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6 AND 12 MONTH RESULTS FROM ORBIT TRIAL COMPARING PERCUTANEOUS TIBIAL NERVE STIMULATION (PTNS) VS. EXTENDED-RELEASE TOLTERODINE

Hypothesis / aims of study

Neuromodulation therapy uses electrical stimulation to target specific nerves in the sacral plexus that control bladder function. Urgent® PC (Uroplasty, Minnetonka, MN) percutaneous tibial nerve stimulation (PTNS) targets the sacral plexus from an accessible, minimally invasive entry point into the nervous system – the posterior tibial nerve. Multiple short-term studies have demonstrated the efficacy and safety of this office-based, minimally invasive procedure in subjects with OAB. (1,2)
The **O**ve**r**active **B**ladder **I**nnovative **T**herapy (OrBIT) Trial is a randomized, multi-center, controlled study that compared the effectiveness of percutaneous tibial nerve stimulation (PTNS) to extended-release tolterodine. 12-week results demonstrated comparable effectiveness.(3)The purpose of this extended study was to demonstrate the sustained effectiveness of PTNS therapy at 6 and 12 months in a group of subjects with improved OAB symptoms following an initial treatment regimen of 12 weekly PTNS sessions.

Study design, materials and methods

Subjects enrolled in the OrBIT study PTNS treatment arm who showed OAB symptom improvement with 12 weeks of PTNS therapy were offered on-going PTNS for 12 months at treatment intervals tapered to maintain symptom relief for the individual subject. Data from voiding diaries and Overactive Bladder Questionnaires (OAB-q) were completed at baseline, 12 weeks, and at 6 and 12 months; subject and investigator Global Response Assessments (GRA) were completed at 12 weeks, 6 and 12 months to assess improvement in 24-hour voiding frequency, urinary urge incontinence (UUI) episodes, voids causing waking, volume voided, urgency episodes, and quality of life indices.

Results

After 12 weeks of PTNS therapy thirty-five subjects who had improved urinary symptoms qualified for on-going therapy. Thirty and twenty-five subjects completed voiding diaries at 6 and 12 months, respectively. At 12 months follow-up, compared to baseline, clinically significant objective improvements in urinary parameters were sustained: 24-hour frequency decreased by a mean of 2.8 voids/day ($p<0.001$), UUI episodes decreased by a mean of 1.6 incontinence episodes/day ($p<0.001$), nighttime voids decreased by a mean of 0.8 voids causing waking/night ($p=0.01$), and improvement in voided volume improved by a mean of 39 cc ($p=0.04$) Table 1. The change from baseline on the OAB-q at 6 and 12 months showed statistically significant improvement from baseline in both symptom severity and overall quality of life ($p<0.001$). (Table 2). Compared to results from baseline to 12 weeks, subjects' GRAs showed sustained improvement at 6 and 12 months, 93.8% and 96% respectively; investigator GRAs were similar, 96.9% and 96%. There were no serious adverse events or device malfunctions. Subjects received a mean of 11.4 +/- 5.6 additional treatments over an average of 249 days; mean of 19.6 days between treatments.

Table 1 Voiding Parameter Improvements at 6 and 12 months of PTNS Therapy

	Voids/Day	Nocturia	Urge Incont	Void Vol (cc)
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Change from Baseline at 6* Months N=30	-3.2±3.7	-1.2±1.5	-1.6±1.7	31±72
Mean % change from Baseline	22.7	35.1	63.6	36
Change from Baseline at 12* Months N=25	-2.8±3.7	-0.8±1.5	-1.6±2.0	39±92
Mean % change from Baseline	19.3	12.4	77.9	54.7

*Changes from baseline at 6 and 12 months significant with $p<0.05$ for all variables

Table 2: Changes from Baseline in Symptom Severity and HRQL

	6 Months		12 Months	
Parameter	N	Mean Change from BL (95% CL)	N	Mean Change from BL (95% CL)
Symptom Severity	32	-28.7 (-36.7, -20.6)[1]	25	-38.8 (-47.7, -29.9)*
HRQL	32	31.0 (24.3, 37.7)[1]	25	34.1 (24.6, 43.6)*

*All changes $p<0.001$

Interpretation of results

There is limited data demonstrating the 12 month efficacy of PTNS in patients with OAB. PTNS provides a therapeutic option that is effective, minimally invasive, improves quality of life and provides sustained relief of symptoms.

Concluding message

The response to PTNS therapy achieved following 12 weeks of treatment demonstrates excellent durability through 12 months of follow-up. This therapy can be easily incorporated into the algorithm of care for OAB subjects and easily administered in the physician's office. The therapeutic effect is demonstrated in the early phase of treatment and is sustained when prolonged therapy is offered at tapering intervals.

References

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Specify source of funding or grant	**Study was funded by Uroplasty, Inc.**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**Yes**
Specify Name of Public Registry, Registration Number	**Clinical Trials.gov NCT 00448175**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Western IRB and individual investigator site IRBs**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**