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Title (type in CAPITAL LETTERS): THE ANTERIOR SACRAL ROOT STIMULATOR (BRINDLEY): EARLY TEMPORARY AND LATE PREMANENT MALFUNCTION OF ELECTRO-MICTURITION - A 15 YEARS EXPERIENCE

Aim of the study: The implantation of a sacral anterior root simulator (SARS) in combination with sacral posterior root rhizotomy has become a useful alternative for patients with an unbalanced reflex bladder and uncontrollable reflex urinary incontinence. The aim of this study is to present our experience with early temporary and late permanent loss of electromicturition by SARS and on measures of management and prevention

Patients & Methods: Between 7/85 and 3/99 63 patients, 40 women and 23 men, 38 paraplegic and 25 tetraplegics with clinically complete posttraumatic spinal cord lesions underwent the procedure. 52 intradural and 11 extradural implantations were performed, mean follow-up 7.9 years.

Results: In 11 patient with initially excellent electromicturition early temporary loss of function developed around day 7 postoperatively. Complete recovery occurred between 7 and 14 months postoperatively in 6 patients, incomplete recovery in 2 patients, in 1 patient recovery might be still possible (follow-up <14 month), in 1 patient no recovery took place. In 4 patients subsequent deterioration of electromicturition occurred during a follow-up period between 6 months and 8 years postoperatively. 1 patient lost the ability of electromicturition after secondary conus-deafferentation, 1 patient due to overdistension of the bladder during an acute abdominal disease. In 1 patient the electrically induced detrusor contractions remained uneffective due to persistent bladderneck-dyssynergia. 8/63 (12.7%) patients empty their bladder by intermittent self-catheterisation - 2 of the "early" and 4 of the "late" group and 2/63 (3.2%) patients have

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to complete an unbalanced electromicturition twice a day. However, 53/63 (84.1%) patients empty their bladder by electromicturition only, without or with minimal (<50 ml) residual urine.

Discussion: Early temporary loss of electromicturition is caused by Wallerian degeneration of the nerve myelon sheath around the 7th post-operative day due to an intraoperative trauma. This became more frequent since we used the microscope instead of the loop spectacles. Postoperative activation of SARS should therefore take place before day 5 as a baseline for follow-up in case of Wallerian degeneration. Recovery can be expected as long as secondary damage to the detrusor due to overdistension and recurrent infections is avoided during recovery. Late permanent breakdown of electromicturition was due to recurrent overdistension in 5 of 6 patients with subsequent detrusor damage over the years when electromicturition was performed – against our advice – once daily only. Regular emptying by electromicturition is therefore essential particularly in these patients.

Conclusion: Wallerian degeneration of the efferent sacral nerves is due to intraoperative nerve damage, recovery can be expected up to 14 months postoperatively. Late permanent failure is mostly due to overdistension over the years and can be avoided by regular electromicturition. Patient compliance is therefore a crucial point to achieve durable success rates with electromicturition.