

Sacral nerve stimulation versus percutaneous posterior tibial nerve stimulation in the treatment of severe fecal incontinence in men

P. Moya¹ · P. Parra² · A. Arroyo¹ · E. Peña² · J. Benavides² · R. Calpena¹

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Abstract

Background Sacral nerve stimulation and percutaneous posterior tibial nerve stimulation have been described previously as effective treatments for fecal incontinence. Nevertheless, there does not exist any study that compares the efficiency of both. The aim of this study was to compare the use of SNS and PPTNS in males with FI.

Methods We conducted a prospective cohort study on men with FI treated with SNS or PTNS in the Coloproctology Unit of the University General Hospital of Elche and Reina Sofia of Murcia between January 2010 and December 2011. Preoperative assessment included physical examination, anorectal manometry, and anal endosonography. Anal continence was evaluated using the Wexner continence grading system. Quality of life was evaluated using the Fecal Incontinence Quality of life Scale.

Results Nineteen patients were included (ten patients SNS and nine PPTNS). SNS improved FI in nine of the ten patients. The mean Wexner score decreased significantly from a median of 14 (12–16) (preoperative) to 4 (1–8) (6-month revision) ($p = 0.007$). PTNS improved FI in seven of the nine patients. The mean Wexner score decreased significantly from a median of 12 (11–19) (preoperative) to 5 (4–7) (6-month revision) ($p = 0.018$). Both treatments produced symptomatic improvement without statistical differences between them.

Conclusions Our study was nonrandomized with a relatively small number of patients. PPTNS had similar efficiency to the SNS in our men population. However, more studies are necessary to exclude selection bias and analyze long-term results.

Keywords Fecal incontinence · Sacral nerve modulation · Posterior tibial nerve stimulation

Fecal incontinence (FI) is a complex, multifactorial health problem. FI is defined as the partial or total loss of the ability to voluntarily control gas and stool expulsion. The severity of FI is evaluated principally by determining the frequency and type of incontinence [1].

Recently, sacral nerve stimulation (SNS) and percutaneous posterior tibial nerve stimulation (PPTNS) have been shown to effectively improve the treatment of FI. Studies have generally reported high success rates and low morbidity rates [2, 3]. Nevertheless, no study has been done comparing the efficiency of both.

We conducted a prospective cohort study on men with FI treated with SNS or PPTNS in the University General Hospital of Elche and Reina Sofia of Murcia between January 2010 and December 2011. The preoperative assessment included a physical examination, anorectal manometry, and anal endosonography. Anal continence was evaluated using the Wexner continence grading system [4].

The SNS technique and PPTNS technique have been previously described [2, 3]. Statistical analysis was performed using SPSS 20.0 (SPSS, Chicago, IL, USA). We used Student's t test and ANOVA to compare paired variables (when following a Gaussian distribution) and Mann–Whitney and Kruskal–Wallis tests for variables without a normal distribution.

✉ P. Moya
pedromoyaforcen@gmail.com

¹ Coloproctology Unit, Department of Surgery, University General Hospital of Elche, Alicante, Spain

² Coloproctology Unit, Department of Surgery, University General Hospital Reina Sofia, Murcia, Spain

Table 1 Patient characteristics and results

	SNS	PPTNS	<i>p</i>
Age (years)	58.5 ± 13.575	62.3 ± 15.011	0.333
Etiology			
Anal surgery	5	5	0.96
Radiotherapy	2	1	
Anterior resection	3	3	
Anal endosonography			
Normal	8	7	0.522
Internal sphincter injury	2	1	
External sphincter injury	0	0	
Injury of both sphincters	0	0	
Thinning	0	1	
Wexner score			
Preoperative	14	12	1
Postoperative	4	5	0.596
Ability to delay evacuation (min)			
Preoperative			0.447
<1	5	4	
1–5	5	2	
5–15	0	3	
>15	0	0	
Postoperative			0.681
<1	0	0	
1–5	0	1	
5–15	3	2	
>15	6	4	
Anorectal manometry (mmHg)			
Preoperative			
Maximum resting pressure	43.60 ± 9.204	40.60 ± 30.672	0.774
Maximum squeeze pressure	60.70 ± 37.166	96.60 ± 29.330	0.083
Postoperative			
Maximum resting pressure	43.44 ± 8.904	67.50 ± 31.819	0.113
Maximum squeeze pressure	60.89 ± 34.447	96.00 ± 5.656	0.201

Nineteen patients were included. All patients had already undergone conservative treatment, including drugs, a constipating diet, and biofeedback physiotherapy for at least 2 years. Patient characteristics are shown in Table 1.

Sacral nerve stimulation

Ten patients underwent percutaneous nerve evaluation (PNE). Nine had a reduction of at least 50 % of incontinence episodes or days with incontinence, at which time they received a permanent implant (Medtronic Models 3023 InterStim I or 3058 InterStim II). SNS improved FI in nine of the ten patients (90 %). The mean Wexner score decreased significantly from a median of 14 (12–16) (preoperative) to 4 (1–8) (6-month revision) ($p = 0.007$). The other results are shown in Table 1.

Percutaneous posterior tibial nerve stimulation

Nine patients underwent the PPTNS. Seven of the nine patients (77.78 %) completed the treatment. Two patients did not continue therapy because of lack of clinical improvement of FI. PTNS improved FI in seven of the patients. The mean Wexner score decreased significantly from a median of 12 (11–19) (preoperative) to 5 (4–7) (6-month revision) ($p = 0.018$). The other results are shown in Table 1.

Sacral nerve stimulation versus posterior tibial nerve stimulation

Both treatments produced symptomatic improvement without statistical differences between them. Regardless of the treatment used, patients showed similar improvement in

Wexner score and quality of life results. Manometric results showed no difference compared to baseline in both groups.

In women, parity, traction, and/or compression of the pudendal nerves during vaginal delivery, age-related neuropathy, and the alteration of progesterone and estrogen levels after menopause were the main cause(s) of FI. However, in men, the etiology is usually simpler and mainly involves local changes, either due to direct injury to the sphincter or due to the loss of rectal reservoir capacity, or due to previous surgery or radiotherapy. We think that this simpler etiology may be the reason that we do not find differences between men treated with SNS and men treated with PPTNS.

The comparative efficacy of PPTNS and SNS is currently unknown. However, it seems to be clear that PPTNS is a less invasive and cheaper treatment that appears to be just as effective as SNS, according to the results previously presented. We believe that PPTNS should be the first treatment used for these patients.

In conclusion, in men PPTNS has a similar efficiency to SNS in terms of Wexner score, ability to defer defecation and manometric findings; nevertheless, studies that analyze long-term results are needed.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from the participant included in the study.

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