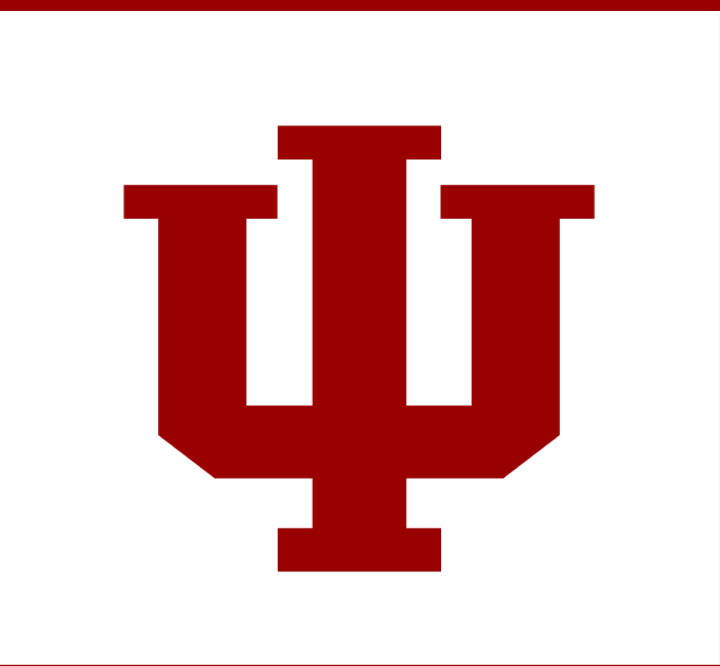




Investigating peripheral nerve stimulation as a tool for modulating non-radicular low back pain: a case series

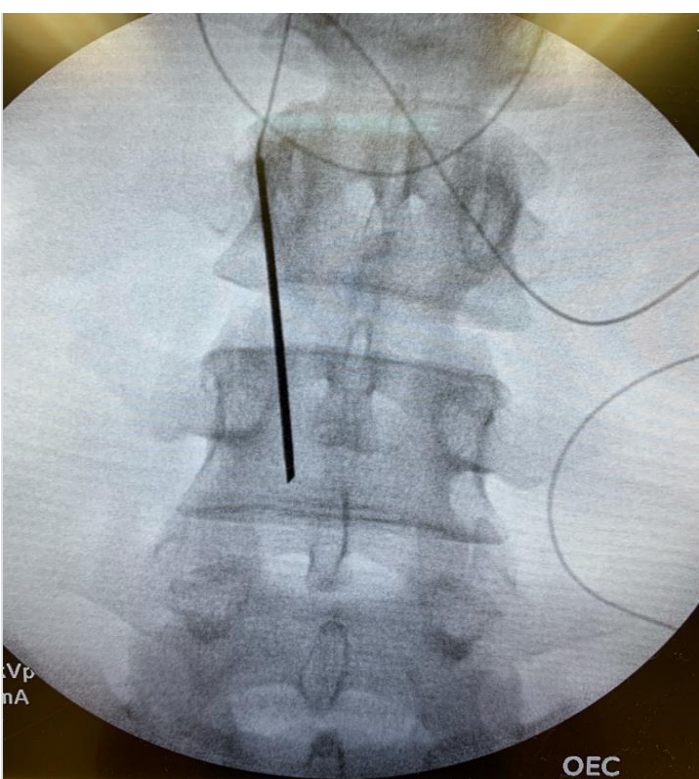
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Introduction

- Low back pain is the leading cause of disability globally. Despite diverse treatments, many patients with non-radicular pain experience limited relief.
- Peripheral nerve stimulation (PNS) has emerged as a novel treatment
 - delivers targeted electrical impulses via an implanted lead to a specific nerve.



- Research specific to PNS use in non-radicular lumbar pain remains limited.
- This study aims to understand how PNS in these patients impacts pain relief and functional outcomes.

Materials & Methods

- A retrospective case series performed on 22 patients with low back pain from lumbar spondylosis.
- Patients had PNS implantation and explanation between May 2023-June 2025.
- Collected reports of pain levels, pain relief, quality of life (QoL), physical function, and sleep using Patient Global Impression of Change (PGIC) validated instruments.

Patient Cohort

All 25 patients in this case series are individuals diagnosed with intractable non-radicular low back pain with a diagnosis of lumbar spondylosis. Many patients have additional diagnoses, such as lumbar facet arthropathy, lumbar radiculopathy, lumbar stenosis, and cluneal neuralgia.

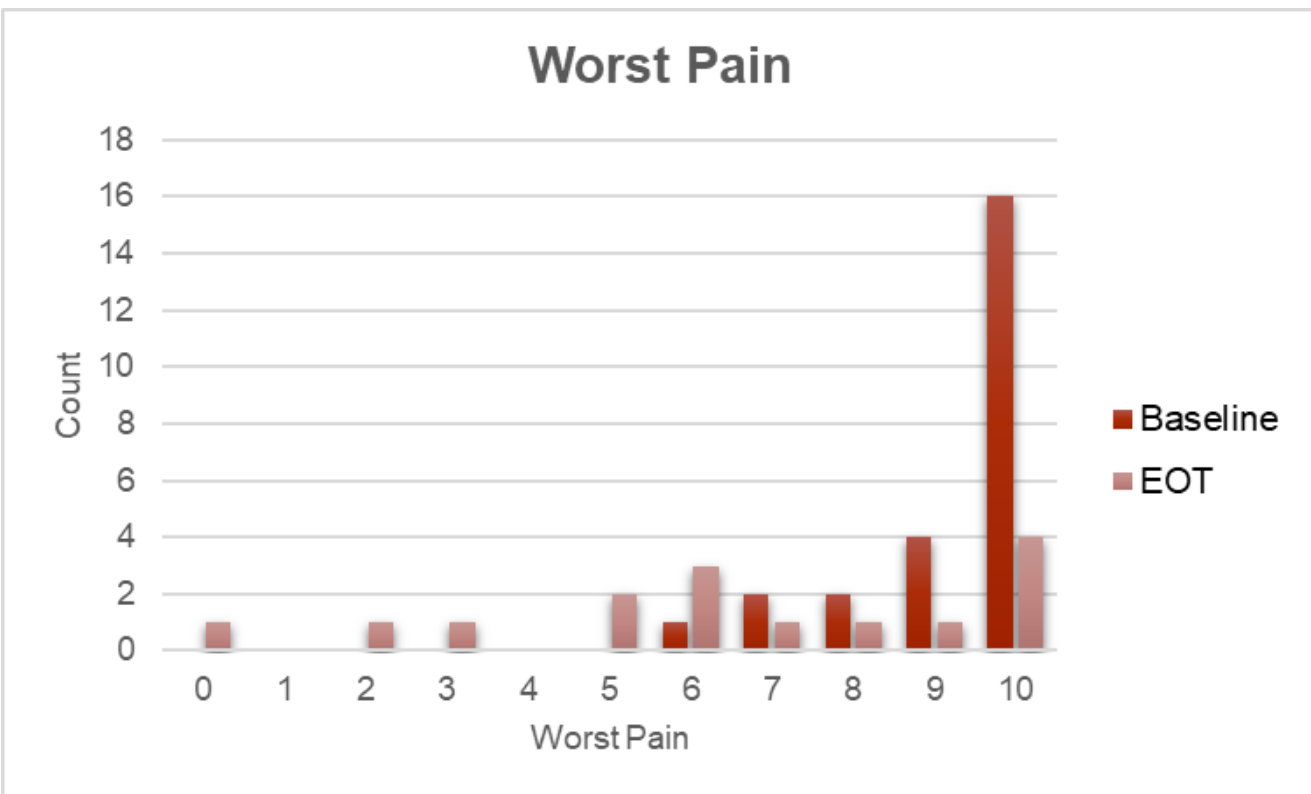
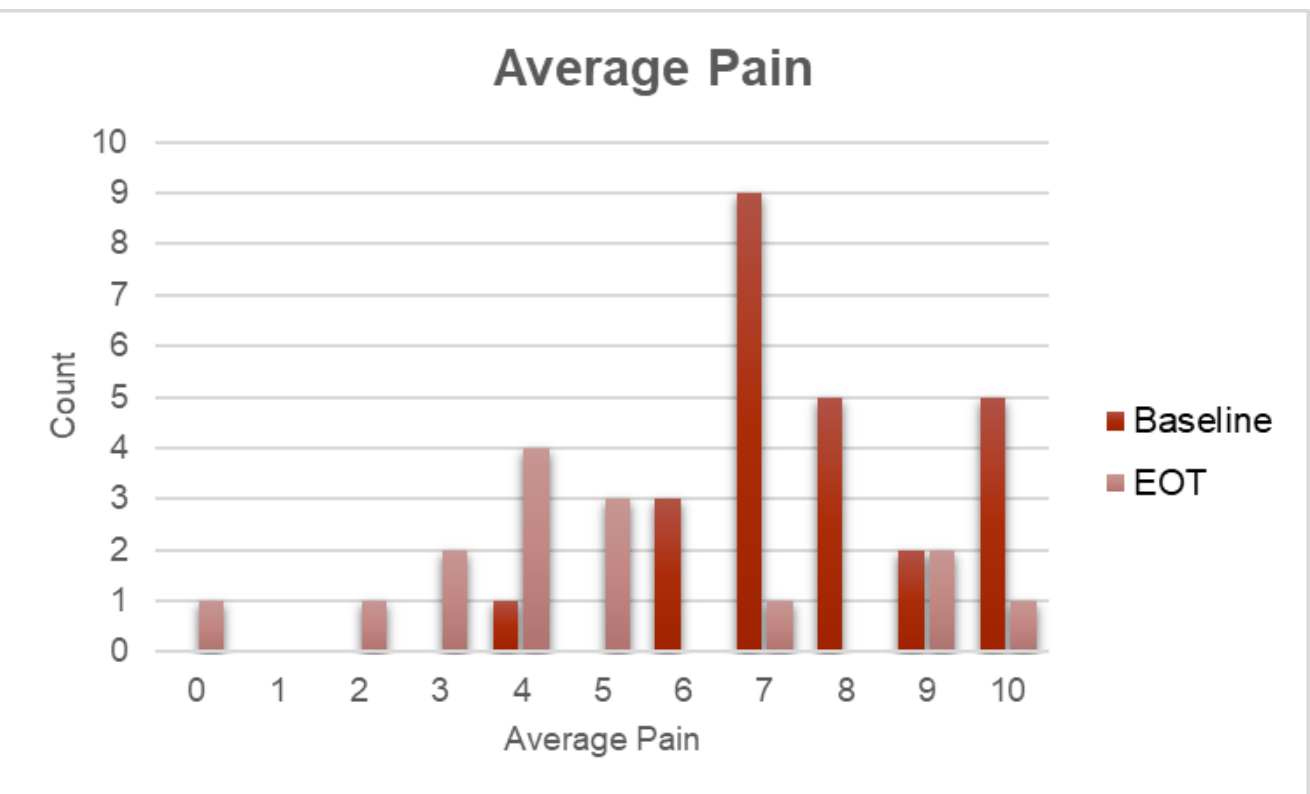
Average Patient Age (years)	Standard Deviation Patient Age (years)	Age Range (years)	Number Female	Number Male
63.08	16.58	21-89	18	7

Table 1. Patient cohort of PNS implantation from May 2023-June 2025 at IUH Senate Surgery Center.

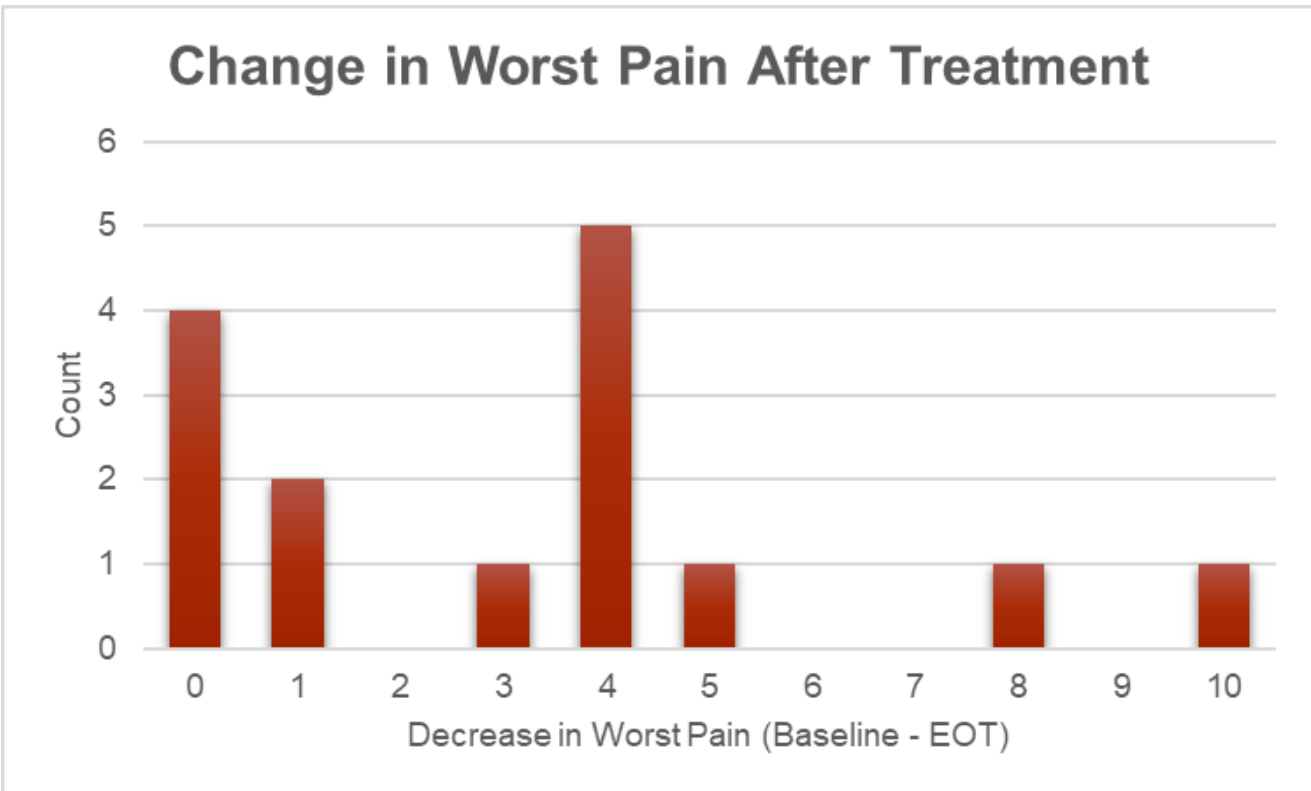
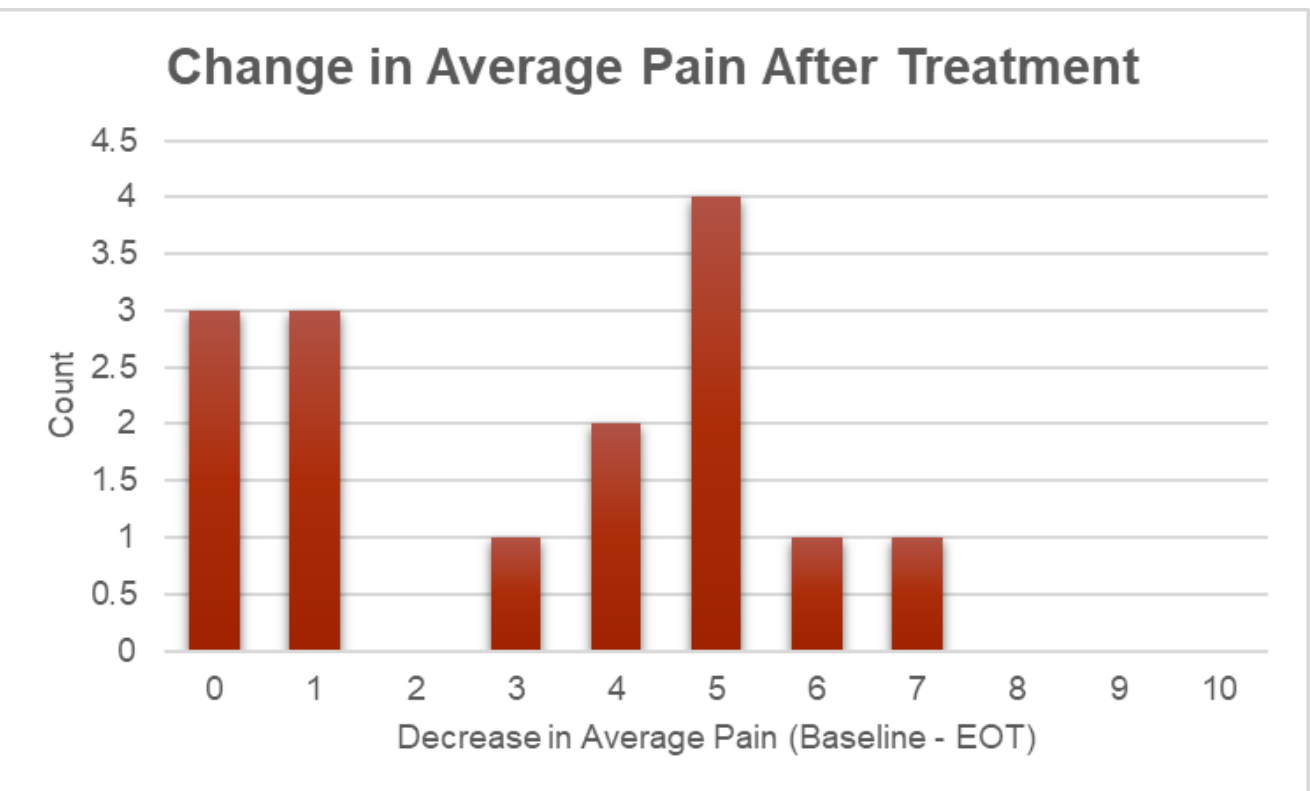
Results

	Success With PNS	≥ 30% Pain Relief	≥ 50% Pain Relief	Improvement in QoL	Improvement in Physical Function	Improvement in Sleep
Sample Size	15	14	14	12	13	6
Percent of Sample	60%	57%	50%	58%	62%	50%

Table 2. Clinical Outcomes in PNS Treatment for Lumbar Spondylosis. Success with PNS measured by ≥50% pain relief and/or PGIC QoL or Physical Function ≥ minimally improved. Improvement in QoL, Physical Function, and Sleep measured by ≥minimally improved by PGIC questionnaires.



Graphs 1 and 2 (above). Patient-reported average daily pain (left) and worst pain (right) before treatment (baseline, n=25) and at end of treatment (EOT, n=15) on a scale of 0 (no pain) to 10 (worst pain imaginable).



Graphs 3 and 4 (above). Changes in patient-reported average daily pain (left, n=15) and worst pain (right, n=15) between values before treatment (baseline) and end of treatment (EOT) on a scale of 0 (no pain) to 10 (worst pain imaginable).

Discussion / Conclusion

As demonstrated by the results of this case series, PNS is a promising treatment for individuals experiencing back pain within the context of non-radicular chronic pain causes such as lumbar spondylosis. While this study did rely on a small cohort of patients, the results demonstrated improvements in pain relief, quality of life, physical function, and sleep in over 50% of patients. In many patients, this was a last-resort treatment following months to years of alternate pain modulation therapies such as physical therapy, joint injections, surgical procedures, and opioid therapy. As such, with continued developments in PNS therapy, it has promise to become a front-line therapy for modulating pain, quality of life, physical function, and sleep in patients with intractable non-radicular low back pain.

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