Assessing the Impact of Positional Changes and Movements in Spinal Cord Stimulation Patients

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The electrical field distribution patterns of spinal cord stimulation are affected by patient movement and positional changes due to increases and decreases in the layer of CSF between the electrode and the spinal cord (Barolat, 1998). These physiological changes during movement can alter patient perception of their stimulation, which can cause painful or ineffective stimulation (North et al., 1991). Therefore, the impact of positional changes and movement on stimulation perception was analyzed from an international registry.

One hundred eleven patients who were enrolled in a prospective, multicenter, international registry were asked to rate their satisfaction with their therapy and the effect of stimulation changes during specific positional changes and movements in the time since their last visit.

Questionnaires were completed at 6 months post-implant.

Patients rated their satisfaction with their SCS therapy as “Very Satisfied”, “Satisfied”, “Neither Satisfied nor Dissatisfied”, “Dissatisfied”, or “Very Dissatisfied.”

Patients rated the effect of their stimulation changes during positional changes and movements as “No Discomfort”, “Minor Discomfort” or “Extreme Discomfort”. If the patient felt discomfort, they were given a choice of “Seldom” or “Frequent”.


In 107 of 111 patients evaluated, changes in stimulation due to movement did not have an impact on their satisfaction with SCS.

In the 4 patients that reported dissatisfaction with SCS and “Frequent Extreme Discomfort”, changes in stimulation due to movement appears to be only one of several factors that contributed to their outcome.