

BLADDER DYSFUNCTIONS IN NEUROGENIC PATIENTS: LONG-TERM EXPERIENCE WITH SACRAL NEUROMODULATION TREATMENT

Aims of Study

Sacral neuromodulation (SNM) is an effective tool in the treatment of lower urinary tract dysfunctions in non-neurogenic patients. In the literature, few studies recently reported results in neurogenic patients that were treated with SNM. We report the clinical results of neuromodulation treatment in neurogenic patients, mainly with incomplete spinal cord lesions, who underwent permanent implant in our institution in the last six years.

Methods

Between March 1997 and February 2003, 30 neurogenic patients (21 males and 9 females) underwent permanent SNM implant. They were non-responders to pharmaceutical treatment. Mean patient age was 44.4 years (range 22-68). Peripheral Nerve Evaluation (PNE) was performed in all those patients. Neurological pathologies are reported in table 1. In all patients videourodynamic evaluation was performed before and after SNM procedure. Six out of 30 patients (20%) had overactive bladder syndrome (O.B.S.), 15/30 patients (50%) had various degree of voiding difficulties (V.D.) from partial to complete urinary retention, and 9/30 patients (30%) had combination of both conditions (O.B.S.+V.D.). In 3 patients definitive implant was performed in one-stage by surgical technique, 1 undergone two-stage "bottock" procedure, while the remaining 26 were implanted with two-stage percutaneous technique (11/26 with Tined Lead). Follow up evaluation was done with use of bladder diaries and/or post-voiding residual measurements.

	Encefalitis	Myelitis	Multiple Sclerosis	Incomplete SCI	Erniated Disc	Peripheral Neuropathy
Pts.	1	11	1	11	3	3
n.= 30	(3%)	(37%)	(3%)	(37%)	(10%)	(10%)

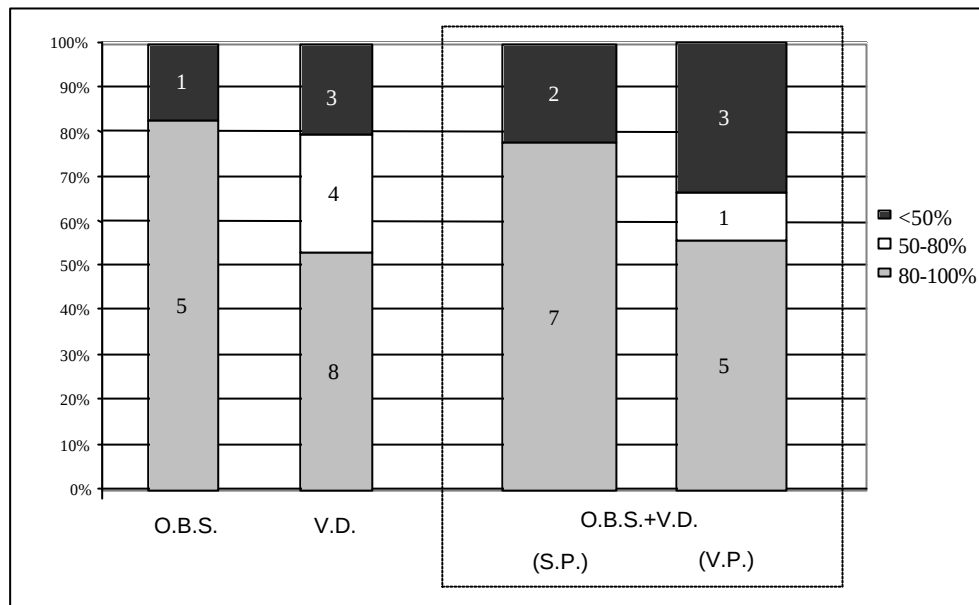
Table 1 – Patients were stratified according to neurological etiologies.

Results

Median follow-up time was 16 months $\pm$ SD 21.2 months (average 22, range 2-72). In O.B.S. group 5 out of 6 subjects (83.3%), had major improvement in reducing the number of leaking episodes ranging between 80 to 100% while 1 pt. was failure and the device was removed. In voiding difficulty group (15 patients), we observed 100% improvement in 8 patients (53.3%), 70% in 4 patients (26.6%) who reduced the number of intermittent catheterization (I.C.) to 2 times weekly (2 pts.), and 1 time daily (2 pts.). In 3 patients (20%), only a minimally improvement was seen. In the O.B.S.+V.D. group (9 patients), with filling and voiding dysfunction, an improvement of 80 to 100% was observed in 7 patients in regards to filling phase, and 2 pts. (22.2%) were failure. Five out of 9 patients reported an improvement on voiding function from 80 to 100%. One patient achieved 70% improvement (1 I.C. daily) and 3 had no improvement in voiding function. In 9/30 (4/9 with Tined lead) patients (30%) who were implanted with percutaneous technique, the lead was removed for the following reasons: 7 for poor clinical outcome, and 2 patients did not accept the permanent neurostimulator, despite the clinical improvement. There were no peri-operative or late complications. In particular, no infection of the implanted system, no lead displacement and no mechanical failure occurred.

Conclusions

This study, performed in neurogenic patients but mainly in those with spinal cord disease (23/30), showed that SNM is a good therapeutic option with partial or complete restoration of bladder function (graphic 1). Moreover, we observed contemporary clinical benefit regarding bowel and/or sexual function. No side-effects or complications were observed. SNM is at the moment, a minimally invasive and reversible approach that may lead to improve or to a complete restore of the micturition cycle in neurogenic patients, and therefore should be indicated before more invasive or definitive procedure are applied.



Graphic 1 – Clinical improvement of voiding dysfunctions versus baseline in neurogenic patients treated with NMS.

O.B.S. = Overactive Bladder Syndrome (6 patients with urge incontinence and/or urgency frequency syndrome).

V.D. = Voiding Difficulties (15 patients).

O.B.S.+V.D. = Overactive Bladder Syndrome/Voiding Difficulties (9 patients).

S.P. = improvement in Storing Phase.

V.P. = improvement in Voiding Phase.

Reference

- Chronic sacral neuromodulation for treatment of neurogenic bladder dysfunction: long-term results with unilateral implants. Urology 2001, 58: 887-892.