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Commentary: Impact of Spinal Cord Stimulation on Opioid Dose Reduction: A Nationwide Analysis

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The authors¹ have used a large, granular database to examine opioid use before and after successful spinal cord stimulation (SCS) belonging to the period 2010 to 2015, before there was wide recognition of the opioid epidemic.² On average, patients who underwent SCS were able to significantly reduce opioid use 1 yr after implant. However, patients with long-term, higher preoperative opioid use and a higher body mass index were less likely to have reduced opioid use.

As with any analysis that includes private insurers, people who lose their insurance over the time period examined are not included, potentially leading to bias, since patients who did not do well might be more likely to lose their insurance over the year after surgery. Since this potentially represented 26% of the patient population (Figure 1¹), this bias should not be underestimated. In addition, patients who had their systems explanted within a year (5%) were excluded, so these data cannot be used to counsel patients who are considering SCS, since it was not an intent-to-treat analysis.

In addition, the authors assume that similar patients who do not undergo SCS placement would have no reduction in their opioid use without SCS. This might not be the case. This was the initial assumption for Kemler and colleagues' paper on SCS for complex regional pain syndrome (CRPS), resulting in a publication in *The New England Journal of Medicine*.³ However, the long-term results showed no difference between the control and the stimulation groups.⁴ The natural history of CRPS with aggressive physical therapy was better than anyone had thought. The opioid reduction seen in this paper could also be a result of patients moving from pain management by their primary care providers to more expert pain practitioners

who perform SCS and would be expected to be more focused on opioid reduction.

I disagree with the authors that they could not obtain a matched cohort in this database as a comparison due to the lack of granularity of the data. While it would have limitations, patients with similar demographics, diagnostic codes, opioid-use patterns, and comorbidities could be a useful comparison group.

The authors are to be congratulated for this important early step in showing the possibility of SCS in reducing opioid use, especially if implemented before patients progress to higher dosing. However, there is more work to be done to prove causality.

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