

Introduction

-Sacral neuromodulation (SN) and intradetrusor botulinum toxin (BTX) are effective treatments for refractory overactive bladder (OAB) and urge incontinence (UI).¹

-Treatment decisions are based on several factors.

-Urodynamics (UDS) have not been proven to determine who will respond to SN, but results could help guide treatment decisions

-Specifically, detrusor overactivity (DO) suggests that BTX may be more effective, given its direct role on muscle.

-The purpose of this study is to determine if presence and severity of DO on UDS is associated with failure of SN and response to BTX.

Aims and Objectives

-To determine whether DO on urodynamics predicts poor symptom improvement with sacral neuromodulation.

-To determine if other urodynamic findings are predictive of poor symptom improvement with sacral neuromodulation

Methods

This is a retrospective review of patients with OAB and UI who failed SN and were subsequently treated with BTX, with complete UDS for review. All UDS were performed off OAB medication, and prior to the first BTX injection or greater than 6 months following the most recent injection. Tracings with or without fluoroscopy were reviewed by a single clinician for presence of DO, bladder volume at first DO, presence of urine leak, max DO amplitude, stress incontinence, and maximum cystometric capacity (MCC).

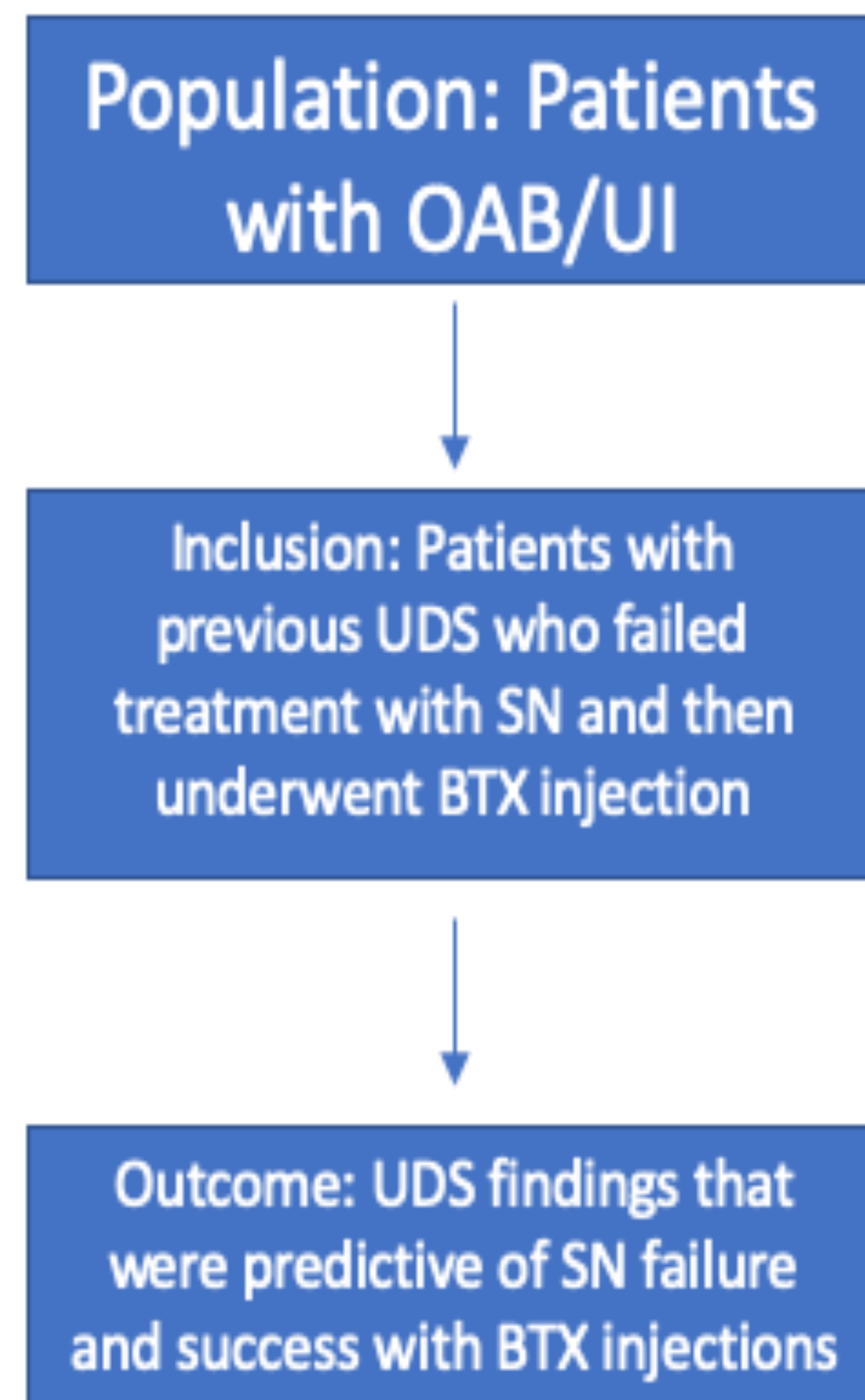


Figure 1. Flow chart of study cohort selection, inclusion criteria, and the outcome of interest.

Results

We identified 53 subjects (39 female, mean age 66.2 y) who underwent SN (50 sacral, 9 pudendal) between 2007-2021. Mean time from implant to first BTX was 32.1 months (range 3-90). Mean total BTX injections was 3.4 (1-14). DO occurred on 40/53 (75.4%) and with leak in 32/53 (60.3%) of UDS. Stress leak occurred in only 3 subjects. Mean volume at first DO of 166.4 mL (13-581), and mean MCC was 295.6 mL (81-643). Mean amplitude at first DO was 38.3 cm H2O, and maximum DO amplitude was 52.3 cm H2O.

Study size	n = 53
Average age	66.2 years
Female (male)	39 (14)
Sacral neuromodulation (pudendal)	50 (9)
Mean Botulinum injections (range)	3.4 (1-14)

Mean time from SN to first BTX injection	32.1 months
Percentage of patients with DO present on UDS	75.4%
Percentage of patients with DO with urine leak present on UDS	60.3%
Percentage of patients with stress incontinence on UDS	5.6%
Mean Volume at first DO	166.4mL
Mean MCC	295.6mL
Mean amplitude of first DO	38.3 mm H2O
Maximum DO amplitude	52.3 mm H2O

Conclusions

The presence of DO at high amplitude (>25 cm H2O) and with leak on UDS is associated with worse UI that does not respond to SN monotherapy

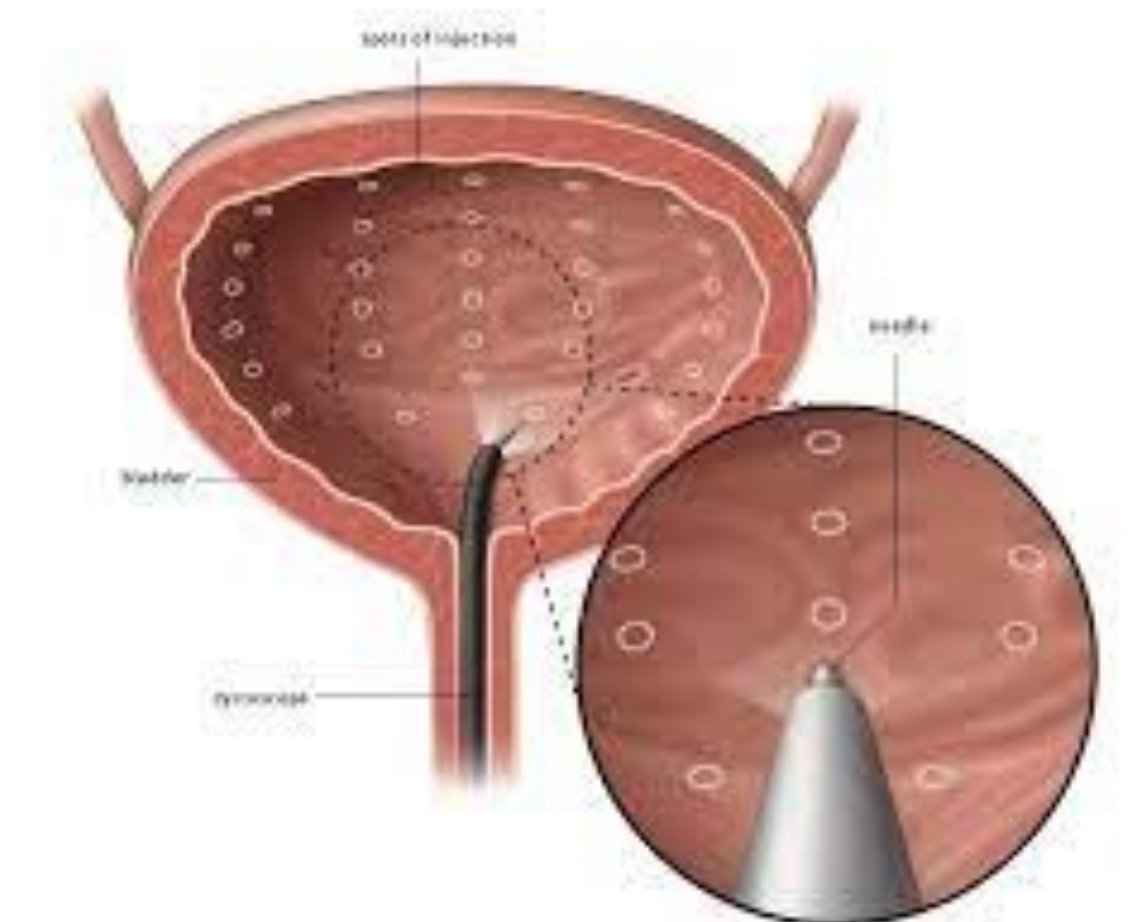


Figure 2. Image demonstrating the technique for intradetrusor botulinum injections

References

Gormley, E. A. *et al.* (2015) 'Diagnosis and treatment of overactive bladder (non-neurogenic) in adults: AUA/SUFU guideline amendment', *Journal of Urology*. Elsevier Inc., 193(5), pp. 1572–1580. doi: 10.1016/J.JURO.2015.01.087.

Shepherd, J. P. *et al.* (2011) 'InterStim Sacral Neuromodulation and Botox Botulinum-A Toxin Intradetrusor Injections for Refractory Urge Urinary Incontinence: A Decision Analysis Comparing Outcomes Including Efficacy and Complications', *Female pelvic medicine & reconstructive surgery*. Female Pelvic Med Reconstr Surg, 17(4), pp. 199–203. doi: 10.1097/SPV.0B013E318224E0D7.

Acknowledgements

Thank you to Dr. Gilleran and Dr. Baxa for your mentorship throughout this process.