

Patient Surgical Packet

Anterior Lumbar Interbody Fusion (ALIF) and Oblique Lateral Interbody Fusion (OLIF)



Peter Sylvester, MD
Neurosurgeon
STL MISC – St. Louis Minimally Invasive Spine Center
4590 South Lindbergh Blvd.
St. Louis, MO 63127
P: (314) 270-9494
F: (314) 270-9495
www.petersylvestermid.com

Surgical overview

Oblique Lumbar Interbody Fusion (OLIF) and Anterior Lumbar Interbody Fusion (ALIF)

Definitions

- **Oblique:** Coming from the side of the body at an angle (**OLIF**)
- **Anterior:** From the front of the body (through the abdomen) (**ALIF**)
- **Lumbar:** Lower part of the spine (low back)
- **Interbody:** Between the bones of the spine (vertebrae)
- **Fusion:** Joining two or more bones together by growing new bone

Operative Anatomy

- **Vertebrae:** The bones that make up your spine
- **Disc:** Soft cushion between the bones of the spine
- **Nerve root:** Nerves that send signals for movement and feeling
- **Psoas muscle:** Muscle near the spine that helps with hip movement (the OLIF approach goes around this muscle)
- **Blood vessels:** Large vessels that run in front of the spine and must be carefully protected
- **Major blood vessels (ALIF):** Large arteries and veins in front of the spine that must be moved safely during surgery
- **Abdominal structures (ALIF):** Organs and tissues gently moved aside to reach the spine

What is Spinal Neuronavigation?

- A CT scan is done during surgery
- The images are matched to your body
- The system works like a GPS for the surgeon
- Helps guide safe and accurate placement of implants

Common Indications for OLIF/ALIF Surgery

- **Spondylolisthesis:** One bone slips forward or backward over another
- **Degenerative disc disease:** Breakdown of the disc causing pain
- **Degenerative scoliosis:** Curvature of the spine in adults
- **Adjacent segment disease:** Wear and tear next to a prior fusion
- **Spinal stenosis (indirect decompression):** Narrowing that can be relieved by restoring disc height
- **Recurrent disc problems:** Ongoing issues after prior surgery
- **Spinal instability:** Abnormal movement between bones
- **Chronic low back pain:** Pain not improved with non-surgical care

Goals of surgery

Decompress nerve roots

- Nerve roots travel within the spinal canal and leave the spine through foramen (holes)
- Indirect decompression achieved with ALIF / OLIF
 - Increasing the height of the foramen (by replacing the disc with a cage larger than the disc)
 - Often effective, but may require releasing the nerve roots posteriorly
- Removing nerve compression reduces nerve inflammation / irritation, which should reduce symptoms of lumbar radiculopathy (pain, numbness, weakness in lower extremities).

Stabilize spine

- Spinal instrumentation (i.e., interbody grafts, screws, and rods) holds the spine in place
- Stabilization is a necessary part of this surgery as the decompression de-stabilizes the spine
- Stabilization can improve back pain, prevent recurrence of nerve compression, and allow for bone fusion

Fuse bone

- Bone graft is placed in the disc space to permanently join of the bones above and below pathology
- Important because spinal instrumentation can loosen over time
- Creates durable protection from recurrent nerve compression

Pre-operative Instructions

Medications considerations

- **NSAIDs**
 - Ibuprofen, Aleve, Naprosyn, Advil, Celebrex, meloxicam, etc.
 - Can inhibit bone fusion
 - **STOP taking 5 days prior to surgery.**
- **Antiplatelet medications**
 - Aspirin, Plavix, and others
 - Can increase your bleeding risk
 - Please discuss with your prescribing doctor whether it is safe to stop this medication.
 - **STOP 5-7 days before surgery.**
- **Anticoagulation medications**
 - Traditional anticoagulation (Coumadin, Lovenox, Heparin)
 - Novel oral anticoagulants (apixaban, dabigatran, rivaroxaban, and edoxaban)
 - Please discuss with your prescribing doctor whether it is safe to stop this medication.
 - **STOP 5 days before surgery.**
- **Injectable medications**
 - Such as Ozempic, Mounjaro and Trulicity
 - **STOP 7 days prior to surgery**

Medical history considerations

- **Clearances:** We require a surgical clearance from every specialist you see (example - cardiology, pulmonology, etc.)
 - Our office will fax a clearance form
 - If needed, please make pre-operative surgical clearance appointments
 - Complete all clearances **5 days before surgery**
- **Preop testing**
 - Mercy South surgery
 - You will need a separate appointment with pre-anesthesia department
 - **Call 314-525-4302 option 1**
 - Appt scheduled 1-2 weeks before surgery.
 - You will get lab draws and EKG there if needed (no fasting)
 - Surgery center surgery
 - Get labs at outpatient lab as convenient (no fasting)
 - Surgery center nurses review your care before surgery
 - Complete all preop testing **5 days before surgery**
- **Specific medical issues**
 - Please review documentation in the back of this folder for details regarding the following conditions:
 - Diabetes
 - Nicotine abuse

- Obesity
- Osteoporosis / osteopenia

Scheduling and work release

- **Surgical location**
 - Dr. Sylvester operates at 3 locations:
 - **Mercy South Hospital:** 10010 Kennerly Rd, St. Louis, MO 63128
 - *John K. Pruellage heart and Vascular Center Entrance*
 - **Ambulatory Surgical Center of Sunset Hills:** 4594 S Lindbergh Blvd, St. Louis, MO 63127
 - **St. Lukes Hospital in Chesterfield:** 232 S Woods Mill Rd, Chesterfield, MO 63017
 - *Main entrance, 2nd floor same day surgery*
 - The location of your surgery will be discussed on scheduling
- **Surgical scheduling**
 - **Most insurance authorization takes about 15 days to complete**
 - We can schedule your surgery now, but cannot guarantee insurance approval, which may result in rescheduling.
- **FMLA and short term disability**
 - Our office will complete FMLA and short-term disability paperwork for you and your family assisting you with recovery.
 - **Please allow 7-10 days to complete**
 - Forms date from Date of Surgery
 - See post-op instructions for post-op work and activity recommendations specific to your surgery.

Day of surgery instructions

Fasting

- No food or drink past MIDNIGHT, the night PRIOR to your surgery (including gum, candy, or mints).
- Exceptions: Sip water only to take approved morning medications, see below.

Medications:

- Take these with a small sip of water:
 - Blood pressure/heart medications.
 - Anti-seizure medications.
 - See pre-operative instructions for medication to hold

Hygiene:

- Shower with chlorhexidine soap (if provided) the night before and morning of surgery.
- Do not apply lotions, perfumes, or makeup.

What to Bring:

- Family / friend if planning outpatient surgery—you will need a driver (No ride shares, ubers, Lyfts, or Taxis)
- Photo ID, insurance card
- Comfortable, loose-fitting clothing (e.g., sweatpants, slip-on shoes).
- List of medications/allergies.
- If you have a bipap/cpap machine bring that as well

Meet the OR team

- Anesthesia
 - They will explain the anesthesia plan
 - They may give you a relaxing medication to make you more comfortable
- Nurses from the OR
 - They will ensure you are well cared for before, during, and after your surgery
- Dr. Sylvester
 - Will see you the morning of surgery
 - Please make sure all of your questions are answered prior to rolling to the OR

What will happen during your surgery: Stage 1

Anterior / oblique spine surgery

Transport to the Operating Room

You will be brought from the preoperative area to the operating room on a hospital bed. The surgical and anesthesia teams will confirm your identity, procedure, and surgical level. Monitoring equipment will be placed, including heart, blood pressure, and oxygen monitors.

Anesthesia and Positioning

You will receive general anesthesia, meaning you will be fully asleep during the procedure. You will be positioned on your back (ALIF) or turned on your side (OLIF), depending on the approach used. Careful positioning allows safe access to the spine.

Surgical Approach and Incision

For ALIF, an incision is made in the lower abdomen to approach the spine from the front. For OLIF, an incision is made along the side of the abdomen to approach the spine from an oblique angle. In both approaches, surrounding structures and blood vessels are carefully moved aside to access the spine by an approach surgeon (vascular or general surgeon).

Disc Removal and Preparation

The correct spinal level is confirmed using X-ray guidance. The damaged disc is removed. The space between the vertebrae is prepared to accept an interbody implant while preserving surrounding bone structure.

Interbody Implant Placement

A spacer (interbody cage) is selected based on size and alignment and inserted into the disc space. This helps restore disc height, improve alignment, and create space for the nerves.

Fusion

Bone graft material is placed within and around the implant to promote fusion. Over time, the vertebrae grow together into a single solid bone.

Closure

Once the implant is in position, the surgical area is carefully inspected. The surrounding tissues are returned to their normal position. The incision is closed with sutures or staples, and a sterile dressing is applied.

Transport to Recovery

You will be awakened from anesthesia and transported to the recovery area. Nurses will monitor you closely as you wake up. Your pain level, breathing, and neurologic status will be assessed. You will then be transferred to a hospital room for continued recovery.

What will happen during your surgery: Stage 2

Posterior spine surgery

Transport to the Operating Room

Same as stage 1

Anesthesia and Positioning

Positioned prone (on your abdomen), otherwise the same as Stage 1.

Surgical Approach and Incision

The skin over the lower back is cleaned with a sterile solution. For a minimally invasive approach, small incisions are made laterally to gently separate the muscles. For an open approach, a midline incision is made and the muscles are carefully moved aside to expose the spine.

Exposure and Decompression

The correct spinal level is confirmed using X-ray guidance. **Decompression may or may not be a part of your surgery, depending on your spine problem.** If recommended, a portion of bone and ligament will be removed to access the spinal canal and nerve roots. Any tissue compressing the nerves is removed to relieve pressure.

Instrumentation placement

Screws are placed into the vertebrae above and below the treated level using imaging guidance. In minimally invasive surgery, these are often placed through small separate incisions (percutaneous technique). Rods are then connected to the screws to stabilize the spine.

Fusion

Posterior fusion may or may not be a part of your surgery, depending on your spine problem. If recommended, Bone graft material is placed to promote fusion. Over time, the vertebrae grow together into a single solid bone, providing long-term stability.

Closure

Same as stage 1 just posterior.

Transport to Recovery

Same as stage 1.

Risks of surgery

All surgeries have at least some degree of risk. Dr. Sylvester believes that the benefits of your surgery outweigh the potential risks. Some of the possible complications specific to the performance of an ALIF/OLIF surgery include:

General risks

- **Anesthesia / endotracheal intubation:** Low risk, but increased if you are elderly, frail, or have serious comorbid medical conditions.
- **Infection:** Low risk, but increased if you are overweight, immunosuppressed, on chronic steroids, diabetic, or have had prior infections.
- **Bleeding:** Low risk. Postoperative bleeding: Low risk, but can cause spinal canal / nerve compression and may require surgical evacuation
- **Urinary retention:** Moderate risk, may require intermittent catheterization or temporary foley placement. Increased risk in males > 50 years old, prostate cancer, enlarged prostate, prior urinary retention.

Risks related to anatomy

- **Inadequate relief of symptoms:** Degree of risk specific to your case. Can occur if pathology is not completely addressed (incomplete decompression of nerve roots), pathology recurrence, and / or pre-existing damage to nervous tissue.
- **Dural tear:** The dura is a sac containing the spinal cord and nerve roots. A tear in this sac can leak spinal fluid. Many times this tear can be fixed during surgery, but may leak post-operatively, causing headache and drainage requiring surgical revision. Tobacco use, old age, severe arthritis increase the risk of dural tear.
- **Nerve damage:** Low risk. Could result in worsening weakness, numbness, tingling, or bowel / bladder symptoms.

Approach-Specific Risks (OLIF)

- Injury to nearby **blood vessels** (rare, but can cause bleeding)
- Injury to the **psoas muscle**
- Injury to nearby organs (such as bowel or ureter, rare)

Approach-Specific Risks (ALIF)

- Injury to major **blood vessels** (arteries or veins), which can lead to significant bleeding
- Blood clots in the legs or lungs
- Injury to abdominal organs (bowel, bladder)
- Hernia at the incision site

Risks related to instrumentation and fusion

- **Cage / screw misplacement:** Low risk, computer assistance and fluoroscopy is used to minimize this risk
- **Non-union or pseudarthrosis** (failure of bone graft to heal adequately): May be asymptomatic and not require treatment. May result in instrumentation failure and pain requiring revision surgery. Risk factors include nicotine use, poor bone quality, poor glucose control
- **Adjacent segment disease** (degeneration the levels above or below your fusion): Caused by additional stress required to maintain range of motion after fusion. May be asymptomatic or may require conservative, procedural, or surgical management.

Post-operative instruction

Inpatient care

- Pain control: IV and oral narcotics, muscle relaxers, tylenol
- Physical and occupation therapy: to assess your inpatient / outpatient needs
- Hospital duration: 1- 2 days
- Staged surgery: Your surgery will require an anterior and posterior exposures, which can be completed in a few different ways:
 - Under a single anesthesia
 - Separated by 1-2 days in the same hospitalization
 - Separated by 1-2 weeks in different hospitalization

Discharge medication

- Will prescribe opioids and muscle relaxers as needed for **8 weeks**, will wean dosing and frequency over time
 - Schedule post-op appointment with PCP if continued narcotics needs at 4 weeks post-op
 - Should develop a long-term plan with PCP / pain management physician
- No NSAIDs or steroids if possible for 3 months
- Can wean neuropathic pain medications (e.g., gabapentine, pregamalin) as instructed if neuropathic pain improved.
- Tylenol can be taken as needed, avoid doses > 4000mg daily

Activity restrictions

- General restrictions
 - Walking is encouraged to prevent blood clots and promote recovery.
 - Steps: OK if strong enough and were doing before surgery unless otherwise instructed
- Bracing
 - Will consider for osteopenia / osteoporosis, multilevel fusion, post-op axial back pain, staged surgery
 - Wear when out of bed, can remove for sleeping, shower, and eating
- Lifting / exercise restrictions
 - Post-op: Avoid lifting >10 lbs (> 5 lbs if frail), excessive low back movement
 - 2 weeks: Light aerobic exercise (stationary bike / elliptical / ambulate for exercise)
 - 6 weeks: Light weight training, ok to start physical therapy, gradual increase in lifting to < 20 lbs
 - 12 weeks: Full activity
 - 1 year: OK for manipulation / traction
- Driving restrictions
 - OK 1 week after surgery
 - Must be off narcotics and be able to perform evasive maneuvers

Return to work

- 2 weeks: Sedentary / Desk
- 6 weeks: General work
- 12 weeks: Hard manual labor

Wound healing

- Day after surgery: ok to shower
- 2 weeks after surgery: OK to submerge wound underwater

Post-op expectations and followup

Impact on preoperative symptoms

- **Low back pain**
 - Recovery tends to occur over 2-4 weeks
 - Recovery can be delayed, as the instrumented levels still move minimally until fusion occurs (typically 3-6 months)
- **Radiculopathy** - nerve root compression causing referred pain, numbness, or weakness into the extremities
 - In the lumbar spine, radiculopathy affects the legs
 - Recovery depends in part on the duration and severity of nerve compression. It may take some time before the nerve recovers and wakes up (if it recovers at all). Most patients, however, wake up from surgery with radiculopathy pain relief (80%).
 - Numbness and tingling can take weeks to months to improve.
 - Significant weakness in the arms may also take weeks or potentially months of rehabilitation and physical therapy to improve.

Time to fusion

- The rate of bone fusion is impacted by several factors including:
 - Bone quality (e.g., osteopenia, osteoporosis)
 - Tobacco use
 - General medical conditions (e.g., obesity, diabetes)
 - Advanced age
- Most patients can expect a solid fusion by 12 weeks post op.

Follow-up

- Day of discharge: Call office to schedule followup appointment
- 6 week: In person visit (NP), 2 view lumbar x-ray
- 3 mon: In person or video visit (MD), 4 view lumbar x-ray
- 6 mon: In person or video visit (MD), 4 view lumbar x-ray
- **As needed:** In person visit (MD), 4 view lumbar x-ray

When to call the office

- Call the office the day after surgery to schedule your first postoperative appointment
- The total duration of followup will depend on your surgery and progress
- **Call the office immediately with any of the following perioperative issues:**
 - Drainage or increased pain at the incision
 - Fever greater than 100.4F
 - Wound swelling
 - Swelling, pain, or tenderness in your arms or legs
 - New pain, weakness, numbness, or tingling in your arms or legs
 - Problems with bowel or bladder control