Sacral neuromodulation effects on periurethral sensation and urethral sphincter activity.

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AIMS: To characterize the effect of sacral neuromodulation (SNM) on urethral neuromuscular function.

METHODS: Following IRB approval, women with refractory overactive bladder (OAB) underwent standardized urethral testing prior to and after Stage 1 SNM implantation. Periurethral sensation was measured using current perception thresholds (CPT). Striated urethral sphincter activity was quantified using concentric needle electromyography (CNE) and Multi-Motor Unit Action Potential (MUP) analysis software. Nonparametric analyses were used to characterize pre/post changes with intervention. Baseline CPT and CNE findings were compared between SNM responders and non-responders.

RESULTS: Twenty-seven women were enrolled in this pilot study with a mean age of 61 ± 13 years. Twenty of 26 women (76.9%) responded to SNM and went to Stage 2 permanent implantation. Four (14.8%) withdrew after Stage 1 implantation; three of the four withdrawals had not had therapeutic responses to SNM. CPT and CNE parameters did not significantly differ from baseline 2 weeks after SNM. Pre-SNM urethral sensation was not significantly different between responders and non-responders. However, responders had larger amplitude, longer duration and more turns and phases at baseline approaching significance, reflecting more
Successful urethral reinnervation, than non-responders.

**CONCLUSIONS:** SNM does not alter urethral neuromuscular function 2 weeks post Stage 1 implantation.

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