

How Spinal Cord Stimulation Works

1. **Electrode Placement:** Electrodes are implanted in the epidural space of the spinal cord.
2. **Pulse Generator:** A small device called a pulse generator or neurostimulator is implanted under the skin, usually in the abdomen or buttocks.
3. **Electrical Stimulation:** The pulse generator sends mild electrical impulses through the electrodes to the spinal cord, disrupting pain signals before they reach the brain.

Indications for Spinal Cord Stimulation

SCS is used to treat various chronic pain conditions, including:

- **Failed Back Surgery Syndrome (FBSS):** Persistent pain after spinal surgery.
- **Complex Regional Pain Syndrome (CRPS):** A chronic pain condition affecting limbs.
- **Peripheral Neuropathy:** Pain from nerve damage, such as diabetic neuropathy.
- **Arachnoiditis:** Inflammation of the arachnoid membrane surrounding the spinal cord.
- **Angina:** Severe chest pain due to coronary artery disease (when not amenable to other treatments).
- **Painful Peripheral Vascular Disease:** Pain due to poor blood flow in the limbs.

Procedure for Spinal Cord Stimulation

Trial Phase

1. **Assessment:** Evaluation by a pain specialist to determine if the patient is a candidate for SCS.
2. **Temporary Trial:** A temporary SCS system is placed to test the effectiveness of the stimulation. Electrodes are inserted through the skin and connected to an external pulse generator.
3. **Trial Evaluation:** The patient uses the trial system for about 3-7 days to assess pain relief and any improvement in function.

Permanent Implantation

1. **Surgery:** If the trial is successful, a surgical procedure is performed to implant the permanent electrodes and pulse generator.

2. **Placement:** The permanent electrodes are placed in the epidural space, and the pulse generator is implanted under the skin.
3. **Programming:** The device is programmed to deliver optimal stimulation patterns based on the patient's pain relief needs. Settings can be adjusted as needed.

Benefits of Spinal Cord Stimulation

- **Significant Pain Relief:** Many patients experience substantial reductions in pain.
- **Reduced Medication Use:** Patients often reduce their reliance on pain medications.
- **Improved Functionality:** Enhanced ability to perform daily activities.
- **Minimally Invasive:** Less invasive compared to other surgical options.
- **Reversible:** The system can be removed if it becomes ineffective or causes complications.

Risks and Considerations

- **Surgical Risks:** Infection, bleeding, or nerve damage at the implantation site.
- **Device-Related Issues:** Equipment malfunction, lead migration (movement of the electrodes), or battery failure.
- **Side Effects:** Tingling or jolting sensation, discomfort at the implantation site.
- **Cost and Maintenance:** The device can be expensive, and the battery may need replacement every few years.

Post-Procedure Care

- **Follow-Up Visits:** Regular appointments with the pain specialist to monitor and adjust the device settings.
- **Activity Restrictions:** Temporary limitations on certain activities to allow proper healing and stabilization of the device.
- **Monitoring for Complications:** Watching for signs of infection, device malfunction, or other issues.

Conclusion

Spinal cord stimulation is a valuable treatment option for patients with chronic pain that have not responded to other therapies. It offers significant pain relief, improved functionality, and a potential reduction in medication use. If you are suffering from chronic pain and considering SCS, consult with a pain management specialist to determine if this treatment is appropriate for your condition.