

Percutaneous Tibial Nerve Stimulation Therapy for Overactive Bladder Syndrome: Clinical Effectiveness, Urodynamic, and Durability Evaluation



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OBJECTIVE	To evaluate percutaneous tibial nerve stimulation (PTNS) effectiveness, durability, and impact on the pathophysiology of overactive bladder syndrome (OAB) in patients who have been previously treated with antimuscarinics without success.
MATERIALS AND METHODS	A prospective study that included 200 women diagnosed with OAB between 2007 and 2015 at Virgen de la Victoria University Hospital (Málaga, Spain) was conducted. OAB patients were treated with PTNS therapy after antimuscarinic treatment failed. To evaluate OAB symptoms, clinical and urodynamic studies were performed before and after PTNS treatment. Treatment's success was defined as a reduction of clinical parameters by >50% and an improvement of at least 2 urodynamic parameters by >50%. The Kolmogorov-Smirnov test and Student's <i>t</i> test or Wilcoxon test were used based on the data. A linear correlation analysis and a multivariate linear regression analysis were performed to determine factors associated with the success of PTNS therapy.
RESULTS	Of the patients, 94% experienced a positive response to PTNS considering clinical and urodynamic parameters. PTNS benefits were extended by 24 months. We identified daytime urinary frequency ($r = -0.165$; $P = .024$; 95% confidence interval, -0.248 to -0.018) and first sensation of bladder filling ($r = 0.208$; $P = .030$; 95% confidence interval, 0.001 - 0.028) as significant independent predictor factors for PTNS success.
CONCLUSION	The current data confirmed a high effectiveness of PTNS improving OAB symptoms through 24 months. Furthermore, daytime urinary frequency and first sensation of bladder filling act as a significant independent predictor factors for PTNS success. UROLOGY 108: 52–58, 2017. © 2017 Elsevier Inc.

Overactive bladder syndrome (OAB) is a common disorder characterized by urinary urgency, with or without urinary incontinence, and usually accompanied by frequency and nocturia, in the absence of urinary tract infection or other organic pathology.¹ OAB prevalence is up to 16% in individuals older than 40 years.^{2,3} OAB significantly impairs patients' quality of life (QOL) and implies a significant health-care burden.⁴ According to the American Urological Association guideline for OAB,

the initial recommended actions are behavioral therapies that may be combined with pharmacologic management.⁵⁻⁸ Additionally, the use of antimuscarinic or beta-3 agonist agents has been established as alternative OAB treatment when behavioral therapies fail to improve the symptoms.⁸ Nevertheless, only 18.2% of patients continue with anticholinergic treatment for more than 6 months due to severe side effects, poor symptoms relief, and unwillingness to remain on lifelong medication therapy.⁹ Onabotulinum toxin A injection (Botox) and neuromodulation using implantable sacral nerve stimulation or percutaneous tibial nerve stimulation (PTNS) have been established as a clinically effective third-line option in OAB patients who failed behavioral and medical treatment.⁸

PTNS is a noninvasive treatment for OAB approved by the Food and Drug Administration. PTNS consists in a peripheral neuromodulation that uses electrical stimulation to target the spinal cord roots, mainly S3, which controls

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