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SACRAL NERVE STIMULATION FOR THE TREATMENT OF REFRACTORY URINARY RETENTION: LONG-TERM EFFICACY AND DURABILITY

Hypothesis / aims of study

To examine the long-term efficacy and durability of sacral nerve stimulation (SNS) for the treatment of refractory, non-obstructive urinary retention.

Study design, materials and methods

A retrospective study of all patients who underwent SNS with the InterStim® device for refractory, non-obstructive urinary retention was performed. All patients underwent history and physical exam, voiding diary, and urodynamics (UDS) prior to treatment with staged SNS. Patients with > 50% improvement in symptoms underwent Implantable Program Device (IPG) placement. Patients were followed for evidence of postoperative complications, device failures, and treatment efficacy. Statistical analyses were performed.

Results

Between June 1, 2000 and February 1, 2007, 40 patients were treated with SNS for refractory, non-obstructive urinary retention. Twenty-nine (29) patients exhibited complete urinary retention (on CIC) while 11 patients demonstrated incomplete retention (elevated PVR). Twenty-eight (70%) demonstrated > 50% improvement in symptoms and underwent IPG placement. Successful response to test stimulation could not be predicted based on preoperative objective voiding parameters (caths/day, volume/cath, PVR) or disease etiology (except Fowler's Syndrome) when analyzed statistically (Table 1). At a mean follow-up of 40.03 months (± 19.61 months), 24 of 28 patients (85.7%) demonstrated sustained improvement of > 50%. Four of 28 patients (14.3%) had their InterStim® removed and 6 of 28 patients (21.4%) required revision. Among those with complete retention, there was a significant improvement in the number of catheterizations/day and volume/catheterization ($p < .001$). Among those with incomplete retention, there was a significant improvement in PVR ($p < .001$). Complete data is available in Tables 2.

Table 1 – Predictors of Successful Test Conversion

Preoperative Predictor	Patients (n)	Test Success*	Test Failure*	p value
Etiology:				
Idiopathic	28	20	8	**0.285**
Spinal Cord Injury	5	3	2	**0.221**
Pelvic Surgery	4	2	2	**0.118**
Fowler's Syndrome	3	3	0	**0.002**
Severity of Retention:				
Complete	29	20	9	**0.096**
Incomplete	11	8	3	**0.078**
Voiding Parameters:				
Complete Retention	29			
Daily Catheterizations		4.3	4.5	**0.624**
Volume/Catheterization		340.79mL	347.12mL	**0.274**
Incomplete Retention	11			
PostVoid Residual		333.5mL	364.78mL	**0.235**

*> 50% improvement in symptoms; **< 50% improvement in symptoms

Table 2 – Efficacy of Sacral Nerve Stimulation based on Voiding Parameters (n=28)

Voiding Diary Variable	Baseline Mean ± SD	Follow-up Mean ± SD	p value
Complete Retention*			
Daily Catheterizations	4.3 ± 1.66	1 ± 1.26	**< .001**
Volume/Catheteriation (mL)	340.79 ± 237.79	93.75 ± 144.16	**< .001**
Incomplete Retention**			
Postvoid Residual (mL)	333.5 ± 148.16	87.44 ± 72.91	**< .001**

*Mean Follow-up = 41.4 months (± 22.26 months)
**Mean Follow-up = 31.75 months (± 14.74 months)

Interpretation of results

At a mean follow-up of 40 months, 85.7% of patients with refractory, non-obstructive urinary retention demonstrated > 50% improvement in symptoms with SNS. Successful conversion with staged SNS could not be predicted based on

disease etiology and/or preoperative voiding parameters. Among all patients, there was a statistically significant improvement in voiding parameters.

Concluding message

Sacral Neuromodulation is an effective and durable treatment for patients with refractory, non-obstructive urinary retention.

References

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