

James A. Forte

Undergraduate
Louisiana Tech University, Ruston, LA

Casey A. Murphy, M.D., F.A.A.P.M.R., D.A.A.P.M.

VA Staff Physician, Pain Medicine Section; Program Director, LSU Pain Medicine Fellowship

“Percutaneous Peripheral Nerve Stimulation of the Lumbar Medial Branch Nerves for 60 Days Improves the Quality of Life for Veterans with Low Back Pain”

Objectives: Peripheral Nerve Stimulation (PNS) of the medial branch nerves is a procedure that stimulates the multifidus muscles along the vertebral column to alleviate chronic axial low back pain via neuromodulation. Stimulation of the efferent nerves with subsequent multifidus muscle contractions creates the signals in the afferent proprioceptive neurons in hopes of breaking a chronic pain cycle caused by several common inflammatory modulators that stimulate nociceptive pain fibers. Our case series aims to determine if PNS of the low back innervated by the medial branch nerves for 60 days improves the quality of life for United States Veterans with chronic lower back pain.

Methods: The five patients participating in the case series were administered an SF-12v2 survey to complete pre-operatively and post-operatively. The PNS SPRINT device was implanted for 60 days, and the post-operative surveys were issued at the time of removal to analyze the quality-of-life changes in each patient. The SF-12v2 survey measures eight domains (physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health) to assess an individual's MCS (Mental Composite Score) and PCS (Physical Composite Score). The patients were also questioned via a custom secondary survey to evaluate each patient's pain on a scale of 1-10 pre-operatively and post-operatively upon removing the device. In addition, each patient was asked whether they would recommend the PNS procedure to a Veteran with a similar diagnosis based on improvement to their low back pain. The patients will then be monitored for up to a year post-operatively to assess the long-term benefits of the device.

Results: For the five patients entered into the study, there was an average increase of 8.234 points ($p=0.004$; $p < 0.05$) for the patients' PCS. As for the MCS, there was an average increase of 1.674 points for the patients' MCS ($p=0.527$; $p > 0.05$), rendering it statistically insignificant. A substantial improvement of 37% in the average bodily pain score on the SF12v2 survey indicated a lower subjective perception of pain across all five patients ($p = 0.032$; $p < 0.05$). For the customized secondary survey, there was an average decrease of -3.40 points on the standardized 10-point pain scale for all five patients ($p = 0.0074$; $p < 0.05$). Additionally, 4 of the 5 patients in the study recommended PNS for U.S. Veterans with similar diseases, and there were no complications.

Conclusions: PNS increases the overall quality of life for veterans with chronic axial low back pain. A significant increase in the patients' PCS and patients' bodily pain scores was observed after 60 Days indicating an overall decrease in patients' subjective perception of pain. There was also a substantial decrease in patients' pain according to the standard 10-point pain scale. Most of the patients recommended the procedure to fellow U.S. Veterans with similar diseases, and there were no complications.