

## BRIEFINGS FROM WOMEN'S HEALTH EXPERTS

# Overactive bladder: Current treatments and new research

Overactive bladder syndrome (OAB) is a common condition affecting up to 43% of women in the United States [1]. For many patients, symptoms of OAB include a loss of self-esteem, restriction of activities and psychological distress [2]. The American Urological Association (AUA) and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU) recommends patients try medication and behavioral modification before proceeding to third line OAB treatments which includes percutaneous tibial nerve stimulation (PTNS), OnabotulinumtoxinA (Botox®), and sacral neuromodulation (SNM) [3].

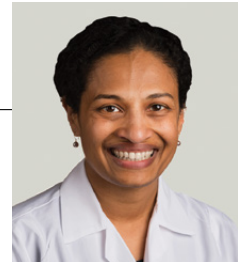
**Behavioral therapy** includes fluid management (limiting caffeine and alcohol), bladder retraining (trying to defer the urge), and pelvic floor physical therapy. With these changes, we can see up to 50% symptom improvement. The next step is OAB medications. There are currently 8 OAB medications available in the U.S. – six anticholinergic, and two  $\beta_3$  agonist.  $\beta_3$  agonist medications are newer overall and cause relaxation of the detrusor muscle, in contrast to anticholinergic medications that block detrusor contraction. While common side effects of anticholinergic medications include dry mouth, dry eyes, and constipation in an average of 20% of patients,  $\beta_3$  agonist medications do not cause these side effects [4].  $\beta_3$  agonist medications can increase blood pressures in some patients, so they should be used with caution in patients with uncontrolled hypertension. Overall, medications work 50% of the time to improve symptoms. We often have to try behavioral changes and at least two medications prior to insurance approval of third-line therapies.

**OAB medications** are primarily anticholinergic with side effects including dry mouth, blurred vision, and constipation and have been associated with cognitive changes in elderly patients [5]. Up to 40% of patients stop OAB medication therapy due to side effects, with 66.7% stopping medication therapy within two years [6]. Common OAB medications, such as oxybutynin, have reported efficacy rates of 32-60%, making OAB medication therapy ineffective for many patients [7]. Once eligible for third-line treatments, many patients persist on OAB medication therapy despite poor efficacy. Poor efficacy, decreased satisfaction, decreased patient use of OAB medications over time, and side effects make medication therapy not suitable for everyone.

**Posterior tibial nerve stimulation (PTNS)** is an electrical stimulation of the posterior tibial nerve. The nerve can be accessed at a point near the ankle. A thin needle is placed

by **Shilpa Iyer, MD, MPH**

*Assistant Professor of  
Obstetrics and Gynecology  
Section of Urogynecology*



through the skin to the level of the nerve. The needle is then connected to a battery that electrically stimulates the tibial nerve. The initial protocol developed by Peters [8] that we use includes tibial nerve stimulation for 30 minutes one time a week for 12 weeks. Peters found in 2010, when compared to a sham procedure, PTNS improved both subjective and objective symptoms in 55% of patients [8]. When compared to tolterodine (OAB medication), both improved symptoms in 50% of patients. The greatest symptom improvement was in patients undergoing PTNS while continuing medication treatment [9]. If the 12-week treatment is successful, patients can opt to continue monthly maintenance visits. While there are frequent clinic visits, there is little to no risk, making this option palatable to many patients.

**Injection of OnabotulinumtoxinA (Botox®)** into the detrusor muscle with cystoscopy in the office setting works by paralyzing part of the detrusor muscle. Additionally, it also decreases sensory afferent signals from the bladder to help with urgency and pain symptoms. It was first approved in the U.S. by the FDA in 2011 for neurogenic patients and expanded in 2013 to include non-neurologic OAB. We perform this in the office after injecting local anesthetic into the bladder, starting at 100 units. On average improved symptoms last for 9 months, or 14 months using a higher dose. When compared to OAB medications, both OAB medications and OnabotulinumtoxinA reduced daily urge incontinence episodes by 3.4 episodes per day, but OnabotulinumtoxinA was more likely to result in no incontinence at all [10]. The main concern for patients is that when it works too well, 1-2% of patients have temporary urinary retention and need to perform self-catheterization until it wears off. Patients like OnabotulinumtoxinA because it is a short office procedure, works well, and allows them to stop OA medications.

**Sacral neuromodulation (SNM)** is a sacral nerve stimulator that involves placing a wire lead with four electrodes into the spinal column at the S3 level to stimulate the sacral nerve roots and an internal battery. It can be used to treat overactive bladder, urinary retention, and fecal incontinence. For overactive bladder, 60% of patients had at least a 50% improvement in symptoms at 6 months after placement, and 50% at 2 years after placement. A subset of patients (20%) had >75% improvement at 6 months

(continued from page 1)

and 2 years [11]. For urinary retention, 80% of patients had >50% improvement at 2 years after placement with increased voids and low residuals [12]. For fecal incontinence, 88% of patients had >50% improvement in their symptoms at 3 years after implant with a significant improvement in quality of life [13]. I often suggest SNM for patients with dual urinary and fecal incontinence. For fecal incontinence and urinary retention, we have a few other SNM treatment options to help patients improve their quality of life.

Patients can now opt for a 5-year non-rechargeable SNM or a 15-year rechargeable device. MRI compatibility and the longer life of a rechargeable system allows more patients to be eligible and for it to last longer prior to battery replacement. We place the SNM device in two stages. In the first stage, the sacral lead can be placed in the office under local anesthesia or in the operating room. If the lead is placed in the office, it is attached to an external battery and the patient tests the effect for one week. If it is placed in the operating room, the lead can be tested for two weeks. During the second stage, if at the end of the testing period the patient has more than 50% improvement in their symptoms, we implant the battery into the patient's buttock at a place they can access. The patient controls the program with a smart phone-like device that connects to the battery via Bluetooth technology. Both the patient and their provider can adjust the settings over time to achieve the optimal stimulation.

## When medications aren't enough

Treatment	Helps patients with	Pros	Cons
PTNS	<ul style="list-style-type: none"><li>• Synergistic with OAB meds</li></ul>	<ul style="list-style-type: none"><li>• Low risk</li><li>• External procedure</li></ul>	<ul style="list-style-type: none"><li>• Weekly office visits x 12, then monthly</li></ul>
Botox®	<ul style="list-style-type: none"><li>• Urge incontinence</li><li>• Neurogenic bladder</li></ul>	<ul style="list-style-type: none"><li>• Can stop OAB meds</li><li>• Short office procedure</li></ul>	<ul style="list-style-type: none"><li>• If over-corrected, may need temporary self-catheterization</li><li>• Lasts 9-14 months</li></ul>
SNM	<ul style="list-style-type: none"><li>• Urinary retention</li><li>• Combined urinary &amp; fecal incontinence</li></ul>	<ul style="list-style-type: none"><li>• New 15-year rechargeable device</li><li>• Adjust settings over time</li></ul>	<ul style="list-style-type: none"><li>• May need to go to OR for placement</li></ul>

## Summary

Overactive bladder is a common problem that affects many patients. There are treatments available that can help patients limit bathroom trips, stop using incontinence products, and greatly improve their social and overall quality of life. We have four fellowship-trained, board-certified urogynecologists and one nurse practitioner who see patients at our main campus and at several off-site locations.

REFERENCES [1] Coyne KS, Sexton CC, Vats V et al. National community prevalence of overactive bladder in the United States stratified by sex and age. *Urology*. 2011 May;77(5):1081-7. [2] Kelleher CJ, Cardozo LD, Khullar V et al (1997) A medium-term analysis of the subjective efficacy of treatment for women with detrusor instability and low bladder compliance. *Br J Obstet Gynaecol* 104:988-993. [3] Anger JT, Goldman HB, Luo X et al. Patterns of medical management of overactive bladder (OAB) and benign prostatic hyperplasia (BPH) in the United States. *Neurourol Urodyn*. 2018 Jan;37(1):213-222. [4] Shamliyan T, Wyman JF, Ramakrishnan R, Sainfort F, Kane RL. Benefits and harms of pharmacologic treatment for urinary incontinence in women: a systematic review. *Ann Intern Med*. 2012 Jun 19;156(12):861-74. [5] Gray S, Anderson M, Dublin S et al. Cumulative use of strong anticholinergics and incident dementia: a prospective cohort study. *JAMA Intern Med* 2015; 175(3):401-407. [6] Abrams P, Malone-Lee J, Jacquetin B, et al (2001) Twelve-Month Treatment of Overactive Bladder: Efficacy and Tolerability of Tolterodine. *Drugs & Aging* 18:551-560. [7] Tran AM, Reis R, Iyer S et al. Is There a Relationship Between Patient-Reported Satisfaction and Persistence on Overactive Bladder Syndrome Pharmacotherapy? *Female Pelvic Med Reconstr Surg*. 2018 May/June;24(3):237-240. [8] Peters KM, Carrico DJ, Perez-Marrero RA, Khan AU, Wooldridge LS, Davis GL, Macdiarmid SA. Randomized trial of percutaneous tibial nerve stimulation versus Sham efficacy in the treatment of overactive bladder syndrome: results from the SUMiT trial. *J Urol*. 2010 Apr;183(4):1438-43. [9] Peters KM, Macdiarmid SA, Wooldridge LS, Leong FC, Shobeiri SA, Rovner ES, Siegel SW, Tate SB, Jarnagin BK, Rosenblatt PL, Feagins BA. Randomized trial of percutaneous tibial nerve stimulation versus extended-release tolterodine: results from the overactive bladder innovative therapy trial. *J Urol*. 2009 Sep;182(3):1055-61. [10] Visco AG, Brubaker L, Richter HE, Nygaard I, Paraiso MF, Menefee SA, Schaffer J, Wei J, Chai T, Janz N, Spino C, Meikle S; Pelvic Floor Disorders Network. Anticholinergic versus botulinum toxin A comparison trial for the treatment of bothersome urge urinary incontinence: ABC trial. *Contemp Clin Trials*. 2012 Jan;33(1):184-96. [11] Siegel S, Noblett K, Mangel J, Griebing TL, Sutherland SE, Bird ET, Comiter C, Culkun D, Bennett J, Zylstra S, Berg KC, Kan F, Irwin CP. Results of a prospective, randomized, multicenter study evaluating sacral neuromodulation with InterStim therapy compared to standard medical therapy at 6-months in subjects with mild symptoms of overactive bladder. *Neurourol Urodyn*. 2015 Mar;34(3):224-30. [12] Gross C, Habli M, Lindsell C, South M. Sacral neuromodulation for nonobstructive urinary retention: a meta-analysis. *Female Pelvic Med Reconstr Surg*. 2010 Jul;16(4):249-53. [13] Mellgren A, Wexner SD, Collier JA, Devroede G, Lerew DR, Madoff RD, Hull T; SNS Study Group. Long-term efficacy and safety of sacral nerve stimulation for fecal incontinence. *Dis Colon Rectum*. 2011 Sep;54(9):1065-75.

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#### **Sandra Valaitis, MD**

*Chief, Section of Urogynecology  
and Reconstructive  
Pelvic Surgery Professor of  
Obstetrics and Gynecology*

[svalaitis@bsd.uchicago.edu](mailto:svalaitis@bsd.uchicago.edu)

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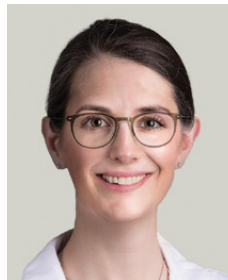


#### **Juraj Letko, MD**

*Urogynecology and Pelvic  
Reconstructive Surgery  
Assistant Professor of  
Obstetrics and Gynecology*

[jletko@bsd.uchicago.edu](mailto:jletko@bsd.uchicago.edu)

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River East  
Schererville**



#### **Dianne Glass, MD, PhD**

*Urogynecology and Pelvic  
Reconstructive Surgery  
Assistant Professor of  
Obstetrics and Gynecology*

[dianneglass@bsd.uchicago.edu](mailto:dianneglass@bsd.uchicago.edu)

**Hyde Park  
River East  
Schererville**



#### **Shilpa Iyer, MD, MPH**

*Urogynecology and Pelvic  
Reconstructive Surgery  
Assistant Professor of  
Obstetrics and Gynecology*

[siyer2@bsd.uchicago.edu](mailto:siyer2@bsd.uchicago.edu)

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