Implantation of spinal cord stimulator

Indications

Spinal cord stimulation (SCS) is a form of “neuromodulation” that is designed to treat pain that is intractable to other forms of treatment. In particular, “neuropathic pain”—pain arising from injury to or chronic inflammation of nerves—is a key indication for neuromodulation and SCS in particular. Also, patients who have lumbar “postlaminectomy syndrome”—pain in the lower back and/or down the legs after multiple lumbar spine surgeries—are excellent candidates for SCS. An initial SCS trial is performed by the patient’s pain management doctor, and patients who have at least 50% improvement in their pain following the SCS trial are considered good candidates for permanent SCS placement.

Surgery description

For SCS implantation, 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 thoracic area down to the gluteal region is prepped and draped in a sterile fashion. Next, fluoroscopy (intraoperative X-ray) is used to image the lower thoracic area of the spine. The location of the incision is chosen carefully in order to place the SCS electrode over the effective location of the SCS trial. A small (minimally-invasive) vertical incision is made and the operating microscope is brought in for careful microdissection. The lower thoracic spine is exposed and a small opening (laminectomy) is performed to allow access to the “epidural” space above the spinal cord. The SCS electrode is then placed, and X-rays are taken to confirm the location. Next, the gluteal incision (where the SCS battery will be placed) is opened (this can be on the right or left side based on patient preference). The ends of the SCS electrode are connected underneath the skin to the SCS battery and the impedance (electrical connection) is carefully tested. Next, both incisions are closed in layers. Biocompatible glue (Dermabond) is placed over the skin sutures and waterproof dressings are applied.

Postoperative care and outcome

Copious local anesthetic is placed around the incisions at the end of surgery so that the patient wakes up as “numb” and thus as comfortable as possible. Walking immediately is encouraged. Going up and down stairs is fine. The main thing is to avoid heavy lifting and rapid twisting.

The outcome from SCS is dependent on the response to the original SCS trial. Since there is better “coverage” of the anatomy of the spine with the permanent “paddle” electrodes rather than the temporary “percutaneous” electrodes, there is greater ability for the pain management doctor to adjust the stimulation to reduce the pain. Therefore, very often the response to permanent SCS is better than the response to the SCS trial.

The SCS battery can be replaced (in several years, depending on settings) through a simple outpatient procedure.

While it depends on the nature of the job, most patients can go back to work in approximately one week postoperatively. At the two-week postoperative visit, we inspect the incisions and remove the sutures. The patient then continues to follow up with the pain management clinic for SCS programming.