

Background

- Spinal cord stimulation (SCS) for pain relief and improved quality of life is well established in chronic low back pain populations.¹⁻³
- While, several studies show pain relief in SCS for diabetic peripheral neuropathy (DPN)⁴there is a paucity of evidence surrounding correlation between SCS and other diabetic-related (DR) complications.

Objective

- To examine DR complications among DPN patients with SCS implant versus those continuing conventional medical(CMM) management in the U.S. Medicare population.

Methods

- Medicare Claims Standard Analytical Files (SAFs) were used to identify patients with chronic pain diagnoses implanted with SCS (first permanent SCS date = index date) or those without SCS (randomly assigned index date matching the distribution of the index dates of the SCS cohort) from 1/1/2017 to 3/31/2021.
- SCS cohort matched 1:3 to non-SCS cohort using propensity score matching based on age, gender, region, Charlson Comorbidity Index, pain type, number of treatments and healthcare visits due to pain.
- Compared DR complications and treatments within 2 years post-index among matched SCS vs non-SCS patients.

Summary of Results

- PDN patients treated with SCS had lower rates of diabetic foot ulcer (6.4% vs 8.9%, p<0.001), diabetic retinopathy (4.8% vs 6.9%, p<0.001), and diabetic nephropathy (6.8% vs 8.1%, p = 0.021) compared to matched non-SCS controls.
- Rate of intervention for foot ulcer (debridement or skin graft) and nephropathy (hemodialysis or renal transplantation) was lower in the SCS cohort (2.9% vs 4.1%, p=0.003; 0.6% vs 1.0%, p=0.050, respectively, shown in Table 2).

Table 2. Diabetic-Related Complications within 2 Years Post-Index	Matched SCS		Matched Non-SCS Control		P-value
N (total number of patients)	N= 2,981		N= 8,943		
Diabetic-related complications (N, %)					
Diabetic foot ulcer	191	6.4%	800	8.9%	<0.0001
Diabetic retinopathy	144	4.8%	613	6.9%	<0.0001
Diabetic nephropathy	203	6.8%	726	8.1%	0.021
Diabetic polyneuropathy	1,347	45.2%	3,891	43.5%	0.110
Diabetic mononeuropathy	46	1.5%	136	1.5%	0.931
Diabetic-related complication surgical treatments (N, %)					
Debridement or skin graft for foot ulcer	86	2.9%	366	4.1%	0.003
Hemodialysis or renal transplantation for nephropathy	18	0.6%	89	1.0%	0.050
Nerve conduction or electromyography for polyneuropathy	52	1.7%	183	2.0%	0.304

SCS: spinal cord stimulation; The non-SCS controls were on conventional medical management

Conclusions

- This retrospective nationwide analysis found among chronic pain patients with DPN, SCS patients had lower rates of complications including foot ulcer, retinopathy, and nephropathy compared to non-SCS patients.
- Further studies***

References

- Lamer TJ, et al. Spinal Stimulation for the Treatment of Intractable Spine and Limb Pain: A Systematic Review of RCTs and Meta-Analysis. Mayo Clin Proc. 2019;94(8):1475-1487.
- Pollard EM, et al. The effect of spinal cord stimulation on pain medication reduction in intractable spine and limb pain: a systematic review of randomized controlled trials and meta-analysis. J Pain Res. 2019;12:1311-1324.
- Farber SH, et al. Long-term Cost Utility of Spinal Cord Stimulation in Patients with Failed Back Surgery Syndrome. Pain Physician. 2017;20(6):E797-E805.
- Petersen EA, et al. Effect of High-frequency (10-kHz) Spinal Cord Stimulation in Patients With Painful Diabetic Neuropathy: A Randomized Clinical Trial. JAMA Neurol. 2021;78(6):687-698.