Open Thoracic Spinal Cord Stimulator Revision

Shanthan Chowdary Challa, Grace Kim, Evan Dunn, Justin H Chung, Rowen Shoshin Lin, Kevin Mo, Daniel D Lee, John Thalgott

Spinal cord stimulators (SCS) are used to manage chronic neuropathic pain by delivering low-amplitude electrical signals to the dorsal columns of the spinal cord, disrupting pain transmission to the brain. Paddle leads, placed via laminotomy, offer superior stability and more targeted coverage than percutaneous leads. While revision surgeries are sometimes required due to infection, hardware malfunction, or inadequate pain relief, reimplantation at the same epidural level is typically avoided because of scar tissue formation, altered anatomy, and increased surgical risk. However, in select cases, careful open revision at the original site may offer the best therapeutic outcome. This video demonstrates the technique for open thoracic SCS revision at the original implant level following prior explantation due to infection. The procedure highlights techniques to minimize complications such as spinal cord injury, epidural hematoma, lead migration, and infection. This case demonstrates that, with appropriate patient selection and surgical care, open thoracic spinal cord stimulator revision at the same level is not only feasible but can restore effective pain coverage. The video serves as a step-by-step guide for spine surgeons performing similar complex revisions.