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SACRAL NEUROMODULATION AS A TREATMENT OPTION FOR POST-HYSTERECTOMY URINE RETENTION; A LONG TERM FOLLOW-UP

Hypothesis / aims of study:

Urological complications such as post-hysterectomy urinary retention are rare conditions, accounting for about 0.1% of cases; these complications seem to be more commonly associated with total hysterectomy than subtotal and radical hysterectomies or hysterectomy for benign diseases.

Urine retention, as an isolated complication, is related to de-afferentiation of the bladder and bladder neck, or de-afferentiation with a concomitant factor like Fowler syndrome. [1]. Sacral neuromodulation was approved by FDA in 1999 as treatment option for non obstructive urine retention. Long term results were encouraging and more than 75% of patients continued to void after permanent implantation. Due to paucity of studies evaluating the long term follow-up of sacral neuromodulation (SNM) as a treatment for post-hysterectomy urine retention, we are reporting our experience in using SNM as treatment for this subset of patients; another aim of this study is to explore if radical hysterectomy or hysterectomy for benign diseases correlates to the outcome of SNM.

Study design, material and methods:

A retrospective chart review of patients who underwent SNM from 2000-2007 was conducted. All patients referred to our center with post hysterectomy urine retention were included in the analysis including patients who had complete urine retention or incomplete urine retention (post void residual more than the third of the bladder capacity). Patients with concomitant bladder surgery during hysterectomy or sling procedures were excluded from this analysis. Bilateral Pecutaneous Nerve Evaluation (PNE) was performed for all patients to evaluate their suitability for permanent SNM. PNE success was defined as 50% or more restoration of their voiding function. Voiding diaries were also used to assess the outcome. Post void residual (PVR) and frequency of clean intermittent catheterization were compared between pre-implantation and on the last visit follow-up after permanent implantation to assess the durability of SNM. Correlation and logistic regression analysis were done to evaluate the predictors of outcome of PNE and examine whether these factors would affect the long term follow-up. Analyzed predictors include: age, duration of complaint, indication of hysterectomy, pre-implantation PVR, pre-implantation average voided volume/void, detrusor contractility during urodynamic study, and severity of urine retention (complete or incomplete). Statistical analysis was done using SPSS/PASW (version 18) *p* value≤ 0.05 was considered statistically significant.

Results:

26 patients were referred for SNM treatment of post-hysterectomy urine retention, all patients had bilateral PNE for 4-7 days, 16 patients (62%) had improvement of 50% or more in their voiding functions and they agreed to proceed to permanent implantation. 10 (38%) patients failed the temporary stimulation and continued on Clean Intermittent Catheterization (CIC). Average age of patients who had successful PNE was 44.9 ±11.5 yrs, while it was 57.2± 5.3 yrs. in non-responder patients *(p*=0.004). average duration of urine retention was 2.5± 2 yrs in those patients who succeed PNE, while it was 6.2± 3.8 yrs in patients who failed PNE (*p*=0.003).

Table (1): characteristics of patients:

Outcome of PNE	*n*	Indication of hysterectomy		Classification of retention		Detrusor contractility	
		benign	tumor	complete	incomplete	present	absent
success	16	11	5	5	11	12	4
failure	10	4	6	6	4	3	7
P value		0.15		0.15		0.024*	

Patients who had successful outcome of their PNE showed a significant reduction in their average post void residual to 70 ±59 ml when compared with those who didn't respond to PNE 332±74ml (*p*=0.0001), and consequently there was a decrease in the frequency of CIC in patients who had successful PNE 1.1±0.77 times/day comparing to non responder group of patients where the frequency of CIC didn't change 3.5± 0.98, *p*=0.001. Fig 1 & 2 show the changes in PVR and frequency of CIC pre and post PNE respectively.

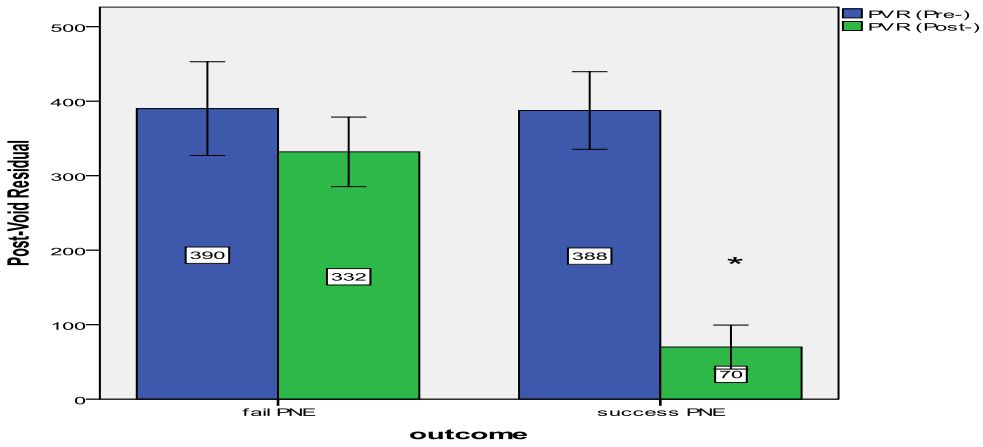
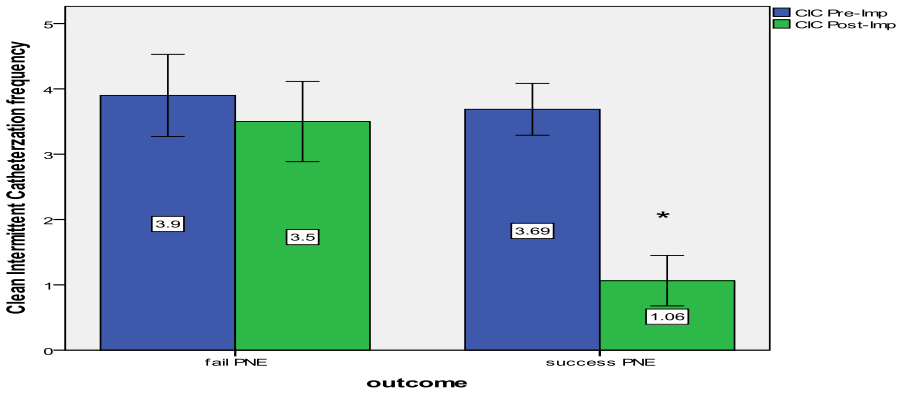


Fig 1
Fig2



Mean follow-up was 5.13±1.5 yrs, 2 (12.5%) patients were explanted due to loss of efficacy, 3 patients had changed their IPG due to end batteries life. In those 14 patients who maintained their efficacy the average PVR was 65.4±40 ml and the average number of CIC is 0.7±0.6 times.

In correlation analysis, age of the patient and duration of retention had negative correlation with PNE outcome (r= - 0.54, r= -0.5), (p=0.004, p=0.009) respectively. There was also a positive correlation between high average voided volume/void and presence of detrusor contractility with success of SNM (r =0.46, r = 0.44), (p=0.02, p=0.023) respectively. No specific factor can predict outcome according to final model of logistic regression.

Interpretation of results:

Our data analysis showed that SNM is a valid therapeutic option on long term follow-up for the treatment of post hysterectomy urine retention. Our results with previous study are encouraging to both urologist and gynaecologist to offer this treatment to patients suffering from urinary retention post hysterectomy [1]. Even though, there is an inverse correlation between the success of PNE and the older age of the patients as well as long duration of retention, we couldn't find any specific predicting factor that could alter the outcome of SNM in post hysterectomy urine retention.

Concluding message:

SNM is an effective and durable treatment option for restoring voiding functions in post hysterectomy urine retention. No change in SNM outcome was affected by the indication of hysterectomy.

References

1. Everaert K, De Muynck M, Rimbaut S, Weyers S.Urinary retention after hysterectomy for benign disease: extended diagnostic evaluation and treatment with sacral nerve stimulation.BJU Int. 2003 Apr;91(6):497-501.

Specify source of funding or grant	**non**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**University Health Network Ethics Board**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**No**