Kiss G¹, Kofler A², Madersbacher H¹
1. Neuro-Urology Unit, 2. Dept. of Neurosurgery

A NEW ALGORITHM FOR PERCUTANEOUS NERVE EVALUATION (PNE) IMPROVES SACRAL NEUROMODULATION (SNS) RESULTS

Hypothesis / aims of study

The presentation of a new procedure, to select the side for unilateral, if necessary bilateral SNS systematically.

Study design, materials and methods

Between 2000 and 2004 in 25 patients (19 women, 6 men) the PNE procedure with the two stage methods, using quadripolar permanent leads, was performed. In all patients the first stage comprised a bilateral implantation of the quadripolar leads. The PNE phase consisted of up to 4 test periods of one week each. (fig.)

1. period / week	2. period / week	3. period / week	4. period / week
unilateral stimulation (e.g. left side)			
successful	1-channel IPG implantation		
suboptimal or failed >>>>>>	contralateral stimulation (e.g. right side)		
	successful	1-channel IPG implantation	
	suboptimal or failed >>>>>>	bilateral stimulation	
		successful	2-channel IPG implantation
		suboptimal or failed >>>>>	explantation of both electrodes

Results

In 15 patients a 1-channel impulse generator (IPG) was implanted after successful unilateral PNE: in 11 patients after the first, in 4 patients after the second period. In the remaining 10 patients a third period with bilateral testing was necessary after suboptimal or lacking effect on unilateral stimulation. 6 of these fulfilled the criteria to be implanted with a 2-channel IPG, in 4 patients both electrodes had to be explanted.

Interpretation of results

There is controversy about both the advantages and disadvantages of unilateral or bilateral SNS, and the method of choice for the stimulation side. Systematic testing of both sides successively during a prolonged period of PNE is impossible with traditional temporary leads. Only the two stage procedure allows us to perform the PNE during an extended period of several weeks to find the best configuration.

Concluding message
Our algorithm provides reliable guidelines to perform the PNE more consequently. It shows that the first stage of implantation should always be performed bilaterally, to enable PNE on both sides. Bilateral testing should be done, if unilateral testing fails.