. Target HbA1c <7% if diabetic.
- **Absolutely no nicotine in any form for at least 3 months** — preferably permanent. Nicotine is the single most modifiable risk factor for pseudarthrosis.
- **Limit alcohol to ≤1 drink/day** (and avoid entirely while on opioids). Alcohol impairs bone formation.

Sleep Optimization

- **Target 7–9 hours nightly.** Sleep is when most tissue healing occurs. Sleep deprivation amplifies pain perception.
- **Sleep hygiene basics** — consistent bedtime and wake time, dark/cool/quiet bedroom, no screens 30 minutes before bed, no caffeine after noon.
- **Position recommendations: Side-lying with a pillow between the knees** or **supine with a pillow under the knees** typically provides the most comfort. Avoid sleeping on the stomach. A wedge pillow or recliner can help in the first 1–2 weeks.
- **Melatonin 1–3 mg** 30–60 minutes before bed is reasonable for short-term sleep difficulty. Avoid alcohol or benzodiazepines as sleep aids.
- **If you use CPAP, continue every night.** Untreated sleep apnea impairs healing and increases cardiovascular risk.

Stress and Pain Self-Management

"Hurt does not equal harm." Postoperative pain is your body's signal that healing is underway — not that damage is occurring. Modern pain neuroscience shows that how we **interpret** pain significantly affects how intensely we experience it. Patients who catastrophize ("this pain means something is wrong") report worse outcomes than those who reframe pain as part of recovery.

- **4-7-8 breathing** — inhale through the nose for 4 seconds, hold for 7 seconds, exhale through the mouth for 8 seconds. Repeat 4 cycles. Practice 2–3 times daily and whenever pain spikes.
- **Progressive muscle relaxation** — starting at your feet, tense each muscle group for 5 seconds, then release. Work your way up to your shoulders and face. Takes about 10 minutes and is excellent at bedtime.
- **Mindfulness apps** all offer free guided meditations specifically for pain, sleep, and surgical recovery.
- **Postoperative blues are normal** — many patients experience an emotional dip around days 3–7. If low mood persists beyond 2–3 weeks, or if you have thoughts of self-harm, contact us or call **988** (Suicide and Crisis Lifeline).

Warning Signs — When to Call Us or Go to the ER

CALL 911 OR PROCEED TO THE ER IMMEDIATELY

• Loss of bowel or bladder control / inability to urinate • Sudden severe leg weakness (especially quadriceps — difficulty climbing stairs) • Numbness in the groin or perineum ("saddle anesthesia") • Severe abdominal pain, distension, vomiting, or no bowel function (signs of bowel injury or severe ileus) • Clear fluid leaking from incision • Severe headache that worsens upright (possible CSF leak) • Chest pain, shortness of breath, unilateral leg swelling (PE/DVT) • Fever > 101.5°F with chills

Call Our Office Within 24 Hours

- Fever 100.4–101.5°F
- Incision redness, drainage, separation, or swelling

- Worsening anterior thigh pain, numbness, or weakness
- Persistent flank bulging or abdominal discomfort
- Constipation > 4 days or urinary difficulty
- Questions about medications, brace, or activity

Long-Term Spine Health

- Core and hip flexor strengthening protects the fusion and adjacent levels.
- Maintain healthy weight; avoid smoking; manage diabetes.
- Continue calcium and vitamin D; periodic DEXA if at risk.
- Proper lifting mechanics for life.

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.