

Transforaminal lumbar interbody fusion (TLIF)

Indications

Transforaminal lumbar interbody fusion (TLIF) is a procedure to relieve nerve compression, remove disc herniations and bone spurs, and provide structural support to one or more levels of the lumbar spine. This is most often related to a condition called “lumbar spondylosis”. This can result from disc herniations or collapse, bone spur formation, joint changes (“facet arthropathy”), or some combination of those. In addition, structural instability of the lumbar spine is a distinct indication for TLIF. Symptoms related to this condition may include severe lower back pain, pain radiating to the hip/buttock area and down the legs (“sciatica”), as well as numbness, tingling, and/or weakness. Surgical treatment is considered when conservative management such as anti-inflammatory medications and physical therapy are ineffective. Most importantly, if there is persistent severe difficulty with pain, numbness, tingling, and/or weakness and there is imaging evidence of severe lumbar spondylosis, then TLIF at the affected level(s) is indicated.

Surgery description

In a transforaminal lumbar interbody fusion (TLIF) procedure, the patient is placed under general anesthesia. Neuromonitoring (nerve monitoring) is routinely performed. The patient is positioned prone (on their front) and all pressure points are padded. The lumbar area is prepped and draped in a sterile fashion. Intravenous antibiotics are given, taking care to avoid any drug allergies. Next, fluoroscopy (intraoperative X-ray) is used to localize the affected level (or levels in the case of multilevel TLIF). The procedure is then accomplished in several stages. First, the lumbar spine is accessed. Second, pedicle screws are placed into the vertebrae above and below the affected disc space(s) (one on each side at each level) for stabilization and realignment of the spine. X-rays are taken to verify excellent positioning of the screws. Third, a combination of removal of the bone over the spine, joints, and ligaments is performed to allow decompression of the lumbar spinal canal and nerve roots. This is done using the operating microscope. Fourth, a complete discectomy is performed and an expandable spacer (“cage”) is placed in the disc space and expanded to restore height to that level of the spine. Fifth, the pedicle screws are connected by rods and a combination of local bone (“autograft”) and synthetic demineralized bone matrix (DBM “allograft”) is placed along the rods to aid in fusion. The structural integrity of the spine is supported and realigned in this fashion. The hardware (spacer, screws and rods) is made of titanium and will not set off metal detectors in airports. Finally, the incision is closed in layers. Biocompatible glue (Dermabond) is placed over the skin sutures and a waterproof dressing is applied.

Postoperative care and outcome

Copious local anesthetic is placed around the incision at the end of surgery so that the patient wakes up as “numb” and thus comfortable as possible. Walking immediately is encouraged. Going up and down stairs is fine. The main thing is to avoid heavy lifting, to avoid rapid twisting, and to avoid bending at the waist. Keeping the back straight and using the knees to bend down is less likely to strain the back. Regarding dressing care, showering immediately is fine, just blot the dressing dry after each shower, take the dressing off in 1 week, and please avoid total immersion (like bath, jacuzzi, or pool) until after the sutures are removed (2 weeks).

The outcome from TLIF is generally excellent. The vast majority (80-90%) of patients have relief from the symptoms of lower back pain and nerve pain within a few weeks to a few months (and sometimes immediately). Usually, the nerve pain diminishes most rapidly, whereas there is a slower improvement in lower back pain. Often, there is a prolonged period of postoperative paraspinal muscle spasm. Muscle relaxant medications, physical therapy, massage, heat and stretching are helpful to treat muscle spasms.

While it depends on the nature of the job, most patients can go back to work in approximately two to four weeks postoperatively. At the two-week postoperative visit, we inspect the incision, remove the sutures, adjust or wean medications, and start physical therapy. It varies among patients, but usually 6-8 weeks of physical therapy are indicated to optimize neuromuscular and functional outcome. We see patients again at 3 months postoperatively to reassess outcome and need for further medications or therapy.