Spinal Cord Stimulator

see also Wireless spinal cord stimulation.

A Spinal Cord Stimulator (SCS) or Dorsal Column Stimulator (DCS) is a type of implantable neuromodulation device (sometimes called a “pain pacemaker”) that is used to send electrical signals to select areas of the spinal cord (dorsal columns) for the treatment of certain pain conditions. SCS is a consideration for people who have a pain condition that has not responded to more conservative therapy.

In the United States Failed Back Surgery Syndrome is the most common use while in Europe the most common use is peripheral ischemia.

As of 2014 the FDA had approved SCS as a treatment for failed back surgery syndrome (FBSS), chronic pain, Complex Regional Pain Syndrome, Intractable angina, as well as visceral abdominal and perineal pain[1] and pain in the extremities from nerve damage.

Cylindrical-type leads can be implanted percutaneously. In contrast, paddle leads (lamitrode) require more invasive surgery (i.e., laminotomy or laminectomy) for placement into the epidural space, thereby offering several advantages over percutaneous leads (octrode), including less lead migration and better paresthesia coverage.

MIS techniques for spinal cord stimulation (SCS) surgical paddle implantation is associated with less perioperative morbidity and surgical site back pain, shorter external neurostimulator trial duration, and long-term device stability benefits [1)].

Precision Spectra

Precision

CoverEdge

see Boston Scientific.

Case series

A total of 47 patients who underwent thoracic SCS for first time were retrospectively studied through chart review. These patients were categorized into two groups, with Group I patients taking a morphine equivalent dose (MED) of less than 100 mg and Group II patients taking an MED of more than 100 mg preoperatively.

Group I had 22 patients, and Group II had 25 patients. The average age in Group I was 53.45 years, and the average age in Group II was 50.16 years. There were seven males (38%) and 15 females (62%) in Group I, and in Group II there were 11 males (44%) and 14 females (56%). The average LOS in both groups was two days. In Group I, there were 16 patients (73%) who had an LOS of one day and

six patients (27%) who had an LOS of more than one day, and in Group II there were 11 patients (44%) who had an LOS of less than one day and 14 patients (56%) who had an LOS of more than one day, with a P value of 0.047. On univariate analysis, postoperative fever and PCA usage correlated with longer hospital stay, with a P value of < 0.001.

Patients on high-dose chronic opioid therapy, defined as an MED greater than 100 mg, who undergo thoracic spinal cord stimulator surgery tend to have longer postoperative hospital stays compared with patients on lower-dose opioid therapy [2].

1)
Shamji MF, Paul D, Shcharinsky A. Minimally-invasive Placement of Spinal Cord Stimulator Paddle Electrodes is Associated with Improved Perioperative and Long-term Experience among Neuropathic Pain Patients. Spine (Phila Pa 1976). 2016 Dec 16. doi: 10.1097/BRS.0000000000002050. [Epub ahead of print] PubMed PMID: 27997509.
2)
Madineni RA, Smith CM, Clark SW, Boorman DW, Wu C, Wang D, Harrop JS, Sharan AD. Effect of Preoperative Opioid Dosage on Postoperative Period After Thoracic Spinal Cord Stimulator Surgery. Pain Med. 2017 Nov 16. doi: 10.1093/pm/pnx250. [Epub ahead of print] PubMed PMID: 29155958.