



Cost-Effectiveness of Spinal Cord Stimulation (SCS) for Chronic Neuropathic Pain

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Background

While published analyses of clinical outcomes have been steadily increasing as well, the availability of published cost-effectiveness analyses remains relatively scarce.

Methods

Study design: Retrospective chart review of clinical outcomes, from our own patient charts.

Duration: Previous 4 year period.

Inclusion criteria: Subjects in whom chronic neuropathic pain of the trunk and/or limbs was treated with the Boston Scientific Precision SCS and one or two Linear™ 8-contact leads, placed epidurally to achieve paresthesia concordance of their primary area of neuropathic pain.

Exclusion criteria: SCS trial failure or >50% missing data.

Number of subjects: 46 (23 male, 23 female)

Clinical endpoint: Patient-reported pain rating on a visual analog scale (VAS) and direct costs before and after SCS implant procedure.

Additional data: Age, gender, diagnosis, duration of implant.

Analyses: Cost-effectiveness was assessed by estimating effectiveness in terms of VAS pain reduction. The incremental cost-effectiveness ratio (ICER) represents the additional cost incurred by the payer to obtain a reduction of 1 point in the VAS score with intervention (SCS) compared to Standard Medical Care (SMC).



Results

A total of 46 patients met our inclusion and exclusion criteria.

- Mean subject age: 55.3±10.6 years
- Diagnoses: FBSS/PLS, CRPS, neuropathy
- Mean implant duration: 19.5 ± 19.0 months

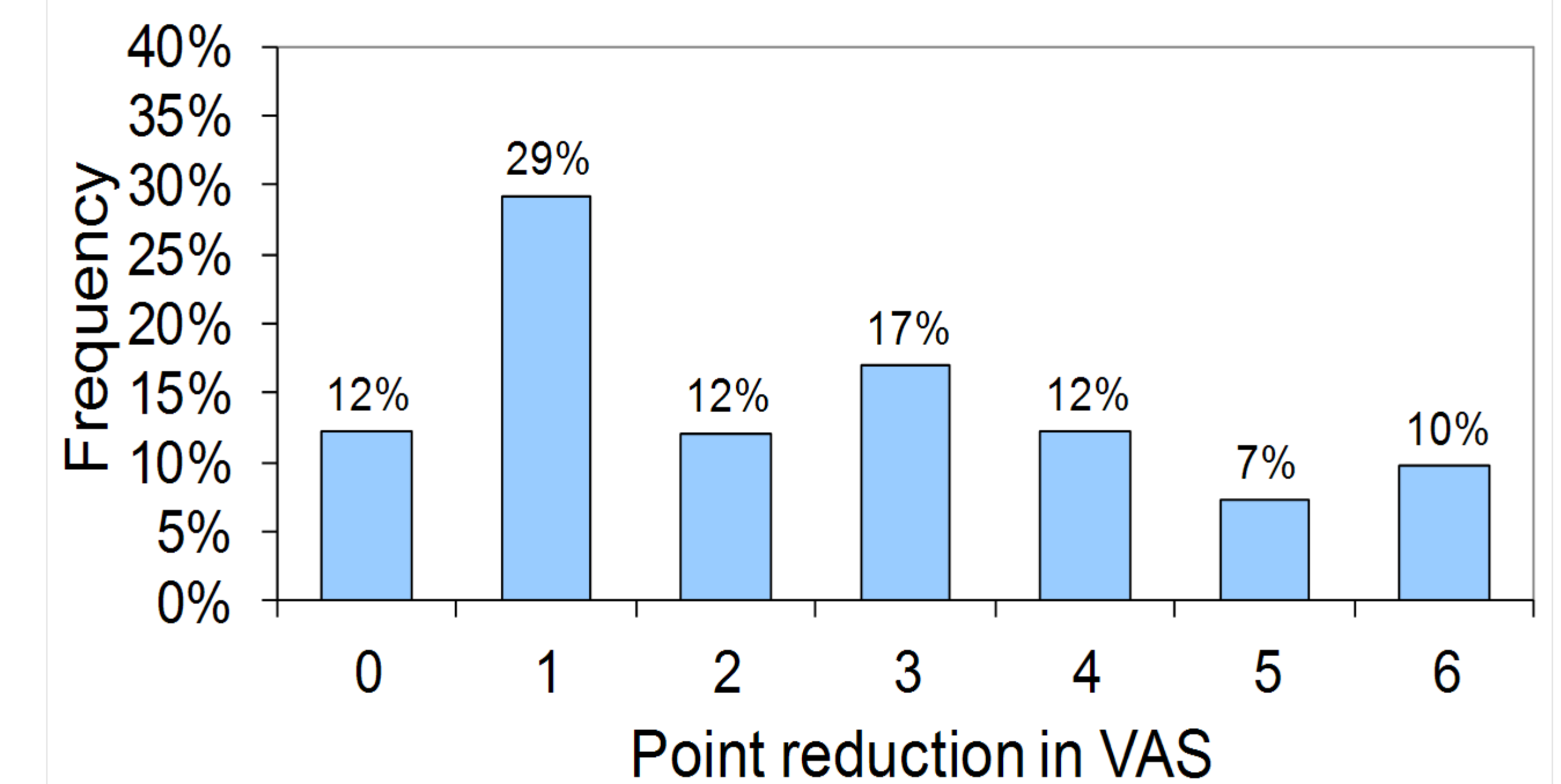
Results

The median pain reduction in VAS from pre- to post-procedure was 3.0 points. This improvement in pain score is both clinically significant and statistically significant ($P < 0.0001$).

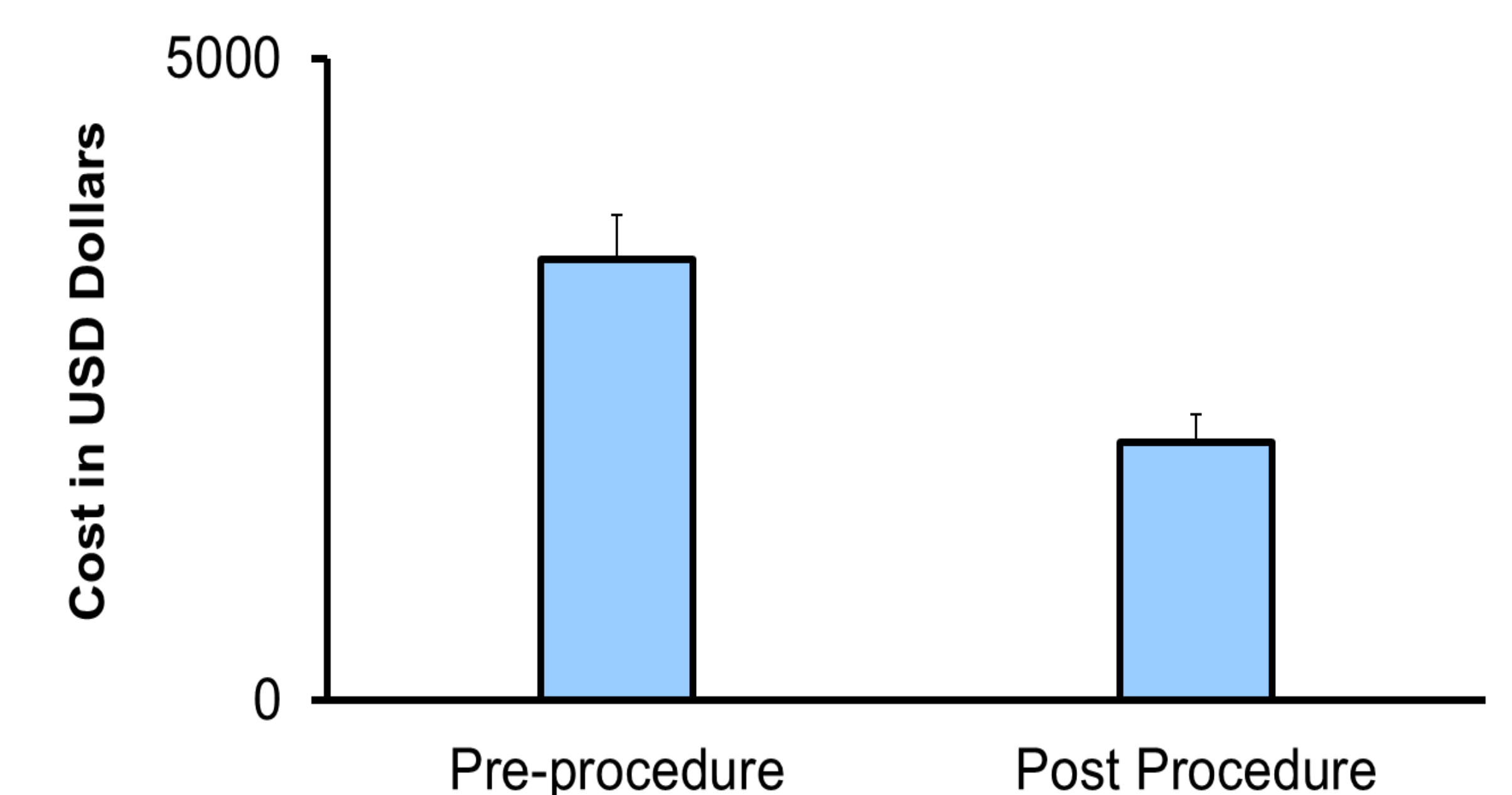
The median direct costs prior to SCS were \$3,438/year, compared to \$2,012/year post-permanent implant procedure, adjusted for the duration of follow-up.

This annual cost reduction of approximately 42% is statistically significant ($P = 0.0007$). With a mean per-patient SCS cost of \$31,530, the ICER of SCS was \$11,250 compared to SMC.

Distribution of VAS Improvement



Annual Median Cost in US Dollars



Conclusions

Our study suggests that SCS provides both clinically significant and cost-effective reduction in pain, when compared to SMC over the patient's lifetime.

References

Kumar, K., Malik, S., and Demeria, D. (2002). "Treatment of chronic pain with spinal cord stimulation versus alternative therapies: cost-effectiveness analysis". *Neurosurgery*, 51(1), 106–115.

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Results of clinical studies may not necessarily be indicative of clinical performance.