

# Increased risk of postop infection when surgery closely follows epidural steroid injection

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Research conducted at the University of Virginia suggests that patients may wish to take a 1 to 3 month break from lumbar epidural steroid injections (LESI) before undergoing lumbar spinal fusion surgery. Why? An increased risk of infection has been identified when LESIs are administered within 3 months prior to surgery. Full details can be found in the article "The impact of preoperative epidural injections on postoperative infection in lumbar fusion surgery" by Anuj Singla, M.D., and colleagues, published online today in the *Journal of Neurosurgery: Spine*.

Lumbar [epidural steroid injections](#) (LESI) are administered to [patients](#) with low-back pain and associated leg pain. The injection delivers corticosteroid medications to the epidural space, an area just outside the spinal sac containing the spinal cord and nerve roots. Once there, the medicine's anti-inflammatory effects reduce nerve root inflammation, local ischemia, and the pain resulting from both. LESI is a standard nonsurgical option to treat persistent and severe low-back pain and radicular leg pain (sciatica). LESI treatment is generally considered safe, although sometimes complications, such as infection, nerve damage, or bleeding, can occur. In some cases lumbar [spinal fusion surgery](#) must be performed if LESI fails to provide durable pain relief.

Lumbar spinal fusion surgery is performed to stabilize parts of the spine that, through injury or age-related degeneration, may have weakened,

shifted location, or changed shape, causing inflammation, pain, and/or reduced function. During surgery, a bone graft is used to bind two adjacent vertebrae together, eliminating painful movement in that portion of the spine.

Using the nationwide, insurance-based PearlDiver patient record database, the authors collected information on patients 65 years of age or older who had undergone a one-level or two-level lumbar spinal fusion. The search identified 88,540 patients. Of these, 1,699 patients received LESI within 1 month before surgery, 5,491 patients received the injection 1 to 3 months before surgery, and 10,493 patients received the injection 3 to 6 months before surgery; the remaining 70,857 patients did not receive LESI prior to lumbar surgery.

The researchers reviewed data on patient outcomes during the first 90 days following surgery, paying specific attention to incidences of [postoperative infection](#). They found [infection rates](#) of 3.9% in patients who underwent surgery within 1 month after LESI, 2.2% in patients who underwent surgery 1 to 3 months after LESI, and 1.3% in patients who underwent surgery 3 to 6 months after LESI. The infection rate in patients who did not receive LESI prior to surgery (the control group) was 1.5%. The differences in infection rates between both groups of patients who underwent surgery within 3 months of receiving LESI and the control group were statistically significant. There was no significance in the difference in infection rates between patients who underwent surgery 3 to 6 months after receiving LESI and the [control group](#) of patients who did not receive LESI prior to surgery.

These findings show a significant added risk of infection when LESI is administered less than 3 months before the patient undergoes lumbar fusion surgery. The risk of infection is greatest when LESI is administered within 1 month before surgery.

The importance of this study lies both in the large number of patient records reviewed and the timing of injections that were examined. Previous studies indicated that administration of LESI shortly before lumbar spinal fusion surgery may result in an increased rate of infection, but fewer patient records were reviewed and varying times of injections were not compared. In the present study, the researchers found that the incidence of infection was highest when LESI was administered within 1 month before surgery and lowest when administered 3 to 6 months before surgery. The researchers pose the possibility that the immunosuppressive effect of LESI may wear off after a specific time and no longer increase the risk of infection. They admit that a very brief time between LESI and surgery could also indicate that patients had more severe symptoms indicating a greater disability and longer operative time, which could lead to a higher risk of infection. The researchers encourage future in-depth studies.

The researchers recommend that their findings be included when advising patients who have received LESI on the timing of future lumbar fusion surgery. They conclude, "Although the overall infection rate remains low despite the use of preoperative LESIs, increasing the time interval to more than 3 months from injections to surgery may help to reduce this increased risk."

When asked about the importance of this study, Dr. Singla responded, "Patients tend to undergo LESI routinely before surgery, which was always considered a risk for infection because of its steroidal content. The results of this study provide a clear association between the timing of the injections and the risk of [infection](#) after subsequent [spinal fusion surgery](#)."

**More information:** Singla A, Yang S, Werner BC, Cancienne JM, Nourbakhsh A, Shimer AL, Hassanzadeh H, Shen FH: The impact of preoperative epidural injections on postoperative infection in lumbar

fusion surgery, *Journal of Neurosurgery: Spine*, published today online, ahead of print, March 14, 2017; [DOI: 10.3171/2016.9.SPINE16484](https://doi.org/10.3171/2016.9.SPINE16484)

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