

## Liste-28

### **HARDWARE FAILURES IN SPINAL CORD STIMULATION FOR FAILED BACK SURGERY SYNDROME**

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Purpose: Spinal cord stimulation (SCS) is an efficient means for treatment of the chronic pain condition known as failed back surgery syndrome (FBSS). Although the devices and the implantation techniques are well established and technically rather sophisticated, there are complications during the course of the treatment caused by hardware failures. This study was aimed at identifying the causes and the most frequent types of hardware failures in FBSS patients.

Methods: In a retrospective study, 40 FBSS patients successfully applying single-lead X-trel device SCS for 6 to 54 months were investigated. Causes of stimulation failure and number of hospitalizations required for surgical corrections of the SCS system were analysed. Hardware failures were considered only, along with parameters such as elapsed time prior to occurrence of the failure, frequency of failures, site of failures, and overall time of SCS usage.

Results: In the patients studied, a total number of 14 surgical corrections of the hardware were carried out. In 7 cases there was a single corrective procedure, in 2 additional cases there were 2 sessions for correction of hardware failures. The most often encountered type of failure was stimulation lead breakage or disruption of insulation, leading to short-circuiting and partial or total dysfunction (n=9). Lead breakage occurred most often in the distal 1/3, and disruption of insulation in the proximal 1/3 of the lead. Second to lead failure was receiver failure due to insulation leakage at the connection sites (n=2). In one additional case, disconnection of the extension cable at the lead-cable junction due to loosening of the fixation screws caused dysfunction of the system. After replacement of the broken hardware, all patients continued to use the SCS system.

Conclusion: In our experience, although the X-trel external electric stimulation system has many advantages over other available SCS devices, especially in terms of reliability and ease of implantation and usage, it seems to be prone mainly to lead failures and less to receiver and cable failures.