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IMPROVED PATIENT SELECTION FOR SACRAL NEUROMODULATION WITH PROLONGED EVALUATION PERIOD USING PERMANENT LEADS

Hypothesis / aims of study

The beneficial effect of sacral neuromodulation depends on the accurate identification of suitable candidates for this therapy. Traditionally, a test stimulation called percutaneous or peripheral nerve evaluation (PNE) is performed to evaluate the eligibility of a patient. However, some patients with unsuccessful PNE still respond well to sacral neuromodulation therapy [1]. More reliable testing results were reported using a two-stage implantation technique [1, 2]. Although it was postulated that a longer testing period may result in a more accurate patient selection [2, 3], no study tested this hypothesis. Therefore, we compared the usual evaluation period of 4 to 7 days to a prolonged evaluation period of a minimum of 14 days.

Study design, materials and methods

19 patients (15 females and 4 males) undergoing prolonged sacral neuromodulation testing using permanent leads were evaluated retrospectively. 9 patients suffered from urgency-frequency syndrome, 3 from urge incontinence and 7 from non-obstructive chronic urinary retention. A traditional PNE with wire electrodes was not performed. All patients underwent prolonged sacral neuromodulation testing using a two-stage approach. The first stage comprised the implantation of the permanent lead: In 9 patients the classical open procedure by median incision over the sacrum was performed, whereas 10 patients underwent minimally invasive percutaneous tined lead placement.
Prolonged sacral neuromodulation testing was defined as evaluation of the same lead or in case of bilateral testing of both leads during a minimum screening period of 14 days. Bladder diaries were completed during the whole evaluation period. In accordance to the literature [1, 2], an improvement by more than half in the key bladder diary variables was used as criterion for implantation of the implantable pulse generator (IPG).
Key bladder diary variables at baseline, after the usual evaluation period of 4 to 7 days and after the prolonged evaluation period of a minimum of 14 days and at the last follow-up were compared. Based on these findings, patients were dichotomized into eligible or not eligible for IPG implantation after the usual evaluation period of 4 to 7 days and after the prolonged evaluation period of a minimum of 14 days and into success or failure at the last follow-up.

Results

The median age was 52 years (interquartile range (IQR) 37-57) and the median evaluation period 16 days (IQR 14-28). 15 of the 19 patients (79%) had successful prolonged sacral neuromodulation testing and underwent the implantation of the IPG that was placed in the anterior abdominal wall in 6 and in the upper buttock in 9 patients. The eligibility for IPG implantation was increased from 53% (10 of 19 patients) after the usual to 79% (15 of 19 patients) after the prolonged evaluation period. At a median follow-up of 22 months (IQR 12-34), sacral neuromodulation was successful in 13 (87%) of the 15 IPG implanted patients but failed in 2.

Interpretation of results

The eligibility for IPG implantation was significantly increased from 53% after the usual to 79% after the prolonged evaluation period. Consequently, if prolonged sacral neuromodulation testing had not been offered, 1 out of 4 of our patients with significant positive clinical effects would not have received sacral neuromodulation.

Concluding message

Prolonged sacral neuromodulation testing using permanent leads is more reliable for accurate patient selection and should become the standard test procedure.

References

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