

POSTERIOR TIBIAL NERVE STIMULATION FOR MANAGEMENT OF CHRONIC PELVIC PAIN – A CASE SERIES. (#192)

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1. Introduction

Peripheral nerve stimulation (PNS) is an established treatment for chronic pain of peripheral nerve origin¹⁻⁴. Posterior tibial nerve stimulation (PTNS) is effective in the treatment of overactive bladder⁴⁻⁶. Preliminary research is showing that PTNS can be used to treat chronic pelvic pain⁷⁻⁹, where 9 of 15 patients reported >50% pain relief¹⁰ and quality of life improved in 12 women who reported decreased pain intensity and more comfortable performance in daily activities¹¹. As this is an emerging research area, we undertook to evaluate the pain relief obtained from chronic pelvic pain with PTNS therapy.

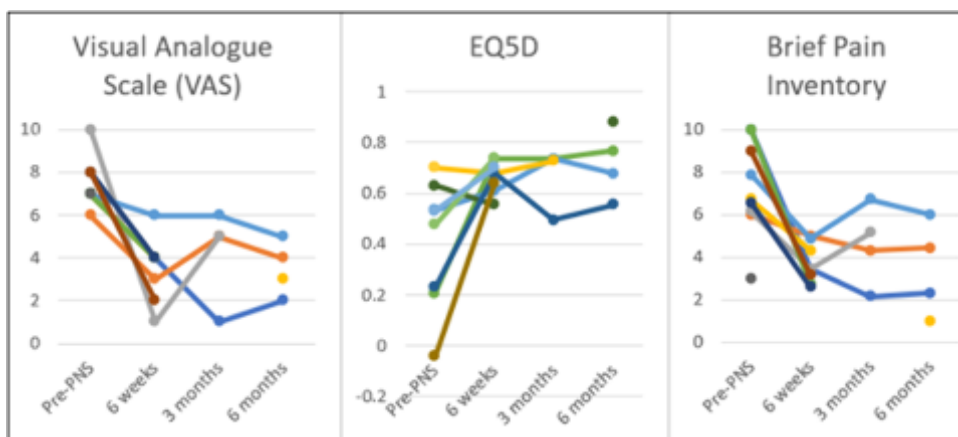
2. Materials / Methods

We conducted a 10 patient case series of PTNS therapy for various pelvic pain conditions. 4 patients received Stimrouter® (Bioventus, Hoofddorp, The Netherlands) PNS device, 6 patients received Stimwave® (Curonix, Pompano Beach, Florida, United States) PNS device.

3. Results

10 patients (8 female) were implanted with PTNS for chronic pelvic pain. Indications included: Bladder pain syndrome (5), pudendal neuralgia (2) adenomyosis (1) post-hysterectomy (1) and non-specific pelvic/perineal pain (1). Mean age 47years (range 25-80years).

6 out of 8 patients reported $\geq 50\%$ pain relief measured by VAS (post-implant results unavailable at this point for 2 patients), of which 3 patients reported over 75% pain relief, regarded as remission of pain. EQ5D was improved by mean 0.294, with 3 patients improving by ≥ 0.5 on EQ5D score. Mean reduction in Brief Pain Inventory was 4.73 points. Patient global impression of change was reported as considerably improved or very much improved in 6 patients, 1 slightly improved, and 1 the same.



Case	Program 1				Program 2			
	Waveform	Phase Duration	Rate	Efficiency	Waveform	Phase duration	Rate	Efficiency
A	Symmetric	250	100Hz	20	Symmetric	200	6	4 hours
B	Symmetric	300	20Hz	18	Symmetric	200	14	4 hours
C	Symmetric	200	120Hz	17	Symmetric	200	20	4 hours
D	Symmetric	200	100Hz	20				4 hours twice /day
Case	Rate	Program 1	Program 2	Program 3	Pattern of use			
E	1499Hz	1.5mA	2mA	2.5mA	4 hours twice/day			
F	1499Hz	0.7mA	1mA	1.2mA	1 hour twice/day			
G	1499Hz	0.3mA	0.6mA	1mA	1.5 hour daily			
H	1499Hz				40 mins alternate day			

4. Discussion

Further information will be available at time of conference for the final 2 patients in the case series. As we implanted 2 different PNS modalities, dependant on market availability, we found programming parameters differed between the 2 devices. Further study is required to establish optimum program parameters for PTNS stimulation, as the mode of action may differ to that required for pain of peripheral nerve origin.

5. Conclusions

PTNS has been shown here to provide effective pain relief from chronic pelvic pain of various origins, resulting in 6 of 8 patients reporting $\geq 50\%$ pain relief measured by VAS. Further study is required to establish optimum program parameters.

6. References

1. Deer T, Pope J, Benyamin R, et al. Prospective, Multicenter, Randomized, Double-Blinded, Partial Crossover Study to Assess the Safety and Efficacy of the Novel Neuromodulation System in the Treatment of Patients With Chronic Pain of Peripheral Nerve Origin. *Neuromodulation Technol Neural Interface*. 2016;19(1):91-100. doi:10.1111/ner.12381
2. Oswald J, Shahi V, Chakravarthy K V. Prospective case series on the use of peripheral nerve stimulation for focal mononeuropathy treatment. *Pain Manag*. 2019;9(6):551-558. doi:10.2217/pmt-2019-0028
3. Lin T, Gargya A, Singh H, Sivanesan E, Gulati A. Mechanism of Peripheral Nerve Stimulation in Chronic Pain. *Pain Med*. 2020;21(Supplement_1):S6-S12. doi:10.1093/pm/pnaa164
4. Finazzi-Agrò E, Rocchi C, Pachatz C, et al. Percutaneous tibial nerve stimulation produces effects on brain activity: Study on the modifications of the long latency somatosensory evoked potentials. *Neurourol Urodyn*. 2009;28(4):320-324. doi:10.1002/nau.20651
5. Gaziev G, Topazio L, Iacovelli V, et al. Percutaneous tibial nerve stimulation (PTNS) efficacy in the treatment of lower urinary tract dysfunctions: a systematic review. *BMC Urol*. 2013;13(61). doi:10.1186/1471-2490-13-61

6. Heesakkers JPFA, Digesu GA, van Breda J, Van Kerrebroeck P, Elneil S. A novel leadless, miniature implantable Tibial Nerve Neuromodulation System for the management of overactive bladder complaints. *Neurourol Urodyn*. 2018;37(3):1060-1067. doi:10.1002/nau.23401
7. Gaj F, Andreuccetti J, Speziali F, Trecca A, Crispino P. [Chronic pelvic pain treatment with posterior tibial nerve stimulation]. *Clin Ter*. 2011;162(4).
8. van Balken MR, Vandoninck V, Messelink BJ, et al. Percutaneous Tibial Nerve Stimulation as Neuromodulative Treatment of Chronic Pelvic Pain. *Eur Urol*. 2003;43(2):158-163. doi:10.1016/S0302-2838(02)00552-3
9. Tirlapur SA, Vlismas A, Ball E, Khan KS. Nerve stimulation for chronic pelvic pain and bladder pain syndrome: a systematic review. *Acta Obstet Gynecol Scand*. 2013;92(8):881-887. doi:10.1111/aogs.12184
10. Kim SW, Paick J-S, Ku JH. Percutaneous Posterior Tibial Nerve Stimulation in Patients with Chronic Pelvic Pain: A Preliminary Study. *Urol Int*. 2007;78(1):58-62. doi:10.1159/000096936
11. Gokyildiz S, Kizilkaya Beji N, Yalcin O, Istek A. Effects of Percutaneous Tibial Nerve Stimulation Therapy on Chronic Pelvic Pain. *Gynecol Obstet Invest*. 2012;73(2):99-105. doi:10.1159/000328447

7. Learning Objectives

1. Discuss the use of peripheral nerve stimulation for neuropathic pain of peripheral nerve origin, and visceral pelvic pain.
2. Assess the effectiveness of PTNS in management of various chronic pelvic pain conditions.
3. Discuss potential programming parameters available with different PNS systems.