

COMMENTARY

The hidden magic of hypoglossal nerve stimulation therapy: organizing the sleep surgery research community

Commentary on Suurna MV, Jacobowitz O, Chang J, et al. Improving outcomes of hypoglossal nerve stimulation therapy: current practice, future directions and research gaps. Proceedings of the 2019 International Sleep Surgery Society Research Forum. *J Clin Sleep Med*. 2021;17(12):2477–2487. doi:10.5664/jcsm.9542

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Hypoglossal nerve stimulation (HGNS) is a Food and Drug Administration–approved treatment for positive airway pressure–intolerant patients with moderate–severe obstruction sleep apnea. The pivotal Stimulation Therapy for Apnea Reduction (STAR) trial demonstrated a 66% response rate (apnea-hypopnea index decrease of 50% and to < 20 events/h).¹ Despite upgrades in hardware, improvements in implantation technique, and enhanced knowledge of device adjustments, large postmarket studies have demonstrated modest improvements in overall response rates.²

The International Surgical Sleep Society held its last in-person meeting in May 2019 in New York, NY. Over the course of the 3-day meeting, 3 expert panels were convened in order to improve HGNS therapy outcomes: current evidence for HGNS, anatomic and clinical considerations for HGNS therapy optimization, and individual factors in HGNS management. In this issue of the *Journal of Clinical Sleep Medicine*, Suurna et al report on the proceedings from the 2019 HGNS research forum.¹ The manuscript provides a detailed account of the panel discussions, concluding with a list of research topics borne from the stated evidence gaps.

While the content of the manuscript provides valuable information, the context of this manuscript merits further attention. The ISSS was founded in 2006 in order to bring together the often solo-practicing sleep surgeons around the world to share clinical experiences as well as promote collaborative research efforts. The conference sessions historically revolved around the following procedures: drug-induced sleep endoscopy, otolaryngology surgeries (eg, nasal, soft palate, and tongue base), or maxillofacial surgeries (eg, maxillo-mandibular advancement). In terms of collaborative research investigation, all the above-mentioned procedures bear significant limitations. Drug-induced sleep endoscopy presents immense challenges related to fluctuations in sedation depth and the subjective nature of clinical endpoints.² The otolaryngology surgeries present inherent variation due to patient anatomy and surgical technique,

thereby generating nonstandardized surgical interventions. Finally, despite the quantifiable, bony manipulations of skeletal surgeries, maxillofacial surgeons represent a small subset of attendees at International Surgical Sleep Society meetings.

HGNS, by contrast, represents an entirely novel approach for the sleep surgeon, ideally suited for collaborative research for sleep surgeons (and sleep physicians). First, the surgical technique for Inspire, the Food and Drug Administration–approved HGNS device, has become well standardized, with intraoperative testing of both tongue motion and respiratory sensation.³ Second, the surgery is inclusive, performed by general otolaryngologists and maxillofacial surgeons alike across several continents. Moreover, the device titration parallels that of positive airway pressure, engendering partnership with sleep physicians. Third, unlike traditional surgeries, the implanted medical device enables manipulation of treatment settings. The ability to modify therapy settings yields novel opportunities to examine cause-effect, vis-a-vis sham-controlled trial designs.^{4,5} Finally, the presence of industry support affords clinical research resources to engage both private and academic institutions.

In summary, as Suurna et al¹ have demonstrated, HGNS provides a highly sought-after research focus for the international sleep surgery community. While this therapy has repeatedly shown benefit to patients with sleep apnea, another advantage appears to have conveniently unfolded for the ranks of sleep surgeons. The long-awaited prospect of conducting rigorous, high-impact, multicenter trials—with or without the responsible partnership with industry—has never been closer.

CITATION

Dedhia RC. The hidden magic of hypoglossal nerve stimulation therapy: organizing the sleep surgery research community. *J Clin Sleep Med*. 2021;17(12):2353–2354.

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