NS-AUA 2023 Annual Meeting Abstracts – Female Urology, Incontinence

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Abstract 80

Fluoroscopy-based measurements of SNM lead locations and their therapeutic relevance

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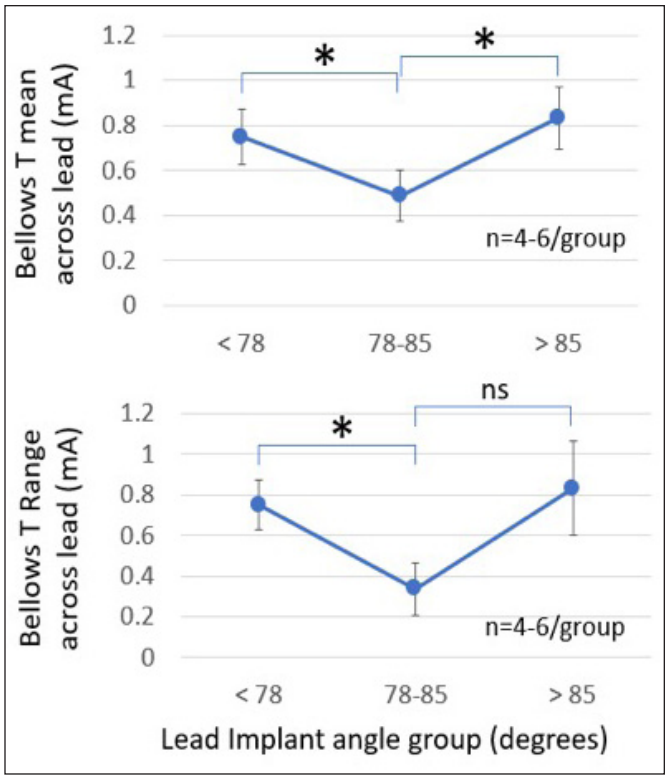
Introduction: Sacral neuromodulation (SNM) is an approved therapy for OAB, urinary retention without obstruction, and bowel disorders. During surgical implantation, fluoroscopy is used to target an electrical lead to the sacral nerve and images are stored in the electronic medical record (EMR); however, these images are not routinely used for quantitative measurements of SNM lead location. We, therefore, conducted a retrospective study to capture and quantify lead depth and implant angle from these fluoroscopic images to test their utility. To examine the functional relevance of these measurements, we compared them to motor thresholds obtained during surgery.

Methods: EMRs were reviewed from 16 patients with implanted Axonics SNM leads (model 1201). Lead angles and contact depths were measured from lateral fluoroscopic images. Contact depths were measured relative to the posterior sacral plane. Without image magnification, we calculated depths as the percentage of each patient's sacral thickness (%ST). Lead angle was measured in degrees between the ventral aspect of the sacrum and the lead. As a measure of therapy relevance, we compared lead and contact locations to available bellows motor or sensory thresholds (bipolar stim) which are related to SNM efficacy. Student's t-test (Bonferroni adjustment for multiple comparisons) was used for statistical significance ($p<0.05$).

Results: Mean contact depths ranged from 81% ST±15 (SD) for the shallowest contact (#3) to 184% ST±27 for the deepest (#0). Mean implant depths across the contacts (0–3) were all significantly different (t-test, Bonferonni adjustment). The mean lead angle was 80±11°. Bellows threshold was significantly smaller for cathodic stimulation at contact 3 vs. contact 0 (0.9±0.1, SEM vs 1.2±0.1 mA, $p<0.05$). Results also revealed a potential optimal lead angle for angles between 75–85°. Within this range, mean bellows thresholds across the lead were significantly lower and had a smaller range relative to implant angles outside this range (Figure 1).

Conclusions: SNM contact depths and implant angles can be measured from fluoroscopic images captured during implantation. There are significant relationships between these measurements and bellows motor thresholds. Together, these results suggest quantitative fluoroscopic measurements of lead angles and contact depths are therapeutically relevant.

Funding: This work is sponsored in part by funds from The Dr. Gerald W. Timm Endowed Professorship in Neurourology and Urologic Engineering



Abstract 80. Figure 1.

Abstract 81

Herbs used to treat urinary tract infection by Indigenous people of North America

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Introduction: There is a long history of Indigenous people treating urinary tract infection (UTI) using their environment's native plants. This review focuses on the herbs used by different tribes across North America used to treat UTIs. As antibiotics are the standard treatment for UTIs, the increase in microbial resistance prompts the exploration of alternative therapies. This review identifies these herbs to investigate whether they could be a potential alternative to antibiotics in modern medicine.

Methods: A review of North American Indigenous peoples' literature was undertaken to investigate the herbs used to treat UTIs in various tribal communities.

Results: Wild mint (Mentha arvensis) is used by the Cherokee, Ojibwa, and Cree, as well as the Lenape tribe located in the Delaware region. The plant leaves have antimicrobial and diuretic properties, helping relieve the symptoms of UTIs. Bearberry (Arctostaphylos uva-ursi) grows throughout North America and is used by Cree, Innu, and Inuit tribes of Northeastern Canada. Its leaves contain arbutin, which is thought to have antiseptic and diuretic properties. It is brewed into a tea and applied directly to the affected area. Because of its diuretic properties, the tea is drunk to promote urination and flushing of bacteria from the urinary tract. The Iroquois, Micmac, and Wampanoag tribes, located in Rhode Island and Massachusetts, used cranberry (Vaccinium macrocarpon) for UTIs. Algonquin-speaking tribes, which spanned across Canada, treated UTIs with cranberry, unaware of its ability to prevent bacteria from adhering to the urinary tract walls. Like cranberries, mossberries (Vaccinium oxycoccos) are found on low shrubs in northern regions and cold climates and were used by Inuit and Cree tribes for their antibacterial properties. Algonquin-speaking tribes also used Goldenrod (Solidago spp.), discovering that the leaves and flowers have diuretic properties, increasing urination and assisting with the excretion of bacteria. Eastern Cherokee used a mix of herbs that included Solidago odora for urinary problems.

Conclusions: This review represents a more complete understanding of the North American plants used by Indigenous people across the region to treat UTIs. The identification of these herbs provides a launching point to investigate whether they have been, or could be, proven as efficacious, alternative treatments of UTIs.

Abstract 82

Post-HoLEP incontinence improvement is delayed among patients self-identified as incontinent preoperatively

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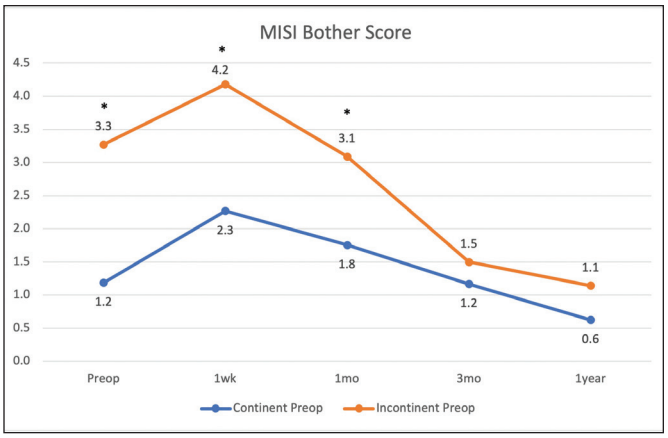
Introduction: Many patients who undergo holmium laser enucleation of the prostate (HoLEP) have some level of preoperative incontinence. It is uncertain how preoperative continence status affects severity and bother attributed to incontinence postoperatively. This study aimed to use the Michigan Incontinence Symptom Index (M-ISI), a validated continence questionnaire, to understand these differences between the two cohorts over the year following HoLEP.

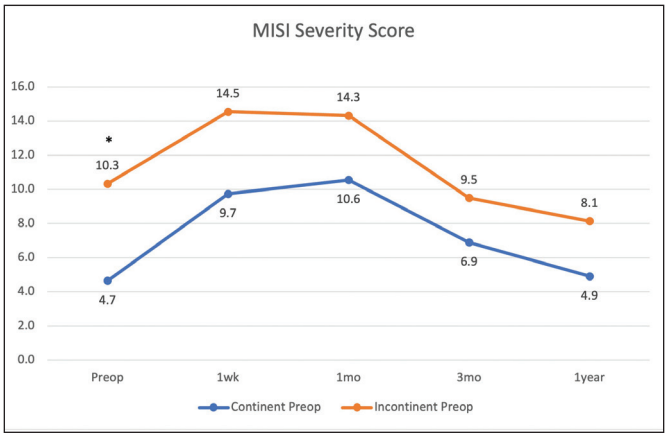
Methods: This was a single-institution, retrospective review of 170 patients who underwent pre-HoLEP evaluation between November 6, 2020, and March 2, 2023; 148 of these patients underwent HoLEP. Pre-HoLEP, patients completed the M-ISI. Patients were evaluated at one week, one month, three months, and one-year post-HoLEP. Two-sample t-tests were used to determine statistical significance, with primary outcomes being the M-ISI severity and bother scores.

Results: Per patient report, 124 participants were self-identified as continent and 46 were incontinent pre-HoLEP. At pre-HoLEP evaluation, incontinent patients had significantly increased M-ISI severity and bother scores compared with continent. At one week post-HoLEP, both groups reported short-term worsening of voiding symptoms per survey data. There was a loss of statistical significance in severity scores between the groups at one week post-HoLEP. At three months post-HoLEP, M-ISI bother scores demonstrated improved voiding symptoms in both groups, with loss of statistical significance between groups. At one year, preop continent patients' M-ISI bother scores improved by 47.3% and their severity scores increased by 5.6%. At one year, preop incontinent patients' M-ISI bother scores improved by 65.1% and their severity scores improved by 21.2%.

Conclusions: These results support the understanding that continence after HoLEP improves in the following months. Patients incontinent pre-HOLEP initially demonstrated more severe early symptoms. All patients' M-ISI severity and bother scores worsen initially but demonstrate significant improvement over one year, especially in bother scores.



Abstract 82. Figure 1. M-ISI bother score.



Abstract 82. Figure 2. M-ISI severity score.

Abstract 82. Table 1

	Continent Pre-op (n = 124)	n	Incontinent Pre-op (n =46)	n	P value
MISI - Severity Score	(0 - 32)		(0 - 32)		
Pre-operatively	4.65	60	10.33	33	**<0.001**
One week	9.74	27	14.55	11	0.064
One month	10.55	49	14.32	22	0.10
Three months	6.89	57	9.50	12	0.32
One year	4.91	33	8.14	7	0.28
MISI - Bother Score	(0 - 8)		(0 - 8)		
Pre-operatively	1.19	59	3.27	33	**<0.001**
One week	2.27	26	4.18	11	**0.029**
One month	1.76	49	3.09	22	**0.040**
Three months	1.17	54	1.50	12	0.52
One year	0.63	32	1.14	7	0.26

Abstract 83

Intravesical contrast-enhanced magnetic resonance imaging: A minimally invasive surrogate of bladder inflammation?

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Introduction: Biopsy is the only reliable tool to index inflammation in the bladder wall but biopsy is limited by invasiveness, complications, and the site-selection bias. Given that inflammation is orchestrated by cytokines with dilatory effect on vascular endothelium and uroepithelium, we examined the potential of intravesical contrast enhanced magnetic resonance imaging (ICE-MRI) to simultaneously measure venous congestion and urothelial permeability as a minimally invasive surrogate for inflammation.

Methods: We analyzed offline data of three cancer-negative male subjects (age range 60–75 years) enrolled in an ongoing clinical trial on ICE-MRI on the suspicion of bladder cancer. After signing informed consent, ICE-MRI was performed with Siemens Biograph 3T before and after transurethral bladder instillation of 50 mL contrast mixture (Gadobutrol and Ferumoxytol) using T1 weighted fast–low–angle–shot–3D volume interpolated breath hold examination (VIBE) and free breathing time-resolved angiography with interleaved stochastic trajectories (TWIST) scans. TWIST scans acquired over 450 s in voxel volume of 0.5*0.5*1 mm^3, repetition time 7.6 ms, echo time 3.4 ms, field of view 199*199 mm^2, acquisition matrix size 192*154. Scans were post processed by inhouse MATLAB scripts to assess dynamic T1 signal intensity changes in the regions of interest (ROI) selected for transurethral resection and normal adjacent region.

Results: The histopathology of the transected lesion ruled out cancer but confirmed inflammation secondary to cystitis cystica, epithelial denudation, or granuloma. Histogram of inflamed pixels intensity revealed higher-than-normal distribution (lower kurtosis) as opposed to lower-than-normal distribution (higher kurtosis, fat tails) for healthy ROI. Owing to its diamagnetic nature, oxyhemoglobin lacks any signal and therefore differences in pulsatile arrival of oxyhemoglobin in inflamed and healthy ROI causes differences in recurring dips in pixel intensity. Since diffused gadobutrol from mucosa only enhances the signal of venules and veins but not of arteries, TWIST scans can visualize the dynamic contrast enhancement of veins from normal and inflamed areas.

Conclusions: ICE-MRI can probe the impact of inflammation on urothelial tight junctions influencing permeability of gadobutrol, as well as the delayed washout of diffused gadobutrol due to venous stasis can be leveraged for radiation-free angiography of bladder wall. Findings warrant future investigations to determine the potential of ICE-MRI can replace invasive biopsy to index inflammation.

Funding: CA252590.

Abstract 84

Retrospective, multicenter analysis of long-term outcomes after artificial urinary sphincter following urethroplasty

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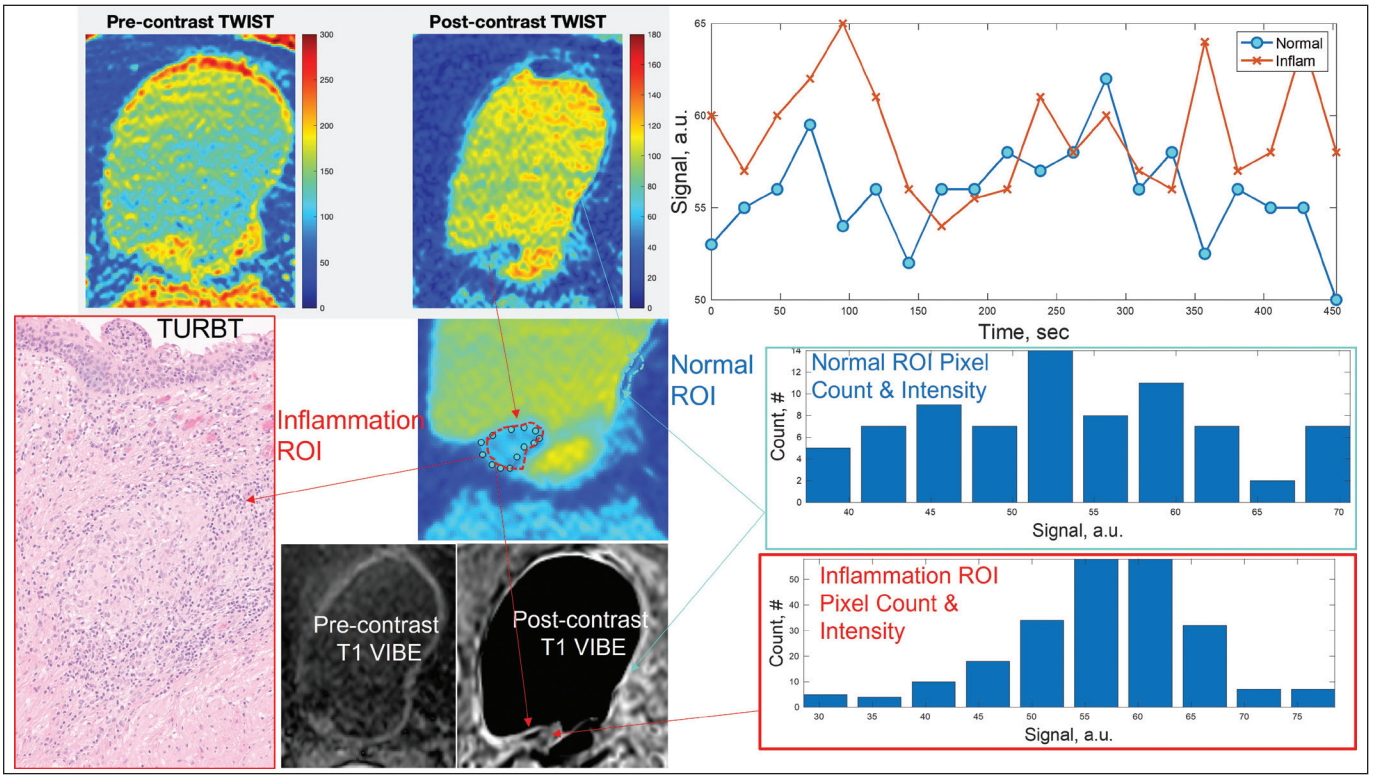
Introduction: The artificial urinary sphincter (AUS) is generally accepted as the gold standard for male stress urinary incontinence (SUI). There is limited and conflicting evidence on outcomes when urethroplasty precedes AUS insertion, and even less scrutiny of whether and how urethroplasty technique affects these outcomes. We sought to evaluate complications of AUS insertion after urethroplasty in a multi-institutional cohort. We hypothesize that complications occur at higher rates in this population and vary between transecting vs. non-transecting urethroplasty.

Methods: A total of 178 patients were identified who underwent AUS after urethroplasty. Demographic and clinical variables were analyzed. Urethroplasties were categorized as either transecting or non-transecting. Long-term complica-



Abstract 83. Figure 1.

tions included AUS infection, erosion, and mechanical failure. Analysis was performed using Stata/BE 17.0. For descriptive statistics, continuous variables were presented as the mean or median and categorical variables were presented as absolute numbers and percentages. Chi-squared test was used for categorical variables. Tests performed were two-sided and $p<0.05$ was considered to indicate statistical significance.

Abstract 84. Table 1. Patient characteristics

Clinical characteristic	%	n
Age, years (range)	66 (15–83)	177
BMI, kg/m^2 (range)	28 (19–39)	136
Prostate cancer	80.0	142
Diabetes	25.8	46
Hypertension	44.9	80
Smoker (current or former)	34.8	62
History of radiation	13.5	24
History of radiation and prostatectomy	27.0	48
History genitourinary trauma	18.6	33
Stricture location		177
Bulbomembranous	33.3	59
Bulbar	17.5	31
VUAS	42.4	75
Panurethral	0.6	1
Other	6.21	11
Stricture length (cm)		174
<2	26.4	46
2–5	69.0	120
>5	4.6	8
Urethroplasty technique		178
Transecting	44.9	80
Non-transecting	56.1	98
Cuff size (cm)		178
<4	2.3	4
4	25.3	45
4.5	48.3	86
5	12.9	23
>5	11.2	20
AUS cuff position		177
Bulbar	58.2	103
Transcorporal	40.1	71
Other	1.7	3

Results: A total of 178 cases were identified that were performed by 17 surgeons (range 4–40). Median followup was 41 months following AUS insertion. Characteristics of the sample are included in Table 1. Long-term AUS complications, including AUS infection, erosion, atrophy, and mechanical failure following transecting urethroplasty, was 55% compared to 23% following non-transecting urethroplasty ($p<0.0001$). Among 98 patients who had non-transecting urethroplasty, 13 experienced erosion, five infection, and two mechanical failure. Among 80 patients who had transecting urethroplasty, 25 experienced erosion, two infection, and seven mechanical failure.

Conclusions: For patients undergoing AUS insertion after urethroplasty, complications occur at higher rates than outcomes in the general population. Patients who undergo transecting urethroplasty are twice as likely to experience AUS complications compared to patients who had undergone non-transecting urethroplasty. Non-transecting urethroplasty may be advisable if a subsequent need for AUS is anticipated.

Abstract 85

Atrial natriuretic peptide demonstrates influential role on the secretion of neurotrophins in smooth muscle cells of the bladder in-vitro

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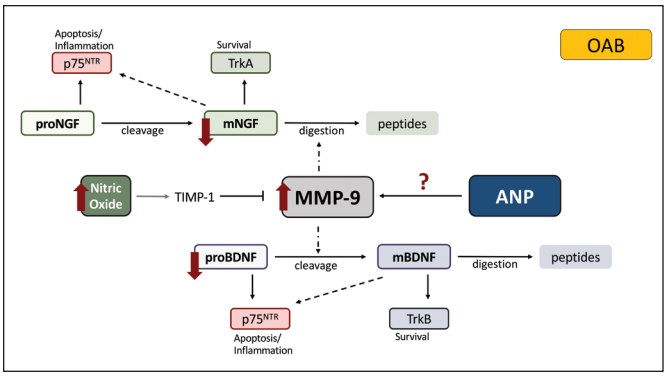
Introduction: Urine storage and voiding by the bladder are controlled by the peripheral and central nervous systems. Neurotrophins are essential for the maintenance and activity of nerve endings. Among them, nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF) controls neuroregeneration, while their respective precursor proNGF and proBDNF trigger inflammation and apoptosis. A dysregulation in the ratio of neurotrophins to proneurotrophins have been found to be viable biomarkers for overactive bladder syndrome (OAB) (Figure 1). On the other hand, our previous data suggests that cGMP plays an important role in neurotrophin secretion and that natriuretic peptide A (ANP), a major source of cGMP, might be involved. The objective of this study was to examine the relationship between ANP and neurotrophins in clinical samples and in bladder cells in-vitro. Urine samples from 20 controls and 20 OAB patients (50–80 years) were obtained with validated medical questionnaires.

Methods: ProBDNF and BDNF were measured using specific ELISA kits (Biosensis). Activity of MMP-9 was measured using an enzymatic kit. Smooth muscle cells (SMC) were grown from rat bladder and incubated for 24 hours with ANP (100 nM), which regulates intracellular cyclic GMP (cGMP) levels, a central pathway in the synthesis and secretion of neurotrophins. ANP, NGF, proNGF, BDNF, proBDNF and matrix metalloproteinase-9 (MMP-9) were measured using specific ELISA kits.

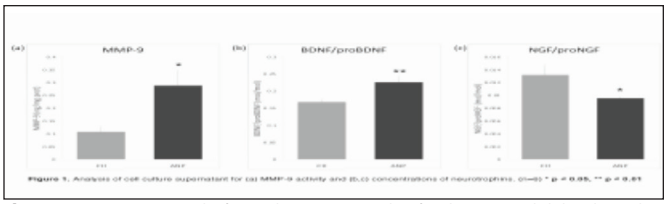
Results: Our findings indicate that ANP reduces the secretion of NGF and proBDNF by SMCs, while proNGF and BDNF remain unaffected, similar to what was observed in patients with OAB (Figure 2). Additionally, ANP increased the activity of MMP-9 in the same cell culture medium. Using CrisprCas9 to knockdown MMP-9 gene, we confirmed the essential role of this enzyme in the proteolysis of NGF into peptides and in the conversion of proBDNF to BDNF (Figure 3). Finally, we found that ANP content in the urine of OAB patients was elevated, supporting our hypothesis (Figure 4).

Conclusions: These results suggest that ANP may be linked to OAB by promoting imbalance between pro- and mature neurotrophins in bladder SMCs through enhanced production of MMP-9. The latter could suggest a new target for future therapies.

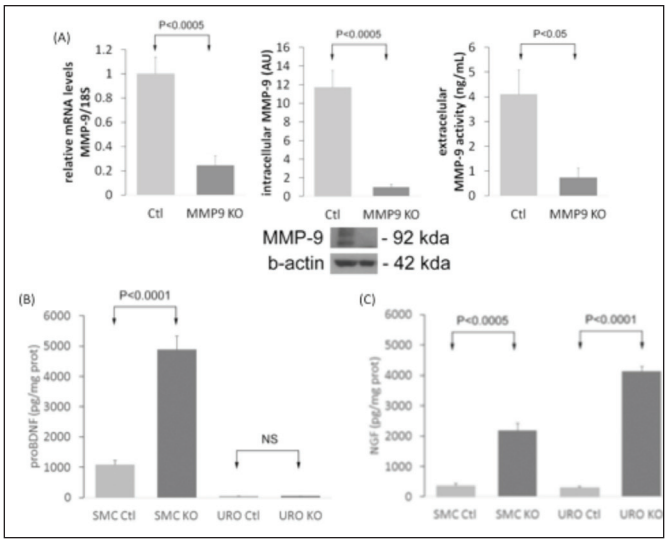
Funding: RQRV



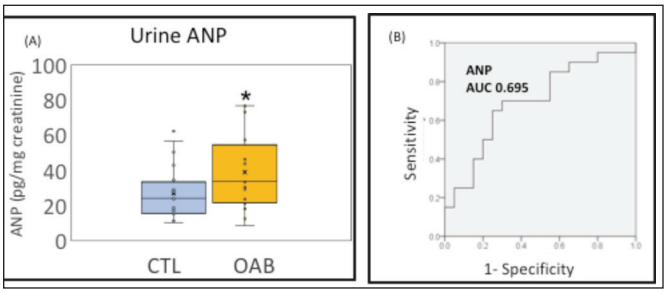
Abstract 85. Figure 1.



Abstract 85. Figure 2. Levels of pro and mature neurotrophins found in SMC, urothelial, and control cell cultures. (A) BDNF, proBDNF; and (B) NGF, proNGF, and their respective ratios.



Abstract 85. Figure 3. Knock-out of MMP-9 gene by CrisprCas-9 in smooth muscle (SMC) and urothelial (URO) cells in culture. (A) Deletion of MMP-9 gene decreased expression of MMP-9 mRNA, of intracellular MMP-9 cell content and its extracellular enzymatic activity. (B) In the same culture, proBDNF secretion was potently increased in SMCs while unchanged in UROs, the latest being due to the very low amount of proBDNF produced. (C) Similarly, extracellular NGF levels were increased in MMP-9 KO cells, both in SMCs and UROs. This data highlights the central role of MMP-9 in the proteolysis of neurotrophins. (n=6) ANOVA one-way.



Abstract 85. Figure 4. Urinary ANP levels (A) and corresponding receiver operating characteristics (ROC) curve. The area under the ROC curve (AUC) (B) signifies the accuracy of the individual biomarker for distinguishing OAB from normal urine samples (*p<0.05).

Abstract 86

Opportunity for International Continence Society urodynamic standardization: Sensation, rectal activity, and uninhibited detrusor contractions – a survey of International Continence Society members

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Introduction: The International Continence Society (ICS) has published essential documents standardizing urodynamic technique and reporting. Currently, no consensus exists regarding patient prompts for bladder sensation, particularly in the setting of impaired bladder sensation (e.g., spinal cord injury, SCI). Similarly, no published standardization exists for the reporting of rectal contractions or duration and amplitude of uninhibited contractions (UICs). We aimed to evaluate current practice patterns among ICS urodynamicists regarding sensation prompts, mention of rectal contractions, and the extent to which uninhibited contractions are described.

Methods: A Qualtrics urodynamic testing survey was distributed to all ICS members over two weeks. The survey included 18 questions regarding provider and practice characteristics, urodynamic practice patterns, qualitative evaluation of coaching prompts given to patients regarding sensation during urodynamic testing and rectal and UICs. Data were analyzed using descriptive statistics (Tables 1, 2).

Results: Of 2859 ICS members, 614 (21%) returned surveys. Of these, 35 did not perform urodynamic testing and 154 surveys were not completed. Thus, 425/614 (69%) surveys were included in our analysis. Participants were most commonly fellowship-trained female functional urologists (40%) and practiced in a government service hospital (46%). Half of the providers (55%) are present for the study 100% of the time. Most participants instructed patients on how to report sensation during urodynamic studies (UDS) (59%). First sensation (86%), urgency (86%), first desire (85%), and strong desire (93%) were the parameters most used. Capacity was the least used (54%). Various prompts for each of the UDS sensation parameters were reported, including repeating the ICS definition, real-life analogies, and a wide variety of other prompts (Table 2); 45% of respondents altered instructions for patients with impaired sensation (e.g., SCI), 59% commented on the presence or absence of rectal contraction, and 70.4% characterized the amplitude and duration of UICs in their reports.

Conclusions: Although most survey participants report they standardize urodynamic instructions (74%), there is no consensus for sensation prompts within ICS urodynamic practice publications. Urodynamic testing practice patterns vary widely among ICS urodynamicists with respect to sensation prompts, modified instructions for those with impaired sensation, and reporting of rectal contractions and UICs. Opportunity exists for further standardization of good urodynamic practice in published guidelines.

Abstract 86. Table 1. Baseline demographics of participants

	Number of participants (%)
Training background	
Female functional urologist	127 (39.9)
General urologist	95 (22.4)
Urogynecologist	78 (18.4)
Nurse	36 (8.5)
Other MD	27 (6.4)
General gynecologist	26 (6.1)
Nurse practitioner/physician assistant	13 (3.1)
Physiologist	3 (0.7)
Technician	2 (0.5)
Practice setting	
Government service hospital	197 (46.4)
Academic medicine	163 (38.4)
Private practice	118 (27.8)
Other practice settings	
National health services	8 (1.88)
Public service in private clinic	1 (0.23)
University hospital	1 (0.23
Ambulatory care hospital	1 (0.23)
Public hospital	1 (0.23)
Unit specialized in neuro urology incontinence and urodynamics	1 (0.23)
Country demographics	
Developed/industrialized nation	298 (70.1)
Developing/emerging/middle-income nation	99 (23.3)
Underdeveloped/low-income nation	20 (4.7)
Who instructs your patient on how to report sensation during UDS?	
I do	249 (58.6)
A combination of providers	85 (20.0)
RN/technician	77 (18.1)
A trainee	10 (2.4)
The patient does not receive instructions	1 (0.2)
For what percent of the studies are you present for the key portions?	
100%	236 (55.5)
>50-<100%	85 (20.0)
>0-50%	64 (15.1)
0%	26 (6.1)

Abstract 86. Table 1 (cont'd). Baseline demographics of participants

	Number of participants (%)
Do you standardize instructions?	
Yes	314 (73.9)
Somewhat	97 (22.8)
No	14 (3.3)
Sensation parameters reported on UDS	
First sensation	366 (86.1)
First desire to void	359 (84.5)
Normal desire to void	334 (78.6)
Strong desire to void	396 (93.2)
Urgency	366 (86.1)
Capacity	229 (53.9)
Maximum cystometric capacity	322 (75.8)
Capacity	229 (53.9)
If your patient has impaired bladder sensation, do you change sensation instructions?	
Yes	191 (44.9)
No	121 (28.5)
Sometimes	102 (24.0)
What are these instructions?	
Describe any feeling or sensation you may have	26.9 %
Pain	20.2%
Describe what you feel at home when you know your bladder is full	16.0%
Lower abdominal pressure	14.3%
Signs of autonomic dysreflexia	10.0%
Abdominal discomfort	8.4%
Hypogastric fullness	8.4%
Urodynamic fluctuations	3.4%
Do you document the presence or absence of rectal contractions?	
Yes	251 (59.1)
No	165 (38.8)
If an uninhibited contraction occurs during filling, do you note amplitude and duration?	
Yes	299 (70.4)
No	119 (28.0)

Abstract 86. Table 2. Most common prompts identified for each parameter with percentage of utilization

Sensation parameter with coaching prompts	% of prompts present for each parameter	Prompt examples
First sensation		
Repeats an ICS definition: *"The feeling when the patient first becomes aware of bladder filling"* [2]	77.4	
Repeats the title	28.6	"Tell me when you feel first sensation"
Describes as presence of urine or fluid	13.9	"Do you feel fluid entering your bladder?"
Uses temperature as a descriptor	7.9	"Do you feel something cold going inside your bladder?"
Utilizes a real-life analogy	0.8	"Enough urine that you could void prior to a long trip"
First desire to void		
Repeats an ICS definition: *"The first feeling that the patient may wish to pass urine."* [2]	30.6	
Would go to the restroom	18.7	"If at home you would look for a bathroom"
Could hold it if possible	17.1	"Sensation to void but can hold longer"
Have thoughts of voiding/Looking for a restroom	13.9	"First sensation of needing to go to the toilet and void"
Utilizes a real-life analogy	6.7	"When you would start looking for a bathroom while driving"
Desire to void but can continue current activity	5.6	"When you feel you could void but can carry on your task with ease"
Normal desire to void		
When you have to go to the restroom	61.4	"Tell me the moment you would go to a restroom"
Repeats an ICS definition: *"The feeling that leads the patient to pass urine at the next convenient moment, but voiding can be delayed if necessary."* [2]	23.6	
Moment you would void during a normal day	16.7	"Normally when you would void"
If at home, you would normally go	15.5	"Tell me when you feel a normal desire and would void at home"
Utilizes a real-life analogy	12.0	"When you would leave a movie/pause a TV show/put down a good book to pass urine"
Have thoughts of voiding/looking for a restroom	9.9	"When you would seek a toilet"
Strong desire to void		
When you absolutely need to go to the restroom	31.8	"Tell me when you have a strong urge to go to the restroom"
Can no longer delay voiding	28.5	"When you can't hold it anymore"
Leaves activity to void	17.3	"When you would have to stop what you were doing and void"
Utilizes real-life analogy	14.0	"When you would start looking for the next rest area if you were driving down the highway?"
Repeats an ICS definition: *"The persistent desire to pass urine without the fear of leakage."* [2]	7.3	
Urgency		
Strong need to void and holding is difficult	34.8	"When you can no longer hold your urine"
Sudden feeling of needing to void	14.8	"When he/she feels the compelling desire to go the bathroom and urinate"
Fear of leakage	12.6	"You would have to go now or else you would lose urine"
Repeats an ICS definition: *"Sudden, compelling desire to pass urine which is difficult to defer."* [2]	9.6	
Need to rush to the restroom	7.4	"When you would run to the toilet"
Utilizes a real-life analogy	6.7	"Tell me when you would pull over in your car to void"

Abstract 86. Table 2 (cont'd). Most common prompts identified for each parameter with percentage of utilization

Sensation parameter with coaching prompts	% of prompts present for each parameter	Prompt examples
Capacity		
Cannot keep urine in your bladder	12.7	"Tell me when you cannot keep the urine in your bladder"
When you would normally go to the restroom	9.9	"Let me know when you have to go the bathroom"
When you feel your bladder is full	8.5	"When you cannot tolerate more"
When you would void without delay	7.0	"When you would no longer defer the urge and would definitely void"
Utilizes a real-life analogy	5.6	"Tell me when you would leave a funeral to void"
When you have discomfort or pain	5.6	"When you feel starting to become uncomfortable"
Repeats an ICS definition: *"Bladder volume at the end of filling cystometry, when a "permission to void" is usually given by the urodynamicist."* [3]	2.8	
Maximum cystometric capacity		
When you cannot tolerate further filling	21.6	"When you can't take anymore"
Calculation and not sensation of filling	12.7	"Voided volume added to the residual volume"
Pain or uninhibited contractions followed by voiding	10.8	"When you feel pain"
Repeats an ICS definition: "In individuals with normal sensation, this is the volume during filling cystometry when voiding can no longer be delayed." [3]	9.8	
Strong desire	5.9	"Tell me you have a strong desire to void"
Utilizes a real-life analogy	3.9	"When you would pull over on the side of a road"
When they say stop	2.9	"When they say stop and permission to void is given"

Abstract 87

Intervention for a cause of severe urethral pain: Patient-reported outcomes of botulinum toxin A injections into bladder neck in women with bladder neck obstruction

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Introduction: Primary bladder neck obstruction (BNO) is a condition wherein the bladder neck fails to open normally during the voiding phase in the absence of anatomic obstruction, often leading to lower urinary tract symptoms. Botulinum toxin A (BoNT-A) to the bladder neck has been performed with clinical success in our subspecialty voiding dysfunction practice for patients who previously failed conventional therapy (alpha blockers, pelvic floor physical therapy). This is the first report of patient-reported outcomes of BoNT-A to the bladder neck for BNO in female participants.

Methods: We included female patients with refractory BNO who received BoNT-A to the bladder neck after January 1, 2022. Patient-reported outcome questionnaires were mailed with a return envelope. Primary outcome was the Global Response Assessment (GRA). Secondary outcomes included Visual Analogue Scales (VAS) and a structured symptom checklist. Descriptive analysis was employed given the population size. BNO was primarily diagnosed according to the Nitti Criteria, however, some patients required privacy to void and were not imaged. Therefore, additional criteria included: high pressure void with normal electromyography, prolonged voiding attempts, significant Valsalva effort, and cystoscopic evidence or symptoms suggesting BNO. All urodynamic studies were performed according to International Continence Society standards.

Results: Eighteen patients met criteria; 17/18 completed the questionnaire. The non-responder was classified as a failure, as most symptoms persisted at followup. Fourteen patients reported improvement on GRA, with an average VAS of 8.3 ("Very helpful") (Table 1). Incomplete emptying and difficulty starting stream were the most frequently improved symptoms (Table 2). Postoperative symptom flares (urethral burning, spasm, feelings of incomplete emptying) were reported in six patients with a mean duration of 16 days. Six patients had biopsy-confirmed small fiber neuropathy (SFN), all of whom markedly improved on the GRA with an average VAS of 8.7. Fourteen patients reported they would repeat the treatment.

Conclusions: Administration of BoNT-A to the bladder neck resulted in significant improvement in those with refractory BNO, particularly among patients with chronic overlapping pain syndromes found to have small fiber neuropathy. Symptom flares are common and require appropriate counselling. These did not appear to deter interest in repeating treatment and can be mitigated by repeating BoNT-A prior to the end of the therapeutic window.

Abstract 88

Patient-reported outcomes of electrical-stimulation guided botulinum toxin A injections into pelvic floor muscles in women with pelvic floor tension myalgia

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Introduction: Chronic pelvic pain (CPP) is described as pain in the pelvis lasting 3–6 months or longer and it is estimated to be present in 5.7–26.6% of women. Pelvic floor tension myalgia (PFTM) is a well-established condition of pelvic pain associated with increased pelvic floor muscle (PFM) tone. First-line treatment involves conservative management with pelvic floor physical therapy, stretching, and biofeedback. Alternatively, botulinum toxin A (BoNT-A) injected

Abstract 87. Table 1. Global Response Assessment and Visual Analogue Scale

	Number of participants (%)
Reported improvement of symptoms on GRA	
Markedly improved	6 (33%)
Moderately improved	6 (33%)
Slightly improved	2 (11%)
No change	1 (6%)
Slightly worse	0
Moderately worse	0
Markedly worse	2 (11%)
Questionnaire not answered	1 (6%)
Reported temporary worsening of symptoms post procedure ("flare")	
Yes	6 (35%)
No	11 (65%)
VAS scale	Average score
Degree of treatment success all-comers (n=17): "Very harmful" (-10) to "Very helpful" (10)	5.3
Degree of treatment success in responders (n=14)	8.3

Abstract 87. Table 2. Patient-reported symptom improvement

Symptoms that improved	# participants out of 17 (%)
Feeling of incomplete emptying	11 (65%)
Difficulty starting stream	11 (65%)
Urethral burning	10 (59%)
Pelvic pain	9 (53%)
Pain with urination	9 (53%)
Frequency	8 (47%)
Urgency	7 (41%)
Intermittent stream	1 (6%)
Lower abdominal pain	1 (6%)
Bladder sensitivity	1 (6%)
Decreased urinary tract infection frequency	1 (6%)

into the pelvic floor has shown significant improvement for patients in our subspecialty clinical practice. We investigate patient-reported outcomes of electrical stimulation-guided BoNT-A injections to the pelvic floor muscles for patients with CPP secondary to PFTM.

Methods: We included female patients with PFTM refractory to pelvic floor physical therapy who subsequently received BoNT-A with electrical stimulation guidance to the PFM after January 1, 2022. Patient-reported outcome questionnaires were mailed to patients with a return envelope. The Global Response Assessment (GRA) was the primary outcome. Secondary outcomes included

Abstract 88. Table 1. Global Response Assessment and Visual Analogue Scale

	Number of participants (%)
Reported improvement of symptoms	
Markedly improved	7 (44%)
Moderately improved	4 (25%)
Slightly improved	3 (19%)
No change	0
Slightly worse	1 (6%)
Moderately worse	0
Markedly worse	0
Questionnaire not answered	1 (6%)
Reported temporary worsening of symptoms	
Yes	7 (47%)
No	8 (53%)
Visual Analogue Scale	Average score
Degree of treatment success all comers (n=15): "Very harmful" (-10) to "Very helpful" (10)	6.4
Degree of treatment success in those reporting success	8.6

Visual Analogue Scales (VAS) and a structured symptom checklist. Descriptive analysis was employed for data assessment given the population size. PFTM was determined on exam according to the International Continence Society report on the terminology of pelvic floor muscle assessment.

Results: Sixteen patients met the study criteria; 15/16 (94%) returned the questionnaire. The non-responder was classified as a failure as most symptoms persisted at followup visits. Fourteen patients (88%) reported improvement in pelvic symptoms on the GRA with an average VAS of 8.6 (Table 1). The most reported improved symptoms were pelvic pressure/pain (80%), among others (Table 2). Symptom flares (increased pelvic pain, pelvic cramping, pain with urination, urethral burning, dyspareunia) occurred in seven patients (47%) for an average duration of 7.8 days. Fourteen patients (88%) reported interest in repeating the procedure.

Conclusions: Electrical stimulation-guided BoNT-A to the pelvic floor muscles provided significant relief of pelvic pain in a majority of patients and is an excellent option for refractory pelvic pain associated with PFTM. Symptom flares commonly occurred among patients, but largely did not deter their interest in future treatments. Patients should be counselled that flares are common and can be avoided by repeating treatment prior to the effects of BoNT-A wearing off entirely.

Abstract 89

Multidisciplinary utilization assessment amongst pelvic health patients: A comparative study

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Introduction: Pelvic floor disorders (incontinence, pain, urinary, and defecatory dysfunction) affect 32% of women and 16% of men in the U.S. (Grimes & Stratton, 2023). Management often requires multidisciplinary care. We compared multidisciplinary needs assessment within a traditional FPMRS/urogynecology intake vs. an electronic multidisciplinary validated intake screening process (MVISP) at a large academic institution.

Methods: We analyzed two consecutive groups in the same urology FPMRS/urogynecology practice with access to multidisciplinary pelvic health specialists (MDPHS), including gastroenterology, colorectal surgery, neurology, neurosurgery, and pelvic floor physical therapy. Group 1 (n=58) completed a traditional paper

history and initial visit one year prior. Multidisciplinary pelvic needs were assessed retrospectively from records, ICD10 codes, and MDPHS seen within 12 months of initial urology visit. Group 2 (n=58, current) completed an electronic MVISP including American Urological Association Symptom Score (AUASS), PFDI-20 (Pelvic Organ Prolapse Distress Inventory, Colorectal-Anal Distress Inventory, Urogenital Distress Inventory), Genitourinary Pain Index (GUPI), PHQ-4 for Anxiety and Depression, EQ-5D health thermometer score, and neurologic review of systems (NROS).

Results: Of 58 traditional intake patients, six were cis-male and 52 cis-female; 40 received multidisciplinary care. Traditional patients saw average 2.10 departments including urology vs. MVISP, who had seen 1.74 departments at intake including urology. Mean departments seen were not significantly different ($t(58)=1.82$, $p=0.07$). Most used pelvic floor physical therapy (n=28), followed by neurology (n=18) within the years queried. Of 58 electronic MVISP patients, six were cis-male and 52 cis-female. MVISP identified 50 patients with multidisciplinary symptomatology: average 2.88 departments per patient (including urology), defined by threshold-positive UDI-6/AUASS (n=58), CRAD-8 (n=34), POPDI-6 (n=27), GUPI pain subscale (n=28), and positive NROS (n=45). AUA QoL scale was "mostly dissatisfied" or worse in eight patients. GUPI QOL "mostly dissatisfied" in 21. EQ 5D was under 80% in 37 patients.

Conclusions: Both traditional and electronic MVISP groups demonstrated multidisciplinary pelvic symptomatology. Patients who completed MVISP were identified with multidisciplinary needs at higher rates than patients in the traditional processes. These findings suggest that if patients can systematically self-report symptoms, multidisciplinary pelvic health outcomes may be enhanced while saving clinicians' time.

Reference

1. Grimes, W. R., & Stratton, M. (2022). Pelvic Floor Dysfunction. In *StatPearls*. StatPearls Publishing.