

Percutaneous 60-Day Peripheral Nerve Stimulation to treat chronic knee pain: Results from a multi-center, retrospective chart review

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Objective

- Knee pain impacts approximately 25% of adults and adversely affects function and mobility, and pain relief can enable rehabilitation and functional recovery [1].
- Conventional pain treatment options often lack sustained efficacy and can produce unwanted side effects [2, 3].
- A recent double-blind randomized controlled trial found Percutaneous 60-Day Peripheral Nerve Stimulation (PNS) can reduce knee pain and improve function [4]. The present study evaluates real world experience using the same system.

Study: IRB-approved retrospective review of multiple centers' experience using Percutaneous 60-Day PNS to treat chronic knee pain.

Methods

- Treatment with Percutaneous 60-Day PNS device with lead(s) connected to body-worn external pulse generator.
- Leads removed after end of treatment (typically 60 days).

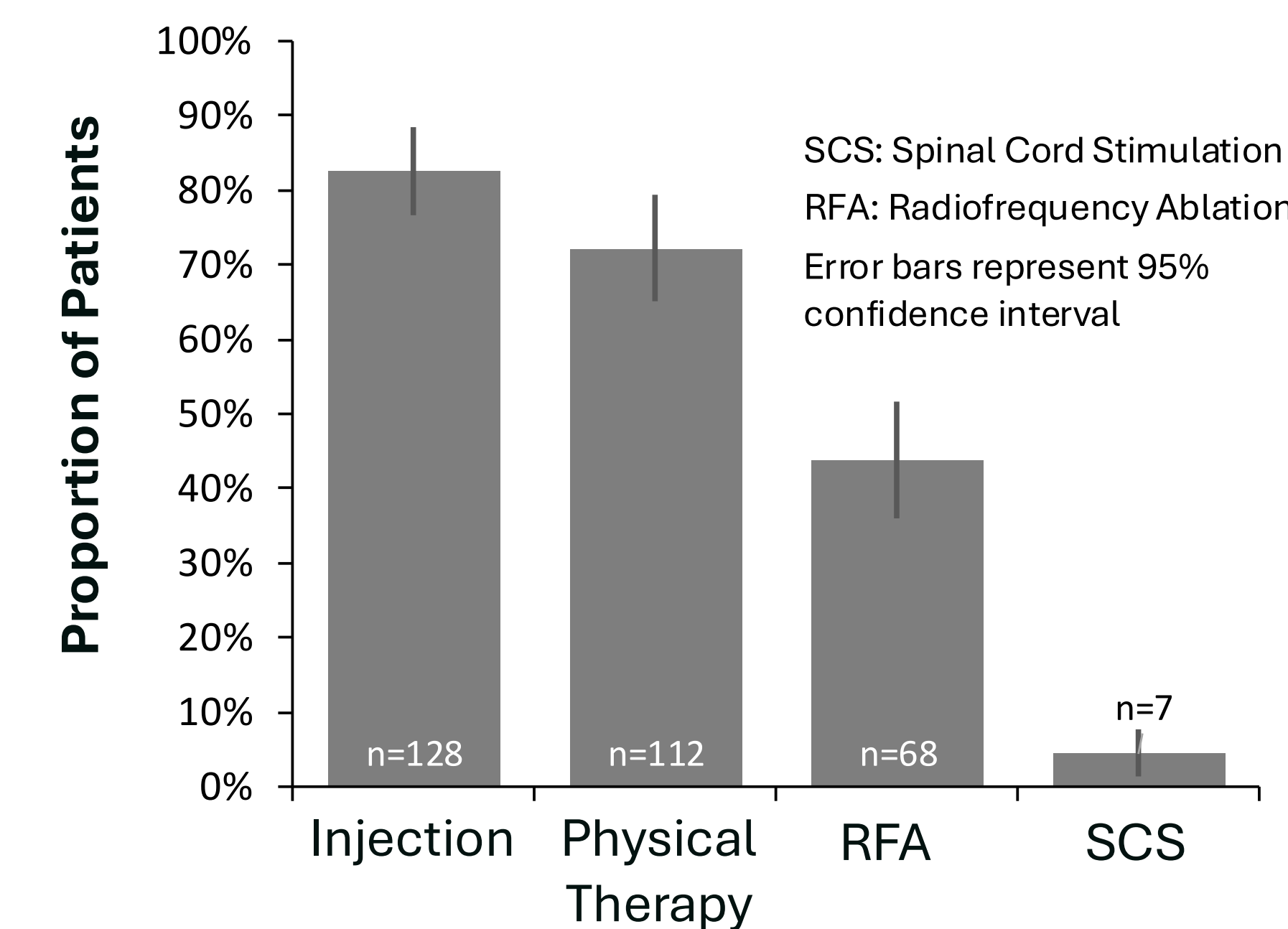


- Data were extracted from electronic medical records and supplemented by data available for patients who opted in to provide outcomes to the device manufacturer's database.
- Patient characteristics included demographic data, clinical characteristics related to their knee pain (diagnosis, other treatments used, etc.), and treatment outcomes.
- The proportion of patients who reported clinically substantial ($\geq 50\%$) pain relief was evaluated at end of treatment (EOT).

Demographics

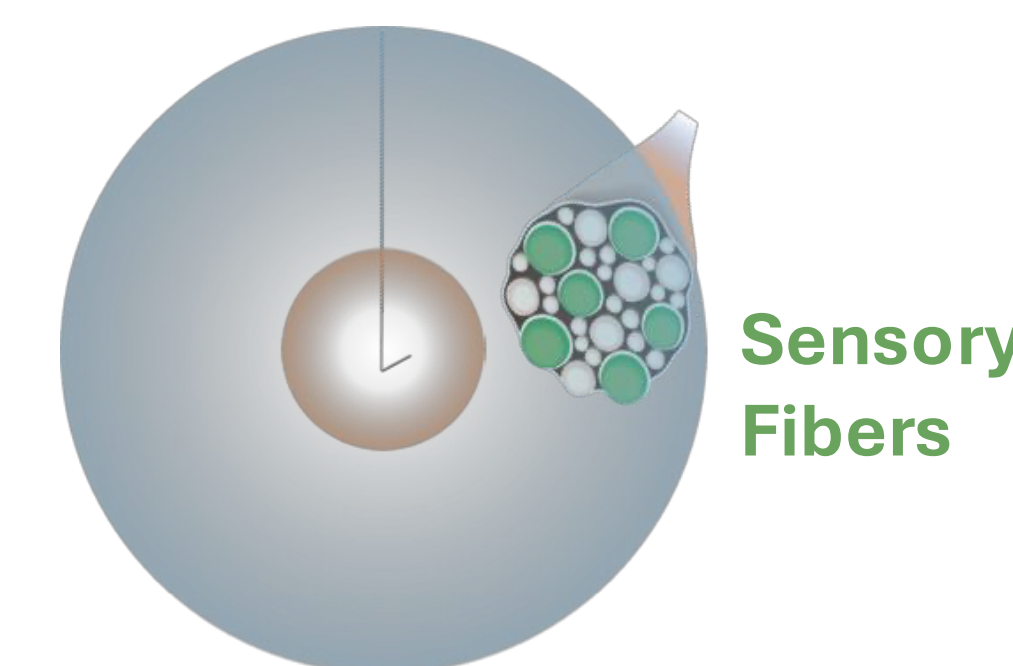
- 155 charts evaluated across three centers.
- Most common nerve targets (1 or 2 per patient)
 - Femoral (n=48)
 - Saphenous (n=135)
- Sex
 - Female (n=116)
 - Male (n=39)

Interventions and Treatments Used Prior to Percutaneous PNS

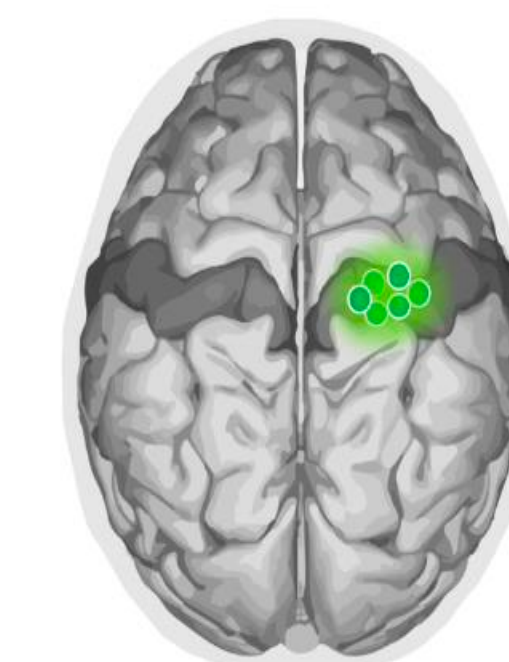


Proposed Mechanism

- Consistent pain relief across knee pain causes, including in patients with multiple knee pain causes, lends support to a convergent central mechanism for PNS
- Remote selective targeting of the peripheral nerves with percutaneous PNS helps recondition the underlying centralized pain state [5].



Percutaneous PNS robustly activates sensory fibers



Robust activation reconditions the CNS

Results

A majority of patients reported clinically substantial relief of knee pain following Percutaneous 60-Day PNS

76%

Proportion with clinically substantial ($\geq 50\%$) pain relief[#]

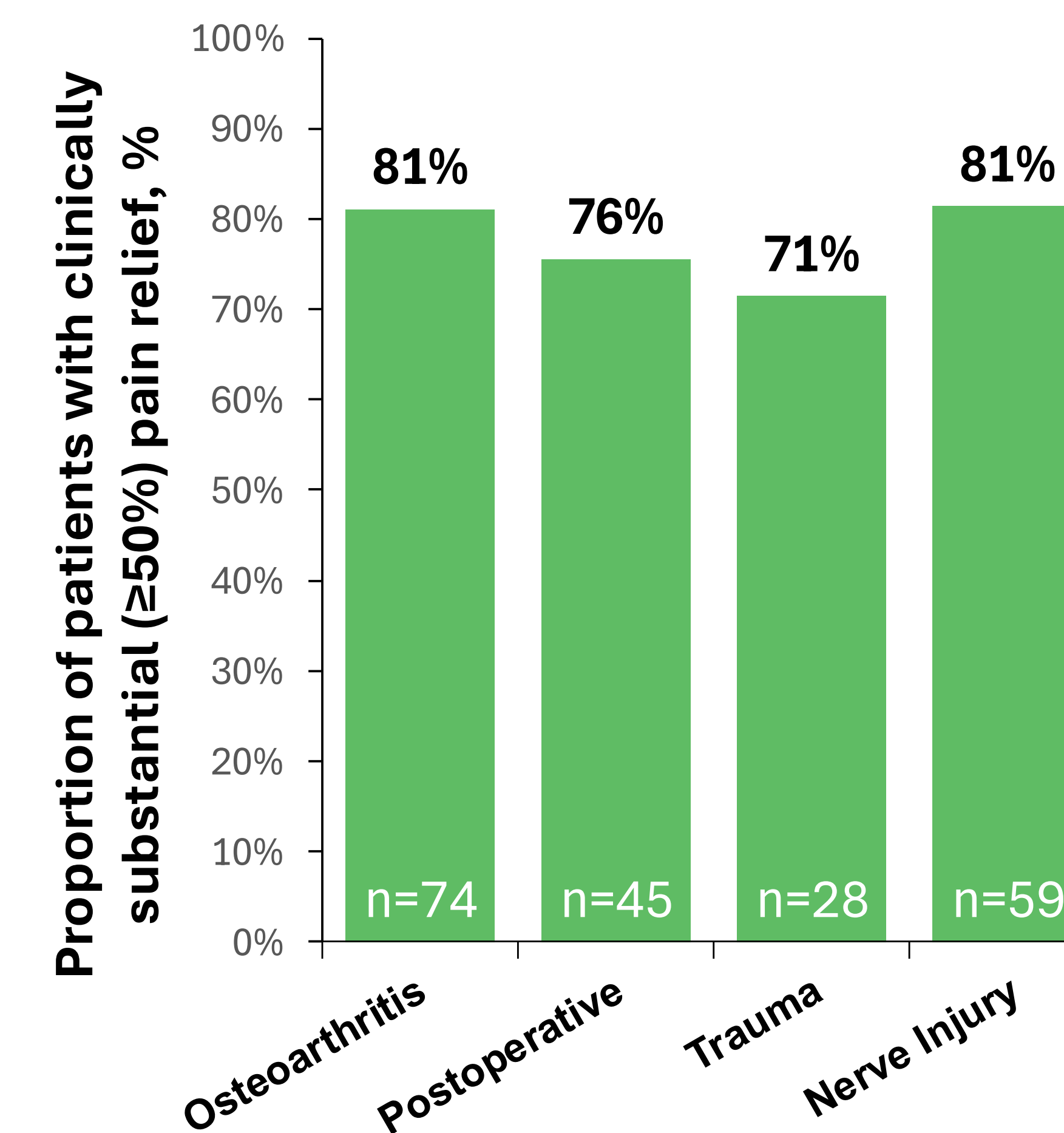
72%

Average pain relief among patients with clinically substantial relief

71%

Proportion with improved quality of life[‡]

Most patients achieved substantial pain relief, regardless of pain etiology

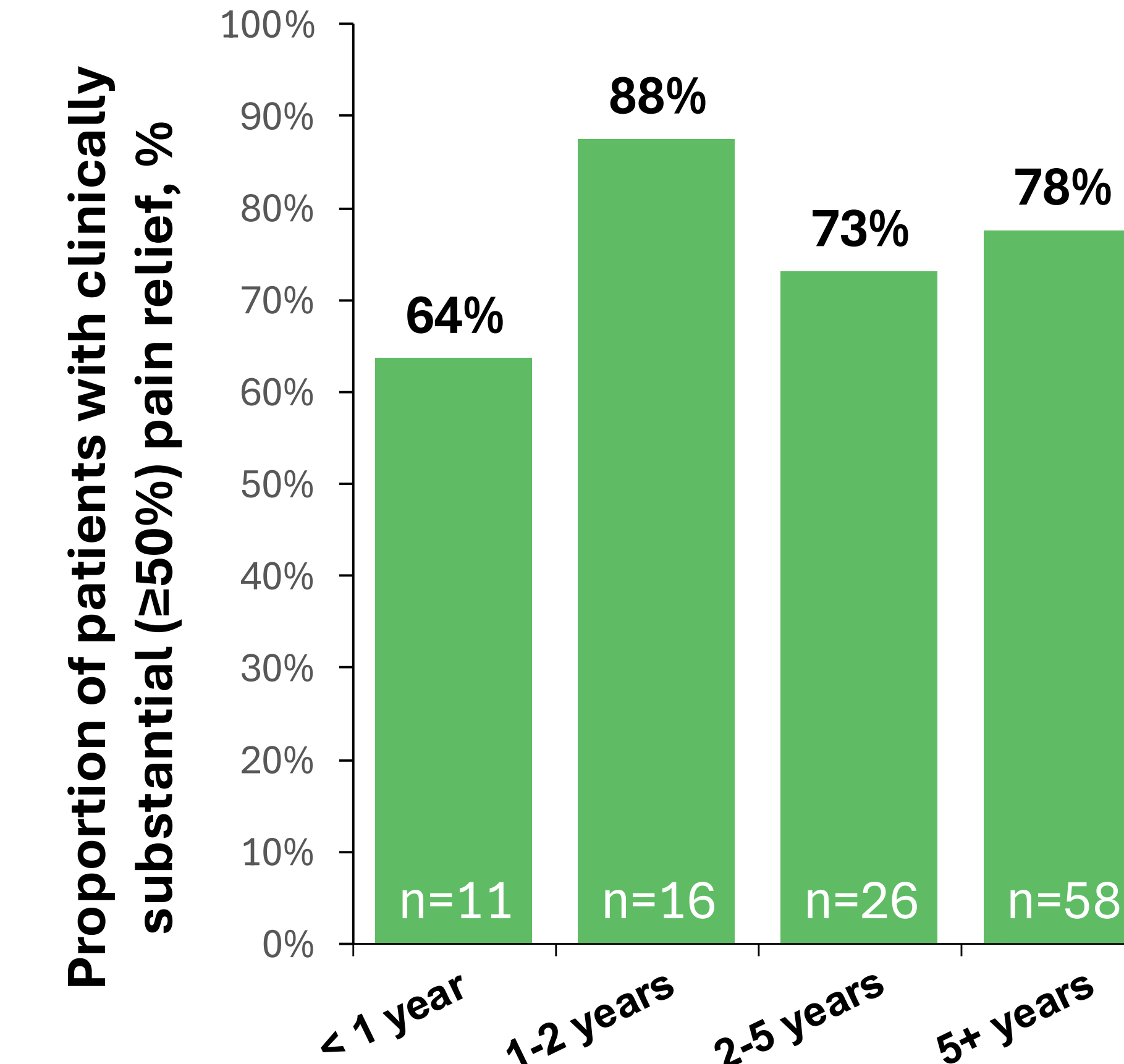


[#] n=148 of 155 patients had available outcomes at the end of treatment

[‡] n=92 of 155 patients had available outcomes at the end of treatment

[§] n=38 patients did not report a duration of pain; among these patients, 76% (n=28 of 37 with available outcomes) reported clinically substantial relief

Most patients reported substantial pain relief, regardless of pain duration[§]



Safety: No adverse events were serious or unanticipated.

Key Takeaways

Percutaneous PNS provided meaningful relief of chronic knee pain in a multi-center chart review.

High responder rates and pain relief were consistent across:

- Different causes of knee pain.
- Different durations of pain before treatment.

Acknowledgments

Funding: Support for this study was provided by SPR

Relevant Disclosures: MA, GJG, VP, JJH, DJDG, and RKB have consulting agreements with SPR. JEG, AW, and JWB are employees of SPR. AW and JWB have ownership/options interests in SPR.

Other Contributions: Thank you to site research staff and the Clinical Affairs team at SPR, including Ryan Begun, Sara Anderson, and Rosemary Zang.

References: [1] U. S. Nguyen et al., Ann Intern Med, 2011. [2] R. Benyamin et al., Pain physician, 2008. [3] N. Bellamy et al., Cochrane Database Syst Rev, 2006. [4] J. H. Goree et al., Neuromodulation, 2024. [5] T. R. Deer et al., J Pain Res, 2021.