SUFU 2015 Winter Meeting
February 24 – 28, 2015
JW Marriott Camelback Inn Resort & Spa
Scottsdale, Arizona

Program Committee:
Gary E. Lemack, MD
(Program Chair)
Lori A. Birder, PhD
David Ginsberg, MD
Adam Klausner, MD
Steven W. Siegel, MD
I would like to thank you for joining us at the beautiful Camelback Resort in Scottsdale, Arizona, for the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU) 2015 Winter Meeting. This marks a homecoming of sorts for SUFU, as Scottsdale was the site of our first Winter Meeting in 2004.

Our meeting has transformed over the years, with enhanced interactions between basic and clinical scientists, clinicians, industry partners and trainees. The first day-and-a-half of the meeting is devoted to basic science plenary sessions, carefully planned and coordinated by my co-chairs Lori Birder, PhD and Adam Klausner, MD. The topics are provocative and timely, including discussions of the impact of aging on brain and bladder function, as well as new concepts in the pathophysiology underlying bladder pain.

The remainder of the meeting will include plenary lectures, lively debates, state-of-the-art discussions and dynamic case presentations by experts in the field. We continue to have smaller breakout sessions each day to encourage more face-to-face discussions with renowned thought leaders. SUFU is pleased to offer several new courses at the 2015 meeting including introduction to statistics, developing an academic career and grant writing. In addition, this meeting marks another important event for SUFU, as we initiate our formal association with the Mediterranean Incontinence and Pelvic Floor Society (MIPS) with an inaugural lecture. We look forward to many more years of interaction with MIPS.

We continue to promote the clinical research of our members, and as such, poster and podium sessions remain a huge focus of the meeting. We encourage members to actively engage the authors during these sessions as a means of stimulating discussion and generating new ideas. We will highlight several of our award-winning researchers and grant recipients during the meeting as well, as we hope to encourage the next generation of thought leaders. I owe a special thanks to David Ginsberg, MD, co-chair of the clinical meeting, for overseeing the abstract selection process and Steve Siegel, MD, for developing the neuromodulation content of the meeting.

Evening social events remain a cornerstone of our meeting, including the SUFU Welcome Reception on Wednesday, February 25th and a Cocktail Hour and Awards Presentation on Friday, February 27th. We encourage you to interact with your colleagues, industry partners and friends from across the country and world during these events. Additionally, there will be other opportunities to interact with our industry members at sponsored lunch symposiums and throughout the meeting in the exhibit hall. We certainly encourage you to visit with our industry partners, as their ongoing support continues to allow SUFU to grow, and the SUFU meeting to flourish.

On behalf of all of my co-chairs, I look forward to seeing you in Scottsdale.

Best Regards,

Gary E. Lemack, MD
SUFU Vice President and Winter Program Chair
Thank You to Reviewers

Due to the large number of abstracts submitted this year, the selection process was done anonymously. We gratefully acknowledge the participation of:

Karl-Erik Andersson, MD, PhD; Winston-Salem, NC
Jennifer Anger, MD, MPH; Beverly Hills, CA
Jerry G. Blaivas, MD; New York, NY
Maude Carmel, MD; Dallas, TX
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Vivian Cristofaro, PhD; Boston, MA
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Alex Gomelsky, MD; Shreveport, LA
E. Ann Gormley, MD; Lebanon, NH
Tomas L. Griebling, MD, MPH; Kansas City, KS
Michael J. Kennelly, MD, FACS; Charlotte, NC
Adam P. Klausner, MD; Richmond, VA
Kathleen C. Kobashi, MD, FACS; Seattle, WA
Stephen R. Kraus, MD; San Antonio, TX
Deborah J. Lightner, MD; Rochester, MN
Ayman Mahdy, MD, PhD; Cincinnati, OH
Alana M. Murphy, MD; Philadelphia, PA
Priya Padmanabhan, MPH, MD; Kansas City, KS
Christopher K. Payne, MD; San Jose, CA
Kenneth M. Peters, MD; Royal Oak, MI
W. Stuart Reynolds, MD, MPH; Nashville, TN
Leslie M. Rickey, MD, MPH; New Haven, CT
Larissa V. Rodriguez, MD; Beverly Hills, CA
Nirit Rosenblum, MD; Chappaqua, NY
Jaspreet S. Sandhu, MD; New York, NY
Steven W. Siegel, MD; Woodbury, MN
Ajay K. Singla, MD; Toledo, OH
John T. Stoffel, MD; Ann Arbor, MI
Maryrose P. Sullivan, PhD; West Roxbury, MA
Christian O. Twiss, MD; Tucson, AZ
Sandip P. Vasavada, MD; Hunting Valley, OH
E. James Wright, MD; Baltimore, MD
Christopher E. Wolter, MD; Phoenix, AZ

And we thank each reviewer for the timely review of the abstracts and for conforming with the scoring grid:

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Gary E. Lemack, MD (Program Chair)
Lori A. Birder, PhD
David A. Ginsberg, MD
Adam P. Klausner, MD
Steven W. Siegel, MD

We would also like to thank the 2015 SUFU Essay Competition Reviewers:

Craig V. Comiter, MD
Stephen R. Kraus, MD
Toby C. Chai, MD
### Schedule at a Glance

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<td>Salons C, D, E and G &amp; I</td>
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<td>6:00 a.m. – 6:00 p.m.</td>
<td>6:00 a.m. – 12:00 p.m.</td>
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<td>7:00 a.m. – 4:00 p.m.</td>
<td>6:00 a.m. – 12:00 p.m.</td>
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<td>6:00 a.m. – 5:00 p.m.</td>
<td>6:00 a.m. – 12:00 p.m.</td>
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<td>Location: Arizona Registration North</td>
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<tr>
<td><strong>7:00 a.m.</strong></td>
<td><strong>Video Session I</strong></td>
<td><strong>Video Session II</strong></td>
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<tr>
<td><strong>Location: Exhibit Hall</strong></td>
<td><strong>Location: Peace Pipe</strong> (Space Limited)</td>
<td><strong>Location: Salons A&amp;B</strong></td>
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<td><strong>8:00 a.m.</strong></td>
<td>Annual Business Meeting</td>
<td>Female Urology/Incontinence Podium Session</td>
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<td><strong>8:30 a.m.</strong></td>
<td>Pelvic Organ Prolapse/Reconstruction Podium Session</td>
<td>Male Incontinence/Neurodynamics/Neuromodulation Moderated and Non-Moderated Poster Sessions</td>
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<td><strong>9:00 a.m.</strong></td>
<td>Dermatological Lesions of the Female Genitalia</td>
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<td><strong>9:30 a.m.</strong></td>
<td>Female Genital Aesthetic Surgery</td>
<td>Female Genital Aesthetic Surgery</td>
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<td><strong>10:00 a.m.</strong></td>
<td><strong>Break – Visit the Exhibits</strong></td>
<td>Vaginal Mesh Update 2015</td>
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<td><strong>10:30 a.m.</strong></td>
<td>Announcements</td>
<td>Mesh Litigation Update</td>
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<td><strong>11:00 a.m.</strong></td>
<td>Subspecialty Training in Urology: An AUA Perspective</td>
<td>NIH Update</td>
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<td><strong>11:30 a.m.</strong></td>
<td>Quality, Cost and Value: How Do We Measure What We Do?</td>
<td>Panel: Rapid Fire Case Discussions in Stress Urinary Incontinence: Ask the Experts</td>
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<td><strong>12:00 p.m.</strong></td>
<td>Panel: Neurogenic Bladder: Management of the Devastated Outlet</td>
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<td><strong>12:30 p.m.</strong></td>
<td>Industry Sponsored Lunch Symposium</td>
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<td><strong>1:00 p.m.</strong></td>
<td>Location: Salons J &amp; K</td>
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<td><strong>1:30 p.m.</strong></td>
<td>State-of-the-Art Lecture: Surgical Treatment of BPH</td>
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<td><strong>2:00 p.m.</strong></td>
<td>Urodynamics: Evaluating the Obstructed Outlet</td>
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<td>Dickno-Lapides Award Presentation</td>
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<td><strong>3:00 p.m.</strong></td>
<td>2012 Neuromodulation Award Recipient Presentation</td>
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<td>Break – Visit the Exhibits</td>
<td>Meeting Adjourns</td>
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<td>Neuromodulation in Children</td>
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<td>Panel: Common Dilemmas in Neuromodulation</td>
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<td><strong>5:00 p.m.</strong></td>
<td>Biostatistics Review Course</td>
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<td>Breakout Session 1. Reconstruction of the Upper Urinary Tract: Tricks of the Trade</td>
<td>Breakout Session 2. Pelvic Floor Therapy in Men and Women with Urologic Chronic Pelvic Pain</td>
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<td><strong>6:30 p.m.</strong></td>
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NEEDS
The basic science topics of advances in age-related changes in brain and bladder function, modeling and phenotyping of the bladder in health and disease, electroceutics, MRI computational modeling, physiology of bladder pain and understanding of the bladder/urothelial microbiome. Attendees of the SUFU program need to be aware of the latest updates and controversies in these areas.

The clinical science topics of urinary tract infection, imaging in pelvic organ prolapse, urodynamics, pelvic floor dysfunction, urinary incontinence, vaginal surgical techniques, vaginal prolapse, fecal incontinence/constipation, neuromodulation and neurogenic bladder voiding dysfunction are rapidly developing areas. In addition, attendees of the SUFU program need to be aware of the latest updates and controversies in these areas.

This meeting will facilitate interactions between clinicians, investigators and basic scientists regarding these topics. Attendees will benefit from the ongoing review of these topics, which will assist them in assessing and providing the optimal patient care.

OBJECTIVES
At the conclusion of the SUFU 2015 Winter Meeting, participants should be able to:

1. Describe the complexities of age-related changes in brain and bladder function.
2. Describe the controversies in bladder modeling in health and disease.
3. Identify the role of electroceutics in the management of bladder dysfunction.
4. Describe the role of MRI computational modeling in pelvic organ prolapse diagnosis.
5. Explain the physiological principles underlying bladder pain.
6. Describe the role of bladder/urothelial biome in health and disease.
7. Review the pathophysiological explanations for recurrent urinary tract infections and current diagnostic and management strategies.
8. Identify the potential role of radiological imaging in pelvic organ prolapse diagnosis and treatment planning.
10. Describe the potential treatments for patients with severe overactive bladder syndromes who have not responded to conventional modalities.
11. Explain the role of up-training and down-training of the pelvic floor for patients with various lower urinary tract and pelvic floor disorders.
12. Recognize the different indications for varying surgical approaches in the treatment of anterior vaginal wall prolapse.
13. Describe the concept of frailty in the elderly, and how it may impact your surgical planning and counseling.
14. Identify the role of urodynamics in the evaluation of patients with lower urinary tract symptoms, as well as better interpret urodynamic studies.
15. Describe the pathophysiology of neurogenic bladder conditions, as well as optimal treatment strategies for patients with various neurogenic bladder disorders.
16. Describe the ways in which we can critically evaluate our outcomes in the treatment of patients with pelvic floor disorders.
17. Describe surgical management strategies for patients with neurogenic disorders suffering from severely compromised bladder outlets.
19. Explain the definition of bladder outlet obstruction in the male and female patient and understand the differences on obstruction between the two genders.
20. Describe current surgical options for reconstructing the upper urinary tract.
21. Review current diagnostic and treatment algorithms for fecal incontinence and constipation.
22. Describe benign gynecological conditions of the vagina and vulva, as well as explain current use of topical estrogen therapy.
23. Explain the controversy regarding the current role of vaginal rejuvenation.
24. Explain the medicolegal controversy regarding vaginal mesh implantation.
25. Describe the histological fate of implanted surgical mesh.
Accreditation Statement
This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the University of Oklahoma College of Medicine and the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction (SUFU). The University of Oklahoma College of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

The University of Oklahoma College of Medicine designates this live activity for a maximum of 28.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Conflict Resolution Statement
The University of Oklahoma College of Medicine, Office of Continuing Professional Development has reviewed this activity’s speaker and planner disclosures and resolved all identified conflicts of interest, if applicable.

Equal Opportunity Statement
The University of Oklahoma is an equal opportunity institution. www.ou.edu/eoo

Accommodation Statement
Accommodations on the basis of disability are available by contacting the Society of Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction at (847) 517-7225 as soon as possible.

Acknowledgement of Commercial and In-Kind Support
Commercial support is financial, or in-kind, contributions given by a commercial interest, which is used to pay all or part of the costs of a CME activity. A commercial interest is any entity producing, marketing, re-selling or distributing health care goods or services consumed by, or used on, patients.

This activity received an educational grant from Allergan, Inc.

Policy on Faculty, Presenters and Joint Provider Disclosure
It is the policy of the University of Oklahoma College of Medicine that the faculty, presenters and joint provider disclose real or apparent conflicts of interest relating to the topics of this educational activity, and also disclose discussions of unlabeled/unapproved uses of drugs or devices during their presentation(s).

Disclaimer Statement
Statements, opinions and results of studies contained in the program are those of the presenters, authors and joint providers and do not reflect the policy or position of the Board of Regents of the University of Oklahoma (“OU”) nor does OU provide any warranty as to their accuracy or reliability.

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Faculty Disclosure Report
The University of Oklahoma College of Medicine and the Irwin H. Brown Office of Continuing Professional Development must ensure balance, independence, objectivity and scientific rigor in all its activities. We have implemented a process where everyone who is in a position to control the content of an education activity has disclosed to us all relevant financial relationships with any commercial interest. In addition, should it be determined that a conflict of interest exists as a result of a financial relationship one may have, this will be resolved prior to the activity. This policy is designed to provide the target audience with an opportunity to review any affiliations between the CME organizers/presenters and supporting organizations for the purpose of determining the potential presence of bias or influence over educational content. The Disclosure Report may be found at the following link: https://wjweis.sslcert19.com/securesite/sufu/meetings/2015/sufu1502/ProgramDisclosureReport.pdf
### Thursday, February 26, 2015

**11:35 a.m. – 1:00 p.m.** *Industry Sponsored Lunch Symposium*

*Sponsored by Medtronic*

*Location: BLT Steak*

*“EVIDENCE INTO ACTION – APPLYING DATA TO PATIENT CARE”*

Melissa Kaufman, MD  
Vanderbilt University Medical Center  
Nashville, Tennessee

Kenneth Peters, MD  
William Beaumont Hospital  
Royal Oak, Michigan

Karen Noblett  
University of California  
Riverside, CA

*Not CME Accredited*

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### Friday, February 27, 2015

**11:30 a.m. – 1:00 p.m.** *Industry Sponsored Lunch Symposium*

*Sponsored by Kimberly-Clark*

*Location: Salons J & K*

*“INTRODUCING A NEW NON-SURGICAL OPTION FOR THE MANAGEMENT OF SUI”*

Priya Padmanabhan, MPH, MD  
The University of Kansas  
Kansas City, Kansas

*Not CME Accredited*
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(as of 02/19/2015)

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Medtronic, Inc.

**Gold Level Partner**
Allergan, Inc.

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Acknowledgement of Commercial and In-Kind Support
Thank You to Our 2015 Educational Grant Provider
(as of 02/19/2015)

Allergan, Inc.
2014 SUFU Neuromodulation Grant Winners

Casella, Daniel Paul, Fellow/Vanderbilt University:
Modulation of the Rat Micturition Reflex with Transcutaneous Ultrasound

Weissbart, Steven and Smith, Ariana, Fellow/ University of Pennsylvania:
Changes in Brain fMRI in Women with Overactive Bladder Treated Sacral Neurmodulation

Santiago-Lastra, Yahir, Fellow/University of Michigan:
Comparative Effectiveness of Sacral Neuromodulation and Percutaneous Tibial Nerve Stimulation

Gioia, Kevin, Fellow/Virginia Mason:
Determine Whether Intraoperative Amplitude and Optimal Lead Placement are Associated with Improved Outcomes for Sacral Neuromodulation

Neuromodulation Grant Review Committee

Raul Ordorica, MD (Chair)
Sandip Vasavada, MD
Jennifer Anger MD
Michael Kennelly, MD
Kevin Benson, MD, MS

2014 Chemodenervation Grant winners

Brooke Brown, Fellow/Vanderbilt University
Effects of Bladder Onabotulinum Toxin Injection on Central Sensitization in OAB Patients.

Andrea Russo, Fellow/Yale University
Chemodenervation with OnabotulinumtoxinA and Its Effect on Bladder Urothelial Function

Eliza Lamin, Resident and Lisa Parrillo, Resident/University of Pennsylvania
Comparison of the Treatment of Refractory Bladder Pain Syndrome with Dimethyl Sulfoxide (DMSO) Alone and DMSO as a Carrier for Botulinum Toxin A Instillation

Chemodenervation Review Committe

Craig V. Comiter, MD
Angelo E. Gousse, MD
Stephen R. Kraus, MD
## Registration/Information Desk Hours

*Location: Arizona Registration North*

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<tr>
<td>Tuesday, February 24, 2015</td>
<td>11:00 a.m. – 5:30 p.m.</td>
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<tr>
<td>Wednesday, February 25, 2015</td>
<td>7:00 a.m. – 6:30 p.m.</td>
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<tr>
<td>Thursday, February 26, 2015</td>
<td>6:30 a.m. – 5:30 p.m.</td>
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<tr>
<td>Friday, February 27, 2015</td>
<td>6:00 a.m. – 6:00 p.m.</td>
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<tr>
<td>Saturday, February 28, 2015</td>
<td>6:00 a.m. – 12:00 p.m.</td>
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</tbody>
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## Exhibit Hall Hours

*Location: Salons F, H, M & N*

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday, February 25, 2015</td>
<td>7:00 p.m. – 8:30 p.m.</td>
</tr>
<tr>
<td>Welcome Reception with Industry Partners</td>
<td>7:00 a.m. – 4:00 p.m.</td>
</tr>
<tr>
<td>Thursday, February 26, 2015</td>
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</tr>
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<td>Friday, February 27, 2015</td>
<td>7:00 a.m. – 4:00 p.m.</td>
</tr>
<tr>
<td>Cocktail Hour and Awards Presentation</td>
<td>6:00 p.m. – 7:30 p.m.</td>
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</tbody>
</table>

## Speaker Ready Desk Hours

*Location: Arizona Registration North*

<table>
<thead>
<tr>
<th>Day</th>
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<td>Saturday, February 28, 2015</td>
<td>6:00 a.m. – 12:00 p.m.</td>
</tr>
</tbody>
</table>
EVENING FUNCTIONS
One ticket to each evening function is included in attendee and spouse registration fees.

Welcome Reception
Date: Wednesday, February 25, 2015
Time: 7:00 p.m. – 8:30 p.m.
Location: Salons F, H, M & N
Attire: Business
Description: Enjoy a beverage and light hors d’oeuvres as you meet with industry partners in the exhibit hall.

Cocktail Hour and Awards Reception
Date: Friday, February 27, 2015
Time: 6:00 p.m. – 7:30 p.m.
Location: Salons F, H, M & N
Attire: Business
Description: Finish off the Winter Meeting with an evening of cocktails, mingling and award presentations in the exhibit hall.
About Scottsdale

Airport Information
Phoenix Sky Harbor Airport is approximately nine miles from the JW Marriott Camelback Inn Resort & Spa or 15 minutes by car.

Taxi Cab Services
Taxi rates for a one-way transfer to the hotel cost approximately $30.00
• Apache Taxi: (480) 557-7000
• AAA/Yellow Cab: (480) 888-8888
• Mayflower Cab: (602) 955-1355
• VIP Taxi (602) 300-3000
• AAAA Enstyle Limo & Taxi (480) 767-6246
• Americab (480) 833-5155
• American Taxi Company (480) 833-8333
• City Cab (480) 635-0911
• Courier Cab (Yellow Cab) (480) 888-8888
• Discount Cab (bright green) (602) 200-2000
• Green Taxi Cab (hybrid vehicles) (480) 634-4227
• Neal’s Cab (Yellow Cab) (480) 835-0555
• Scottsdale Taxi Sedan (480) 944-4567

Rental Car Information
Avis Rent-A-Car is the official rental car company for the SUFU 2015 Winter Meeting. For reservations, please call (800) 331-1600, and use the code “J901055” to receive the discounted rates.

Parking
Both valet and self-parking are free at the JW Marriott Camelback Inn Resort & Spa.

Suggested Dining
Olive & Ivy
(480) 751-2200
Continental/open for lunch and dinner

Chelsea’s Kitchen
(602) 957-2555
Continental/open for lunch and dinner
In a quaint corridor of Arcadia rests Chelsea’s Kitchen. Enjoy open architecture with the comfort of one’s own kitchen, featuring an excellent patio and bar. Great seafood, salads and tacos – don’t miss the red velvet cake!

Roaring Fork
(480) 947-0795
American/open for lunch and dinner
Roaring Fork is an American Western Bistro. What is American Western Cuisine? It is a combination of using foods that are indigenous to the American West and locally grown ingredients, and capturing the “spirit” of the west.

Veneto Trattoria Northern Italian
(480) 948-9928
Italian/open for lunch and dinner
Veneto Trattoria is an independent restaurant modeled after the traditional trattorias of Northern Italy. The authentic menu features fresh, flavorful dishes, all lightly prepared, and are very healthful and satisfying without a heavy, filled feeling.

True Food Kitchen
(480) 774-3488
California/open for lunch and dinner
At True Food Kitchen, we celebrate simplicity. We practice sustainability. We believe that simple, fresh, pure ingredients create the most memorable and satisfying meals. And while our healthy menu is packed with nutritious food, we never sacrifice flavor.
About Scottsdale

Golf
Wildfire Golf Club
A true desert golf experience with two, 18-hole golf courses
Phone: (480) 705-7775
Greens fees apply
Managed by Marriott Golf
- Clubhouse and Golf Shop
- Clubhouse Restaurant
- Lessons
- Putting green and Driving range
- Kids Golf-4-Free

Palmer Golf Course
18 holes and 7145 yards/Par for course 72/
Designed by Arnold Palmer/Golf carts required

Faldo Golf Course
8 holes and 6846 yards/Par for course 72/
Designed by Nick Faldo/Golf carts required

Family & Children’s Activities
McCormick Ranch Railroad Park
Phone: (480) 312-2312
Take a ride on the Paradise and Pacific Railroad and antique carousel

CrackerJax
Phone: (480) 998-2800
CrackerJax is Arizona’s largest Family Fun & Sports Park with over 27 acres of excitement!

More Activities
Biking trail
Bowling
Hiking
Horseback riding
Mountain biking trail

Visit the concierge for more details at http://www.marriott.com/hotels/local-activities/phxcb-jw-marriott-scottsdale-camelback-inn-resortand-spa/
Mark Your Calendars

SUFU at the AUA 2015
May 16, 2015
New Orleans, Louisiana

SUFU Foundation Fundraiser
May 16, 2015
New Orleans, Louisiana

SUFU 2016 Winter Meeting
February 23 – 27, 2016
The Roosevelt New Orleans
New Orleans, Louisiana

Society of Urodynamics,
Female Pelvic Medicine &
Urogenital Reconstruction
2015 SUFU FOUNDATION FUNDRAISER

The SUFU Foundation Invites You to Attend Its 3rd Annual Fundraiser: “Krewe de SUFU”

Saturday, May 16, 2015 | 7:00 p.m. – 10:00 p.m.
Mardi Gras World | 1380 Port New Orleans Place | New Orleans, LA 70130

Mardi Gras World, located a short distance from the New Orleans Convention Center, is the largest float designing building facility in the world. Here, more than 80 percent of the floats that journey down New Orleans’ streets during the Carnival season are designed and built.

Plan to join us at Mardi Gras World for Krewe de SUFU experience this May, with live entertainment, food and an open bar!

Cost*: $500.00
Residents & Fellows: $200.00

*Portions of this contribution may be tax deductible. Check with your tax adviser.
PROGRAM

Society of Urodynamics, Female Pelvic Medicine and
Urogenital Reconstruction

2015 Winter Meeting

February 24 – February 28, 2015
JW Marriott Camelback Inn Resort & Spa
Scottsdale, Arizona
TUESDAY, FEBRUARY 24, 2015

SUFU BASIC SCIENCE RESEARCH MEETING

OVERVIEW
11:00 a.m. – 5:30 p.m. Registration/Information Desk
Location: Arizona Registration North

11:00 a.m. – 5:00 p.m. Speaker Ready Desk Hours
Location: Arizona Registration North

GENERAL SESSION
1:00 p.m. – 2:30 p.m. Panel 1: Age-Related Changes in Brain and Bladder Function
Moderator: Henry Lai, MD
Panelists: The Impact of Aging on Lower Urinary Tract Function
Neil M. Resnick, MD
Role of Higher Centers on the Aged Bladder
Cara Tannenbaum, MD, MSc
How Can Animal Models Help Us Understand the Aging Bladder?
Phillip P. Smith, MD

2:30 p.m. – 2:40 p.m. Q & A

2:40 p.m. – 3:30 p.m. Keynote Speaker: Pain Signaling and Neuromodulation
Allan Basbaum, PhD

3:30 p.m. – 3:40 p.m. Q & A

3:40 p.m. – 3:55 p.m. Break

3:55 p.m. – 5:25 p.m. Panel 2: Modeling and Phenotyping the Bladder in Health and Disease
Moderator: Georgi V. Petkov, PhD
Panelists: New Methods in 3D Bladder Modeling
George J. Christ, PhD
Optogenetic Modulation of Bladder Pain
Robert W. Gereau, PhD
Phenotyping Detrusor Overactivity
Matthew O. Fraser, PhD

5:25 p.m. – 5:35 p.m. Q & A

5:35 p.m. – 5:50 p.m. Break

5:50 p.m. – 7:50 p.m. *Basic Science Poster Session I (Non-Moderated)
Judges: Adam P. Klausner, MD
Henry Lai, MD
See page 102 for abstract summaries
*Not CME Accredited
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

**WEDNESDAY, FEBRUARY 25, 2015**

**SUFU BASIC SCIENCE RESEARCH MEETING**

**OVERVIEW**

7:00 a.m. – 6:30 p.m.  
**Registration/Information Desk**  
*Location: Arizona Registration North*

7:30 a.m. – 8:30 a.m.  
**Breakfast**  
*Location: Sonoran Terrace*

7:00 a.m. – 5:30 p.m.  
**Speaker Ready Desk Hours**  
*Location: Arizona Registration North*

7:00 p.m. – 8:30 p.m.  
**Welcome Reception in the Exhibit Hall**  
*Location: Salons F, H, M & N*

**GENERAL SESSION**

8:30 a.m. – 8:45 a.m.  
**Welcome**

Gary E. Lemack, MD  
*Program Chair*

Eric S. Rovner, MD  
*SUFU President*

Lori A. Birder, PhD  
*Basic Science Committee Chair*

Adam P. Klausner, MD  
*Basic Science Co-Committee Chair*

8:45 a.m. – 10:20 a.m.  
**Panel 3: Bladder Pain**

*Panelists:*  
**Involvement of Glial Cells in Nociception**  
Linda R. Watkins, PhD

**The Brain’s Role in Perceiving and Modifying Chronic Pain**  
M. Catherine Bushnell, PhD

**P2X3 Antagonist in Treatment of Bladder Pain Syndrome/Interstitial Cystitis**  
Anthony Ford, PhD  
*Not CME Accredited*

10:20 a.m. – 10:30 a.m.  
**Q & A**

10:30 a.m. – 10:45 a.m.  
**Break**

10:45 a.m. – 11:45 a.m.  
**Keynote Speaker: Why Do Women Have Prolapse? Sorting Fallacies from Facts**  
John DeLancey, MD

11:45 a.m. – 11:55 a.m.  
**Q & A**
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

11:55 a.m. – 12:05 p.m. 2015 Basic Science Prize Essay Award Winner
Moderator: Craig V. Comiter, MD

#BS27 THE ROLE OF BK CHANNELS AND CHOLINERGIC NEUROTRANSMISSION IN THE HYDROGEN SULFIDE-INDUCED GUINEA PIG DETRUSOR SMOOTH MUSCLE CONTRACTIONS
Georgi Petkov, PhD

12:10 p.m. – 1:10 p.m. Lunch
Location: North Foyer

1:30 p.m. – 4:30 p.m. Fellows Forum
Location: Salons J &K
(For participating fellows only)
See page 38 for full details

4:30 p.m. – 6:30 p.m. Setting Yourself Up For a Successful Research Career
Location: Sunshine
(Space Limited)
Erika Wolff, PhD

5:00 p.m. – 6:30 p.m. Fellowship Program Directors Meeting
Location: Salons J & K

1:30 p.m. – 3:00 p.m. Panel 4: Electroceutics
Moderator: Georgi V. Petkov, PhD
Panelists: Science of Neuromodulation
Ken Gustafson, PhD
Pudendal Nerve Stimulation
Warren Grill, PhD
Mechanisms of Action Underlying Tibial Neuromodulation of Bladder Over Activity
Changfeng Tai, PhD

3:00 p.m. – 3:10 p.m. Q & A

3:10 p.m. – 4:00 p.m. Panel 5: The Microbiome
Moderator: Henry Lai, MD
Panelists: New Approaches to Understanding UTI
Scott J. Hultgren, PhD
Oomics Approaches to Understanding Bladder Dysfunction
Michael Freeman, PhD
Study of the Human (Vaginal) Microbiota
Rebecca M. Brotman, PhD, MPH

4:00 p.m. – 4:10 p.m. Q & A

4:10 p.m. – 4:25 p.m. Break
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

4:25 p.m. – 6:40 p.m. *Basic Science Poster Session II (Non-Moderated)
Judges: Tomas L. Griebling, MD
Christopher Chermansky, MD
See page 105 for abstract summaries
*Not CME Accredited

7:00 p.m. – 8:30 p.m. Welcome Reception in the Exhibit Hall
Location: Salons F, H, M & N

THURSDAY, FEBRUARY 26, 2015

OVERVIEW
6:30 a.m. – 5:30 p.m. Registration/Information Desk
Location: Arizona Registration North

7:00 a.m. – 7:45 a.m. Breakfast in the Exhibit Hall
Location: Salons F, H, M & N

7:00 a.m. – 8:00 a.m. Residents and Fellows Breakfast
Location: Town Hall

7:00 a.m. – 4:00 p.m. Exhibit Hall Open
Location: Salons F, H, M & N

6:30 a.m. – 5:30 p.m. Speaker Ready Desk Hours
Location: Arizona Registration North

GENERAL SESSION
7:55 a.m. – 8:00 a.m. Introduction
Gary E. Lemack, MD

8:00 a.m. – 8:45 a.m. Panel: Urinary Tract Infection Update 2015
Moderator: Karyn S. Eilber, MD

Panelists:
Pathophysiology of Recurrent UTI’s – Why Patients with ‘Normal’ Urinary Tracts Get Bladder Infections
Duane Hickling, MD

Evaluation and Treatment of Recurrent UTI’s in Women: Who Needs Treatment and How Should We Be Treating?
Kimberly L. Cooper, MD

Evaluation and Treatment of UTI’s and Prostatitis in Men
Michel A. Pontari, MD

8:45 a.m. – 9:15 a.m. Radiological Evaluation of SUI and POP – Is It Necessary?
Moderator: Alan J. Wein, MD, FACS, PhD (Hon)

Panelists:
Vital to Optimal Diagnosis and Management
Christian O. Twiss, MD

Unnecessary and Costly
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

9:15 a.m. – 9:30 a.m.  
**Update on Injectables for Stress Urinary Incontinence**  
Howard B. Goldman, MD, FACS  
Roger R. Dmochowski, MD, MMHC, FACS

9:30 a.m. – 10:00 a.m.  
**Break – Visit the Exhibits**

10:00 a.m. – 10:15 a.m.  
**Mechanism of Action and Differences between Sacral, Pudendal and Tibial Nerve Stimulation**  
Ken Gustafson, PhD

10:15 a.m. – 11:00 a.m.  
**Management of Refractory Overactive Bladder: What To Do When Third Line Therapies Fail**  
Lead Revision: Steven W. Siegel, MD  
Pudendal: Kenneth M. Peters, MD  
OnabotulinumtoxinA: Sandip P. Vasavada, MD  
Augmentation/Diversion: Stephen R. Kraus, MD

11:00 a.m. – 11:30 a.m.  
**Panel: Controversies in Pelvic Floor Physical Therapy**  
Moderator: Christopher K. Payne, MD  
Panelists:  
Uptraining and Downtraining: Indications, Techniques and Outcomes  
Kelly Scott, MD

11:35 a.m. – 1:00 p.m.  
**Industry Sponsored Lunch Symposium**  
Location: BLT Steak  
See page 10 for full details

**CONCURRENT POSTER/PODIUM SESSIONS**

1:00 p.m. – 2:20 p.m.  
**IC/Pelvic Pain/Geriatrics/BPH Podium Session**  
Moderators: Tomas L. Griebling, MD  
Raymond R. Rackley, MD  
See page 108 for abstract summaries

1:00 p.m.  
**#1 TRENDS AND UTILIZATION OF LASER PROSTATECTOMY IN AMBULATORY SURGICAL PROCEDURES FOR THE TREATMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH) IN NEW YORK STATE (2000–2011)**  
(Presented by: Vannita Simma-Chiang, MD)

1:10 p.m.  
**#2 PATTERNS OF NON-SURGICAL MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH) IN THE UNITED STATES**  
(Presented by: Jennifer Anger, MD, MPH)

1:20 p.m.  
**#3 LONG-TERM NITROFURANTOIN PROPHYLAXIS IN THE OLDER WOMAN: WHAT ARE THE REAL RISKS?**  
(Presented by: Lauren Rego)

1:30 p.m.  
**#4 A MULTICENTER STUDY EVALUATING THE SAFETY AND EFFICACY OF AF-219, A P2X3 ANTAGONIST, IN WOMEN WITH INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME (IC/BPS)**  
(Presented by: Philip Hanno, MD)
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

**1:40 p.m. #5** GLT1 GLUTAMATE RECEPTOR MEDIATES THE ESTABLISHMENT AND PERPETUATION OF CHRONIC VISCERAL PAIN IN AN ANIMAL MODEL OF BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS
(Presented by: A. Lenore Ackerman, MD, PhD)

**1:50 p.m. #6** PAINFUL BLADDER FILLING AND PAINFUL URGENCY: IMPORTANT CLINICAL CHARACTERISTICS OF UROLOGIC CHRONIC PELVIC PAIN SYNDROMES (UCPPS) IN MEN AND WOMEN PARTICIPATING IN THE MAPP RESEARCH NETWORK
(Presented by: H. Henry Lai, MD)

**2:00 p.m. #7** MRI IMAGING SUGGESTS INCREASED TONICITY OF THE LEVATOR ANI MUSCLE COMPLEX IN WOMEN WITH INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME
(Presented by: A. Lenore Ackerman, MD, PhD)

**2:10 p.m. #8** THE ASSOCIATION BETWEEN URINARY MARKER LEVELS AND BCG RELATED CYSTITIS
(Presented by: Hajar Ayoub, MD)

**1:00 p.m. – 2:20 p.m.** LUTS/Voiding Dysfunction/Neurogenic Bladder Moderated Poster Session

*Location: Salons A & B*

*Moderators: Michelle E. Koski, MD
Larry T. Sirls II, MD*

*See page 110 for abstract summaries*

**1:00 p.m. – 2:20 p.m.** *LUTS/Voiding Dysfunction/Neurogenic Bladder Non-Moderated Poster Session

*Location: Salons A & B*

*Not CME Accredited

*See page 112 for abstract summaries*

**2:20 p.m. – 2:50 p.m.** Blaivas Lectureship: Lifetime Achievement Award Winner

*Presenter: Eric S. Rovner, MD*

*Recipient: Christopher Chapple, BSc, MD, FRCS*

**2:50 p.m. – 3:20 p.m.** Break – Visit the Exhibits

**3:20 p.m. – 3:50 p.m.** Panel: Repair of Anterior POP in 2015

*Moderator: Victor W. Nitti, MD*

*Panelists: Why and How I Use a Synthetic
Kurt A. McCammon, MD*

*Why and How I Use Donor Tissue
Alexander Gomelsky, MD*

*Why and How I Perform a Native Tissue Repair
Kathleen C. Kobashi, MD*

**3:50 p.m. – 4:10 p.m.** Geriatrics Society Lecture: Assessing Surgical Risk In The Elderly: What Is ‘Frailty’ and How Should It Impact Your Surgical Practice

*Gregory T. Bales, MD*
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>4:10 p.m. – 4:30 p.m.</td>
<td><strong>MIPS Lecture: Critical Review of the Role of Urodynamic Evaluation of Female Urinary Incontinence: Economic Implications in Mediterranean Countries</strong>&lt;br&gt;Enrico Finazzi-Agro, MD&lt;br&gt;<em>Professor of Urology, Rome, Italy</em></td>
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<tr>
<td>4:30 p.m. – 5:30 p.m.</td>
<td><strong>BREAKOUT SESSIONS</strong>&lt;br&gt;1. In-Depth Consensus Panel on Third Line OAB Therapies&lt;br&gt;David R. Staskin, MD (Director)&lt;br&gt;PTNS: Kenneth M. Peters, MD&lt;br&gt;SNM: J. Quentin Clemens, MD&lt;br&gt;OnabotulinumtoxinA: Emily E. Cole, MD&lt;br&gt;2. Neurogenic Bladder&lt;br&gt;<em>Location: Sunshine</em>&lt;br&gt;Michael J. Kennelly, MD, FACS (Director)&lt;br&gt;John C. Hairston, MD&lt;br&gt;John T. Stoffel, MD&lt;br&gt;3. Advanced Urodynamics&lt;br&gt;<em>Location: Peace Pipe</em>&lt;br&gt;Gamal Ghoneim, MD (Director)&lt;br&gt;Maude Carmel, MD&lt;br&gt;Jason P. Gilleran, MD</td>
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<tr>
<td>5:30 p.m. – 7:00 p.m.</td>
<td><strong>CONCURRENT POSTER/PODIUM SESSIONS</strong>&lt;br&gt;5:30 p.m. #9 TRANSCORPORAL ARTIFICIAL URINARY SPHINCTER: DOES THIS TECHNIQUE REDUCE THE RISK OF EROSION IN HIGH−RISK PATIENTS?&lt;br&gt;(Presented by: Casey Kowalik, MD)&lt;br&gt;5:40 p.m. #10 PATIENT CHARACTERISTICS AND NATIONAL TRENDS IN INPATIENT MALE URINARY INCONTINENCE SURGERY IN THE UNITED STATES&lt;br&gt;(Presented by: Rena D Malik, MD)&lt;br&gt;5:50 p.m. #11 EFFECTS OF RADIATION THERAPY ON DEVICE SURVIVAL AMONG INDIVIDUALS WITH ARTIFICIAL URINARY SPHINCTERS&lt;br&gt;(Presented by: Matthew Ziegelmann, MD)&lt;br&gt;6:00 p.m. #12 CYSTOMETRIC EVALUATION OF BLADDER FUNCTION IN PANNEXIN 1 AND IN P2X7 RECEPTOR DEFICIENT FEMALE MICE&lt;br&gt;(Presented by: Nuan Cui, MD)&lt;br&gt;6:10 p.m. #13 INTERVENTIONS TO DECREASE ANXIETY IN PATIENTS UNDERGOING URODYNAMIC TESTING: A RANDOMIZED CONTROLLED TRIAL&lt;br&gt;(Presented by: Ellen Solomon, MD)</td>
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</table>
### Scientific Program

All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 6:20 p.m.  | **#14** A MODERN COMPARISON OF URODYNAMIC FINDINGS IN NONDIABETIC VERSUS DIABETIC FEMALES  
(Presented by: Rena D. Malik, MD) |
| 6:30 p.m.  | **#15** UNDERACTIVE BLADDER IS A VOLUME HYPOSENSITIVITY SYNDROME AND DOES NOT PREDICT DETRUSOR UNDERACTIVITY  
(Presented by: Phillip Smith, MD) |
| 6:40 p.m.  | **#16** CORRELATION OF CONTINUOUS URGENCY AND STANDARD SENSORY THRESHOLDS DURING URODYNAMICS TESTING IN PATIENTS WITH OVERACTIVE BLADDER  
(Presented by: Andrew Colhoun, MD) |
| 6:50 p.m.  | **#17** THE IMPACT OF FLUOROURODYNAMICS ON PATIENT CARE  
(Presented by: Lindsey Cox, MD) |

**5:30 p.m. – 7:00 p.m.**  
Female Urology/Incontinence Moderated Poster Session  
*Location: Salons A & B*  
*Moderators: Elizabeth R. Mueller, MD, MSME  
Matt Rutman, MD*  
See page 116 for abstract summaries

**5:30 p.m. – 7:00 p.m.**  
*Female Urology/Incontinence Non-Moderated Poster Session*  
*Location: Salons A & B*  
*Not CME Accredited*  
See page 118 for abstract summaries

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**FRIDAY, FEBRUARY 27, 2015**

**OVERVIEW**

<table>
<thead>
<tr>
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<th>Event</th>
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</table>
| 6:00 a.m.  | Registration/Information Desk  
*Location: Arizona Registration North* |
| 7:00 a.m.  | Breakfast in the Exhibit Hall  
*Location: Salons F, H, M & N* |
| 7:00 a.m.  | Exhibit Hall Open  
*Location: Salons F, H, M & N* |
| 7:00 a.m.  | Speaker Ready Room Hours  
*Location: Arizona Registration North* |
| 6:00 p.m.  | Cocktail Hour and Award Presentations  
*Location: Salons F, H, M & N* |

**GENERAL SESSION**

<table>
<thead>
<tr>
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</table>
| 7:00 a.m.  | *Video Session I in Exhibit Hall*  
*Moderators: Priya Padmanabhan, MD, NPH  
Jason Kim, MD*  
*Not CME Accredited*  
See page 122 for abstract summaries |
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

7:00 a.m. – 8:30 a.m.  *Grant Writing 101
Location: Peace Pipe
(Space Limited)
Lori A. Birder, PhD
Erika Wolff, PhD
*Not CME Accredited

8:00 a.m. – 8:30 a.m.  Annual Business Meeting

CONCURRENT POSTER/PODIUM SESSIONS

8:30 a.m. – 10:00 a.m.  Pelvic Organ Prolapse/Reconstruction Podium Session
Moderators: Elise J.B. De, MD
            Donna Y. Deng, MD
See page 123 for abstract summaries

8:30 a.m.  #18  REDUCING OPERATING ROOM TURNOVER TIME FOR ROBOTIC PELVIC SURGERY
(Presented by: Lauren N. Wood, MD)

8:40 a.m.  #19  ASSESSING THE LEARNING CURVE OF ROBOTIC SACROCOLPOPEXY
(Presented by: Brian Linder, MD)

8:50 a.m.  #20  DERMAL GRAFT (AXIS) AUGMENTED CYSTOCELE REPAIR; FIVE YEARS FOLLOW-UP
(Presented by: Saad Juma, MD)

9:00 a.m.  #21  PROLAPSE RECURRENCE AFTER TRANSVAGINAL MESH REMOVAL
(Presented by: Tanner Rawlings)

9:10 a.m.  #22  ANALYSIS OF SEXUAL FUNCTION CHANGES IN WOMEN UNDERGOING PELVIC
ORGAN PROLAPSE REPAIR WITH ABDOMINAL OR VAGINAL APPROACHES
(Presented by: Priyanka Gupta, MD)

9:20 a.m.  #23  ASSESSING RESIDENT SURGICAL VOLUME BEFORE AND AFTER INITIATION OF A
FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY FELLOWSHIP
(Presented by: Zaid Chaudhry, MD)

9:30 a.m.  #24  READMISSIONS AND HEALTH RESOURCE UTILIZATION SUBSEQUENT TO ROBOTIC
SACROCOLPOPEXY
(Presented by: Vani Dandolu, MD, MPH, MBA)

9:40 a.m.  #25  OUTCOME OF DIRECT VISUAL INTERNAL URETHROTOMY (DVIU) FOR POST-
URETHROPLASTY STRICTURES
(Presented by: Stephen Mock, MD)

9:50 a.m.  #26  PREDICTORS OF SYMPTOMATIC URETERO-ENTERIC ANASTOMOTIC STRICTURES
AFTER RADICAL CYSTECTOMY AND URINARY DIVERSION
(Presented by: Katherine Brewer, MD)

8:30 a.m. – 10:00 a.m.  Male Incontinence/Urodynamics/Neuromodulation Moderated Poster Session
Location: Salons A & B
Moderators: Michael E. Albo, MD
            Christopher E. Kelly, MD
See page 125 for abstract summaries
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 8:30 a.m. – 10:00 a.m. | *Male Incontinence/Urodynamics/Neuromodulation Non-Moderated Poster Session  
Location: Salons A & B  
*Not CME Accredited  
See page 127 for abstract summaries |
| 10:00 a.m. – 10:30 a.m. | Break - Visit the Exhibits                                           |
| 10:30 a.m. – 10:35 a.m. | Announcements                                                        
Gary E. Lemack, MD                |
| 10:35 a.m. – 10:50 a.m. | Subspecialty Training in Urology: An AUA Perspective                
William W. Bohnert, MD, FACS; AUA President |
| 10:50 a.m. – 11:05 a.m. | Quality, Cost and Value: How Do We Measure What We Do?              
W. Stuart Reynolds, MD, MPH        |
| 11:05 a.m. – 11:30 a.m. | Panel: Neurogenic Bladder: Management of the Devastated Outlet      
Moderator: Angelo E. Gousse, MD    |
|                     | Panelists: Occlusive Sling/Bladder Neck Closure/AUS                  
John P. Lavelle, MBBCh, BSc, FRCS |
|                     | Urinary Diversion Alternatives                                       
Polina Reyblat, MD                |
| 11:30 a.m. – 1:00 p.m. | Industry Sponsored Lunch Symposium                                   
Location: Salons J & K            |
|                     | See page 10 for full details                                        |
| 1:00 p.m. – 1:30 p.m. | State-of-the-Art Lecture: Surgical Treatment of BPH                 
Claus G. Roehrborn, MD             |
| 1:30 p.m. – 2:00 p.m. | Urodynamics: Evaluating the Obstructed Outlet                        
Moderator: Eric S. Rovner, MD      |
|                     | Panelists: Diagnosing Obstruction in Men: Tricks of the Trade        
Jerry G. Blaivas, MD               |
|                     | Diagnosing Obstruction in Women: Causes and Case Discussion          
Benjamin M. Brucker, MD            |
| 2:00 p.m. – 2:10 p.m. | Diokno-Lapides Award Presentation                                   
Moderator: Michael B. Chancellor, MD  
Winner: Georgi V. Petkov, PhD      |
|                     | “TRPM4 Channels as Promising Novel Targets for the Pharmacological Treatment of Overactive Bladder” |
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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| 2:10 p.m. – 2:20 p.m. | 2012 Neuromodulation Grant Recipient Presentation  
Moderator: Raul C. Ordorica, MD  
“Sacral Neuromodulation and Cytokines: An Investigation into Interstitial Cystitis”  
Megan Bing, MD |
| 2:20 p.m. – 3:00 p.m. | Break – Visit the Exhibits |
| 3:00 p.m. – 5:00 p.m. | Biostatistics Review Course  
Location: Salon J & K  
(Space Limited)  
Katherine Odem-Davis, PhD  
Jennifer Wu, MD, MPH  
*Not CME Accredited |
| 3:00 p.m. – 3:25 p.m. | Neuromodulation in Children  
Yuri E. Reinberg, MD |
| 3:25 p.m. – 4:00 p.m. | Panel: Common Dilemmas in Neuromodulation  
Moderator: Kevin D. Benson, MD, MS  
Panelists: Nissrine A. Nakib, MD  
Karen L. Noblett, MD  
Raul C. Ordorica, MD |

**CONCURRENT POSTER/PODIUM SESSION**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 4:00 p.m. – 5:10 p.m. | Neuromodulation/OAB - Moderated Podium Session  
Moderators: Suzette E. Sutherland, MD  
Steven W. Siegel, MD  
See page 129 for abstract summaries |
| 4:00 p.m. | #27  
PUDENDAL NEUROMODULATION AFTER FAILED SACRAL STIMULATION  
(Presented by: Kenneth M. Peters, MD) |
| 4:10 p.m. | #28  
RESULTS OF A PROSPECTIVE, MULTICENTER STUDY EVALUATING THE EFFICACY AND SAFETY OF SACRAL NEUROMODULATION THROUGH 36 MONTHS IN SUBJECTS WITH SYMPTOMS OF OVERACTIVE BLADDER  
(Presented by: Steven Siegel, MD) |
| 4:20 p.m. | #29  
SINGLE CENTER EXPERIENCE: SACRAL NEUROMODULATION REPROGRAMMING RATES  
(Presented by: Sara Lenherr, MD) |
| 4:30 p.m. | #30  
HEATING OF THE INTERSTIM SACRAL NEUROMODULATION DEVICE IN A SIMULATED PHANTOM MODEL DURING LUMBAR AND PELVIC MAGNETIC RESONANCE IMAGING (MRI)  
(Presented by: Adrienne Quirouet, MD) |
| 4:40 p.m. | #31  
OBTAINING SACRAL MOTOR REFLEXES ON <4 ELECTRODES AT TIME OF STAGE 1 TINED LEAD PLACEMENT DOES NOT AFFECT CLINICAL OUTCOME  
(Presented by: Jason Gilleran, MD) |
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

4:50 p.m.  #32  *SACRAL FORAMEN LOCALIZATION FOR NEEDLE PLACEMENT: DIAGNOSTIC ULTRASOUND VS. FLUOROSCOPY
(Presented by: Peter Rodine, MPH)
*Not CME Accredited

5:00 p.m.  #36  REAL-WORLD PATTERNS OF OVERACTIVE BLADDER (OAB) CARE IN THE UNITED STATES (US) BASED ON AN OBSERVATIONAL STUDY
(Presented by: Howard Goldman, MD)

4:00 p.m. – 5:00 p.m.  IC/Pelvic Pain/Geriatrics/BPH Moderated Poster Session
Location: Salons A & B
Moderators:  Larissa V. Rodriguez, MD
            Alvaro Lucioni, MD
See page 131 for abstract summaries

4:00 p.m. – 5:00 p.m.  *IC/Pelvic Pain/Geriatrics/BPH Non-Moderated Poster Session
Location: Salons A & B
See page 133 for abstract summaries
*Not CME Accredited

5:00 p.m. – 6:00 p.m.  Breakout Sessions
1. Reconstruction of the Upper Urinary Tract: Tricks of the Trade
   Brian J. Flynn, MD (Director)
   David Ginsberg, MD
   E. James Wright, MD
   Jaspreet S. Sandhu, MD

2. Pelvic Floor Therapy in Men and Women with Urologic Chronic Pelvic Pain
   Location: Sunshine
   Christopher K. Payne, MD (Director)
   Diane Newman, MD
   Rhonda Kotarinos, MPT

3. Evaluation and Treatment of Constipation and Fecal Incontinence
   Location: Peace Pipe
   Kevin D. Benson, MD, MS (Director)
   Karen L. Noblett, MD
   Suzette Sutherland, MD

6:00 p.m. – 7:30 p.m.  Cocktail Hour and Award Presentations
(Award Presentations to begin promptly at 6:15 p.m.)
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

**SATURDAY, FEBRUARY 28, 2015**

**OVERVIEW**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 a.m.</td>
<td>Registration/Information Desk</td>
<td>Arizona Registration North</td>
</tr>
<tr>
<td>6:00 a.m.</td>
<td>Breakfast</td>
<td>North Foyer</td>
</tr>
<tr>
<td>6:00 a.m.</td>
<td>Speaker Ready Room Hours</td>
<td>Arizona Registration North</td>
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</tbody>
</table>

**GENERAL SESSION**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:00 a.m.</td>
<td>*Video Session II</td>
<td>Salons C, D, E, and G &amp; I</td>
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<tr>
<td></td>
<td>Moderators: Anne Pelletier Cameron, MD</td>
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<td></td>
<td>Elizabeth B. Takacs, MD</td>
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<td>See page 138 for abstract summaries</td>
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<tr>
<td></td>
<td>*Not CME Accredited</td>
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**CONCURRENT POSTER/PODIUM SESSIONS**

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Female Urology/Incontinence Podium Session</td>
<td>Salons C, D, E, and G &amp; I</td>
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<td>Moderators: Philippe E. Zimmern, MD</td>
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<td></td>
<td>Alana M. Murphy, MD</td>
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<td>See page 139 for abstract summaries</td>
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8:00 a.m. #42 EMG EVIDENCE OF DECREASED STRIATED URETHRAL SPHINCTER ACTIVITY IN WOMEN WITH DETRUSOR OVERACTIVITY INCONTINENCE  
(Presented by: Kimberly Kenton, MD, MS)

8:10 a.m. #43 DISPELLING A COMMON MYTH − DIABETIC SEVERITY DOES NOT INCREASE THE ODDS OF URINARY INCONTINENCE IN WOMEN  
(Presented by: Christopher Elliott, MD, PhD)

8:20 a.m. #44 A RANDOMIZED COMPARISON OF SINGLE INCISION MID-URETHRAL SLING (MINIARC™) AND TRANSOBTURATOR MID-URETHRAL SLING (MONARC™) FOR TREATMENT OF STRESS URINARY INCONTINENCE: 2-YEAR CLINICAL OUTCOMES  
(Presented by: Katrien O. Rengerink)

8:30 a.m. #45 CLINICAL AND COST COMPARISON OF TWO TRIAL OF VOID METHODS AFTER OUTPATIENT MID URETHRAL SLING PLACEMENT  
(Presented by: Michael Ehlert, MD)

8:40 a.m. #46 URGENCY INCONTINENCE AFTER REVISION OF AN OBSTRUCTING MID-URETHRAL SLING  
(Presented by: Iryna Makovey, MD)

8:50 a.m. #47 NATIONAL TRENDS IN THE PERFORMACE OF ROBOT-ASSISTED VAGINAL VAULT SUSPENSION  
(Presented by: C.R. Powell, MD)
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

### Scientific Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Session #</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 a.m.</td>
<td>#48</td>
<td>THE LONG-TERM SAFETY, TRENDS AND RE-INTERVENTIONS IN THE SURGICAL MANAGEMENT OF STRESS URINARY INCONTINENCE</td>
<td>Jessica Buck</td>
</tr>
<tr>
<td>9:10 a.m.</td>
<td>#49</td>
<td>CHILDHOOD SEXUAL AND VIOLENCE TRAUMA MORE PREVALENT IN PATIENTS WITH OVERACTIVE BLADDER</td>
<td>H. Henry Lai, MD</td>
</tr>
<tr>
<td>9:20 a.m.</td>
<td>#50</td>
<td>A RANDOMIZED, CONTROLLED CLINICAL TRIAL OF AN INTRAVESICAL PRESSURE-ATTENUATION BALLOON SYSTEM FOR THE TREATMENT OF STRESS URINARY INCONTINENCE IN FEMALES</td>
<td>Jean Jacques Wyndaele, MD</td>
</tr>
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### 8:00 a.m. – 9:30 a.m. LUTS/Voiding Dysfunction/Neurogenic Bladder Podium Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Session #</th>
<th>Title</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m.</td>
<td>#33</td>
<td>ANTICHOLINERGIC CYCLING AND TREATMENT OUTCOMES IN OVERACTIVE BLADDER PATIENTS WITH URINARY INCONTINENCE</td>
<td>Michael Chancellor, MD</td>
</tr>
<tr>
<td>8:10 a.m.</td>
<td>#34</td>
<td>ONABOTULINUMTOXINA HAS A POSITIVE SAFETY AND EFFICACY PROFILE IN OVERACTIVE BLADDER (OAB) PATIENTS &lt;65 AND ≥65 YEARS OF AGE</td>
<td>Courtenay Moore, MD</td>
</tr>
<tr>
<td>8:20 a.m.</td>
<td>#35</td>
<td>UNDERACTIVE BLADDER IS NOT A SYMPTOM COMPEX</td>
<td>Melissa Laudano, MD</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>#37</td>
<td>A RETROSPECTIVE COMPARISON OF PERSISTENCE ON PHARMACOTHERAPY FOR OVERACTIVE BLADDER SYNDROME AMONGST SPECIALTIES</td>
<td>Alexis Tran, DO</td>
</tr>
<tr>
<td>8:40 a.m.</td>
<td>#38</td>
<td>EFFECT OF DEEP BRAIN STIMULATION (DBS) ON LOWER URINARY TRACT SYMPTOMS (LUTS) OF PARKINSON'S DISEASE PATIENTS (PD)</td>
<td>Stephen Mock, MD</td>
</tr>
<tr>
<td>8:50 a.m.</td>
<td>#39</td>
<td>INOSINE ALTERS MARKERS OF SENSORY NEUROTRANSMISSION AND IMPROVES DETRUSOR OVERACTIVITY FOLLOWING SPINAL CORD INJURY</td>
<td>Claire Doyle, PhD</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>#40</td>
<td>THE EPIDEMIOLOGY OF HAND FUNCTION AS IT AFFECTS BLADDER MANAGEMENT IN PERSONS WITH SPINAL CORD INJURY</td>
<td>Dimitar Zlatev, MD</td>
</tr>
<tr>
<td>9:10 a.m.</td>
<td>#41</td>
<td>THE PATTERN OF UROLOGIC INVESTIGATIONS AND MONITORING AMONG TRAUMATIC SPINAL CORD INJURED PATIENTS</td>
<td>Blayne Welk, MD, MSc</td>
</tr>
</tbody>
</table>
All sessions will be located in Salons C, D, E and G & I unless otherwise noted.

8:00 a.m. – 9:30 a.m. *Pelvic Organ Prolapse/Reconstruction Non-Moderated Poster Session
*Not CME Accredited

9:30 a.m. – 9:55 a.m. Dermatological Lesions of the Female Genitalia
Clay Cockerell, MD

9:55 a.m. – 10:15 a.m. Female Genital Aesthetic Surgery
Gary J. Alter, MD

10:15 a.m. – 11:05 a.m. Vaginal Mesh Update 2015
What is the Fate of Mesh in Vivo – Shrinkage: Fact or Fiction?
Pam Moalli, MD, PhD

Treatment of Bladder and Urethral Mesh Erosion: Remove and Reconstruct
Daniel S. Elliott, MD

Ablate and Observe
Brian J. Flynn, MD

11:05 a.m. – 11:15 a.m. Mesh Litigation Update
J. Christian Winters, MD, FACS

11:15 a.m. – 11:25 a.m. NIH Update
Tamara G. Bavendam, MD

11:25 a.m. – 12:00 p.m. Panel: Rapid Fire Case Discussions in Stress Urinary Incontinence: Ask the Experts
Moderator: Gary E. Lemack, MD
Panelists: Jennifer Anger, MD
E. Ann Gormley, MD
Una J. Lee, MD
Courtenay K. Moore, MD
Ariana L. Smith, MD

12:00 p.m. Meeting Adjourns

Disclaimer Statement

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Every effort has been made to faithfully reproduce the abstracts as submitted. However, no responsibility is assumed by SUFU for any injury and/or damage to persons or property from any cause including negligence or otherwise, or from any use or operation of any methods, products, instruments, or ideas contained in the material herein.
1. Call to Order – President, Eric S. Rovner, MD

2. Approval of 2014 Minutes and Thank You to Program Chairs – Eric S. Rovner, MD

3. Treasurer’s Report – Kathleen C. Kobashi, MD

4. Awards Committee Report – Victor W. Nitti, MD

5. Membership Committee Report – Alan J. Wein, MD, FACS, PhD (Hon)

6. SUFU Foundation Fundraiser Update – Victor W. Nitti, MD & J. Christian Winters, MD, FACS

7. Old Business

8. New Business
   (a) Announcement of 2016 Meeting
   (b) UCF/ SUFU Foundation/Hari Badlani Research Scholarship
   (c) Pfizer and Uroplasty Grant Announcement
   (d) Website redesign and Video Content

9. Adjourn
Fellowship Education Chair: Craig V. Comiter, MD

1:30 p.m. – 1:35 p.m. Introduction and SUFU Grant Opportunities

1:35 p.m. – 1:40 p.m. AUA Urology Care Funding Opportunities
                Caroyn Best, MD

1:40 p.m. – 4:15 p.m. Fellow Presentations
                Moderators: Toby C. Chai, MD
                Craig V. Comiter, MD

1:40 p.m. – 1:46 p.m. SINGLE CENTER EXPERIENCE: SACRAL NEUROMODULATION REPROGRAMMING RATES
                (Presented by: Sara Lenherr)

1:46 p.m. – 1:52 p.m. ANTIMICROBIAL PROPHYLAXIS IN POST-TRANSPLANT PATIENTS UNDERGOING A CYSTOSCOPY AND VIDEOURODYNAMICS. IS IT NECESSARY?
                (Presented by: Yanina Barbalat)

1:52 p.m. – 1:58 p.m. TRENDS IN SECOND LINE THERAPY USE FOR OVERACTIVE BLADDER BEFORE AND AFTER FDA APPROVAL OF ONABOTULINUMTOXINA
                (Presented by: Ekene Enemchukwu)

1:58 p.m. – 2:04 p.m. SURGEON’S ATTITUDES TOWARDS SLING TENSIONING DURING SURGERY FOR FEMALE STRESS URINARY INCONTINENCE
                (Presented by: Javier Pizarro-Berdichevsky)

2:04 p.m. – 2:10 p.m. OUTCOMES AFTER MIDURETHRAL SLING PLACEMENT IN WOMEN WITH STRESS URINARY INCONTINENCE AND CONCOMITANT SEVERE LOWER URINARY TRACT SYMPTOMS
                (Presented by: Marisa M. Clifton)

2:10 p.m. – 2:16 p.m. LONG-TERM OUTCOMES OF ABDOMINAL VS. VAGINAL APICAL PROLAPSE REPAIR AMONG FEMALE MEDICAIRE BENEFICIARIES
                (Presented by: Aqsa A. Khan)

2:16 p.m. – 2:22 p.m. BODY MASS INDEX IMPACTS REOPERATION RATES BUT NOT OVERALL OUTCOMES OF NEUROMODULATION
                (Presented by: Michael Ehlert)

2:22 p.m. – 2:28 p.m. COMPARISON OF OPERATIVE AND PERIOPERATIVE OUTCOMES BETWEEN ROBOTIC ASSISTED PROLAPSE REPAIR AND TRANSVAGINAL MESH REPAIR
                (Presented by: Priyanka Gupta)

2:28 p.m. – 2:34 p.m. TWO-STAGE MANAGEMENT OF COMPLICATED BLADDER NECK CONTRACTURE ASSOCIATED WITH STRESS URINARY INCONTINENCE AFTER PROSTATE CANCER TREATMENT IN THE GERIATRIC POPULATION
                (Presented by: Nazia Bandukwala)
2:34 p.m. – 2:40 p.m.  USING TRANSLABIAL ULTRASOUND TO VISUALIZE MESH EROSION INTO THE URETHRA AND BLADDER  
(Presented by: Seth A. Cohen)

2:40 p.m. – 2:46 p.m.  TEMPORAL TRENDS IN CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE  
(Presented by: Brooke T. Brown)

2:46 p.m. – 2:52 p.m.  MEDICAL STUDENT ROBOTIC SIMULATOR PERFORMANCE DOES NOT CORRELATE WITH THEIR USMLE SCORE  
(Presented by: Meghan Griffin)

2:52 p.m. – 2:58 p.m.  GENTAMICIN INTRAVESICAL INSTILLATIONS DECREASE SYMPTOMATIC URINARY TRACT INFECTIONS AND ORAL ANTIBIOTIC USE IN PATIENTS WITH NEUROGENIC BLADDER ON INTERMITTENT CATHETERIZATION  
(Presented by: Lindsey Cox)

2:58 p.m. – 3:04 p.m.  EFFECT OF DEEP BRAIN STIMULATION (DBS) ON LOWER URINARY TRACT SYMPTOMS (LUTS) OF PARKINSON'S DISEASE PATIENTS (PD)  
(Presented by: Stephen Mock)

3:04 p.m. – 3:10 p.m.  HEATING OF THE INTERSTIM SACRAL NEUROMODULATION DEVICE IN A SIMULATED PHANTOM MODEL DURING LUMBAR AND PELVIC MAGNETIC RESONANCE IMAGING (MRI)  
(Presented by: Adrienne Quirouet)

3:10 p.m. – 3:16 p.m.  PROLAPSE RECURRENCE AFTER TRANSVAGINAL MESH REMOVAL  
(Presented by: Rebecca Lavelle)

3:16 p.m. – 3:22 p.m.  MEDICAL COMPLICATIONS AND UROLOGICAL SURVEILLANCE IN THE UNITED STATES ADULT SPINA BIFIDA POPULATION  
(Presented by: Yahir Santiago-Lastra)

3:22 p.m. – 3:28 p.m.  EARLY RESULTS OF ANTERIOR ELEVATE FOR REPAIR OF PELVIC ORGAN PROLAPSE  
(Presented by: Jennifer Sung)

3:28 p.m. – 3:34 p.m.  NATIONAL PRACTICE PATTERNS IN INFECTION PROPHYLAXIS FOR INTERSTIM – A SURVEY OF HIGH-VOLUME PROVIDERS  
(Presented by: Eugene W. Lee)

3:34 p.m. – 3:40 p.m.  LONG-TERM OUTCOMES OF RETROPUBIC MIDURETHRAL SLINGS FOR STRESS URINARY INCONTINENCE IN A TERTIARY REFERRAL SETTING  
(Presented by: Kevin Gioia)

3:40 p.m. – 3:46 p.m.  WHAT DO INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME PATIENTS WANT?  
(Presented by: Nicole Golda)

3:46 p.m. – 3:52 p.m.  ABDOMINAL SACROCOLPOPEXY WITH CONCURRENT TOTAL ABDOMINAL HISTERECTOMY IN THE ROBOTIC ERA  
(Presented by: Gillian Stearns)

3:52 p.m. – 3:58 p.m.  OUTCOMES OF SUBTOTAL MESH EXCISION AND VAGINOPLASTY FOR MESH EXPOSURE/EXTRUCTION/PERFORATION IN THE URINARY AND GENITAL TRACT FOLLOWING PRIOR FAILED INTERVENTION  
(Presented by: Drew Freilich)

4:00 p.m. – 4:30 p.m.  Q&A
Panel 1: Age-Related Changes in Brain and Bladder Function

Moderator: Henry Lai, MD

Panelists: Neil M. Resnick, MD, Cara Tannenbaum, MD, MSc, Cara Tannenbaum, MD, MSc

How Can Animal Models Help Us Understand the Aging Bladder?
Phillip P. Smith, MD

I. Aging:
   a. Increased variances vs. universal decline
   b. Diminished tolerances/adaptability: homeostasis/physiologic reserve

II. Type of study
   a. Study of the aged
      i. Phenotyping
      ii. Responses to stressors
      iii. Responses to manipulation of age-associated changes
   b. Study of Aging
      i. Maturation vs. Aging
         1. Separation of Aging and Senesence
         2. Selection of Age Groups
      ii. Differential baseline function
      iii. Differential responsiveness/physiology
      iv. Differential responses to stressors

III. Type of Model
   a. Choice of Animal
   b. Molecular/Cellular
      i. Ca++ mobilization/transport
      ii. Energetics
   c. Pharmacologic
      i. Neurotransmitters: what’s key, what’s not?
      ii. Receptors: concentration, sensitivity
   d. Tissue
      i. Structural
         1. Stereology
         2. Ultrastructure
      ii. Strip
         1. UE +
         2. UE –
         3. UE
      iii. Ex-vivo / whole bladder
         1. Pharmacology
         2. Nerve: efferent, afferent
   e. In Vivo
      i. Voiding Spot testing
      ii. CMG – pressure, flow, timing
      iii. Afferent nerve activity
   f. Contextualize/perceptual/integrative
      i. Animal models of uncertain/doubtful utility
      ii. Instinct vs. self-determination
TUESDAY, FEBRUARY 24, 2015
1:00 p.m. – 2:30 p.m.

Panel 1: Age-Related Changes in Brain and Bladder Function
Moderator: Larissa Rodriguez, MD
Panelists: Neil M. Resnick, MD; Cara Tannenbaum, MD, MSc; Phillip P. Smith, MD

Role of Higher Centers on the Aged Bladder
Cara Tannenbaum, MD, MSc

Brain regions associated with bladder control
The modus operandi of the bladder comprises of urine storage and elimination (Fowler et al., 2008). Involuntary or reflex micturition (elimination of urine) is known to occur in children until ages 3 to 5, following which the process becomes voluntarily regulated (Fowler et al., 2008). Neural circuitry in the brain that controls these two bladder processes is highly distributed, functionally complex, and may be broadly subdivided into reflex and limbic/cortical sub-circuitries (Griffiths, 2011).

Reflex: The reflex circuitry switches back and forth between the storage and micturition/or voiding phases. Reflex micturition is a mechanical reflex, which in the absence of inputs from higher brain regions ensures automatic and involuntary voiding whenever the bladder volume reaches a critical threshold. This reflex is mediated by a spinobulbospinal pathway passing through the pontine micturition centre (PMC), a collection of cell bodies located in the rostral pons of the brainstem. It is believed that bladder afferent signals ascend the spinal cord to the periaqueductal gray (PAG), another brainstem region situated above the pons, before reaching the PMC.

Limbic/Cortical: Afferent bladder signals from the PAG further project to the emotional (limbic) regions of the brain. It has been suggested that an output signal produced by the limbic circuitry actively inhibits voiding, unless the situation is deemed safe for the individual (Griffiths, 2011). Afferent bladder signals from the PAG are also relayed via the thalamus to the insula, the dorsal anterior cingulate cortex (dACC), and the medial and lateral prefrontal cortices (mPFC and lPFC respectively). This cortical circuitry is thought to (a) generate the sensations of bladder filling and (b) evaluate the social propriety of voiding (Griffiths, 2011).

Specifically, afferent bladder signals from the PAG are relayed to and mapped in the insular cortex, thus dubbing the insula as the neural correlate of bladder sensations. The motivation to void, and in particular the urgency to void is thought to be encoded by the dACC. The prefrontal cortex (PFC) is invoked when conscious attention or voluntary decision about voiding is required. The mPFC has been implicated in maintaining continence, primarily by inhibiting voiding until voluntarily desired (Griffiths et al., 2009; Griffiths, 2011), while the IPFC is concerned with voluntary regulation of emotion and bladder sensation.

Converging evidence from various brain imaging (SPECT, PET and fMRI) studies substantiates this simplified cortical circuitry of bladder control. As expected, brain regions strongly activated during bladder filling include the PAG, the thalamus (the relay center), and the insula. The dACC and mPFC is also activated, but curiously, compared to normal subjects its activation is much stronger in subjects prone to involuntary loss of urine, suggesting that these regions might have a greater role to play in the genesis of urge incontinence.

Age-related changes in the brain
Advancing age is associated with consistent differences in brain structure and function (Lockhart, 2014). Structural changes include, but are not limited to disruption of cerebral white matter, cerebral atrophy of the frontal and medial lobes, and the presence of neurofibrillary tangles and beta-amyloid plaques, making it difficult to distinguish “normal” brain aging in the presence of concurrent disease from “healthy” brain aging. Functional brain differences, such as declines in episodic memory, processing speed, executive control and inhibition during task switching, can be detected by cognitive testing, are often independent of age-associated diseases and may result from age-related differences in neurotransmitter concentrations or alterations in synapse integrity and dendritic spine remodeling in the absence of reduced neuronal cell count ((Lockhart, 2014). As concurrent medical risk factors and illness (i.e. hypertension) becomes more common with age, our understanding of brain aging in the absence of disease is increasingly difficult to disentangle from alterations due to incipient neurodegenerative or vascular conditions.

Brain responses to bladder filling in the elderly with normal bladder function
Brain imaging studies help uncover age-related alterations in the brain networks associated with, and thought to control responses to bladder filling. These age-related changes might significantly contribute to the increased prevalence of bladder
dysfunction in the elderly (Griffiths et al., 2009; Griffiths, 2011). Similar to findings in younger adults, infusion into an already full bladder in older individuals results in strong sensation and fMRI-detectable brain activation near the insula and in the dorsal anterior cingulate (dACC)/supplementary motor complex (SMA) (Tadic et al., 2013). The magnitude of activations in the insula and dACC, as well as the mPFC have been demonstrated to decrease with age, and might stem from changes in cerebral connectivity and/or peripheral factors, such as bladder afferents (Griffiths et al., 2009). In contrast, activation strength in the PAG appears to remain unaffected by age (Griffiths et al., 2009). Interestingly, this study further suggested an increase in connectivity between brain regions associated with bladder control with age (Griffiths et al., 2009). Moreover, reduction in bladder sensation with age has also been reported in both human and animal literature (Pfisterer et al., 2006; Smith et al., 2012).

Infusion into a near-empty bladder in the aged resulted in weak/or absent sensation, absence of activation in the cortical area, and activation in midbrain and parahippocampal regions. It has been suggested that the latter might be related to unconscious monitoring of ascending bladder signals (Tadic et al., 2013). While additional studies are required to delineate brain activation differences between the young and the aged during infusion into a near-empty bladder, a reduction in insular response has been reported (Griffiths, 2011).

Age-related changes might predispose to disorders of bladder control

A decrease in activation strength in brain regions crucial (e.g. insula, dACC, mPFC) for maintaining neural control of the bladder may have a net negative effect on voluntary bladder control (Griffiths et al., 2009). Age-related increase in connectivity between brain regions associated with bladder control might indicate neural compensation in the face of age-related network deterioration (Griffiths et al., 2009). One trigger for this phenomenon might be damage to the white matter tracts. This hypothesis is supported by several studies linking severity of white-matter damage to decreased ability over voluntary bladder control (Poggesi et al., 2008; Kuchel et al., 2009).

REFERENCES

Keynote Speaker: Pain Signaling and Neuromodulation
Allan Basbaum, PhD

Neuropathic pain arises from injury to the peripheral or central nervous system and is characterized by ongoing pain and mechanical hypersensitivity (allodynia). Among the many mechanisms that have been implicated in the generation of neuropathic pain is a central sensitization of spinal cord pain processing circuits. Of particular interest is the view that neuropathic pain is an epileptic-like condition resulting from reduced GABAergic inhibition. Consistent with this hypothesis is that anticonvulsants are among the most effective pharmacological approaches to treat neuropathic pain. An alternative approach to reducing the mechanical allodynia is to re-establish the inhibitory tone lost in the setting of nerve injury. Indeed, it is possible to restore inhibitory tone by transplanting GABAergic precursor neurons derived from the embryonic cortex into the spinal cord of nerve-injured mice. These precursor neurons develop in the spinal cord, differentiate into GABAergic interneurons and integrate into the host circuitry. Most importantly, peripheral nerve injury-induced mechanical hypersensitivity can be completely normalized, within weeks of the transplantation. With a view to translating these preclinical findings to patients, we have now initiated studies using human pluripotent stem cells modified to assume the properties of GABAergic neurons. Preliminary studies indicate that these cells have the capacity to integrate and influence host circuits. Taken together these studies suggest that a therapy targeted at treating the “disease” of neuropathic pain, namely the pathophysiological alterations in CNS function that are characteristic of this condition, is a viable and novel approach to the management of neuropathic pain.

With a view to identifying the factors that contribute to the GABAergic dysfunction we turned our attention to the microglial activation in the spinal cord that occurs following peripheral nerve injury. Despite the growing evidence that microglia are major contributors to the mechanical hypersensitivity produced by peripheral nerve injury, there is little consensus as to how nerve injury activates spinal cord microglia. Importantly, activation of microglia requires an intact connection between the injured sensory neurons in dorsal root ganglia (DRG) and the spinal cord. Thus, injured DRG neurons must transmit signals that communicate with the microglia. Based on an extensive RNA-Seq analysis of DRG neurons after injury, we focused on the cytokine, colony-stimulating factor 1 (CSF1). CSF1 is critical to the differentiation and maintenance of the myeloid lineage population, including microglia. Its receptor, CSF1R, is also required for microglia development and in the adult CNS, CSF1R is only expressed in microglia. Our analyses established that nerve injury-induced CSF1 in sensory neurons is required not only for the activation of dorsal horn microglia, but also for the mechanical hypersensitivity that is the hallmark of the neuropathic pain condition. We also studied the microglial membrane adaptor protein DAP12, which lies downstream of CSF1R and is central to microglia functionality. In these studies, we demonstrated a critical contribution of DAP12 to the nerve injury-induced expression of microglial genes implicated in the neuropathic pain condition and in the mechanical hypersensitivity that follows nerve injury.
Panel 2: Modeling and Phenotyping the Bladder in Health and Disease
Moderator: Georgi V. Petkov, PhD
Panelists: George J. Christ, PhD; Robert W. Gereau, PhD; Matthew O. Fraser, PhD

Phenotyping Detrusor Overactivity
Matthew O. Fraser, PhD

The ICS defines Detrusor Overactivity (DO) as “a urodynamic observation characterized by involuntary detrusor contractions during the filling phase which may be spontaneous or provoked.” DO may occur with or without accompanying incontinence, and may be further qualified according to cause, as Neurogenic or Idiopathic DO. Neurogenic in this terminology refers to association with a known neurological deficit.

While it may be argued that individuals with normal or heightened bladder afferent sensitivity that exhibit DO are likely to fall under the symptom cluster referred to as Overactive Bladder Syndrome (OAB; urgency with or without urge incontinence, usually with frequency and nocturia), not all OAB patients demonstrate DO during urodynamics. This has led to a movement away from urodynamic diagnoses to symptom-based diagnoses. Until relatively recently, however, all OAB patients were treated equally with antimuscarinics as the second-line medical therapy (after behavioral therapy). The interesting assumption implicitly made by this treatment is that OAB symptoms are caused by spurious parasympathetic activity in all patients, either driven spontaneously or reflexly, resulting in a neurally-mediated DO. However, anticholinergics are efficacious in only ~30-40% of OAB patients.

In preclinical models, spontaneous myogenic activity can result in high amplitude rhythmic non-voiding bladder contractions during the filling phase. Inhibition of autonomic transmission amplifies this activity, while administration of beta3-adrenoceptor agonists inhibits it, supporting the notion that these high amplitude contractions are myogenic in origin (i.e. myogenic DO). Beta3-adrenoceptor agonists inhibit spontaneous and/or weakly stimulated smooth muscle activity, and represent a new option for pharmacotherapy of OAB. In the clinic, Mirabegron (a beta3-adrenoceptor agonist) is also efficacious in ~30-40% patients. It is tempting to speculate that these 30-40% of patients are different than those who respond to antimuscarinics, that is to say that their OAB is caused by myogenic DO while those who achieve relief from antimuscarinics have neurally-mediated DO.

Sacral or tibial nerve stimulation and Botulinum toxin neuromodulation approaches (third-line) are efficacious in ~50-90% of OAB patients who are refractory to second-line medications, which suggests an afferent component to refractory OAB that may be independent of DO.

Thus, at least three underlying mechanisms may be responsible for generating OAB symptoms: 1) spurious parasympathetic activity, 2) spontaneous myogenic activity, and 3) enhanced afferent nerve activity. The first two of the preceding three mechanisms are responsible for generating neurally-mediated and myogenic DO, respectively. These mechanisms may or may not coexist, and likely largely determine which therapeutic approaches will work for any given individual with OAB symptoms. If we were able to quickly phenotype patients and discern which mechanism was predominant in each individual, we would be better able to target our therapeutic strategies. Such an approach would save time, money and enhance patient satisfaction. Additionally, as testing strategies for phenotyping patients become validated, third-line treatments may be graduated to phenotype-appropriate second-line treatments.
Involvement of Glial Cells in Nociception
Linda R. Watkins, PhD

Work over the past 25 years has challenged classical views of pain & opioid actions. Glia (microglia & astrocytes) in the central nervous system are now recognized as key players in: pain amplification, including pathological pain; compromising the ability of opioids, such as morphine, for suppressing pain; causing chronic morphine to lose effect, contributing to opioid tolerance; driving morphine dependence/withdrawal; driving morphine reward, linked to drug craving & drug abuse; & even driving negative side effects such as respiratory depression. Glial activation arises under conditions of chronic pain from neuron-to-glia signaling. Furthermore, glia can be “primed” by such things as aging, stress, inflammation, and opioids so that a new glial challenge can result in an amplified response, thereby amplifying pain including visceral pain. New data on glial priming document that morphine, administered only around the time of trauma, actually leads to the later amplification of the magnitude and duration of subsequent chronic pain, an effect prevented by blocking glial activation during morphine exposure. Intriguingly, the glial activation receptor that creates neuroinflammation under conditions of chronic pain is one and the same receptor that is activated by opioids. Atop this, what is both fascinating & fundamentally important is that opioid effects on glia that create neuroinflammation are via the activation of a non-classical, non-stereoselective opioid receptor distinct from the receptor expressed by neurons that suppresses pain. This implies that the effects of opioids on glia & neurons should be pharmacologically separable so to lead to new drugs for the control of chronic pain & to increase the clinical efficacy of pain therapeutics for both acute and chronic pain. Indeed, drugs in development that target either glia activation generally or this glial activation receptor in particular have shown remarkable efficacy as stand alone treatments for neuropathic pain, by blocking neuron-to-glia signaling, plus blocking unwanted side effects of opioids.

The Brain's Role in Perceiving and Modifying Chronic Pain  
M. Catherine Bushnell, PhD

Brain imaging reveals that multiple regions of the brain are activated during pain, including the thalamus, somatosensory cortices, and limbic regions, such as anterior cingulate and insular cortices. Frontal cortical regions and periaqueductal grey matter are involved in pain modulation, and become particularly important in chronic pain conditions. Functional brain imaging studies of touch-evoked allodynia in patients with chronic pain, including those with chronic pelvic pain, reveal that similar brain regions are activated. Whether the pain is related to peripheral nerve damage or damage within the CNS, there is an abnormal activation of pain-related regions by stimuli that normally would not be painful. Resting-state imaging studies reveal a network of brain activation and a disruption of normal resting-state brain activity in chronic pain states, including interstitial cystitis and painful bladder syndrome. There is now accumulating evidence that chronic pain is associated with changes in brain gray and white matter, particularly in regions involved in pain modulation. Although the most commonly reported alteration is a decrease in gray matter volume, studies in patients with chronic vulvar or bladder pain show a predominance of gray matter increases. Together, brain imaging studies suggest that chronic pain conditions can have a profound influence on the brain that may then lead to secondary conditions, including anxiety disorders and depression. As such, the data underline the importance of early treatment of chronic pain conditions.
*P2X3 Antagonist in Treatment of Bladder Pain Syndrome/Interstitial Cystitis
Anthony Ford, PhD
*Not CME Accredited

A role for ATP in sensory function was first proposed in the 1950s, long before general acceptance of its extracellular role. It is now clear that ATP activates & sensitizes signal transmission at multiple sites along the sensory axis, across multiple synapses. P2X & P2Y receptors mediate ATP modulation of sensory pathways & clearly participate in their dysregulation. It has become clear that ATP acts directly on primary afferent neurons, linking the receptive field in all tissues and organs to the CNS. Many afferents, especially C-fibers, are specifically activated by ATP, via P2X3-containing trimeric channels that are excitatory in nature (gating sodium and calcium).

Following the pioneering work of Geoff Burnstock, that laid the basis of ATP as a signaling factor (purinergic signaling) and its likely role in participating in filling and movement communication in hollow organs (the tubes and sacs purinergic hypothesis), several key lines of evidence led to striking indications of its role within the lower urinary tract. One key paper that triggered heightened interest was from Ferguson and coworkers (Ferguson et al., 1997) who examined the release of ATP from pieces of rabbit bladder, in which the tissue strip was intact or the epithelial or smooth muscle layers were studied alone. This paper illustrated that ATP was readily liberated from bladder tissue strips upon electrical field stimulation, and that the source of this release was predominantly the epithelial tissue layer, prompting speculation that this release might occur as part of a local sensing mechanism. Subsequently, this putative sensing mechanism was studied using an isolated bladder-pelvic nerve preparation from rat, developed by Morrison and colleagues (Namasivayam et al., 1999) where recordings from pelvic sensory nerves were seen to reflect the volume of infusate filling of the bladder, with firing of these nerves mimicked by ATP application and inhibited by antagonism of P2X receptors.

P2X3 knock-out mice, developed at Roche Palo Alto (Cockayne et al., 2000), added further information by demonstrating that this specific P2X subunit was responsible for mediation of the sensory effects of ATP in bladder, as reflected by altered volume thresholds for reflex responses. Additional work on KO mice & knock-down (antisense or siRNA) in rats revealed reduced nocifensive activity & visceral reflexes, suggesting that antagonism may offer benefit in sensory disorders.

Recently, drug-like P2X3 antagonists, active in many inflammatory & visceral pain models, have emerged. Significantly, these compounds have no overt CNS action & are inactive versus acute nociceptive stimuli (defensive responses). Selectively targeting ATP sensitization of afferent fibers by P2X3 receptor blockade is thus now considered a viable approach to deliver novel therapies that block inappropriate chronic signals, decreasing drivers of peripheral & central wind-up, yet leaving defensive nociceptive and brain functions unperturbed.

This presentation reviews the above evidence, focusing on how ATP sensitization of afferents in visceral “hollow” organs primes them to chronic discomfort, irritation & pain (symptoms) as well as exacerbated autonomic reflexes (signs). Moreover, it will be discussed how recent findings with AF-219, the first clinical stage P2X3 antagonist, have confirmed that this novel mechanism of action offers potential in hitherto poorly managed and common conditions, including refractory chronic cough (Abdulqawi et al., 2014) and interstitial cystitis / bladder pain syndrome (IC/BPS: Hanno et al., this meeting).

Invited Speakers Lecture Summaries

SUFU

WEDNESDAY, FEBRUARY 25, 2015
10:45 a.m. – 11:45 a.m.

Keynote Speaker: Why Do Women Have Prolapse? Sorting Fallacies from Facts
John DeLancey, MD

Pelvic organ prolapse is a disease that has been described in the medical literature for over 3000 years. During that time there have been many different theories proposed to explain why the uterus and vagina fall downward to and protrude through the vaginal opening. Surgery for prolapse is required in twice as many women as radical prostatectomy is in man yet our understanding of this common and distressing problem remains based on opinion and theory rather than data.

There are many competing hypotheses used to explain pelvic organ prolapse. Many of these are mutually contradictory. This situation has existed because the lack of techniques that allow measurements to be made of the many different structures involved in the pelvic organ support system. The analogy that we used to this new strategy for pelvic floor evaluations relates to echocardiography. With echocardiography imaging is used to assess the structure and function of a complex system. For each element of this report of value is obtained and compared with the normal range.

The advent of 3-D stress MRI has revolutionized our understanding by allowing us to make measurements of pelvic floor structures in women who do have prolapse and compare with women who do not. Over the last 15 years our research group has conducted a series of case-control studies that has clarified the confusing picture of pelvic organ prolapse etiology.

There are 16 structures involved in pelvic organ support. As an example I will focus primarily on anterior vaginal wall support as it relates to cystocele. This is the condition that is both the most common and also the one for which the best data exists. It is possible in imaging studies to measure the length and width of the vagina during a maximal Valsalva maneuver. I will refer to these as vaginal wall factors. They relate to the hypothesis that the vaginal wall and its fascia fail. There are also two attachment factors. These are the apical support of the vagina and the paravaginal attachment. These factors have to do with displacement of the vagina from its normal points of attachment. In addition the action of the levator ani muscle in determining the size of the urogenital hiatus within the levator ani muscle are further factors involved.

In assessing the relative contributions of these different failure areas it is clear that the apical and paravaginal attachments are highly correlated and probably simply represent to measurements of the same phenomenon. Changes in vaginal width and length are much smaller when women with cystocele are compared to normal volunteers. Although most individuals believe that the vagina widens in women with cystocele this is actually not the case. The vagina is about 20% longer in women with cystocele but there is not a statistically significant increase in vaginal width throughout the length of the vagina. It seems that way to a clinical observer who suddenly sees the vaginal wall below the introitus but it is the fact that the vagina has descended rather than the fact that it is widened that is actually involved.

Prolapse is caused by the interaction of several different factors. Women who have pelvic organ prolapse are three times more likely to have sustained major injury to the levator ani muscle at the time of delivery. This results in an inability for these damaged muscles to hold the hiatus closed. The anterior vaginal wall then loses the support of the levator muscles and drops downward some point. Once it reaches the introitus it then lies in between abdominal and atmospheric pressure. This pressure differential drives the anterior vaginal wall downwards and this, in turn, pulls the cervix down. Data that we have recently acquired concerning the Cardinal and uterosacral ligaments that suspend the cervix and upper vagina revealed that these structures have very little change in their elasticity but considerable change in their length that suggests that these chronic increased forces caused by the pressure differential force and to stretch in much the same way to the skin expander causes the connective tissue of the dermis to expand. Therefore it is the interplay of these different factors that’s responsible for pelvic organ prolapse.

Surgically we must move beyond the presumption that the details of different prolapses don’t matter. In a recent study where we looked at outcomes eight years after surgery in women who did and did not have major injuries to the levator ani muscle, anatomical recurrence was more than three times more common in the women who had a muscle injury than those who did not (8% versus 28%). This suggests that women with normal muscles have a high success rate in women with damaged muscles have a high failure rate. If adjunctive surgical mesh is to be used it seems only justified in those with levator injuries. Of course a clinical trial would need to show that there was in proved outcome but that would be a much different situation than suggesting mesh for all patients. In addition there is great difference of opinion about when hysterectomy is needed at the time of cystocele repair or when a sacrospinous ligament suspension or uterosacral suspension is needed at the same time. Most of these
decisions are currently based on expert opinion and probably result in substantial overtreatment because we had not yet decided to assess each individual woman and establish cutpoints for necessary surgery.

Now that it's possible to image the pelvic floor both with ultrasound in magnetic resonance imaging a new paradigm for treatment must be developed and evaluated. No one would think about treating a patient for congestive heart failure without determining whether it was caused by myocardial dysfunction versus mitral valve stenosis. Now that we have a framework of pelvic floor structure and function this work can begin.
WEDNESDAY, FEBRUARY 25, 2015
4:30 p.m. – 6:30 p.m.

Setting Yourself Up For a Successful Research Career
Location: Sunshine
(Space Limited)
Erika Wolff, PhD

MDs face challenges when wanting to incorporate research into their career. In terms of publications and grant funding, MDs must compete with PhD-level investigators who have the training, resources, and time for conducting research.

At this session we will discuss strategies for developing research skills, leveraging available resources, and maximizing efficiency in order to set you up for success. The format is very interactive so come ready for lots of discussion.
Pudendal Nerve Stimulation
Warren Grill, PhD

The functions of the lower urinary tract to store urine (continence) and expel urine (micturition) can be disrupted by disease or injury. Electrical stimulation of pudendal sensory nerve fibers can inhibit the bladder and promote continence or activate the bladder to produce or enhance emptying. This differential control of bladder function can be achieved by selective stimulation based on anatomical segregation of pudendal afferents or by stimulation of pudendal afferents at different frequencies.

I will review preclinical studies and clinical translation of pudendal afferent stimulation to inhibit the bladder and promote continence including recent work to demonstrate the importance of GABAergic mechanisms in mediating pudendal afferent evoked inhibition of the bladder. I will also review complementary studies on the role of pudendal afferents in efficient bladder emptying, highlighting results demonstrating that pudendal afferent stimulation can excite the bladder and enhance bladder emptying in models of detrusor underactivity. These studies demonstrate that activity in pudendal afferents can generate either inhibition or activation of the bladder, and that electrical stimulation of pudendal afferents holds promise as an approach to restoration of continence and micturition following disease or injury.

REFERENCES

ACKNOWLEDGMENTS
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Study of the Human (Vaginal) Microbiota
Rebecca M. Brotman, PhD, MPH

The overwhelming majority of microbial species (>99%) resist cultivation in the laboratory, and as a result, we have had an incomplete understanding of the microbes which inhabit the human body. The recent development of next generation sequencing technologies has revolutionized how we characterize the human microbiome, as it has enabled sequencing hundreds of thousands of bacteria in a quantitative and affordable way.

Vaginal bacterial communities play a key role in preventing colonization by pathogenic organisms, including urinary tract infectious agents and sexually transmitted infections (STIs). Many *Lactobacillus* species produce antimicrobial metabolites and copious amounts of lactic acid resulting in a protective, low pH (<4.5). Dysbiotic vaginal microbiota, as in the clinical syndrome of bacterial vaginosis (BV), is highly prevalent (29% of U.S. women), prompts millions of health care visits annually in the U.S. and can be quite symptomatic and highly recurrent. Unfortunately, the etiology of BV remains unknown and treatment options are still inadequate. Our research group seeks to apply modern genomic-based approaches to better understand the interaction between the vaginal microbiome and women’s health across the lifespan, and ultimately to develop novel strategies to maintain a healthy and protective microbiome.

In the first study of its kind, analyzing 396 women from four different ethnicities, we identified five groupings of vaginal microbiota in reproductive-age women. Four of these groups were dominated by one of four species of *Lactobacillus* while the fifth group was depleted of *Lactobacillus*. The latter group contained higher proportions of anaerobic bacteria, resembling BV. The frequencies of each bacterial state varied greatly by ethnicity and African American and Hispanic women were more likely to be *Lactobacillus*-depleted. The reasons for racial disparity in the vaginal microbiome are unknown and likely play a role in greater susceptibility to infection along racial lines. We have also demonstrated in daily longitudinal studies that some women experience frequent and rapid fluctuations in the composition of the vaginal microbiota, while in others, the microbiota are remarkably stable.

We recently expanded this work to other age groups as it is known that the vaginal microbiota respond dramatically to transitional phases such as puberty and menopause. Up to 50% of menopausal women experience the genitourinary syndrome of menopause (GSM), a condition which severely affects quality of life. We have shown that vaginal atrophy is associated with changes in the vaginal microbiota. Helping peri-menopausal women maintain a *Lactobacillus*-dominated microbiota as they enter menopause may prove to prevent the development of GSM symptoms. Such studies describing the vaginal microbiota across the lifespan provides the necessary information needed to begin planning future interventional studies.

Lastly, recent studies suggest that the vaginal microbiota may contribute to recurrent urinary tract infection (UTI) susceptibility. Our longitudinal data suggest that women who have a vaginal microbiota dominated by a *Lactobacillus iners* subtype are at increased risk for uropathogenic *E. coli* colonization. Overall, the genus *Lactobacillus* is considered to protect against pathogens, however, species-specific attention to *L. iners* has recently emerged. *L. iners* has been associated with both BV and healthy states. Importance of *Lactobacillus* spp. strain-specific differences was highlighted in a study by Ghartry et al. in which *E. coli* inhibitory activity varied by strain of *L. crispatus*.

We have only begun to understand the importance of our human microbiome and how changes in its composition and function can affect our health. Our behaviors, diet, hygiene, and smoking habits do not just affect us, they also affect our microbial partners. We have the expectation that in the future, we will be able to harness the microbiome to improve women’s health. Therapy in the form of probiotics and prebiotics could be used to manage, modulate or restore the vaginal microbiome and maintain homeostasis. Such therapies could provide much needed strategies to cure and/or prevent urologic conditions including uropathogenic *E. coli* colonization, asymptomatic bacteruria, symptomatic cystitis and urinary incontinence, and also general gynecologic issues including recurrent BV, atrophic vaginitis, transmission and acquisition of HIV, and adverse obstetric outcomes, such as preterm birth. The preponderance of data points to the need for a personalized approach to treatment which takes into account the composition and function of a woman’s microbiome.
THURSDAY, FEBRUARY 26, 2015
8:00 a.m. – 8:45 a.m.

Panel: Urinary Tract Infection Update 2015
Moderator: Karyn S. Eilber, MD
Panelists: Duane Hickling, MD; Kimberly L. Cooper, MD; Michel A. Pontari, MD

Evaluation and Treatment of Recurrent UTI's in Women: Who Needs Treatment and How Should We Be Treating?
Kimberly L. Cooper, MD

- Epidemiology
- Definitions
- Classification

Evaluation
- History, Risk Factors
- Physical examination
- Urinalysis and urine culture
- Microbiology
- Further testing

- Asymptomatic Bacteriuria

- Treatment of Symptomatic UTI
  IDSA guideline, 2010 (next page)

Management Options for Recurrent UTIs

- Antimicrobial Prophylaxis
- Symptomatic Self-Start Therapy
- Behavioral Modification
- Cranberry
- Vaginal Estrogen
- Methenamine Mandelate and Methenamine Hippurate

- Future Options
  Oral immunostimulant OM-89 (Uro-Vaxom)
  Urovac vaginal vaccine

Conclusions

IDSA Guidelines for treatment of Symptomatic UTI
Can one of the **recommended antimicrobials** below be used considering:
- Availability
- Allergy history
- Tolerance

Nitrofurantoin monohydrate/macrocrystals 100 mg bid X 5 days
   (avoid if early pyelonephritis suspected)
   
   **OR**

Trimethoprim-sulfamethoxazole 160/800 mg (one DS tablet) bid X 3 days
   (avoid if resistance prevalence is known to exceed 20% or if used for UTI in previous 3 months)
   
   **OR**

Fosfomycin trometamol 3 gm single dose
   (lower efficacy than some other recommended agents; avoid if early pyelonephritis suspected)
   
   **OR**

Pivmecillinam 400 mg bid X 5 days
   (lower efficacy than some other recommended agents; avoid if early pyelonephritis suspected)

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*The choice between these agents should be individualized and based on patient allergy and compliance history, local practice patterns, local community resistance prevalence, availability, cost, and patient and provider threshold for failure (see Table 4)*
Evaluation and Treatment of UTI's and Prostatitis in Men
Michel A. Pontari, MD

Urinary tract infections in males are considered complicated infections until proven otherwise due to the presence of the prostate. In the UDA project study, the overall annual incidence of UTI in men increased with age from 1789/100,000 in men 25-34 up to 6693 in men 75-84. The term prostatitis refers to a set of four conditions classified by the NIH as Category I: Acute bacterial prostatitis; II: Chronic bacterial prostatitis; III: Chronic prostatitis/pelvic pain syndrome and IV: Asymptomatic inflammatory prostatitis.

Patients with acute bacterial prostatitis (Category I) present with symptoms of an acute urinary tract infection and frequently have systemic signs such as fever, malaise and myalgias. The most common infecting organism is E coli. Patients with chronic bacterial prostatitis (Category II) have recurrent episodes of a bacterial urinary tract infection caused by the same organism. The most common bacteria are E coli, other gram negative rods or enterococcus. Between symptomatic episodes, they generally do not experience chronic pain. Categories I and II make up approximately 5-10% of symptomatic cases. The most common type is Category III or Chronic pelvic pain syndrome, a clinical syndrome of chronic pain in the pelvis for 3 out of the past 6 months, in the absence of bacteria identifiable by conventional means. Category IV refers to patients with no genitourinary tract pain but with inflammation on prostate biopsy or in seminal fluid.

More than 90% of men with febrile UTI, with and without clinical signs of acute pyelonephritis, show an involvement of the prostate. Of those with acute prostatitis 10% develop category II prostatitis and a further 10% progress to CPPS. Acute prostatitis can occur in anatomically normal men who become infected with a virulent organism. This is generally the only time you will feel a boggy prostate; avoid vigorous massage as it can precipitate sepsis. If patients are in retention place an SP tube instead of a urethral catheter. Treatment is with IV antibiotics if febrile and then oral antibiotics. Treatment for a total of four weeks to prevent development of chronic prostatitis is generally recommended but a 2 week course in one study showed similar results. In patients who are not responding to IV antibiotics, imaging should be done to rule out prostatic abscess. There are increasing rates of infectious complications after TRUS due to increased bacterial resistance to Fluoroquinolones antibiotics. There is an increased risk of resistance with use of Fluoroquinolones 3-6 months prior to biopsy. Using antibiotics selected based on pre biopsy cultures of rectal flora, Tayler et al reduced the post biopsy infection rate to 0. Other strategies include using rectal povidine iodine or simply augmenting the standard quinolone regimen. The regimen that is most targeted and uses the fewest antibiotics is preferable to prevent further development of resistant bacteria.

Treatment of asymptomatic bacteriuria in men is recommended only before a planned prostate resection or other urologic procedure in which mucosal bleeding is anticipated. The optimal duration of treatment of symptomatic male UTI has not been established. In a large review of 39,000 male UTI episodes in the VA system, longer duration treatment of > 7 days was not associated with an overall reduction in early or late recurrences. Long term therapy was associated with a significant increase in C difficile infection compared to short duration (p=0.02) and a significantly greater rate of late recurrence (P<0.001). Obstruction is a risk factor for infection in males. Urethral obstruction enhances the pathogenicity of nonpathogenic e coli. Investigation to rule out obstruction is recommended in men > 45, and urethral stricture should be ruled out in younger men. The relationship between BPH, elevated residual volume and UTI is not always certain. Patients with LUTS and a post void volume of greater than 180 ml are more likely to have a UTI. In the MTOPS series, the cumulative incidence of UTI (defined as 2 or more UTI in one year or urosepsis) at 4 years overall was 1.2% and in the placebo group was 0.3%. In the REDUCE trial, at 4 years, 10.5% of men taking placebo developed a UTI compared to 6.8% of patients on Dutasteride (p=0.008). Different than MTOPS however was that these patients had all had a prior prostate biopsy.

Bacterial prostatitis (NIH category II) should be considered in men with recurrent UTI. Evaluation of the prostatic bacteria can be done by a 2 glass test. Treatment is recommended with Fluoroquinolones due to gram negative coverage, and prostate penetration. A recent Cochrane review concluded that in treating bacterial prostatitis, there were no differences among the oral Fluoroquinolones. Treatments in studies ranged from 4-12 weeks. No conclusion could be drawn regarding the optimal treatment duration. Therefore at least four weeks of therapy is recommended. For refractory chronic bacterial prostatitis, other
options are daily dosing of prophylactic antibiotics based on culture, self-start antibiotic regimens once symptoms recur, or radical transurethral prostate resection \(^6,^{19}\).

Update on Injectables for Stress Urinary Incontinence
Roger R. Dmochowski, MD, MMHC, FACS

The strategy of urethral bulking as a treatment for stress urinary incontinence has been utilized for nearing 100 years for this indication. The strategy has been limited by the appropriateness of the bulking material (wound healing, host reaction, type of material, durability, and associated need for additional equipment for purposes of injection). A variety of materials have been utilized historically, none of which have been proven to be substantially superior to prior agents. Substantive differences in risk/side-effect have been noted with some materials and this has led to the withdrawal or non-utilization of these materials subsequently. The appropriate patient and indication for bulking material remains debatable. Classically, the mobile urethra with relatively decreased leak point pressure represents the patient considered most apropos for bulking.

However, certain data has supported the use of bulking in patients with some degree of hypermobility and relatively preserved leak point pressures as well. Certain sub-populations have also been considered as more optimal than others. These would include women with relatively fixed urethras and low leak point pressures (the typical and classic intrinsic sphincter deficiency patient) and women who have achieved some benefit after prior sling but wish additional therapeutic intervention without re-operation. Additionally, women who have substantive comorbidities that would preclude anesthesia have been considered candidates for bulking.

The actual technique and procedure of bulking has classically been done under direct endoscopic vision with implantation of bulking material in the mid or proximal urethra. Historically, bulking was achieved at the bladder neck but experience with materials in the latter 1990s and early 2000s indicated a more mid-urethral injection zone would allow better bulking technique and now bulking is delivered by this technique. Evidence has accrued to support the use of transvaginal ultrasonography as a guide to three-dimensional deposition of bulking material.

Unfortunately, concepts of urethral function have somewhat lagged and the concept of urethral resistivity as demonstrated by leak point pressures or maximal urethral closure pressure may not be an optimal predictor for bulking effect. Equally unfortunate is the fact that endoscopic appearance of bulking effect at the completion of injection is not also reliably consistent with overall efficacy. The aforementioned observations were made prior to the ultrasonographic observations noted above and therefore, perhaps a combination of ultrasonography at the time of injection might produce the best benefit. Regarding material types, a variety of biologic as well as synthetic materials have been achieved. Currently, no biologic material is available as collagen is no longer produced. Available materials include hydroxylapatite, carbon-coated zirconium beads, and silicone products. Each of these materials has relative differences in injection technique and in the case of two of them requires altered technique for purposes of adequate deposition of material in the appropriate location. Recent experience with polymers has indicated the potential for these agents.

Perhaps the future is represented by the use of autologous stem cells. These may be harvested from skeletal muscle groups, processed, and re-injected after appropriate tissue expansion.

Generally, a period of time is needed for appropriate cell expansion that may approach one two months. Injection techniques, however, are similar to those utilized for standard bulking.

Currently, an FDA trial is ongoing related to autologous adult stem cell injection and the results of this are not yet available.

Bulking remains an option in the management of stress urinary incontinence in the appropriately selected patient. Further understanding of urethral function and closure mechanisms as well as the optimization of material may provide the most rigorous improvement in bulking as a strategy for stress urinary incontinence management.
**Management of Refractory Refractory Overactive Bladder: What To Do When Third Line Therapies Fail**

**Lead Revision**
Steven W. Siegel, MD

Assuming the right patient for SNM has been selected in the first place, revision of the lead is often the best option for treatment after a failed implant.

**Pick the right patient**

Ideal candidates for SNM have OAB and failed first and second line therapies, are under 70, neurologically normal, do not have pelvic pain as a primary or major focus, and are able to understand and actively participate in their care. The therapy can work well for patients who do not fit this description, but may be more problematic. Do we really expect someone with a progressive neurologic disorder or IC to be trouble free after an SNM implant? Sufficient objective improvement should be noted on trial phase voiding diaries compared to baseline, and patients shouldn’t be pushed into deciding. I tell them “the difference needs to be ‘night and day’, and you will know if it is right for you.”

**Place the lead properly**

An ideally placed S3 lead has a characteristic appearance on AP and Lateral X-ray (table 1). All 4 contacts yield the appropriate response (bells first, toe a quick second) at thresholds under 2V, with sensation comfortable in the genital and/or perineal area. To achieve this outcome routinely, it is necessary to use the 3889 lead and the curved stylet, and to steer the lead under continuous fluoro during active placement. If you are not achieving this in the majority of patients, there is room for improvement in your technique. Having all four contacts working appropriately gives maximum flexibility in programming, battery life, and controlling symptoms over time.

**Dealing with initial lack of efficacy**

After a successful percutaneous nerve evaluation (PNE), an appropriate patient should be nearly certain to experience the same degree of benefit after chronic lead placement. Usually, the result is better. When this doesn’t happen, it implies an error in placing the chronic lead. Some patients seem to have a very narrow neuromodulation target. Making sure the PNE lead is placed in a careful, consistent fashion is helpful in assuring equivalent results. Using fluoro during the PNE can help insure this. The techniques described related to ideal lead positioning are another. The patient should have similar sensory responses using both techniques. Programming the INS can be helpful in salvaging benefit after an initially unsuccessful outcome. The manufacturer suggests there are seven basic patterns of lead configuration to be tried. If none of these are sufficiently successful, a lead revision may be needed. All bets are off if the initial trial was not confirmed by objectively measured significant changes in relevant voiding complaints.

**Dealing with lack of efficacy over time**

The patient may perceive declining efficacy over time. The use of objective diary measures can be helpful to confirm the changes are real. Once the patient has insured they feel the stimulation normally, and has cycled through the four programs available to them using the patient programmer, reprogramming to one of the 7 basic programs not currently in use is appropriate. Ideal lead placement will give maximum flexibility here. Reprogramming also gives a chance to see if there has been a fracture of the lead (impedance >4000 ohms at one or more contacts), which may occur due to a fall. Reprogramming may be able exclude sites affected by a partial fracture. The change in efficacy may also be related to a change in the underlying status of the patient. We have patients using implants for over 20 years. During that time period, a number of factors may come into play regarding the basis of complaints that need to be understood. Another possibility is that the INS needs to be replaced because it is at or nearing end of life.

**Revising lead placement**

If programming cannot solve initial or delayed lack of efficacy, it may be necessary to revise the original lead position. Obtaining an AP and lateral view of the lead is extremely helpful in understanding whether revision is appropriate. I feel confident in having
learned how to place a lead with better precision year after year. It is not unusual to find the original lead was not positioned as high and medial in the foramen as possible, or that the depth and course of the lead is sub-optimal. This is particularly likely if prior placement employed the stiff stylet and the 3093 lead. The pattern of sensory responses and thresholds will also corroborate. If only one or two contacts from the original lead were helpful, and they have somehow changed due to lead fracture or migration, there may be little else to do but change the lead. Here I am convinced that a single, appropriately placed S3 lead is as or more likely to produce a successful outcome than experimental techniques such as bilateral or pudendal lead placement.

Summary

Selecting appropriate candidates and placing the lead and INS ideally are the most important steps to minimizing troubles after SNM implant. Reprogramming or revising the implanted components can address most problems. These steps should be considered before abandoning the therapy and moving on to other options such as intravesical botulinum toxin, which may not have the same potential for patient benefit.
Management of Refractory Refractory Overactive Bladder: What To Do When Third Line Therapies Fail

OnabotulinumtoxinA
Sandip P. Vasavada, MD

Refractory bladder overactivity is a condition we all believe to understand despite no true definition. What we really do not understand is what refractory therapy to 3rd line management entails and all of its considerations. This represents an important question as we have pushed the envelope with OAB therapies and now are realizing some occasional shortcomings in the therapeutic realm of these management schemes.

The worldwide use of Botox in refractory bladder disorders has significantly increased since its approval. As would be with almost any therapy, we challenge ourselves as specialists to optimize delivery and subsequently improve outcomes while keeping complications to a minimum. To this end, we have learned many lessons on the use of Botox in refractory bladder conditions that can help us even in the more challenging cases. Several areas of emphasis have been considered in optimal Botox delivery. These may include:

1. optimal dose: while the US FDA has approved onabotulinum toxinA recently for both idiopathic and neurogenic bladder disorders, the optimal dose has been examined but must be looked at not only on basis of efficacy but its major side effects, namely retention and UTI's. Studies aimed at the idiopathic population to optimize both of these factors looked at dose ranging from 100 to 300 IU of onabotulinum toxinA. While the manufacturer ultimately selected 100 IU for FDA approval based on the balance of efficacy and side effects, the data available presents opportunities for patients who wish to maximize efficacy while forgoing some of the morbidity (in particular, urinary retention). Furthermore, some data (ABC Trial, NEJM 2012) poses challenges to the efficacy of the approved 100 IU dose for idiopathic patients.
2. Failed alternative therapies: while some people look at all refractory OAB therapies as interchangeable, this is probably an overstatement. Most pelvic health specialists are quite tactical with their choice or recommendation of therapy based on many factors. Thus, every Botox candidate is not necessarily a good neuromodulation candidate and vice versa. Still, limited data exists on “switch” type data where one succeeds with one therapy after having failed with another
3. Alternative botulinum toxins: in the United States limited alternative toxins are available for use. Furthermore, no data exists in the true “refractory” refractory setting for Botox use in bladder conditions.

References:


Lenherr, S, Morhardt, D, Crossley, H et al: Analysis of cross over rates between sacral neuromodulation and onabotulinum toxinA injection in refractory idiopathic overactive bladder. Neurourology and Urodynamics vol 33(2), 175 Podium 28
THURSDAY, FEBRUARY 26, 2015
11:00 a.m. – 11:30 a.m.

Panel: Controversies in Pelvic Floor Physical Therapy
Moderator: Christopher K. Payne, MD
Panelists: Kelly Scott, MD; Colleen M. Fitzgerald, MD

ICS Classification of Pelvic Floor Muscle Function and Dysfunction¹:

**Normal pelvic floor muscles**: Pelvic floor muscles which can voluntarily and involuntarily contract and relax.

**Overactive pelvic floor muscles**: Pelvic floor muscles which do not relax, or may even contract when relaxation is functionally needed, for example, during micturition or defecation.

**Underactive pelvic floor muscles**: Pelvic floor muscles which cannot voluntarily contract when this is appropriate.

**Non-functioning pelvic floor muscles**: Pelvic floor muscles where there is no action palpable.

ICS on assessment of pelvic floor function²:

1. Can be qualitatively defined by the tone at rest and the strength of a voluntary or reflex contraction as strong, normal, weak or absent, or by a validated grading symptom.

2. Voluntary pelvic floor muscle contraction and relaxation may be assessed by visual inspection, by digital palpation (circumferentially), electromyography, dynamometry, perineometry, or ultrasound.

3. Factors to be assessed include muscle strength (static and dynamic), voluntary muscle relaxation (absent, partial, complete), muscular endurance (ability to sustain maximal or near maximal force), repeatability (the number of times a contraction to maximal or near maximal force can be performed), duration, coordination, and displacement.

4. It is desirable to document findings for each side of the pelvic floor separately to allow for any unilateral defects and asymmetry.

**Examination for levator (puborectalis) injury**: The puborectalis muscle may be assessed for the presence of major morphological abnormalities by palpating its insertion on the inferior aspect of the os pubis. If the muscle is absent 2–3 cm lateral to the urethra, that is, if the bony surface of the os pubis can be palpated as devoid of muscle, an “avulsion injury” of the puborectalis muscle is likely.³

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**THURSDAY, FEBRUARY 26, 2015**
11:00 a.m. – 11:30 a.m.

**Panel: Controversies in Pelvic Floor Physical Therapy**
Moderator: Christopher K. Payne, MD
Panelists: Kelly Scott, MD; Colleen M. Fitzgerald, MD

**Uptraining vs. Downtraining: Indications, Techniques and Outcomes**
Kelly Scott, MD; Colleen M. Fitzgerald, MD

“**Uptraining**” refers to any number of various techniques for pelvic floor (PF) rehabilitation, which aim to strengthen and increase endurance of the pelvic floor muscles (PFM). Uptraining can consist of Kegel training (such as long holds, “quick flicks,” “The Knack,” or elevator-type exercises) with or without biofeedback. Other techniques include: urge suppression techniques, vaginal/rectal electrical stimulation, and vaginal weight/cone training.

“**Downtraining**” refers to various techniques for PF rehabilitation which aim to relax and lengthen the PFM. Downtraining can consist of myofascial release, scar/connective tissue mobilization, diaphragmatic breathing, mental imagery, paradoxical relaxation, perineal bulges (also called “reverse Kegels”), stretches, vaginal or anal dilation, rectal balloon catheter training, desensitization, skin rolling, visceral mobilization, and dry needling.

The decision whether to uptrain or downtrain a patient with PF dysfunction depends primarily upon the type of dysfunction found in the PFM upon completion of a thorough pelvic floor physical examination.

“**Underactive**” PFM are lacking in strength or endurance.

“**Overactive**” PFM are hypertonic and shortened, often in spasm and tender to palpation. Many patients present with a combination of both underactive and overactive PFM. In general, downtraining is preferable when the PFM are overactive and uptraining is needed when the PFM are underactive. When the patient has both conditions, then most practitioners believe that downtraining must be done first, followed by uptraining only when the patient has restored muscle length and tonicity. Anecdotal evidence suggests that uptraining of overactive pelvic floor muscles can lead to significantly worsened pelvic floor dysfunction and symptoms.

**Clinical conditions which are usually associated with underactive pelvic floor muscles and for which uptraining is typically appropriate include:**

- **Stress urinary incontinence:**
  - 21 randomized trials included - PF rehabilitation patients 8x more likely to report cure, 17x more likely to report cure or improvement.

- **Urinary urgency/frequency/incontinence:**
  - Uptaining for urge incontinence is not as effective as for stress incontinence, but still can produce significant benefit.

- **Pelvic organ prolapse:**
  - Uptaining is effective for symptom reduction, especially in mild cases, but does not change the degree of prolapse.

- **Fecal incontinence:**
More than 30 randomized trials included between these 2 reviews of biofeedback, pelvic floor muscle training, and electrical stimulation. 50-80% response rate reported.

Clinical conditions which are usually associated with overactive pelvic floor muscles for which downtraining is typically appropriate include: (Limited studies)

- **Pelvic pain/pelvic floor myofascial pain:**
    - RCT comparing PFPT (n=17) to levator trigger point injections (n=12).
    - A >50% improvement in NRS was documented among 59% of women receiving PT and 58% receiving LTPI, both improved in the Patient Global Impression of Improvement (PGI-I) scale. Sexual function was assessed using the Female Sexual Function Index (FSFI); FSFI improvement favored PT.

- **Vulvodynia:**
    - Systematic review; PT and biofeedback recommended as first line.

- **Dyspareunia:**
    - Prospective uncontrolled study of multidisciplinary treatment including PT; 54% of women reported improved dyspareunia.

- **Constipation:**
    - 17 randomized trials on biofeedback in adults with dyssynergic defecation, chronic idiopathic constipation, 16 high risk bias to blinding.
    - Several suggest improvement in symptoms with BF (EMG or manometry) compared with oral diazepam, sham BF or laxatives, but low quality studies.

- **Interstitial Cystitis:**
    - PFPT feasibility RCT successful.
    - RCT 81 women PFPT vs global massage, 59% of PFPT improved significantly on global response assessment.

- **Vaginismus:**
    - 5 trials included, 1 RCT, others quasi-RCT, 1 used PFPT, others desensitization and other psychological interventions. Inconclusive evidence, mod-high biased studies.

- **Pudendal neuralgia:**
    - PT described as first line treatment though no RCTs to date.

Ultimately, it is most important to treat the type of pelvic floor dysfunction seen and not the symptoms – a patient with overactive pelvic floor muscles can have urinary urgency/frequency and incontinence, for example, and should be downtrained as the primary mode of rehabilitative treatment for maximum improvement.
THURSDAY, FEBRUARY 26, 2015
3:20 p.m. – 3:50 p.m.

Panel: Repair of Anterior POP in 2015
Moderator: Victor W. Nitti, MD
Panelists: Kurt A. McCammon, MD; Alexander Gomelsky, MD; Kathleen C. Kobashi, MD

Why and How I Use Donor Tissue
Alexander Gomelsky, MD

The anterior colporrhaphy has long been considered the standard approach for vaginal repair of anterior compartment prolapse, although anatomic recurrence rates may be as high as 70%, depending on the definition of failure.1 While prolapse recurrence is undoubtedly multifactorial, and anatomic recurrence does not necessarily correlate with symptomatic recurrence, there remains doubt regarding the long-term effectiveness and stability of weakened fibromuscular tissue as a primary buttress for anterior compartment support. This concern regarding long-term stability serves as a potential impetus for the widespread adoption and proliferation of graft-augmented repairs for vaginal reconstruction in the last decade. The bulk of the surgical experience with graft-augmented repairs in the literature describes the outcomes after synthetic materials, often with the aid of transvaginal kits. The use of synthetic mesh has been associated with lower anatomic recurrence rates;2 however, mesh use carries the risks of extrusion, erosion, and vaginal distortion. Biologic allografts and xenografts are theoretically associated with lower rates of impaired healing and extrusion, although the anatomic recurrence rates vary widely and may be higher than those following synthetic mesh repairs.3 Additionally, each biologic material carries with it unique properties and biocompatibility profiles, often making the remodeling process unpredictable. It is likewise not entirely known whether the remodeling process results in enhanced tissue strength and a more durable repair than native tissue alone. Furthermore, the use of biologics has recently been placed under additional scrutiny as many of these materials have been undergoing additional testing and post-market surveillance under the 522 studies. The objectives of this presentation are to (1) describe the ideal patient for biologic use for anterior compartment repair, (2) describe surgical technique, and (3) summarize outcomes of available biologic donor tissue.

THURSDAY, FEBRUARY 26, 2015

BREAKOUT SESSIONS
4:30 p.m. – 5:30 p.m.

1. In-Depth Consensus Panel on Third Line OAB Therapies
David R. Staskin, MD (Director)
PTNS: Kenneth M. Peters, MD
SNM: J. Quentin Clemens, MD
OnabotulinumtoxinA: Emily E. Cole, MD

Our mission is to utilize the expertise of our panel members to arrive at a consensus for treating patients refractory to pharmacological therapy who desire further intervention for urgency, frequency, and or urgency incontinence. Although each panel member has been asked to update a specific therapy they will be encouraged - along with the additional expertise of the audience members - to discuss whether “a year’s difference has made a difference” in treating patients, and whether advances in these areas show promise in the future.

New Developments in Peripheral Tibial Neuromodulation - Kenneth Peters, MD

Percutaneous tibial nerve stimulation is the only neuromodulation treatment that has level I evidence with a sham-controlled trial demonstrating effectiveness in treating overactive bladder in men and women. The treatment consists of 12 weekly 30-minute, office-based treatments. A patient demonstrating at least a 50% improvement in symptoms, return for monthly maintenance treatments and 36-month data, demonstrates sustained symptom improvement. A subset analysis of patients younger than 65 and older than 65 years, demonstrated similar efficacy in each group. The safety of PTNS has been well-established.

Over the past 15 years, there have been multiple single-institution studies demonstrating that sacral neuromodulation can be effective in neurogenic bladder, bowel disorders and pelvic pain. In 2014, there have been a number of publications suggesting that PTNS may be effective in managing neurogenic bladder in Parkinson’s disease and post-stroke neurogenic bladder in men and chronic pelvic pain in women. A systematic review on published literature of the effect of PTNS on fecal incontinence suggests the data currently does not support that stimulation of the tibial nerve improves this condition.

Although the exact mechanism of action of neuromodulation is not known, it is thought to be afferent stimulation and central processing that leads to symptom improvement. S3 sacral neuromodulation is FDA approved for bladder and bowel dysfunction. However, there is evidence that stimulation of the pudendal nerve (S1, S2, S3) may work better. The tibial nerve is comprised of branches from L4, L5, S1, S2 and S3. A limitation of PTNS is that no dose escalation trial has been performed and weekly treatments have been devised more out of convenience rather than scientific data. Stimulating the tibial nerve may result in more afferent signals to the central nervous system and potentially could work better than sacral or pudendal stimulation if stimulated daily. Non-needle cutaneous neuromodulation devices are currently under study. These involve a special patch electrode and waveform that allows the stimulation to bypass the impedance of the skin and activate the tibial nerve. Using a home unit, it may be possible to assess the impact of daily cutaneous stimulation of the tibial nerve on symptom improvement.

In 2014, at the 3rd Annual Neuro-urology Meeting in Zurich, a live surgery demonstrating implantation electrode at the tibial nerve was performed on two patients suffering from neurogenic bladder. The neurovascular bundle was identified by ultrasound and the electrode was placed in a procedure lasting less than 15 minutes. Clinical outcomes are currently being assessed with daily stimulation using an external energy source that is captured by the implanted electrode and routed to the nerve. The future of neuromodulation likely will be microimplants that will increase our ability a access specific nerves and deliver targeted therapy to improve symptoms.
New Developments in Sacral Nerve Neuromodulation – Quentin Clemens, MD

The primary clinical development has been the approval and availability of the Medtronic Verify Bluetooth device for staged testing. To use the Verify device, the SNM lead is attached to a percutaneous extension wire and tunneled out to the contralateral side as before. The percutaneous extension wire is then attached to the Verify device, which is worn on the waist. The device, which consists of a battery and Bluetooth transmitter, is adjusted using a smartphone-like controller. The advantage is that there is no need for a long external wire during testing, and the battery itself is smaller and less obvious. The Verify device is currently not available for percutaneous testing (PNE). A second clinical issue is that there continue to be multiple reports attesting to the efficacy for SNM in the treatment of bowel dysfunction.

From a research perspective, Medtronic sponsored a randomized, post-approval study (InSite) in the U.S. which compared SNM testing to standard medical therapy in patients with ‘mild’ OAB who had failed one antimuscarinic. The authors found that SNM was more effective than medical therapy at 6 months. Other investigators have examined physician attitudes for SNM, with the goal of developing decision tools for refractory OAB.

New Developments in Botulinum Toxin for Bladder Chemodenervation – Emily Cole, MD

In January 2013, The US Food and Drug Administration approved the use of onabotulinumtoxinA (onabotA or Botox) for the treatment of overactive bladder (OAB). In May of 2014, the AUA Guidelines Committee published updated guidelines for the diagnosis and management of overactive bladder in adults. Based on an updated review of available data, the OAB guidelines committee elevated onabotA to the strongest guidelines statement “Standard” third line therapy (Evidence Strength Grade A or B) versus Interstim and PTNS which received guideline statements “Recommended.”

Multiple publications support the position of onabotA as a standard therapeutic option in the treatment of medically insensitive OAB:

Nitti et al reported their results from the multicenter 3-year extension study evaluating the long-term efficacy and safety of repeat onabotA treatments. They followed patients who had completed the 2 pivotal Phase 3 studies who elected to enter the extension trial. onabotA consistently reduced daily UI episodes, daily micturition and urgency episodes across 5 cycles of treatment over a median 2.4 years follow-up. Patient-reported outcomes and quality of life data revealed a consistently positive response over time, the duration of action remained stable, and there were no changes in the adverse event (AE) profile over time.

In this era of cost containment, Murray et al reported on the direct costs of 4 treatment options for OAB for up to 10 years including tolterodine, mirabegron, onabotA and sacral neuromodulation. Their analysis, at years 1, 5 and 10, revealed that onabotA (when administered in an in-office setting) is the least costly OAB treatment option across all 3 time-horizons.

Regarding vulnerable patient populations, Chughtai et al reported on the use of onabotA for the treatment of refractory overactive bladder in men persisting following surgical management of benign prostatic hyperplasia. This was a small study, but was double blind and placebo controlled. They found no difference in AE’s between the treatment and placebo groups and did demonstrate a significant improvement in quality of life scores in the treatment group. There were improvements in frequency episodes, however not statistically significant.

Regarding future directions, there is increasing interest in better understanding the various mechanisms of action of the onabotA to possibly identify alternative delivery methods, improve AE profiles, and potentially expand the indications to other disease states. Hanna-Mitchell et al studied the expression of the toxin receptor (SV2) and its cleavage targets (SNAP-25 and SNAP-23) within urothelium as well as the effects of the toxin on release of ATP in cultured rat urothelial cells. They confirmed that both rat
and human bladder urothelium expresses the intracellular targets and the binding protein for cellular uptake of onabotA; and that the toxin is able to suppress levels of these targets as well as evoked ATP release. This data raises the possibility that intravesical treatment with onabotA suppresses bladder reflex and sensory mechanisms by affecting a number of urothelial functions.

Chuang et al reported findings from a prospective, 2-center, double blind, randomized trial of instillation of liposome-encapsulated onabotA. They compared patients who had intravesical instillation of 200U of liposome-encapsulated onabotA to placebo with a primary endpoint of a mean change in micturition episodes per 3 day diary at 4 weeks. Additional end points were change in urgency events and urge incontinence as well as quality of life-related outcomes. A statistically significant decrease in urinary urgency events was seen as well as a decrease in urinary urgency severity scores. These benefits were not accompanied by an increased risk of urinary retention.

REFERENCES
2. Neurogenic Bladder

Location: Sunshine
Michael J. Kennelly, MD, FACS (Director)
John C. Hairston, MD
John T. Stoffel, MD

The lower urinary tract is regulated by a complex neural network that is subject to supraspinal control. Neurological disorders, especially of the central nervous system can rapidly lead to disruption of this control. Spinal cord injury, multiple sclerosis, Parkinson’s disease, and stroke are neurological disorders which quite frequently cause dysfunction of the lower urinary tract. With respect to the pathophysiology of bladder dysfunction in CNS diseases there are various hypotheses regarding the individual disorders: disturbances of neural communication between the frontal cortex and pontine micturition center, between the pontine micturition center and the lumbosacral parts of the spinal cord, and between the basal ganglia, thalamus, and anterior cingulate gyrus appear to play a pivotal role in the development of bladder dysfunction.

Often neurologic disease is categorized as supraspinal, spinal, peripheral, or mixed based upon the level of lesion. Supraspinal refers to those neurologic diseases (i.e. Parkinson’s, Cerebral Palsy, etc.) that occur above the pontine micturition center. In general these diseases cause neurogenic detrusor overactivity with synergic normal voiding (detrusor contraction concurrent with voluntary relaxation of urethral and/or periurethral striated muscle).

Spinal refers to those neurologic diseases (i.e. spinal cord injury, spinal stenosis, etc.) that occur in the spinal cord. Suprasacral injuries often cause neurogenic detrusor overactivity with detrusor sphincter dyssynergia (detrusor contraction concurrent with an involuntary contraction of the urethral and/or periurethral striated muscle). In addition to neurogenic OAB, patients with detrusor sphincter dyssynergia are at high risk for other urologic complications including hydronephrosis, vesicourethral reflux, urosepsis, and urolithiasis. Accordingly, proper neurological evaluation and management of these patients is imperative.

Sacral spinal cord lesions (spina bifida, myelodysplasia) and peripheral neurologic diseases (i.e. diabetes mellitus, herpes zoster) generally cause an acontractile detrusor. In these lesions, a patient’s perianal sensation, sphincter tone, and bulbocavernous reflex may become diminished in response to a loss of pudendal nerve innervation. It should be noted that many exceptions to the above categorization exist due to either the partial peripheral or combined (peripheral/central) nature of neurologic lesions. Consequently proper neuourologic evaluation is necessary.

The symptoms and urodynamic presentation of LUT dysfunction can vary considerably depending on the disease and disease progression and can change in the course of the disease. The incidence and prevalence of LUT dysfunctions rise with increasing progression of the underlying neurological disease. Various conservative, minimally invasive, and open surgical procedures are available to prevent harmful sequelae and to improve the quality of life of these patients. Intermittent self-catheterization and antimuscarinic medications are among the most important conservative treatment options. Injection of botulinum neurotoxin type A into the detrusor muscle and increasingly sacral or pudendal neuromodulation are among the most important minimally invasive treatment options. Surgical methods include reconstructive continent or incontinent urinary diversion.

The choice of therapy (Table 1) is based on many factors (i.e. prognosis of underlying disease, mental status, motivation, age, educability, and mobility) and should be tailored to each individual patient. A conservative management scheme begins with simple reversible (medical) therapy before one proceeds to irreversible (surgical) therapy. Due to the many complexities of the neurological diseases and individual variability, no one treatment for neurogenic bladder exists. Often several treatments will need to be tested and modified in order to meet the patient’s desired goal of therapy. Although many goals exist in managing neurovesical dysfunction, the main management goal in treating neurogenic bladder is preservation of upper urinary tract function and improvement of the patient’s troubling urinary symptoms.

In this session, we will present a generalized overview of neurophysiology, neuourology evaluation, and management strategies to treat neurogenic bladder. Several case studies will be presented that provide insight into the evaluation of neurogenic bladder and various management techniques. The main focus will be on the every-day care of a patient with
neurogenic bladder and emphasis will be placed on the pharmacologic and surgical management of neurogenic bladder from currently available effective therapies.

**Table 1. Management in Neurologic Disease**

**Neurogenic Detrusor Overactivity**
1. Antimuscarinics with/without Intermittent Catheterization
2. Behavioral therapy and biofeedback
3. Electrical stimulation
4. Chemical denervation procedure - Botulinum Toxin
5. Sacral neuromodulation
6. Augmentation Cystoplasty
7. External catheter (men)
8. Indwelling Foley catheter

**Neurogenic Detrusor Overactivity with Detrusor External Sphincter Dyssynergia**
1. Treatment of hyperreflexia (1 to 6 above) and intermittent catheterization
2. External sphincterotomy (men)
3. Urinary diversion
4. Indwelling Foley catheter

**Detrusor Areflexia**
1. Intermittent catheterization
2. Urinary diversion
3. Credé void (women)
4. Indwelling Foley catheter
THURSDAY, FEBRUARY 26, 2015

BREAKOUT SESSIONS
4:30 p.m. – 5:30 p.m.

3. Advanced Uroodynamics
Location: Peace Pipe
Gamal Ghoneim, MD (Director)
Maude Carmel, MD
Jason P. Gilleran, MD

- The use of urodynamic studies, with and without fluoroscopic assistance, can assist in the proper evaluation of complex cases of lower urinary tract dysfunction, neurogenic bladder, and unexplained urinary incontinence.
- The experienced urodynamicist should be able to recognize normal and abnormal urodynamic studies, obvious and not-so-obvious artifacts, and obscure findings that can diagnose difficult conditions.
- Goals of this session include:
  - Review individual urodynamic tracings in a case studies format
  - Assist with identifying abnormal and obscure findings
  - Discuss potential subsequent management plans based on the urodynamic studies.

CASE DISCUSSIONS ON URODYNAMIC FINDINGS IN:
- Bladder outlet obstruction in women due to anti-incontinence surgery and other etiologies
- Mixed urinary incontinence
- Neurogenic bladder
- Pelvic organ prolapse and the evaluation of bladder outlet obstruction and occult incontinence
- Complex urinary incontinence in men after prostate surgery
- Abnormal compliance
- Detrusor-sphincter dyssynergia
- Bladder outlet obstruction in men
- Unique findings that can only be identified on video urodynamics
FRIDAY, FEBRUARY 27, 2015
7:00 a.m. – 8:30 a.m.

*Grant Writing 101
Location: Peace Pipe
(Space Limited)
Lori A. Birder, PhD; Erika Wolff, PhD
*Not CME Accredited

The format of the session is very interactive so come ready for lots of discussion. Topics to be covered include, but are not limited to:

Overview of NIH/NIDDK funding strategy
How to organize a grant
  • Typical components
  • What should go into each
Do’s and don’ts of grant writing
  • Do utilize mentors and collaborators to strengthen proposal
  • Don’t make the reviewer’s job difficult
Specific aims
  • How to write the most important page of the grant
  • Examples
Hands-on exercise
  • Practice revising specific aims
Subspecialty Training in Urology: An AUA Perspective
William W. Bohnert, MD, FACS; AUA President

Subspecialty Training in Urology has evolved over the last fifty years. Pediatric urology led the way in reconstructive procedures for multiple congenital anomalies. Pediatric fellowships were begun at multiple centers worldwide.

The Society of Pediatric Urology and the AUA realized that as the subspecialty evolved, subspecialty accreditation was necessary. SPU developed a separate certifying exam, the CAQ (Certificate of Qualification) through the American Board of Urology(ABU). Fellowship numbers increased to where currently there are 26 two-year fellowships. This is all monitored by the ABU who reports to the American Board of Medical Specialties (ABMS). Having a CAQ does not prevent general urologists from seeing or treating pediatric patients.

Urology has competed for years with OB-GYN in the arena of Female Pelvic Medicine and Reconstruction. When the American Board of OB & GYN announced plans to pursue subspecialty certification the ABU concluded that a joint training program was in the best interest of urologists and patients. The ABU and the ABOG collaborated and completed a process to create a joint subspecialty in Female Pelvic Medicine and Reconstructive Surgery(FPMRS). Application to the ABMS was completed and accepted. Multiple fellowships have been established.

Today the FPMRS is formally recognized by the ABMS. The ABU, SUFU and the AUA notified urologists and helped develop a senior certifying process and exam to be given over a 3 year period (2013, 2014 & 2015). After this, only candidates who complete an accredited fellowship will be qualified to take the exam. Urologists fellowships are 2 years with a 1 year additional option. Gynecologists fellowships are 3 years.

The major take home message is that subspecialty certification DOES NOT PREVENT fully trained and certified urologists from evaluating and treating patients with pelvic floor disorders; the exact policy that applies regarding pediatric urology subspecialty care.
FRIDAY, FEBRUARY 27, 2015
11:05 a.m. – 11:30 a.m.

Panel: Neurogenic Bladder: Management of the Devastated Outlet
Moderator: Angelo E. Gousse, MD
Panelists: John P. Lavelle, MBBCh, BSc, FRCS; Polina Reyblat, MD

Urinary Diversion Alternatives
Polina Reyblat, MD

Management of lower urinary tract for patients with neurogenic bladder is often overlooked and is a cause for multiple readmissions and hospital visits. Poorly managed lower urinary tract can lead to problems such as poor QoL/ depression, urospesis, decubitus ulcers leading to development of osteomyelitis. When we discuss devastated outlet, we consider a variety of situations such as severely incompetent bladder neck, urethral erosion secondary to long-term in-dwelling catheter use, or urethra/prostato-cutaneous fistula secondary to decubitus ulcer.

During the session we will address the following:
- Assessment of the outlet
  - Assessment of the bladder
  - Non-urological considerations:
    - Patient’s hand function, caregiver accessibility, patient’s independence, willingness and ability to catheterize, stability of the condition (SCI) vs progressive disease (MS), overall health status/age, proximity to a medical center, access to supplies, surgeon skill/ availability

  - Urinary Diversion Alternatives
    - Continent/ Catheterizable
      - Appendicovesicostomy
      - T-limb
      - Imbricated/ Tapered ileal segments
      - Intussusception nipple
      - Myriad of techniques / none is optimal
    - Incontinent
      - Ileovesicostomy
      - Conduit

There is no standardized algorithm for selecting the type of urinary diversion in patients with devastated outlet. This is a joint decision with the patient and involves many urologic, social and functional factors.

Our goal as neuro/ reconstructive urologists is not only to protect the upper tracts, but to help with social continence, be patient advocates and to maintain/improve their quality of life.
FRIDAY, FEBRUARY 27, 2015
1:30 p.m. – 2:00 p.m.

Urodynamics: Evaluating the Obstructed Outlet
Moderator: Eric S. Rovner, MD
Panelists: Jerry G. Blaivas, MD; Benjamin M. Brucker, MD

Diagnosing Obstruction in Men: Tricks of the Trade
Jerry G. Blaivas, MD
### Synchronous pdet / Q:
- **Normal:**
  - High pressure, high flow
- **Urethral obstruction:**
  - High pressure, low flow
- **Impaired detrusor contractility:**
  - Low pressure, low flow

<table>
<thead>
<tr>
<th>Obstruction</th>
<th>Qmax (mL/s)</th>
<th>pdet@Qmax (cm H2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstruction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impaired detrusor contractility</td>
<td>&lt; 12</td>
<td>&gt; 40 (men) &gt; 20 (women)</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>&lt; 12</td>
<td>30 – 40 (men)</td>
</tr>
</tbody>
</table>

### Synchronous Pdet/Q
- Bladder outlet obstruction index (BOOI)
- Bladder contractility index (BCI)
- Schafer nomogram
- ICS BOO nomogram
- ICS detrusor contractility nomogram
**Bladder Outlet Obstruction Index (BOOI)**

\( (\text{BOOI}) = \text{pdet@Qmax} - 2\text{Qmax} \):

- < 20 – no obstruction
- 20 - 40 – equivocal
- > 40 – obstruction

**Bladder Contractility Index (BCI)**

\( \text{BCI} = \text{pdetQmax} + 5\text{Qmax} \):

- \( \text{BCI} < 100 \): Weak
- \( 100 \leq \text{BCI} \leq 150 \): Normal
- \( \text{BCI} > 150 \): Strong

**Schafer Nomogram**

![Schafer Nomogram](image)

**ICS BOO Nomogram**

![ICS BOO Nomogram](image)

**ICS Bladder Contractility Nomogram**

![ICS Bladder Contractility Nomogram](image)

**AUA Guidelines for Urodynamics**

- LUTS (Statement 7)
  - PFS - in patients with urgency incontinence after bladder outlet procedures to evaluate for bladder outlet obstruction
- Neurogenic Bladder (Statement 19)
  - PFS - in patients with relevant neurologic disease with or without symptoms, or in patients with other neurologic disease and elevated FVR or urinary symptoms

**Indications for Urodynamics**

- Patients who agree to invasive or irreversible Rx
- Patients already on intermittent cath
- Failure of medical/surgical Rx
- Need to know

**Urodynamic Diagnosis of Obstruction**

- Pressure flow study documents the presence of obstruction
- The narrowest point in the urethra @ Qmax documents the site of obstruction
Prostatic Obstruction

Bladder Neck Obstruction

Urethral Stricture
Prostatic Obstruction
Low Bladder Compliance

High Flow Obstruction
- Normal unintubated uroflow
- PFS criteria for BDO are met
Conclusions

- Normal flow does not exclude obstruction
- Obstruction can exist with impaired detrusor contractility
- During UDS, fill the bladder until the patient has a voluntary detrusor contraction or is comfortably full

- 2/3 rds of men with refractory LUTS have urethral obstruction
- 20% have underactive bladder
- All can be diagnosed by inspection of the pressure flow curve
- VCUG necessary to determine the site of obstruction
FRIDAY, FEBRUARY 27, 2015
3:00 p.m. – 5:00 p.m.

*Biostatistics Review Course
Location: Salon J & K
(Space Limited)
Katherine Odem-Davis, PhD; Jennifer Wu, MD, MPH
*Not CME Accredited

I. Introductory Statistics
   A. Overview of Statistical Methods in Research
   B. Estimation
      i. Sampling to estimate population characteristics
      ii. Types of Bias
      iii. Confidence Intervals
   C. Hypothesis Testing
      i. Selecting the appropriate test
      ii. Interpretation of results
      iii. Measures of error
   D. Diagnostic Tests

II. Study Design
   A. Overview of study design
   B. Types of study design
      i. Randomized trials
      ii. Case report/Case series
      iii. Cross sectional study
      iv. Cohort studies
      v. Case-control studies
   C. Determining the study design of example abstracts

III. Practice Questions and Examples; Q&A
FRIDAY, FEBRUARY 27, 2015
3:25 p.m. – 4:00 p.m.

Panel: Common Dilemmas in Neuromodulation
Moderator: Kevin D. Benson, MD, MS
Panelists: Nissrine A. Nakib, MD; Karen L. Noblett, MD; Raul C. Ordorica, MD

Section 1: Common Dilemmas in Neuromodulation

- Interest in Neuromodulation is Growing!

Section 2: We've All Been There

- Growing interest and use of neuromodulation
- Problems arise that were not evident with initial use of therapy
- What to do about these problems is not clear cut or consistently agreed upon
- Many common issues have not been addressed by research
- Many current practices are trial and error and subject to varying.
- Daily tool with neuromodulation dilemmas and how we do as well!

Section 3: Problem Categories

- Patient Selection/Indications
- Implant/Programming
- Device Malfunction
- Loss of Efficacy

The scope of questions will exceed our time!

Section 4: With Growth Comes Challenges!

- Patient Selection
  - How do you work through the Tier 3 options for OAB?
  - How do you prioritize neuromodulation?
  - What is your experience regarding patient acceptance?
  - What are the barriers to acceptance?
  - Is neuromodulation too late?
  - Do you have an apparatus for aiding patients?

- IMPLANT/PROGRAMMING
  - How do you present the process of implantation?
  - Do you have an additional protocol?
  - Do you handle a history of NDI differently?
  - Do you use prophylactic antibiotics?
  - Do you use "standard program(s)?
  - Do you select or change programs?
  - Do you have patients trial all programs given?

- LOSS OF EFFICACY
  - What contributes loss of efficacy?
  - How do you determine loss of efficacy vs. worsening of OAB?
  - How long is "enough" on any given program?
  - When have you evaluated programming changes?
  - Role of cycling? What parameters are you using?
ROLE FOR SYNERGY?
- Do you ever combine Tier 1 drugs?
- Which do you use in combination?
- Any role for Antimitochondria?

THE NEXT "BIG THING"
- What do you see neurostimulation evolving?
- What are the barriers to more widespread adoption?
- What indications would you like to see investigated next?
FRIDAY, FEBRUARY 27, 2015

BREAKOUT SESSIONS
5:00 p.m. – 6:00 p.m.

1. Reconstruction of the Upper Urinary Tract: Tricks of the Trade
Brian J. Flynn, MD (Director)
David Ginsberg, MD
E. James Wright, MD
Jaspreet S. Sandhu, MD

This session will focus on iatrogenic injury to the ureter from GYN, GS, GU surgery. We will not discuss ureteral cancer or injury from external trauma (blunt, knife, gun, etc.). We will not discuss UPJ obstruction.

This is a one-hour break out session that is intended to be as interactive as possible.

Each speaker to give a short lecture (10 minutes) and then the panel will spend the remaining 30 minutes of the session going over interesting cases.

-Speaker 1 (Jaspreet Sandhu): etiology incidence, pathophysiology and anatomy of ureteral injury. Review of common locations of ureteral injury, during GYN, GU and GS cases. 10 minutes

-Speaker 2 (David Ginsberg): intra-operative measures to prevent ureteral injury, and minimally invasive management, acute management (IR and stenting). 10 minutes

-Speaker 3 (Jamie Wright): overview treatment options for ureteral injury following iatrogenic trauma, 10 minutes. Discuss open, Laparoscopic, Robotic techniques for ureteral re-implant, psoas hitch, boari flap, UU, TUU, ileal ureter, nephrectomy

The next 30 minutes we will go over 3-5 cases of iatrogenic ureteral trauma, as time will allow.
Cases will include:
- injury amenable to endoscopic techniques.
- simple case involving the distal ureter
- complicated case where a larger segment has been damaged
- ureteral injury and fistula

Cases presentations will include history, x-rays, intra-operative photos of a representative cases and a data on outcome. The session will be attended by 50 or so SUFU members including residents and fellows that are anxious to learn and participate.
FRIDAY, FEBRUARY 27, 2015

BREAKOUT SESSIONS
5:00 p.m. – 6:00 p.m.

2. Pelvic Floor Therapy in Men and Women with Urologic Chronic Pelvic Pain

Location: Sunshine
Christopher K. Payne, MD (Director)
Diane Newman, MD
Rhonda Kotarinos, MPT

Introduction: Setting the stage
- Scope of the Problem
  - Prevalence of IC/BPS by phone survey 2.7 – 6.5% adult women (Berry 2011)
  - Prevalence of IC/BPS by phone survey 1.9 - 4.2% adult men (Suskind 2013)
  - CPPS prevalence 1.8% adult males, only 17% estimated overlap with IC/BPS
- Prevalence of Pelvic Floor Dysfunction
  - Relevant physical findings in 65 -92% of women with IC/BPS
  - PFM abnormalities in CPPS men compared to controls 57-73% vs. 12-15%
- Existing/standard therapies have been minimally effective
- Potential of Pelvic Floor Therapy: two positive NIDDK multicenter RCTs

Conclusion: The role of the physician—an oncologic approach (Payne 2015)
- Diagnosis—Complete examination documenting findings & potential relevance to clinical symptoms.
- Staging—objective/subjective severity of symptoms, other relevant contributors to symptoms
- Treatment planning
  - Work with PT.  Establish clear expectations/timeline for reevaluation.
  - Adjutant therapies as needed but evaluate each critically
- Assessment—repeat “staging” at specified intervals to assess effect of intervention
  - Are the physical findings responding to treatment?
  - Are the clinical symptoms resolving with the physical findings?
  - If the patient is not improving is it due to a misdiagnosis or a failure of the therapy?
- Cure
  - Initially aim for complete remission of symptoms
  - Normalize behaviors
  - Titrate off therapy

References/Recommended Reading:
3. Evaluation and Treatment of Constipation and Fecal Incontinence

Location: Peace Pipe
Kevin D. Benson, MD, MS (Director)
Karen L. Noblett, MD
Suzette Sutherland, MD

Management of Constipation and Fecal Incontinence

Kevin Benson, MD MS
Karen Noblett, MD
Suzette Sutherland, MD.

How Big is Constipation?
- Prevalence 4-27%
- Women 3:1
- Increases exponentially with increased age
- 11% of patients over 50 experience at least weekly
- 80,000 hospitalizations/yr
- 1 billion $55 in locations annually

Defining Constipation
- ROME III criteria
  1. Fewer than 3 defecations/week
  2. Hard stools/straining >50% of time
  3. Sense of incomplete evacuation >25% of time
  4. Sensation of rectal urgency <50% of time
  5. Manual maneuvers <25% of time

Constipation vs IBS-C
- Defining difference is abdominal pain at least 3 days per month in the last 3 months
- With 2 or more of the following:
  - Improvement with defecation
  - Onset after change in stool freq
  - Onset after change in stool form
  - Hard lumpy stools >25% of time and loose watery stools <25% of time

Primary vs. secondary constipation
- Inactivity/hydratation: common contributors
- Meds:
  - Anticholinergics/diuretics/alkaline channel blockers—especially important
- Diseases:
  - Hypothyroidism/diabetes/parkinson's

Red Flags for Evaluation
- Iron Deficiency anemia
- Rectal bleeding
- Rapid change in bowel habit in patient over 50
- More than 5% weight loss
- Family history of colon cancer

Mechanism of Action
- 3 main types
  1. Functional-most common
  2. Slow transit—>3 days through colon
  3. Outlet dysfunction—muscle dystarctuation
- Often defined as primary or secondary

Conservative Management
- Increasing exercise
- High-fiber diet—25-30 g/day, watch out for slow transit/abdominal floor dysfunction pts!
- Toilet training

Role for Fiber
- Increases water absorbency in stool
- Increased fiber retains more H2O than soluble
- Medium chain acylglycerols (palm kernel)
- Watch out for patients with slow transit, or pelvic floor muscle dysfunction
- Initial response 4-8 WKS; 6-12 months before failure is documented
- Most polyunsaturated fatty acids less gas production, better tolerated
- Level II, grade B recommendations
**Probiotics**
- Meta-analysis: 14 studies, 1,682 patients
- Very heterogeneous, comparisons were varied
- Overall probiotics reduced whole gut transit time by 12 hours (normal 48-60 hours) and increased CAMP by 1.5x
- Domestics: Lactobacillus rhamnosus GG is best tolerated
- **Specifically, if abdominal pain is most effective**
- May help patients with mild problems who are unable to use other drugs
- **Other laxatives**
- Laxatives:
  - Lubricant: bisacodyl/simvastatin/simvastatin
  - Domestics are 4th: Final choice
  - Polyethylene glycol (Miralax) most recommended
  - Grade A recommendation
  - All debris for slow transit disorders
  - Triosenate: may take 2-4 weeks for results, slow acting
  - Enemas: may be very effective
  - For more effective than others, less fatal

**New Drugs**
- FDA requires a 30% reduction in abdominal pain and at least 50% reduction in CAMP levels for approval
- Drugs affect the mobility and fluid movement of stool
  - Tablets
  - Prucalopride
- Luliprostone
- Linacotide

**TEGASEROD**
- Partial agonist of 5-hydroxytryptamine (5-HT3) receptors
- Increases peristaltic reflexes, enhanced visceral sensitivity, and reduced visceral hyperreactivity
- Studies revealed increased frequency of bowel movement, improved stool formation, stool form, consistency, and discomfort
- Withdrawn from market in 2007 due to suggestion of increased risk of MI and CHD (9.1% versus 3.6%)

**PRUCALOPRIDE**
- High-affinity 5-HT receptor agonist
- Sensory and motor effects on the entire intestine
- More selective than tegaserod for the 5-HT3 receptor
- Primarily increases high-amplitude, slow-wave activity in the colon
- Lower risk of MI and CHD (9.1% versus 3.6%)
- Withdrawn during clinical trial treatment
- 14 months or 40-60% of patients benefited
- Dosage of 2-4 mg daily, usually oral
- Increased abdominal pain, bloating, decreased micturition 1st and 2nd day
- Can be used in conjunction with other analgesics
- Not available in the UK

**LUBIPROSTONE**
- Selective activation of type 2 enteroendocrine (D2) receptors
- Approved for treatment of IBS-C
- Improved stool form and reduced abdominal pain
- Increased CAMP is 1.5x
- Increased motility, stool frequency, stool consistency, and severity of constipation
- No cardiovascular side effects

**LINACLITIDE**
- Glutamate receptor GC (GluA) agonist
- Reduces visceral hyperreactivity
- Selective agonist on GluA2 subunits
- 128 mg/day for IBS-C (fasted) 2-80 mg/day
- = 2-4 weeks of treatment
- Injection of 0.05% lidocaine and 2% mepivacaine
- 2 x 2 drops of 0.2% solution
- 0.2 ml, slow intraperitoneal injection

**Pelvic Floor Dysfunction**
- 15-50% of constipation
- Rectal Sensitivity Syndrome (RFS)
- Sensation of inappropriate defecation, prolonged straining, need for digital evacuation
- Characterised by spasms: detectable in 30% of patients
- Often seen in conjunction with pelvic pain syndromes
- 3D change in anorectal angle; clear perineal descent
- Kickback, laceration, neurectomy
Physical Therapy/Biofeedback

- Cochrane Review 2014.1
- 17 studies/351 participants
- Great heterogeneity of studies, many end-points, small size
- Findings
  1. Cochrane review 2014.1 suggests some benefits
  2. Nonsurgical therapy of biofeedback is superior
  3. More research needed
  4. Raising awareness needed...

Surgery for Constipation

- 83% of female constipated patients have rectocele
- Resolution of constipation complaints in 50% of patients undergoing rectocele repair
- Appears that rectoceles are probably a consequence of constipation and not a cause!

Constipation and Neuroromodulation

- NSAIDs, anticholinergics, high amylase levels associated with risk of constipation
- Findings of 98% in patients with severe idiopathic constipation
- 100% of patients who had a tumor of the colon or rectum
- Literature Review 2011 - Gastroenterology

Is Testing Necessary?

- Depends on the etiology
- Depends whether it has failed previous treatment
- May give patient insight regarding treatments
- May be helpful in research setting
- Practically, often doesn’t change therapy suggested

Testing for Fecal Incontinence

- Endoanal ultrasound
- Anus manometry
- Defecography
- Electroneurodiagnostics

Must Test Accurately

- Many clinical practices not set up/experienced to reliably test
- Refer to centers with experience/validation
- May be an opportunity for practice development
- Many forms of testing do not have established normative data

Endoanal Ultrasound

- Functional radiographic assessment of anatomy
- Differentiates enterocele/hypospadias/rectal prolapse
- User dependent
- May be prone to inter-observer discrepancy
- Only available in select centers
- Often poorly reimbursed
- Helpful for recurrent/recurrent defects

Defecography
EMG Testing
- Rectal Terminal Motor Latency Testing (PTML)
- Measures integrity of nerve, muscle and neuromuscular junction
- Population normal values are not defined
- Implications of abnormal conduction controversial
- Not applicable for most clinical situations
- Does not predict outcome of Neuromodulation

Anal Manometry
- Measures variety of pressures/sensations
- May aid in treating refractory/complicated cases
- Studies show digital rectal exam is as accurate as anal manometry measuring resting and squeeze pressures
- Anal manometry findings often don’t correlate with patient outcomes with surgery or neuromodulation

Treatment options
Conservative care
- Interferon therapy
- Biofeedback

Surgical Care
- Anterior resection
- Abdominal/pelvic resection
- Transanal endorectal pull-through
- Tomasing

Regenerative Care
- Stem Cell Therapy

Trends in Treatment of F.I.
- Conservative care first line
- Less surgical repair (unless acute injury)
- Major focus on use of Neuromodulation
- Novel treatments?

Conservative Care of F.I.
- Perhaps 70% of F.I. can be prevented with conservative care
- Physical Therapy/Biofeedback
  - Exercise
  - Anti-mobility agents
  - Lubricants
  - Ointments

Physical Therapy/Biofeedback
- Standards of treatment are lacking and magnitude of benefit is undetermined
- Cochrane review-21 studies, 1825 patients
- PFMT exercises better than sham, adding biofeedback +/- electrical stim was better than exercise alone
- Education was as successful as PFMT
- SNM was better than PFMT and biofeedback in combination

Sacral Neuromodulation
- 34 Studies, 665 patients multiple domains improved
- Decreased # of incontinent episodes
- SF-36 and PDIQ indices improved
- Wexner Score improved
- Improvability to defer urgency
- Anal resting pressures improved

Mechanism of Action of SNM for Fecal Incontinence
- Works at many levels
  - CNS- primary somatosensory cortex
  - Midbrain-cerebral peduncle center
  - Peripherally- different nerve modulation affecting enteric afferent/sensory complex modulation morality and sensation of colon, may change muscle fiber type of anal sphincter
- Not dependent on intact sphincter

Central Mechanism of Action of SNM
- Stimulation of somato-sensory reflexes
- Different nerve modulation
- Inhibition of defecation reflex in the central parasympathetic nervous system
- Modulation of brain impulses at level of cerebral cortex and intermediate pathways
### Rectal Bulking Agents

- **Variety of options have been tried**
  - Saline
  - Silicone
  - Carbon-coated microbeads
  - Dextranomers suspended in hyaluronic acid

### Bulking Agents

- **Non-animal-stabilized hyaluronic acid dextranomer gel**
- FDA approved 2011, only U.S. approved product
- Patient’s body forms reactive response and increases effect
- Injected in office above dentate line
- Safe, may be repeated
- Takes 3–6 months for response
- Rarely associated with abscess formation

### NASHA Dx Study Group

- 28 patients with rectal incontinence
- Clinical signs of rectal incontinence
- Incontinence to flatus, wiping, or dripping
- No prior sphincter repair

### NASHA Dx Study Group Results

- 52% of treatment group had at least 50% response
- 31% of placebo had similar response
- 50% of treatment patients required reinsertion
- All patients had intact sphincter
- Improvements seen mild and incomplete
- Costs were substantial

### Rectal Bulking Adverse Events

- **Proctalgia**: 17%
- **Injection Site Bleeding**: 8.1%
- **Rectal Bleeding**: 7.6%
- **Pyrexia**: 6.6%
- **Injection Site Pain**: 5.1%
- **Diarrhea**: 4.1%
- **Rectal Discharge**: 3.6%
- **Precord**: 2.5%

### Where Do Bulking Agents Fit?

- May work synergistically with other methods
- Generally work better for mild incontinence
- Option when other options contraindicated
- Generally acceptable side effect profile
- Not known yet who is optimal candidate

### Surgical Repair

- **Used less than in the past**
- Long-term results poor at best (5% at 5 yrs)
- May be last option available
- *Anal sphincteroplasty*
  - Overlappingvs. end to end-contemporary
  - Tying best for acute injury (children)
- Post Anal Repair: less effective
- *Dynamic graciloplasty*
  - Rarely used
- *Artificial anal sphincter*
  - Rarely used, high infection rate

### Surgical Repair

- Cochrane Review update of review from 2010
- 9 trials, 204 patients
- Variety of comparisons
- Poor methodology and outcome measurements
- Striking for lack of quality trials for FA, over past 30 years
- Impossible to identify or refute differences between surgical techniques/approaches
**Rectal Sling**

- Transobturator approach
- Augments the puborectalis muscle enhancing anorectal angle
- Short-term results promising
- No significant complications seen

**Stem Cell Therapy**

- Growing literature for use for urinary incontinence
- Injection of cultured autologous myocytes
  - Cells successfully implanted
  - Cells were incorporated into existing muscle successfully
  - Cells acted in concert with functional muscle cells
  - Increased resting tone
  - Increased squeeze strength
  - New MUAPs
  - Electrical activity in areas of previous scar

**Summary of Practice Tips**

- Be aware and screen
- If not comfortable treating, identify resources
- Role for testing unclear
- Start with stool consistency optimization and conservative care
- Role for traditional surgery limited
- Think about neuromodulation if conservative treatment fails
Dermatological Lesions of the Female Genitalia
Clay Cockerell, MD

General Principles
Many different conditions may affect the female genitalia and surrounding areas although some affect it preferentially and others tend not to involve the area
• Most have features similar to that seen on other body parts but others may take on unusual characteristics
• Correlation of clinical features with histologic features often necessary for accurate diagnosis
• Important to make accurate diagnoses as serious infections or neoplasms can be missed resulting in patient harm
• Many pathologists only report “dysplasia, present or absent” and do not understand dermatologic diagnoses that affect female genitalia

Biopsy Technique
• Saucerization, incision, excision best for neoplasms
  o Provide specimen that is intact, large enough to be representative of entire lesion so that malignancy can be excluded
    • Tiny, fragmented, curetted, hyfrecated specimens prone to sampling error and misdiagnosis
• Punch or incision best for inflammatory lesions

• General Categories of Vulvar Disorders

• Infections
  o Bacterial (Staph, Strep, hidradenitis, post traumatic [oral flora], erythrasma)
  o Bacterial STD’s (syphilis, chancroid, granuloma inguinale, lymphogranuloma venereum)
  o Viral (HPV, molluscum contagiosum, herpes)
  o Fungal (dermatophytosis, candidiasis)
  o Parasitic (scabies, Phthirus pubis)

• Inflammatory Skin Diseases
  o Contact and irritant dermatitis
  o Psoriasis
  o Lichen Planus; Zoon’s Balanitis
  o LSA (BXO)
  o Fixed Drug Eruption
  o Aphthous ulcers
  o Other (Pemphigus, Cicatricial Pemphigoid, Crohn’s, Paraffinoma, Localized Argyria 2° Piercing)

• Neoplasms
  o Benign
    • Sebaceous hyperplasia
    • Vaginal papillomatosis
    • Hemangioma
    • Angiokeratoma
    • Melanocytic nevi
    • Vulvar melanosis
  o Malignant
    • Non-melanoma skin cancer: PIN; SCC in situ, Erythroplasia of Queyrat, Bowenoid papulosis, verrucous carcinoma (Giant condyoma), non-HPV induced SCC
    • Extramammary Paget’s disease
    • Kaposi’s sarcoma
    • Mycosis fungoides and lymphomas
    • Melanoma
    • Rare cancers, ie, sebaceous, sarcomas
• Pyogenic Infections
  o May present as pustules, abscess, cellulitis, ulcers, vulvitis, vaginitis
  o Diagnosis usually made on basis of clinical appearance and culture
  o Biopsy may help in distinguishing from other conditions (ie, pyoderma gangrenosum, pustular psoriasis)

• Syphilis
  o Caused by the spirochete Treponema pallidum
  o First stage of syphilis referred to as chancre
  o Ulcer that develops at site of spirochete entry
  o May be single or multiple
  o Appears about 3-4 weeks after infection
  o Usually hard and painless
  o Typically clears in approximately 1 month without scarring
  o Serologic tests often negative when chancre first appears but become reactive in the following 1-4 weeks
  o Early diagnosis depends on identifying spirochete in tissue or by darkfield microscopy
  o Later, develops widespread papulosquamous eruption with classic involvement of palms, soles and mucosa

• Chancroid
  o Acute ulcerative disease of genitalia with inguinal adenopathy ("bubo")
  o Ulcers painful and soft in contrast to syphilis
  o More common in developing countries
  o Caused by Haemophilus ducreyi, a gram-negative facultatively anaerobic bacillus
  o Definitive diagnosis requires isolation or identification of H. ducreyi. Culture difficult.
  o Histology reveals diffuse acute and chronic inflammation with neutrophils, plasma cells and prominent vascular proliferation
  o “Schools of fish”: clusters of extracellular Gram negative coccobacilli diagnostic

• Granuloma Inguinale
  o Caused by Klebsiella granulomatis, Gram negative pleomorphic bacillus
  o Presents with painless genital ulcers, often multiple; “beefy red” with extensive granulation tissue
  o Endemic in less develop countries although 100 cases seen in US each year
  o Ulcers progress to destruction of internal and external tissue with extensive drainage and lymphedema
  o Histology reveals diffuse inflammation with bipolar rod-shaped encapsulated organisms in histiocytes with Giemsa or silver stains. Can do crush prep or smear also

• Lymphogranuloma Venereum
  o Caused by Chlamydia trachomatis
  o Relatively rare in industrialized countries, but has been increasingly recognized in North America, Europe, and UK especially in homosexual males
  o Self-limited genital papules or ulcers followed by painful inguinal and/or femoral lymphadenopathy
  o May present with rectal ulcerations and proctocolitis in those participating in receptive anal intercourse
  o May lead to ulceration, lymphatic obstruction and elephantiasis
  o Pathology of primary ulcer similar to aphthae; lymphadenitis reveals acute supplicative lymphadenitis
  o No organisms visible; requires culture or specialized studies such as PCR

• Genital Aphthosis
  o Painful recurrent ulcers of genitalia
  o May be idiopathic or associated with other conditions such as Behcet’s disease, Parvovirus B-19, Epstein Barr Virus (Lipshutz ulcers)
  o Histology reveals ulcer with abundant neutrophils; may see vasculitis in some cases especially in Behcet’s
• **Genital Human Papillomavirus Infection**
  - 1 percent of all sexually active adults have genital warts
  - 10% have HPV infection by PCR
  - 90% caused by low-risk types 6 and 11
  - Occur mostly on vulva but may involve cervix
  - Pedunculated, cauliflower-like verrucous papules coalescing plaques
  - Pink-red to reddish-brown in color
  - May become extensive and “giant” in immunocompromised patients
  - Histology: verrucous epidermal hyperplasia with koilocytosis: clear staining cells with hypergranulosis

• **Molluscum Contagiosum**
  - DNA poxvirus
  - Often sexually transmitted
  - Skin-colored or white to yellow umbilicated folliculocentric papules
  - Most common site in adults is groin
  - Histology: Eosinophilic intracytoplasmic inclusions (Henderson-Patterson; molluscum bodies) lower epidermis more basophilic and larger near surface
  - May contain atypical lymphocytes

• **Genital Herpesvirus Infection**
  - Most common cause of genital ulcers
  - Sexually transmitted
  - Predominantly caused by HSV type 2
  - After infection, viral genome remains latent in nuclei of sensory neurons for life
  - Genital HSV-1 infections less severe and less prone to recur than HSV-2

• **Direct Immunofluorescent Test for HSV**
  - Bedside hospital test
  - Perform smear; air dry and take to lab
  - Lab applies monoclonal antibody to smear and evaluates with IF scope
  - Cells fluoresce if infected
  - Can do in cases in which diagnosis uncertain or no stain or microscope

• **Fungal Infections**
  - **Tinea cruris** (*"jock itch"): dermatophyte infection caused by *Trichophyton rubrum* and *Epidermophyton floccosum*
    - Itchy red dermatitis with central clearing and peripheral scale in groin and perianal area
  - **Candidiasis** (candidal intertrigo): *Candida albicans infection*
    - Itchy red dermatitis with oozing, pustule formation; no central clearing; cheesy exudate
    - Can diagnose with KOH preparation at bedside

• **Erythrasma**
  - Intertriginous bacterial infection caused by *Corynebacterium minutissimum*
  - Sharply delineated, dry, brown, slightly scaly patches
  - Asymptomatic or slightly itchy
  - Coral red fluorescence with Wood’s lamp due to porphyrins secreted by bacteria
  - Histology: filamentous Gram positive rods in cornified layer

• **Scabies**
  - Infestation with female human mite *Sarcoptes scabiei*
  - Sexually transmitted disease in adults
  - Severely pruritic, widespread eruption
  - Serpiginous burrows visible
  - Diagnosis confirmed by scraping visualizing mite or scybala (fecal material)
• **Pediculosis Pubis**
  o Pediculosis pubis caused by crab louse, *Pthirus pubis*
  o May be sexually or non-sexually transmitted
  o Itching may be intense
  o Clinically may have reddish papules or primarily excoriations
  o Lice grasp hair shafts with claw-like structure
  o Nits found on hair shafts in pubic area and eyelids

• **Psoriasis**
  o May involve genitals; referred to as “inverse” psoriasis
  o Epithelium hyperproliferative resulting in parakeratotic scale
  o May involve inner thighs, perineum
  o Itching may be intense or nonexistent
  o Histology reveals marked epidermal hyperplasia, prominent vessels, loss of granular layer, neutrophils in cornified layer and parakeratosis

• **Lichen Planus**
  o Pruritic papular inflammatory skin disorder characterized by polygonal flat topped papules usually on flexural areas
  o May involve genitalia
  o Violet-hued with whitish lace-like scale (Wickham’s striae)
  o Histology reveals characteristic “lichenoid” band of lymphocytes with “saw tooth” epidermal retia and hypergranulosis and parakeratosis

• **Plasma Cell Vulvitis**
  o Benign chronic vulvitis of unknown origin; may be variant of lichen planus
  o Most common middle-aged or elderly women
  o Solitary red-orange plaque of the vulva
  o Shiny, smooth, slightly moist surface
  o Histology: lichenoid infiltrate of abundant plasma cells

• **Lichen Sclerosus et Atrophicus**
  o Disorder of dermal and subepithelial sclerosis
  o Involves anogenital regions
  o Often severe pruritus or painful erosions
  o May lead to urethral stenosis
  o Histology: thin epithelium with hyperkeratosis; edema and sclerosis of papillary dermis; follicular plugging

• **Lichen Simplex Chronicus**
  o Due to longstanding rubbing
  o May be secondary to underlying inflammatory processes such as contact dermatitis or atopic dermatitis or may be idiopathic
  o Leathery, thickened skin with overlying hyperkeratosis

• **Contact Dermatitis**
  o Allergic contact dermatitis develops secondary to contact with allergens
  o Acute phases manifest as pruritic, erythematous, edematous, oozing dermatitis
  o Later stages manifest as thickened lichenified skin
  o Possible causes are hygiene products, condoms and plants
  o Histology: inflammation in dermis with eosinophils; spongiosis in epidermis; epidermal hyperplasia

• **Burning Vulva Syndrome**
  o Bright red erythema clinically with apparent inflammation
  o Patients complain of burning, not itching
  o Biopsy reveals no inflammation
  o Unknown mediators that cause this but may be due to histamine or cytokines
Irritant Vulvitis
- Inflammation due to application of topical preparations to vulvo-vaginal area
- Most of these are genital hygiene products
- Distinct from allergic contact dermatitis; minimal spongiosis and only slight inflammation
- Should be reported by pathologist

Erythema Multiforme
- Inflammatory hypersensitivity reaction usually due either to underlying infection such as herpesvirus infection or other process such as drug hypersensitivity.
- Tends to involve acral surfaces and mucosae
- Epidermal necrosis with blisters and erosions

Fixed Drug Eruption
- Localized hypersensitivity reaction; recurs with each exposure at the same site
- Phenolphthalein in laxatives, sulfonamides, NSAIDs
- Commonly presents on genitalia
- Bright red to violaceous macules that blister and erode
- Eventually round brown macule due to pigmentation
- Histology: superficial and deep mixed infiltrate with epidermal necrosis; eosinophils and melanophages

Pemphigus Vulgaris
- Autoimmune blistering disease due to autoantibodies to desmoglein 1 and 3
- Middle aged, Ashkenazy Jews most commonly affected
- Flaccid bullae that rupture with marked denudation of skin
- Scalp, chest, umbilicus, intertriginous areas and mucous membranes most common sites
  - May involve uterine cervix: beware of cytology calling SCC!
- Associated with myasthenia gravis, thymoma, lymphoma, lupus erythematosus
- Histology: Acantholysis with suprabasilar clefts with extension into adnexal epithelium
  - Intercellular deposits of IgG and C3 on immunofluorescence

Hailey-Hailey Disease
- Macerated epithelium in intertriginous areas such as axillae and groin
- May be confused with neoplasm histologically
- Diffuse acantholysis with involvement of entire epidermis
- Direct IF negative

Localized Argyria Secondary to Piercing
- Refers to deposition of silver from metallic stud used for piercing. Analouges to mercury amalgam tattoo in mouth
- Clitoral and vulvar piercings relatively common in some subcultures
- Clinically appears as a greyish macule on skin near site of piercing. Stud may have been removed previously
- May simulate melanocytic or vascular neoplasm
- Histology: fine granules of black silver on elastic fibers and around adnexa

Sebaceous Hyperplasia
- Benign proliferation of sebaceous glands
- Single or multiple, asymptomatic, small yellow papules with central depression
- Face most commonly affected but may involve genitalia including penile shaft and scrotum
- May be confused with genital warts by patients
- Histology: increased numbers of sebaceous lobules in dermis
• **Vulvar Papillomatosis**
  - Small dome-shaped to filiform skin-colored papules of the vaginal introitus
  - Seen in 8-48%; more common in uncircumcised
  - Arranged circumferentially in one or several rows
  - Normal variant; wrongly assumed to be transmitted sexually
  - Histology: thin-walled ectatic vessels in the dermis with fibroblastic proliferation similar to angiofibroma

• **Vulvar Angiokeratoma**
  - Asymptomatic, 2- to 5-mm, blue-to-red papules with a scaly surface located on the labia majora most commonly
  - May be thought to be serious condition by patients
  - Generalized systemic form usually associated with a metabolic disorder, Fabry disease or fucosidosis
  - Histology: ectatic thin-walled vessels in the superficial dermis with overlying epidermal hyperplasia

• **Genital Melanocytic Nevus**
  - Benign melanocytic lesion
  - Small, round, symmetrical; may be heavily pigmented
  - Patient may be concerned re melanoma
  - Histology may demonstrate slightly unusual features characteristic of the location, considered to be “special” site
  - Histology: architecture of benign lesion but nests of melanocytes may be slightly irregular and cells larger with more cytoplasm and melanin; no atypia or mitoses

• **Vulvar Melanosis**
  - Macular hyperpigmentation of the penile shaft and/or glans
  - Usually develops in adults; slowly growing
  - Often confused with melanoma
  - Macular brown flat condyloma most important to distinguish
  - Also, exclude localized manifestation of other conditions with lentigines such as Peutz-Jeghers and Laugier-Hunziker syndromes
  - Histology: slight hyperpigmentation of basal cell layer; no melanocytic hyperplasia or epithelial hyperplasia

• **Vulvar Melanoma**
  - Extremely rare; less than 4% of all melanomas and less than 2% of all primary vulvar malignancies
  - Median age at diagnosis 64 years
  - Clinically broad, asymmetric, poorly circumscribed; areas of black commonly
  - Histology: atypical melanocytes in epithelium in irregular nests and singly; mitoses; asymmetry, poor circumscription

• **Verrucous Carcinoma (Giant Condyloma of Buschke-Lowenstein)**
  - Large cauliflower-like lesions arising from the prepuce or glans
  - Most caused by low risk HPV 6 and 11
  - Subtype of low-grade SCC; low propensity to spread; deep structures involved
  - Deep incisional biopsy required to distinguish from verruca
  - Histology: verrucous epithelial hyperplasia with deep extension into soft tissue; minimal atypia or mitoses

• **Bowenoid Papulosis**
  - Similar to Bowen’s but multiple papules instead of plaques
  - Bowenoid papulosis is a high grade intraepithelial lesion
  - Bowenoid papulosis is characterized by flat, skin-coloured, pink or often hyperpigmented papules
  - Is strongly associated with HPV 16 and 18
  - Occurs mainly in young sexually active adults
• **Erythroplasia of Queyrat**
  - A form of SCC in situ of vulva
  - Caused by infection with HPV 16, 18, 31, 35
  - Single or multiple, fixed red velvety plaques
  - More aggressive than nongenital SCC in situ
  - Microscopic examination shows atypical, hyperplastic keratinocytes in a disordered array with vacuolated cytoplasm and mitotic figures

• **Bowen’s Disease**
  - Bowen’s disease is squamous cell carcinoma in situ; may involve genitalia
  - Red plaque with encrustations
  - Surgical excision best option for small lesions

• **Vulvar SCC**
  - Of all cancers affecting the vulva, 95% are SCC
  - Age at the onset wide (20–90 years) with peak at fifth decade
  - Risk factors include chronic inflammatory conditions, multiple sexual partners and HPV infection
  - Clinically lesions appear as erythematous indurated plaque or nodule often with ulceration
  - Histology: endophytic epithelial neoplasm with squamous differentiation; mitoses, atypia, necrosis

• **Extramammary Paget’s Disease**
  - Non-healing erythematous scaly and crusted plaque in genital area
  - Most affected >50 years
  - May be associated with intense pruritus
  - May resemble inflammatory skin conditions such as inverse psoriasis, candidiasis
  - May be primary or due to cutaneous extension of underlying GI or GU malignancy
  - Histology: intraepidermal proliferation of large atypical cells with abundant pale cytoplasm
    - Positive staining with mucicarmine, CK7 and CEA

• **Langerhans Cell Histiocytosis**
  - Significant percentage of cases affect adults
  - Inflammatory plaques of intertriginous areas; crusting and oozing
  - May simulate inverse psoriasis and irritant dermatitis clinically
  - Infiltrate of Langerhans cells with variable atypia; epidermotropism; crusting

• **Hidradenoma Papilliferum**
  - Solitary verrucous papule of vulva
  - Crusting, oozing common
  - Exo-endophytic epithelial neoplasm with apocrine differentiation
  - Plasma cells in stroma common

• **Verruciform Xanthoma**
  - Verrucous epithelial hyperplasia
  - Often simulates condyloma or verrucous carcinoma
  - Histology shows epithelial hyperplasia with infiltrate of histiocytes in lamina propria
  - May represent reactive lesion

• **Rarely Encountered Neoplasms**
  - Lymphoma: usually due to spread from lymphoma elsewhere; when primary, is usually diffuse large cell lymphoma of either B or T cell origin
    - Mycosis fungoides may involve buttocks, groin, occasionally vulva
    - Langerhans cell histiocytosis commonly involves vulva
  - Sarcomas: leiomyosarcoma, angiosarcoma, epithelioid sarcoma
• **Conclusions**
  - Virtually any dermatologic condition may affect the skin of the genital region but there are some conditions that involve it more frequently
  - Important to recognize which conditions may be more serious than they might otherwise appear
  - Conversely, do not over treat benign conditions with aggressive measures
  - Biopsies important in many cases to establish diagnosis. Ensure that pathologist is conversant with dermatopathology when dealing with this area.

**References**


For Inquiries regarding consultation or other services: www.dermpath.com
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Female Genital Aesthetic Surgery
Gary J. Alter, MD

ANATOMY:
- Vulva
- Clitoris

AESTHETIC IDEALS

LABIA MINORA REDUCTION
- Central wedge VS Trim technique
- Central wedge technique
- Variations
- Complications

CLITORAL HOOD REDUCTION
- Lateral excision
- Clitoropexy with reduction

RECONSTRUCTION OF OTHER LABIAPLASTIES
- YV advancement
- Wedge excisions
- Clitoral hood flaps
- Combinations

LABIA MAJORA
- Fat injections
- Reduction Technique

CLITORAL REDUCTION

COMBINATION PROCEDURES
Poster #BS1
EFFECT OF OBESITY ON THE DEVELOPMENT OF DIABETIC BLADDER DYSFUNCTION
Tongxiang Liu, PhD1, Zongwei Wang, MD, PhD2, Vivian Cristofaro, PhD1, Hongying Cao, PhD1, Maryrose P. Sullivan, PhD1 and Aria F. Olumi, MD2
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(Presented by: Vivian Cristofaro, PhD)

Poster #BS2
STEM-CELL BASED THERAPY PREVENTS PELVIC ORGAN PROLAPSE (POP) IN LYSYL OXIDASE LIKE-1 (LOXL1) KNOCKOUT (KO) MICE
Bruna M. Couri, MD1, Brittaney Wilson-Harris, MD2, Javier Pizarro-Berdichevsky, MD3,4, Ali Borazjani, BS2, Samantha D. Gonzalez-Ramos, MD2, Geerke Dijkema, BS2,5, Mei Kuang, PhD2, Brian M Balog, BS2 and Margot S. Damaser, PhD3,6
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(Presented by: Bruna M. Couri, MD)

Poster #BS3
UNDERACTIVE BLADDER IN OBESE-PRONE RATS FED A HIGH FAT DIET
Nazema Siddiqui, MD, MHSc1, Alexis Dieter, MD2, Cindy Amundsen, MD2, Jillene Brooks, MA3, Danielle Degoski, BS3 and Matthew Fraser, PhD4
1Duke University, Durham, NC; 2Duke University Medical Center, Durham, NC; 3Institute for Medical Research, Durham, NC; 4Duke University and Durham Veteran's Affairs Medical Centers, Institute for Medical Research, Durham, NC
(Presented by: Nazema Siddiqui, MD, MHSc)

Poster #BS4
ABDOMINAL MUSCLE ACTIVITY DURING MICTURITION IS DECREASED BY INTRAVESICAL INHIBITION OF P2X3 RECEPTORS IN INTACT RATS
Broderick Sutton1, Jorge Tovar-Perez1, Timothy Boone, MD, PhD2 and Alvaro Munoz, PhD1
1Houston Methodist Research Institute; 2Houston Methodist Hospital and Houston Methodist Research Institute
(Presented by: Alvaro Munoz, PhD)

Poster #BS5
CASTRATION DIFFERENTIALLY IMPAIRS FEMALE RABBIT BLADDER AND PELVIC FLOOR CONTRACTILE ENDURANCE IN A NOVEL MODEL OF IN-VITRO ISCHEMIA-REPERFUSION
Amy Dobberfuhl, MD1, Catherine Schuler2, Robert Leggett2, Elise De, MD1 and Robert Levin, PhD2
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(Presented by: Amy Dobberfuhl, MD)

Poster #BS6
THE VAGINAL DISTENTION MODEL OF STIMULATED BIRTH TRAUMA DOES NOT PRODUCE INCONTINENCE IN MICE
Alex Galante, BA, Ramzi El Hassan, MS, Michael Kavran, MS, Stephen Ganocy, PhD, Adonis Hijaz, MD
Urology Institute, University Hospitals Case Medical Center, School of Medicine, Cleveland, OH
(Presented by: Alex Galante, BA)
Abstract Summaries

Poster #BS7
PERIURETHRAL MUSCLE-DERIVED MONONUCLEAR CELL INJECTION IMPROVES MORPHOLOGICAL RECOVERY OF THE URETHRAL SPHINCTER IN A RAT MODEL OF URINARY INCONTINENCE
Marcelo Turco, MD 1, Cristiano Gomes, PhD 1, Jose Bessa, PhD 1, Marina Brolio, PhD 1, Marcio Rodrigues, PhD 1, Alex Souza, PhD 1, Katia Leite, PhD 1, Ricardo Nunes, PhD 1, Homero Bruschini, PhD 1, Maria Angelica Miglino, PhD 1 and Miguel Srougi, PhD 1
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(Presented by: Cristiano Gomes, PhD)

Poster #BS8
CHRONIC IRRITATION OF THE BLADDER LEADS TO CHANGES IN THE SYMPATHETIC REFLEX
Jang-Hwan Kim, MD 1, Sanghyun Jee, MD 1, Sangwoon Kim, MD 1, Jiyu Kim, MS 1, Sooyoung Moon, MS 1 and Jaeyoeb Hong, MD 2
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(Presented by: Jang-Hwan Kim, MD)

Poster #BS9
WIRELESS URODYNAMIC DEVICE DEMONSTRATES SUBMUCOSAL SENSOR IS COMPARABLE TO URODYNAMIC CATHETER
CR Powell, MD 1, Albert Kim, MS 2, Mouhamad Alloosh, PhD 3, Michael Sturek, PhD 3 and Babak Ziaie, PhD 2
1Indiana University, Indianapolis, IN; 2Purdue University School of Electrical and Computer Engineering; 3Indiana University Department of Cellular and Integrative Physiology
(Presented by: CR Powell, MD)

Poster #BS10
COMPARISON OF FEMALE PELVIC FLOOR DEFORMATION BETWEEN JUMPING AND VALSALVA MANEUVER
Yun Peng 1, Rose Khavari, MD 2, Julie Stewart, MD 2, Timothy Boone, MD, PhD 2 and Yingchun Zhang, PhD 1
1University of Houston; 2Houston Methodist Hospital
(Presented by: Yingchun Zhang, PhD)

Poster #BS11
SUTURE RETENTION STRENGTH OF THREE TYPES OF DECELLULARIZED OVINE VAGINAL PATCHES FOR SURGICAL APPLICATIONS
Sourav Patnaik, BS 1, James Ryan Butler, DVM, MS, Diplomate, ACVS 1, Bryn Brazile, BS 1, Vani Dandolu, MD, MPH, MBA 2, Meeghana Reddy 2, Benjamin Weed, BS, PhD 1, David Christiansen, BS, DVM 1, Peter Ryan, BA, MS, PhD 1 and Jun Liao, BS, MS, PhD 1
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(Presented by: Sourav Patnaik, BS)

Poster #BS12
EVALUATION OF A NOVEL SUTURE METHOD IN STABILIZING URETHRAL HYPERMOBILITY
Yun Peng, Yingchun Zhang, PhD
University of Houston
(Presented by: Yingchun Zhang, PhD)

Poster #BS13
PRACTICAL AND INEXPENSIVE PROCEDURE TO MEASURE MECHANICAL PROPERTIES OF VAGINAL TISSUE
Zachary Cook 1, Sogol Prisbastami, BS 1, Brendan O'Toole, BS, MS, PhD 1, Mohamed Trabia, BS, MS, PhD 1 and Vani Dandolu 2
1UNLV, Las Vegas, Nevada; 2University of Nevada School of Medicine, Las Vegas, Nevada
(Presented by: Vani Dandolu)
Poster #BS14
THE INTERACTION BETWEEN URINARY INCONTINENCE (UI), RECURRENT LOWER URINARY TRACT INFECTION (UTI), AND AGING IN MICE
Zhina Sadeghi, MD1, Johnathan Kenyon1, Albert Park1, Michael Kavran1, Adonis Hijaz1, Thomas Hannan2 and Firouz Daneshgari1
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(Presented by: Zhina Sadeghi, MD)

Poster #BS15
THE ROLE OF BACTERIAL BIOFILMS AND CHRONIC INFLAMMATION IN THE DELAYED DEVELOPMENT OF SYSTEMIC SIDE EFFECTS FOLLOWING TRANSVAGINAL PLACEMENT OF MESH SLINGS FOR INCONTINENCE
A. Lenore Ackerman, MD, PhD1, Bruno P. Lima, DDS, PhD2, Patkawat Ramart, MD1, Erin Mellano, MD3, Renate Lux, PhD2, Wenyuan Shi, PhD2 and Shlomo Raz, MD1
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(Presented by: A. Lenore Ackerman, MD, PhD)
**Poster #BS16**

**USE OF REAL TIME ULTRASOUND DURING URODYNAMICS TO CALCULATE DETRUSOR WALL TENSION**  
Andrew Colhoun, MD\(^1\), John Speich, PhD\(^2\), Jay Sulek, MD\(^4\), Paul Ratz, PhD\(^3\), R. Wayne Barbee, PhD\(^4\), Laura Carucci, MD\(^5\), J. Tyler Roseman, MD\(^1\) and Adam Klausner, MD\(^1\)  
\(^1\)Department of Surgery/Division of Urology, Virginia Commonwealth University School of Medicine, Richmond, Virginia;  
\(^2\)Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University School of Engineering, Richmond, Virginia;  
\(^3\)Departments of Biochemistry and Pediatrics, Virginia Commonwealth University School of Medicine, Richmond, Virginia;  
\(^4\)Department of Emergency Medicine, Virginia Commonwealth University School of Medicine, Richmond, Virginia;  
\(^5\)Department of Radiology, Virginia Commonwealth University School of Medicine, Richmond, Virginia  
(Presented by: Andrew Colhoun, MD)

**Poster #BS17**

**BUILDING A NOMOGRAM FOR EVALUATION OF DETRUSOR CONTRACTILITY IN WOMEN**  
Françoise A. Valentini, MD, PhD\(^1\) and Pierre P. Nelson, PhD\(^2\)  
\(^1\)Physical Medicine and Rehabilitation, Hôpital Rothschild; \(^2\)Hôpital Rothschild Paris, France  
(Presented by: Françoise A. Valentini, MD, PhD)

**Poster #BS18**

**SIGNAL NETWORK OF INTERSTITIAL CYSTITIS-ASSOCIATED ANTIPROLIFERATIVE PEPTIDE**  
Sungyong You, PhD\(^1\), Tack Lee, MD, PhD\(^2\), Susan Keay, MD, PhD\(^3\), Jennifer Anger, MD, PhD\(^4\), Michael Freeman, PhD\(^3\) and Jayoung Kim, PhD\(^4\)  
\(^1\)Cedars-Sinai Medical Center; \(^2\)Inha University; \(^3\)VA Maryland Health Care System and University of Maryland School; \(^4\)Cedars-Sinai Medical Center, Los Angeles, CA  
(Presented by: Jayoung Kim, PhD)

**Poster #BS19**

**NONINVASIVE BIOMARKER CANDIDATES OF INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME**  
He Wen, PhD\(^1\), Tack Lee, MD, PhD\(^2\), Sungyong You, PhD\(^3\), Soo-Hwan Park, MD, PhD\(^2\), Hosuk Song, PhD\(^2\), Karyn Eilber, MD\(^3\), Jennifer Anger, MD\(^3\), Michael Freeman, PhD\(^4\), Sunghyurk Park, PhD\(^1\) and Jayoung Kim, PhD\(^4\)  
\(^1\)Seoul National University, Korea; \(^2\)Inha University Hospital; \(^3\)Cedars-Sinai Medical Center; \(^4\)Cedars-Sinai Medical Center, Los Angeles, CA  
(Presented by: Jayoung Kim, PhD)

**Poster #BS20**

**STEPS TOWARD CHARACTERIZATION OF AN OAB-SUBTYPE MEDIATED BY LOW AMPLITUDE RHYTHMIC CONTRACTIONS**  
Andrew Colhoun, MD\(^1\), John Speich, PhD\(^2\), Jay Sulek, MD\(^4\), Paul Ratz, PhD\(^3\), R. Wayne Barbee, PhD\(^4\), J. Tyler Roseman, MD\(^1\) and Adam Klausner, MD\(^1\)  
\(^1\)Department of Surgery/Division of Urology, Virginia Commonwealth University School of Medicine, Richmond, Virginia;  
\(^2\)Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University School of Engineering, Richmond, Virginia;  
\(^3\)Department of Biochemistry and Pediatrics, Virginia Commonwealth University School of Medicine, Richmond, Virginia;  
\(^4\)Department of Emergency Medicine, Virginia Commonwealth University School of Medicine, Richmond, Virginia  
(Presented by: Andrew Colhoun, MD)

**Poster #BS21**

**WITHDRAWN**
Abstract Summaries

Poster #BS22
AUA OFFICE OF RESEARCH: SUPPORT FOR RESEARCH IN UROLOGY THROUGH FUNDING, EDUCATION, AND ADVOCACY
Carolyn Best, PhD1, Jessica Ames, MS1, Rodney Cotton, MBA1 and Johannes Vieweg, MD2
1American Urological Association, Linthicum, MD; 2Department of Urology, Prostate Disease Center, University of Florida College of Medicine, Gainesville, FL
(Presented by: Carolyn Best, PhD)

Poster #BS23
ROLE OF P2X3 RECEPTOR IN MODULATING PURINERGIC NEUROTRANSMISSION
Vivian Cristofaro, PhD1, Subbarao V. Yalla, MD1 and Maryrose P. Sullivan, PhD1
1VA Boston Healthcare System, Harvard Medical School, Boston, MA
(Presented by: Vivian Cristofaro, PhD)

Poster #BS24
DIFFERENTIAL EFFECTS OF STEPWISE PHARMACOLOGICAL AUTONOMIC DENERVATION OR DIRECT SMOOTH MUSCLE RELAXATION ON URODYNAMIC INDICES IN CHRONIC SPINAL CORD INJURED RATS
Jessica Lloyd, MD, Danielle J. Degoski BS1, Jillene M. Brooks MS1, Paul C. Dolber, PhD2 and Matthew O. Fraser, PhD2
1Institute for Medical Research, Durham, NC; 2Department of Research and Development, Durham Veterans Affairs Medical Center, Durham, NC
(Presented by: Jessica Lloyd, MD)

Poster #BS25
EFFECTS OF ALPHA 1-ADRENERGIC BLOCKER AND/OR PHOSPHODIESTERASE TYPE-5 INHIBITOR ON DETRUSOR FUNCTION AFTER BLADDER OUTLET OBSTRUCTION IN RAT
Ji-Yeon Han, Young-Suk Lee, MD, PhD
Samsung Changwon Hospital, Sungkyunkwan University School of Medicine, Changwon, Korea
(Presented by: Ji-Yeon Han)

Poster #BS26
FUNCTIONAL TRPV4–SK3 INTERACTION IN MURINE DETRUSOR PDGFRΑ+ CELLS: POSSIBLE MECHANISM OF MYOGENIC FILLING
Haeyeong Lee, PhD, Byoung Koh, BS, Lauren Peri, MS, Kenton Sanders, PhD, Sang Don Koh, MD, PhD
University of Nevada Reno, NV
(Presented by: Haeyeong Lee, PhD)

Poster #BS27
THE ROLE OF BK CHANNELS AND CHOLINERGIC NEUROTRANSMISSION IN THE HYDROGEN SULFIDE-INDUCED GUINEA PIG DETRUSOR SMOOTH MUSCLE CONTRACTIONS
Vitor Fernandes, BS, Wenkuan Xin, PhD, Georgi Petkov, PhD
University of South Carolina, Columbia, SC
(Presented by: Georgi Petkov, PhD)

Poster #BS28
UTP INDUCED SK3 CHANNEL ACTIVATION IN MURINE DETRUSOR PDGFRΑ+ CELLS
Haeyeong Lee, PhD, Byoung Koh, BS, Lauren Peri, MS, Kenton Sanders, PhD, Sang Don Koh, MD, PhD
University of Nevada Reno, NV
(Presented by: Haeyeong Lee, PhD)

Poster #BS29
HYPOXIA-INDUCED METABOLIC STRESS IN BLADDER SMOOTH MUSCLE CELLS
Monica Velasquez Flores, BSc, Philippe Cammisotto, PhD, Lysanne Campeau, MDCM, PhD, FRCSC
Lady Davis Institute for Medical Research McGill University, Montreal, Canada
(Presented by: Lysanne Campeau, MDCM, PhD, FRCSC)
Poster #BS30

ROLE OF PDGFRΑ+ CELLS IN TYPE 1 DIABETIC BLADDER DYSFUNCTION

Byoung Koh¹, Lauren Peri, MS², Haeyeong Lee, PhD², Kenton Sanders, PhD² and Sang Don Koh, MD, PhD²
¹Department of Physiology and Cell Biology, University of Nevada Reno; ²University of Nevada, Reno, NV
(Presented by: Byoung Koh)

Poster #BS31

POST-PARTUM INTRAPERITONEAL (IP) INJECTION OF BONE MARROW-DERIVED MESENCHYMAL STEM CELLS (BM-MSC) INTO LYSYL OXIDASE LIKE-1 KNOCKOUT (LOXL1 KO) MICE HOME PREFERENTIALLY TO THE VAGINA AND URETHRA

Javier Pizarro-Berdichevsky, MD¹, Nathalie Walker, BS², Bruna M Couri, MD³, Ali Borazjani, BS⁴, Samantha D. Gonzalez-Ramos, MD⁴, Mei Kuang, PhD⁴, Brian M. Balog, BS⁵, Howard B. Goldman, MD⁵ and Margot S. Damaser, PhD⁶
¹Urogynecology Unit, H. Dr. Sotero del Rio, Servicio Salud Metropolitano Sur Oriente, Santiago, Chile – Division Obstetricia y Ginecologia, Pontificia Universidad Catolica de Chile – Glickman Urological & Kidney Institute Cleveland Clinic, Cleveland, OH; ²Cleveland Clinic Lerner College of Medicine at Case Western University, Cleveland, OH; ³Dept. of Obstetrics & Gynecology, Cleveland Clinic, Cleveland, OH – Dept of Biomedical Engineering, Cleveland Clinic, Cleveland, OH; ⁴Dept. of Biomedical Engineering, Cleveland Clinic, Cleveland, OH – Dept. of Biomedical Engineering, Cleveland Clinic, Cleveland, OH – Advanced Platform Technology Center, Louis Stokes VA Medical Center, Cleveland, OH; ⁵Glickman Urological & Kidney Institute Cleveland Clinic, Cleveland, OH; ⁶Glickman Urological & Kidney Institute Cleveland Clinic, Cleveland, OH – Dept. of Biomedical Engineering, Cleveland Clinic, Cleveland, OH – Advanced Platform Technology Center, Louis Stokes VA Medical Center, Cleveland, OH
(Presented by: Javier Pizarro-Berdichevsky, MD)

Poster #BS32

ENGINEERED VAGINAL TISSUE: TOWARDS AN AUTOLOGOUS GRAFT FOR PELVIC ORGAN PROLAPSE

Julia Raykin, PhD¹, Gina Northington, MD, PhD², Carrie Bedient, MD², Johnna Temenoff, PhD¹ and Stacey Schutte, PhD²
¹Georgia Institute of Technology, Atlanta, GA; ²Emory University SOM, Atlanta, GA
(Presented by: Stacey Schutte, PhD)

Poster #BS33

THE EFFECTS OF VAGINAL DELIVERY ON SERUM CYTOKINES IN OBESE AND NON-OBESE WOMEN IN THE DEVELOPMENT OF STRESS URINARY INCONTINENCE

Courtenay Moore, MD, Mei Kuang, PhD², Raymond Rackley, MD, Andrea Aaby, Robert Butler, MS and Margot Damaser, PhD
Cleveland Clinic, Cleveland, OH
(Presented by: Courtenay Moore, MD)

Poster #BS34

A METHOD TO STUDY BLADDER UROTHELIAL CELLULAR FUNCTION WITH PRESERVATION OF CELLULAR LOCATION WITHIN THE UROTHELIUM

Ming Lu, MD, Toby Chai, MD
Yale, New Haven, CT
(Presented by: Toby Chai, MD)

Poster #BS35

INTRAVESICAL INHIBITION OF P2X3 RECEPTORS IMPROVES BLADDER DYSFUNCTION DEPENDING ON THE UROTHELIAL-EXPRESSION LEVELS FOR THE RECEPTOR IN SCI RATS

Jorge Tovar-Perez¹, Broderick Sutton¹, Timothy Boone, MD, PhD² and Alvaro Munoz, PhD¹
¹Houston Methodist Research Institute; ²Houston Methodist Hospital and Houston Methodist Research Institute
(Presented by: Alvaro Munoz, PhD)
Podium #1
TRENDS AND UTILIZATION OF LASER PROSTATECTOMY IN AMBULATORY SURGICAL PROCEDURES FOR THE TREATMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH) IN NEW YORK STATE (2000−2011)
Bilal Chughtai, MD, Vannita Simma-Chiang, MD, Richard Lee, MD, MBA, Abby Isaacs, MS, Alexis Te, MD, Steven Kaplan, MD, Art Sedrakyan, MD, PhD
Weill Cornell Medical College, New York, NY
(Presented by: Vannita Simma-Chiang, MD)

Podium #2
PATTERNS OF NON-SURGICAL MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH) IN THE UNITED STATES
Jennifer Anger, MD, MPH 1, Howard Goldman, MD 2, Kelly Zou, PhD 3, Xuemei Luo, PhD 3, David Russell, MD 3, Douglass Chapman, MS 4, Canan Esinduy, MD 5 and J. Quentin Clemens, MD 4
1Cedars−Sinai Medical Center, Beverly Hills, CA; 2Cleveland Clinic Lerner College of Medicine, Cleveland, OH; 3Pfizer Inc, New York, NY; 4University of Michigan, Ann Arbor, MI
(Presented by: Jennifer Anger, MD, MPH)

Podium #3
LONG-TERM NITROFURANTOIN PROPHYLAXIS IN THE OLDER WOMAN: WHAT ARE THE REAL RISKS?
Lauren Rego and Philippe E. Zimmern, MD
UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

Podium #4
A MULTICENTER STUDY EVALUATING THE SAFETY AND EFFICACY OF AF-219, A P2X3 ANTAGONIST, IN WOMEN WITH INTERSTITIAL CYSTITIS /BLADDER PAIN SYNDROME (IC/BPS)
Philip Hanno, MD 1, Michael Kitt, MD 2, Robert Moldwin, MD 3, Anthony Ford, PhD 2, Peter Butera 2 and Bruce McCarthy, MD 2
1University of Pennsylvania, Philadelphia, PA; 2Afferent Pharmaceuticals, Inc. San Mateo, CA; 3Hofstra University School of Medicine, North Shore-LIJ Healthcare System, New Hyde Park, NY
(Presented by: Philip Hanno, MD)

Podium #5
GLT1 GLUTAMATE RECEPTOR MEDIATES THE ESTABLISHMENT AND PERPETUATION OF CHRONIC VISCERAL PAIN IN AN ANIMAL MODEL OF BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS
A. Lenore Ackerman, MD, PhD 1, Forrest C. Jellison, MD 2, Una J. Lee, MD 3, Sylvie Bradesi, PhD 4 and Larissa V. Rodriguez, MD 5
1Department of Urology, David Geffen School of Medicine at UCLA, Los Angeles, CA; 2Department of Urology, San Antonio Military Medical Center (SAMMC), Fort Sam, Houston, TX; 3Section of Urology and Renal Transplantation, Virginia Mason Medical Center, Seattle, WA; 4Center for the Neurobiology of Stress, The David Geffen School of Medicine at UCLA, Los Angeles, CA; 5Departments of Urology and Obstetrics and Gynecology, University of Southern California, Los Angeles, CA
(Presented by: A. Lenore Ackerman, MD, PhD)
Podium #6
PAINFUL BLADDER FILLING AND PAINFUL URGENCY: IMPORTANT CLINICAL CHARACTERISTICS OF UROLOGIC CHRONIC PELVIC PAIN SYNDROMES (UCPPS) IN MEN AND WOMEN PARTICIPATING IN THE MAPP RESEARCH NETWORK
H. Henry Lai, MD¹, John Krieger, MD², Michel Pontari, MD³, Dedra Buchwald, MD², Xiaoling Hou, PhD⁴ and J. Richard Landis, PhD⁴
¹Washington University School of Medicine, St Louis, MO; ²University of Washington School of Medicine, Seattle, WA; ³Temple University School of Medicine, Philadelphia, PA; ⁴University of Pennsylvania Perelman School of Medicine, Philadelphia, PA
(Presented by: H. Henry Lai, MD)

Podium #7
MRI IMAGING SUGGESTS INCREASED TONICITY OF THE LEVATOR ANI MUSCLE COMPLEX IN WOMEN WITH INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME
A. Lenore Ackerman, MD, PhD¹, Una J. Lee, MD², Forrest C. Jellison, MD³, Daniel J. Margolis, MD⁴, Nelly Tan, MD⁴, Maitraya K. Patel, MD⁴, Shlomo Raz, MD¹, Steven S. Raman, MD⁴ and Larissa V. Rodriguez, MD⁵
¹Department of Urology, David Geffen School of Medicine at UCLA, Los Angeles, CA; ²Section of Urology and Renal Transplantation, Virginia Mason Medical Center, Seattle, WA; ³Department of Urology, San Antonio Military Medical Center (SAMMC), Fort Sam, Houston, TX; ⁴Department of Radiology, David Geffen School of Medicine at UCLA, Los Angeles, CA; ⁵Departments of Urology and Obstetrics and Gynecology, University of Southern California, Los Angeles, CA
(Presented by: A. Lenore Ackerman, MD, PhD)

Podium #8
THE ASSOCIATION BETWEEN URINARY MARKER LEVELS AND BCG RELATED CYSTITIS
Hajar Ayoub, MD, Ashish Kamat, MD, Colin Dinney, MD, Bryan Fellman, MS, Diana Urbauer, MS, O. Lenaine Westney, MD
MD Anderson Cancer Center, Houston, TX
(Presented by: Hajar Ayoub, MD)
Poster #M1
INCREASED PROSTATE SIZE AND HISTORY OF PREOPERATIVE VOIDING DYSFUNCTION ASSOCIATED WITH GREATER URINARY TOXICITY AFTER POST-PROSTATECTOMY ADJUVANT OR SALVAGE RADIATION
Juan Guzman-Negron, MD¹ and Ricardo Sanchez-Ortiz, MD²
¹University of Puerto Rico, San Juan PR; ²Robotic Urology and Oncology Institute, San Juan PR
(Presented by: Juan Guzman-Negron, MD)

Poster #M2
OUTCOMES AFTER MIDURETHRAL SLING PLACEMENT IN WOMEN WITH STRESS URINARY INCONTINENCE AND CONCOMITANT SEVERE LOWER URINARY TRACT SYMPTOMS
Michael Ingber, MD, Marisa Clifton, MD, Courtenay Moore, MD, Sandip Vasavada, MD, Howard Goldman, MD
Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

Poster #M3
THE IMPACT OF LAPAROSCOPIC ASSISTED GASTRIC BANDING ON LOWER URINARY TRACT SYMPTOMS AND QUALITY OF LIFE SCORES IN OBESE MEN AND WOMEN
Neha Talreja, MD, Margarita Aponte, MD, Miriam Nazmy, MD, Benjamin Brucker, MD, Victor Nitti, MD, Nirit Rosenblum, MD
NYU Langone Medical Center, New York, NY
(Presented by: Neha Talreja, MD)

Poster #M4
A COMPARATIVE STUDY ON THE EFFICACY OF SOLIFENACIN SUCCINATE IN PATIENTS WITH URINARY FREQUENCY WITH OR WITHOUT URGENCY
Ji-Yeon Han, Young-Suk Lee, MD, PhD
Samsung Changwon Hospital, Sungkyunkwan University School of Medicine, Changwon, Korea
(Presented by: Ji-Yeon Han)

Poster #M5
FESOTERODINE 8 MG VERSUS FESOTERODINE 4 MG IN PATIENTS WITH OVERACTIVE BLADDER AND A HISTORY OF PREVIOUS ANTIMUSCARINIC THERAPY: RESULTS FROM THE EIGHT TRIAL
Christopher Chapple, BSc, MD, FRCS, FEBU¹, François Haab, MD², Tim Schneider, MD³, Martin Carlsson, MS⁴ and Daniel Arumi, MD⁵
¹The Royal Hallamshire Hospital, Sheffield, UK; ²Hôpital Tenon, Paris, France; ³Praxisklinik Urologie Rhein/Ruhr, Mülheim, Germany; ⁴Pfizer, Inc., New York, NY; ⁵Pfizer Europe, Madrid, Spain
(Presented by: Christopher Chapple, BSc, MD, FRCS, FEBU)

Poster #M6
CONSISTENT LONG-TERM EFFICACY AND SAFETY OF REPEAT ONABOTULINUMTOXINA INJECTIONS IN PATIENTS WITH NEUROGENIC DETRUSOR OVERACTIVITY: FINAL RESULTS OF UP TO FOUR YEARS’ TREATMENT
Courtenay Moore, MD¹, Roger Dmochowski, MD², Karen Ethans, MD³, Heinrich Schulte-Baukloh, MD⁴, Brenda Jenkins, BS⁵, Steven Guard, PhD⁶, Yan Zheng, PhD⁷, Gilles Karsenty, MD⁸ and Michael Kennelly, MD⁹
¹Cleveland Clinic, Cleveland, OH; ²Vanderbilt University, Nashville, TN; ³University of Manitoba, Winnipeg, Manitoba, Canada; ⁴St. Hedwig-Krankenhaus, Berlin, Germany; ⁵Allergan, Inc., Irvine, CA; ⁶Allergan, Ltd., Marlow, UK; ⁷Allergan, Inc., Bridgewater, NJ; ⁸Aix-Marseille Université, Marseille, France; ⁹Carolinatas Rehabilitation, Charlotte, NC
(Presented by: Courtenay Moore, MD)
Poster #M7
THE SEVERITY OF BOWEL DYSFUNCTION IN PATIENTS WITH NEUROGENIC BLADDER
Anne P. Cameron, MD, Gianna M. Rodriguez, MD, Amy Gursky, Chang He, J. Quentin Clemens, MD, MSCI, John T Stoffel, MD
Ann Arbor, MI
(Presented by: Anne P. Cameron, MD)

Poster #M8
BODY MASS INDEX AS A PREDICTIVE FACTOR OF AUTONOMIC DYSREFLEXIA IN PATIENTS WITH NEUROGENIC BLADDER
Allison Polland, MD¹, Amy Gursky² and Anne P. Cameron, MD²
¹Icahn School of Medicine at Mount Sinai; ²University of Michigan, Ann Arbor, MI
(Presented by: Allison Polland, MD)

Poster #M9
NEUROGENIC BLADDER PRESENTING TO THE EMERGENCY DEPARTMENT IN THE UNITED STATES: ADMISSION RATES AND ASSOCIATED MORTALITY
Jessica Meyers, MD¹, Akshay Sood, MD¹, Marianne Schmid, MD², Quoc-Dien Trinh, MD³ and Humphrey Atiemo, MD¹
¹Henry Ford Hospital, Detroit, MI; ²University Medical Center of Hamburg-Eppendorf, Hamburg, Germany; ³Brigham and Women’s Hospital, Harvard Medical School, Boston, MA
(Presented by: Jessica Meyers, MD)
*LUTS/Voiding Dysfunction/Neurogenic Bladder Non-Moderated Poster Session
(Non-Moderated)
Thursday, February 26, 2015
1:00 p.m. – 2:20 p.m.
See page 200 for abstracts
*Not CME Accredited

Poster #NM1
UROLOGIST PRESCRIBING PRACTICES FOR INTERMITTENT CATHETERIZATION IN NEW ENGLAND
Gillian Wolff, MD¹, Matthew Ely, MD² and Richard Kershen, MD²
¹Hartford, CT; ²Tallwood Urology and Kidney Institute, Hartford Hospital, Hartford, CT
(Presented by: Gillian Wolff, MD)

Poster #NM2
BEHAVIORAL AND COGNITIVE THERAPY (BCT) AS NON-INVASIVE TREATMENT OF OVERACTIVE BLADDER (OAB) SYNDROME IN ABSENCE OF CONTRIBUTIVE URODYNAMIC DIAGNOSIS
Brigitte G. Marti PT¹, Françoise A. Valentini, MD, PhD² and Gilberte Robain, MD, PhD²
¹Rehabilitation Department, Hôpital Saint Antoine, Paris, France; ²Physical Medicine and Rehabilitation, Hôpital Rothschild
(Presented by: Françoise A. Valentini, MD, PhD)

Poster #NM3
FACTORS IMPACTING PATIENT TOLERABILITY AND PROCEDURE TIME FOR INTRAVESICAL ONABOTULINUMTOXIN A INJECTION
Kevin Carlson, MD, Richard Baverstock, MD¹, Andrea Civitarese, BSc² and Trafford Crump, PhD³
¹Department of Surgery, University of Calgary and Vesia [Alberta Bladder Centre]; ²Vesia [Alberta Bladder Centre]; ³Department of Surgery, University of Calgary
(Presented by: Kevin Carlson, MD)

Poster #NM4
SOLIFENACIN AND TAMSULOSIN COMBINATION THERAPY IMPROVES QUALITY OF LIFE AND DECREASES URINE NGF LEVELS IN MALES WITH LOWER URINARY TRACT SYMPTOMS
Robert Chan, MD¹, Alvaro Munoz, PhD²; Evan Wenker³, Melissa Whipple⁴, Brian Miles, MD⁴ and Timothy Boone, MD, PhD⁴
¹Northwoods Urology, Shenandoah, Texas; ²Houston Methodist Research Institute, Houston, Texas; ³Baylor College of Medicine, Houston, Texas; ⁴Houston Methodist Hospital Department of Urology, Houston, Texas
(Presented by: Evan Wenker)

Poster #NM5
THE EFFICACY OF SOLIFENACIN FOR PREVENTION OF CATHETER RELATED BLADDER DISCOMFORT AFTER TRANSURETHRAL RESECTION OF BLADDER TUMOR IN NONMUSCLE INVASIVE BLADDER CANCER PATIENTS: A PROSPECTIVE, RANDOMIZED, MULTICENTER STUDY
Dongwan Sohn, MD¹, Hokyung Seo, MD² and Sung Dae Kim, MD³
¹Yeuido St.Mary's Hospital/Seoul/Korea; ²National Cancer Center, Korea; ³Jeju National Univrsity, Jeju, Korea
(Presented by: Dongwan Sohn, MD)

Poster #NM6
HIGH-FLOW URETHRAL OBSTRUCTION: A REAL ENTITY
Nitin Sharma, MD¹ and Jerry Blaivas, MD²
¹Lenox Hill Hospital, New York, NY; ²Institute for Bladder and Prostate Research, New York, NY
(Presented by: Nitin Sharma, MD)

Poster #NM7
ONABOTULINUMTOXIN A IN PATIENTS WITH A HISTORY OF PRIOR PELVIC RADIATION THERAPY
David Flores, MD¹, Stephen Mock, MD², Joshua Broghammer, MD³, Tomas Griebling, MD,MPH³, Roger Dmochowski, MD² and Priya Padmanabhan, MD,MPH³
¹Kansas City, KS; ²Vanderbilt University Medical Center; ³The University of Kansas Medical Center
(Presented by: David Flores, MD)
Poster #NM8
UROLOGICAL SURVEILLANCE AND MEDICAL COMPLICATIONS AFTER SPINAL CORD INJURY IN THE UNITED STATES
Anne P. Cameron, MD1, Julie Lai2, Christopher S. Saigal, MD3 and J. Quentin Clemens, MD, MSCI1
1Ann Arbor, MI; 2Santa Monica, CA; 3Los Angeles, CA
(Presented by: Anne P. Cameron, MD)

Poster #NM9
BLADDER DYSFUNCTION IN MULTIPLE SCLEROSIS
Gerard Pregenzer, MD1, Marlene Murphy-Setzko, MD2, Matthew P. Farr MS, PT2, Amy C. Neal PA-C, MSCS2, Beth M. Anderson, PhD2 and Jennifer A. Ruiz DPT2
1University of Connecticut, Farmington, CT; 2Mandell Center for Multiple Sclerosis, Mount Sinai Rehabilitation Hospital, Hartford, CT
(Presented by: Gerard Pregenzer, MD)

Poster #NM10
MEDICAL COMPLICATIONS AND UROLOGICAL SURVEILLANCE IN THE UNITED STATES ADULT SPINA BIFIDA POPULATION
Yahir Santiago-Lastra, MD1, Anne Pelletier Cameron, MD1, Julie Lai, MPH2, Christopher Saigal, MD3 and J. Quentin Clemens, MD1
1University of Michigan, Ann Arbor, MI; 2RAND Corporation, Santa Monica, CA; 3University of California - Los Angeles, Los Angeles, CA
(Presented by: Yahir Santiago-Lastra, MD)

Poster #NM11
ACCURATELY MEASURING RENAL FUNCTION IN ADULT MYELOMENINGOCELE PATIENTS- VOLUMETRIC-BASED MEASUREMENTS ARE NO BETTER THAN CREATININE-BASED MEASUREMENTS
Sarah Coleman, MD1, Wadih Karim1, Patrik Luzny, MD2, Jeremy Myers, MD2, Brian Herts, MD1 and Hadley Wood, MD1
1Cleveland Clinic Foundation, Cleveland, OH; 2University of Utah, Salt Lake City, UT
(Presented by: Sarah Coleman, MD)

Poster #NM12
UTILIZING MORE RESTRICTIVE CRITERIA FOR OBTAINING URODYNAMICS IN WOMEN WITH MULTIPLE SCLEROSIS, DOES NOT RESULT IN MORE WORRISOME FINDINGS
Himanshu Aggarwal, MD, MS, Rebecca Lavelle, MD, Louise A. Gliga, Alana L. Christie, Gary E. Lemack, MD UTSW
(Presented by: Himanshu Aggarwal, MD, MS)

Poster #NM13
AN ARGUMENT FOR THE DYNAMIC STATE OF NEUROGENIC BLADDER IN THE CERVICAL LEVEL SPINAL CORD INJURY PATIENT
Benjamin Yuh, MD, Claudia Sevilla, MD, David Ginsberg, MD
USC Institute of Urology, Los Angeles, CA; Rancho Los Amigos National Rehabilitation Center, Downey, CA
(Presented by: Benjamin Yuh, MD)

Poster #NM14
ASSOCIATION BETWEEN DISABILITY STATUS AND URINARY SYMPTOMS IN PATIENTS WITH MULTIPLE SCLEROSIS
Lisa Parrillo, MD, Salim Chahin, MD, Anna Malykhina, PhD, Tom Bavaria, BS, Diane Newman DNP FAAN BCB-PMD, Alan Wein, MD, PhD (Hon), Ariana Smith, MD
Divisions of Urology and Neurology, University of Pennsylvania, Philadelphia PA
(Presented by: Lisa Parrillo)

Poster #NM15
OUTCOME OF MID-URETHRAL SLING EXCISION IN PATIENTS WITH NEUROGENIC BLADDER CONDITIONS
Himanshu Aggarwal, MD, MS, Philippe E Zimmern, MD, Gary E. Lemack, MD
(Presented by: Himanshu Aggarwal, MD, MS)
Male Incontinence/Urodynamics Podium Session
Moderated by: Ryan M. Krlin, MD & Henry Lai, MD
Thursday, February 26, 2015
5:30 p.m. – 7:00 p.m.
See page 215 for abstracts

Podium #9
TRANSCORPORAL ARTIFICIAL URINARY SPHINCTER: DOES THIS TECHNIQUE REDUCE THE RISK OF EROSION IN HIGH–RISK PATIENTS?
Casey Kowalik, MD¹, Leonard Zinman, MD², Alex Vanni, MD² and Arthur Mourtzinos, MD, MBA²
¹Lahey Hospital & Medical Center; ²Lahey Hospital & Medical Center, Burlington, MA
(Presented by: Casey Kowalik, MD)

Podium #10
PATIENT CHARACTERISTICS AND NATIONAL TRENDS IN INPATIENT MALE URINARY INCONTINENCE SURGERY IN THE UNITED STATES
Rena D Malik, MD, Joseph J Pariser, MD, Shane M Pearce, MD, Doreen E Chung, MD, Gregory T Bales, MD
Chicago, IL
(Presented by: Rena D Malik, MD)

Podium #11
EFFECTS OF RADIATION THERAPY ON DEVICE SURVIVAL AMONG INDIVIDUALS WITH ARTIFICIAL URINARY SPHINCTERS
Marelino Rivera, MD, Matthew Ziegelmann, MD, Brian Linder, MD, Boyd Viers, MD, Laureano Rangel BA, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Matthew Ziegelmann, MD)

Podium #12
CYSTOMETRIC EVALUATION OF BLADDER FUNCTION IN PANNEXIN 1 AND IN P2X7 RECEPTOR DEFICIENT FEMALE MICE
Nuan Cui, MD¹, Hiromitsu Negoro, MD, PhD² and Sylvia Suadicani, PhD³
¹Department of OB/GYN, Montefiore Medical Center/Albert Einstein College of Medicine, Bronx, NY; ²Department of Urology, Kyoto University Graduate School of Medicine, Kyoto, Japan; ³Department of Urology, Albert Einstein College of Medicine, Bronx, NY
(Presented by: Nuan Cui, MD)

Podium #13
INTERVENTIONS TO DECREASE ANXIETY IN PATIENTS UNDERGOING URODYNAMIC TESTING: A RANDOMIZED CONTROLLED TRIAL
Ellen Solomon, MD¹ and Beri Ridgeway, MD²
¹Baystate Medical Center, Springfield Mass; ²Cleveland Clinic, Cleveland, Ohio
(Presented by: Ellen Solomon, MD)

Podium #14
A MODERN COMPARISON OF URODYNAMIC FINDINGS IN NONDIABETIC VERSUS DIABETIC FEMALES
Rena D. Malik, MD¹, Jessica Volsky, MD¹, Joshua A. Cohn, MD¹, Charles Chang, MD², Gregory T. Bales, MD¹ and Doreen E. Chung, MD¹
¹Chicago, IL; ²Seattle, WA
(Presented by: Rena D. Malik, MD)

Podium #15
UNDERACTIVE BLADDER IS A VOLUME HYPOSENSITIVITY SYNDROME AND DOES NOT PREDICT DETERUSOR UNDERACTIVITY
Phillip Smith, MD
University of Connecticut, Farmington CT
(Presented by: Phillip Smith, MD)
Podium #16
CORRELATION OF CONTINUOUS URGENCY AND STANDARD SENSORY THRESHOLDS DURING URODYNAMICS TESTING IN PATIENTS WITH OVERACTIVE BLADDER
Andrew Colhoun, MD¹, John Speich, PhD², Jay Sulek, MD¹, Paul Ratz, PhD³, R. Wayne Barbee, PhD⁴, J. Tyler Roseman, MD¹ and Adam Klausner, MD¹
¹Department of Surgery/Division of Urology, Virginia Commonwealth University School of Medicine, Richmond, Virginia; ²Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University School of Engineering, Richmond, Virginia; ³Departments of Biochemistry and Pediatrics, Virginia Commonwealth University School of Medicine, Richmond, Virginia; ⁴Department of Emergency Medicine, Virginia Commonwealth University School of Medicine, Richmond, Virginia
(Presented by: Andrew Colhoun, MD)

Podium #17
THE IMPACT OF FLUOROURODYNAMICS ON PATIENT CARE
Lindsey Cox, MD¹, Anne Suskind, MD², Chang He¹, Anne Cameron, MD¹, Bahaa Malaeb, MD¹, John Stoffel, MD¹, Ann Oldendorf, MD¹ and J. Quentin Clemens, MD¹
¹University of Michigan, Ann Arbor, MI; ²University of California, San Francisco, San Francisco, CA
(Presented by: Lindsey Cox, MD)
Poster #M10
THE EFFICACY OF ONABOTULINUMTOXINA (BOTOX) IN PATIENTS WITH URGE URINARY INCONTINENCE WHO FAILED SACRAL NEUROMODULATION (INTERSTIM)
Gina Kirkpatrick, DO, MPH, MBA, Gordon Brown, DO, FACOS, and David Sussman, DO, FACOS
Rowan University, Stratford, NJ; Delaware Valley Urology, Voorhees, NJ
(Presented by: Gina Kirkpatrick, DO, MPH, MBA)

Poster #M11
HEALTH INSURANCE TYPE AND SELF-REPORTED URINARY INCONTINENCE RATES AMONG WOMEN BETWEEN 20 AND 65 YEARS OF AGE
Evgeniy Kreydin, MD, Michelle Kim, MD, PhD, Dicken Ko, MD
Massachusetts General Hospital, Boston, MA
(Presented by: Evgeniy Kreydin, MD)

Poster #M12
PREDICTORS OF READMISSION FOLLOWING OPEN AND MINIMALLY INVASIVE SACRAL COLPOPEXY USING THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP) DATABASE
Ahmed Sarhan, MD, Ahmad Shabsigh, MD, Ketul Shah, MD
Urology Department, The Ohio State University
(Presented by: Ahmed Sarhan, MD)

Poster #M13
THE EFFECT OF TIME TO REVISION OF AN OBSTRUCTING SYNTHETIC MID-URETHRAL SLING ON REOPERATION FOR STRESS URINARY INCONTINENCE
Nitya Abraham, MD, Iryna Makovey, MD, Ashley King, MD, Howard B. Goldman, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, Ohio
(Presented by: Nitya Abraham, MD)

Poster #M14
SURGICAL MANAGEMENT OF MIXED URINARY INCONTINENCE
Bilal Chughtai, MD, Nicholas Hauser, MD, Leanna Laor, MD, Jialin Mao, MD, Richard Lee, MD, Steven Kaplan, MD, Alexis Te, MD, and Art Sedrakyan, MD, PhD
Weill Cornell Medical College, New York, NY; Weill Cornell Medical College, Department of Urology, New York, NY; Weill Cornell Medical College, New York, NY 10065
(Presented by: Nicholas Hauser, MD)

Poster #M15
FLOW DISRUPTIONS IN ABDOMINAL SACROCOLPOPEXY: DOES ROBOTIC SURGERY INTRODUCE UNFORESEEN CHALLENGES FOR SURGEONS?
Colby E. Perkins, BA, Ken Catchpole, PhD, Karyn S. Elber, MD, Lauren N. Wood, MD, Ronit Lyon, BA, Bruno Gross, BA, Samantha Jagannathan, BS, Niv Hakami, BS, Matthias Weigl, PhD, and Jennifer T. Anger, MD, MPH
David Geffen School of Medicine at UCLA, Los Angeles, CA; Cedars–Sinai Medical Center, Los Angeles CA; Texas A&M College of Medicine, Bryan, TX; St. Louis University School of Medicine, St. Louis, MO; Ludwig Maximilian University of Munich, Munich, Germany
(Presented by: Lauren N. Wood, MD)
Poster #M16
INDICATIONS FOR REVISION OF AN OBSTRACTING SYNTHETIC MID-URETHRAL SLING
Nitya Abraham, MD, Iryna Makovey, MD, Howard B. Goldman, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, Ohio
(Presented by: Nitya Abraham, MD)

Poster #M17
INITIAL RETENTION AFTER MACROPLASTIQUE® (MPQ) INJECTION MAY BE A PREDICTOR OF SUCCESS
Himanshu Aggarwal, MD, MS, Philippe E. Zimmern, MD
(Presented by: Himanshu Aggarwal, MD, MS)

Poster #M18
PREOPERATIVE TESTING FOR URETHRAL SLING SURGERY FOR STRESS URINARY INCONTINENCE: OVERUSE, UNDERUSE, AND COST IMPLICATIONS
Tom S. Feng, MD¹, Colby E. Perkins, BA², Lauren N. Wood, MD¹, Jerome K. Wang, MD³, Jenna F. Borok, BS², Alex J. Hannemann⁴, Catherine Bresee, MS⁵, Karyn S. Eilber, MD¹ and Jennifer T. Anger, MD, MPH¹
¹Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA; ²David Geffen School of Medicine at UCLA, Los Angeles, CA; ³Department of Internal Medicine, Cedars-Sinai Medical Center, Los Angeles, CA; ⁴Augustana College, Sioux Falls, SD; ⁵Cedars-Sinai Biostatistics & Bioinformatics Research Center, Los Angeles, CA
(Presented by: Lauren N. Wood, MD)

Poster #M19
HOLMIUM LASER EXCISION OF GENITOURINARY MESH EXPOSURE FOLLOWING ANTI-INCONTINENCE SURGERY: MINIMUM 6 MONTH FOLLOW-UP
Christina Ogle, MD, Brian Linder, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Christina Ogle, MD)
Poster #NM16
DETRUSOR OVERACTIVITY ON URODYNAMICS PREDICTS PERSISTENCE OF URGENCY AFTER SLING PROCEDURE
Catherine Chen, MD, Christopher Wolter, MD
Mayo Clinic Arizona, Phoenix, Arizona
(Presented by: Catherine Chen, MD)

Poster #NM17
USING TRANSLABIAL ULTRASOUND TO VISUALIZE MESH EROSION INTO THE URETHRA AND BLADDER
Seth Cohen, MD,1 Karoly Viragh, MD,2 Leah Nakamura, MD,1 Anne Ackerman, MD,1 Pat Ramart, MD,1 Diana Kang, MD,1 Judy Choi, MD,1 Ja-Hong Kim, MD,1 Steven Raman, MD,2 and Shlomo Raz, MD,1
1Department of Urology, UCLA, Los Angeles, CA; 2Department of Radiology, UCLA, Los Angeles, CA
(Presented by: Seth Cohen, MD)

Poster #NM18
GENERAL ANESTHESIA FOR MIDURETHRAL SLING: TO PARALYZE OR NOT?
Bhumy Davé, MD1, Camaleigh Jaber, BS2, Alix Leader-Cramer, MD1, Nicole Higgins, MD3, Margaret Mueller, MD1, Lisa Labin Johnson, MD1, Christina Lewicky-Gaup, MD1 and Kimberly Kenton, MD1
1OB/GYN, Division of Female Pelvic Medicine & Reconstructive Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL; 2Loyola University Chicago Stritch School of Medicine, Chicago, IL; 3Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL
(Presented by: Bhumy Davé, MD)

Poster #NM19
FUNCTIONAL INDEPENDENCE MEASURE AND GLASGOW COMA SCORES PREDICT URINARY AND FECAL INCONTINENCE AFTER TRAUMATIC BRAIN INJURY
David Osborn, MD1, Jill Danford, MD2, Stephen Mock, MD2, Brook Brown, MD2, W. Stuart Reynolds, MD, MPH2, Melissa Kaufman, MD, PhD2 and Roger Dmochowski, MD, MMHC2
1Bethesda, MD; 2Vanderbilt University, Nashville, TN
(Presented by: David Osborn, MD)

Poster #NM20
HOW WELL CAN UROLOGY TRAINEES DETECT SUBURETHRAL MESH USING TRANSLABIAL US IN COMPARISON TO A RADIOLOGIST?
Daniel Faaborg, MD, Glen Rouse, MD, Muhammad Alsyouf, MD, Myklak Kristene, MD and Staack Andrea, MD
Loma Linda, CA
(Presented by: Daniel Faaborg, MD)

Poster #NM21
PREVALENCE OF OBSTRUCTIVE SLEEP APNEA DETECTED BY THE BERLIN QUESTIONNAIRE IN PATIENTS WITH NOCTURIA ATTENDING A UROGYNECOLOGY UNIT
Harold Drutz, MD, Salomon Zebede, MD, May Alarab, MD and Danny Lovatsis, MD
Mount Sinai Hospital, University of Toronto, Toronto, Ontario, Canada
(Presented by: Harold Drutz, MD)
Poster #NM22
STRESS AND OVERACTIVE BLADDER SYMPTOMS
H. Henry Lai, MD, Vivien Gardner, Joel Vetter, MS, Gerald Andriole, MD
Washington University School of Medicine, St Louis, MO
(Presented by: H. Henry Lai, MD)

Poster #NM23
ARE PELVIC SURGEONS AWARE OF THEIR SURGICAL FAILURES? – PATIENT PERCEPTIONS AFTER FAILED INCONTINENCE OR PELVIC ORGAN PROLAPSE SURGERY
Christopher Elliott, MD, PhD¹ and Eric Sokol, MD²
¹Santa Clara Valley Medical Center Department of Urology, San Jose, CA & Stanford University School of Medicine, Department of Urology, Stanford CA; ²Stanford University School of Medicine, Department of Obstetrics and Gynecology, Stanford, CA
(Presented by: Christopher Elliott, MD, PhD)

Poster #NM24
THE IMPACT OF OBESITY ON OUTCOMES AFTER RETROPUBIC MIDURETHRAL SLING FOR FEMALE STRESS URINARY INCONTINENCE
Umar Karaman, MD, Kevin Campbell MS, Clifton F. Frilot II, PhD, Alex Gomelsky, MD
LSU Health-Shreveport, LA
(Presented by: Umar Karaman, MD)

Poster #NM25
THE RISK OF STRESS INCONTINENCE AND PELVIC ORGAN PROLAPSE SURGERY AFTER A PELVIC FRACTURE
Blayne Welk, MD, MSc¹, Hana'a Al-Hothi, MD², Barry MacMillan, MD³, Queena Chou, MD³ and Abdel-Rahman Lawendy, MD, PhD³
¹London, ON; ²Hamad Medical Center, Qatar; ³Western University, London
(Presented by: Blayne Welk, MD, MSc)

Poster #NM26
OUTCOMES OF AUTOLOGOUS RECTUS FASCIA PUBOVAGINAL SLING FOR STRESS URINARY INCONTINENCE AT MEAN SIX-YEAR FOLLOW-UP
Eugene Lee, MD¹, Andrew Chang, PhD², Una Lee, MD¹, Alvaro Lucioni, MD¹, John Massman, PhD¹, Erika Wolff, PhD¹, Fred Govier, MD¹ and Kathleen Kobashi, MD¹
¹Virginia Mason, Seattle, WA; ²Stony Brook School of Medicine, Stony Brook, NY
(Presented by: Eugene Lee, MD)

Poster #NM27
CHANGING PRACTICE PATTERNS IN VAGINAL MESH SURGERY FOR PELVIC ORGAN PROLAPSE IN TERTIARY CARE CENTERS
Austin Younger, MD¹, Goran Rac, BS¹, J. Quentin Clemens, MD², Kathleen Kobashi, MD², Aqsa Khan, MD², Victor Nitti, MD², Ilana Jacobs, MD³, Gary E. Lemack, MD⁴, Elizabeth T. Brown, MD, MPH⁵, Roger Dmochowski, MD⁵, David Ginsberg, MD⁷, Michelle Koski, MD⁶, Ross Rames, MD¹ and Eric Rovner, MD¹
¹Department of Urology, Medical University of South Carolina, Charleston, SC; ²Department of Urology, University of Michigan Health Science Center, Ann Arbor, MI; ³Section of Urology and Renal Transplantation, Virginia Mason Medical Center, Seattle, WA; ⁴Department of Urology, New York University Langone Medical Center, New York, NY; ⁵Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX; ⁶Department of Urologic Surgery, Vanderbilt University Medical Center, Nashville, TN; ⁷Institute of Urology, Keck Medicine of University of South Carolina, Los Angeles, CA; ⁸Urology of Kaiser Permanente Medical Center, San Diego, CA
(Presented by: Austin Younger, MD)
Abstract Summaries

Poster #NM28
CHANGING PRACTICE PATTERNS IN VAGINAL MESH SURGERY FOR STRESS URINARY INCONTINENCE IN TERTIARY CARE CENTERS
Austin Younger, MD1, Goran Rac, BS1, J. Quentin Clemens, MD2, Kathleen Kobashi, MD3, Aqsa Khan, MD4, Victor Nitti, MD4, Ilana Jacobs, MD5, Gary E. Lemack, MD6, Elizabeth T. Brown, MD, MPH7, Roger Dmochowski, MD8, David Ginsberg, MD9, Michelle Koski, MD9, Ross Rames, MD1 and Eric Rovner, MD1
1Department of Urology, Medical University of South Carolina, Charleston, SC; 2Department of Urology, University of Michigan Health Science Center, Ann Arbor, MI; 3Section of Urology and Renal Transplantation, Virginia Mason Medical Center, Seattle, WA; 4Department of Urology, New York University Langone Medical Center, New York, NY; 5Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX; 6Department of Urologic Surgery, Vanderbilt University Medical Center, Nashville, TN; 7Institute of Urology, Keck Medicine of University of South Carolina, Los Angeles, CA; 8Urology of Kaiser Permanente Medical Center, San Diego, CA
(Presented by: Austin Younger, MD)

Poster #NM29
LONG-TERM OUTCOMES OF RETROPUBIC MIDURETHRAL SLINGS FOR STRESS URINARY INCONTINENCE IN A TERTIARY REFERRAL SETTING
Kevin Gioia, Katherine Odem-Davis, PhD1, John Massman, PhD2, Erika Wolff, PhD2, Alvaro Lucioni, MD2, Una Lee, MD2 and Kathleen Kobashi, MD2
1Center for Biomedical Statistics, Institute of Translational Health Sciences; 2Virginia Mason
(Presented by: Kevin Gioia)

Poster #NM30
HOW, DOES A COMPLIANT AIR-FILLED INTRAVESICAL BALLOON INCREASE THE ABDOMINAL PRESSURE REQUIRED TO INDUCE STRESS URINARY INCONTINENCE RELATED LEAKAGE?
Kurt McCammon, MD1, Ryan Cahill, BSME2 and Scott Duncan, BSME2
1Urology of Virginia; 2Solace Therapeutics, Framingham, MA
(Presented by: Kurt McCammon, MD)

Poster #NM31
AUTOLOGOUS TRANSOBTURATOR URETHRAL SLING PLACEMENT FOR FEMALE STRESS URINARY INCONTINENCE
Brian Linder, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Poster #NM32
PATIENT QUALITY OF LIFE AFTER REMOVAL OF VAGINAL MESH
Diana Kang, MD, Tamara Hartshorn, MD1, Matthew Pollard, MD1, Judy Choi, MD1, Larissa Rodriguez, MD2, Ja-Hong Kim, MD1, Anne Ackerman, MD1, Seth Cohen, MD1, Patkawat Ramapart, MD1 and Shlomo Raz, MD1
1UCLA, Los Angeles, CA; 2USC, Los Angeles, CA
(Presented by: Diana Kang, MD)

Poster #NM33
CHARACTERISTICS OF WOMEN ATTENDING PELVIC FLOOR MUSCLE TRAINING
Landon Erickstad, MD1, Ahmad Azzawe, BS1, Jenny Lewis PT2, Clifton F. Frilot II, PhD1 and Alex Gomelsky, MD1
1LSU Health-Shreveport, LA; 2Willis-Knighton Health System, Shreveport, LA
(Presented by: Landon Erickstad, MD)

Poster #NM34
DEVELOPMENT OF FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY FELLOWSHIP PROGRAMS SINCE THE DEADLINE FOR SENIOR ACCREDITATION
Allison Polland, MD, Neil Graffstein, MD
Icahn School of Medicine at Mount Sinai
(Presented by: Allison Polland, MD)
Poster #NM35
THE EFFECT OF AGE ON RE-INTERVENTION FOR STRESS URINARY INCONTINENCE
Bilal Chughtai, MD¹, Jessica Buck¹, Jialin Mao², Richard Lee, MD¹, Alexis Te, MD¹, Steven Kaplan, MD¹ and Art Sedrakyan²
¹Department of Urology, Weill Medical College of Cornell University, New York-Presbyterian Hospital, New York, NY; ²Department of Public Health, Weill Medical College of Cornell University, New York-Presbyterian Hospital, New York, NY
(Presented by: Jessica Buck)

Poster #NM36
VALIDATION OF THE SEAPI-S QUESTIONNAIRE
Elizabeth Tourville, MD, Joel Funk, MD, FACS, Christian Twiss, MD, FACS
University of Arizona College of Medicine
(Presented by: Elizabeth Tourville, MD)

Poster #NM37
MANAGEMENT OF PATIENTS SEEKING CARE FOR STRESS URINARY INCONTINENCE OVER THE PAST FOUR YEARS: HAVE RATES OF MESH SLINGS DECREASED?
Aqsa Khan, MD, Nirit Rosenblum, MD, Benjamin Brucker, MD, Scott Smilen, MD, Ekene Enemchukwu, MD, Victor Nitti, MD
New York University, New York, NY
(Presented by: Aqsa Khan, MD)

Poster #NM38
FOUR-YEAR TRENDS IN URETHRAL BULKING AND SLING PROCEDURES AFTER RELEASE OF UPDATED FDA PUBLIC HEALTH NOTIFICATION ON VAGINAL MESH
Aqsa Khan, MD, Nirit Rosenblum, MD, Benjamin Brucker, MD, Scott Smilen, MD, Ekene Enemchukwu, MD, Victor Nitti, MD
New York University, New York, NY
(Presented by: Aqsa Khan, MD)

Poster #NM39
OPTIMIZATION OF TREATMENT FOR OVERACTIVE BLADDER PATIENTS
Elisabeth Ferlic, MD¹ and Steven Siegel, MD²
¹Intermountain Urological Institute, Salt Lake City, UT; ²Woodbury MN
(Presented by: Elisabeth Ferlic, MD)

Poster #NM40
EFFECT ON CONCURRENT PROLAPSE SURGERY ON URGENCY AND FREQUENCY OUTCOMES FOLLOWING TVTO
MaryEllen Dolat, MD¹, Andrew Colhoun, MD¹, Joseph Habibi, MD¹, Zachary McDowell, BS¹ and David Rapp, MD¹,²
¹VCU School of Medicine, Richmond, VA; ²Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA
(Presented by: Andrew Colhoun, MD)

Poster #NM41
WITHDRAWN

Poster #NM42
WITHDRAWN

Poster #NM43
THE DIGITAL FOOTPRINT OF ACADEMIC UROLOGISTS: HOW, DOES FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY STAND?
Bradley Gill, MD, MS¹, Margaret Knodler, BS², Paurush Babbar, MD¹, Daniel Shoskes, MD¹ and Sandip Vasavada, MD¹
¹Cleveland Clinic, Cleveland, Ohio; ²Tulane University Shool of Medicine, New Orleans, Louisiana
(Presented by: Bradley Gill, MD, MS)
Abstract Summaries

*Video Session I
Moderated by: Priya Padmanabhan, MD, NPH & Jason Kim, MD
Friday, February 27, 2015
7:00 a.m. – 8:00 a.m.
See page 257 for abstracts
*Not CME Accredited

Video #1
CHRONIC PELVIC PAIN & SUI RESOLUTION AFTER LAPAROSCOPIC TVT _REMOVAL & BURCH/PARAVAGINAL REPAIR
John Miklos, Robert Moore, DO, Orawee Chinthakanan, MD
International Urogynecology Associates, Atlanta, GA
(Presented by: John Miklos)

Video #2
OBTURATOR NEURALGIA: COMPLETE RESOLUTION AFTER TRANSVAGINAL LAPAROSCOPIC TVT REMOVAL
John Miklos, Robert Moore, DO, Orawee Chinthakanan, MD
International Urogynecology Associates, Atlanta, GA
(Presented by: John Miklos)

Video #3
THE 26–MINUTE SACRAL COLPOPEXY: DO WE NEED ROBOTIC TECHNOLOGY?
John Miklos, Robert Moore, DO
International Urogynecology Associates, Atlanta GA
(Presented by: John Miklos)

Video #4
TRANSABDOMINAL SACROCOLPOPEXY WITH RECTUS FASCIA GRAFT
Adrienne Quirouet, MD1, Nitya Abraham, MD2 and Howard Goldman, MD1
1Cleveland Clinic, Cleveland, OH; 2Montefiore, Bronx, NY
(Presented by: Adrienne Quirouet, MD)

Video #5
ROBOTIC URETERAL REIMPLANTATION FOR IATROGENIC DISTAL URETERAL INJURY
Sarah McAchran, MD, Granville Lloyd, MD
Madison, WI
(Presented by: Sarah McAchran, MD)

Video #6
IDENTIFICATION OF THE S3 FORAMEN DURING TRANSFORAMINAL SACRAL NEUROMODULATION LEAD PLACEMENT− A NOVEL “ROLLING PEN” TECHNIQUE
Kristi Hebert, MD, Amanda Saltzman, MD1, Howard Woo, MD2 and Ryan Krlin, MD3
1Louisiana State University/Ochsner Clinic Foundation, New Orleans, Louisiana; 2Ochsner Clinic Foundation; 3Louisiana State University
(Presented by: Amanda Saltzman, MD)
Podium #18
REDUCING OPERATING ROOM TURNOVER TIME FOR ROBOTIC PELVIC SURGERY
Colby E. Perkins, BA¹, Ken Catchpole, PhD², Lauren N. Wood, MD³, M. Jonathon Solnik, MD⁴, Raymund M. Avenido, RN², Paul L. Strauss, MD⁵, Karyn S. Eilber, MD⁶ and Jennifer T. Anger, MD, MPH³
¹David Geffen School of Medicine at UCLA, Los Angeles, CA; ²Department of Surgery, Cedars-Sinai Medical Center, Los Angeles, CA; ³Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA; ⁴Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA; ⁵Department of Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA
(Presented by: Lauren N. Wood, MD)

Podium #19
ASSESSING THE LEARNING CURVE OF ROBOTIC SACROCOLPOPEXY
Brian Linder, MD, Mallika Anand, MD, Amy Weaver, MS, Joshua Woelk, MD, Christopher Klingele, MD, Emanuel Trabuco, MD, John Occhino, MD, John Gebhart, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Podium #20
DERMAL GRAFT (AXIS) AUGMENTED CYSTOCELE REPAIR; FIVE YEARS FOLLOW-UP
Saad Juma, MD
Incontinence Research Institute, Encinitas, CA
(Presented by: Saad Juma, MD)

Podium #21
PROLAPSE RECURRENCE AFTER TRANSVAGINAL MESH REMOVAL
Tanner Rawlings¹, Rebecca S. Lavelle, MD², Burhan Coskun, MD², Feras Alhalabi, MD², Alana Christie² and Philippe E. Zimmern, MD²
¹UT Southwestern Medical School, Dallas, Texas; ²UT Southwestern Medical Center, Dallas, Texas
(Presented by: Tanner Rawlings)

Podium #22
ANALYSIS OF SEXUAL FUNCTION CHANGES IN WOMEN UNDERGOING PELVIC ORGAN PROLAPSE REPAIR WITH ABDOMINAL OR VAGINAL APPROACHES
Priyanka Gupta, MD¹, Michael Ehlert, MD¹, James Payne², Kim A. Killinger, MSN¹, Judith A. Boura, MS¹,², Wendy Price RN, BSN¹, Melissa Fischer, MD¹,² and Larry T. Sirls, MD¹,²
¹Beaumont Health System, Royal Oak, MI; ²Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Podium #23
ASSESSING RESIDENT SURGICAL VOLUME BEFORE AND AFTER INITIATION OF A FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY FELLOWSHIP
Zaid Chaudhry, MD, Christopher Tarnay, MD
UCLA, Los Angeles, CA
(Presented by: Zaid Chaudhry, MD)
Podium #24
READMISSIONS AND HEALTH RESOURCE UTILIZATION SUBSEQUENT TO ROBOTIC SACROCOLPOPEXY
Vani Dandolu, MD, MPH, MBA, Meghana Reddy, Lannah Lua, MD, Prathamesh Pathak B. Parm, MS
UNSONM, Las Vegas, NV
(Presented by: Vani Dandolu, MD, MPH, MBA)

Podium #25
OUTCOME OF DIRECT VISUAL INTERNAL URETHROTOMY (DVIU) FOR POST-URETHROPLASTY STRICTURES
Stephen Mock, MD, Elizabeth Brown, MD, W. Stuart Reynolds, MD, Melissa R. Kaufman, MD, PhD, Douglas F. Milam, MD, Roger R. Dmochowski, MD
Vanderbilt University Medical Center, Nashville, TN
(Presented by: Stephen Mock, MD)

Podium #26
PREDICTORS OF SYMPTOMATIC URETERO-ENTERIC ANASTOMOTIC STRICTURES AFTER RADICAL CYSTECTOMY AND URINARY DIVERSION
Katherine Brewer, MD1, Gillian Stearns, MD2, Guido Dalbagni, MD2 and Jaspreet Sandhu, MD2
1Icahn School of Medicine at Mount Sinai; 2Memorial Sloan Kettering Cancer Center
(Presented by: Katherine Brewer, MD)
Male Incontinence/Urodynamics/Neuromodulation Moderated Poster Session
Moderated by: Michael E. Albo, MD & Christopher E. Kelly, MD
Friday, February 27, 2015
8:30 a.m. – 10:00 a.m.
See page 268 for abstracts

Poster #M20
A PROSPECTIVE EVALUATION OF COMPLICATIONS AFTER ARTIFICIAL URINARY SPHINCTER PLACEMENT AND THEIR IMPACT ON DEVICE SURVIVAL
Brian Linder, MD, Joshua Piotrowski, Matthew Zieglemann, MD, Tanner Miest, Marcelino Rivera, MD, Christina Ogle, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Poster #M21
OUTCOMES FOR ARTIFICIAL URINARY SPHINCTER PLACEMENT AFTER PRIOR MALE URETHRAL SLING FAILURE
Matthew Ziegelmman, MD, Brian Linder, MD, Marcelino Rivera, MD, Christina Ogle, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Matthew Ziegelmman, MD)

Poster #M22
THE IMPACT OF BASELINE FUNCTIONAL BLADDER CAPACITY ON NEUROMODULATION OUTCOMES
Michael Ehlert, MD, Kim A. Killinger, RN, MSN, Judith A. Boura, Jason Gilleran, MD, Priyanka Gupta, MD, Cheryl Wolfert RN, Jamie Bartley, DO, Kenneth M. Peters, MD
Beaumont Health System, Royal Oak, MI
(Presented by: Michael Ehlert, MD)

Poster #M23
DIFFERENCES BETWEEN VOLTAGE THRESHOLD FOR MOTOR RESPONSE DURING STAGE 1 NEUROMODULATION IMPLANT
Jason Gilleran, MD, Kim Killinger, MSN, Judith Boura, Michael Ehlert, MD, Priyanka Gupta, MD, Cheryl Wolfert, Jamie Bartley, DO, Kenneth Peters, MD
William Beaumont Hospital, Royal Oak, MI
(Presented by: Jason Gilleran, MD)

Poster #M24
THE IMPACT OF PRIOR BACK SURGERY ON UROLOGIC DIAGNOSES AND NEUROMODULATION OUTCOMES
Jamie Bartley, DO, Kim A. Killinger, RN, MSN, Judith A. Boura, Jason Gilleran, MD, Michael Ehlert, MD, Priyanka Gupta, MD, Cheryl Wolfert, RN, Kenneth M. Peters, MD
Beaumont Health System, Royal Oak, MI
(Presented by: Jamie Bartley, DO)

Poster #M25
LEAD POSITION DURING PUDENDAL NEUROMODULATION: A RADIOGRAPHIC ASSESSMENT
Michael Ehlert, MD, Travis Washington, Ajwad Bajwa, MD, Renee Cholyway, Kim A. Killinger, RN, MSN, Burton Ellis, MD and Kenneth M. Peters, MD
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Michael Ehlert, MD)

Poster #M26
EFFECT OF AGEING ON DETRUSOR FORCE IN WOMEN. EVALUATION FROM MATHEMATICAL MODELING OF PRESSURE-FLOW STUDIES
Françoise A. Valentini, MD, PhD, Pierre P. Nelson, PhD, Gilberte Robain, MD, PhD and Philippe E. Zimmern, MD
1Physical Medicine and Rehabilitation, Hôpital Rothschild; 2Hôpital Rothschild, Paris, France; 3UT Southwestern Medical Center, Dallas, TX
(Presented by: Françoise A. Valentini, MD, PhD)
Poster #M27  
**INTRAETRUSOR BOTULINUM TOXIN INJECTIONS FOR THE MANAGEMENT OF IMPAIRED BLADDER COMPLIANCE REFRACTORY TO ANTI-CHOLINERGIC DRUGS**  
Dane Johnson, MD, Michael Guralnick, MD, FRCSC and Robert C. O'Connor, MD  
Medical College of Wisconsin, Milwaukee, WI  
(Presented by: Dane Johnson, MD)

Poster #M28  
**URODYNAMIC FINDINGS OF LOW BLADDER COMPLIANCE IN END STAGE RENAL DISEASE PATIENTS AWAITING RENAL TRANSPLANTATION ARE NOT ASSOCIATED WITH DECREASED GRAFT SURVIVAL OR URINARY COMPLICATIONS AFTER TRANSPLANT**  
John Stoffel, MD¹, Andrea Sorcini, MD², James Pomposelli, MD² and Arthur Mourtzinos, MD, MBA²  
¹University of Michigan, Ann Arbor MI; ²Lahey Clinic, Burlington MA  
(Presented by: John Stoffel, MD)

Poster #M29  
**COULD A NEWLY PROPOSED URODYNAMIC PARAMETER CHANGE URODYNAMIC DIAGNOSIS OF BLADDER OUTLET OBSTRUCTION IN MALE PATIENTS?**  
Michael Vainrib, MD¹ and Ariel Levi, MD²  
¹Meir Medical Center, Kfar Saba, Israel; ²Chief of Female Urology, Neurourology and Pelvic Reconstruction Service at Urology Dept. Meir Medical Center Kfar Saba Israel  
(Presented by: Michael Vainrib, MD)
Poster #NM44
GENDER DIFFERENCES IN URINARY BOTHER DUE TO STRESS URINARY INCONTINENCE
Matthew Nielsen, MD, Jack Zuckerman, MD, Ramon Virasoro, MD, Jeremy Tonkin, MD, Jessica Delong, MD, Kurt McCammon, MD
EVMS, Norfolk, Virginia
(Presented by: Matthew Nielsen, MD)

Poster #NM45
PLACEMENT OF AN INFLATABLE PENILE PROSTHESIS (IPP), DOES NOT CHANGE CONTINENCE OUTCOMES IN PATIENTS WITH A PRIOR PLACED TRANSOBTURATOR SLING (TOS)
Divya Ajay, MD, John Selph, MD, Michael Belsante, MD, Ngoc-Bich, Le, MD, Andrew Peterson, MD
Division of Urology, Duke University Medical Center, Durham, NC
(Presented by: Divya Ajay, MD)

Poster #NM46
URETHRAL MANAGEMENT DURING ARTIFICIAL URINARY SPHINCTER EXPLANTATION FOR EROSION
Brian Linder, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Poster #NM47
THE EFFECT OF BMI ON PRIMARY ARTIFICIAL URINARY SPHINCTER OUTCOMES AMONG MALES WITH STRESS URINARY INCONTINENCE
Boyd Viers, MD, Brian Linder, MD, Marcelino Rivera, MD, Laureano Rangel, Matthew Ziegelmann, MD, Daniel Elliott, MD
(Presented by: Boyd Viers, MD)

Poster #NM48
A COMPARISON OF ARTIFICIAL URINARY SPHINCTER DEVICE OUTCOMES AMONG PATIENTS WITH AND WITHOUT DIABETES
Boyd Viers, MD, Brian Linder, MD, Marcelino Rivera, MD, Laureano Rangel, Matthew Ziegelmann, MD, Daniel Elliott, MD
(Presented by: Boyd Viers, MD)

Poster #NM49
URODYNAMIC STUDY OUTCOMES AFTER HYSTERECTOMY
Michael Vainrib, MD
Meir Medical Center, Kfar Saba, Israel
(Presented by: Michael Vainrib, MD)

Poster #NM50
DYNAMIC COMPLIANCE: A NOVEL METRIC FOR THE URODYNAMIC FILLING PHASE
Andrew Colhoun, MD, John Speich, PhD, Jay Sulek, MD, Paul Ratz, PhD, R. Wayne Barbee, PhD, J. Tyler Roseman, MD and Adam Klausner, MD
1Department of Surgery/Division of Urology, Virginia Commonwealth University School of Medicine, Richmond, Virginia; 2Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University School of Engineering, Richmond, Virginia; 3Departments of Biochemistry and Pediatrics, Virginia Commonwealth University School of Medicine, Richmond, Virginia; 4Department of Emergency Medicine, Virginia Commonwealth University School of Medicine, Richmond, Virginia
(Presented by: Andrew Colhoun, MD)
Poster #NM51
BODY MASS INDEX IMPACTS REOPERATION RATES BUT NOT OVERALL OUTCOMES OF NEUROMODULATION
Priyanka Gupta, MD1, Michael Ehlert, MD1, Kim A. Killinger, MSN1, Judith A. Boura, MS1,2, Jason Gilleran, MD1,2, Cheryl Wolfert, RN1, Jamie Bartley, DO1,2 and Kenneth M. Peters, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Poster #NM52
NATIONAL PRACTICE PATTERNS IN INFECTION PROPHYLAXIS FOR INTERSTIM –A SURVEY OF HIGH-VOLUME PROVIDERS
Eugene Lee, MD, Alvaro Lucioni, MD, Una Lee, MD, Kathleen Kobashi, MD
Virginia Mason, Seattle, WA
(Presented by: Eugene Lee, MD)

Poster #NM53
OUTCOMES OF BILATERAL LEAD PLACEMENT FOR STAGE I OF SACRAL NEUROMODULATION TRIAL.
Adrienne Quirouet, MD, Ashley King, MD, Howard Goldman, MD, Raymond Rackley, MD, Courtenay Moore, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)

Poster #NM54
PREDICTORS OF INCOMPLETE BLADDER EMPTYING REQUIRING CIC FOLLOWING INTRADETRUSOR ONABOTULINUMTOXINA
Ekene Enemchukwu, MD, MPH, Neha Talreja, MD, Darren Bryck, MD, Andres Flores-Aguayo, MD, Victor Nitti, MD
NYU Langone Medical Center, New York, NY
(Presented by: Ekene Enemchukwu, MD, MPH)

Poster #NM55
TRENDS IN SECOND LINE THERAPY USE FOR OVERACTIVE BLADDER BEFORE AND AFTER FDA APPROVAL OF ONABOTULINUMTOXINA
Ekene Enemchukwu, MD, MPH, Neha Talreja, MD, Victor Nitti, MD
NYU Langone Medical Center, New York, NY
(Presented by: Ekene Enemchukwu, MD, MPH)

Poster #NM56
REMOVAL OF SACRAL NEUROMODULATION DEVICES FOR MAGNETIC RESONANCE IMAGING
Adrienne Quirouet, MD, Howard Goldman, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)
Abstract Summaries

Neuromodulation/OAB – Moderated Podium Session
Moderated by: Suzette E. Sutherland, MD & Steven W. Siegel, MD
Friday, February 27, 2015
4:00 p.m. – 5:00 p.m.
See page 286 for abstracts

Podium #27
PUDENDAL NEUROMODULATION AFTER FAILED SACRAL STIMULATION
Kenneth M. Peters, MD1,2, Priyanka Gupta, MD1, Michael Ehlert, MD1, Kim A. Killinger, MSN1, Judith A. Boura, MS1,2, Cheryl Wolfert, RN1, Jamie Bartley, DO1,2 and Jason Gilleran, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Kenneth M. Peters, MD)

Podium #28
RESULTS OF A PROSPECIVE, MULTICENTER STUDY EVALUATING THE EFFICACY AND SAFETY OF SACRAL NEUROMODULATION THROUGH 36 MONTHS IN SUBJECTS WITH SYMPTOMS OF OVERACTIVE BLADDER
Steven Siegel, MD, Jason Bennett, MD1, Jeffrey Mangel, MD2, Craig Comiter, MD3, Erin Bird, MD4, Tomas L. Griebling, MD, MPH5, Suzette E. Sutherland, MD6, Shenita Bolstrom, MS6, Fangyu Kan, MS7 and Karen Noblett, MD8
1Female Pelvic Medicine, Grand Rapids, MI; 2MetroHealth Medical Center, Cleveland, OH; 3Stanford University, Stanford, CA; 4Scott and White Healthcare, Temple, TX; 5University of Kansas, Kansas City, KS; 6University of Washington, Seattle, WA; 7Medtronic, Minneapolis, MN; 8University of California, Irvine, CA
(Presented by: Steven Siegel, MD)

Podium #29
SINGLE CENTER EXPERIENCE: SACRAL NEUROMODULATION REPROGRAMMING RATES
Sara Lenherr, MD, Cynthia Stroup PA–C, Heather Crossley, BA, Anne Pelletier Cameron, MD, John Stoffel, MD, Ann Oldendorf, MD, J. Quentin Clemens, MD, MSCI
University of Michigan, Ann Arbor, MI
(Presented by: Sara Lenherr, MD)

Podium #30
HEATING OF THE INTERSTIM SACRAL NEUROMODULATION DEVICE IN A SIMULATED PHANTOM MODEL DURING LUMBAR AND PELVIC MAGNETIC RESONANCE IMAGING (MRI)
Adrienne Quirouet, MD, Stephen Jones, MD, PhD, Pallab Bhattacharyya, PhD, Howard Goldman, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)

Podium #31
OBTAINING SACRAL MOTOR REFLEXES ON <4 ELECTRODES AT TIME OF STAGE 1 TINED LEAD PLACEMENT DOES NOT AFFECT CLINICAL OUTCOME
Jason Gilleran, MD, Kim Killinger, MSN, Judith Boura, Michael Ehlert, MD, Priyanka Gupta, MD, Cheryl Wolfert, Jamie Bartley DO, Kenneth Peters, MD
William Beaumont Hospital, Royal Oak, MI
(Presented by: Jason Gilleran, MD)

*Podium #32
SACRAL FORAMEN LOCALIZATION FOR NEEDLE PLACEMENT: DIAGNOSTIC ULTRASOUND VS. FLUOROSCOPY
Peter Rodine, MPH1, Phillip Falkner, DVM2, Tim Brelje, MS2, Katie Fullerton2 and Poornima Bedi, MS2
1Medtronic; 2Medtronic, Minneapolis, MN
(Presented by: Peter Rodine, MPH)
*Not CME Accredited
Podium #36
REAL-WORLD PATTERNS OF OVERACTIVE BLADDER (OAB) CARE IN THE UNITED STATES (US) BASED ON AN OBSERVATIONAL STUDY
Howard Goldman, MD¹, Jennifer Anger, MD, MPH², Canan Esinduy, MD³, Kelly Zou, PhD³, David Russell, MD³, Xuemei Luo, PhD³, Fady Ntanios, PhD³, Martin Carlsson, MS³ and J. Quentin Clemens, MD⁴
¹Lerner College of Medicine, Cleveland Clinic, Cleveland, OH; ²Cedars−Sinai Medical Center, Beverly Hills, CA; ³Pfizer Inc, New York, NY; ⁴University of Michigan, Ann Arbor, MI
(Presented by: Howard Goldman, MD)
Abstract Summaries

IC/Pelvic Pain/Geriatrics/BPH Moderated Poster Session
Moderated by: Larissa V. Rodriguez, MD & Alvaro Lucioni, MD
Friday, February 27, 2015
4:00 p.m. – 5:00 p.m.
See page 293 for abstracts

Poster #M30
FACTORS AFFECTING SEXUAL FUNCTION AMONG AGING WOMEN WITH PELVIC FLOOR DISORDERS
Lauren N. Wood, MD¹, Jenna F. Borok, BS², Karyn S. Eilber, MD², Catherine Bressee, MS³, Ronald T. Luu, BS², Alex J. Hannemann⁴ and Jennifer T. Anger, MD, MPH¹
¹Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA; ²David Geffen School of Medicine at UCLA, Los Angeles, CA; ³Cedars-Sinai Biostatistics & Bioinformatics Research Center, Los Angeles, CA; ⁴Augustana College, Sioux Falls, SD
(Presented by: Lauren N. Wood, MD)

Poster #M31
THE EFFECT OF HYDRODISTENTION VERSUS TRANSURTHRAL FULGURATION OF BLADDER IN INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME (IC/BPS) PATIENTS: PROSPECTIVE, MULTICENTER, RANDOMIZED CLINICAL TRIAL
Jang-Hwan Kim, MD¹, Sanghyun Jee, MD¹, Sangwoon Kim, MD¹, Myungsoo Choo, MD¹, Kyusung Lee, MD³, Joonchul Kim, MD¹, Sungyong Cho, MD⁵, Jutae Seo, MD⁶, Jongbo Choi, MD⁷, Seungjune Oh, MD⁸ and Jaeyoeb Hong, MD⁹
¹Department of Urology, Urological Science Institute, Yonsei University College of Medicine, Seoul, Korea; ²Department of Urology, University of Ulсан, Seoul, Korea; ³Department of Urology, Samsung Medical Center, Seoul, Korea; ⁴Department of Urology, Bucheon St. Mary’s Hospital, Catholic University, Bucheon, Korea; ⁵Department of Urology, SMG-SNU Boramae Medical Center, Seoul, Korea; ⁶Department of Urology, Cheil General Hospital & Women’s Healthcare Center, Seoul, Korea; ⁷Department of Urology, Ajou University Hospital, Suwon, Korea; ⁸Department of Urology, Seoul National University Hospital, Seoul, Korea; ⁹Department of Urology, CHA medical school, Sungnam, Korea
(Presented by: Jang-Hwan Kim, MD)

Poster #M32
THE PREVALENCE OF MYCOPLASMA GENITALIUM IN WOMEN WITH INTERSTITIAL CYSTITIS OR CHRONIC IRRITATIVE URINARY SYMPTOMS
Jacquia De La Cruz, MD, Lisa Rahangdale, MD, MPH, Emily Davidson, MD, Marcia Hobbs, PhD, Catherine Matthews, MD UNC, Chapel Hill, NC
(Presented by: Jacquia De La Cruz, MD)

Poster #M33
RELATIONSHIP AMONG PELVIC FLOOR TONE, VOIDING COMPLAINTS, AND PELVIC FLOOR DISTRESS IN WOMEN WITH UROGENITAL PAIN
Michael Ehlerdt, MD¹, Priyanka Gupta, MD¹, Emily Dove-Medows, CNM, MSN¹, Larry T. Sirls, MD¹, Donna Carrico, RN, MSN¹, Janice Tomakowsky, PhD¹, Mireya Diaz, PhD², Jason Gilleran, MD¹, Jamie Bartley, DO¹ and Kenneth M. Peters, MD¹
¹Beaumont Health System, Royal Oak, MI; ²Henry Ford Health System
(Presented by: Michael Ehlerdt, MD)

Poster #M34
THE CHARACTERISTICS OF WOMEN TESTING POSITIVE FOR MYCOPLASMA HOMINIS AND UREAPLASMA UREALYTICUM IN THE URINARY TRACT
Jessie Liang, MD, Sarah Rentrop, BS, Andrea Balthazar, BS, Clifton F. Fritol II, PhD, Alex Gomelsky, MD LSU Health-Shreveport, LA
(Presented by: Jessie Liang, MD)
ASSOCIATION OF PELVIC FLOOR MYOFASCIAL TRIGGER POINTS PSYCHOLOGICAL DISTRESS AND UROLOGIC DYSFUNCTION IN WOMEN WITH PELVIC PAIN
Emily Dove-Medows, CNM, MSN, Priyanka Gupta, MD, Michael Ehler, MD, Jamie Bartley, MD, Jason Gilleran, MD, Janice Tomakowsky, PhD, Mireya Diaz, PhD, Donna Carrico NP, MS, Larry T. Sirls, MD and Kenneth M. Peters, MD
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI; 3Henry Ford Health System, Detroit, MI
(Presented by: Priyanka Gupta, MD)
NEW TECHNIQUES IN TRANSURETHRAL NEEDLE ABLATION LEADS TO PATIENT PREFERENCE OF PROSTIVA OVER MEDICAL MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA
Craig Smith, MD
DuPage Medical Group, Naperville, IL
(Presented by: Craig Smith, MD)

MULTI INSTITUTIONAL EXPERIENCE WITH THE GREENLIGHT SIMULATOR
Bilal Chughtai, MD1, Vannita Simma-Chiang, MD1, Leanna Laor, MD1, Alexander Sarkisian, MD1, Claire Dunphy, BA1, Abby Isaacs, MS1, Matthew Rutman, MD2, Richard Lee, MD, MBA1, Steven Kaplan, MD1, Art Sedrakyan, MD, PhD1 and Alexis Te, MD1
1Weill Cornell Medical College, New York, NY; 2Columbia University Medical Center, New York, NY
(Presented by: Vannita Simma-Chiang, MD)

PATTERNS OF MEDICAL MANAGEMENT OF OVERACTIVE BLADDER (OAB) AND BENIGN PROSTATIC HYPERPLASIA (BPH) IN THE US: WHO, DOES BETTER?
Jennifer Anger, MD, MPH1, Howard Goldman, MD2, Xuemei Luo, PhD3, Martin Carlsson MS3, Douglass Chapman MS3, Kelly Zou, PhD3, Fady Ntanos, PhD3, David Russell, MD3, Canan Esinduy, MD3 and J. Quentin Clemens, MD4
1Cedars-Sinai Medical Center, Beverly Hills, CA; 2Lerner College of Medicine, Cleveland Clinic, Cleveland, OH; 3Pfizer Inc, New York, NY; 4University of Michigan, Ann Arbor, MI
(Presented by: Jennifer Anger, MD, MPH)

“REGULAR MONITORING” IN OLDER WOMEN ON LONG-TERM NITROFURANTOIN PROPHYLAXIS: WHAT, DOES IT MEAN PRACTICALLY?
Lauren Rego1 and Philippe E. Zimmern, MD2
1UT Southwestern Medical School, Dallas, Texas; 2UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

EVALUATION OF BASELINE PHYSICAL AND COGNITIVE FUNCTION IN WOMEN UNDERGOING PELVIC FLOOR SURGERY
Maria Nieto, MD1, Cassandra Kisby, MD2, Catherine Matthews, MD1 and Jennifer Wu, MD, MPH1
1University of North Carolina, Chapel Hill, NC; 2Duke University, Durham, NC
(Presented by: Maria Nieto, MD)

REPAIR OF PELVIC ORGAN PROLAPSE IN THE INTERSTITIAL CYSTITIS PATIENT
Natasha Ginzburg, MD, Darlene Morrissey, DO1, Peter O’Hare, MD1, Ryan Sidebottom, DO2 and Kristene Whitmore, MD3
1Drexel University College of Medicine, Philadelphia, PA; 2Albert Einstein Medical Center, Philadelphia, PA; 3Pelvic and Sexual Health Institute, Philadelphia, PA
(Presented by: Natasha Ginzburg, MD)
Poster #NM63
TRIGGER POINT INJECTIONS FOR THE MANAGEMENT OF LOWER URINARY TRACT SYMPTOMS AND SEXUAL PAIN
Sonia Bahlani, MD1, Alexandra King, MD candidate2 and Robert Moldwin, MD2
1The Smith Institute for Urology, New Hyde Park, NY; 2North Shore-LIJ, New Hyde Park, NY
(Presented by: Sonia Bahlani, MD)

Poster #NM64
ASSOCIATIONS AMONG PSYCHOLOGICAL DISTRESS, DYSPAREUNIA AND LEVATOR PAIN IN WOMEN WITH PELVIC PAIN
Janice Tomakowsky, PhD1, Priyanka Gupta, MD1, Michael Ehler, MD1, Emily Dove-Medows. CNM, MSN1, Mireya Diaz, PhD2, Donna Carrico NP, MS1, Larry T. Sirls, MD1,2, Jason Gilleran, MD1,2, Jamie Bartley, DO1,3 and Kenneth M. Peters, MD1,3
1Beaumont Health System, Royal Oak, MI; 2Henry Ford Health System, Detroit, MI; 3Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Poster #NM65
HISTORY OF BULLYING AND ABUSE ARE NOT ASSOCIATED WITH INCREASED PELVIC FLOOR SYMPTOMS
Priyanka Gupta, MD1, Tori Nault1, Michael Ehler, MD1, Emily Dove-Medows CNM, MSN1, Donna Carrico NP, MS1, Jamie Bartonley, DO1,2, Jason Gilleran, MD1,2, Larry T. Sirls, MD1,2, Marlene Seltzer, MD1,2 and Kenneth M. Peters, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Poster #NM66
IMPACT OF BULLYING AND ABUSE ON SEXUAL HEALTH
Priyanka Gupta, MD1, Tori Nault1, Michael Ehler, MD1, Emily Dove-Medows CNM, MSN1, Donna Carrico NP, MS1, Jamie Bartonley, DO1,2, Jason Gilleran, MD1,2, Larry T. Sirls, MD1,2, Marlene Seltzer, MD1,2 and Kenneth M. Peters, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Poster #NM67
CYSTOSCOPIC YIELD IN THE EVALUATION OF RECURRENT URINARY TRACT INFECTION
Matthew Pagano, MD, Yanina Barbalat, MD, Kimberly Cooper, MD
Columbia University College of Physicians and Surgeons, New York, NY
(Presented by: Matthew Pagano, MD)

Poster #NM68
UPPER TRACT IMAGING ABNORMALITIES RELATED TO RECURRENT URINARY TRACT INFECTIONS RARELY FOUND IN WOMEN
Lauren Rego1, Alana Christie2 and Philippe E. Zimmern, MD2
1UT Southwestern Medical School, Dallas, Texas; 2UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

Poster #NM69
THE PAIN ASSOCIATED WITH ALLERGIES IN A FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY CLINIC
Margaret Mueller, MD1, Marisa Peri2, Bhumy Dave, MD1, Alix Leader-Cramer, MD1, Christina Lewicky-Gaupp, MD1, Lisa Johnson, MD1 and Kimberly Kenton, MD, MS3
1Northwestern University, Department of OB/GYN, Chicago, IL; 2Northwestern University, Feinberg School of Medicine, Chicago IL; 3Northwestern University, Department of OB/GYN and Urology Chicago IL
(Presented by: Margaret Mueller, MD)
Poster #NM70
EXPRESSON OF URINARY CYTOKINE IN BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS AS A DIAGNOSTIC BIOMARKER
Hana Yoon, MD, PhD1, Jae Yup Hong, MD, PhD2, Jung Hwan Shon, MD, PhD3 and Young Ho Kim, MD, PhD4
1Ewha Womans University; 2Cha University; 3Jesang Hospital; 4Soonchunhyang University
(Presented by: Hana Yoon, MD, PhD)

Poster #NM71
THE DIAGNOSTIC AND TREATMENT PATTERNS OF UROLOGISTS IN THE UNITED STATES FOR INTERSTITIAL CYSTITIS
Dana Kivlin, DO1, Curtis Ross, DO1, Caitlin Lim, DO1, Tia Schellato, DO1 and Kristene Whitmore, MD2
1Albert Einstein Medical Center, Philadelphia, PA; 2Hahnemann University Hospital, Philadelphia, PA
(Presented by: Dana Kivlin, DO)

Poster #NM72
CHARACTERISTICS OF WOMEN PRESENTING WITH UROGENITAL PAIN AND DYSPAREUNIA IN A MULTIDISCIPLINARY UROLOGY CLINIC
Priyanka Gupta, MD 1, Michael Ehlert, MD 1, Emily Dove-Medows, CNM, MSN1, Jamie Bartley, DO1,2, Jason Gilleran, MD1,2, Janice Tomakowsky, PhD1, Mireya Diaz, PhD3, Donna Carrico, NP, MS1, Larry T. Sirls, MD1,2 and Kenneth M. Peters, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI; 3Henry Ford Health System, Detroit, MI
(Presented by: Priyanka Gupta, MD)

Poster #NM73
NEUROMETER MEASUREMENT OF CURRENT PERCEPTION AND PAIN TOLERANCE THRESHOLDS IN PATIENTS WITH PAINFUL BLADDER SYNDROME
Marisa Clifton, MD, Courtenay Moore, MD, Barbara Tucky, MD, Daniel Shoskes, MD
Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

Poster #NM74
LONG-TERM OUTCOME OF URETHROVAGINAL FISTULA REPAIR
Dominic Lee, MD1 and Philippe E. Zimmern, MD2
1UT Southwestern Medical Center, Dallas, Texas; 2UT Southwestern Medical Center
(Presented by: Dominic Lee, MD)

Poster #NM75
PRESENTATION OF FEMALE URETHRAL DIVERTICULUM: HOW COMMON IS THE CLASSIC TRIAD OF THE THREE “D’S”
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD
Medical University of South Carolina, Charleston, SC
(Presented by: Drew Freilich, MD)

Poster #NM76
OUTCOMES OF TREATMENT OF STRESS URINARY INCONTINENCE ASSOCIATED WITH FEMALE URETHRAL DIVERTICULA
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD
Medical University of South Carolina, Charleston, SC
(Presented by: Drew Freilich, MD)
Abstract Summaries

Poster #NM77
TEMPORAL TRENDS IN CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE
Elizabeth T. Brown, MD, MPH, David Osborn, MD, Stephen Mock, MD, Amy Graves MPH, Laurel Milam, Douglas Milam, MD, Melissa Kaufman, MD, PhD, Roger Dmochowski, MD, W. Stuart Reynolds, MD, MPH
Vanderbilt University Medical Center, Nashville, TN
(Presented by: Elizabeth T. Brown, MD, MPH)

Poster #NM78
IMMEDIATE POST-OPERATIVE COMPLICATIONS OF CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE
Elizabeth T. Brown, MD, MPH, David Osborn, MD, Amy Graves MPH, Laurel Milam, Stephen Mock, MD, Douglas Milam, MD, Melissa Kaufman, MD, PhD, Roger Dmochowski, MD, W. Stuart Reynolds, MD, MPH
Vanderbilt University Medical Center, Nashville, TN
(Presented by: Elizabeth T. Brown, MD, MPH)

Poster #NM79
EXTRACELLULAR MATRIX MATERIAL DERIVED FROM PORCINE URINARY BLADDER: INITIAL EXPERIENCE IN PATIENTS WITH VESICO-VAGINAL FISTULA
Jose Flores, MD, Travis Pagliara, MD, Sean McAdams, MD, Isaac Palma, Nissrine Nakib, MD
University of Minnesota, Minneapolis, MN
(Presented by: Jose Flores, MD)

Poster #NM80
FORMAL SACROCOLPOPEXY REDUCES HYPERCONTINENCE RATES IN FEMALE ORTHOTOPIC URINARY DIVERSION
Gillian Stearns, MD, Timothy Donahue, MD1, Guido Dalbagni, MD2 and Jaspreet Sandhu, MD2
1Walter Reed National Military Medical Center, Bethesda, MD; 2Memorial Sloan Kettering Cancer Center, New York, NY
(Presented by: Gillian Stearns, MD)

Poster #NM81
FEMALE URETHRAL DIVERTICULECTOMY: PERIOPERATIVE OUTCOMES OF A MULTI-INSTITUTIONAL PROSPECTIVE DATABASE
Deborah Sperling, MD, Julian Hanske, MD1, Marianne Schmid, MD1, Briony Varda, MD2, Anurag Das, MD3, Quoc-Dien Trinh, MD4 and Jairam Eswara, MD2
1Center for Surgery and Public Health, Brigham and Women's Hospital, Boston, MA; 2Division of Urologic Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 3Division of Urology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; 4Division of Urologic Surgery and Center for Surgery and Public Health, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
(Presented by: Deborah Sperling, MD)

Poster #NM82
PROSPECTIVE COMPARATIVE Results: OF PESSARY USE IN PATIENTS WITH SYMPTOMATIC PELVIC ORGAN PROLAPSE IN PATIENTS ABOVE OR BELOW 65 YEARS OF AGE
Javier Pizarro-Berdichevsky, MD1, Alejandro Pattillo, MD2, Bernardita Blumel, MD3, Silvana Gonzalez NP3, Marco Arellano, MD3, Rodrigo Cuevas, MD3, Ariel Gorodischer4, Eitan Dines4 and Howard B Goldman, MD5
1Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile – Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile; 2Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA, Cleveland, OH; 3Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile – Division Obstetricia y Ginecologia, Pontificia Universidad Catolica de Chile; 4Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile; 5Medical Student, Pontificia Universidad Catolica de Chile; 6Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA
(Presented by: Javier Pizarro-Berdichevsky, MD)
STRONG ASSOCIATION BETWEEN PROLAPSE-RELATED SYMPTOM SCORES AND DEPRESSIVE SYMPTOMS AMONG PELVIC ORGAN PROLAPSE (POP) PATIENTS – A CROSS-SECTIONAL STUDY

Javier Pizarro-Berdichevsky, MD1, Mario Hitschfeld, MD2, Alejandro Pattillo, MD3, Bernardita Blumel, MD4, Silvana Gonzalez NP4, Marco Arellano, MD5, Rodrigo Cuevas, MD3, Ariel Gorodischer5, Eitan Dines5, Claudia Flores, NP6 and Howard B Goldman, MD7

1Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile - Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile - Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA, Cleveland, OH; 2Mental Health Unit, Sotero Del Rio Hospital, Santiago, Chile; 3Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile - Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile; 4Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile; 5Medical Student, Pontificia Universidad Catolica de Chile; 6Nursing School, Pontificia Universidad Catolica de Chile; 7Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA

(Presented by: Javier Pizarro-Berdichevsky, MD)
Abstract Summaries

*Video Session II

Moderated by: Anne Pelletier Cameron, MD & Elizabeth B. Takacs, MD
Saturday, February 28, 2015
7:00 a.m. – 8:00 a.m.
See page 324 for abstracts
*Not CME Accredited

Video #7
DORSAL ONLAY BUCCAL MUCOSA URETHROPLASTY FOR BENIGN FEMALE STRICTURE DISEASE
Marisa Clifton, MD, Herman Bagga, MD, Nitya Abraham, MD, Kenneth Angermeier, MD, Sandip Vasavada, MD
Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

Video #8
SURGICAL MANAGEMENT OF URETHRAL DIVERTICULUM
Brad Gill, MD, Adrienne Quirouet, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Brad Gill, MD)

Video #9
SKENE’S GLAND CYST EXCISION
Philippe E. Zimmern, MD, Gary E. Lemack, MD
UT Southwestern Medical Center, Dallas, TX
(Presented by: Philippe E. Zimmern, MD)

Video #10
COLPOCLEISIS: TECHNICAL CONSIDERATIONS, PEARLS, AND PITFALLS
Brian Linder, MD, John Gebhart, MD, John Occhino, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Video #11
URETHRAL RECONSTRUCTION AND REPAIR OF A COMPLEX URETHROVAGINAL AND VESICOVAGINAL FISTULA
Gillian Wolff, MD, Richard Kershen, MD
Tallwood Urology and Kidney Institute, Hartford Hospital, Hartford, CT
(Presented by: Gillian Wolff, MD)

Video #12
VAGINAL HYSTERECTOMY AND UTEROSACRAL LIGAMENT SUSPENSION: A UROLOGIST’S GUIDE TO NATIVE TISSUE APICAL REPAIR
Lee Richter, MD, Andrew Sokol, MD
MedStar Washington Hospital Center, Washington, DC
(Presented by: Lee Richter, MD)
Podium #42  
EMG EVIDENCE OF DECREASED STRIATED URETHRAL SPHINCTER ACTIVITY IN WOMEN WITH DETRUSOR OVERACTIVITY INCONTINENCE  
Kimberly Kenton, MD, MS  
Northwestern University Chicago, IL  
(Presented by: Kimberly Kenton, MD, MS)

Podium #43  
DISPELLING A COMMON MYTH − DIABETIC SEVERITY DOES NOT INCREASE THE ODDS OF URINARY INCONTINENCE IN WOMEN  
Aviva Weinberg, MD1, John Leppert, MD, MS2 and Christopher Elliott, MD, PhD3  
1Stanford University School of Medicine, Department of Urology, Stanford CA; 2Vetran Administration Palo Alto, Department of Urology, Palo Alto CA & Stanford University School of Medicine, Department of Urology, Stanford CA; 3Santa Clara Valley Medical Center Department of Urology, San Jose, CA & Stanford University School of Medicine, Department of Urology, Stanford CA  
(Presented by: Christopher Elliott, MD, PhD)

Podium #44  
A RANDOMIZED COMPARISON OF SINGLE INCISION MID-URETHRAL SLING (MINIARC™) AND TRANSOBTURATOR MID-URETHRAL SLING (MONARC™) FOR TREATMENT OF STRESS URINARY INCONTINENCE: 2-YEAR CLINICAL OUTCOMES  
Jan-Paul Roovers ¹, René P. Schellart, MD², Bart Kimpe, MD, PhD³, Jean-Philippe Lucot, MD, PhD⁴, Prof. Dirk de Ridder, MD, PhD⁵ and Katrien O. Rengerink¹  
¹Dept of Obstetrics and Gynaecology Academic Medical Centre; ²Kennemer Gasthuis, Haarlem, Netherlands; ³AZ Sint Lucas Brugge, Brugge, Belgium; ⁴Jeanne de Flandre Hospital, Lille, France; ⁵UZ Gasthuisberg, Leuven, Belgium  
(Presented by: Katrien O. Rengerink)

Podium #45  
CLINICAL AND COST COMPARISON OF TWO TRIAL OF VOID METHODS AFTER OUTPATIENT MID URETHRAL SLING PLACEMENT  
Michael Ehlert, MD ¹, Brian Odom², Renee Cholyway², Kim A. Killinger, RN, MSN¹, Priyanka Gupta, MD¹, Judith Boura¹ and Larry T. Sirls, MD¹  
¹Beaumont Health System, Royal Oak, MI; ²Oakland University William Beaumont School of Medicine, Rochester, MI  
(Presented by: Michael Ehlert, MD)

Podium #46  
URGENCY INCONTINENCE AFTER REVISION OF AN OBSTRUCTING MID-URETHRAL SLING  
Iryna Makovey, MD¹, Nitya Abraham, MD², Howard Goldman, MD² and Sandip Vasavada, MD²  
¹Cleveland Clinic; ²Cleveland Clinic, Cleveland, OH  
(Presented by: Iryna Makovey, MD)

Podium #47  
NATIONAL TRENDS IN THE PERFORMANCE OF ROBOT-ASSISTED VAGINAL VAULT SUSPENSION  
Chandra K. Flack, MD¹, M. Francesca Monn, MD, MPH¹, Neil B. Patel, BA¹, Thomas A. Gardner, MD¹ and C.R. Powell, MD²  
¹Indiana University School of Medicine, Indianapolis, IN; ²Indiana University, Indianapolis, IN  
(Presented by: C.R. Powell, MD)
Podium #48
THE LONG-TERM SAFETY, TRENDS AND RE-INTERVENTIONS IN THE SURGICAL MANAGEMENT OF STRESS URINARY INCONTINENCE
Bilal Chughtai, MD¹, Jessica Buck¹, Jialin Mao², Abby J. Isaacs², Richard Lee, MD¹, Alexis Te, MD¹, Steven Kaplan, MD¹ and Art Sedrakyan²
¹Department of Urology, Weill Medical College of Cornell University, New York−Presbyterian Hospital, New York, NY; ²Department of Public Health, Weill Medical College of Cornell University, New York−Presbyterian Hospital, New York, NY
(Presented by: Jessica Buck)

Podium #49
CHILDHOOD SEXUAL AND VIOLENCE TRAUMA MORE PREVALENT IN PATIENTS WITH OVERACTIVE BLADDER
Clinton Morgan, BA, Joel Vetter, MS, H. Henry Lai, MD
Washington University School of Medicine, St Louis, MO
(Presented by: H. Henry Lai, MD)

Podium #50
A RANDOMIZED, CONTROLLED CLINICAL TRIAL OF AN INTRAVESICAL PRESSURE-ATTENUATION BALLOON SYSTEM FOR THE TREATMENT OF STRESS URINARY INCONTINENCE IN FEMALES
Jean Jacques Wyndaele, MD, Stephan De Wachter, MD¹, Giovanni Tommaselli, MD², Roberto Angioli, MD³, Michel de Wildt, MD⁴, Karel Everaert, MD⁵, Dirk Michielsen, MD⁶ and Gommert van Koeveringe, MD⁷
¹University Hospital Antwerp; ²Università Degli Studi Di Napoli “Federico II”, Naples, Italy; ³Università di Roma Campus Biomedico, Rome, Italy; ⁴Catharina Ziekenhuis, Eindhoven, The Netherlands; ⁵Universitair Ziekenhuis Gent, Gent, Belgium; ⁶Universitair Ziekenhuis Brussel, Brussels, Belgium; ⁷University Medical Center (MUMC+), Maastricht, The Netherlands
(Presented by: Jean Jacques Wyndaele, MD)
Podium #33
ANTICHLINERGIC CYCLING AND TREATMENT OUTCOMES IN OVERACTIVE BLADDER PATIENTS WITH URINARY INCONTINENCE
Michael Chancellor, MD, Alon Yehoshua, PharmD, MS¹, Karen Campbell, PharmD¹, Manher Joshi, MD¹ and Riya Pulicharam, MD²
¹Allergan, Irvine, CA; ²Healthcare Partners, Torrance, CA
(Presented by: Michael Chancellor, MD)

Podium #34
ONABOTULINUMTOXINA HAS A POSITIVE SAFETY AND EFFICACY PROFILE IN OVERACTIVE BLADDER (OAB) PATIENTS <65 AND ≥65 YEARS OF AGE
Courtenay Moore, MD¹, Albert Kaufmann, MD², Manher Joshi, MD³, Yan Zheng, PhD⁴ and Sender Herschorn, MD⁵
¹Cleveland Clinic, Cleveland, OH; ²Kliniken Maria Hilf GmbH, Mönchengladbach, Germany; ³Allergan Inc., Irvine, CA; ⁴Allergan Inc., Bridgewater, NJ; ⁵University of Toronto, Toronto, ON, Canada
(Presented by: Courtenay Moore, MD)

Podium #35
UNDERACTIVE BLADDER IS NOT A SYMPTOM COMPEX
Melissa Laudano, MD¹, Matthew Benedon² and Jerry Blaivas, MD²,³
¹Weill Cornell Medical School, NY, NY; ²Institute for Bladder and Prostate Research, New York, NY; ³Weill Cornell Medical School, New York, NY
(Presented by: Melissa Laudano, MD)

Podium #37
A RETROSPECTIVE COMPARISON OF PERSISTENCE ON PHARMACOTHERAPY FOR OVERACTIVE BLADDER SYNDROME AMONGST SPECIALTIES
Alexis Tran, DO, Peter Sand, MD, Janet Tomezsko, MD, Ying Zhou, CBRI, Miriam Seitz, MD, Adam Gafni-Kane, MD, Sylvia Botros, MD
Chicago, IL
(Presented by: Alexis Tran, DO)

Podium #38
EFFECT OF DEEP BRAIN STIMULATION (DBS) ON LOWER URINARY TRACT SYMPTOMS (LUTS) OF PARKINSON'S DISEASE PATIENTS (PD)
Stephen Mock, MD¹, David J. Osborn, MD², Elizabeth Brown, MD³, Melissa R. Kaufman, MD¹, W. Stuart Reynolds, MD¹, Roger R. Dmochowski, MD¹ and Christopher M. Tolleson, MD¹
¹Vanderbilt University Medical Center, Nashville, TN; ²Walter Reed National Military Center, Bethesda, MD
(Presented by: Stephen Mock, MD)

Podium #39
INOSINE ALTERS MARKERS OF SENSORY NEUROTRANSMISSION AND IMPROVES DETRUSOR OVERACTIVITY FOLLOWING SPINAL CORD INJURY
Claire Doyle, PhD¹, Yeun Goo Chung, MD, PhD¹, Kyle Costa, BSc², Vivian Cristofaro, PhD³, Maryrose P Sullivan, PhD³ and Rosalyn M Adam, PhD¹
¹Boston Children's Hospital & Harvard Medical School, Boston, MA; ²Boston Children's Hospital, Boston, MA; ³VA Boston Healthcare System & Harvard Medical School, West Roxbury, MA
(Presented by: Claire Doyle, PhD)
Podium #40
THE EPIDEMIOLOGY OF HAND FUNCTION AS IT AFFECTS BLADDER MANAGEMENT IN PERSONS WITH SPINAL CORD INJURY
Dimitar Zlatev, MD¹, Kazuko Shem, MD² and Christopher Elliott, MD, PhD³
¹Department of Urology, Stanford University School of Medicine, Stanford, CA; ²Department of Physical Medicine and Rehabilitation, Santa Clara Valley Medical Center, San Jose, CA; ³Department of Urology, Santa Clara Valley Medical Center, San Jose, CA & Department of Urology, Stanford University School of Medicine, Stanford, CA
(Presented by: Dimitar Zlatev, MD)

Podium #41
THE PATTERN OF UROLOGIC INVESTIGATIONS AND MONITORING AMONG TRAUMATIC SPINAL CORD INJURED PATIENTS
Blayne Welk, MD, MSc¹, Kuan Liu, MSc² and Salimah Shariff, PhD²
¹London ON; ²ICES Western
(Presented by: Blayne Welk, MD, MSc)
Abstract Summaries

Pelvic Organ Prolapse/Reconstruction Moderated Poster Session
Moderated by: Kathleen C. Kobashi, MD & Saah E. McAchran, MD
Saturday, February 28, 2015
8:00 a.m. – 9:30 a.m.
See page 343 for abstracts

Poster #M36
URETHRAL STRICTURE (US) AND ARTIFICIAL URINARY SPHINCTER (AUS) REINSERTION RATES AFTER URETHRAL REPAIR AT THE TIME OF AUS EXPLANTATION FOR EROSION
Stephen Mock, MD, Elizabeth Brown, MD, W. Stuart Reynolds, MD, Melissa R. Kaufman, MD, PhD, Douglas F. Milam, MD, Roger R. Dmochowski, MD
Vanderbilt University Medical Center, Nashville, TN
(Presented by: Stephen Mock, MD)

Poster #M37
PERIOPERATIVE OUTCOMES FOLLOWING OPEN AND MINIMALLY INVASIVE SACRAL COLPOPEXY. ANALYSIS OF THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP) DATABASE
Ahmed Sarhan, MD, Ahmad Shabsigh, MD, Ketul Shah, MD
Dept. of Urology, The Ohio State University
(Presented by: Ahmed Sarhan, MD)

Poster #M38
THE IMPACT OF COMORBID CHRONIC PAIN SYNDROMES ON SEXUAL ACTIVITY AND DYSPAREUNIA AFTER PELVIC ORGAN PROLAPSE REPAIR
Priyanka Gupta, MD 1, Michael Ehlert, MD 1, James Payne 2, Kim A. Killinger, MSN 1, Judith A. Boura, MS 1,2, Melissa Fischer, MD 1,2 and Larry T. Sirls, MD 1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Poster #M39
DOES PELVIC ORGAN PROLAPSE QUANTIFICATION EXAM (POPQ) D-POINT PREDICT UTEROSACRAL LIGAMENT SUSPENSION OUTCOMES?
Lee Richter, MD 1, Amy Park, MD 1, Jenine Boileau, BS 2, Megan Janni, BS 2, Sameer Desale, MS 1 and Cheryl Iglesia, MD 1
1MedStar Washington Hospital Center, Washington, DC; 2Georgetown University Medical School, Washington, DC; 3MedStar Health Research Institute, Washington, DC
(Presented by: Lee Richter, MD)

Poster #M40
RISK FACTORS FOR WOUND COMPLICATION IN WOMEN WITH OBSTETRIC ANAL SPHINCTER INJURIES
Alix Leader-Cramer, MD 1, Kimberly Kenton, MD, MS 2, Lisa Johnson, MD 1, Dana Gossett, MD, MSc 1 and Christina Lewicky-Gaupp, MD 1
1Northwestern University, Female Pelvic Medicine and Reconstructive Surgery, Chicago, IL; 2Northwestern University, Female Pelvic Medicine and Reconstructive Surgery and Urology, Chicago, IL; 3Northwestern University, Obstetrics and Gynecology, Chicago, IL
(Presented by: Alix Leader-Cramer, MD)

Poster #M41
OUTCOMES OF SUBTOTAL MESH EXCISION AND VAGINoplastY FOR MESH EXPOSURE/EXTRUCTION/PERFORATION IN THE URINARY AND GENITAL TRACT FOLLOWING PRIOR FAILED INTERVENTION
Matt Chappell, BS 1, Drew Freilich, MD 2, Ross Rames, MD 1 and Eric Rovner, MD 1
1Charleston, SC; 2Medical University of South Carolina, Charleston, SC
(Presented by: Drew Freilich, MD)
Poster #M42
LONG-TERM OUTCOMES OF ABDOMINAL VS. VAGINAL APICAL PROLAPSE REPAIR AMONG FEMALE MEDICAIRE BENEFICIARIES
Aqsa Khan, MD1, Karyn Eilber, MD2, Ning Wu, MS3, Chris Pashos, PhD3 and Jennifer Anger, MD, MPH2
1New York University, New York, NY; 2Cedars-Sinai Medical Center, Los Angeles, CA; 3United BioSource Corporation, Lexington, MA
(Presented by: Aqsa Khan, MD)

Poster #M43
IMPACT OF MRI DEFECOGRAPHY ON CLINICAL EVALUATION AND SURGICAL MANAGEMENT OF PELVIC ORGAN PROLAPSE
Maude Carmel, MD, Gaurav Khatri, MD, April Bailey, MD, Philippe Zimmern, MD
UT Southwestern Medical Center, Dallas, TX
(Presented by: Maude Carmel, MD)

Poster #M44
ABDOMINAL SACROCOLPOPEXY MESH COMPLICATIONS: PRESENTATION AND SURGICAL REMOVAL TECHNIQUES
Judy M. Choi, MD, Patkawat Ramart, MD, Diana Kang, MD, Lenny Ackerman, MD, PhD, Seth Cohen, MD, Shlomo Raz, MD
UCLA Department of Urology, Los Angeles, CA
(Presented by: Judy M. Choi, MD)

Poster #M45
DETAILED COST ANALYSIS OF ROBOTIC SACROCOLPOPEXY COMPARED TO TRANS-VAGINAL MESH REPAIR
Michael Ehlert, MD1, Jonathan Park2 and Larry T. Sirls, MD1
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Michael Ehlert, MD)
*Pelvic Organ Prolapse/Reconstruction Non-Moderated Poster*  
(Non-Moderated)  
Saturday, February 28, 2015  
8:00 a.m. – 9:30 a.m.  
See page 352 for abstracts  
*Not CME Accredited*

Poster #NM74  
**LONG-TERM OUTCOME OF URETHROVAGINAL FISTULA REPAIR**  
Dominic Lee, MD¹ and Philippe E. Zimmern, MD²  
¹UT Southwestern Medical Center, Dallas, Texas; ²UT Southwestern Medical Center  
(Presented by: Dominic Lee, MD)

Poster #NM75  
**PRESENTATION OF FEMALE URETHRAL DIVERTICULUM: HOW COMMON IS THE CLASSIC TRIAD OF THE THREE “D’S”**  
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD  
Medical University of South Carolina, Charleston, SC  
(Presented by: Drew Freilich, MD)

Poster #NM76  
**OUTCOMES OF TREATMENT OF STRESS UrINARY INCONTINENCE ASSOCIATED WITH FEMALE URETHRAL DIVERTICULA**  
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD  
Medical University of South Carolina, Charleston, SC  
(Presented by: Drew Freilich, MD)

Poster #NM77  
**TEMPORAL TRENDS IN CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE**  
Elizabeth T. Brown, MD, MPH, David Osborn, MD, Stephen Mock, MD, Amy Graves MPH, Laurel Milam, Douglas Milam, MD, Melissa Kaufman, MD, PhD, Roger Dmochowski, MD, W. Stuart Reynolds, MD, MPH  
Vanderbilt University Medical Center, Nashville, TN  
(Presented by: Elizabeth T. Brown, MD, MPH)

Poster #NM78  
**IMMEDIATE POST-OPERATIVE COMPLICATIONS OF CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE**  
Elizabeth T. Brown, MD, MPH, David Osborn, MD, Amy Graves MPH, Laurel Milam, Stephen Mock, MD, Douglas Milam, MD, Melissa Kaufman, MD, PhD, Roger Dmochowski, MD, W. Stuart Reynolds, MD, MPH  
Vanderbilt University Medical Center, Nashville, TN  
(Presented by: Elizabeth T. Brown, MD, MPH)

Poster #NM79  
**EXTRACELLULAR MATRIX MATERIAL DERIVED FROM PORCINE URINARY BLADDER: INITIAL EXPERIENCE IN PATIENTS WITH VESICO-VAGINAL FISTULA**  
Jose Flores, MD, Travis Pagliara, MD, Sean McAdams, MD, Isaac Palma, Nissrine Nakib, MD  
University of Minnesota, Minneapolis, MN  
(Presented by: Jose Flores, MD)

Poster #NM80  
**FORMAL SACROCOLOPEXY REDUCES HYPERCONTINENCE RATES IN FEMALE ORTHOTOPIC URINARY DIVERSION**  
Gillian Stearns, MD, Timothy Donahue, MD¹, Guido Dalbagni, MD² and Jaspreet Sandhu, MD²  
¹Walter Reed National Military Medical Center, Bethesda, MD; ²Memorial Sloan Kettering Cancer Center, New York, NY  
(Presented by: Gillian Stearns, MD)
Abstract Summaries

Poster #NM81
FEMALE URETHRAL DIVERTICULECTOMY: PERIOPERATIVE OUTCOMES OF A MULTI-INSTITUTIONAL PROSPECTIVE DATABASE
Deborah Sperling, MD, Julian Hanske, MD1, Marianne Schmid, MD1, Briony Varda, MD2, Anurag Das, MD3, Quoc-Dien Trinh, MD4 and Jairam Eswara, MD2
1Center for Surgery and Public Health, Brigham and Women's Hospital, Boston, MA; 2Division of Urologic Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA; 3Division of Urology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; 4Division of Urologic Surgery and Center for Surgery and Public Health, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
(Presented by: Deborah Sperling, MD)

Poster #NM82
PROSPECTIVE COMPARATIVE Results: OF PESSARY USE IN PATIENTS WITH SYMPTOMATIC PELVIC ORGAN PROLAPSE IN PATIENTS ABOVE OR BELOW 65 YEARS OF AGE
Javier Pizarro-Berdichevsky, MD1, Alejandro Pattillo, MD2, Bernardita Blumel, MD3, Silvana Gonzalez NP3, Marco Arellano, MD4, Rodrigo Cuevas, MD5, Ariel Gorodischer5, Eitan Dines5 and Howard B Goldman, MD5
1Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile – Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile – Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA, Cleveland, OH; 2Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile – Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile; 3Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile; 4Medical Student, Pontificia Universidad Catolica de Chile; 5Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA
(Presented by: Javier Pizarro-Berdichevsky, MD)

Poster #NM83
STRONG ASSOCIATION BETWEEN PROLAPSE-RELATED SYMPTOM SCORES AND DEPRESSIVE SYMPTOMS AMONG PELVIC ORGAN PROLAPSE (POP) PATIENTS – A CROSS-SECTIONAL STUDY
Javier Pizarro-Berdichevsky, MD1, Mario Hitschfeld, MD2, Alejandro Pattillo, MD3, Bernardita Blumel, MD4, Silvana Gonzalez NP4, Marco Arellano, MD5, Rodrigo Cuevas, MD5, Ariel Gorodischer5, Eitan Dines5, Claudia Flores, NP5 and Howard B Goldman, MD7
1Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile - Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile - Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA, Cleveland, OH; 2Mental Health Unit, Sotero Del Rio Hospital, Santiago, Chile; 3Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile - Division Obstetricia y Ginecologia, Pontificia Universidad Católica de Chile; 4Urogynecology Unit, H. Dr. Sotero del Rio, Santiago, Chile; 5Medical Student, Pontificia Universidad Catolica de Chile; 6Nursing School, Pontificia Universidad Catolica de Chile; 7Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, Ohio, USA
(Presented by: Javier Pizarro-Berdichevsky, MD)

Poster #NM84
ROBOTIC SACROCOLPOPEXY AND CONCOMITANT RECTOCELE VAGINAL REPAIR
Paholo B. Romo, MD, MPH1 and Veronica Triaca, MD2
1DHMC, Lebanon, NH; 2Concord Hospital, Concord, NH
(Presented by: Paholo B. Romo, MD, MPH)

Poster #NM85
ARE WOMEN WITH ADVANCED PELVIC ORGAN PROLAPSE TREATED BY OPEN MESH SACROCOLPOPEXY AT RISK OF SECONDARY INCISIONAL HERNIA?
Feras Alhalabi, MD, Chasta Bacsu, MD, Omer Gulpinar, MD, Daniel Scott, MD, Philippe E. Zimmern, MD
UT Southwestern Medical Center, Dallas, Texas
(Presented by: Philippe E. Zimmern, MD)

Poster #NM86
RECURRENT CYSTOCELE: CORRELATION WITH INTRINSIC HOST FACTORS
Saad Juma, MD
Incontinence Research Institute, Encinitas, CA
(Presented by: Saad Juma, MD)
Poster #NM87
COST ANALYSIS OF THE ANTERIOR VAGINAL WALL SUSPENSION PROCEDURE IN THE REPAIR OF STRESS URINARY INCONTINENCE WITH EARLY GRADE ANTERIOR COMPARTMENT PROLAPSE
Tanner Rawlings, Alana Christie and Philippe E. Zimmern, MD
UT Southwestern Medical School, Dallas, Texas
(Presented by: Tanner Rawlings)

Poster #NM88
EIGHT-YEAR REVIEW OF SURGICAL MANAGEMENT OF ICS/IUGA CATEGORY 1–4 TRANSVAGINAL MESH COMPLICATIONS FOLLOWING PROLAPSE KITS
Kirk Anderson, MD, Paul Knoll, MD, Nicholas Westfall, MD, Ketul Shah, MD and Brian Flynn, MD
University of Colorado, Denver
(Presented by: Kirk Anderson, MD)

Poster #NM89
IMPACT OF BODY MASS INDEX ON SURGICAL OUTCOMES IN WOMEN WITH PELVIC FLOOR DISORDERS
Jose Flores, MD, Travis Pagliara, MD, Sean McAdams, MD, Isaac Palma, Nissrine Nakib, MD
University of Minnesota, Minneapolis, MN
(Presented by: Jose Flores, MD)

Poster #NM90
PESSARY USE AS A FIRST LINE TREATMENT FOR PELVIC FLOOR DISORDERS
Meghan Griffin, DO¹, Youngwu Kim, MD², Richard Roberts, MD² and Husam Abed, MD¹
¹Henry Ford Hospital, Detroit, MI; ²Wayne State School of Medicine, Detroit, MI
(Presented by: Meghan Griffin, DO)

Poster #NM91
THE EFFICACY AND SAFETY OF TWO SURGICAL MESHES, PROLIFT® AND EASYCELE®, FOR THE TREATMENT OF ANTERIOR VAGINAL WALL PROLAPSE
Joong Shik Lee, Professor¹, Hyo Serk Lee, Urologist², Young Sik Kim, Urologist³, Ju Tae Seo, Professor⁴ and Young Ho Kim³
¹Department of Urology, Cheil general hospital, Kwandong University, Seoul, Korea; ²Department of Urology, Cheil general hospital, Kwandong university, Seoul, Korea; ³Department of Urology, Ilsan Hospital, National Health Insurance Corporation, Ilsan, Korea; ⁴Department of Urology, Cheil general hospital, Kwandong university, Seoul, Korea
(Presented by: Joong Shik Lee, Professor)

Poster #NM92
ABDOMINAL SACROCOLPOPEXY WITH CONCURRENT TOTAL ABDOMINAL HYSTERECTOMY IN THE ROBOTIC ERA
Allison Polland, MD¹, Katherine Brewer, MD¹, Gillian Stearns, MD² and Jaspreet Sandhu, MD³
¹Icahn School of Medicine at Mount Sinai; ²Memorial Sloan Kettering Cancer Center; ³Memorial Sloan Kettering Cancer Center
(Presented by: Allison Polland, MD)

Poster #NM93
PELVIC ORGAN PROLAPSE, URINARY INCONTINENCE DUE TO STRESS, SURGICAL OUTCOMES AND POSTOPERATIVE COMPLICATIONS IN WOMEN WITH AND WITHOUT HYSTERECTOMY
Jose Flores, MD, Sean McAdams, MD, Travis Pagliara, MD, Isaac Palma, Nissrine Nakib, MD
University of Minnesota, Minneapolis, MN
(Presented by: Jose Flores, MD)
THE ROLE OF BK CHANNELS AND CHOLINERGIC NEUROTRANSMISSION IN THE HYDROGEN SULFIDE-INDUCED GUINEA PIG DETRUSOR SMOOTH MUSCLE CONTRACTIONS

Vitor Fernandes, BS, Wenkuan Xin, PhD, Georgi Petkov, PhD
University of South Carolina, Columbia, SC
(Presented by: Georgi Petkov, PhD)

Introduction: Hydrogen sulfide (H2S) is a key signalling molecule regulating important physiological processes in various tissues, including smooth muscle. The mechanisms by which H2S regulates detrusor smooth muscle (DSM) function, however, are not well understood. Large conductance voltage- and Ca2+ -activated K+ (BK) channels and muscarinic acetylcholine receptors (mAChRs) are key regulators of DSM excitability and contractility. This study investigates the cellular and tissue mechanisms by which H2S affects DSM contractions, cholinergic neurotransmission, and BK channels in freshly-isolated guinea pig DSM strips and cells.

Methods: We used a multidisciplinary experimental approach including isometric DSM tension recordings, colorimetric acetylcholine (ACh) measurement, Ca2+ imaging, and patch-clamp electrophysiology.

Results: In isolated DSM strips, the novel slow release H2S donor, p-(4-methoxyphenyl)−p−4−morpholinylphosphinodi −thioic acid (GYY4137), significantly increased the spontaneous phasic and nerve-evoked DSM contractions. The blockade of neuronal voltage-gated Na+ channels or muscarinic ACh receptors with tetrodotoxin and atropine, respectively, reduced the stimulatory effects of GYY4137 on DSM spontaneous phasic contractions. GYY4137 increased ACh release from bladder nerves, which was inhibited upon blockade of L-type voltage-gated Ca2+ (CaV) channels with nifedipine. Furthermore, GYY4137 increased the amplitude of the Ca2+ transients and basal Ca2+ levels in isolated DSM strips. GYY4137 reduced the DSM relaxation induced by the BK channel opener, NS11021. In freshly-isolated DSM cells, GYY4137 decreased the amplitude and frequency of transient BK currents recorded at −20 mV in the perforated whole cell configuration and also reduced the single BK channel open probability measured in excised inside-out patches. GYY4137 also depolarized the DSM cell membrane potential.

Conclusion: The current study reveals a novel regulatory mechanism by which H2S modulates the excitability and contractility of DSM: H2S increases spontaneous phasic and nerve-evoked DSM contractions by stimulating ACh release from bladder nerves in combination with a direct inhibition of DSM BK channels.

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Clinical relevance: LUTS/Voiding Dysfunction
Introduction: Obesity is linked to diabetes and together these diseases are associated with insulin resistance and hyperglycemia. Since most animal models of type 2 diabetes are also obese, unraveling the effect of obesity from that of diabetes on bladder dysfunction is challenging. Genetic deletion of insulin receptor substrates 1 and 2 in mice causes insulin resistance and hyperglycemia without development of obesity. These double knockout (DKO) mice develop a temporal pattern of diabetic bladder dysfunction (DBD) that parallels DBD observed in humans. The purpose of this study was to investigate the impact of obesity on DBD in mice fed a high fat diet (HFD).

Methods: Female DKO mice (12−14 weeks old) and their genetic controls (WT) were fed a normal diet (DKO, WT) or a HFD (DKO+HFD, WT+HFD) for 10 weeks. Urinary bladders were harvested from each animal for functional evaluation by ex vivo muscle tension studies. The mucosa was removed from half of each bladder. Contractile responses induced by α−β−methylene ATP (αβmeATP), carbachol (CCh), KCl and electrical field stimulation (EFS) were measured in bladder tissue with and without mucosa.

Results: HFD significantly increased body weight and fasting glucose in WT and DKO mice. Body weight in WT+HFD was greater than DKO+HFD. Compared to WT (normal diet), responses to αβmeATP, CCh and neutrally-mediated EFS contractions were significantly higher in DKO bladders, independent from the presence or absence of mucosa. With intact mucosa, agonists and EFS induced contractions in DKO+HFD were not different from contractile responses obtained from DKO fed standard chow. However, contractile responses to EFS in WT+HFD tissue with intact mucosa were significantly higher than the response from WT fed a normal diet. In mucosa-denuded tissue, HFD had little effect on WT tissue; however, for DKO+HFD animals, CCh, KCl and EFS induced contractions were significantly higher than the responses from DKO fed standard chow.

Conclusion: The increased contractile responses of DKO bladders compared to WT are consistent with the compensated phase of DBD as demonstrated previously. The effect of HFD appeared to be more pronounced and functionally distinct in diabetic bladders than in WT. The effect of HFD in WT on the response to EFS, but not agonists, suggests alterations in neurotransmission, while smooth muscle and urothelial compartments appear to be altered by HFD in diabetic animals.

Clinical relevance: LUTS/Voiding Dysfunction
Poster #BS2

STEM-CELL BASED THERAPY PREVENTS PELVIC ORGAN PROLAPSE (POP) IN LYSYL OXIDASE LIKE-1 (LOXL1) KNOCKOUT (KO) MICE
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(Presented by: Bruna M. Couri, MD)

Introduction: Loxl1 KO mice develop POP with increasing age & parity, similar to women. Regenerative cell-based therapies from paracrine secretions that can be collected from cell culture media could be tested in this model. We hypothesized that concentrated conditioned media (CCM) from mesenchymal stem cells (MSC) of wild type (WT) mice would be more beneficial than Loxl1 KO mice MSC in protecting against POP development in Loxl1 KO mice. The aims were: 1) assess relevant CCM protein content from Loxl1 KO (−/−CM) & WT (+/+CCM) mice MSC; 2) determine if CCM intra-peritoneal (IP) injections protect Loxl1 KO mice against POP after delivery.

Methods: MSC were obtained from bone marrow of Loxl1 KO & WT mice, cultured in media with serum & antibiotic until passage 8−11, when the media was replaced with antibiotic- & serum-free media for 24h, collected, spun and filtered to a concentration of 50X. Concentrated control media (CM) was produced in the same way but without conditioning by cells. Total protein was measured by Bradford protein assay. Relevant proteins to elastin & connective tissue were assessed in CCM by ELISA. Seventy seven Loxl1 KO female mice received 300μl IP injections of either +/+CCM, −/−CCM, or CM within 48h after first & second deliveries. POP was assessed weekly for 20 weeks after first delivery. Kaplan−Meier survival analysis compared time-to-prolapse between groups, and Student’s T−test compared concentration of CCM proteins. P<0.05 indicates a significant difference.

Results: Loxl1 KO mice treated with −/−CCM showed a significant reduction of time to prolapse (p=0.04) compared to CM treated mice. In contrast, time to prolapse in Loxl1 KO mice treated with +/+CCM was not significantly different compared to CM treated mice (p=0.14). CM demonstrated lack of protein content; there was no significant difference (p=0.28) in total protein concentration between +/+CCM & −/−CCM. Concentration of LOXL1 protein in +/+CCM was 0.06ng/ml/μg but was undetectable in −/−CCM or CM. There were no significant differences in protein content of LOX, CCL7, VEGF, TGF−β, FGF, activin A, TIMP2 & MMP2 in either CCM.

Conclusion: IP injection of −/−CCM slowed development of POP in Loxl1 KO mice compared to +/+CCM, indicating that CCM slows development of POP by a mechanism other than replacing missing LOXL1, and suggesting that a non-invasive cell-based therapy could possibly be used to prevent POP. Further research is needed to clarify the mechanism.

Clinical relevance: Pelvic Organ Prolapse
UNDERACTIVE BLADDER IN OBESE-PRONE RATS FED A HIGH FAT DIET

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(Presented by: Nazema Siddiqui, MD, MHSc)

Introduction: Changes in systemic metabolism lead to alterations in lower urinary tract (LUT) physiology. High fat diets (HFD) are implicated in the development of insulin resistance. Obese Prone (OP) and Obese Resistant (OR) rats (Charles River) are used in obesity research, as OP rats become obese on HFD while OR remain lean. To assess the effect of obesity on LUT function, we characterized LUT function in both rat strains during chronic HFD feeding.

Methods: Four OP and 4 OR female rats were placed on the same HFD at 9 weeks (wks) of age (30% fat for 12 wk, followed by 60% fat for 4 wk, Research Diets). Conscious restrained cystometry was performed at 7, 11 and 15 wk HFD. Body mass index (BMI) was calculated, and serum glucose was measured. For all cystometric evaluations, single fill cystometrograms were performed to determine true bladder capacity (TBC), followed by 60 min of continuous cystometry to determine functional bladder capacity (FBC). Voiding efficiency (%VE) was calculated as follows: %VE = [average FBC/TBC]*100. For animals showing overflow incontinence (OI), TBC was a priori considered to be 5 milliliters.

Results: Mean BMIs were higher in OP compared to OR rats (0.64 vs. 0.46 at 7wk, 0.72 vs. 0.52 at 11 wk, 0.74 vs. 0.52 at 15 wk, respectively; p = 0.002). At 15 wk HFD, there were no significant differences in mean blood glucose between OP and OR groups (102 +/- 14 vs. 97 +/- 11, respectively; p=0.58). TBC and %VE were compared across all time points and results are shown in the figure. At 7 wk HFD, all rats exhibited normal voiding patterns. At 11 wk HFD, 2/4 (50%) of OP rats exhibited OI while the remaining 2/4 OP and all 4 OR rats showed normal voiding patterns. At 15 wk HFD, one of the OP rats with OI at 11 wk HFD could no longer be assessed due to catheter issues. Of the remaining OP rats, 2/3 (66%) exhibited overflow incontinence while all OR rats showed normal voiding patterns. Mean %VE decreased in the OP group.

Conclusion: Obese non-diabetic animals exhibited elevated bladder capacities, to the point of OI in the majority, and decreased voiding efficiency after 15 wk HFD. OP rats given a chronic HFD may serve as a promising new model to study underactive bladder.

Clinical relevance: LUTS/Voiding Dysfunction
ABDOMINAL MUSCLE ACTIVITY DURING MICTURITION IS DECREASED BY INTRAVESICAL INHIBITION OF P2X3 RECEPTORS IN INTACT RATS

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(Presented by: Alvaro Munoz, PhD)

Introduction: Contraction of abdominal muscles occurs during normal voiding, and is also considered a feedback response after noxious stimulation of the urinary bladder. The micturition reflex is initiated by activation of afferent fibers in the bladder, where P2X3-purinergic receptors (P2X3R) play a key sensory role for normal urination as well as for pain transmission. The main objective of this study was to determine whether the electromyographic (EMG) activity of internal oblique (IO) abdominal muscles can be modulated by pharmacological inhibition of bladder P2X3R.

Methods: Female Sprague-Dawley rats were anesthetized with urethane and implanted with a suprapubic catheter for cystometric evaluation. For recording EMG activity, a skin incision was made lateral to the second last inguinal nipple and needle electrodes inserted into the IO muscle. Data recording for voids, bladder pressure and EMG IO activity was synchronized to start at the same time. Saline infusion into the bladder was started at a rate of 0.1 ml/min. After 4–5 voiding contractions, an infusion containing the specific P2X3R antagonist AF−353 (20 µM) began to record 4–5 more voiding events. Thereafter, the infusion solution was re-initiated with regular saline. On each step we determined voided volume, bladder peak pressure (BPP), duration of BPP and IO−EMG, intercontractile intervals (ICI), and the amplitude and frequency of the IO−EMG. Group analysis was performed on six rats with p<0.05 considered significant.

Results: Intravesical inhibition of P2X3R did not affect voiding volumes, BPP, or the interval durations for either BPP or IO−EMG. However, intravesical AF−353 did significantly increase the duration of the ICI. This rise effect was reversed during the second infusion of saline. Intravesical inhibition of P2X3R generated a significant decrease in the amplitude of the IO−EMG together with a substantial reduction in the frequency of the IO−EMG activity.

Conclusion: The specific blockage of the initial steps in the micturition-reflex by pharmacological inhibition of bladder P2X3R negatively affects final micturition events associated with abdominal muscle responses. Our experimental approach may be useful to distinguish normal from noxious voidings in rat models of bladder dysfunction. Furthermore, both initial and end stages of the micturition process could be better evaluated.

Support: Houston Methodist Foundation, the Cullen Foundation and the Brown Foundation

Clinical relevance: Urodynamics
Poster #BS5

Castration Differentially Impairs Female Rabbit Bladder and Pelvic Floor Contractile Endurance in a Novel Model of In-Vitro Ischemia-Reperfusion

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(Presented by: Amy Dobberfuhl, MD)

Introduction: Weakness of the pelvic floor muscles (PFM) is well described in stress urinary incontinence and pelvic organ prolapse. In the female rabbit after ovariectomy, low estrogen is associated with poor bladder compliance, decreased blood flow, thinning of mucosa, and urothelial hypoxia. The current experiment seeks to directly explore the dynamic contractile characteristics of PFM and bladder detrusor muscle (BDM) in the setting of in-vitro ischemia and reperfusion.

Methods: Twelve female adult virgin rabbits were divided into three groups: control, ovariectomized (OVX) and OVX with estradiol (E) replacement. At 4 weeks animals were euthanized. BDM, pubococcygeous (PC) and coccygeous (CC) were isolated into 150mg strips. Strips were equilibrated in oxygenated Tyrodes and then stimulated under ischemic conditions at 32 Hz every 5 minutes for 1 hour in nitrogenated Tyrodes without glucose. Strips were then incubated in oxygenated Tyrodes for 2 hours and stimulated at 2, 8 and 32 Hz. Biochemical analyses were performed for nitrotyrosine, carbonylation and malondialdehyde as markers of oxidative stress.

Results: Bladder weight was significantly decreased after OVX and restored above control values after E replacement. PFM required 10 times the power to stimulate contractions at baseline. Both maximal contractile response and rate of tension generation were significantly greater for the BDM than either PC or CC and all showed diminished strength after OVX. The PC and CC were both significantly less sensitive to the effects of ischemia and continued to have stable but reduced contractile responses to field stimulation during the entire hour of ischemia. There was a progressive decline of BDM contractile strength, with completely diminished response after 1 hour of ischemia. E replacement improved the ischemic contractile response after prolonged hypoxia. Following the ischemic period, PFM contractile recovery was significantly superior to BDM and markers of oxidative stress were consistent with the improvement and recovery of contractile performance.

Conclusion: PFM contractions and recovery were significantly slower than BDM, yet not as sensitive to either in-vitro ischemia or the effects of post-ischemia reperfusion. Replacement of E after OVX reduced the oxidative stress on tissue and was protective to the effects of hypoxia on pelvic floor and bladder contractile function.

Funding: Capital Region Medical Research Foundation & Stratton VA Research and Development Office

Clinical relevance: Female Urology – including Incontinence
Poster #BS6
THE VAGINAL DISTENTION MODEL OF STIMULATED BIRTH TRAUMA DOES NOT PRODUCE INCONTINENCE IN MICE
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(Presented by: Alex Galante, BA)

Introduction: Various animal models have been created in an attempt to reproduce the trauma of childbirth in order to study its physiological consequences. A small animal model using vaginal distension (VD) to simulate birth trauma has been used to study stress urinary incontinence (SUI) in mice. The objective of this study was to test whether the VD method produces incontinence in mice as previously described.

Methods: Aged Mice: A total of 190 12-week-old C57BL/6 mice were randomized into either VD or sham groups. VD mice underwent 0.3mL balloon VD for one hour. Sham mice underwent placement of an uninflated six-French Foley catheter for one-hour. All the 12-week mice were divided into five subgroups containing 19 mice each to determine the timing of LPP measurement after VD (0, 4, 10, 20, or 40 days). An additional 190 40-week-old mice were similarly randomized. A separate cohort of 20 mice were set aside and served as age-matched controls. Super VD: A total of eight mice underwent VD with a balloon catheter filled with 0.5 ml of water for three hours. Four days later, LPP was measured. Hegar VD: 16 mice underwent VD with 6 mm or 7 mm Hegar dilators for one hour. Four days later, LPP was measured.

Results: In 40 week-old mice, incontinence was produced at 0 days in both VD and sham groups as demonstrated by a significantly decreased LPP compared with age-matched, non-instrumented control mice. The VD group had significantly lower LPP values than sham on day 0 (p=.0026) but not during any other time point thereafter. Mice demonstrated recovery of LPP values to control values in VD and sham groups by four days, which persisted at 10, 20, and 40 days after instrumentation. In 12 week-old mice LPP achieved a nadir at day 0 for sham and VD groups which was significantly lower than controls. This nadir was followed by return to control levels by day four, continuing to day 40 post-instrumentation. An ANOVA analysis did not reveal any significant differences in LPP values among the Super VD, Hegar VD, VD, Sham VD, and control groups at 4 days after instrumentation.

Conclusion: The VD model does not produce SUI in mice.

Clinical relevance: Female Urology – including Incontinence
PERIURETHRAL MUSCLE-DERIVED MONONUCLEAR CELL INJECTION IMPROVES MORPHOLOGICAL RECOVERY OF THE URETHRAL SPHINCTER IN A RAT MODEL OF URINARY INCONTINENCE

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(Presented by: Cristiano Gomes, PhD)

Introduction: We investigated the effect of periurethral injection of skeletal muscle-derived mononuclear cells (SMDMC) in the urethral sphincter in an animal model of stress urinary incontinence.

Methods: SMDMC were isolated from the gastrocnemius muscle of male WKY rats. The muscle underwent enzymatic dissociation followed by isolation of mononuclear cells with no need for culture and/or expansion. Urinary sphincter deficiency was created by surgical urethrolysis in 20 female Wistar-Kyoto isogenic (WKY) rats. One week after that a periurethral injection of 10^6 SMDMC was performed in 10 rats (Cells group) and 10 rats received saline injections (Saline group). Ten sham-operated animals served as controls (Sham group). Four weeks after the injection, the rats were euthanized and their urethras harvested. The incorporation of male SMDMC in the female urethra was confirmed by the detection of Y cromossomes by fluorescence in situ hybridization. Hematoxylin-eosin and morphological and morphometric analysis were performed using Masson's trichrome. We calculated the muscle to collagen rate in each urethral sample and the proportions were compared between groups.

Results: Urethrolysis produced marked urethral disruption characterized by loss of its circular cross-section and increased urethral thickness (Figure 1). A major decrease in the ratio of muscle to connective tissue was observed in the Saline group in comparison to the Cells group as well as the Sham group (0.54 ± 0.34 vs 1.52 ± 0.60 vs 2.41 ± 1.60, respectively; p< 0.001). Similarly, a greater decrease in the urethral area occupied by muscle was observed in the Saline group in comparison to the Cells group and the Sham group (0.19 ± 0.04 vs 0.27 ± 0.03 vs 0.27 ± 0.04, respectively; p< 0.001).

Conclusion: SMDMC incorporated into the injured urethral sphincter resulted in less morphological disruption and increased muscle content in a rat model of urinary incontinence. The SMDMC are easily obtained, needing no cell expansion and shorter preparation time.

Funding: Research Grant from FAPESP (# 2011/51868–5)
Clinical relevance: Female Urology – including Incontinence
Basic Science Poster Full Abstracts

Poster #BS8
CHRONIC IRRITATION OF THE BLADDER LEADS TO CHANGES IN THE SYMPATHETIC REFLEX
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(Presented by: Jang-Hwan Kim, MD)

Introduction: There is increasing evidence that the sympathetic system is involved in chronic pain conditions. Recent study has shown that sympathetic over activity is seen in interstitial cystitis/bladder pain syndrome (IC/BPS) patients and that bladder sympathetic fibers and urine noradrenaline levels are increased in an animal model of inflamed bladder using lipopolysaccharide (LPS) bladder instillation. Changes in blood pressure (BP) and heart rate during hydrodistention (HD) of IC/BPS patients is probably due to a sudden increase in sympathetic output. We investigated the changes in blood pressure during HD of rats instilled with LPS into the bladder. This study was funded by Handok Pharmaceuticals (Seoul, Korea).

Methods: Sprague-Dawley female rats (200−250 g) were divided into two groups (short term n=6; long term n=8). The short term group received protamine sulfate (PS) 10 mg/ml in the urinary bladder for 30 minutes followed by 2 mg/ml LPS instillation for 45 minutes. HD (intravesical pressure of 140−150 mmHg) was performed for 1 minute per each session (total 3 sessions) and BP measured from the carotid artery. The long term group received PS and 750ug/ml LPS instillation once a week for 5 weeks. One week after the last instillation, BP measurement during HD was performed.

Results: BP did not change during HD in the short term group (Δ MBP 17.722±21.215 mmH2O, p=0.0961). However, BP significantly increased during HD in the long term group (Δ MBP 34.280±9.870 mmH2O, p=0.002).

Conclusion: We observed a significant increase in BP during HD of rats instilled with LPS. Although previous study has shown an increased bladder sympathetic fiber density after a single LPS bladder instillation, increased BP, a possible manifestation of that change was observed only in the long term group. It seems chronic irritation of the bladder leads to changes in the sympathetic reflex.

Clinical relevance: IC and Pelvic Pain − UTI / Inflammatory

![Fig 1. Change in blood pressure during hydrodistention (HD). A) Short term, B) Long term](image)
Poster #BS9
WIRELESS URODYNAMIC DEVICE DEMONSTRATES SUBMUCOSAL SENSOR IS COMPARABLE TO URODYNAMIC CATHETER
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(Presented by: CR Powell, MD)

Introduction: Conventional urodynamic measurement is not suitable for long-term bladder pressure sensing because it requires trans-urethral catheters that are exposed to urine. It is hypothesized that a sub-mucosal sensor would sense changes in pressure as accurately as a trans-urethral, intra-luminal catheter.

Methods: Female Ossabaw minipigs were implanted with a novel wireless bladder pressure sensor developed collaboratively between the Purdue University School of Electrical and Computer Engineering, the Indiana University Department of Urology, and Department of Cellular and Integrative Physiology. Called the UPLink, this device can be implanted beneath the bladder mucosa and will broadcast data wirelessly to a nearby receiver. Urodynamic studies were completed in anesthetized animals using a Laborie Delphis machine (Laborie, Toronto, Canada) using gas-charged T-Doc catheters for comparison.

Results: The device was implanted in five animals. Intra-class correlation coefficients (ICCs) were calculated for concurrent measurement analysis of bladder pressure resulting in calculated ICCs of 0.979, Figure 1, indicating a strong validity (R2 of 0.946). After zeroing to atmosphere, urodynamic bladder measurement demonstrated mean pressures of 9.0 +/- 3.5 cm H2O (95% CI) with empty bladder and 53.2 +/- 21.8 cmH2O with a full bladder. Mean capacity was 1,328.6 +/- 125.2 ml. No devices were noted to perforate bladder mucosa at the conclusion of the trial. Urinary incontinence was noted in one animal at capacity.

Conclusion: Sub mucosal bladder pressure monitoring is strongly correlated with reference measurements, demonstrating that a sensor implanted within the wall of the bladder can accurately represent the intraluminal bladder pressure without contacting urine directly.

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Clinical relevance: Urodynamics
Poster #BS10

COMPARISON OF FEMALE PELVIC FLOOR DEFORMATION BETWEEN JUMPING AND VALSALVA MANEUVER
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(Presented by: Yingchun Zhang, PhD)

Introduction: Urine leakage occurs when SUI patients undergo an increase in intra-abdominal pressure (IAP). The IAP increase is often realized by allowing subjects to perform Valsalva in SUI evaluation, and is used as a representation of a broad range of stress events such as jumping or coughing. However, the difference in pelvic deformation pattern among these events has not been well characterized. The pelvic deformation patterns during Valsalva and jumping were compared using a well-established computational model of the female pelvis.

Methods: The IAP increase is simulated by applying a uniformly distributed pressure on the top and front surfaces of the abdomen in the Valsalva test, and is simulated by assigning the time history data of landing velocities as the boundary conditions of the pelvic bone in the jumping test. With the exact same pelvic model, our study focused on the urethral angle changes (UAC), bladder neck displacements, and levator ani muscles (LAM) pressures achieved in both tests.

Results: Maximum IAP reached 130cmH2O in the Valsalva test and 215 cmH2O in the jumping test, and the comparisons were made at the IAP of 100cmH2O. The Valsalva maneuver generated a much larger posterior displacement from the resting position in the bladder neck and the pelvic floor than the jumping maneuver (Fig.1 A–B). The vaginal and rectal canals were also remarkably compressed. During the jumping test the whole model experienced large vertical displacement so that perineal membrane underwent severe deformation. Due to such different patterns, the Valsalva maneuver generated a UAC of 15.1°, much larger than the jumping UAC of 1.6°. Fig. 1 C–D show the jumping test yielded a maximal Mises stress of 2.20 MPa on the LAM at the attachment of the posterior iliococcygeus to the coccyx, while the maximal Mises stress of 0.53 MPa was achieved at the attachment of the anterior puborectalis to the pubic bone in the Valsalva test.

Conclusion: In comparison, the Valsalva maneuver generates a larger urethral angle change and stronger posterior pelvic displacement; the jumping generates a larger stress on LAM and stronger inferior pelvic motion.

Financial Funding: NIH K99DK082644, R00DK082644 and the University of Houston.
Clinical relevance: Female Urology – including Incontinence
SUTURE RETENTION STRENGTH OF THREE TYPES OF DECELLULARIZED OVINE VAGINAL PATCHES FOR SURGICAL APPLICATIONS

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(Presented by: Sourav Patnaik, BS)

Introduction: There is great interest in the development of biologic materials to augment surgical repair for pelvic organ prolapse. In this study, the assessment of the strength and surgical suitability of such a tissue construct is studied as a necessary part of pre-clinical validation.

Objectives: To assess the properties of decellularized specimens of sheep vagina as it relates to surgical suturing. Specimens of sheep vagina were prepared using different decellularization methods and their ability to resist tearing at suture sites was assessed.

Methods: Specimens of sheep vaginal wall were obtained from a commercial abattoir, processed and were decellularized using one of three methods Trypsin (enzyme), Triton-X (mild chemical), and Sodium Dodecyl Sulfate (SDS) (detergent). Along with gentle agitation, these chemicals accomplish a gentle disruption of the extracellular matrix, which leads to removal of cellular materials and debris. Decellularized specimens, and native vaginal wall controls, were dissected to circular patches of 19.4mm (Fig 1a). Each specimen was then sutured, using eight interrupted stitches of 2–0 polydioxanone suture with a taper needle, to a specimen of native vaginal wall, in which a 14.9mm circular hole had been cut. This patch/tissue construct was then subjected to ball-burst tests by mounting them between two metal plates with a 19.05mm diameter hole, and ruptured using a 12.7mm diameter ball at a rate of 10mm/min (ASTM D3787). Data from tests, including number of failed sutures, were processed for three decellularization treatments.

Results: Data indicated that Trypsin treated group was substantially weaker in all respects when compared to SDS and Triton treated groups. SDS and Triton treated groups had similar values for stiffness and load at failure, but Triton treated group appeared to create a patch that could accommodate greater stretch (Fig 1c–d).

Conclusion: Given the complex mechanical properties of the vagina, the accommodation of a wider variety of deleterious scenarios may be advantageous. Future studies will assess the biocompatibility and cell surface capabilities of these patches.

Clinical relevance: Pelvic Organ Prolapse
Poster #BS12
EVALUATION OF A NOVEL SUTURE METHOD IN STABILIZING URETHRAL HYPERMOBILITY
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(Presented by: Yingchun Zhang, PhD)

Introduction: To evaluate a novel suture fixing method to stabilize the urethra in correcting the urethral hypermobility.

Methods: A well-established subject-specific computational pelvic model was utilized to reveal pelvic floor deformation under induced increase in intra-abdominal pressure (IAP). The urethral mobility was characterized by vectors of movement from rest to a final IAP of 100cmH2O of six equidistant points along the posterior urethral wall. By anchoring points on the inferior perineal membrane surface close to the urethra, the suture helps eliminate urethral mobility. Four tests were performed. No muscle was weakened in Test 1 and the levator ani muscle (LAM) was weakened in Tests 2–4. No stabilization method was employed in Test 2. A simple fixing method was employed which confined 9 nodes on either side of the perineal membrane from translations in Test 3. The simple fixing method represents an ideal situation in which the anchored points have zero displacements. The suture fixing method was employed in Test 4, by stitching the same 9 nodes to the inferior surface of the obturator internus muscle.

Results: The urethral motion profile and pelvic floor deformation are shown in the figures. The weakened LAM leads to a clear amount of increase in urethral motions, and the maximum increase of 5.9mm occurs at the internal meatus. The simple fixing method effectively stabilizes the urethral motion especially in middle and distal urethra. Urethral motions in test 2 are reduced by as much as 3.5mm at the middle urethra. The deformation shows that the simple fixing method holds the urethra firmly while the bladder neck experiences a large posterior shift. Such a pattern could possibly close the urethra and prevent urine from leaking. The suture fixing method has a more uniform urethral motion control. Urethral motions in test 2 are reduced by an average amount of 1mm at all six equidistant points.

Conclusion: The urethral mobility can be well controlled by anchoring the adjacent points near urethra on the perineal membrane. A proper selection of suture placement would be helpful to maximize the treatment outcome.

Clinical relevance: Female Urology – including Incontinence
PRACTICAL AND INEXPENSIVE PROCEDURE TO MEASURE MECHANICAL PROPERTIES OF VAGINAL TISSUE

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(Presented by: Vani Dandolu)

Introduction: There is a need to better understand the mechanical characteristic of pelvic tissues to develop more compatible biological materials and new mesh materials that would supplement the native tissue repair in pelvic organ prolapse. Towards that goal we tested sheep vaginal tissues to develop inexpensive, easily reproducible experimental procedures for measuring mechanical characteristic. Later, these procedures will be adjusted for use on corresponding human tissues.

Methods: The vaginal tissues were obtained from 10 sheep without POP. All sheep were 9 months old; their weight varied between 146 to 150 lbs. The samples were kept frozen in −80 Celsius and thawed before testing at room temperature. A custom-made punch was used to cut rectangular samples (10 mm x 4 mm) from both anterior and posterior parts of vaginal tissue. All samples have the tissues in the lengthwise direction. A customized fixture was developed to fully secure the samples, which were tested using the Bose Machine, ElectroForce 200 N Motor. A calibrated SONY video camera was focused on the sample. The gauge length of each sample was measured using a custom program that incorporates MATLAB Computer Vision Toolbox. The uniaxial tensile and stress relaxation tests were then conducted. The force data were collected for each test in addition to using the camera system and the custom software to monitor the associated deformation. Experimental data were synchronized and used to calculate stress and strain values.

Results: The stress-strain curve showed the vaginal tissues exhibit a nonlinear behavior. Based on the tensile and stress relaxation tests, a new viscoelastic model for sheep tissue is proposed. The stiffness of anterior showed lower value than posterior wall. Strain rate effect is similar for anterior and posterior sheep vaginal tissue.

Conclusion: Nonlinear behavior confirms the anisotropic nature of the vaginal tissue. The greater the stiffness, the higher is the non-linearity. The non-uniform distribution of collagen and elastin fibers explains the nonlinearity. This research can be a basis for conducting similar testing using human vaginal tissues to assess their mechanical characteristics.

Clinical relevance: Pelvic Organ Prolapse

Fig.1. Stress-strain curve for sheep vaginal tissue without POP
THE INTERACTION BETWEEN URINARY INCONTINENCE (UI), RECURRENT LOWER URINARY TRACT INFECTION (UTI), AND AGING IN MICE

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(Presented by: Zhina Sadeghi, MD)

Introduction: UI and recurrent UTI are both highly prevalent in the aged female population. We hypothesized that UI and UTI phenotypes have negative bidirectional impact on each other, which worsens with aging.

Methods: UTI was induced by inoculation of ≈108 uropathogenic E-colii (UPEC89) in 0.05ml PBS into the bladder via a transurethral catheter. Control mock-infected mice received 0.05 ml saline. We tested various components of our hypotheses by 4 sets of experiments: i) Determined the impact of recurrent UTI on UI by measuring leak point pressure (LPP) in 20wk old B6 mice 2wk after 2 infections (1day apart) with UPEC89 (UTIx2 n=10, Saline n=6). ii) Determined the impact of UI on urine bacterial clearance in 20wk old B6 mice after UPEC89 challenge. UI was created by pudendal nerve transection in 17wk old mice, followed by single UTI induction 3wk later (PNT+UTIx1 n=10, Saline n=6). Bacterial counted for urine collected on day 1, 2, 3, 5, 9, and 14. Control groups included: Saline n=6, UTIx1 n=10, PNT+Saline n=6; iii) Determined if recurrent UTI in >80wk old B6 mice worsens UI 2wk following infection (UTIx2 aged mice: n=15, Saline control aged mice: n=10) compared to experiment (i) 20wk old mice. iv) Determined if bacterial clearance following 2 challenges with UPEC89 was diminished in >80wk old mice compared to 20wk old mice during 2wk.

Results: i) No significant differences between LPP of infected and control mice 2wk after inoculation. ii) Control, and PNT group remained sterile during the study. All UTIx1 induced mice, and 86% of PNT+UTIx1 mice developed UTI by day 2. Complete urine bacterial clearance rate was ≈40% lower in PNT+UTIx1 mice compared to UTIx1 alone. No LPP difference was found in PNT+UTI, saline, UTI, and PNT treated groups at day 14. iii) Significantly reduced LPP was observed in aged mice with UTIx2 compared to saline controls (P<0.05). LPPs of UTIx2 aged mice trended lower than UTIx2 and saline 20wk mice but lacked statistical significance. iv) Bacterial clearance in >80wk old mice was not observed by day 14, while 40% of 20wk old mice urine cleared by day 14. *Homogenized kidney tissue had negative microbial culture in all animals.

Conclusion: Recurrent UTI failed to induce UI in 20wk old B6 mice but was associated with increased UI in >80wk old mice. Additionally >80wk old mice cleared UTI infections slower than 20wk old mice. Our finding suggests aging prolongs bacterial clearance while prolonged bacterial infection promotes the development of UI.

Clinical relevance: Female Urology – including Incontinence
Poster #BS15
THE ROLE OF BACTERIAL BIOFILMS AND CHRONIC INFLAMMATION IN THE DELAYED DEVELOPMENT OF SYSTEMIC SIDE EFFECTS FOLLOWING TRANSVAGINAL PLACEMENT OF MESH SLINGS FOR INCONTINENCE

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(Presented by: A. Lenore Ackerman, MD, PhD)

Introduction: After the adoption of vaginal mesh slings for stress urinary incontinence, a number of severe complications of these procedures emerged, including mesh extrusion, infection, pain, urinary problems, bleeding, organ perforation, and vaginal scarring. While most complications of mesh placement are directly attributable to pathology at the surgical site (eg. erosion or nerve entrapment), we have also observed the delayed development of systemic symptoms (SS) consistent with generalized inflammation; 17% of our patients with mesh complications complain of myalgias, myositis, arthritis, sinusitis, asthma, chronic fatigue, sleep disturbances, cognitive impairment, memory loss, or skin changes. We sought to investigate the cellular mechanisms involved in the pathophysiology of these delayed reactions.

Methods: Explanted mesh segments were cultured for bacterial pathogens and examined by immunohistochemistry for local inflammatory reactions surrounding the mesh. We also surveyed the bacterial species present in mesh explants using PCR-based amplification of bacterial ribosomal DNA and subsequent sequencing after separation using denaturing gradient gel electrophoresis.

Results: We were able to culture pathogenic bacteria from explanted APM samples in affected patients. Preliminary histological analysis has also demonstrated the presence of chronic inflammation surrounding the mesh explants of patients with delayed systemic mesh complications. Both the bacterial colonization and surrounding inflammation appear to be absent from patients without pain or systemic symptoms who underwent mesh removal due to misplacement of the sling, as for urinary retention.

Conclusion: We hypothesize that contamination with vaginal bacteria during sling placement may result in bacterial biofilms on the mesh in susceptible individuals. The result is a local smoldering subclinical infection that over time overrides the immune system’s ability to maintain tolerance to self, leading to immune dysregulation. Understanding the fundamental mechanisms whereby the placement of vaginal mesh can result in the development of severe systemic reactions may have multiple long-reaching effects, including identifying treatment targets in patients with SS, designing new medical implants that minimize the risk of SS, and increasing our understanding of the role of bacterial biofilm and chronic inflammation in the development and treatment of autoimmunity.

Clinical relevance: Female Urology – including Incontinence
USE OF REAL TIME ULTRASOUND DURING URODYNAMICS TO CALCULATE DETRUSOR WALL TENSION

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(Presented by: Andrew Colhoun, MD)

Introduction: During standard urodynamics, pressure generally increases little during bladder filling. Furthermore, afferent nerve signaling reflects detrusor wall tension rather than pressure. Thus, there is a pressing need for a urodynamics test that evaluates detrusor wall tension. The purpose of this investigation was to describe a novel method to determine detrusor wall tension during urodynamics through the incorporation of real time ultrasound.

Methods: As part of an IRB-approved extended urodynamics protocol individuals with OAB defined as ICIq−OAB question 5a ≥3 had real time ultrasound during filling. Fill rate was set at 10% cystometric capacity (Ccap) as determined by an initial fill. Ultrasound images were obtained by an ultrasound technologist using a Philips Epic 7 machine with an abdominal probe at frequency of 1 to 5 MHz. The technologist held the probe in a constant position throughout filling and captured mid-sagittal and maximum transverse images at 1 min intervals. Time signatures on acquired images were linked to extracted urodynamics pressure (Pves) data to calculate detrusor wall tension, wall stress, and wall compliance.

Results: Using acquired ultrasound image data and Pves, we developed an objective technique to calculate detrusor wall tension, wall stress, and wall compliance as follows: From each cross-sectional image acquired from a single patient, we measured wall and luminal areas as well as inner and outer perimeters (Figure1A−C). Wall tension was calculated as Pves*luminal area and wall stress as wall tension/wall area (Figure 1D). As shown in the figure, Pves is relatively flat during filling whereas wall stress increases. This finding demonstrates that Pves measurements during urodynamics do not reflect the underlying state of detrusor wall tension. Strain was calculated as the change in inner perimeter/inner perimeter at 10%Ccap, and compliance as strain/stress (Figure 1E).

Conclusion: This study demonstrates that detrusor wall tension, wall stress, and wall compliance can be calculated by adding real time ultrasound to standard urodynamics. This technique may be useful in the diagnosis and treatment of OAB and other disorders of voiding dysfunction.

Clinical relevance: Urodynamics
Introduction: Hydrogen sulfide (H2S) is a key signaling molecule regulating important physiological processes in various tissues, including smooth muscle. The mechanisms by which H2S regulates detrusor smooth muscle (DSM) function, however, are not well understood. Large conductance voltage- and Ca2+-activated K+ (BK) channels and muscarinic acetylcholine receptors (mAChRs) are key regulators of DSM excitability and contractility. This study investigates the cellular and tissue mechanisms by which H2S affects DSM contractions, cholinergic neurotransmission, and BK channels in freshly-isolated guinea pig DSM strips and cells.

Methods: We used a multidisciplinary experimental approach including isometric DSM tension recordings, colorimetric acetylcholine (ACh) measurement, Ca2+ imaging, and patch-clamp electrophysiology.

Results: In isolated DSM strips, the novel slow release H2S donor, p-(4-methoxyphenyl)-p-4-morpholinylphosphinodithioic acid (GYY4137), significantly increased the spontaneous phasic and nerve-evoked DSM contractions. The blockade of neuronal voltage-gated Na+ channels or muscarinic ACh receptors with tetrodotoxin and atropine, respectively, reduced the stimulatory effects of GYY4137 on DSM spontaneous phasic contractions. GYY4137 increased ACh release from bladder nerves, which was inhibited upon blockade of L-type voltage-gated Ca2+ (CaV) channels with nifedipine. Furthermore, GYY4137 increased the amplitude of the Ca2+ transients and basal Ca2+ levels in isolated DSM strips. GYY4137 reduced the DSM relaxation induced by the BK channel opener, NS11021. In freshly-isolated DSM cells, GYY4137 decreased the amplitude and frequency of transient BK currents recorded at −20 mV in the perforated whole cell configuration and also reduced the single BK channel open probability measured in excised inside-out patches. GYY4137 also depolarized the DSM cell membrane potential.

Conclusion: The current study reveals a novel regulatory mechanism by which H2S modulates the excitability and contractility of DSM: H2S increases spontaneous phasic and nerve-evoked DSM contractions by stimulating ACh release from bladder nerves in combination with a direct inhibition of DSM BK channels.

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Clinical relevance: LUTS/Voiding Dysfunction
Building a Nomogram for Evaluation of Detrusor Contractility in Women

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(Presented by: Françoise A. Valentini, MD, PhD)

Introduction: Methods developed for men greatly overestimate the detrusor contractility (DC) in women. A reliable parameter PIP1 (= pdet.Qmax + Qmax) has been proposed for older women [1] but to our knowledge, there is no nomogram or parameter allowing to evaluate DC in women over the life span.

Our objectives were to carry out a nomogram able to evaluate the detrusor contractility in women from the maximum flow rate Qmax and detrusor pressure at maximum flow pdet.Qmax.

Methods: The VBN mathematical knowledge model of micturition [2] introduces 2 mechanical parameters: the detrusor contractility (k) and the urethral obstruction (U). Some thousand computations using this model allowed to obtain, for a filling bladder volume (Vini)=300 mL, a set of iso-contractility curves in the plane [pdet.Qmax− Qmax] (a nomogram). Due to the Hill’s law, this nomogram depended on Vini. So an auxiliary “volume-correction nomogram” was needed to generalize the contractility nomogram to any Vini. Computations were made for a 7F catheter.

Results: The nomogram for Vini = 300 mL is displayed in Fig L. In Fig R some Qmax vs. Vini curves for sets of k and U values. Algebraic fitting of these 2 nomograms was then performed.

From curves of Fig L one had:

k = .965*(A/B) − .0405

where A and B were polynomials (to simplify Qmax and pdet.Qmax are named Q and P):

A = (1+ .25*Q)(c+a*Q +P(d+b*Q)) −4*(d+b*Q) and B = 1 + .25*Q + 12*(d+b*Q)

with: a = − .00325; b = .000709; c = − .0948; d = .0172

From Fig R, Qmax was found proportional to (Vini)0.25.

Then, the k value was obtained by replacing Q by Q = Q*(300/Vini).25 and P by P = P − .5*(Q −Q) [3]. Algebraic fitting of abacus was easily programmed (Excel or any handheld).

Conclusion: This study proposed for the first time a nomogram for detrusor contractility in women which could be used over the life span. The curves’ fitting is easily programmable (Excel or handheld) allowing a rapid assessment of detrusor contractility from a pressure-flow study when an impaired detrusor function is suspected in women.

Clinical relevance: Urodynamics
**Signal Network of Interstitial Cystitis-Associated Antiproliferative Peptide**

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(Presented by: Jayoung Kim, PhD)

**Introduction:** Interstitial cystitis/painful bladder syndrome (IC/PBS), a chronic idiopathic visceral pain syndrome that mostly affects women, is one of the most bothersome conditions among bladder diseases. A sialoglycopeptide urinary biomarker is antiproliferative factor (APF), which has been detected in urine from approximately 95% of IC/PBS patients, is a small glycosylated peptide with 100% of homology to fragment of frizzled-8 (a receptor of Wnt signaling). The objectives of this study were (1) to identify the signaling networks altered in response to APF treatment in bladder epithelial cells, and (2) to understand the global network perturbed in IC/PBS in vivo by computational approaches.

**Methods:** Chemically synthesized APF (as−APF) was used in combination with APF-responsive hTERT-immortalized human bladder epithelial cell line, TRT-HU1. Biochemical and functional analysis including Western blot, proliferation assay, immunoprecipitation and immunofluorescence staining were performed.

**Results:** Our in vitro experiments using TRT-HU1 showed that as−APF reduced the level of a deubiquitinase, ubiquitin specific protease (USP) 2a, leading to an increase in p53 expression and growth arrest. These responses to as−APF were recovered by enforced expression of USP2a, through, MDM2 deubiquitination and subsequent p53 inactivation. In order to understand we have performed systematic review and build a pool of database with the existing public “-omics” data associated with IC/PBS, which designed for provide a work platform for bioinformatics analysis. Literature search allowed us to find several genomics datasets, which were available from public domains or published papers. Computational analysis suggested the NF–κB pathway as an additional important regulator of IC/PBS.

**Conclusion:** Our findings suggest that as−APF functions similarly to native APF, and highlight a signaling pathway plays an important role in the APF network, which may be relevant in the development of novel therapeutic approaches. This research was supported by: NIH grants 1R01DK100974–01 (J.K. and J.A.), U24 DK097154, NIH NCATS UCLA CTSI UL1TR000124, the Steven Spielberg Discovery Fund in Prostate Cancer Research Career Development Award, Interstitial Cystitis Association (ICA) Pilot Grant, and a Fishbein Family IC Research Grant by ICA; New York Academy of Medicine; Boston Children’s Hospital Faculty Development (J.K.); 1R01DK087806 (M.R.F.).

Clinical relevance: IC and Pelvic Pain – UTI/Inflammatory
NONINVASIVE BIOMARKER CANDIDATES OF INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME

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(Presented by: Jayoung Kim, PhD)

Introduction: Interstitial cystitis/painful bladder syndrome (IC/PBS) is a debilitating condition that presents with a constellation of symptoms including bladder pain, urinary urgency, frequency, nocturia and small voided volumes in the absence of other identifiable etiologies. A lack of objective diagnostic criteria has affected our ability to adequately treat the disease. The goal of this study was to identify and nominate sensitive and non-invasive urine diagnostic biomarkers that stratify IC/PBS patients from healthy subjects.

Methods: We performed NMR spectroscopy-based metabolomics analysis to search for soluble metabolites that segregate with the diagnosis of IC/PBS. Annotation of the NMR peaks was performed using MeltDB and MetaboAnalyst software. Results: We were able to annotate several of the discriminate peaks, including the most significant peak, which was identified as tyramine, a neuro-transmodulator related to pain. These results demonstrate our ability to assay and provisionally identify discrete urine metabolites that appear to be significantly associated with IC/PBS.

Conclusion: We believe this will provide novel insights about the etiology of IC/PBS and identify urine metabolites as biomarkers of IC/PBS that have the potential to be employed clinically.

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Clinical relevance: IC and Pelvic Pain − UTI/Inflammatory
**Poster #BS20**

**STEPS TOWARD CHARACTERIZATION OF AN OAB-SUBTYPE MEDIATED BY LOW AMPLITUDE RHYTHMIC CONTRACTIONS**

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(Presented by: Andrew Colhoun, MD)

**Introduction:** Low amplitude rhythmic contractions (LARC) have been identified in detrusor smooth muscle (DSM) from various mammals and humans. Although LARC function is not well-understood, they may play a role in overactive bladder (OAB). The purpose of this study was to correlate LARC identified in strips of human DSM (hDSM) with LARC identified during urodynamics (UD). We aimed to take preliminary steps toward the characterization of a LARC-mediated OAB sub-type.

**Methods:** After IRB approval, fresh strips of hDSM were obtained from uninvolved cystectomy portions in three patients with bladder cancer. Isometric tension was recorded at various lengths and after stimulation with 0.1µM carbachol. Five-minute sections were analyzed by Fast Fourier Transform (FFT) to identify LARC frequencies. Blinded UD tracings were retrospectively reviewed visually for signs of LARC on the vesical (Pves) tracing that were not also identified on the abdominal (Pabd) tracing.

Pressure data was analyzed by FFT on Pves and Pabd during a 200–400 second period without provocative maneuvers or voiding/incontinent episodes. Pressure tracings were normalized to maximum recorded pressure during the analyzed segment. Identified frequencies were considered distinct if they were > 3 standard deviations in amplitude above the mean normalized Pabd frequency (p=0.0001). Pves and hDSM slow wave frequency were similar (p=0.5). Average patient age was 40 with 75% having neurogenic bladder dysfunction.

**Results:** Distinct slow and fast wave LARC frequencies were identified at 2.1±0.1 and 4.4±0.5 cycles/min, respectively, in hDSM (Figure 1A). 100 consecutive UD studies were reviewed with 35 displaying LARC. In 12/35 (34%), a distinct frequency of 2.4±1.3 cycles/min was identified (Figure 1B) with Pves amplitudes significantly greater than 3 standard deviations above average normalized Pabd frequency (p=0.0001). Pves and hDSM slow wave frequency were similar (p=0.5). Average patient age was 40 with 75% having neurogenic bladder dysfunction.

**Conclusion:** Analysis of LARC during UD testing identified a sub-set of patients with a distinct slow wave frequency, similar to that observed in hDSM. Further refinements of this technique may help identify sub-sets of individuals with LARC-mediated OAB.

**Clinical relevance:** Urodynamics

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**Figure 1:** Examples of in vitro human DSM (inset A) and UD (inset B) rhythm with corresponding FFT frequency analysis (A and B, respectively).
AUA OFFICE OF RESEARCH: SUPPORT FOR RESEARCH IN UROLOGY THROUGH FUNDING, EDUCATION, AND ADVOCACY

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(Presented by: Carolyn Best, PhD)

Introduction: The Office of Research is advancing the commitment of the American Urological Association (AUA) to support urological research through funding, education, and advocacy to meet the ever-growing needs of patients with urologic diseases and conditions.

Methods: & Results: To best meet the funding needs of urologic research, the AUA Office of Research (AUA OR) administers grant programs, provided through the Urology Care Foundation, for early-career investigators, fellows, residents, and medical students. Funding has increased annually, with $678,000 in 2011 to a projection of $1,239,000 in 2015. Over the 39-year history of these programs, over 600 scholarships totaling over $20 million have been provided. Awardees have garnered $20 in federal and other grants for every $1 received in scholarship funds, and the 2003–2012 awardees (178) have published over 6,000 peer-reviewed journal articles, including entries in the “Top 100 Cited Articles in Urology.” Recognizing that less than 12% of applications submitted for these scholarships grants come from SUFU’s key focus areas, we are pursuing new ideas to increase support in these areas of research.

The AUA OR also conducts research education conferences. In 2014, the Basic Sciences Symposium at the AUA Annual Meeting featured premier scientists presenting advancements in understanding neurourologic, epidemiologic, microbial and other contributors to urologic disease. Other opportunities for scientific conferencing and developing collaborations include the AUA Summer Research Conference, which most recently focused on understanding patient phenotypes in lower urinary tract dysfunction. We also support early-career investigators with the Research Forum at the AUA Annual Meeting and the Early-Career Investigators Workshop (ECIW) to foster successful research careers through grant-writing and presentation. Of eight K or R grant applications submitted after the first ECIW in 2012, five (63%) were funded upon their first submission.

The AUA OR has significantly increased engagement in research advocacy. In 2014, “promotion of urology/cancer research funding” became an AUA legislative priority, and the AUA OR has defined initial advocacy priorities that include funding and other support for research in bladder health and prostate cancer.

Conclusion: The AUA OR maintains robust programs to advance basic science in urologic research and is working toward engagement with all urology researchers.

Clinical relevance: Female Urology – including Incontinence
ROLE OF P2X3 RECEPTOR IN MODULATING PURINERGIC NEUROTRANSMISSION
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(Presented by: Vivian Cristofaro, PhD)

Introduction: The prominent expression of the purinergic receptor subtype P2X3 (P2X3R) in the urinary bladder and its distribution within the urothelium and sensory fibers support its role in bladder sensation and afferent signaling. However, studies also suggest that P2X3R is associated with parasympathetic fibers, providing a mechanism to modulate efferent function [J Neurosci. 21:RC166; 2001, Pharmacol Res. 65:129; 2012]. The present study investigated the potential role of non-mucosal P2X3R signaling in modulating rat bladder contractility.

Methods: Urinary bladders were procured from male Wistar Kyoto rats. The mucosa was removed by microdissection. The remaining tissue was divided in longitudinal strips, placed in organ bath and equilibrated in Kreb’s solution at 37°C under a resting tension of 1.5 grams. Contractile responses to electrical field stimulation (EFS, 20V, 2–64 Hz) and α-β-methyleneATP (αβmeATP, 10µM) were measured under baseline conditions as well as in the presence of P2X3R antagonist NF-110 (50µM). Aliquots from organ baths were collected during EFS and the amount of ATP released was measured by luciferin-luciferase assay.

Results: Compared to frequency-response curves under baseline conditions, the amplitude of EFS-induced contractions at all frequencies was significantly increased in the presence of NF−110 [24.8 ± 6.1% increase at 16Hz]. In contrast, contractile responses generated by exogenous administration of αβmeATP were not significantly affected by NF-110 pre-incubation [1.6 ± 0.3 vs 1.5 ± 0.2 Ng−1]. Moreover, the presence of NF-110 significantly increased ATP levels measured during EFS compared to levels measured under baseline conditions.

Conclusion: The augmented effects of P2X3R inhibition on neurally-evoked contractions and ATP release suggest that purinergic neurotransmission is negatively modulated by P2X3R activation. The lack of effect of P2X3R inhibition on αβmeATP-induced contractions is consistent a pre-junctional role of P2X3R in modulating neurotransmitter release. Changes in this pathway may contribute to detrusor over activity, a disorder in which altered purinergic signaling has been implicated.

Supported by BLR&D, Department of Veterans Affairs
Clinical relevance: LUTS/Voiding Dysfunction
Poster #BS24
Differential Effects of Stepwise Pharmacological Autonomic Denervation or Direct Smooth Muscle Relaxation on Urodynamic Indices in Chronic Spinal Cord Injured Rats
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1Institute for Medical Research, Durham, NC; 2Department of Research and Development, Durham Veterans Affairs Medical Center, Durham, NC
(Presented by: Jessica Lloyd, MD)

Introduction: Suprasacral spinal cord injury (SCI) often results in detrusor over activity, causing low compliance (Comp) and unsafe bladder pressures. We determined the relative contributions of parasympathetic and sympathetic nervous systems and spontaneous myogenic activity on urodynamic indices in chronic SCI rats.

Methods: Chronic female SCI rats (>4 weeks) underwent conscious cystometry and i.v. drug treatment to achieve parasympathetic (Para) or sympathetic (Symp) denervation or direct smooth muscle relaxation (SM; n=10−12/group). Following control cystometry, vehicle was administered in all rats. Control group animals received 3 additional vehicle doses. In the Para group, rats sequentially received atropine (antimuscarinic), NF−449 (purinergic antagonist) and hexamethonium (HEX, autonomic ganglion blocker). The Symp rats received phentolamine (P; α−adrenergic antagonist), propranolol + SR59230A (complete β−adrenergic block) and HEX. The SM rats received verapamil (Ca2+ channel blocker), CL−316,243 (β3−adrenergic agonist) and isoproterenol (β1−3−adrenergic agonist). Data were analyzed by 2-Way RM ANOVA, alpha = 0.05.

Results: As can be seen in the table, selective Para resulted in increased true bladder capacity (TBC) and area under the curve for filling pressure (AUC−FP), and decreased maximal bladder contraction amplitudes for voiding (BCA−V) and nonvoiding events. Selective Symp had no effect except the P increased functional bladder capacity (FBC) and voiding efficiency. HEX increased TBC and AUC−FP in both autonomic arms. SM increased TBC, FBC, and Comp and decreased BCA−V.

Conclusion: That specific Para increased TBC and Symp had no effect suggests ongoing Para tone during filling with no such influence of Symp. Only α−adrenergic blockade had any effect in Symp, and that was likely on urethral smooth muscle dyssynergia. A strategy combining antimuscarinic, α−adrenergic blockade and direct bladder smooth muscle relaxation may ultimately provide the best therapeutic results.

Clinical relevance: Neurogenic Bladder
Introduction: There are several recent studies that PDE-5 inhibitors might be useful as a treatment for bothersome LUTS associated with BPE. However, whether PDE-5 inhibition ameliorates LUTS by acting on the prostatic urethra or on the bladder is not clear. This study was undertaken to assess the efficacy of the α1-blocker silodosin, PDE-5 inhibitor mirodenafil, and the combination of both on lower urinary tract symptoms suggestive of benign prostatic hyperplasia.

Methods: Six-week old male Sprague-Dawley rats were dived into five groups (n=10 in each group) of sham control, bladder outlet obstruction (BOO, experimental control), silodosin, mirodenafil and the combination of both-treated. BOO group and drug-treated groups were partially obstructed for six weeks. Concurrently, silodosin (3mg/kg/day), mirodenafil (10mg/kg/day) and combination were administrated orally for drug-treated groups for six weeks. After six weeks, the effect of drugs was determined using urodynamic study and contractile response to field stimulation and drug stimulation.

Results: The bladder weights of the BOO group were significantly increased compared with the control and drug-treated groups. In drug-treated groups, especially in combination group, cystometric parameters including number of voids per minute (NVM), peak pressure (PP), nonvoiding contraction (NVC) decreased compared to BOO group (Table). Intercontraction interval (ICI) increased significantly in drug-treated groups, especially in combination group than BOO group. The contractile response to all frequency of stimulation, bethanechol and KCl were decreased in obstruction group and the contractile response in the α1-blocker treated group and the combination group were higher than that in the BOO group. In the contractile response to ATP, the contractile responses in obstruction group significantly increased. But there is no significant difference in the contractile response of PDE-5 treated group compared with BOO group. In all the contractile response to field and drug stimulation, however, there is no significant difference in the contractile response of PDE-5 treated group compared with BOO group (Figure).

Conclusion: These findings suggest that the combination of silodosin and mirodenafil is more effective than silodosin monotherapy to improve detrusor overactivity related BPH without affecting detrusor contractility.

Clinical relevance: BPH
FUNCTIONAL TRPV4–SK3 INTERACTION IN MURINE DETRUSOR PDGFRA+ CELLS: POSSIBLE MECHANISM OF MYOGENIC FILLING

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(Presented by: Haeyeong Lee, PhD)

Introduction: The functional expression of SK3 channels in detrusor PDGFRα+ cells has been reported. These cells do not display voltage-dependent Ca2+ channels. Among TRP channels, TRPV are relatively more Ca2+ permeable. Previous studies have shown Trpv4−/− mice displayed an increase in frequency of non-voiding contractions. The mechanisms responsible for this phenotype have not been determined. Since TRPV4 channels are mechanosensitive and Ca2+ permeable, we tested the hypothesis that expression and role of TRPV4 channels in PDGFRα+ cells and serve as an important source of Ca2+ influx to activate SK channels in regulating detrusor stabilization during bladder filling.

Methods: C57BL/6, Pdgfratm11(EGFP)Sor/J and smMHC/Cre/eGFP mice (3~12 weeks) were used for this study. We applied qualitative and quantitative PCR analysis, western blotting, proximity-ligation assay, patch clamp, Ca2+ imaging, isometric force and ex-vivo compliance measurement.

Results: Quantitative analysis in trp transcripts demonstrated trpv4 was highly expressed in PDGFRα+ cells compared to smooth muscle cells (SMCs). Western blot analysis from sorted cells supported that TRPV4 was highly expressed in PDGFRα+ cells. In patch clamp experiments, GSK activated non-selective cation currents under Cs+–rich solution. With K+–rich solution, GSK and mechanical stretch activated initial inward currents followed by the outward currents. The GSK-activated currents and hyperpolarization were completely blocked by TRPV4 antagonists and SK channel blockers. Removal of external Ca2+ also abolished GSK-activated outward currents. Detrusor SMCs did not show significant response to TRPV4 agonist. TRPV4 agonist alone did not increase the detrusor contractility. However, TRPV4 agonist increased the spontaneous contractility and the ex-vivo pressure-volume response in the presence of SK blocker. Furthermore, co-immunoprecipitation and proximity-ligation assay suggested the protein-protein interaction between TRPV4 and SK3 channels.

Conclusion: TRPV4 and SK3 channels are functionally interact in plasma membrane of PDGFRα+ cells. Ca2+ influx through TRPV4 channels directly activates SK3 channels and stabilizes membrane potentials during bladder filling. Defects of this mechanism by loss of PDGFRα+ cells or reduced expression of key proteins may underlie detrusor overactivity. (Supported by NIH/NIDDK 098388)

Clinical relevance: Urodynamics
THE ROLE OF BK CHANNELS AND CHOLINERGIC NEUROTRANSMISSION IN THE HYDROGEN SULFIDE-INDUCED GUINEA PIG DETRUSOR SMOOTH MUSCLE CONTRACTIONS

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(Presented by: Georgi Petkov, PhD)

Introduction: Hydrogen sulfide (H2S) is a key signalling molecule regulating important physiological processes in various tissues, including smooth muscle. The mechanisms by which H2S regulates detrusor smooth muscle (DSM) function, however, are not well understood. Large conductance voltage- and Ca2+-activated K+ (BK) channels and muscarinic acetylcholine receptors (mAChRs) are key regulators of DSM excitability and contractility. This study investigates the cellular and tissue mechanisms by which H2S affects DSM contractions, cholinergic neurotransmission, and BK channels in freshly-isolated guinea pig DSM strips and cells.

Methods: We used a multidisciplinary experimental approach including isometric DSM tension recordings, colorimetric acetylcholine (ACh) measurement, Ca2+ imaging, and patch-clamp electrophysiology.

Results: In isolated DSM strips, the novel slow release H2S donor, p-(4-methoxyphenyl)p-4-morpholinylphosphinodithioic acid (GYY4137), significantly increased the spontaneous phasic and nerve-evoked DSM contractions. The blockade of neuronal voltage-gated Na+ channels or muscarinic ACh receptors with tetrodotoxin and atropine, respectively, reduced the stimulatory effects of GYY4137 on DSM spontaneous phasic contractions. GYY4137 increased ACh release from bladder nerves, which was inhibited upon blockade of L-type voltage-gated Ca2+ (CaV) channels with nifedipine. Furthermore, GYY4137 increased the amplitude of the Ca2+ transients and basal Ca2+ levels in isolated DSM strips. GYY4137 reduced the DSM relaxation induced by the BK channel opener, NS11021. In freshly-isolated DSM cells, GYY4137 decreased the amplitude and frequency of transient BK currents recorded at -20 mV in the perforated whole cell configuration and also reduced the single BK channel open probability measured in excised inside-out patches. GYY4137 also depolarized the DSM cell membrane potential.

Conclusion: The current study reveals a novel regulatory mechanism by which H2S modulates the excitability and contractility of DSM: H2S increases spontaneous phasic and nerve-evoked DSM contractions by stimulating ACh release from bladder nerves in combination with a direct inhibition of DSM BK channels.

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Clinical relevance: LUTS/Voiding Dysfunction
Introduction: Purines induce transient contraction and prolonged relaxation of detrusor muscles. Transient contraction could be due to activation of inward currents in smooth muscle cells, prolonged relaxation could be due to activation of SK channels via mainly P2Y1 receptor in detrusor PDGFRα+ cells. Based on our previous studies, P2Y1, P2Y2, P2Y4 and P2Y14 are highly expressed in detrusor PDGFRα+ cells. In this study we explored whether other subtypes of P2Y receptors involved in the purinergic relaxation regulated by PDGFRα+ cells. We tested the effects of UTP (agonist for P2Y2 and P2Y4) on detrusor PDGFRα+ cells. UTP activated large outward currents in PDGFRα+ cells that were inhibited by SK blockers or treatment with PLC inhibitor. UTP also induced significant membrane hyperpolarization. UTP decreased the carbachol (CCh)-induced contractions. These data suggest that P2Y2 and/or P2Y4 are involved in the purinergic relaxation of detrusor muscle.

Methods: We applied molecular, whole-cell patch clamp and isometric force measurement. Single PDGFRα+ cells or bladder detrusor strips were obtained from PDGFRα−/−eGFP− mice (Pdgfrαtm11(EGFP)Sor/J mice). These novel mice express bright GFP in the nuclei of cells expressing PDGFRα, thus making them identifiable from a population of enzymatically dispersed cells in the detrusor muscle. We analyzed the qualitative expression of P2ry1, P2ry2, P2ry4, P2ry6, P2ry11−14 receptor transcripts in laser captured/FACS sorted PDGFRα+ cells. Effects of UTP in these cells using patch clamp approaches were examined. The effects of UTP application on the CCh-induced contractions were also tested.

Results: Qualitative PCR revealed that P2ry1, P2ry2, P2ry4 and P2ry14 (P2ry1 > P2ry14 > P2ry2 > P2ry4) were expressed in sorted and laser captured (PALM) PDGFRα+ cells. In patch clamp experiments, UTP activated outward currents at a holding potential of −40 mV, which had similar properties to ATP or P2Y1 agonist, MRS2365-activated currents. UTP also induced significant membrane hyperpolarization. The effect of UTP was not affected by pretreatment of P2Y1 antagonist, MRS2500. In isometric force experiments, UTP decreased CCh-induced contractions.

Conclusion: PDGFRα+ cells have an important role in regulating purinergic relaxation of detrusor muscle. P2Y2 and P2Y4, as well as P2Y1 are involved in purinergic relaxation of bladder detrusor muscle regulated by PDGFRα+ cells. (Supported by NIH/NIDDK 098388)

Clinical relevance: Urodynamics
**Poster #BS29**

**HYPOXIA-INDUCED METABOLIC STRESS IN BLADDER SMOOTH MUSCLE CELLS**

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(Presented by: Lysanne Campeau, MDCM, PhD, FRCSC)

**Introduction:** Lower urinary tract symptoms (LUTS) are associated with the metabolic syndrome (MetS). The different components of MetS contribute to end-organ dysfunction such as the bladder, possibly through endothelial dysfunction or decreased blood flow. Hypoxia is known to develop in tissues of obese animal models and disrupt dramatically cell metabolism and functions. The aim of our study is to determine if hypoxia causes changes at a cellular level that may be responsible for voiding dysfunction.

**Methods:** Smooth muscle cells (SMC) were isolated from rat bladders using a collagenase IV method and grown in petri dishes until passage between two and five. After confluency, cells were exposed to oxygen 21% (normoxia) or 1% (hypoxia) for 24 hours then assessed for microscopy, immunohistochemistry and immunoblotting analysis.

**Results:** SMC were characterized by immunohistochemistry for myosin and smooth muscle actin-alpha before and after hypoxia. MTT Cell proliferation Assay yielded similar results between normoxic and hypoxic cells. Hypoxia led to an increase in lactic acid release in the media of SMC. Cells showed an increase in GLUT−1 expression as revealed by immunohistochemistry and immunoblotting. Increase in HIF−1 alpha was also observed, demonstrating together with increases in GLUT−1 and lactic acid release that the SMC were in hypoxic state. The inducible nitric oxide (NO)-synthesizing enzyme iNOS was increased by hypoxia.

Regulators of cytoskeleton RhoA and ROCK−1 were not affected by hypoxia. On the other hand, the activated proteins Akt−473P and c−Jun amino-terminal kinases (JNKs) JNK−P, involved in insulin signaling and cell survival, were decreased with stable expression of non-phosphorylated Akt and JNK.

**Conclusion:** While short exposure to hypoxia does not affect SMC cytoskeleton integrity, SMC contractility may be impaired by the accumulation of NO from increased iNOS levels. Decreased levels of activated Akt and JNK suggests that hypoxia can contribute to the development of insulin resistance and increased vulnerability in SMC.

**Financial funding:** Institutional, Quebec Diabetes, Canadian Urological Association Scholarship Foundation  
**Clinical relevance:** LUTS/Voiding Dysfunction

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**Poster #BS30**

**ROLE OF PDGFRα+ CELLS IN TYPE 1 DIABETIC BLADDER DYSFUNCTION**

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(Presented by: Byoung Koh)

**Introduction:** The most common lower urinary tract complication of DM is diabetic bladder dysfunction (DBD). Clinical manifestations of DBD involve not only a combination of storage and voiding problems, but also time-dependent change of DBD. Although, multiple studies have shown detrusor smooth muscle dysfunction in diabetic animal models, there is not a consensus on the mechanism, time course, or implication of diabetes-related changes in detrusor function. PDGFRα+ cells have been previously described in the interstitial space in the bladder lamina propria, suburothelium, as well as detrusor. Small conductance Ca2+-activated K+ channels (SK), vanilloid transient receptor potential 4 and P2Y receptors are highly expressed in PDGFRα+ cells.

**Methods:** Steptozotocin-induced diabetes (STZ) and Akita mice were used for diabetic type 1 models. We applied molecular biology, immunohistochemistry and isometric force measurement to investigate the role of PDGFRα+ cells in diabetic bladder dysfunction.

**Results:** We discovered a decrease in expression of Pdgfra, Kcnn3 (SK3), and Trpv4 in both STZ and Akita mice compared to age-matched controls. PDGFRα immunoreactivity in detrusor muscle layer was decreased in STZ treated animals compared to their respective controls. PDGFRα+ cells in suburothelial layer showed immunopositivity to α-smooth muscle actin suggesting that PDGFRα+ cells were changed to myofibroblast. Transcriptional expression of tumor necrosis factor α (TNFα) and interleukin 6 (IL−6) was also higher in STZ injected mice than control mice. Spontaneous contractility was increased in STZ injected detrusor muscles. Application of SK channel blocker, apamin had no significant effect on tone or electrical field stimulation-evoked contractions.

**Conclusion:** Type 1 diabetes induces the down-regulation of PDGFRα+ cells in detrusor layer and fibrosis in lamina propria and in turn, causes detrusor overactivity.  
**Clinical relevance:** LUTS/Voiding Dysfunction
POST-PARTUM INTRAPERITONEAL (IP) INJECTION OF BONE MARROW-DERIVED MESENCHYMAL STEM CELLS (BM−MSC) INTO LYSYL OXIDASE LIKE-1 KNOCKOUT (LOXL1 KO) MICE HOME PREFERENTIALLY TO THE VAGINA AND URETHRA

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(Presented by: Javier Pizarro-Berdichevsky, MD)

Introduction: The risk of pelvic organ prolapse increases in Loxl1 KO mice with parity and age. Vaginal delivery is associated with tissue damage and increases MSC homing chemokines. BM−MSC homing has been described in other injured tissue animal models. We hypothesized that Loxl1 KO BM−MSC delivered via IP injection will preferentially home to pelvic organs in primiparous mice compared to nulliparous age-matched Loxl1 KO mice.

Methods: Thirty Loxl1 KO female mice were bred and males were removed to avoid additional pregnancies; 1.25 x106 passage 8–12 luciferase-labeled Loxl1 KO BM−MSC were injected IP within 48h after vaginal delivery or at 11 weeks old in nulliparous controls (n=30). Animals were assessed 1, 4 and 7 days after injection. In vivo imaging was performed after D–Luciferin injection. Thereafter pelvic organs, kidneys, spleen, liver, lungs, and heart were harvested and ex vivo imaging was performed using IVIS Lumina system. T-test was used to compare radiance between the two groups with p<0.05 indicating a statistically significant difference.

Results: Mean ± SEM radiance (1000 p/s/cm²/sr) in the abdominopelvic region of primiparous and nulliparous mice was 834 ± 139 & 365 ± 121 1 day after injection (p=0.02) and 111 ± 24 & 38 ± 12 4 days after injection (p=0.03). Radiance did not differ 7 days after injection. Ex vivo radiance in the vagina and urethra 4 days after BM−MSC injection was 10.5 ± 4.8 vs. 1.1 ± 0.8 and 8 ± 1.9 vs. 2.3 ± 1.1 in primiparous compared to nulliparous (p=0.023 and p=0.016), respectively. A trend to higher radiance was noted in primiparous mice 4 days after injection in the rectum (p=0.070) and bladder (p=0.082) and 7 days after injection in the vagina (p=0.085) and lungs (p=0.065). There were no significant differences between other organs 4 days after injection. No significant differences were noted with ex vivo imaging 1 day after injection.

Conclusion: After vaginal delivery, BM−MSC delivered IP home preferentially to the vagina (9.4 fold) and urethra (3.5 fold). This suggests the vagina and urethra are injured by parturition and secrete injury-related stem cell homing cytokines. However, the exact homing mechanism remains unknown. Assuming a diffuse injury provoked by the parturition process, our results could be relevant for future stem cell-based therapies for delivery related disorders, such as pelvic organ prolapse.

Funding: NIH R01 HD059859, Cleveland Clinic, RR&D Service of the VA.

Clinical relevance: Pelvic Organ Prolapse
ENGINEERED VAGINAL TISSUE: TOWARDS AN AUTOLOGOUS GRAFT FOR PELVIC ORGAN PROLAPSE

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(Presented by: Stacey Schutte, PhD)

Introduction: Pelvic organ prolapse is a common cause of morbidity among women in the United States. Women have an 11% lifetime risk of requiring surgery for pelvic organ prolapse and individual risk increases with advancing age, higher parity, increased body mass index and some co-morbid conditions. The complication rate can exceed 10% for the currently available synthetic and biologic implants. Safety issues associated with synthetic mesh have prompted the FDA to issue a Public Health Notification regarding the serious complications associated with its use in the repair of pelvic organ prolapse. We hypothesize that an autologous engineered tissue would more closely match the mechanical properties and composition of native tissue.

Methods: In order to create the engineered tissue, vaginal fibroblasts were isolated from full thickness vaginal biopsies taken from women undergoing reconstructive surgery for pelvic organ prolapse. Vaginal fibroblasts were isolated from the muscularis layer via a combination of collagenase digest and explant technique. The engineered tissue was created by encapsulating the vaginal fibroblasts within a fibrin hydrogel. The tissue was cultured in medium containing epsilon-amino caproic acid (ACA) and ascorbic acid. The concentration of ACA was slowly reduced over an eight week time period to allow the cells to remodel the tissue in a controlled fashion.

Results: By four weeks significant levels of collagen could be seen histologically. The total collagen content was 0.268±0.095 mg collagen/mg dry weight in the engineered tissue compared to 0.578±0.032 mg/mg in the native prolapsed tissue. Glycosaminoglycan content was 0.015±0.001 mg/mg in the engineered tissue, less than the 0.064±0.009 mg/mg in the native prolapsed tissue but similar to published levels in healthy tissue. By six weeks there is little to no fibrin left and had a strength of 8.06+/−0.95 kPa. By eight weeks the ACA had been completely removed and a dense cell secreted matrix high in collagen remained.

Conclusion: We have demonstrated that autologous vaginal fibroblasts are a possible source for creation of an autologous implant. This is the first step toward creating an autologous graft for pelvic organ prolapse repair.

Clinical relevance: Pelvic Organ Prolapse
Introduction: Vaginal childbirth is a strong risk factor for the development of SUI. Obesity, diabetes mellitus and advanced age are other major risk factors. We have shown that cytokines, particularly those that attract adult mesenchymal stem cells to the site of injury, are upregulated after simulated childbirth in rodents suggesting that expression of specific factors may be involved in the repair of pelvic floor tissues following vaginal delivery (VD). To date there are no studies investigating serum expression of these factors in women after VD, the effect of obesity on cytokine upregulation, or if level of cytokine upregulation correlates with development of SUI. The objectives of this study were to 1) measure changes in the serum concentrations of these cytokines and their receptors: MCP−3/CCR1, SDF−1/CXCL12 & IGF−1 in response to VD & assess the effects of obesity on that response; 2) correlate the maternal cytokine response to delivery with the severity of SUI within 1 year of VD.

Methods: Two cohorts of primigravid women were recruited: obese (BMI>30) & age-matched non-obese (BMI 18.5−28). Serum concentrations of MCP−3, SDF−1 and IGF−1 were obtained at arrival to the hospital & 24 hours after VD. Subjects were excluded if they underwent c-section. Subjects completed ISI, UDI−6 & IIQ−7 prior to VD & at 3, 6 & 12 months after VD.

Results: CCR1 was significantly increased after VD in controls (p<0.001) but not obese women. CCL7 was significantly increased in obese women (p=0.04) after VD but not controls. IGF1 was significantly decreased in both populations after VD (p<0.001). Three−12 months after VD there were no significant differences in IIQ−7, ISI & UDI−6 total score compared to cytokines levels, the two groups (control vs. obese) and time (before vs. after VD).

Conclusion: This is the first study to measure maternal serum levels of cytokines before & after VD. CCR1, CCL7, and IGF1 exhibited significant differences before & after delivery between control and obese patients. Maternal cytokine response did not correspond with the severity or development of SUI within one year of VD perhaps due to the short time course & low numbers in this initial study.

Clinical relevance: Female Urology – including Incontinence
Introduction: The bladder urothelium is comprised of basal, intermediate, and apical urothelial cells. Ability to functionally study an individual urothelial cell while preserving its in situ location would represent an advance in bladder urothelial biology. Methods: Mice were euthanized and cardiac perfused with phosphate-buffered saline. Bladders were then excised. Urothelial sheets were dissected off the suburothelium using forceps with a microscope (5x magnification). Sheets were stained with H&E. In separate experiments, single cell electrophysiology was performed by placing urothelial sheets in Ringer’s bath solution, with either basal or apical surface down. Using 40x magnification, individual urothelial cells from different layers were identified. Potassium currents on these cells were measured in situ using single channel patch-clamp technique. Results: Histology revealed that urothelial sheets were free of lamina propria and smooth muscles. The proportion of apical cells, compared to proportion of intermediate and basal cells, with measureable potassium currents was considerably higher (69% of apical versus 16% of intermediate and 18% of basal cells). Of the active patches detected in apical cells, 100% of these patches showed a 43 pS current conductance. For intermediate and basal cells, 75−83% demonstrated a 43 pS current and 17−25% demonstrated a 22 pS current. Single cells, from all 3 layers, could also be individually microdissected completely off the urothelium. Conclusion: A novel approach was developed in which individual urothelial cells within the multi-layered urothelium were identified and functionally studied in situ. Electrophysiologic characterization revealed differences between the cells from different layers. Single cells from an identified layer can be harvested off the urothelium allowing for other studies. This technique allows investigators to study various cellular functions in while preserving cellular location within the urothelium. Clinical relevance: Female Urology − including Incontinence
INTRAVESICAL INHIBITION OF P2X3 RECEPTORS IMPROVES BLADDER DYSFUNCTION DEPENDING ON THE UROTHELIAL-EXPRESSION LEVELS FOR THE RECEPTOR IN SCI RATS
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(Presented by: Alvaro Munoz, PhD)

Introduction: P2X3-purinergic receptors (P2X3R) are expressed in afferent nerve terminals of the urinary bladder where ATP released from the urothelium during filling increase nerve activity to begin the micturition reflex. P2X3R are also expressed in the urothelium, however, its physiological role is less clear. Our objectives were 1) to determine the cystometric effects of AF−353, a specific P2X3R antagonist, in intact animals and spinal cord injured (SCI) rats with neurogenic bladder; and 2) to compare the differences on urothelial P2X3R expression between groups.

Methods: Neurogenic bladder conditions were induced in female Sprague-Dawley rats via a partial bilateral-transsection of the dorsal spinal cord at the Th8/Th9 region. Intact rats were used as controls. At two (SCI2W) or four weeks (SCI4W) post-SCI, rats were anesthetized with urethane and implanted with a suprapubic catheter for cystometry. Saline infusion was started at a rate of 0.1 ml/min. After baseline recordings (60–90 minutes), infusion containing AF−353 (10 µM) was initiated for a similar period of time. Thereafter, rats were perfused with iced-cold paraformaldehyde (4%). The bladder was isolated for immunostaining with a P2X3R antibody (abcam; 1:1,000) and DAPI. Confocal images were obtained at 40X. The bladder peak pressure (BPP), intercontractile intervals (ICI), and the frequency of voiding (VC) and non-voiding (NVC) contractions were determined. Changes were normalized with the respect to the saline-infusion values.

Results: Inhibition of P2X3R had minor effects on increasing the ICI in SCI2W rats, but significantly increased the ICI value in control and SCI4W rats. Application of AF−353 also decreased the frequency of NVC in both the SCI2W and SCI4W animals. The qualitative evaluation using confocal microscopy suggests that in comparison with the control bladders, the expression of P2X3R is reduced in SCI2W but increased in SCI4W rats.

Conclusion: Our results suggest that the reduced effect of AF−353 to increased ICI in SCI2W rats may be related to a reduced expression of urothelial P2X3R. It is also reasonable to suggest that urothelial P2X3R may play a role in regulating ICI and the frequency of NVC in SCI rats. Pharmacological inhibition of P2X3R to treat neurogenic bladder conditions may be a beneficial therapy but requires taking into consideration the duration of the dysfunction.

Support: Houston Methodist Foundation, the Cullen Foundation and the Brown Foundation

Clinical relevance: Neurogenic Bladder
THE EFFECT OF TIME TO REVISION OF AN OBSTRUCTING SYNTHETIC MID-URETHRAL SLING ON REOPERATION FOR STRESS URINARY INCONTINENCE

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(Presented by: Nitya Abraham, MD)

Introduction: The risk of recurrent stress urinary incontinence (SUI) after incising a synthetic mid-urethral sling (MUS) ranges from 3−61%. The primary objective of this study was to describe the rate of reoperation for SUI after revision of an obstructing synthetic MUS and evaluate the effect of time from sling placement to sling revision on reoperation rates. The secondary objective was to assess rates of recurrent and persistent SUI.

Methods: This is a retrospective review of women who underwent synthetic MUS incision from 2005−2013. Additional follow-up was obtained by administering the urinary distress inventory (UDI−6) and surgical satisfaction questionnaires. Fisher’s exact test was used to compare categorical variables. Multivariable logistic regression analysis was used to evaluate the association between time to sling revision and reoperation for SUI.

Results: 107 patients were included. Median time to sling revision was 22 months (IQR 5−49 months). 43.2% were transobturator slings. 15 out of 107 patients (14%) underwent re-operation for SUI. 49% and 77% reported de novo and persistent SUI respectively. 83% of these women reported they were moderately or quite a bit bothered by their SUI. On multivariable analysis, women were significantly less likely to undergo reoperation for SUI when sling revision was performed > 24 months after the initial sling was placed (OR 0.12 95% CI 0.02−0.85, p=0.03) compared to within 3 months.

Conclusion: This is the largest report of outcomes after revision of an obstructing synthetic MUS. The reoperation rate for SUI was 14%. The rate of recurrent SUI was 49%. 83% of these women were moderately or quite a bit bothered by their SUI. On multivariable analysis, the longer the interval to sling incision, the less likely patients were to undergo re-operation for SUI. The high degree of bother with low reoperation rate for SUI suggests women wanted to avoid additional surgery. This data may be helpful in counseling patients in this situation.

Funding: None
INTRODUCTION: There has been significant change in surgical treatment of benign prostatic hyperplasia (BPH) over the last two decades. Most importantly, laser surgery (coagulation, vaporization, or enucleation) has been growing in popularity as an alternative to standard transurethral prostatectomy (TURP) or other procedures. Our goal was to analyze the trends of BPH surgeries and compare outcomes of laser surgery to TURP as two most common alternative surgeries.

METHODS: We used The New York Statewide Planning and Cooperation System (SPARCS) data to identify patients with a diagnosis of BPH who underwent BPH-related surgery from October 2000 to December 2011. Age, insurance, individual comorbidities, and average hospital volumes were assessed. Bivariate and multivariate regression models were used to analyze predictors of laser use. In-hospital outcomes were then compared between laser and TURP in a balanced propensity matched cohort.

RESULTS: 90,670 patients underwent BPH surgery. Laser surgery usage increased from 6.4% to 44.5% over ten years (p<0.0001). TURP declined significantly from 72.2% to 48.3% (p<0.0001). Patients with Medicaid were less likely to undergo laser therapy than those with private insurance (OR: 0.58 95% CI: 0.48–0.69). Mid and high volume institutions were more likely to use laser treatment than low volume centers (OR: 2.26 95% CI: 1.22–4.2; OR: 4.07 95% CI: 1.75–9.46, respectively). In the matched cohort, both laser and TURP patients had similar complication rates, with more frequent electrolyte disorders in TURP patients (2.9% vs. 2.3%, p=0.001).

CONCLUSION: TURP remains the most common procedure. However, the rate of use has declined over time. In contrast, laser use has significantly increased. Laser treatment was utilized more in younger patients, in those privately insured, in hospitals with high volumes of BPH procedures, and in patients with fewer comorbid conditions. Both surgeries are safe with no differences in terms of occurrences of morbidity and complications.
PATTERNS OF NON-SURGICAL MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA (BPH) IN THE UNITED STATES
Jennifer Anger, MD, MPH1, Howard Goldman, MD2, Kelly Zou, PhD3, Xuemei Luo, PhD3, David Russell, MD3, Douglass Chapman, MS3, Canan Esinduy, MD3 and J. Quentin Clemens, MD4
1Cedars−Sinai Medical Center, Beverly Hills, CA; 2Cleveland Clinic Lerner College of Medicine, Cleveland, OH; 3Pfizer Inc, New York, NY; 4University of Michigan, Ann Arbor, MI
(Presented by: Jennifer Anger, MD, MPH)

Introduction: Lower urinary tract symptoms associated with BPH are highly prevalent among aging men and place a large socioeconomic burden on the US health care system. Few nationally representative datasets are available that have evaluated patterns of non-surgical care for men with BPH.

Objective: To examine national practice patterns for incident BPH in men age 18+, stratified by age <65 and 65+, in an observational study.

Methods: The Humedica® electronic health records database, which consists of a network of provider organizations treating approximately 30 million patients (pts) throughout 38 states, was queried. Pts with ≥2 diagnoses of BPH > 30 days apart, based on International Classification of Diseases, Ninth Revision (ICD−9) diagnosis codes 600.x (BPH), 596.0 (bladder neck obstruction), 788.20 (urinary retention), and 788.21 (incomplete bladder emptying), were included between 7/1/2009 and 6/30/2012. Other inclusion criteria for incident BPH (vs. prevalent disease) were continuous enrollment for 1 year before and 6 months after the first diagnosis date, and no BPH diagnosis during the previous year. Pts with ICD−9 diagnoses of neurologic conditions or urologic malignancy were excluded. Overall outcomes through 9/30/2013 were analyzed. Variables of interest included pt comorbidities, demographics, diagnostic tests, and medication prescriptions.

Results: A total of 38,252 men were included. The majority (24,814, 65%) were aged 65+, and 41% had 1+ comorbid conditions. Diagnostic tests included post-void residual measurement in 21%, renal ultrasound in 9%, cystoscopy in 6%, prostate ultrasound in 3%, and urodynamics in 1% of pts. A total of 58% of men were prescribed BPH medications, including alpha blockers (50%) and/or 5-alpha reductase inhibitors (24%). Older men had higher rates of prescriptions for both alpha blockers and 5-alpha reductase inhibitors than younger men (Table 1).

Conclusion: Men aged 65+ had higher rates of prescriptions overall, possibly due to more severe symptoms among older men. The relatively low rate of renal ultrasound and other diagnostic tests may reflect adherence to the 2010 American Urological Association BPH guidelines.

No financial support was received for this study.

Table 1. BPH Patterns of Care Data for Male Patients

<table>
<thead>
<tr>
<th>BPH Medication or Diagnostic Test</th>
<th>Overall N = 38,252</th>
<th>Males 18-64 Years N = 13,438</th>
<th>Males 65+ Years N = 24,814</th>
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<tbody>
<tr>
<td><strong>BPH Medication Prescription During the Entire Follow-up Period</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any BPH Medications</td>
<td>56.15%</td>
<td>51.54%</td>
<td>61.73%</td>
</tr>
<tr>
<td>Alpha-blockers</td>
<td>50.32%</td>
<td>45.40%</td>
<td>52.99%</td>
</tr>
<tr>
<td>S-alpha reductase inhibitors</td>
<td>24.12%</td>
<td>18.21%</td>
<td>27.32%</td>
</tr>
<tr>
<td><strong>Diagnostic Tests During the Entire Follow-up Period</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Any Diagnostic Tests</td>
<td>84.60%</td>
<td>84.52%</td>
<td>84.64%</td>
</tr>
<tr>
<td>Post-void Residual</td>
<td>20.58%</td>
<td>16.07%</td>
<td>23.02%</td>
</tr>
<tr>
<td>Cystoscopy</td>
<td>5.87%</td>
<td>4.55%</td>
<td>6.58%</td>
</tr>
<tr>
<td>Urodynamics</td>
<td>1.28%</td>
<td>1.09%</td>
<td>1.37%</td>
</tr>
<tr>
<td>Renal Ultrasound</td>
<td>9.39%</td>
<td>6.93%</td>
<td>10.72%</td>
</tr>
<tr>
<td>Prostate Ultrasound</td>
<td>2.62%</td>
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<td>Lab Test: Urinalysis</td>
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<td>Lab Test: Urine Cytology</td>
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</tr>
<tr>
<td>Lab Test: Blood Work</td>
<td>77.02%</td>
<td>77.16%</td>
<td>76.95%</td>
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</tbody>
</table>
LONG-TERM NITROFURANTOIN PROPHYLAXIS IN THE OLDER WOMAN: WHAT ARE THE REAL RISKS?
Lauren Rego and Philippe E. Zimmern, MD
UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

Introduction: To review the current literature on reported adverse reactions (ARs) of long-term Nitrofurantoin (NF) use in older female patients treated for urinary tract infections (UTIs).

Methods: In the wake of the recent Beers criteria (2012) (1), an extensive literature search was performed on PubMed for the search terms “Nitrofurantoin,” “Nitrofurantoin AND lung,” “Nitrofurantoin AND nerve,” “Nitrofurantoin AND liver,” “Nitrofurantoin AND blood,” “Nitrofurantoin AND kidney,” and “Nitrofurantoin AND ARs”. Relevant cited papers were also analyzed. Articles were excluded if not in English, or if they studied men, children, or pregnant women. Acute NF reactions were also excluded.

Results: A total of 69 articles and other texts met the inclusion criteria and were reviewed out of over 200 publications. Reported rates of chronic NF-related AR compared to total NF prescriptions differed worldwide, but remained extremely small, all totaling 0.001% (USA) and 0.001% for pulmonary and hepatic AR (France) (2,3). The breakdown of these adverse reactions also differed across the literature: chronic pulmonary AR ranged from 2% (UK), 3% (Holland), 5% (Sweden), to 7% (Australia); liver AR from 4% (UK) to 10% (Holland); and neuropathy from 2% (Sweden), 10% (Holland), to 14% (UK) (4,5). Analysis of case study reports for NF-related chronic pulmonary (N=21), liver (N=1), and neuropathy (N=5) ARs confirmed their occurrence for women both above and below the age of 65 (Figure 1), and underscored their unpredictable nature.

Conclusion: Risks of chronic NF prophylaxis in older women treated for UTIs are extremely minimal, and should not deter from the use of NF in this population.

1. Journal of the American Geriatrics Society 2012; 60: 616–.
4. BJU (Clinical research ed.) 1982; 284: 1440.
A MULTICENTER STUDY EVALUATING THE SAFETY AND EFFICACY OF AF-219, A P2X3 ANTAGONIST, IN WOMEN WITH INTERSTITIAL CYSTITIS /BLADDER PAIN SYNDROME (IC/BPS)

Philip Hanno, MD1, Michael Kitt, MD2, Robert Moldwin, MD3, Anthony Ford, PhD2, Peter Butera2 and Bruce McCarthy, MD2

1University of Pennsylvania, Philadelphia, PA; 2Afferent Pharmaceuticals, Inc. San Mateo, CA; 3Hofstra University School of Medicine, North Shore-LIJ Healthcare System, New Hyde Park, NY

(Presented by: Philip Hanno, MD)

Introduction: P2X3 receptors may mediate sensitization of primary afferent neurons in bladder, leading to pain, discomfort and urgency and blockade of these receptors may ameliorate symptoms of IC/BPS. P2X3 KO mice revealed a urinary hyporeflexic phenotype and pharmacological blockade in rodent visceral hyperalgesia models shows potential for efficacy. This was a multicenter phase 2 study to assess safety and efficacy of AF-219, a P2X3 antagonist compared to placebo in patients with moderate to severe pain due to IC/BPS over four weeks. Secondary objectives assessed changes in urinary urgency, micturition frequency, global response, and treatment response.

Methods: Eligible women 18–80 years of age were required to have clinical evidence of IC/BPS for at least six-months with moderate to severe pain and urinary frequency during the baseline assessment. Subjects who met entry criteria were randomized to either AF-219 or placebo. The protocol was amended to a titration design due to patient intolerability of dysgeusia. Study drug (AF-219 or Placebo) was initiated at 50 mg BID on Day 1 and was titrated upward over a six-day period to the highest tolerable dose or to a maximum dose of 300 mg BID. Cystoscopy was performed either at time of diagnosis or prior to randomization. Four patients were noted to have Hunner’s lesions.

Results: Seventy-four women were randomized after the protocol amendment to either AF-219 (n=36) or Placebo (n=38). Two thirds of the patients randomized to AF-219 received final doses of at least 200 mg BID. At baseline, patients had a mean daily Numeric Pain Rating Scale (NPRS) of 6.2–6.5 (AF-219-Placebo) and mean daily Urinary Urgency of 6.7–6.8 (AF-219-Placebo) on a 0–10 scale. Urinary frequency was 16.9–17.7 voids per day at baseline. In patients who completed the 4-week treatment period, AF-219-treated patients had a decrease in NPRS from 6.2 at baseline to 3.3 at week four compared to 6.4 to 4.5 in Placebo-treated patients (p=0.038). There were similar reductions in urinary urgency and improvements in the Global Response Assessment. There were no SAEs during the study. AEs were generally mild. AF-219-treated patients reported significantly more dysgeusia/hypogeusia than placebo-treated patients.

Conclusion: In this study, treatment with the P2X3 antagonist AF-219 resulted in significant improvements in pain, urinary urgency and overall assessment of IC/BPS symptoms and status compared to placebo in patients with moderate to severe pain due to IC/BPS.
GLT1 GLUTAMATE RECEPTOR MEDIATES THE ESTABLISHMENT AND PERPETUATION OF CHRONIC VISCERAL PAIN IN AN ANIMAL MODEL OF BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS

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Presented by: A. Lenore Ackerman, MD, PhD

Introduction: Psychological stress can exacerbate functional pain disorders, such as bladder pain syndrome/interstitial cystitis (BPS/IC), a pain disorder of the lower urinary tract thought to result from neuronal dysregulation. Glutamate (Glu) is the primary excitatory neurotransmitter in the central nervous system (CNS) functioning in the neuroplasticity of nociceptive networks. GLT1, an astrocytic transporter responsible for Glu clearance, is critical in termination of Glu pain signaling. We sought to examine the modulation of Glu neurotransmission in an animal model of BPS/IC.

Methods: In our model of chronic psychological stress-induced systemic and bladder hyperalgesia, virgin female WKY rats were subjected to water avoidance (WA) stress for one hour/day for 10 days. Behavioral testing was performed before and after WA stress. Referred hyperalgesia and tactile allodynia were tested with von Frey filaments applied to the suprapubic region and plantar hindpaw, respectively. After behavioral testing, GLT1 expression in the spinal cord was assessed by immunoblotting. We also assessed the influence on pain development of dihydrokainate (DHK) and ceftriaxone (CTX), which downregulate and upregulate GLT1, respectively.

Results: Rats exposed to WA stress demonstrated alterations in voiding behaviors (increased frequency and decreased volume), increased fecal pellet excretion, and anxiety-like behaviors. Animals also demonstrated enhanced visceral hyperalgesia and tactile allodynia. This behavioral phenotype correlated with decreases in spinal GLT1 expression. Exogenous GLT1 downregulation by DHK administration resulted in hyperalgesia similar to that seen with WA stress. Exogenous GLT1 upregulation via injection of intraperitoneal ceftriaxone (CTX) inhibited the development of pain and increased voiding frequency and reversed established chronic pain.

Conclusion: This rodent WAS model represents a novel tool for studying lower urinary tract dysfunction and pain. Repeated psychological stress results in changes in voiding behaviors and hyperalgesia, associated with alterations in CNS glutamate processing. Our results suggest that manipulation of Glu handling may inhibit or reverse the allodynia developing after psychological stress. These findings provide important insights into the pathophysiology of BPS/IC and may provide a target for intervention in BPS/IC, a challenging disease refractory to most treatment.
PAINFUL BLADDER FILLING AND PAINFUL URGENCY: IMPORTANT CLINICAL CHARACTERISTICS OF UROLOGIC CHRONIC PELVIC PAIN SYNDROMES (UCPPS) IN MEN AND WOMEN PARTICIPATING IN THE MAPP RESEARCH NETWORK

H. Henry Lai, MD1, John Krieger, MD 2, Michel Pontari, MD3, Dedra Buchwald, MD 2, Xiaoling Hou, PhD4 and J. Richard Landis, PhD4

1Washington University School of Medicine, St Louis, MO; 2University of Washington School of Medicine, Seattle, WA; 3Temple University School of Medicine, Philadelphia, PA; 4University of Pennsylvania Perelman School of Medicine, Philadelphia, PA

(Presented by: H. Henry Lai, MD)

Introduction: “Painful filling” (pain that gets worse with bladder filling), and “painful urgency” (the urge to urinate due to pain, pressure, or discomfort instead of fear of leakage) have been described in women with interstitial cystitis/bladder pain syndrome (IC/BPS), with 56−76% of patients reporting these symptoms. We have limited, mostly anecdotal, information on painful filling or painful urgency in men with chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS). To better understand the clinical significance of painful filling and painful urgency in either men or women, we (1) describe bladder pain symptoms in men and women with UCPPS, and (2) correlate them with other urologic and non-urologic symptoms, psychosocial, and quality of life measures.

Methods: The MAPP Research Network enrolled participants with UCPPS at six clinical sites. Participants were asked if they had painful filling or painful urgency. Participants were then categorized into three groups: 1) both painful filling and painful urgency, 2) either painful filling or painful urgency, or 3) neither.

Results: The Network enrolled 424 participants with IC/BPS and/or CP/CPPS. Painful filling and/or painful urgency were present in 75.4% and 88.4% of men or women with UCPPS, respectively. Presence of both or either characteristics was associated with more severe urologic symptoms (worse pain, frequency, urgency), higher physical symptom burden, higher depression scores, and worse SF−12 physical health (all p<0.01, 3 group trend test). A gradient effect was observed (both > either > neither). Men were more likely to have irritable bowel syndrome, catastrophizing, or report a current symptom “flare” as we moved from neither to either to both. Women were more likely to have chronic fatigue syndrome, higher fatigue scores, negative effect, and worse SF−12 mental health from neither to either to both.

Conclusion: UCPPS patients frequently reported bladder pain symptoms, with high proportions of males (75.4%) and females (88.4%) experiencing painful filling and/or painful urgency. Male and female participants with bladder phenotypes characterized by painful filling and/or painful urgency have more severe urologic symptoms, more generalized symptoms, and poorer quality of life than patients who reported neither of these bladder symptoms, suggesting that these bladder characteristics might represent important subsets of UCPPS patients.

Funding: NIDDK MAPP Research Network
INTRODUCTION: In women with Bladder Pain Syndrome/Interstitial Cystitis (BPS/IC), the pelvic musculature is hypothesized to undergo tonic contraction, contributing to pelvic pain. While muscle hypertonicity produces minimal change on exam, we speculated it would manifest as alterations in the pelvic floor on Magnetic Resonance Imaging (MRI). We retrospectively compared MRI findings, specifically levator measurements, in women with BPS/IC to pain-free women to test this hypothesis.

METHODS: Fifteen women with BPS/IC and 15 age-matched controls without pain, aged 18–55 years, received pelvic MRI, which were reviewed by two blinded radiologists. We took quantitative measurements of the pelvic muscles, including the puborectal line (H-line), distance of the puborectalis to the pubococcygeus (M-line), vaginal length, urethral length and cross-sectional area, levator width and length, and posterior puborectalis angle. A paired, two-tailed T-test was used to compare MRI measures and clinical factors, such as age, parity, age at menarche, and duration of symptoms, between BPS/IC and control patients.

RESULTS: There were no significant differences in age, parity, symptom duration, or age at menarche between BPS/IC patients and controls. Patients with BPS/IC exhibited shorter bilateral levator muscles compared to controls (right: 5.0±0.7 vs. 5.6±0.8 cm, P<0.002; left: 5.0±0.8 vs. 5.7±0.8 cm, P<0.002), resulting in widening of posterior puborectalis angle (35.0±8.6 vs. 26.7±7.9°, P<0.01). The H-line was shorter in BPS/IC patients (7.8±0.8 vs. 8.6±0.9 cm, P<0.02), while the M-line did not differ between groups. While total urethral length was similar, the distance from the vaginal cuff and bladder neck to the H-line was significantly longer in BPS/IC patients than in controls (5.7±0.6 vs. 5.1±0.9 cm, P<0.02; 1.9±0.4 vs. 1.4±0.2 cm, P<0.001, respectively).

CONCLUSION: Patients with BPS/IC have pelvic floor hypertonicity on MRI, manifest as shortened levator length, increasedlevator angle, and decreased puborectal distance. Although a different patient cohort, these findings are consistent with MAPP cohort studies exhibiting enhanced activity in CNS centers that control the pelvic musculature. Our observations support the theory that some patients with BPS/IC experience pelvic floor muscle hypertonicity, which may contribute to or amplify patient pain. Future prospective studies are necessary to determine the utility of MRI to understand the role of the pelvic floor in BPS/IC.
THE ASSOCIATION BETWEEN URINARY MARKER LEVELS AND BCG RELATED CYSTITIS
Hajar Ayoub, MD, Ashish Kamat, MD, Colin Dinney, MD, Bryan Fellman, MS, Diana Urbauer, MS, O. Lenaine Westney, MD
MD Anderson Cancer Center, Houston, TX
(Presented by: Hajar Ayoub, MD)

Introduction: We sought out to determine whether pre-intravesical therapy urinary levels of IL−2, IL−8, IL−1 (ra/B), IL−6, IL−10, IL−12, IL−18, IFN (alpha/gamma) and TRAIL correlate with the development of BCG (Bacillus Calmette-Guerin) related cystitis requiring pharmacological management during an induction or maintenance BCG course.

Methods: Data was obtained from an IRB approved protocol NCT01007058 measuring levels of urinary markers pre and post BCG therapy (induction and maintenance) in 120 patients with superficial bladder cancer. The electronic medical record was reviewed for pre and post BCG urinary symptoms (frequency, urgency, dysuria, nocturia, hematuria, UTI, fever and chills), medical therapy intervention [symptomatic, antimicrobial or anti-tubercular (TB)] and interruption/cessation of treatment. Descriptive statistics such as means, standard deviations, and ranges were calculated for each of the cytokines by assessment time. Changes in cytokine levels after induction (post sixth dose induction minus baseline) and maintenance (post third dose maintenance-baseline) were calculated and were compared by development of induction/maintenance symptoms using a Wilcoxon rank-sum test. We used p < 0.01 to declare statistical significance to give us a family wise Type I error rate of approximately 0.15.

Results: The difference in urinary cytokine levels between baseline and post induction did not correlate with the development of urinary symptoms. However, there was a significant change between the baseline and post maintenance cytokine levels of IL−6, IL−1ra, IL−8, IL−18 and TRAIL in patients reporting maintenance therapy urgency, dysuria and/or nocturia. Additionally, the need for medical therapy during maintenance to treat urinary symptoms was significantly associated with increased IL−18 marker levels in comparison with baseline. (Table and Figure 1)

Conclusion: Significant increases in a sub-group of the urinary markers tested – IL6, IL−1ra, IL−8, IL−18 and TRAIL – were associated the development of maintenance course urgency, dysuria, nocturia and/or the need for medical therapy to ameliorate cystitis symptoms. Several of these cytokines have been identified as candidate marker bladder pain syndrome/IC (BPS/IC). In the bladder cancer patient, there would be benefit in blunting the inflammatory response related to these elevated markers while maintaining the treatment effect on superficial transitional cell carcinoma of the bladder.
Poster #M1

INCREASED PROSTATE SIZE AND HISTORY OF PREOPERATIVE VOIDING DYSFUNCTION ASSOCIATED WITH GREATER URINARY TOXICITY AFTER POST-PROSTATECTOMY ADJUVANT OR SALVAGE RADIATION

Juan Guzman-Negron, MD1 and Ricardo Sanchez-Ortiz, MD2

1University of Puerto Rico, San Juan PR; 2Robotic Urology and Oncology Institute, San Juan PR

(Presented by: Juan Guzman-Negron, MD)

Introduction: Animal models using the rabbit bladder have shown that outlet obstruction is associated with bladder fibrosis and diminished aerobic metabolism. Given that urinary toxicity in men undergoing radiation therapy (RT) after radical prostatectomy (RP) is related to ischemia, we set out to correlate the relationship between clinical factors affecting bladder circulation and urinary complications after RT.

Methods: Patients with a history of postoperative (postop) RT were identified from a database of 542 consecutive men who underwent RP by a single surgeon. Indications included positive margins, pT3, or a serum PSA ≥0.2. All were continent and waited ≥6 months before RT. Of 508 patients with ≥ 6 months (mo.) follow-up, 50 received adjuvant (3.3%, 17/508) or salvage (6.5%, 33/508) intensity modulated RT (median dose of 69 Gy). Urinary complications were classified using the Clavien system. SPSS was used for statistical analysis.

Results: After a median follow-up of 37.9 mo., transient incontinence developed in one patient (2%) (Clavien grade II), and permanent incontinence in three men (6%), one managed medically (grade II), and the others with a sling and an artificial sphincter, respectively (grade III). Three patients (6%) developed bladder neck scars requiring incision. Twenty percent of patients (10/50) developed hematuria requiring fulguration (grade III). Patients with hematuria had higher preop International Prostate Symptom Scores (IPSS) (15.5 vs. 6.5, p<0.01) and larger prostates (51.7 vs. 39.3 g, p<0.01) compared with those without. Seventy five percent of patients with prostates ≥ 60 g developed hematuria compared with 9.5% of those with smaller glands (p<0.001). Diabetic patients showed a trend for hematuria (25% vs. 19.5%) and incontinence (12.5% vs. 7.3%) but this was not significant (only 8/50 radiated patients had DM). Urinary complications did not correlate with age, surgery type, salvage vs. adjuvant RT, body-mass index, smoking, hyperlipidemia, or hypertension.

Conclusion: Our data show that grade III urinary complications may develop in up to 30% of patients treated with RT after RP. Gross hematuria was three times more common than incontinence or strictures and predominantly affected men with preop voiding dysfunction or large prostates. This study constitutes the first report of the importance of gland volume in the post-prostatectomy RT setting and warrants validation with a larger cohort of patients.
OUTCOMES AFTER MIDURETHRAL SLING PLACEMENT IN WOMEN WITH STRESS URINARY INCONTINENCE AND CONCOMITANT SEVERE LOWER URINARY TRACT SYMPTOMS

Michael Ingber, MD, Marisa Clifton, MD, Courtenay Moore, MD, Sandip Vasavada, MD, Howard Goldman, MD
Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

Introduction: Women with symptomatic stress urinary incontinence (SUI) and concomitant obstructive lower urinary tract symptoms (LUTS) represent a challenging patient population whose treatment remains controversial. As there exists a paucity of literature regarding management of these patients, we aimed to evaluate the outcomes of women who underwent midurethral sling (MUS) placement in the setting of severe obstructive LUTS.

Methods: We performed a prospective IRB-approved trial of women with SUI who underwent MUS placement. AUASS were completed preoperatively, at 4–6 weeks postoperatively, and at a mean long-term follow-up (range) of 31.5 (27–35) months. We then selected those patients with severe LUTS preoperatively as defined by an AUA Symptom Score (AUASS) ≥20, an AUASS voiding subscale score ≥12, and/or evidence of obstruction on urodynamic study (UDS).

Results: We identified a total of 30 patients with an AUASS≥20, 23 patients with an AUASS voiding subscale score ≥12 and 11 patients with evidence of obstruction on UDS. All three groups of patients had a statistically significant improvement in storage and voiding subscales of their AUASS at short term follow-up. None of these patients presented with retention or voiding dysfunction. Long-term, these improvements continued for all groups with the exception of those who had obstruction based only on UDS findings (Table 1). Previous studies have indicated improvement in overall AUASS as well as storage subscale scores; however, this study reveals an improvement in voiding subscale scores in most patients as well.

Conclusion: MUS placement in patients with SUI and concomitant severe LUTS is a safe and effective treatment for SUI. Additionally, MUS may significantly improve both storage and voiding symptoms in most of these patients with severe obstructive LUTS.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Preoperative</th>
<th>Postoperative (short-term)</th>
<th>p-value</th>
<th>Post-operative (medium-term)</th>
<th>p-value</th>
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<tr>
<td>AUASS ≥20</td>
<td></td>
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<tr>
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<td>6.82</td>
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</table>
THE IMPACT OF LAPAROSCOPIC ASSISTED GASTRIC BANDING ON LOWER URINARY TRACT SYMPTOMS AND QUALITY OF LIFE SCORES IN OBESE MEN AND WOMEN

Neha Talreja, MD, Margarita Aponte, MD, Miriam Nazmy, MD, Benjamin Brucker, MD, Victor Nitti, MD, Nirit Rosenblum, MD
NYU Langone Medical Center, New York, NY
(Presented by: Neha Talreja, MD)

Introduction: Obesity is an epidemic with a prevalence of 35% among American adults. In women, obesity contributes to pelvic floor stress and muscle weakness, which increases the risk of pelvic floor disorders. In men, lower urinary tract symptoms (LUTS) are associated with obesity related growth of the prostate. Thus, weight loss can improve these symptoms. We conducted a prospective cohort study to assess for change in LUTS and their impact on quality of life (QOL) after weight loss with laparoscopic assisted gastric banding (LAGB). We surmised that weight loss after LAGB would improve LUTS and QOL scores in, both, men and women.

Methods: Obese men and women over 18, undergoing LAGB were recruited. Demographics, clinical data and validated questionnaires (OAB−Q, MESA, IPSS, ICIQ−SF, KHQ) were used to evaluate LUTS and QOL preoperatively and 24–36 months postoperatively. Domain and total scores for each questionnaire were compared to percent weight loss using Spearman’s rho and ANOVA. R statistics was used for analysis.

Results: 43 participants of 134 initially enrolled completed follow up questionnaires. Mean follow up time was 2.1 years (SD ±0.73) with a mean age of 46 (SD ±12) for men (n=15) and 44 (SD ±11) for women (n =28). All participants maintained or lost weight with a mean change in BMI of 23% (SD ±10) in men and 27% (SD ±8) in women. There was no statistically significant association between weight loss and LUTS in any of the questionnaires; however, in the KHQ, decreasing BMI was associated with an increase in general health perception (p=0.012) and a marginally significant association with sleep and energy (p=0.079).

Conclusion: Weight loss after LAGB was associated with an improvement in QOL scores while change in LUTS scores was not found. A preoperative correlation between increased BMI and greater LUTS with worse QOL scores was seen in women; however, the postoperative phase failed to show a significant difference when stratified by gender. The study was limited by a small study size secondary to a 30% follow-up rate. Additionally, this subgroup was relatively young with low baseline LUTS scores, which could limit the degree of change that would be seen after weight loss. Further studies, with larger study populations, are needed to validate the relationship between weight loss after LAGB with LUTS and QOL.
A COMPARATIVE STUDY ON THE EFFICACY OF SOLIFENACIN SUCCINATE IN PATIENTS WITH URINARY FREQUENCY WITH OR WITHOUT URGENCY

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Samsung Changwon Hospital, Sungkyunkwan University School of Medicine, Changwon, Korea
(Presented by: Ji-Yeon Han)

Introduction: Patients with overactive bladder (OAB) often have trouble perceiving urinary urgency because of difficulties in distinguishing between urgency and desire to void. Empirical antimuscarinic treatment of patients with frequency only may be reasonable if conservative management has failed.

Objectives: We compared the efficacy of solifenacin in patients with frequency with or without urgency

Methods: This multicenter, 12-week, open-label, comparative, non-inferiority study was based on the hypothesis; “The efficacy of solifenacin for frequency only is non-inferior to the efficacy of solifenacin for frequency with urgency.” The study population consisted of men and women (≥18 years old) who had the symptom of frequency without (Group 1) or with (Group 2) urgency for more than 3 months. Frequency was determined on the basis of three-day bladder diaries and defined as an average micturition frequency ≥8/24 hours and urgency was defined as a score ≥3 on the urinary sensation scale. All patients received solifenacin 5mg once daily. At the week 4 visit, the dose could be increased to 10mg based on discussion between the subject and investigator regarding treatment efficacy and tolerability. Primary efficacy variable: daily frequency change at 12 weeks relative to baseline. Secondary efficacy variables: change at 12 weeks relative to baseline in PPBC (Patients’ Perception of Bladder Condition), OABSS (OAB Symptom Score), and, BSW (Benefit, Satisfaction, Willingness to continue) questionnaire scores. Safety was evaluated by adverse events and measuring maximal urinary flow rate and post-void residual urine.

Results: Of the 286 enrolled patients, 240 (83.9%) completed the study (Group 1 n=115; Group 2 n=125). Full dataset analysis revealed that the groups without and with urgency exhibited significant reductions in daily micturition frequency (−2.49 ± 3.71 and −2.63 ± 4.19, respectively, p=0.176). The lower limit of the 95% two-sided CI of the comparison of the two group means was −1.14, which is smaller than the −0.8 margin of clinical equivalence. The two groups did not differ in mean voided volume or improvement in PPBC, OABSS, or, BSW scores. Both tolerated the treatment well.

Conclusion: The present study could not verify that solifenacin had non-inferior efficacy for frequency relative to its efficacy for OAB. However, the 12-week solifenacin treatment was effective in all patients with frequency, regardless of whether they also had urgency.
Introduction: The randomized, double-blind, placebo (PBO)-controlled, EIGHT trial demonstrated the superiority of fesoterodine (FESO) 8 mg versus FESO 4 mg and PBO for improving overactive bladder (OAB) symptoms, including urgency urinary incontinence (UUI). In a post hoc analysis of EIGHT trial data, we assessed the efficacy and safety of FESO 8 mg versus FESO 4 mg and PBO in patients with a history of taking previous antimuscarinic therapy for OAB.

Methods: In the 12-week, fixed-dose, EIGHT trial, patients aged ≥18 years with OAB symptoms for ≥6 months, ≥8 micturitions/24 hours, ≥2 and ≤15 UUI episodes/24 hours, and at least moderate bladder-related problems on the Patient Perception of Bladder Condition were randomized to receive FESO 8 mg, FESO 4 mg, or PBO once daily. Patients randomized to FESO 8 mg received FESO 4 mg for 1 week, followed by 8 mg for 11 weeks. Patients completed bladder diaries and the OAB Questionnaire (OAB-q) at baseline and week 12. The primary endpoint was change from baseline to week 12 in UUI episodes/24 hours for FESO 8 mg versus FESO 4 mg and PBO.

Results: 691 of 1955 (35%) treated patients (FESO 8 mg, n=271; FESO 4 mg, n=284; PBO n=136; 87% women) in the EIGHT trial had taken previous antimuscarinic therapy (71% of these had taken only 1 previous antimuscarinic) for OAB. At week 12, FESO 8 mg significantly improved UUI episodes, micturitions, urgency episodes, and OAB-q Symptom Bother and Health-Related Quality of Life (HRQL) scores versus FESO 4 mg and PBO (all P<0.05; Table); the diary-dry rate was significantly higher (P=0.001) in the FESO 8-mg group versus FESO 4 mg and PBO. Dry mouth (FESO 8 mg, 24%; FESO 4 mg, 10%; PBO, 3%) and constipation (FESO 8 mg, 4%; FESO 4 mg, 1%; PBO, 2%) were the most common treatment-emergent adverse events (All Causalities).

Conclusion: These data from the EIGHT trial demonstrate the additional efficacy benefit of fesoterodine 8 mg versus fesoterodine 4 mg and PBO for improving OAB symptoms, including UUI, and HRQL in patients who had received previous antimuscarinic therapy for OAB. Fesoterodine 8 mg and 4 mg were generally well tolerated in this patient population.

Funding: Pfizer Inc
Poster #M6
CONSISTENT LONG-TERM EFFICACY AND SAFETY OF REPEAT ONABOTULINUMTOXINA INJECTIONS IN PATIENTS WITH NEUROGENIC DETRUSOR OVERACTIVITY: FINAL RESULTS OF UP TO FOUR YEARS’ TREATMENT
Courtenay Moore, MD1, Roger Dmochowski, MD2, Karen Ethans, MD3, Heinrich Schulte-Baukloh, MD4, Brenda Jenkins, BS5, Steven Guard, PhD6, Yan Zheng, PhD7, Gilles Karsenty, MD8 and Michael Kennelly, MD9
1Cleveland Clinic, Cleveland, OH; 2Vanderbilt University, Nashville, TN; 3University of Manitoba, Winnipeg, Manitoba, Canada; 4St. Hedwig-Krankenhaus, Berlin, Germany; 5Allergan, Inc., Irvine, CA; 6Allergan, Ltd., Marlow, UK; 7Allergan, Inc., Bridgewater, NJ; 8Aix-Marseille Université, Marseille, France; 9Carolinas Rehabilitation, Charlotte, NC
(Presented by: Courtenay Moore, MD)

Introduction:
We present final results from a four-year, multicenter study of long-term efficacy/safety of onabotulinumtoxinA (onabotA; BOTOX; Allergan, Inc.) for treatment of urinary incontinence (UI) due to neurogenic detrusor overactivity (NDO) in patients who were inadequately managed by an anticholinergic.

Methods:
Patients with MS or SCI who completed either phase three study were eligible for a three-year extension study in which they could receive multiple intradetrusor onabotA treatments (200U or 300U). Patients were treated ‘as needed’ based on their request and fulfillment of prespecified criteria (≥12 weeks since previous treatment; ≥1 UI episode within three days), so the number of treatments varied per patient. Assessments included change from baseline in UI episodes/day (primary efficacy measure) and volume/void, duration of effect (time to request for retreatment), adverse events (AEs), and rate of de novo clean intermittent catheterization (CIC). Data are presented up to 6 treatments.

Results:
396 patients entered the extension study per protocol; 240 (60.6%) were followed for ≥4 years. Discontinuation rates due to AEs/lack of efficacy were low (3.0%/2.0%). At study baseline, mean UI episodes/day were 4.5 and volume/void was 150.9 mL. OnabotA 200U consistently reduced the number of UI episodes/day over four years; mean reductions from baseline at week 6 ranged from −3.2 to −4.1 over six treatments. Volume/void nearly doubled after onabotA 200U treatment; increases ranged from 133.2 to 166.1 mL over six treatments. Overall median duration of effect was 9.0 months (200U). Efficacy results for onabotA 300U were similar. Most common AEs were urinary tract infections and urinary retention. De novo CIC rates (200U) were 29.5%, 3.4%, and 6.0% for treatments 1–3, and 0% for treatments 4–6. CIC rates were higher with 300U.

Conclusion:
Over a four-year period, onabotA consistently reduced UI and improved volume/void in patients with NDO who were inadequately managed by an anticholinergic, with no new safety concerns.

Funded by Allergan, Inc.
Poster #M7
THE SEVERITY OF BOWEL DYSFUNCTION IN PATIENTS WITH NEUROGENIC BLADDER
Anne P. Cameron, MD, Gianna M. Rodriguez, MD, Amy Gursky, Chang He, J. Quentin Clemens, MD, MSCI, John T Stoffel, MD
Ann Arbor, MI
(Presented by: Anne P. Cameron, MD)

Introduction: Patients with neurological conditions often suffer from severe debilitating lower urinary and bowel dysfunction in addition to their physical disabilities. However, only the bladder has received the attention of medical providers with neurogenic bowel being poorly understood and characterized. The primary aim in this study was to determine the level of severity and impact on quality of life of bowel dysfunction in a population with neurogenic bladder using validated surveys and to determine those patient variables that correlate with worse bowel symptoms. Our second aim was to determine if the severity of bowel dysfunction correlates with the severity of bladder dysfunction.

Methods: This is a cross-sectional analysis of a prospective institutional Neurogenic Bladder Database from 2010−2013.

Results: Among the 175 patients 60.6% had traumatic SCI and 18.3%, MS. Fecal Incontinence Severity Index (FISI) scores were a median of 18.0±1.39 (moderate). Neurogenic Bowel Dysfunction (NBD) score, which is specific to patients with neurological disease, were a median of 11.0±0.63 (moderate). NBD Scores were worse in those patients with SCI and myelomeningocele compared to other diseases (P=0.020), in younger patients (p=0.020) and in the SCI group those with higher levels of injury (p=0.0046). Based on the Bristol stool scale 65% of patient had abnormal stool consistency, mostly constipation. None of the FISI, Bristol or NBD scores correlated significantly with SF−12 quality of life measures.

None of the urodynamic findings correlated with any of the bowel symptom scores. However, both of the bladder symptom scores Michigan Incontinence Symptom Index (M−ISI)(p=0.05) and the AUA−SI (p=0.03) correlated with FISI severity and the NBD score correlated with the M−ISI. Those patients with abnormal stool consistency on the Bristol reported more urgency and stress incontinence on M−ISI.

Conclusion: Bowel dysfunction is very common among patients with neurogenic bladder. Those patients with worse bladder symptoms also suffered from worse bowel dysfunction although the severity of bowel dysfunction did not correlate with overall quality of life or urodynamic measures.

<table>
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<tr>
<th>Characteristics</th>
<th>N(%) or mean</th>
<th>FISI</th>
<th>NBD</th>
<th>Bristol</th>
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<tr>
<td>Gender: Male</td>
<td>94 (53.7)</td>
<td>16</td>
<td>12</td>
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<tr>
<td>Female</td>
<td>81 (46.3)</td>
<td>22</td>
<td>10</td>
<td>3.15</td>
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<tr>
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<td>7</td>
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<td>30−40</td>
<td>45 (25.6)</td>
<td>14</td>
<td>8</td>
<td>0.97</td>
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<td>40−60</td>
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<tr>
<td>&gt;60</td>
<td>12 (6.8)</td>
<td>8</td>
<td>5</td>
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<tr>
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<td>63 (36.6)</td>
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<td>14</td>
<td>5.9</td>
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<tr>
<td>no</td>
<td>112 (63.4)</td>
<td>29</td>
<td>16</td>
<td>3.15</td>
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<tr>
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<td>14</td>
<td>5.9</td>
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<tr>
<td>A: 22 (12.6)</td>
<td>14 (8.0)</td>
<td>2</td>
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<td>AUA−SI Total</td>
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<td>1.03</td>
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<td>2.04</td>
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</table>

Conclusion: Bowel dysfunction is very common among patients with neurogenic bladder. Those patients with worse bladder symptoms also suffered from worse bowel dysfunction although the severity of bowel dysfunction did not correlate with overall quality of life or urodynamic measures.
Poster #M8

BODY MASS INDEX AS A PREDICTIVE FACTOR OF AUTONOMIC DYSREFLEXIA IN PATIENTS WITH NEUROGENIC BLADDER

Allison Polland, MD1, Amy Gursky2 and Anne P. Cameron, MD2
1Icahn School of Medicine at Mount Sinai; 2University of Michigan, Ann Arbor, MI
(Presented by: Allison Polland, MD)

Introduction: Autonomic dysreflexia (AD) is a well-known complication of spinal cord lesion above T6 triggered by noxious stimulus below the level of injury and characterized by profuse sweating, muscles spasms and hypertensive crisis causing headaches. This study aimed to determine if body mass index (BMI) is associated with AD in neurogenic bladder patients.

Methods: An IRB-approved neurogenic bladder database from a single institution was queried for spinal cord injured patients who were at risk for AD. Patient height and weight as well as blood pressure and American Spinal Injury Association (ASIA) classification were recorded and patient reported severity of AD was recorded via questionnaire.

Results: A total of 73 patients responded to questions regarding AD, 32 were excluded for having not had a height and weight or blood pressure measured near the time of the visit during which the survey was completed and 13 patients were excluded due to incomplete data. The majority (78%) of the patients were male with an average age of 48.6 years. Thirteen patients did not experience AD, only two of these patients had lesions below T6. Within the overweight/obese group (BMI>25) 10/13 (76%) patients had never experienced AD as compared to 3/15 (20%) in the normal weight group. AD frequency and duration were significantly greater in the overweight group compared to the normal weight group (p=0.012 and p=0.009 respectively), while there was no difference in the severity of AD between groups. There was also no difference in the presence of comorbidities such as hypertension or the use of anticholinergic medications. On multiple regression analysis, including age, ASIA classification, mean arterial pressure and BMI classification, only overweight designation was found to be a significant predictor of AD (p=0.046).

Conclusion: Elevated BMI was associated with decreased risk of autonomic dysreflexia in patients with neurogenic bladder. Increased body fat has been shown to be associated with an increase in resting rate of sympathetic discharge, and obese patients may be less likely to experience AD due to their higher resting sympathetic tone. Further research will allow us to better understand this association.

Poster #M9

NEUROGENIC BLADDER PRESENTING TO THE EMERGENCY DEPARTMENT IN THE UNITED STATES: ADMISSION RATES AND ASSOCIATED MORTALITY

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1Henry Ford Hospital, Detroit, MI; 2University Medical Center of Hamburg-Eppendorf, Hamburg, Germany; 3Brigham and Women’s Hospital, Harvard Medical School, Boston, MA
(Presented by: Jessica Meyers, MD)

Introduction: Neurogenic bladder is a heterogeneous disease that is difficult to characterize epidemiologically. To characterize patients with neurogenic bladder presenting to the emergency department (ED) in the United States, assessing concurrent diagnoses, predictors of admission and mortality.

Methods: From the Nationwide Emergency Department Sample database between 2006–2009, patients presenting to the ED with diagnoses associated with neurogenic bladder were extracted, and defined as having primary/secondary diagnosis of lower urinary tract symptoms, urinary retention, urinary tract infection (UTI), hematuria, hydronephrosis or urolithiasis, and an additional diagnosis of neurologic disease, including multiple sclerosis, Parkinson’s disease, spina bifida, hemiplegia, quadriplegia, paraplegia and spinal cord injury. Characteristics associated with admission were evaluated using logistic regression models adjusted for clustering.

Results: There were 546,962 ED visits associated with neurogenic bladder. Diagnosis of sepsis and renal failure were seen in 6.8% and 8.7%, respectively. Admission rate was 69%. Predictors of admission included female gender, higher Charlson Comorbidity Index, UTI, hydronephrosis, sepsis and renal failure. Mortality rate was 1.1% of admitted patients, and 22.0% and 28.1% of patients with kidney failure and sepsis, respectively.

Conclusion: This is the largest population based study to characterize neurogenic bladder patients presenting to the ED, demonstrating its significant morbidity and mortality. This illustrates the severity of the disease, and the necessity of improved care in the outpatient setting.

Financial disclosure: None.
UROLOGIST PRESCRIBING PRACTICES FOR INTERMITTENT CATHETERIZATION IN NEW ENGLAND
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(Presented by: Gillian Wolff, MD)

Introduction: Intermittent catheterization (IC) is a critical aspect of urologic care for patients with impaired bladder emptying. Since Lapides described clean technique, patients have been saved from the hazards of chronic indwelling catheters. Nonetheless, complications of IC are common, and include urinary tract infection (UTI), urethral trauma, and stricture. Despite the variety of catheter types, there are no definitive studies showing the superiority of any type of catheter, or of single-use, sterile catheters in terms of complications, or quality of life. Notwithstanding, on April 1, 2008, Medicare recognized urethral catheters as “single-use”, reimbursing 200 monthly. We conducted a survey of New England urologists to better understand how clinical knowledge, cost and patient preference influence current prescribing patterns.

Methods: A 20-question survey was distributed by email to members of the NEAUAN. Questions focused on practice type, type and number of catheters prescribed, use of third party suppliers, and factors impacting prescription decisions. The cost of various regimens was calculated.

Results: Responses were received from 83/549 urologists (15%). 30% of respondents were from private, 40% academic, and 30% hospital-affiliated practice. 83% did not believe that sterile was superior to clean IC for the prevention of UTI. Only 63% of respondents, however, advised patients to clean and reuse their catheters. Many catheter types were prescribed: red rubber (15%), silicone (9%), medical grade PVC (33%), hydrophilic coated (17%), and closed “touch-less”(5%). 21% did not know the type of catheter they prescribed. 74% knew that Medicare covers 200 catheters monthly. 41% answered that they prescribe this maximum, 19% prescribed 200 only for patients with recurrent UTIs, while only 17% continued to tell patients to wash and reuse catheters. 90% stated patient preference influenced catheter prescriptions, while cost played a role for only 35%.Monthly costs for various catheter types ranged from $1.83– $2.85 when reused and $122.00– $974.00 when 200 were used.

Conclusion: 83% of respondents, an overwhelming majority, believed that there is no advantage to sterile IC compared to clean technique. Nonetheless, only 17% advised patients to clean and reuse catheters, despite the substantially increased cost expenditure associated with this change. Patient preference impacted prescription practices for more urologists than did cost.
**Introduction:** Overactive bladder (OAB) is a syndrome characterized by symptoms of urgency with or without incontinence, frequency and nocturia there is a great variability on OAB evaluation. In some cases urodynamics is normal and the challenge is to propose the least invasive treatment of OAB. Behavioral therapies have been used for decades as they are conservative, inexpensive and do not induce side effect. Our purpose was to describe how the association of usual techniques of pelvic floor rehabilitation and behavioral and cognitive therapy (BCT) was effective to manage OAB syndrome in absence of urodynamic diagnosis.

We present our experience of comprehensive care combining muscular training and BCT in patients complaining at variable degrees of severity of urgency frequency syndrome with leakages [1].

**Methods:** All patients had urodynamic testing close to normal. Management (seven to 15 sessions of 45 min duration) included observation (to identify inappropriate life habits), learning techniques (Pelvic Floor Muscle Training (PFMT), breathing, bladder training, diet tips), cognitive approach (analysis of usual circumstances of urgency) and home exercises to induce behavioral changes [2].

**Results:** The population comprised of 24 non-neurological patients (20 women, four men) mean age 54.7±16.2y who performed 10.8±3.9 sessions.

There was a significant improvement (Table): Visual Analogic Scale (VAS) of discomfort, Measurement of Urinary Disability (French score) (mainly items of urgency and frequency) and recurrence of voiding at normal desire.

**Conclusion:** Comprehensive care combining muscular training and behavioral and cognitive therapy appears as a good alternative for patients presenting with OAB syndrome and without urodynamic diagnosis and can be proposed as first line treatment before considering invasive investigations and /or heavy medical treatment.

Factors impacting patient tolerability and procedure time for intravesical onabotulinumtoxin A injection

Kevin Carlson, MD, Richard Baverstock, MD¹, Andrea Civitarese, BSc² and Trafford Crump, PhD³
¹Department of Surgery, University of Calgary and Vesia [Alberta Bladder Centre]; ²Vesia [Alberta Bladder Centre]; ³Department of Surgery, University of Calgary
(Presented by: Kevin Carlson, MD)

Introduction: Onabotulinum toxin A (BTA) injection has become a common urologic procedure. Techniques that ensure efficiency while delivering BTA in the least painful way become paramount as the volume of patients receiving BTA rise. The purpose of this study is to examine factors at the time of injection that impact pain and the duration of procedure.

Methods: A total of 548 patients are actively receiving BTA in our practice for a variety of lower urinary tract conditions. The data for this study was sourced from a longitudinal registry specifically developed to track these patients. The primary outcomes for this study were: 1) participants' self-reported pain, measured using a visual analogue scale ranging from zero (no pain) to 10 (worst pain imaginable) immediately after being injected; and 2) the duration of the procedure, measured in minutes. The units of BTA, volume of saline injected, and the number of injections were recorded immediately after each procedure. An interaction variable for the combination of rigid scope and Cook Williams needle (representing >75% of procedures) was created. Patient diagnosis and surgeons were included as categorical variables to account for any non-random unmeasured effects. An ordered logistic regression was used to analyze a multivariate model for pain, and ordinary least squares was used to model the duration of the procedure.

Results: At the time of analysis, injection data was available for 113 participants from three surgeons. Participants injected by two of the surgeons reported significant lower pain scores (odds ratio = 0.32; p = 0.01, and odds ratio = 0.12; p = 0.02). Participants with spinal cord injuries also reported lower pain scores (0.30; p = 0.04). Participants receiving more injections had significantly longer procedures (0.10; p = 0.04). Those procedures using a rigid scope/Cook Williams combination were significantly shorter (−2.49; p < 0.01). Significant surgeon-level effects were also found for procedure length.

Conclusion: These results suggest that the combination of a rigid scope and Cook Williams needle does not significantly increase patients’ reported pain, yet makes for more efficient injection of BTA. The surgeon’s injection technique had an impact on both pain and procedure time. Comparative studies into different scope/needle combinations and injection techniques may be warranted in future studies. This study was funded by an unrestricted research grant from Allergan Canada Inc.
SOLIFENACIN AND TAMSULOSIN COMBINATION THERAPY IMPROVES QUALITY OF LIFE AND DECREASES URINE NGF LEVELS IN MALES WITH LOWER URINARY TRACT SYMPTOMS

Robert Chan, MD¹, Alvaro Munoz, PhD², Evan Wenker³, Melissa Whipple⁴, Brian Miles, MD⁴ and Timothy Boone, MD, PhD⁴
¹Northwoods Urology, Shenandoah, Texas; ²Houston Methodist Research Institute, Houston, Texas; ³Baylor College of Medicine, Houston, Texas; ⁴Houston Methodist Hospital Department of Urology, Houston, Texas

(Presented by: Evan Wenker)

Introduction: Nerve growth factor (NGF) has been proposed as a urinary biomarker and previously shown to be elevated in male patients with bladder outlet obstruction (BOO) and other lower urinary tract symptoms (LUTS). The aim of this prospective study was to evaluate urinary NGF/Cr levels from men with symptomatic LUTS and measure the effect of combination therapy with solifenacin and tamsulosin.

Methods: From January 2012 – February 2014, all male patients referred for evaluation and management of LUTS were screened for enrollment. Inclusion criteria were: men ≥50 years old with symptomatic LUTS, IPSS ≥8, PSA <10 (negative biopsies within six months for any age-specific PSA elevation suspicious for prostate carcinoma), post void residual urine <150 ml, urinary flow rate ≥12 ml/sec. In all subjects, urinary NGF and creatinine (Cr) levels were measured and normalized to the urinary Cr concentrations (NGF/Cr). Urinary NGF/Cr levels, uroflow, post-void residual, and symptom questionnaires including IPSS, PPIUS, PBC, ICIQ-MLUTS, and ICIQ LUTSqol were measured at baseline, four weeks, eight weeks, and 12 weeks after starting combination therapy with solifenacin 5 mg and tamsulosin 0.4 mg. The primary endpoint was urinary NGF and NGF/Cr change from baseline compared to week 12.

Results: Seven men meeting inclusion criteria were enrolled in the study. Urodynamic studies failed to show statistically significant changes over the three-month study period. AUA symptom scores, ICS ICIQ–LUTS and perception of bladder control survey values were significantly improved during treatment. Urinary NGF/Cr values were significantly decreased after one month of treatment. No patients discontinued treatment due to side effects.

Conclusion: In this study, male patients with LUTS had decreased urinary NGF/Cr levels after treatment with combination solifenacin and tamsulosin. This corresponded with improvement in patient reported outcomes.

* Funding relationships with Astellas Pharmaceuticals.

Supported by the Brown and Cullen Foundations
Poster #NM5
THE EFFICACY OF SOLIFENACIN FOR PREVENTION OF CATHETER RELATED BLADDER DISCOMFORT AFTER TRANSURETHRAL RESECTION OF BLADDER TUMOR IN NONMUSCLE INVASIVE BLADDER CANCER PATIENTS: A PROSPECTIVE, RANDOMIZED, MULTICENTER STUDY
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(Presented by: Dongwan Sohn, MD)

Introduction: To evaluate the incidence of catheter-related bladder discomfort (CRBD) and efficacy of solifenacin in preventing CRBD after transurethral resection of bladder tumor (TUR−BT) in nonmuscle invasive bladder cancer patients.

Methods: Our prospective, randomized, multicenter trial enrolled 111 patients undergoing elective TUR−BT under general anesthesia with nonmuscle invasive bladder cancer. Patients were divided into two groups: solifenacin 5 mg (group S) and control (group C). Among the patients included in the study patients, 84 completed study patients were analyzed. Group S (n=41) received solifenacin 5 mg orally the day before, the day of the operation and the next day and Group C (n=43) received usual care. After TUR−BT patients were catheterized with a Foley catheter (mainly 18 Fr) and the balloon was inflated with 10 ml distilled water. The CRBD was assessed at one hour and two hours after operation in a recovery room and a general ward, respectively. Severity of CRBD was graded with a simple four-step severity scale: no pain; mild pain (revealed only by interviewing the patient); moderate (a spontaneous complaint by the patient) and severe discomfort (agitation, loud complaints and attempt to remove the Foley catheter). Pain was assessed during three days starting six hours after TUR−BT using a VAS. Standardized postoperative analgesia administered via a patient-controlled analgesia system. Foley catheter was removed at three days later after TUR−BT and checked uroflowmetry and postvoiding residual volume.

Results: As shown in table, the incidences and severities of CRBD at one hour and two hours were no differences in two groups (p>0.05). Overall VAS scores were no differences in two groups (p>0.05). However, VAS score of two days after TUR−BT was lower significantly (p=0.041). None of the patient receiving solifenacin had severe discomfort or voiding difficulty in postoperative period.

Conclusion: The incidence of CRBD at one hour and two hours after TUR−BT in nonmuscle invasive bladder cancer patients was 76.7% and 72.1%. The incidence was similar with previous study. Pretreatment of solifenacin 5 mg did not reduce the incidence and severity of CRBD after TUR−BT in nonmuscle invasive bladder cancer patients.
Poster #NM6
HIGH-FLOW URETHRAL OBSTRUCTION: A REAL ENTITY
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(Presented by: Nitin Sharma, MD)

Introduction: Bladder outlet obstruction (BOO) is a diagnosis based on the functional and anatomic components of the lower urinary tract. While videourodynamics (VUDS) is considered the gold standard in distinguishing normal patients from those with BOO and/or impaired detrusor contractility, many urologists base their clinical management decisions on non-invasive uroflowmetry alone. We aimed to evaluate whether patients with VUDS diagnostic of BOO could demonstrate normal or high-flow voiding patterns on uroflowmetry (Qmax > 12 ml/s).

Methods: 161 consecutive patients with a VUDS diagnostic of BOO were retrospectively evaluated. Indications for VUDS were refractory lower urinary tract symptoms (LUTS) in patients considering invasive treatment regardless of uroflow. The diagnosis of BOO was based on established criteria from the bladder outlet obstruction index (BOOI) in men and the Blaivas-Groutz nomogram (BGN) in women. Patients with equivocal data and with concurrent detrusor underactivity were diagnosed with BOO based on clinical judgment. All contemporaneous uroflowmetry tracings were then individually inspected and analyzed for each patient. Only maximum free flow (Qmax) measurements sustained for at least two seconds were included and all voided volumes less than 150 ml on uroflowmetry were excluded. Patients with a Qmax greater than 12mL/s on a single uroflowmetry were categorized as demonstrating high-flow urethral obstruction (HFO).

Results: 161 patients met the VUDS criteria for BOO and 22 met the criteria for HFO. Three patients were excluded because the Qmax was not sustained for two seconds leaving 19/161 (12%) patients with HFO. Sixteen men and three women with a mean age of 64 (range 36–85) comprised this group. All three women and 88% of men had unequivocal obstruction according to the criteria cited above. The mean BOOI for men was 54 (range 11–127) and all women had Grade 1 BGN obstructions. The mean Qmax for all patients was 15 ml/s (range 12–22). Thirteen (81%) of the men were found to be obstructed at the level of the bladder neck and/or prostatic urethra and three (19%) had anterior urethral strictures. All three women were obstructed from prior pelvic sling procedures.

Conclusion: HFO is a real entity and was documented in 12% of consecutive patients with a urodynamic diagnosis of obstruction. Relying on a normal non-invasive Q as an exclusion criteria for performing urodynamics can potentially overlook this group of obstructed patients for whom VUDS is necessary.
ONABOTULINUMTOXIN A IN PATIENTS WITH A HISTORY OF PRIOR PELVIC RADIATION THERAPY
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(Presented by: David Flores, MD)

Introduction: Pelvic radiation (xrt) is a common treatment modality for various malignant processes, but has adverse short and long-term effects. Patients may develop dysuria, urinary urgency, frequency, and incontinence. Onabotulinumtoxin A (BTX) is FDA approved for management of similar symptoms in the neurogenic bladder and overactive bladder populations. Yet, this treatment modality has not been reported for use in patients with voiding dysfunction secondary to pelvic xrt. Our objective is to determine if patients that received previous pelvic xrt benefit from intradetrusor onabotulinumtoxinA injection therapy.

Methods: This is a retrospective chart review of patients who received pelvic xrt from two academic medical centers that underwent BTX–A injections for symptomatic relief of voiding symptoms. All patients were assessed with pre- and post-operative urodynamics, AUA Symptom Score (AUASS), and subjective improvement. BTX–A injections were performed in standard fashion, excluding the trigone.

Results: Seventeen patients underwent treatment with BTX–A for anticholinergic refractory urinary symptoms (urinary urgency, frequency, urge incontinence) associated with prior pelvic xrt. Sixteen of 17 patients were male, 15 of 17 received their xrt due to prostate cancer and two for rectal cancer. Of the patients with prostate cancer, one was treated with brachytherapy and the remaining with external beam therapy. Preop UDS was available in 16 of the 17 patients with documented normal compliance in 12, a median capacity of 200 ml (78–579 ml), DO in nine patients, median detrusor pressure at maximal flow rate of 27mmH20 (13–95mmH2O) and complete emptying.

Thirteen of 17 (76.5%) patients reported subjective improvement in their symptoms with a median dose of 100U (80–200U). The AUASS reduced from a mean of 21.6 to 13.4. Two patients in this series developed transient urinary retention requiring clean-intermittent. Six patients had second and one patient had a third BTX–A injection. Five patients had resolution of DO and symptoms and successful subsequent placement of an AUS.

Conclusion: The urinary sequelae of pelvic xrt has profound effects on quality of life. Three quarters of our patients reported improvement in their urinary symptoms after treatment. This is the first study reporting the use of BTX–A for urinary symptoms associated with exposure to pelvic xrt. A prospective, larger powered study would be invaluable in establishing BTX–A as a standard treatment in this population.
Introduction: Complications from neurogenic bladder (NGB) after spinal cord injury (SCI) such as upper tract deterioration could potentially be preventable with adequate screening and urologic care. Our objectives are to assess the method of urologic follow up after SCI; and to evaluate the occurrence and predictors of urological complications including the impact of adequate bladder surveillance.

Methods: This retrospective cohort study utilized a 5% sample of Medicare data 2007–2010. The minimum adequate urologic surveillance was defined as a urologist visit; serum creatinine; and upper urinary tract imaging study within the two year period of follow up. Each patient was classified to their most severe complication and implemented a multivariate linear regression model predicting level of complication.

Results: Among the 7,162 patients with SCI the majority were functionally paraplegic (82.4%) and Caucasian (80.9%). 4.9% received no screening studies over the two year period, 70.5% received some, but not all screening and 24.6% received all three screening tests. Patients travelled a mean of 21.3 ±27.5 miles to receive care from a urologist or a rehab center. A total of 35.7% of patients saw a urologist during the two year period, 48.6% had some form of upper tract evaluation, with the majority being CT scans (40.0% of entire cohort) followed by ultrasound (35.2%) and 90.7% had a creatinine. Fully 35.8% of all patients had a minor complication during their two year follow up with the majority being cystitis (21.1% prevalence). 17.1% had a moderate complication and 8.0% had a severe complication. In our prediction model patient factors that correlated with increased complications included male gender, African American race, paraplegia and receiving some or all of the NGB recommended screening. Patient distance of travel to their treating physician (urologist or physiatrist) and age did not affect the rate of complications.

Conclusion: Urological complications are common in patients with SCI, but most are not receiving the recommended screening for these complications. More education is needed to provide the best care for this vulnerable population.

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BLADDER DYSFUNCTION IN MULTIPLE SCLEROSIS

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(Presented by: Gerard Pregenzer, MD)

Introduction: Bladder dysfunction, which can lead to urinary incontinence (UI), presents in a minimum of 80% of people with MS (pwMS). Individuals with UI have been found to be more depressed and have a potentially lower overall quality of life (QOL). Particularly in the presence of other common motor impairments seen in pwMS, UI may have a negative impact on life participation and QOL. This may be mitigated by early urological evaluation and intervention; however, pwMS frequently do not report bladder dysfunction until it is impairing their QOL or UI episodes are occurring. Our objective is to examine the relationship of self-reported bladder impairment with the standardized neurological evaluation in pwMS.

Methods: Data from routine examinations of 86 pwMS presenting at a comprehensive MS care center between November 1, 2013 and January 30, 2014 were retrospectively reviewed. pwMS are routinely assessed using Kurtzke’s Expanded Disability Status Scale (EDSS) and the Functional Systems Score (FSS) to rate disease severity. Components of the EDSS extracted for this study include: Cerebellar FSS, Brainstem FSS, Bowel and Bladder (BB) FSS, Overall EDSS score, Modified Fatigue Impact Scale (MFIS−5), and Barthel Index (BI).

Spearman’s correlations were used to examine the relationship between the MFIS−5, BI, EDSS and Cerebellar, Brainstem, and BB FSS. All data were assessed using SPSS; alpha level was set at <.05.

Results: BB impairment of at least mild level was found in 68.7% of our sample. The BB FSS was found to have a large relationship to the BI [r(81)=−.559, p<.001] indicating that BB impairment is associated with a decrease in a person’s ability to independently perform activities of daily living (ADL). The BB FSS has a moderate relationship to overall EDSS score [r(81)=.432, p<.001] indicating that BB impairment is associated with a decrease in mobility. BB FSS had a small relationship with brainstem FSS [r(81)=.229, p=.037] and MFIS−5 [r(84)=.233, p=.034] indicating an association between BB impairment and decreased brainstem function and increased fatigue. No correlation was found between BB FSS and cerebellar FSS [r(84)=.207, p=.061].

Conclusion: Given that pwMS under report bladder dysfunction, the relationship between the EDSS and BB FSS suggests a mechanism by which pwMS at risk for bladder dysfunction may be identified, prompting early urological evaluation and intervention. Further prospective investigation in this area is warranted.

No funding
MEDICAL COMPLICATIONS AND UROLOGICAL SURVEILLANCE IN THE UNITED STATES ADULT SPINA BIFIDA POPULATION
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(Presented by: Yahir Santiago-Lastra, MD)

Introduction: Adult patients with myelomeningocele (MMC) and the associated neurogenic bladder require consistent, lifelong vigilance. Preventing these complications may be possible if adequate surveillance can be implemented for these patients. Our objectives are to evaluate the adequacy of urologic surveillance in this population and to outline the prevalence and risk factors for medical complications.

Methods: We performed a retrospective cohort study using a 5% sample of Medicare administrative data from 2007−2010. We used the Paralyzed Veterans of America screening guideline to define the minimum adequacy of surveillance: serum creatinine, upper urinary tract imaging and a urologist visit within a 2-year period. Neurogenic bladder-associated complications and diagnosis of MMC were collected using ICD−9 codes. Complications were graded based on their clinical implications. Multivariate analysis was used to identify predictors of complications based on severity. We included the following variables: age, gender, race, travel distance to referral center, and geographic location of residence.

Results: 825 MMC patients were included in our study and were a predominantly Caucasian (85.1%) female population (61.3%) with a mean age of 51.2 +/- 17.2 years. Most patients (61.3%) received some form of neurogenic bladder surveillance, although only 33% of the patients met the minimum acceptable criteria for adequacy. A urologist visit within two years took place for 44% of the patient population. Most complications observed in the patient sample were mild complications, which occurred in 27.6% of patients. Moderate and severe complications were observed in 17.0% and 6.6% of patients respectively. The most common complications were acute or recurrent cystitis (16.4%), pressure ulcers (7.1%), chronic kidney disease (4.4%), and kidney infection (3.7%). Multivariate analysis showed that the risk factors for increased complications included younger patient age, male gender and better adequacy of neurogenic bladder surveillance.

Conclusion: This retrospective sample of patients highlights the opportunity for improvement in surveillance in this susceptible population. The select minority of patients who received adequate observation was diagnosed with a larger number of complications. Disease ascertainment may be better in the adequately screened MMC population. This emphasizes a need for a close watch on these high-risk patients.
ACCURATELY MEASURING RENAL FUNCTION IN ADULT MYELOMENINGOCELE PATIENTS - VOLUMETRIC-BASED MEASUREMENTS ARE NO BETTER THAN CREATININE-BASED MEASUREMENTS

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(Presented by: Sarah Coleman, MD)

Introduction: Patients with myelomeningocele (MMC) have variable muscle mass and body composition. For this reason, measuring renal function using existing creatinine-based models can be inaccurate in this population and renal function in MMC patients is often impaired. For the urologist, accurate assessment of their renal function is important because of peri-operative fluid shifts and the periodic need for nephrotoxic antibiotics. Many of these patients ultimately require cystectomy and bowel diversion, which further negatively impacts their renal function. Renal volume, based upon computed tomography (CT) has been used to estimate GFR in renal donor populations. We hypothesized that using volumetric measurements could be used for the same purpose in MMC patients.

Methods: After institutional review board approval, 13 adult subjects with MMC for whom we had CT-scans of the abdomen and pelvis with contrast were identified. Age, gender, weight, baseline serum creatinine were obtained. Renal volumes were calculated from CT-scans using an established fitted regression model to calculate a volumetric based GFR. Correlation between renal volume-based GFR and Modification of Diet in Renal Disease (MDRD) and Cockroft-Gault (C−G) GFR was calculated. Iodine 125 Iothalamate studies were available for two of the 13 subjects.

Results: Volumetric based measurements of GFR correlate poorly with, MDRD and C−G measurements of GFR in adult MMC patients. Correlation between volume-based GFR and, MDRD GFR was +0.48. Correlation between volume-based GFR and C−G GFR was +0.73. Volumetric-based GFR was significantly higher than Iodine 125 Iothalamate based estimates for the two patients for whom we had Iothalamate scans.

Conclusion: Estimating GFR in adult MMC patients is unreliable with current available methods. Volumetric measurements also appear to overestimate renal function despite the classic changes in renal morphology in this population. When it is important to accurately measure GFR in MMC patients, a non-creatinine based measurement such as Iothalamate scan should be performed.
UTILIZING MORE RESTRICTIVE CRITERIA FOR OBTAINING URODYNAMICS IN WOMEN WITH MULTIPLE SCLEROSIS, DOES NOT RESULT IN MORE WORRISOME FINDINGS

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UTSW
(Presented by: Himanshu Aggarwal, MD, MS)

Introduction: Bladder dysfunction is a common manifestation of Multiple Sclerosis (MS) and can significantly affect quality of life. Urodynamics (UDS) are often performed to help guide therapy, though more judicious use in certain neurogenic populations has been advocated. The purpose of the current study is to evaluate the urodynamic findings when employing a new strategy to more selectively obtain UDS in patients with MS.

Methods: Utilizing an IRB-approved neurogenic bladder database of patients seen in a specialty clinic from 2001–2013, we evaluated the urodynamic and demographic findings in women with MS. Specifically, we identified women who underwent UDS only after being identified with more severe lower urinary tract symptoms (LUTS) at baseline (Group 1) compared to patients studied using a less restrictive approach (Group 2). Group 1 consisted of patients with Post void residual (PVR) ≥100 and/or a total score of 7 or greater on Urogenital Distress Inventory (UDI–6), while patients in group 2 had neither elevated PVR or UDI–6 score >7.

Results: Of the 835 patients in our database, 538 had MS, and 100 of these patients had both UDS and UDI–6 scores. Of these, 84 were in Group 1 and 16 were in Group 2. A comparison of the demographic and urodynamic findings in the two groups is shown in Table 1. We found no difference in urodynamic findings between these two groups of patients. A sub-analysis of patients with a score of > 2 on question 5 (feeling of incomplete emptying) of UDI–6 questionnaire and/or PVR of > 100 had significantly higher risk of detrusor external sphincter dyssynergia (DESD) (p <0.003)

Conclusion: These findings suggest that utilizing a more restrictive approach to urodynamic testing in patients with MS (PVR ≥ 100, or UDI score ≥ 7) will not result in more advanced/severe urodynamic findings. In our series, we would have potentially eliminated 16% of UDS using this approach. We believe a more restrictive approach to ordering UDS in MS patients will not compromise patient care and will result in cost savings. Utilizing individual questions of UDI–6 may help better determine which patients will benefit from UDS.

Financial Funding: Departmental
AN ARGUMENT FOR THE DYNAMIC STATE OF NEUROGENIC BLADDER IN THE CERVICAL LEVEL SPINAL CORD INJURY PATIENT
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(Presented by: Benjamin Yuh, MD)

Introduction: To identify changes that occur over time in patients with neurogenic bladder (NGB) secondary to cervical level spinal cord injury (CLSCI).

Methods: This is a retrospective review of an institutional review board approved database for CLSCI patients at a rehabilitation hospital.

Results: A total of 11 CLSCI patients (10 males, 1 female, mean age 50.2 years) with long-term follow up were identified. Etiology of injuries were fall (n=1), gunshot wound (n=2) and motor vehicle accident (n=8). Seven men had at least one prior sphincter defeating procedure (external sphincterotomy and/or bladder neck incision), with an average of 1.7 procedures between the earliest and most recent urodynamic evaluation. There was an average of 13.5 years between the oldest urodynamics (UDS) and the most recent UDS. Lower urinary tract management included: reflex voiding to external condom catheter (n=3), clean intermittent catheterization (CIC) (n=1) and combination of reflex voiding and CIC (n=7). Indications for repeat UDS included: recurrent urinary tract infections (n=4), urinary incontinence (n=3), elevated residual (n=2), upper tract deterioration (n=1) and routine evaluation (n=1).

During the period reviewed, three important cohorts were identified when comparing UDS. Those with unchanged bladder dynamics (n=3, 27.3 %), those with moderate changes (n =5, 45.4%), and those who progressed to areflexive bladders (n=3, 27.3%). Various findings were noted in the moderate change cohort a) shorter/more frequent bladder contractions (n=3) versus longer contractions (n=1), b) higher maximum detrusor pressures (n=1) versus lower maximum detrusor pressure (n=2), c) reflex volume occurring earlier (n=4) versus later (n=1). In the areflexive bladder cohort, all three had previously documented bladder contractions with detrusor sphincter dyssynergia. Degree of bladder changes did not appear to correlate with the location of the cervical injury or length between oldest UDS to newest UDS. Compliance remained intact with all 11 patients.

Conclusion: CLSCI patients appear to have a dynamic process that effects bladder function in the majority of patients over time. While we classically follow CLSCI patients for detrusor overactivity and elevated detrusor pressures, it is interesting to find a cohort that developed areflexic bladders. Further investigation is needed to understand the processes that lead to these changes.

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ASSOCIATION BETWEEN DISABILITY STATUS AND URINARY SYMPTOMS IN PATIENTS WITH MULTIPLE SCLEROSIS

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(Presented by: Lisa Parrillo, MD)

Introduction: The clinical presentation and progression of multiple sclerosis (MS) varies widely; physical disability and lower urinary tract symptoms (LUTS) range in severity from none to extreme.

Methods: Patients with MS were recruited from outpatient urology practices. Impairment in ambulation was measured using the Kurtzke Expanded Disability Status Scale (EDSS), LUTS by AUA Symptom Score (AUASS), and incontinence by the MESA Incontinence Questionnaire. EDSS score was calculated by a trained neurologist using multiple functional system sub-scores including the bowel and bladder sub-score (BBSS). Correlations between EDSS, AUASS (including obstructive (OSS) and irritative sub-scores (ISS)) and MESA (including urgency (UUI) and stress (SUI) sub-scores) were assessed using Spearman’s rank coefficient. Additionally, correlation between the BBSS, AUASS and MESA were assessed.

Results: Thirty females and five males with a mean age of 50 were evaluated. Mean time from MS diagnosis was 14.8 years and from onset of bladder symptoms was 8.5 years. Median EDSS score was three (IQR 2.5–6), corresponding to moderate disability in one functional system or mild disability in three or four functional systems though fully ambulatory. Median AUASS was 16 (IQR 12–20.5). Median MESA urgency (UUI) and stress (SUI) incontinence scores were seven (IQR 3–10) and seven (IQR 2–14), respectively. Association was seen between EDSS and SUI and BBSS and SUI (Table 1).

Conclusion: LUTS in patients with MS are present at many stages of disability and do not consistently correlate with sophisticated measures of physical disability. Neither irritative or obstructive LUTS nor UUI correlate with EDSS score suggesting that urgency related incontinence and the need for intermittent catheterization are not independently associated with functional status. There is a moderate association with SUI suggesting decreased pelvic floor muscle strength may accompany physical disability. The BBSS may not be a sensitive measure to detect neurogenic bladder dysfunction as no correlation with AUASS or MESA UUI score was seen. Further evaluation and validation of measures of LUTS in MS patients are needed to understand the impact of overall disability on bladder dysfunction.

| Table 1: Correlation between Disability and Bladder Dysfunction Scores |
|---------------|----------------|
| **Variables** | **Spearman’s Rank Coefficient (p-value)** |
| EDSS/AUASS    | 0.19 (0.28)   |
| BBSS/AUASS    | 0.18 (0.30)   |
| EDSS/AUASS OUI| 0.25 (0.13)   |
| EDSS/AUASS ISS| 0.02 (0.99)   |
| BBSS/AUASS OUI| 0.19 (0.27)   |
| BBSS/AUASS ISS| 0.42 (0.01)   |
| BBSS/MESA UUI | 0.32 (0.06)   |
| BBSS/MESA SUI | 0.51 (0.001)  |

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OUTCOME OF MID-URETHRAL SLING EXCISION IN PATIENTS WITH NEUROGENIC BLADDER CONDITIONS

Himanshu Aggarwal, MD, MS, Philippe E Zimmern, MD, Gary E. Lemack, MD
(Presented by: Himanshu Aggarwal, MD, MS)

Introduction: To assess the outcome of mid-urethral sling (MUS) excision in women with neurogenic bladder (NGB) conditions.

Methods: Following IRB approval, a prospective MUS removal database was reviewed for women with neurological conditions who presented with new onset lower urinary tract symptoms (LUTS) after MUS. Data collected included demographic parameters, presenting symptomatology, preoperative urodynamic (UDS) findings, and questionnaire results (Urogenital Distress Inventory –UDI–6, and visual analog scale of QOL related to bladder graded from 1−10 [VAS]. All patients underwent suburethral sling excision and had questionnaire repeated postoperatively.

Results: Between 2006–2014, 15 women with NGB underwent sling excision. Type of NGB included multiple sclerosis in nine patients, cerebrovascular accident (CVA) in three, Parkinson’s disease in two, and neuromyelitis optica in one patient. Median time since diagnosis of NGB was 10-years (range 1−23). Indications for MUS excision were obstructive symptoms alone (12), obstruction with dyspareunia (2) and obstruction with urethral erosion (1). Mean age was 58 + 13 years, with mean BMI of 26 + 5. Median time from initial MUS placement to sling excision was three-years (range 1−12). The slings excised were retropubic (13), transobturator (1) and minisling (1).

Preoperative UDS demonstrated detrusor overactivity (9), detrusor overactivity incontinence (6), stress urinary incontinence (3), decreased compliance (1), Valsalva voiding (7) and bladder outlet obstruction (BOO) (7). Mean PVR was 174 + 166 ml. One patient was on clean intermittent catheterization (CIC) at presentation. Median follow-up after MUS excision was 27-months (range 4−75). Median total UDI–6 scores decreased from 12 (7–17) to 9 (3–17) postoperatively (p=0.08). Significant postoperative improvements were noted on UDI–6 question 2 (2.4 to 1.4, P = 0.01), 5 (2.6 to 1.5, P = 0.002) and VAS (8.3 to 5.4 P =0.01). One patient, who was on CIC, remained in retention and required suprapubic tube placement. Two others ultimately required CIC for worsening urinary retention.

Conclusion: Management of LUTS after MUS in NGB patients can be challenging, and distinguishing BOO due to detrusor sphincter dyssynergy from sling obstruction can be difficult, even during videourodyamics. Though most patients report symptomatic improvement after sling excision, results may not be as reliable as that seen in non-neurogenic patients.
TRANSCORPORAL ARTIFICIAL URINARY SPHINCTER: DOES THIS TECHNIQUE REDUCE THE RISK OF EROSION IN HIGH-RISK PATIENTS?

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Introduction: The artificial urinary sphincter (AUS) is the standard treatment for male stress urinary incontinence. Prior studies have shown that the risk of explantation at five years ranges from 28–53% in simple cases. However, the risk of erosion has been shown to be 2–4 fold higher in patients with a history of radiation or prior AUS placement. The transcorporeal method, which adds bulk to the urethra by leaving the corporal tissue on the dorsal surface of the urethra, is often used in high-risk patients in an attempt to reduce the risk of erosion in high-risk patients, although there is little data supporting this practice. The objective of our study was to evaluate whether placement of a transcorporeal AUS reduced the risk of erosion in high-risk patients with a history of radiation, prior AUS placement, rectourethral fistula (RUF) repair, or urethroplasty.

Methods: We retrospectively reviewed the records of 274 patients who were implanted with an AUS from January 2003 to February 2014 at a single institution. High-risk patients were identified and defined as having had prior pelvic radiation therapy, prior AUS placement, RUF repair or urethroplasty. Demographics and erosion rates were compared between the groups.

Results: 187 high-risk patients were identified for analysis with a median age of 68 years and a median follow-up of 1.4 years. 73 patients had a history of prior radiation therapy, with 41 (56%) patients undergoing a transcorporeal approach. 78 patients had a history of prior AUS placement, with 28 (36%) placed transcorporeally. 23 patients had a prior urethroplasty, with 15 (65%) having a transcorporeal approach. 13 patients had a prior RUF repair with 7 (54%) undergoing a transcorporeal approach. There was no significant difference in erosion rates between the standard and the transcorporeal groups in patients with a history of prior radiation (p= 0.905) or urethroplasty (p=0.28).

Conclusion: The transcorporeal technique has been accepted as a safe and useful method of AUS insertion in patients at high risk for urethral erosion. While this technique is effective in treating incontinence, our results indicate that it does not have a significant effect on reducing the rate of erosion. Further multi-institutional investigation is necessary to further evaluate the effectiveness of the transcorporeal approach in high-risk patients.
PATIENT CHARACTERISTICS AND NATIONAL TRENDS IN INPATIENT MALE URINARY INCONTINENCE SURGERY IN THE UNITED STATES

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Chicago, IL
(Presented by: Rena D Malik, MD)

Introduction: Artificial Urinary Sphincters (AUS) and male urethral slings (MUS) are commonly used modalities to treat male urinary incontinence. We sought to identify patient characteristics, predictors and trends associated with the choice of either AUS or MUS for the treatment of male incontinence in a large national database.

Methods: The Nationwide Inpatient Sample dataset was utilized to identify 4,383 men for a weighted population of 21,539 who underwent either MUS or AUS placement for urinary incontinence between 2000−2010 utilizing ICD−9 codes. Patient demographics, clinical characteristics, and hospital characteristics were analyzed using weighted multivariate logistic regression.

Results: The proportion of patients undergoing AUS decreased from 87.7% to 66.9% while those undergoing MUS increased from 12.2% to 33.1% between 2000 and 2010 (p<0.001, Figure 1). MUS placement was associated with men who were younger (67.8 ± 0.4 vs. 69.0 ± 0.3, p=0.007), more often had private insurance (32% vs. 26%, p=0.02), and those who had a higher Elixhauser Comorbidity Index (49% vs. 41%, p=0.017). On multivariate analysis, men with Medicaid insurance (OR 1.4, 95% CI 1.1−1.7, p=0.019), a higher Elixhauser Comorbidity Index (OR 1.6, 95% CI 1.1−2.4, p=0.008) and those having surgery at higher volume centers (OR 1.3, 95% CI 1.01−1.7, p=0.045) were significantly likely to undergo a MUS. Mean hospital charges were significantly less for men undergoing MUS compared to AUS ($27,264 ± 612 vs. $32,210 ± 360, p<0.001).

Conclusion: While AUS appears to be the preferred option for surgical treatment of male urinary incontinence, the proportion of patients undergoing MUS in the inpatient setting increased from 2000 to 2010. It appears that physicians’ decision to utilize MUS vs. AUS may be associated with patient insurance status, comorbidities, and hospital volume. A single inpatient hospitalization for MUS is significantly less expensive than that for AUS placement.

Financial Funding: none
EFFECTS OF RADIATION THERAPY ON DEVICE SURVIVAL AMONG INDIVIDUALS WITH ARTIFICIAL URINARY SPHINCTERS

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(Presented by: Matthew Ziegelmann, MD)

Introduction: Literature surrounding artificial urinary sphincter (AUS) device survival among individuals with a history of radiation therapy is conflicting with limited data to date. Therefore, we aim was to assess AUS device survival outcomes among individuals with prior radiation therapy exposure undergoing AUS placement.

Methods: An institutional review board approved database of all AUS patients from 1999−2014 was utilized to assess device survival in patients who underwent radiotherapy compared to individuals without radiotherapy exposure. Kaplan-Meier analysis was performed to determine survival including overall device and erosion/infection-free survival. Hazard regression analysis was utilized to determine the association between radiation therapy and device outcomes.

Results: From 1999−2014 a total of 1,153 patients underwent AUS surgery at our institution. Of these, a total of 650 individuals underwent primary AUS placement with 285 (44%) having received radiation therapy. When compared with patients who did not receive radiation therapy those who did were older (median age 72.8 vs. 70.2, p<0.0001), had a greater BMI (28.9 vs. 28.1, p<0.0019), and higher rates of diabetes and hypertension (HTN) (p<0.02 and <0.009 respectively). On univariate analysis, only age was significantly associated with AUS overall device survival (HR 0.976, p< 0.002). Likewise, survival analysis demonstrated no significant difference in 1 and 5-year overall device (88% vs. 84% and 62% vs. 57% respectively, p=0.5) and erosion/infection-free survival (94% vs. 92% and 89% vs. 89% respectively, p=0.7) rates among individuals who received radiation therapy relative to those without radiation therapy exposure.

Conclusion: While individuals who underwent radiation therapy were significantly older, had a higher BMI and higher rates of diabetes and HTN, device survival, as well as infection/erosion rates were not significantly different between the two groups. Clinically, these findings will assist the urologist with preoperative counseling of men undergoing primary AUS placement with a history of radiation therapy.
Introduction: Perception of bladder distension is crucial for proper micturition. ATP released from urothelial cells upon distension has been proposed to communicate the degree of bladder fullness by stimulating urothelial/suburothelial sensory fibers. Various receptors and channels participate in urothelial ATP release mechanisms and we have shown that Pannexin 1 (Panx1) is one of these channels. We have also shown that Panx1 in urothelial cells functionally interacts with P2X7R where P2X7R-mediated activation of Panx1 provides a mechanism for ATP-induced ATP release that amplifies ATP signaling. Our objective is to determine the extent to which deletion of the Panx1 mechanosensory component and disruption of the P2X7R−Panx1 signaling complex affect bladder function.

Methods: Twelve-week-old female wildtype (WT, N=6), Panx1 null (N=6) and P2X7R null (N=6) mice were used. Distension-induced luminal ATP release was quantified from isolated bladders and continuous infusion cystometry was performed in conscious mice. Cystometric parameters: Bladder capacity (BC, µL), micturition volume (MV, µL), residual volume (RV; µL), bladder compliance (BCo, µL/cmH2O), basal pressure (BP; cmH2O), threshold pressure (TP; cmH2O) and micturition pressure (MP; cmH2O).

Results: Body weight (g) (WT: 22.3±0.8; Panx1: 23.3±1.4; P2X7R: 22.3±0.8), bladder weight (mg) (WT: 37.0±2.1; Panx1: 38.8±2.9; P2X7R: 38.3±3.8) and gross bladder morphology did not differ between genotypes. Nonetheless, ATP release was 75% and 60% lower in Panx1 and P2X7R compared to WT (P<0.05). Cystometric analysis indicated that Panx1 and P2X7R mice display higher BC (WT: 127.1±4.7; Panx1: 225.3±8.1; P2X7R: 187.9±3.3; P<0.0001), MV (WT: 81.0±4.6; Panx1: 167.2±7.6; P2X7R: 142.0±4.3, P<0.0001), micturition pressure (MP; cmH2O), threshold pressure (TP; cmH2O) and micturition pressure (MP; cmH2O). BP was similar between WT and Panx1 but lower in P2X7R (WT: 7.9±0.2; Panx1: 7.4±0.4; P2X7R: 6.0±0.2, P<0.0001). TP was similar (WT: 16.3±2.2; Panx1: 16.4±14.6; P2X7R: 70.7±12.7, P<0.05 and P<0.001). RV was similar (WT: 45.9± 3.2; Panx1: 57.7± 6.0; P2X7R: 44.1± 3.5).

Conclusion: Panx1 and P2X7R deficient mice display significant changes in bladder function. These changes likely result from decreased urothelial ATP release and signaling, and consequent reduced sensory activation in response to bladder distension. Funding: Female Pelvic Med. & Reconstructive Surgery Fellowship Program; NIH−DK081435
Podium #13

INTERVENTIONS TO DECREASE ANXIETY IN PATIENTS UNDERGOING URODYNAMIC TESTING: A RANDOMIZED CONTROLLED TRIAL
Ellen Solomon, MD¹ and Beri Ridgeway, MD²
¹Baystate Medical Center, Springfield Mass; ²Cleveland Clinic, Cleveland, Ohio
(Presented by: Ellen Solomon, MD)

Introduction: Multichannel urodynamic testing is a common procedure performed on patients with lower urinary tract dysfunction. This test is not without risks and discomfort and may be a source of embarrassment to the patient as it is invasive requiring catheters to be placed in the bladder and rectum or vagina.

Objective: To determine if music (at 60 beats/min) or watching a pre-procedure educational video decreases pain and anxiety in women undergoing multichannel urodynamic testing compared to usual care.

Methods: Women undergoing multichannel urodynamic testing at a tertiary care center were randomized to one of three groups: usual care (UC), music (M), in which music was played throughout the urodynamic test, or video (V), in which subjects watched an informational video on the procedure prior to undergoing the test. Visual analog scales were used to measure patient’s pain and anxiety before and after the test. Demographic information was obtained and five-item Likert questionnaires were given to assess information seeking behavior, preparedness, embarrassment, and privacy.

Results: Ninety-eight subjects were included in this analysis. All groups were similar in age (year±SD): UC 55.7(±10.8), V 54.3(13.7), and M 57.2 (±11.6), p=0.62. There was no difference between groups regarding ethnicity, or education. There was no difference in history of anxiety and depression diagnoses or in current antidepressant or anxiolytic use between groups.

Overall, 32% of subjects reported a previous diagnosis of depression and 41% of subjects reported a previous diagnosis of anxiety. In all groups, mean perceived pain on the pre-test visual analog scale was significantly higher compared to the post-test visual analog scale with pre-test mean(SD) 47(±30) and post-test mean (SD) 26(±23), p=.0001. Overall the anxiety pre-test visual analog scale score was significantly greater than post-test visual analog scale score with pre-test mean (SD) 46.9(±29) and post-test mean 17.9(±18), p=.0001. There were no differences in pain and anxiety scores between the two intervention groups and usual care. Patients who were randomized to usual care or the video arm felt more prepared for the test compared to patients who were randomized to the music arm, with (mean ± SD): usual care (42 ± 8), video (43±9), music (37±11), p=.002.

Conclusion: Music and an educational video do not decrease pain or anxiety in subjects undergoing multichannel urodynamics compared to usual care.
A MODERN COMPARISON OF URODYNAMIC FINDINGS IN NONDIABETIC VERSUS DIABETIC FEMALES

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1Chicago, IL; 2Seattle, WA

(Presented by: Rena D. Malik, MD)

Introduction: Classic diabetic cystopathy has been described as decreased sensation, increased capacity, impaired contractility, and elevated post void residual (PVR). Data is conflicting and few contemporary studies exist regarding urodynamics (UDS) findings in patients with diabetes mellitus (DM). To date no comparative studies exist. Our aim was to compare UDS findings in females with and without DM from a contemporary database.

Methods: A retrospectively collected UDS database (2010−2014) was searched for females and reviewed. Studies were performed according to International Continence Society Standards. For significance, chi-square and Students t-tests were performed.

Results: Of 424 female patients, 282 met inclusion criteria and 66 (23%) had DM. Indications for UDS and symptoms at presentation were similar in both groups. Females with DM were significantly older than non-diabetics (58.2 years ± 14.3 vs. 49.7 years ± 14.4, p<0.001) and had significantly larger bladder capacity (mean 475mL ± 284, vs. 406mL ± 226, p = 0.045) in comparison to non-diabetics. Diabetics were more frequently diagnosed with impaired sensation defined as first sensation or urge > 300 mL (17% vs. 6%, p=0.008). Of diabetic females, those with HgA1c greater than or equal to 7.5% had significant delay to first sensation when compared to those with HgA1c <7.5% (116mL ± 92 vs. 249mL±184, p=0.02) and patients with a diagnosis of diabetes for greater than 10 years had significantly lower detrusor pressure at maximum flow rate (25.5 ± 16 vs. 35.7 ± 18, p=0.028) and lower maximum detrusor pressures (39.4 ± 31.1 vs. 54.4 ± 25.0 p=0.046). PVR tended to be greater in longer duration diabetics (138 ± 272 vs. 32 ± 98, p=0.065).

Conclusion: In this contemporary series, women with DM demonstrated similar presenting complaints to women without DM but had impaired sensation and higher capacity. Within diabetic females, diabetic control and duration of diabetes appears to impact bladder sensation and contractility. These findings suggest that DM does affect bladder function despite the presence of similar presenting symptoms. UDS may be helpful in diabetic females to diagnose underlying bladder dysfunction, particularly prior to initiation of treatment. Further studies are needed to explore treatment implications of this phenomenon.

Financial Funding: none
Introduction: Underactive bladder (UAB) is a recently discussed symptom complex relating to symptoms of voiding difficulty. Detrusor underactivity (DU) is a defined urodynamic finding of insufficient detrusor expulsive pressure to ensure timely, efficient voiding. Impaired contractility is ill defined but implies failure of detrusor smooth muscle as a force generator. While these terms are often used synonymously, the degree to which they overlap is not known.

The objective is to compare urodynamic sensory and motor functions between UAB and DU in symptomatic patients.

Methods: 256 urodynamic charts were reviewed with IRB approval. Excluding studies in neurologic patients and those lacking conclusive results, 200 charts were abstracted. Primary symptoms were classified as OAB (filling phase: frequency, nocturia, and/or urgency), UAB (voiding phase: hesitancy, slow stream, intermittency, incomplete emptying), and Incontinence (UI) (urge/stress/mixed/insensate incontinence). Primary urodynamic findings were volume hypersensitivity in the absence of detrusor overactivity (VH), detrusor overactivity with/without incontinence (DO), stress urinary incontinence (SUI), outlet obstruction (BOO), dysfunctional voiding (DV), and detrusor underactivity (DU). DU was defined according to the ICS terminology, and included DHIC. Volumes at First Sensation (FS), First Desire (FD), Normal Desire (ND), and Strong Desire (SD) were recorded. Maximum Watts factor (WF) was calculated by the urodynamic software, and age, sex, and postvoid residual volumes (PVR) recorded. Means were compared among symptoms and findings groups with ANOVA. Contingency tables were analyzed for symptoms vs. findings groups. Correlations were sought among continuous variables.

Results: 59 patients (33 male) had a 1st symptom of UAB, 38 (10 male) had a 1st finding of DU. UAB (p<0.05) and DU (n.s.) were associated with higher volume sensory thresholds than other groups. UAB, DU, BOO had larger PVRs than other symptoms/findings. No significant differences among groups were found for WF. UAB as a predictor of DU is 25% sensitive, 85% specific. The likelihood ratio of DU having UAB as 1st presenting symptom overall was 1.6 (n.s.). No correlations were found among continuous variables.

Conclusion: While both UAB and DU are associated with increased PVR without loss of contractility, UAB does not require DU. Diminished volume sensitivity characterizes UAB and may relate to the etiology of DU.
Introduction: During urodynamics (UD), patients are prompted to report sensory thresholds during filling including first sensation, first desire to void, and strong desire to void. These thresholds are subjective and poorly characterized. Prior studies have measured continuous urgency to characterize voiding dysfunction. However, a detailed correlation of sensory thresholds and continuously recorded urgency has not been previously performed.

Methods: As part of an IRB-approved extended urodynamics protocol, patients with overactive bladder (OAB), defined as ICIq−OAB question 5a ≥ 3, underwent standard UD testing and simultaneously used a real-time urgency meter to record continuous changes in urgency from 0−100%. Patients were instructed on the use of the meter prior to the study. Post-study ease-of-use and understanding by the patient were assessed using a 10-point survey (0=not hard, 10=very hard). Infused volumes were normalized as a percentage of cystometric capacity (Ccap) and significance was determined with paired t-tests between sensory threshold volumes. Best-fit analysis was performed on continuous urgency data as a function of percent Ccap.

Results: Seven patients completed the extended UD protocol with use of the urgency meter. Standard sensory threshold volumes were 16 ± 5 %Ccap for first sensation, 21 ± 5 %Ccap for first desire, and 50 ± 9 %Ccap for strong desire. There were no significant differences between first sensation and first desire (p=0.49). However, differences were identified between first desire and strong desire (p = 0.02) and between strong desire and Ccap (p=0.001). Continuous urgency recordings demonstrated a strong quadratic relationship to percent Ccap (R² = 0.9974) (Figure 1). Patients rated real-time urgency meter ease of use and understanding with favorable ratings of 1.57±0.72 and 1.14±0.67, respectively.

Conclusion: In patients with OAB, there may be a significant overlap between first sensation and first desire, limiting the diagnostic utility of these subjective metrics. The use of continuous urinary urgency during UD testing may provide a more objective means to characterize bladder sensation during the filling phase.
Podium #17
THE IMPACT OF FLUOROURODYNAMICS ON PATIENT CARE
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1University of Michigan, Ann Arbor, MI; 2University of California, San Francisco, San Francisco, CA
(Presented by: Lindsey Cox, MD)

Introduction: The utility of urodynamics has come into question after the results of a randomized controlled trial in women with stress urinary incontinence found no difference in surgical outcomes. The purpose of this study is to prospectively survey Urology providers on the clinical utility of fluoroscopic urodynamic studies (FUDS) in our complex tertiary practice.

Methods: All patients undergoing FUDS were invited to participate and the treating urologist filled out a survey both before and after the study regarding diagnoses and treatment decisions.

Results: The mean age of the 279 patients was 55.9 years, 59.5% were female, 29.2% had a diagnosis of a neurologic problem.

Patients were categorized by one or more urodynamics question, the most frequently chosen were “...to discern predominant type of urinary incontinence?” (38.4%) “...to assess safety during filling?” (38%) and “...to evaluate for obstruction vs. atonic bladder?” (30.8%). None of these studies were performed for an index patient with SUI.

Change in the provider’s impression after FUDS occurred in patients who had an initial clinical impression of “stress urinary incontinence”14.7%(p=0.02) “urgency incontinence/detrusor overactivity”31.7%(p=<0.0001).

Although it did not reach statistical significance, 83/274 (30.3%) patients had a change in management based on fluoroscopy. There was no significant difference in management changes based on fluoroscopy when patients with neurogenic bladder were compared those without (p=0.11).

After FUDS, treatment plans changed in 42.7% of patients; change in medication/dose in 14.7%, change in follow up interval for 11.5%, a change in surgical plan for 35.5%. The follow up interval changed based on FUDS significantly more often than for those patients with neurogenic bladder, (p=0.03) and the surgical plan changed significantly more often for patients without neurogenic bladder (p=0.04).

Conclusion: FUDS significantly changed the provider’s impressions, and changed management plans in over 40% of patients, with the majority of these being changes in surgical management. Urodynamics, when used judiciously, are clinically useful and critical in establishing surgical and medical management plans.

Table 1: Pre and Post Urodynamics Survey

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>55.9 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: Male</td>
<td>113 (40.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>166 (59.5%)</td>
</tr>
<tr>
<td>Race: White</td>
<td>261 (93.9%)</td>
</tr>
<tr>
<td>African American</td>
<td>15 (5.4%)</td>
</tr>
<tr>
<td>Other</td>
<td>7 (2.7%)</td>
</tr>
<tr>
<td>History of neurologic problem: Spinal cord injury</td>
<td>22 (7.4%)</td>
</tr>
<tr>
<td>Spina bifida</td>
<td>10 (3.6%)</td>
</tr>
<tr>
<td>Multiple Sclerosis</td>
<td>11 (12.9%)</td>
</tr>
<tr>
<td>Stroke</td>
<td>4 (4.7%)</td>
</tr>
<tr>
<td>Other</td>
<td>35 (12.7%)</td>
</tr>
<tr>
<td>History of pelvic radiation</td>
<td>15 (5.4%)</td>
</tr>
<tr>
<td>Urodynamics questions: Assess safety during filling</td>
<td>106 (38.9%)</td>
</tr>
<tr>
<td>Assess etiology of incontinence in neurogenic</td>
<td>50 (17.4%)</td>
</tr>
<tr>
<td>Discern predominant type of urinary incontinence</td>
<td>37 (13.4%)</td>
</tr>
<tr>
<td>Determine etiology of voiding dysfunction in a female spina bifida</td>
<td>42 (15.1%)</td>
</tr>
<tr>
<td>Evaluate for obstruction vs. detrusor dysfunction/bladder</td>
<td>86 (30.4%)</td>
</tr>
<tr>
<td>Assess for adequate bladder and urethral pressure prior to renal cystoscopy</td>
<td>15 (9.4%)</td>
</tr>
<tr>
<td>Change in Clinical Impression after FUDS:</td>
<td></td>
</tr>
<tr>
<td>Urgency incontinence</td>
<td>81 (44.1%)</td>
</tr>
<tr>
<td>Detrusor overactivity</td>
<td>66 (33.7%)</td>
</tr>
<tr>
<td>Pelvic Compliance</td>
<td>31 (11.1%)</td>
</tr>
<tr>
<td>Detrusor undersensitivity/bladder</td>
<td>43 (15.4%)</td>
</tr>
<tr>
<td>Obstruction</td>
<td>39 (14.4%)</td>
</tr>
<tr>
<td>DSD/Bladder neck</td>
<td>29 (10.4%)</td>
</tr>
<tr>
<td>Urinary reflux</td>
<td>21 (7.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>25 (8.9%)</td>
</tr>
<tr>
<td>Multiple impressions</td>
<td>31 (11.1%)</td>
</tr>
</tbody>
</table>

Table of Contents
Female Urology/Incontinence Moderated Poster Session

Poster #M10
THE EFFICACY OF ONABOTULINUMTOXINA (BOTOX) IN PATIENTS WITH URGE URINARY INCONTINENCE WHO FAILED SACRAL NEUROMODULATION (INTERSTIM)
Gina Kirkpatrick, DO, MPH, MBA1, Gordon Brown, DO, FACOS2 and David Sussman, DO, FACOS2
1Rowan University, Stratford, NJ; 2Delaware Valley Urology, Voorhees, NJ
(Presented by: Gina Kirkpatrick, DO, MPH, MBA)

Introduction: Botox has been recently been approved by the FDA for treatment in overactive bladder for patients who have failed traditional anti-cholinergic therapy. Alternatively, Interstim has been clinically indicated in patients with refractory symptoms who have failed anti-cholinergics. Our research evaluates efficacy in patients who received Botox injections compared to those who received Interstim therapy and Botox injections. In this pilot study, we sought to determine if patients with Interstim prior to Botox injections had better outcomes than those with only Botox therapy.

Methods: Retrospective Review of 50 patients in a community based Urologic practice from January 2009 to April 2014 who were treated for Urge Urinary Incontinence. We reviewed the records of 25 patients who received Botox injections after failure of anti-cholinergics, compared to 25 patients who failed Interstim for numerous reasons, including discomfort, refractory urgency, incontinence or infection, who later subsequently received Botox injections.

Results: In the Botox only group there was an overall reduction in UI episodes of 58% compared to 68% in the group with Botox and Interstim. The mean cystometric bladder capacity of the Botox Interstim group was 303 ml compared to 215 ml in the Botox group. The Peak and Average Urinary Flow for Botox only group was 14.5, 6.4 compared to 14.2, 6.2 in the Botox-Interstim group respectively.

Conclusion: The Interstim and Botox group had a 10% higher reduction in UI than patients treated with Botox only. Though not statistically significant, data in this study present consideration that possible bladder neuro-stimulatory changes induced by Interstim could influence susceptibility to treatment with Botox.

Poster #M11
HEALTH INSURANCE TYPE AND SELF-REPORTED URINARY INCONTINENCE RATES AMONG WOMEN BETWEEN 20 AND 65 YEARS OF AGE
Evgeniy Kreydin, MD, Michelle Kim, MD, PhD, Dicken Ko, MD
Massachusetts General Hospital, Boston, MA
(Presented by: Evgeniy Kreydin, MD)

Introduction: Health insurance coverage is often necessary for women to access effective therapy for urinary incontinence. Prior studies have demonstrated that not all health insurance coverage results in adequate access and treatment of medical conditions. Low-income adults enrolled in Medicaid often have higher rates of chronic diseases than higher income adults and are less likely than privately insured enrollees to seek care and undergo certain procedures. The degree to which health insurance coverage results in health outcome disparities in the urologic population, specifically among women with urinary incontinence, has been understudied. In this study, we investigate the association between insurance type and rates of self-reported incontinence.

Methods: We used data from the 2005 to 2010 National Health and Nutrition Examination Survey (NHANES) cycles to examine Medicare-ineligible women between 20 and 65 years of age. Insurance status was defined as private or Medicaid insurance. Incontinence was defined as self-reported stress, urge, mixed and other incontinence. Self-reported nocturia and quality of life metrics related to incontinence symptoms were also measured during the survey. Insurance type was examined in a weighted, multivariate logistic regression model for associations with each lower urinary tract symptom. All models were adjusted for age, body mass index, race, smoking, diabetes, parity, education and household income.

Results: A cohort of 3,740 women was included in the study. Women enrolled in private health insurance plans were less likely to report urge incontinence (OR 0.53; 95% CI 0.39–0.72), mixed incontinence (OR 0.62; 95% CI 0.43–0.91), and nocturia (OR 0.62; 95% CI 0.43–0.91) compared to women enrolled in Medicaid. Women enrolled in private insurance were also less likely to report that urinary incontinence affected their daily activities (OR 0.52; 95% CI 0.32–0.85).

Conclusion: This study demonstrates that women enrolled in private health insurance were less likely to report lower urinary tract symptoms and decreased quality of life relative to women enrolled in Medicaid. These findings provide additional evidence for disparities in health outcomes by health insurance type. Future studies will investigate the underlying factors responsible for different rates of incontinence and LUTS in women with different types of health insurance.
**Introduction:** Post-operative readmissions have a significant impact on the health care cost. They reflect the quality of care and the complexity of our patients. Our objective is to define the rates and the predictors of unplanned readmissions following open (OSC) and minimally invasive sacral colpopexy (MISC).

**Methods:** We performed a retrospective review of prospectively collected database (NSQIP) of all patients who underwent open and minimally invasive sacral colpopexy between 2005 and 2012. Patient’s demographics, unplanned readmission rate and its causes were reported. Multivariate analysis was performed to characterize predictors of readmission.

**Results:** Between 2005 and 2012, a total of 1520 cases were identified. Data regarding readmission rates and possible causes of readmission was available for 2011 and 2012 dataset. Between 2011 and 2012, 1049 underwent sacral colpopexy. 386 patients (36.8%) underwent open sacral colpopexy (OSC) while 663 patients (63.2%) were managed through minimally invasive sacral colpopexy (MISC). Unplanned readmission and reoperation rates were comparable between the two groups (2.3% vs. 3.3%, P= 0.24 and 1.6% vs. 1.8%, P= 0.49 respectively). For both groups, postoperative ileus was the most common causes of readmission but it was significantly higher in OSC group accounting for 44.4% of total readmissions in OSC and 9.1% for MISC group (P= 0.043). Other common causes for readmission in OSC group were surgical site infection (11.1%) and pulmonary embolism (11.1%). For MISC, other common causes of readmission were postoperative fever (9%) and unspecified abdominal pain (4.5%). Logistic regression analysis was performed to define the predictors of readmission. For OSC, preoperative blood urea nitrogen (BUN) was the only significant predictor for OSC (OR 1.4, 95% CI 1.05−1.87, P= 0.02) while for MISC preoperative serum albumin was the only significant predictor (OR 0.17, 95% CI 0.04−0.67, P= 0.012) and hypertension was near significant predictor (OR 4.5, 95% CI 0.86−23.87, P=0.75).

**Conclusion:** Both OSC and MISC have comparable readmission and reoperation rates. Predictors of readmission vary between different treatment options and selection of approach should be based on general condition as well as local factors.
THE EFFECT OF TIME TO REVISION OF AN OBSTRUCTING SYNTHETIC MID-URETHRAL SLING ON REOPERATION FOR STRESS URINARY INCONTINENCE

Nitya Abraham, MD, Iryna Makovey, MD, Ashley King, MD, Howard B. Goldman, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, Ohio
(Presented by: Nitya Abraham, MD)

Introduction: The risk of recurrent stress urinary incontinence (SUI) after incising a synthetic mid-urethral sling (MUS) ranges from 3−61%. The primary objective of this study was to describe the rate of reoperation for SUI after revision of an obstructing synthetic MUS and evaluate the effect of time from sling placement to sling revision on reoperation rates. The secondary objective was to assess rates of recurrent and persistent SUI.

Methods: This is a retrospective review of women who underwent synthetic MUS incision from 2005−2013. Additional follow-up was obtained by administering the urinary distress inventory (UDI−6) and surgical satisfaction questionnaires. Fisher’s exact test was used to compare categorical variables. Multivariable logistic regression analysis was used to evaluate the association between time to sling revision and reoperation for SUI.

Results: 107 patients were included. Median time to sling revision was 22 months (IQR 5−49 months). 43.2% were transobturator slings. 15 out of 107 patients (14%) underwent re-operation for SUI. 49% and 77% reported de novo and persistent SUI respectively. 83% of these women reported they were moderately or quite a bit bothered by their SUI. On multivariable analysis, women were significantly less likely to undergo reoperation for SUI when sling revision was performed > 24 months after the initial sling was placed (OR 0.12 95% CI 0.02−0.85, p=0.03) compared to within 3 months.

Conclusion: This is the largest report of outcomes after revision of an obstructing synthetic MUS. The reoperation rate for SUI was 14%. The rate of recurrent SUI was 49%. 83% of these women were moderately or quite a bit bothered by their SUI. On multivariable analysis, the longer the interval to sling incision, the less likely patients were to undergo re-operation for SUI. The high degree of bother with low reoperation rate for SUI suggests women wanted to avoid additional surgery. This data may be helpful in counseling patients in this situation.

Funding: None
Poster #M14
SURGICAL MANAGEMENT OF MIXED URINARY INCONTINENCE
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(Presented by: Nicholas Hauser, MD)

Introduction: We sought to determine the diagnosis, workup and management of mixed urinary incontinence.

Methods: We used data from a 5% national random sample of outpatient and carrier claims from 2000 to 2011. We included females who were 65 and older, diagnosed with mixed or functional urinary incontinence (International Classification of Diseases, Ninth Edition (ICD−9) 788.33, 788.30, 788.91, or 788.31 concurrent with 625.6), and underwent surgical treatment identified by Current Procedural Terminology, Fourth Edition (CPT−4) codes. Urodynamic tests before initial and secondary procedure were also identified using CPT−4 codes. Trends of procedure frequencies and utilization of urodynamic tests were analyzed. Utilization of urodynamic tests and re-intervention following initial procedure were also inspected within each treatment group.

Results: Total numbers of procedures performed for patients with mixed incontinence increased consistently in the 12-year period from 414 to 586, yielding national estimates of 8280 to 11720 cases per year. Utilization of urodynamic tests (UDS) also increased from 38.4% to 73.6% for initial procedure and from 28.6% to 66.7% for re-interventions. Sling surgery (62.1%) and injectable bulking agents (27.6%) were the most common surgical treatments adopted for mixed incontinence, followed by SNS (4.7%) and Burch (3.7%) procedures. After initial surgery, 4.0% of patients in sling groups and 21.3% of patients in bulking group underwent a second procedure, the majority (51.7% and 76.3%) of which opted for a bulking procedure.

Conclusion: There was an increased utilization of UDS before surgical intervention for mixed urinary incontinence, as well as for re-intervention. Most patients with mixed incontinence were treated with slings or bulking agents. If there was a failure of therapy, surgical re-intervention most often consisted of a repeat bulking procedure.
FLOW DISRUPTIONS IN ABDOMINAL SACROCOLPOPEXY: DOES ROBOTIC SURGERY INTRODUCE UNFORESEEN CHALLENGES FOR SURGEONS?
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¹David Geffen School of Medicine at UCLA, Los Angeles, CA; ²Cedars–Sinai Medical Center, Los Angeles CA; ³Texas A&M College of Medicine, Bryan, TX; ⁴St. Louis University School of Medicine, St. Louis, MO; ⁵Ludwig Maximilian University of Munich, Munich, Germany
(Presented by: Lauren N. Wood, MD)

Introduction: The introduction of surgical robots changes many elements of the work system – for example, the surgeon no longer operates at the table and the robot needs to be docked to the patient – which may change the intraoperative requirements for communication, expertise, and training. Such problems often result in flow disruptions (FDs), defined as deviations in the optimal course of care. FDs during robotic surgery may impact patient outcomes, as well as operating room efficiency. Human factors research is the study of how humans interact with and perform in complex systems. The purpose of this study is to employ a human factors research approach to identify FDs in robotic abdominal sacrocolpopexy procedures, with the goal of developing system interventions to improve the safety and efficiency of robotic surgery.

Methods: Twenty-one robotic abdominal sacrocolpopexy procedures were evaluated, thirteen of which included a concomitant supracervical hysterectomy. FDs were classified using categories defined previously (Parker, 2010) (Table 1). FDs were categorized into four stages: 1) patient arrival and induction of anesthesia; 2) port placement and robot docking; 3) console time; and 4) undocking of robot, incision closure, and patient exiting operating room.

Results: The mean surgery duration was 4.8 hours (+/- 0.9 (SD), range: 3.4–6.4). Almost all of the cases (19/21) had residents or fellows present. A total of 1,050 FDs were observed. A mean of 50.0 FDs (+/- 24.0 (SD), range: 19–123) occurred in each robotic abdominal sacrocolpopexy case, with a mean of 10.9 FDs per hour (+/- 5.9 (SD), range: 4.7–30.6). The most frequent FDs in this study were due to training (2.9 FDs/hour, 25.1%), equipment (2.2 FDs/hour, 20.5%), and coordination (2.9 FDs/hour, 19%).

Conclusion: FDs in robotic abdominal sacrocolpopexy surgery occur about every six minutes. They impair progress, increase team workload, operating time, and reduce efficiency and safety. The study of disruptions can be used to diagnose and suggest improvements for systems problems introduced by new OR technology.
INDICATIONS FOR REVISION OF AN OBSTRUCTING SYNTHETIC MID-URETHRAL SLING

Nitya Abraham, MD, Iryna Makovey, MD, Howard B. Goldman, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, Ohio
(Presented by: Nitya Abraham, MD)

Introduction: There are no widely accepted objective criteria for defining synthetic mid-urethral sling (MUS) obstruction and thus the decision to revise a sling is often based on a clinician’s best judgment. The objectives of this study were to 1) describe the indications for which women underwent MUS revision, 2) characterize the urodynamic (UDS) findings prior to sling revision, and 3) evaluate whether these patients would be classified as obstructed based on the criteria for bladder outflow obstruction (BOO) in the literature.

Methods: This is a retrospective review of women who underwent synthetic MUS revision from 2005 –2013 due to iatrogenic obstruction. Indication for revision was obtained from clinic visit records. For women who underwent UDS, parameters collected included maximum detrusor pressure (Pdetmax), Pdetmax at maximum flow (Pdet@Qmax), and maximum flow (Qmax). These women were then classified as obstructed or not based on criteria in the literature (Blaivas –Qmax <12 ml/s & Pdet@Qmax ≥ 20 cm H2O or Video evidence of BOO or Pdetmax ≥ 20 cm H2O, Nitti –Video evidence of BOO, Zimmern − Pdet@Qmax ≥ 25 cm H2O & Qmax ≤ 15 ml/s).

Results: 107 patients were included. Indications for sling revision included obstructive and irritative symptoms. 22/107 (21%) patients had retention or required clean intermittent catheterization. 66 patients reported irritative symptoms including 31/107 (29%), 10/107 (9%), and 25/107 (23%) who reported urgency incontinence (UUI), recurrent UTI (RUTI), or a combination of UUI and RUTI respectively. 83 women underwent UDS. Median Pdetmax was 36 cm H20 (IQR 26–50), Pdet@Qmax 30 cm H20 (IQR 21–40), and Qmax 10 ml/sec (IQR 7–14). A scatter plot of Pdetmax vs Qmax did not demonstrate clustering of the UDS parameters. When classified according to the Blaivas and Zimmern criteria for female BOO, 74/83 (89%) and 39/83 (47%) met the criteria for obstruction respectively. An insufficient number of women underwent video UDS to apply the Nitti criteria for BOO.

Conclusion: Many women with iatrogenic obstruction after synthetic MUS placement present with irritative symptoms in addition to obstructive symptoms. UDS parameters in these women varied widely. For women diagnosed as obstructed based on clinician judgment, the highest percentage of women were concordantly classified as obstructed using the Blaivas criteria.

Funding: None
Introduction: To examine if initial postoperative urinary retention after transurethral Macroplastique® (MPQ) bulking agent injection for female stress urinary incontinence (SUI) is a predictor of success.

Methods: Following IRB approval, a prospective database of non-neurogenic women who underwent MPQ injection for SUI due to intrinsic sphincter deficiency under light anesthesia, and were followed for >6 months was reviewed. Postoperative retention was defined as inability to void after injection requiring a catheter for 24–48 hours, or difficulty voiding immediately postoperatively (post void residual >200 ml by bladder scan) as charted in the recovery room electronic medical record. Excluded were women on self-catheterization, with a supra-pubic tube, those who had a concomitant procedure, or with follow up <6 months. Success was defined as patient reporting sufficient continence for not desiring any additional therapy, i.e., dry or with rare leakage. Patients were divided into Group 1: Retention post-operatively and Group 2: no retention postoperatively.

Results: From August 2011 to December 2013, 52 of 92 women met all inclusion criteria. Similar baseline demographics for Group 1 (N=16) and Group 2 (N=36) are shown in Table 1. Success was 81% for group 1 (13/16) versus 15/36 (42%) in group 2 (p<0.01). In group 1, 3 women underwent repeat injection (1) and fascial sling (2), whereas in group 2, 13 patients underwent repeat injections (9), fascial sling (3) or artificial urinary sphincter (1).

Conclusion: Postoperative transient retention seen in nearly one third of women immediately after MPQ injection remained dry or were markedly improved, and did not desire additional SUI therapy.

<table>
<thead>
<tr>
<th>Table: Comparison of Group 1 and Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (years)</td>
</tr>
<tr>
<td>BMI</td>
</tr>
<tr>
<td>Median follow up in months</td>
</tr>
<tr>
<td>Dry or markedly improved</td>
</tr>
</tbody>
</table>
**PREOPERATIVE TESTING FOR URETHRAL SLING SURGERY FOR STRESS URINARY INCONTINENCE: OVERUSE, UNDERUSE, AND COST IMPLICATIONS**

Tom S. Feng, MD¹, Colby E. Perkins, BA², Lauren N. Wood, MD¹, Jerome K. Wang, MD³, Jenna F. Borok, BS², Alex J. Hannemann⁴, Catherine Bressee, MS⁵, Karyn S. Eilber, MD¹ and Jennifer T. Anger, MD, MPH¹

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(Presented by: Lauren N. Wood, MD)

**Introduction:** Following national guidelines, we sought to identify areas of overuse and underuse in the preoperative evaluation of patients undergoing sling surgery with or without concomitant prolapse repair. The impact of preoperative testing on health care costs and the quality of patient care was also evaluated.

**Methods:** A retrospective review of records of women who underwent sling surgery with or without concomitant prolapse repair between 2012 and 2013 was conducted. Physician orders for preoperative electrocardiogram (ECG), chest x-ray (CXR), basic metabolic panel (BMP), complete blood count (CBC), coagulation studies, urinalysis (UA), and glucose tests were classified as appropriate or inappropriate based on summary guidelines from the American Academy of Family Physicians. The additional costs for inappropriate tests were estimated using the California billing prices from the Medicare clinical laboratory fee schedule calendar year 2014.

**Results:** A total of 101 women who underwent mid-urethral sling surgery were identified, and 347 preoperative tests were ordered. The most frequent evaluations were UA (91%), ECG (63%), CBC (63%), BMP (59%), and coagulation studies (41%). Only 24% of coagulation studies and 27% of CBCs ordered were clinically indicated (Table 1). Forty-seven percent of BMPs, 39% of CXRs, and 21% of ECGs ordered did not have an appropriate clinical indication. Only three ECGs, four CXRs, and ten UAs were not ordered when indicated. The majority of patients who underwent preoperative evaluation had normal test results, and the abnormal tests did not alter patient treatment course. The estimated cost of the overused tests to the health care system is $2,257, with most of the costs accrued from excessive CXRs ($513), CBCs ($506), coagulation studies ($434), and ECGs ($390).

**Conclusion:** Preoperative testing is both overused and underused in patients undergoing sling surgery, with the greatest variation occurring with the use of ECGs, CXRs, and UAs. Poor adherence to national guidelines leads to increased healthcare costs and warrants the need for increasing awareness to health care providers to follow evidence-based guidelines.

Table 1: Preoperative tests underused, overused and appropriately used

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Number of tests overall</th>
<th>Number of tests underused*, N (%)</th>
<th>Appropriate use, N (%)</th>
<th>Number of tests overused**, N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECG</td>
<td>63</td>
<td>3 (5.7)</td>
<td>50 (79.4)</td>
<td>13 (20.6)</td>
</tr>
<tr>
<td>CXR</td>
<td>23</td>
<td>4 (22)</td>
<td>14 (60.9)</td>
<td>9 (39.1)</td>
</tr>
<tr>
<td>BMP</td>
<td>59</td>
<td>0 (0)</td>
<td>31 (52.5)</td>
<td>28 (47.5)</td>
</tr>
<tr>
<td>CBC</td>
<td>63</td>
<td>0 (0)</td>
<td>17 (27)</td>
<td>46 (73)</td>
</tr>
<tr>
<td>UA</td>
<td>91</td>
<td>10 (9.9)</td>
<td>91 (93.4)</td>
<td>6 (6.6)</td>
</tr>
<tr>
<td>Coagulation studies</td>
<td>41</td>
<td>0 (0)</td>
<td>10 (24.4)</td>
<td>31 (75.6)</td>
</tr>
<tr>
<td>Glucose</td>
<td>7</td>
<td>0 (0)</td>
<td>7 (100)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>347</td>
<td>17</td>
<td>220</td>
<td>133</td>
</tr>
</tbody>
</table>

*Number of indicated tests that were not ordered

**Number of tests ordered that were not indicated
Poster #M19
HOLMIUM LASER EXCISION OF GENITOURINARY MESH EXPOSURE FOLLOWING ANTI-INCONTINENCE SURGERY: MINIMUM 6 MONTH FOLLOW-UP
Christina Ogle, MD, Brian Linder, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Christina Ogle, MD)

Introduction: Mesh exposure into the genitourinary (GU) tract following surgery for stress urinary incontinence (SUI) is a rare but potentially serious complication. Transurethral endoscopic management of GU mesh exposure has been utilized as a minimally invasive approach with reported success in small series. We sought to evaluate patient outcomes following transurethral endoscopic excision using the holmium laser (TEEH) for foreign material after anti-incontinence surgery.

Methods: Between May of 2011 and July of 2013, 10 patients underwent TEEH at our institution. Of these, nine had a prior urethral sling placed and one had suture erosion following a Marshall-Marchetti-Krantz procedure. One patient was lost to follow-up, thus nine patients are included in our series. Outcomes assessed included resolution of symptoms, successful treatment of exposed mesh as seen on repeat cystoscopy, and recurrence of stress urinary incontinence following treatment with TEEH. Patient follow-up was obtained through office examination, cystoscopy and/or through written or telephone correspondence.

Results: The median age at the time of surgery was 58 years (IQR 54;67). The median time from anti-incontinence surgery to onset of symptoms was 28 months (IQR 1;86). Patients with mesh erosion most commonly presented with irritative voiding symptoms, 50%. The location of erosion was the urethra in four patients and the bladder in five patients. Median symptom follow-up was 27 months (IQR 16;37) with 8/9 (89%) patients reporting symptomatic improvement. Seven patients underwent follow-up cystoscopy at a median of 7 months (IQR 3;17) with 5/7 (71%) negative for recurrence. In the two with recurrence, one was asymptomatic, and the second underwent repeat TEEH for a retreatment rate of 1/9 (11.1%). Notably, three patients experienced recurrent SUI following TEEH, with one patient undergoing repeat anti-incontinence surgery.

Conclusion: TEEH is a viable, minimally invasive option for first line management of GU mesh erosion, with excellent overall symptomatic success and relatively low retreatment rate. Notably, there is a risk for recurrent SUI following laser mesh excision. No financial disclosures.
DETRUSOR OVERACTIVITY ON URODYNAMICS PREDICTS PERSISTENCE OF URGENCY AFTER SLING PROCEDURE
Catherine Chen, MD, Christopher Wolter, MD
Mayo Clinic Arizona, Phoeniz, Arizona
(Presented by: Catherine Chen, MD)

Introduction: Patients with mixed urinary incontinence benefit from sling procedures by treating the stress incontinence aspect of their disease. The purpose of this study is to evaluate how placing slings effects urinary urgency in patients with mixed urinary incontinence (MUI).

Methods: A retrospective database of patients who underwent all sling procedures from 2008–2014 from a single surgeon and at single institution was compiled. Patients who underwent any concomitant surgery for pelvic organ prolapse or urethrolysis were excluded. MUI, detrusor overactivity (DO) on urodynamic study (UDS), persistent urgency after surgical procedure, and patient global impression of improvement (PGI–I) scores were evaluated.

Results: A total of 172 patients had only sling procedures. Of this group, 111 had mixed urinary incontinence. In the MUI group, 67.5% had no prior surgeries for incontinence and 25% had detrusor overactivity on UDS. Seventy-three patients had persistent urgency, 11 of which had worsening of their urgency, 29 with no change and 33 with improvement. Overall, 64% (71/111) of patient with MUI had either resolution (n=38) or improvement (n=33) of their urge symptoms. Patients who have, DO on UDS are 33.6% less likely to have improvement or resolution of their urgency symptoms (p=0.025). Despite the difference in improvement rates, there is no statistically significant difference in patient satisfaction. Overall, a PGI–I score of 1 or 2 was 90% (100/111) in the MUI population.

Conclusion: DO on UDS in patients with mixed urinary incontinence undergoing their first sling procedure indicates that those patients are less likely to have improvement of their urge symptoms. This finding likely indicates worse urge severity than in those patients where, DO was not detected on testing. Despite this finding, overall patient satisfaction after their procedure remains high, likely due to the efficacy of the sling procedure eliminating the SUI component of their symptoms, thus providing adequate satisfaction in controlling their incontinence. The expected improvement in urge symptoms should also be communicated to patient in pre-operative counseling.
Poster #NM17

USING TRANSLABIAL ULTRASOUND TO VISUALIZE MESH EROSION INTO THE URETHRA AND BLADDER

Seth Cohen, MD1, Karoly Viragh, MD2, Leah Nakamura, MD1, Anne Ackerman, MD1, Pat Ramart, MD1, Diana Kang, MD1, Judy Choi, MD1, Ja-Hong Kim, MD1, Steven Raman, MD2 and Shlomo Raz, MD1

1Department of Urology, UCLA, Los Angeles, CA; 2Department of Radiology, UCLA, Los Angeles, CA

(Presented by: Seth Cohen, MD)

Introduction: Mesh grafts are commonplace for the repair of stress urinary incontinence in women. Women presenting with complications necessitating mesh removal will at times require excision, including a delicate dissection and reconstruction. Preoperative cystoscopy is not always informative in situations of previous partial mesh removal. Ultrasound can yield accurate information for location and position of mesh, which may impact surgical plan and patient expectations. This investigation sought to determine the sensitivity of translabial ultrasound for visualizing mesh erosion of the urethra and/or bladder.

Methods: We retrospectively analyzed data from a database of mid-urethral sling patients who underwent translabial ultrasound and mesh removal, identifying those with erosion of the urethra and/or bladder documented intraoperatively. Patients with previous placement of additional mesh-products were excluded from the study. We reviewed the preoperative translabial ultrasound interpretations and calculated the sensitivity for ultrasound to identify mesh erosion. The translabial ultrasounds were performed with a standard technique each time including: images taken in the sagittal, coronal, and axial dimensions, dynamic phase (including cough, strain kegel), along with a 3-dimensional reconstruction. We classified the findings into extraluminal (mesh not touching the urethra or bladder), intramural (mesh is in continuity with the wall of the urethra or bladder), or intraluminal (mesh is protruding into the lumen). If mesh was found in the intramural or intraluminal position, it was included in the erosion category.

Results: Two-hundred patients with suburethral mesh slings underwent translabial ultrasound and mesh excision between 2007 and 2013. Seventeen were found to have intraoperative erosion of the urethra and/or bladder. Mean age of this cohort at time of mesh removal was 54.67 years old. Sensitivity of translabial ultrasound for erosion was 12/17 (70.5%). Position of mesh at time of ultrasound: 29% were extraluminal or not well visualized, 35% were intramural, and 35% were intraluminal.

Conclusion: Translabial ultrasound is effective at visualizing mesh in the urethra and bladder. This study can increase the yield of preoperative counseling for a patient undergoing mesh removal. Subclassification of the mesh position may allow us to more robustly grade the extent of erosion in the future.

Financial Funding: None.
Poster #NM18
GENERAL ANESTHESIA FOR MIDURETHRAL SLING: TO PARALYZE OR NOT?
Bhumy Davé, MD¹, Camaleigh Jaber, BS², Alix Leader-Cramer, MD¹, Nicole Higgins, MD³, Margaret Mueller, MD¹, Lisa Labin Johnson, MD¹, Christina Lewicky-Gaup, MD⁴ and Kimberly Kenton, MD⁴
¹OB/GYN, Division of Female Pelvic Medicine & Reconstructive Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL; ²Loyola University Chicago Stritch School of Medicine, Chicago, IL; ³Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL; ⁴Urology & OB/GYN, Division of Female Pelvic Medicine & Reconstructive Surgery, Northwestern University Feinberg School of Medicine, Chicago, IL
(Presented by: Bhumy Davé, MD)

Introduction: To determine if there is a difference between intra- and perioperative outcomes for patients undergoing midurethral sling (MUS) placement under general anesthesia (GA) with or without paralysis.

Methods: A retrospective cohort analysis was performed on consecutive women undergoing placement of a synthetic retropubic MUS by a urogynecologist from 2009 to 2014 at a tertiary care institution. Patients undergoing concomitant procedures were excluded. Demographic, intra- and perioperative data was obtained from electronic medical records. If a paralytic agent was administered, an endotracheal tube (ETT) was placed. If paralytic agents were not given, a supraglottic device (LMA Unique™ or Ambu® Aura-ITM) was placed. All patients underwent a standardized voiding trial with retrograde fill in the recovery room, and voiding dysfunction was defined as discharge from the hospital using intermittent straight catheterization (ISC) or Foley catheter. Continuous variables were compared using the independent samples t-test or Mann-Whitney U test. Chi-squared test of association was used for categorical variables.

Results: Obtained: 140 patients were included (80 with paralysis, 60 without paralysis). There was no difference between the groups in most baseline characteristics (age, race, ASA class, surgeon, prolapse stage, parity, smoking); BMI was greater in the paralysis group (median 28.3 vs. 25.4, p=0.027). Operating room times and total charges were greater in the paralysis group (mean±SD, 71.4±12.3 min vs. 62.0±10.6 min, p<.001 and $17,649±2649 vs. $16,160±2372, p<.001, respectively). There was no difference in actual surgical time (30.3±9.0 min vs. 29.4± 8.7 min, p=.551). The paralysis group had higher rates of voiding dysfunction (35% vs.16%, p=.016). Backwards logistic regression including BMI and paralysis showed that only paralysis was independently associated with voiding dysfunction (p=0.018). There was no difference in rates of bladder perforation (6.2% vs. 6.6%, p=.921).

Conclusion: In the absence of contraindications, general anesthesia without paralysis may offer significant benefits over GA with paralysis in women undergoing retropubic MUS, including shorter operating room times, lower charges, and less voiding dysfunction in the immediate postoperative period.

Funding: Enterprise Data Warehouse grant for eight-hours of research analyst time.
FUNCTIONAL INDEPENDENCE MEASURE AND GLASGOW COMA SCORES PREDICT URINARY AND FECAL INCONTINENCE AFTER TRAUMATIC BRAIN INJURY

David Osborn, MD,1 Jill Danford, MD,2 Stephen Mock, MD2, Brook Brown, MD2, W. Stuart Reynolds, MD, MPH2, Melissa Kaufman, MD, PhD2 and Roger Dmochowski, MD, MMHC2

1Bethesda, MD; 2Vanderbilt University, Nashville, TN
(Presented by: David Osborn, MD)

Introduction: The objective of this study is to evaluate the incidence of lower urinary tract symptoms (LUTS) and fecal incontinence in patients with acute traumatic brain injuries. The secondary objective is to identify prognostic factors that are associated with urinary and fecal incontinence.

Methods: A review of female patients from the National Trauma Registry of the American College of Surgeons database who were diagnosed with traumatic brain injury (TBI) at a level-one trauma center from 2004 to 2010 was performed. The diagnosis of TBI was based on a head computed tomography (CT) positive for intracranial hemorrhage and a head and neck abbreviated injury score greater than two. Patients who sustained bladder or spinal cord injuries were excluded from the study. Multivariate logistic regression modeling was used to determine the association between de novo urinary incontinence (and de novo fecal incontinence) and potential risk factors for incontinence.

Results: Of the identified 1275 patients with TBI, 1008 patients met inclusion criteria. Mean age was 46 years-old. Average follow-up was 14.9 months. Average GCS was 9.6. Of the 1008 patients, 20.5% (207) died during their initial admission, 82% (664) had more than two weeks of outpatient follow-up. The overall incidence of de novo urinary incontinence was 8.5% (100). The incidence of de novo fecal incontinence in patients in this same population was 13% (51). The overall rate of urinary tract infection was 12.6% (127/1008). Lower GCS score and FIM score equivalent with patient requiring assistance were associated with an increased risk of de novo urinary incontinence (OR of 0.88, 95% CI 0.83−0.93, p<0.001 and OR 0.78, 95% CI 0.71−0.87, p<0.01, respectively). This association was also seen with an increased risk of fecal incontinence (OR of 0.87, 95% CI 0.80−0.94, p<0.01 and OR 0.83, CI 0.71−0.91, p<0.001 respectively).

Conclusion: The de novo urinary incontinence incidence after TBI was 12.0%, and de novo fecal incontinence was 7.7%. An association is seen with lower GCS and FIM scores and increased urinary or fecal incontinence.
HOW WELL CAN UROLOGY TRAINEES DETECT SUBURETHRAL MESH USING TRANSLABIAL US IN COMPARISON TO A RADIOLOGIST?
Daniel Faaborg, MD, Glen Rouse, MD, Muhammad Alsyouf, MD, Myklak Kristene, MD and Staack Andrea, MD
Loma Linda, CA
(Presented by: Daniel Faaborg, MD)

Introduction: Suburethral mesh implantation for stress urinary incontinence can result in erosion, extrusion, infection, pain, and irritative voiding symptoms. Surgical mesh removal can be challenging when operative records are not available, portions of mesh have been removed, mesh position has changed, or it's not palpated on physical exam. Translabial ultrasonography is a diagnostic tool that can detect synthetic mesh. The purpose of this study was to compare a group of Urology trainees’ and a radiologist’s ability to identify pelvic landmarks, localize and assess completeness of suburethral mesh.

Methods: Eight urology trainees received a 15-minute lecture on landmarks and techniques in translabial ultrasound, anatomical landmarks, and detecting suburethral mesh. The trainees reviewed 18 different translabial ultrasound studies. Trainees were then asked a total of 126 questions including identification of anatomical planes, pelvic structures in different planes, mesh presence, disruption of mesh, and its location along the urethra. The overall correct response rate of all questions was compared to a Board-certified radiologist specialized in translabial ultrasound, which served as our control. The radiologist and trainees were blinded to patient history, clinical, and operative findings.

Results: Overall, trainees answered correct on average 83.9% (105/126) of all questions compared to the radiologist 94.4% (119/126; p=.023)Per category the average trainee was able to correctly identify the anatomical plane in 94.4% (17/18) of questions, detect presence or absence of mesh in 95.8% (17/18), determine mesh disruption in 82.6% (15/18), correctly identify pelvic anatomical structures in 83.3% (15/18), and determine location of mesh in correspondence to the urethra in 71.5 % (12/18).

Conclusion: Urology trainees can learn without time-consuming prior training how to identify anatomical landmarks on translabial ultrasound and consistently detect the presence of suburethral mesh. Translabial ultrasound can be utilized by urologists to aid in preoperative planning for mesh removal or clinical diagnostics for symptomatic mesh.

Financial Funding: None
PREVALENCE OF OBSTRUCTIVE SLEEP APNEA DETECTED BY THE BERLIN QUESTIONNAIRE IN PATIENTS WITH NOCTURIA ATTENDING A UROGYNECOLOGY UNIT
Harold Drutz, MD, Salomon Zebede, MD, May Alarab, MD and Danny Lovatsis, MD
Mount Sinai Hospital, University of Toronto, Toronto, Ontario, Canada
(Presented by: Harold Drutz, MD)

Introduction: Nocturia has been associated with several chronic conditions including obstructive sleep apnea (OSA). The pathophysiological link between nocturia and OSA has been well delineated but the prevalence of this condition in patients with nocturia is unknown. Our objective is to determine the prevalence of sleep apnea in patients with nocturia compared to patients without nocturia in a group of women referred to a Urogynecology unit.

Methods: After ethics approval, a prospective case control study including 81 cases and 79 controls was conducted. Sample size calculation indicated a need for 72 patients in each group for a two sided confidence level, with alpha 5% and power 80%. All patients completed the Nocturia, Nocturia Eneuresis and Sleep Interruption Questionnaire (NNES−Q) and the Berlin OSA questionnaire. The NNES−Q was used to define cases and controls. Cases were defined as sleep interruption due to an urge to void two or more times. The Berlin questionnaire was used to classify patients into high risk or low risk of having OSA. Univariate analysis was first performed, followed by logistic regression to assess the association between nocturia and OSA, as well as other possible variables associated with nocturia.

Results: Fifty (61.7%) of the cases were classified as high risk of having OSA compared to only 19 (24.1%) in the control group (logistic regression, OR 2.9, 95% CI 1.29−6.52, p=0.01). Other variables found to be statistically significant by logistic regression were high BMI, overactive bladder and low bladder capacity (<300 cc). Age, menopausal status, urogenital atrophy, parity, prolapse stage, prior pelvic surgery, and diabetes were not found to be significant in the logistic regression analysis. Of the cases, 10 (12.3%) reported having a positive history of OSA proven by polysomnography compared to none in the control group. NNES−Q showed that cases were more bothered by getting awakened (6.86±2.31 vs. 2.81±3.06 P< .001). Eneuresis was also more common in the cases: 35 (43.2%) vs. nine (11.4%) (p< .001).

Conclusion: Patients with nocturia showed significantly a higher risk of having OSA. Patients with nocturia should be screened for OSA. More research is needed to determinate which is the best screening tool in this population.
STRESS AND OVERACTIVE BLADDR SYMPTOMS

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(Presented by: H. Henry Lai, MD)

Introduction: The relationship between psychological stress and interstitial cystitis (IC/BPS) has been well described. Even though there is considerable overlap of symptoms between OAB (overactive bladder) and IC/BPS, there have been very few studies that investigated the relationship between stress and urinary symptoms in OAB patients who do not have pelvic pain. The objective of this study was to examine the relationship between psychological stress levels and the severity of overactive bladder (OAB) symptoms in patients.

Methods: Patients diagnosed with OAB (n=51) or IC/BPS (n=27), and age-matched healthy controls (n=30) participated in a prospective study that inquired about their perceived stress levels using the 10-item perceived stress scale (PSS). Among OAB patients, their responses on the PSS was correlated to self-reported OAB symptoms using the following questionnaires: 1) international consultation on incontinence –urinary incontinence (ICIQ−UI), 2) international consultation on incontinence/overactive bladder (ICIQ−OAB), 3) OAB–q short form, 4) urogenital distress inventory short form (UDI−6), 5) incontinence impact questionnaire short form (IIQ−7), 6) urgency severity scale (USS), 7) numeric rating scales of urgency symptom, and 8) frequency symptom.

Results: OAB patients reported perceived stress levels (17.4 +/- 8.11) that were as high as IC/BPS (17.7 +/- 6.7, p=0.886), and significantly higher than healthy controls (10.7 +/- 8.5, p=0.001). Among OAB patients, there was a positive correlation between stress levels and urinary incontinence symptoms (ICIQ−UI, p=0.007), and impacts on quality of life (UDI−6, IIQ−7, OAB–q QoL subscale; p=0.028, 0.005, 0.029, respectively, see Table). No significant correlation was observed between stress levels and urinary urgency or frequency symptoms (ICIQ–OAB, USS, numeric ratings of urgency and frequency).

Conclusion: OAB patients reported perceived stress levels that were as high as IC/BPS, and significantly higher than healthy controls. There was a positive correlation between perceived stress levels and urinary incontinence symptoms, and its impacts on quality of life among OAB patients.

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**Poster #NM23**

**ARE PELVIC SURGEONS AWARE OF THEIR SURGICAL FAILURES? – PATIENT PERCEPTIONS AFTER FAILED INCONTINENCE OR PELVIC ORGAN PROLAPSE SURGERY**

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(Presented by: Christopher Elliott, MD, PhD)

**Introduction:** Prior studies suggest that pelvic organ prolapse (POP) and stress incontinence (SUI) may recur following surgery in 20% or more of patients. Despite these numbers, we have anecdotaly found that many surgeons performing pelvic floor reconstruction feel their success rates exceed these figures. Based on our experience we hypothesized that significant numbers of patients with recurrent POP or SUI following prior surgery do not return or notify their original surgeon of their recurrence. We also aimed to identify reasons why the patient was seeking care elsewhere.

**Methods:** We investigated patients presenting to a tertiary referral center urogynecologic practice with recurrence after prior POP or SUI surgery over a two-year period. Data was collected using an IRB approved 15-item questionnaire and after two years was analyzed.

**Results:** We found that 16 of 51 patients (31%) had not notified their primary surgeon of surgical failure. Of these patients, roughly half (9 of 16) did not return due to either moving to a different area of the country, changing their insurance or their prior physician retiring. Despite the surgical failures, of all patients presenting to our clinic, very few stated they had a poor-relationship with their prior surgeon (6%). A large majority (63%) however did not think that their primary surgeon could fix their problem.

**Conclusion:** Roughly one third of patients who suffer from recurrence after POP or SUI surgery do not notify their original surgeon. This may artificially inflate a clinician’s perceived success rate of pelvic floor repair.

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**Poster #NM24**

**THE IMPACT OF OBESITY ON OUTCOMES AFTER RETROUBIC MIDURETHRAL SLING FOR FEMALE STRESS URINARY INCONTINENCE**

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(Presented by: Umar Karaman, MD)

**Introduction:** Obesity is a risk factor for failure of surgery for stress urinary incontinence (SUI). In previous studies, obese women had higher rates of persistent/recurrent SUI after three types of slings, but lower rates of postoperative voiding symptoms vs. non-obese women. We evaluate the outcomes of retropubic midurethral slings (RPMUS) in obese women (BMI≥30).

**Methods:** This is an IRB-approved, retrospective chart review of women undergoing top-down RPMUS with follow-up (FU) of ≥12 months. Of 622 women, 294 (47.3%) had BMI≥30 and 328 BMI<30 (52.7%). Women with previous anti-incontinence surgery were included. Pre- and postoperative assessment included exam, SEAPI scoring (stress incontinence, emptying, anatomy, protection, inhibition), and quality of life (QoL) questionnaires. Cure was no subjective or objective SUI and no further procedures for SUI. Details on perioperative morbidity were abstracted from the hospital and clinic charts.

**Results:** Mean FU=22 months for the entire cohort. Mean age, parity, valsalva leak point pressure, SEAPI, and QoL scores were not statistically (NS) different in obese vs. non-obese groups. Cure rates were 82.9% and 74.5% for all non-obese and obese women, respectively (p=0.01). In women undergoing sling only, 76.9% of 65 non-obese women were cured, compared with 73.7% of 99 obese women (p=0.65). Cure rates waned with longer FU for both groups, but more rapidly for the obese group. Approximately 5% in each group had perioperative complications, with most being Clavien grade ≤3 (NS). Mean and median time to successful voiding was shorter in the obese group. Seven non-obese women had a total of eight sling incisions, compared with five obese women (6 incisions) (NS). Two women in each group had sling revision for pain or extrusion. Significant improvement in postoperative SEAPI scores and QoL indices was achieved for each group, while the difference between obese and non-obese groups was similar (NS). Nine non-obese women later underwent 13 anti-incontinence procedures (7 bulking, 6 slings), compared with 16 obese women (7, 9).

**Conclusion:** Our results indicate that obese women are not predisposed to additional complications during RPMUS surgery and surgical outcomes are similar in the short term. While overall satisfaction is high, recurrence of SUI may be more rapid in the obese population. While obesity alone should not be a deterrent in performing RPMUS, appropriate preoperative counseling is recommended.
THE RISK OF STRESS INCONTINENCE AND PELVIC ORGAN PROLAPSE SURGERY AFTER A PELVIC FRACTURE
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(Presented by: Blayne Welk, MD, MSc)

Introduction: Traumatic pelvic fractures can significantly disrupt the muscle and ligaments that are essential for incontinence, and may cause stress urinary incontinence (SUI) or pelvic organ prolapse (POP). The objective of this project was to assess the incidence of operative treatment for SUI and POP after traumatic pelvic fractures.

Methods: Administrative data from Ontario, Canada, was used to identify the patient population, outcomes, and covariates. Female patients who underwent operative repair of a pelvic fracture (which destabilized the pelvic ring and required operative repair) between 2002–2010 were identified using physician-billing claims. The co-primary outcomes were the subsequent surgical treatment of SUI, or the surgical repair of POP. To compare the incidence to the general population, patients who had operative repair of a pelvic fracture were matched (1:2) to a patient in the general population who did not have any history of pelvic fracture based on age, provincial location, and propensity score. The propensity score adjusted for the frequency of previous health care contacts, obesity, diabetes, socioeconomic status, ADG comorbidity score resource bands and prior investigations. Cox proportional hazards model was used to calculate an adjusted hazard ratio (HR) to assess risk between exposed and unexposed patients.

Results: We identified 399 female patients who fit our inclusion criteria, and had a minimum follow-up of three years after their pelvic fracture (78% had a disruption of their pubic symphysis, and 22% had a disruption of their sacroiliac joint; all patients underwent surgical repair). The median age was 47 (interquartile range (IQR) 30–67), the majority of patients were urban (85%), and most had high or very high health care utilization for comorbid diseases (51%). The majority of patients had not seen a urologist (73%) or gynecologist (70%) in the year prior to their pelvic fracture. The absolute risk of SUI surgery after pelvic fracture was 3.3% (13/390) compared to 1.0% (8/769) in the matched general population. The adjusted HR for SUI surgery was 5.8 (95% CI 2.2–15.1). The absolute risk of POP surgery after pelvic fracture was 1.8% (7/390) compared to 0.9% (7/769) in the matched general population. The adjusted HR for POP surgery was 2.3 (95% CI 0.9–5.8).

Conclusion: Among patients who had a pelvic fracture requiring operative repair, there appears to be a significantly increased risk of surgery for SUI, but not for POP.
OUTCOMES OF AUTOLOGOUS RECTUS FASCIA PUBOVAGINAL SLING FOR STRESS URINARY INCONTINENCE AT MEAN SIX-YEAR FOLLOW-UP

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(Presented by: Eugene Lee, MD)

Introduction: In the midurethral sling era, treatment of stress urinary incontinence (SUI) has increased dramatically. Concomitantly, use of the autologous rectus fascia pubovaginal sling (PVS) has decreased proportionately. However, for patients with intrinsic sphincter deficiency (ISD), recurrent SUI or mesh complications, PVS remains an important procedure. We evaluated the long-term outcomes of PVS in patients with SUI.

Methods: A retrospective review of prospectively collected data of patients undergoing PVS for SUI was performed. Patients were followed by mailed questionnaire annually. Success was defined as less than one incontinent episode per week or greater than 70% patient-reported improvement from baseline. Patient-reported dry rate was assessed using the Urinary Distress Inventory (UDI−6) questionnaire. Secondary outcomes were complication rates.

Results: A total of 138 patients received a PVS between 1999 and 2014. There were 82 patients with a minimum follow up of 12 months. Mean age was 60 (range 34–87) and 63% had recurrent SUI. 78% had ISD, defined as Valsalva leak point pressure (VLPP) <60 cmH2O (mean VLPP 37, range 0–58). At 6.1 years mean follow-up (range 1.4–11.0), the success rate was 74%, and patient-reported dry rate was 35%. Seventeen patients (23%) experienced a total of 20 peri-operative complications including 3 wound infections, 2 UTIs, 2 transfusions, 1 vaginal sling exposure, 1 small seroma that was drained, 1 abdominal wall hematoma, and 1 case of pneumonia. Rate of transient urinary retention was 9%, and 2% of patients had prolonged obstruction requiring intervention. In terms of postoperative urgency, 29% had de novo urgency but 17% had resolution of preoperative urgency.

Conclusion: PVS is associated with a good success rate at long-term follow-up, even in more complicated and severe cases. Complication rate was low, but potential for retention and de novo urgency mandates careful preoperative counseling. PVS remains an important tool in the armamentarium for treatment of SUI.

Funding: none
CHANGING PRACTICE PATTERNS IN VAGINAL MESH SURGERY FOR PELVIC ORGAN PROLAPSE IN TERTIARY CARE CENTERS

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(Presented by: Austin Younger, MD)

Introduction: Until recent years the number of surgeries utilizing transvaginal mesh had been steadily increasing. FDA Safety Communications were issued in 2008 and 2011 regarding complications of transvaginal mesh. The effects of these statements on mesh surgery volume related to pelvic organ prolapse (POP) are unclear. The objective of this study is to evaluate for trends in POP surgery including revision surgery for mesh related complications over the last seven years at tertiary care medical centers across the United States.

Methods: Surgical volume for procedures performed at each institution were collected from billing data using CPT codes for POP surgery, as well as mesh revision surgery, from 1/1/2007 to 12/31/2013, excluding stress urinary incontinence (SUI) surgery. POP repair with and without mesh and abdominal sacrocolpopexy were independently evaluated. Mesh revision surgery numbers were compared to total case volume for POP/SUI procedures.

Results: Total surgical volume for treatment of POP has remained relatively stable over the past seven years. However, the repair of POP using mesh has drastically decreased since 2007. There has been a proportional increase in both non-mesh repair of POP and mesh revision surgery. Mesh revision surgery as a percentage of total POP case volume has steadily increased over the last seven years at academic centers across the United States from approximately 10% in 2007 to over 25% in 2013.

Conclusion: There has been steady decrease in mesh implantation for POP surgery and a steady increase in the number mesh revision surgeries performed at several tertiary care centers across the US over the past seven years. This suggests substantial effects of the FDA Safety Communication on the surgical practice in POP. These observed trends could be also related to changes in referral patterns, an increased awareness and recognition of potential mesh complications, an actual increase in mesh surgery implantation elsewhere, an actual increase in mesh complications or other factors. Limitations of this study include potential regional variations in practice patterns and coding practice as well as bias of tertiary care facilities and associated referral patterns.
CHANGING PRACTICE PATTERNS IN VAGINAL MESH SURGERY FOR STRESS URINARY INCONTINENCE IN TERTIARY CARE CENTERS

Austin Younger, MD 1, Goran Rac, BS 1, J. Quentin Clemens, MD 2, Kathleen Kobashi, MD 3, Aqsa Khan, MD 4, Victor Nitti, MD 4, Ilana Jacobs, MD 5, Gary E. Lemack, MD 6, Elizabeth T. Brown, MD, MPH 6, Roger Dmochowski, MD 6, David Ginsberg, MD 7, Michelle Koski, MD 8, Ross Rames, MD 1 and Eric Rovner, MD 1

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(Presented by: Austin Younger, MD)

Introduction: Until recent years, the number of surgeries utilizing transvaginal mesh had been steadily increasing. FDA Safety Communications were issued in 2008 and 2011 regarding complications of transvaginal mesh. The effects of these statements on mesh surgery volume related to stress urinary incontinence (SUI) are unclear. The objective of this study is to evaluate for trends in SUI surgery, including revision surgery for mesh related complications, over the last seven years at several tertiary care medical centers across the United States.

Methods: Surgical volumes for procedures performed at each institution were collected from billing data using CPT codes for SUI surgical procedures and revision surgeries from 1/1/2007 until 12/31/2013. Intervention for SUI with AFPVS was compared to the number of mid-urethral sling procedures using synthetic mesh.

Results: Surgical volume for treatment of SUI has remained relatively stable over the past 7 years; however, there has been an increase in the utilization of AFPVS when compared to total SUI intervention, from 24% (2007) to 45% (2013) of all SUI surgeries. There has been a substantial decrease in the number of interventions with synthetic mesh mid-urethral slings over this same period of time. The number of urethral revision surgeries, including urethrolysis and sling incision, has almost tripled from 129 (2007) to 381 (2013).

Conclusion: Intervention for SUI alone remains stable over the past seven years; but with a strong trend towards decreased utilization for synthetic sling and increased use of autologous fascia pubovaginal sling and mesh revision surgery. This suggests substantial effects of the FDA Safety Communication on the surgical practice of SUI. These observed trends could be related to changes in referral patterns, an increased awareness and recognition of potential mesh complications, an actual increase in mesh complications, an increase in synthetic mesh mid-urethral sling placement at non-academic centers or other factors. Limitations of this study include potential regional variations in practice patterns and coding practice as well as bias of tertiary care facilities and associated referral patterns.
LONG-TERM OUTCOMES OF RETROPUBIC MIDURETHRAL SLINGS FOR STRESS URINARY INCONTINENCE IN A TERTIARY REFERRAL SETTING

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(Presented by: Kevin Gioia)

Introduction: Data on the durability of retropubic (RP) midurethral slings (MUS) longer than five years after surgery is limited. However, this information is frequently requested by patients during preoperative counseling. Our objective is to present an observational study at a tertiary referral center using two measures of success 10 years after surgery.

Methods: Retrospective review of our prospective database identified 179 patients with at least one RP MUS surgery and complete data for success definitions within one year and/or in the tenth year following surgery. Success was defined as either completely dry or at least 70% improvement and/or <1 incontinent episode per week (VM success). We estimated success rates among all available patients as well as among a subset with all data at both time points. Change in success from the first year to the tenth year among patients with data available at both times was assessed by McNemar’s (paired Chi-square) test.

Results: Among all patients with complete success data in the first postoperative year, 73% (118/161) and 99% (160/161) reported completely dry and VM success, respectively. Of those with data in the tenth year, 40% (17/42) and 70% (30/42) reported completely dry and VM success, respectively. Questionnaire responses at both time points were available for 24 subjects. Completely dry success among this subset declined significantly from 71% to 33% (17/24 vs. 8/24, p=0.016). VM success also declined significantly from 100% to 67% (24/24 vs. 16/24, p<0.001).

Conclusion: Examination of a subset of patients with early and late follow-up revealed a significant decline in both measures of success. However, a moderate number of women are symptom-free and a majority has maintained subjective improvement in the overall group at 10 years after RP sling surgery. Our results provide the surgeon with a tool for counseling patients preoperatively based on a target population representative of that which is encountered in a high-volume referral center. Further analysis will allow for more accurate characterization of this population in order to more accurately predict long-term outcomes following RP MUS surgery for stress urinary incontinence.
HOW, DOES A COMPLIANT AIR-FILLED INTRAVESICAL BALLOON INCREASE THE ABDOMINAL PRESSURE REQUIRED TO INDUCE STRESS URINARY INCONTINENCE RELATED LEAKAGE?

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(Presented by: Kurt McCammon, MD)

Introduction: Stress Urinary Incontinence related urine leakage occurs when intravesical pressure momentarily exceeds the urethral pressure, which commonly occurs during a cough, sneeze, or physical exertion. A recent published study (Rovner et al, J. Urology, 12/2013) clinically evaluated an air-filled intravesical balloon as a means to reduce transient intravesical pressure and urinary leakage, reporting a statistical difference in the number of patients that did not leak during a VLPP test with a balloon vs. control patients without a balloon. Flow rate and post-void residual before and after the balloon insertion supported that result was due to the device’s pressure attenuation effect and not any obstructive phenomenon. The authors assessed a similar attenuator device in-vitro to evaluate its ability to attenuate intravesical pressures due to short-duration transient pressure events.

Methods: A balloon was constructed of thin polyurethane material with a one-way valve to permit filling with various volumes of air. In-vitro feasibility assessment was made using a custom-built bench-top acrylic chamber. Computer controlled valves, connected to a compressed air source, were used to pressurize a 250 cc chamber to transient pressures of 140 cm H2O to simulate an intravesical pressure which may result in stress urinary incontinence leakage. Pressure in the chamber was recorded without the balloon, and then with a 15ml balloon. Pressure pulse duration was 20 msec, 40 msec, and 80 milliseconds to represent a typical duration of a leakage-inducing transient pressure event.

Results: The results of the in-vitro measurements using a 20 msec pulse in the acrylic chamber are shown in Figure 1. For a balloon volume of 15 ml, the amplitude of a transient pressure pulse was reduced by 43% from 128 cm H2O to 72 cm H2O.

Conclusion: For volumes and pressures that approximate physiological values, significant pressure attenuation can be obtained using a balloon volume less than 10% of typical functional bladder capacity. The findings warrant further investigation into the use of air-filled balloon attenuator to reduce leakage associated with stress urinary incontinence. This study was funded by Solace Therapeutics.
Poster #NM31
AUTOLOGOUS TRANSOBTURATOR URETHRAL SLING PLACEMENT FOR FEMALE STRESS URINARY INCONTINENCE
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(Presented by: Brian Linder, MD)

Introduction: To describe and evaluate a transobturator approach to urethral sling placement using autologous rectus fascia for the management of female stress urinary incontinence.

Methods: We performed a feasibility study of ten autologous transobturator (ATO) mid-urethral sling placements for stress urinary incontinence. The procedure includes an anterior vaginal dissection, performed in the standard fashion for a mid-urethral sling, and harvest of a strip of rectus fascia. A trocar is passed through each obturator foramen and the fascial stay sutures are retracted through the skin incisions. The sling is then appropriately tensioned and the stay sutures tied. Patient outcomes were measured by 24-hour pad weight test and ICIQ–FLUTS score.

Results: Median patient age was 57 (IQR 48; 69.5) with a median body mass index of 30.3 kg/m² (IQR 25.2; 32.4). Median follow-up was 4 months (range 3–5). All patients demonstrated reduction of leakage, with 80% being completely dry (zero grams on 24-hr pad test and not wearing pads). Overall, there was significant improvement in pre- versus postoperative 24-hour pad weight (p=0.02). Likewise, all subscores of the ICIQ–FLUTS were significantly improved following surgery: frequency (p=0.006), voiding (p=0.04), and incontinence (p=0.002). Six of the nine eligible cases (67%) were performed on an outpatient basis. One patient performed intermittent self-catheterization for 24 hours following sling placement. No patients suffered severe (Clavien III–V) postoperative complications or required urethrolysis.

Conclusion: Autologous transobturator urethral sling placement (ATO) appears technically feasible with excellent short-term outcomes. Longer follow up and larger series are needed for validation.

Financial Funding: None

Poster #NM32
PATIENT QUALITY OF LIFE AFTER REMOVAL OF VAGINAL MESH
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(Presented by: Diana Kang, MD)

Introduction: Despite a growing number of vaginal mesh removal surgeries, little is known about patient quality after the mesh has been removed. We present the short and long terms results of patient satisfaction and outcomes after mesh removal surgery in our patient population.

Methods: A retrospective review was conducted of all vaginal mesh removal procedures performed at UCLA by three fellowship trained Female Urologists between 2006 and 2012. We included vaginal prolapse mesh, vaginal sling mesh, and sacrococcygeal mesh removal. Five hundred and forty patients were identified and sent surveys about their quality of life. The questionnaires included the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ–12), Incontinence Symptom Score (ISS–8) questionnaire, a modified Stanford pain scale, and a modified International Prostate Symptom Score (I–PSS). Patients were asked where their pain was located on the body and if they had systemic symptoms related to mesh.

Results: Two hundred and seven surveys were collected with a mean follow up rate of 38%. The mean patient age was 64 years old (range 35–89). Mean follow up time since surgery was 37 months (range 4–months). In terms of improvement after surgery, 51% of patients stated that they were “very much better” or “much better” and a further 19% stated that they were “a little better”. Eleven percent of patients responded that they were “a little worse”, “much worse” or “very much worse” after the surgery. On the Stanford pain scale, 61% of patients rated their pain as mild (score 0–3) while 31% rated their pain as moderate to severe. 23% of patients stated that they had no pain. Many patients continued to have incontinence after removal, although this was mostly irritative in nature: 62% complained of moderate to great bother due to frequency while 58% complained of moderate to great bother due to urgency. Twenty seven percent of patients complained of stress urinary incontinence once a day or more. In terms of sexual function, 53% of women responding complained of dyspareunia “usually” or “always”.

Conclusion: The majority of vaginal mesh surgeries are elective in nature and usually occur in otherwise healthy patients. Vaginal mesh has the potential to cause prolonged and disabling pelvic pain, urinary incontinence, and sexual dysfunction despite subsequent mesh removal.

Financial Funding: None
CHARACTERISTICS OF WOMEN ATTENDING PELVIC FLOOR MUSCLE TRAINING
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(Presented by: Landon Erickstad, MD)

Introduction: Pelvic floor muscle training (PFMT) is a first-line treatment for urinary incontinence (UI), and may also be effective for dyspareunia and pelvic pain. Studies have suggested that supervised intervention results in better rates of adherence, especially in stress-predominant UI (SUI). In the supervised population, finding time and remembering to exercise are often cited as barriers to completing treatment. Since little is known about barriers to completing therapy in a non-supervised population, we aim to describe and evaluate this cohort of women.

Methods: This is an IRB-approved, retrospective chart review of all women referred for PFMT by a single physician over a three-year period. Several attempts were made to contact each patient to schedule a PFMT appointment. The regimen and subsequent follow-up were determined by the physical therapist. Demographics were abstracted from the office chart and patient progress was monitored from the therapist’s updates.

Results: 161 women were referred for PFMT, with 103 (64%) attending ≥1 session (PFMT group). There was no statistical difference between the PFMT group and those failing to attend (FTA group) in mean age, parity, BMI, and prevalence of SUI, urgency UI (UUI), pelvic pain, and dyspareunia. In the FTA group, the most-common reasons for not attending were: did not show/canceled appointment (41.4%), unable to reach patient (17.2%), and patient declined (13.8%). Only 5.2% cited financial hardship as a reason. In the PFMT group, 51.5% had mixed UI, 21.4% SUI only, 11.7% dyspareunia and 5.8% UUI only. Approximately 18% were referred for persistent/recurrent UI after definitive sling. Mean and median number of visits for the PFMT group was 3.4 and 2, respectively. Approximately 29% completed therapy, and none of these underwent further surgery or pharmaceutical management during the follow-up period. Approximately 5% of women reported no benefit from therapy. Subjective improvement (in decreasing order) was UUI>SUI>pelvic pain/dyspareunia. Age was not associated with lack of improvement or non-completion of therapy.

Conclusion: In a non-supervised population, PFMT is associated with improvement in UI and pelvic pain/dyspareunia, but >1/3 of all women complete therapy. Incontinent women are more likely to see improvement than those with pelvic pain, and age is not a factor in adherence. Counseling regarding appropriate expectations of PFMT may improve adherence and completion of therapy.
Introduction: There has been a recent wave of subspecialization in medicine accompanied by an evolution of accreditation mechanisms. Female Urology and Urogynecology previously existed as separate unaccredited fellowships for residents from urology and obstetrics and gynecology (OB/GYN). A board certification in Female Pelvic Medicine and Reconstructive Surgery (FPMRS) was developed recently and became available to both urologists and gynecologists. Those currently in practice who graduated residency prior to 2010 could receive senior accreditation without having completed an accredited training program. The purpose of this study was to determine if there was a change in number of programs and applicants since this date.

Methods: The National Residency Matching Program (NRMP) database was queried for “pelvic medicine and reconstructive surgery.” Programs in the database are designated as OB/GYN, Urology, OB/GYN-Urology or undesignated based on Graduate Medical Education Review Committee. Number of programs, positions, applicants and match rate were recorded from 2010–2014. Linear regression was used to predict changes in the number of programs and applicants over time. Multivariate analysis was performed to determine if program specialty or location could be used to predict number of current programs.

Results: Since the 2010 deadline the number of applicants has been consistently greater than the number of positions, with a steeper rise in positions than in applicants. The number of positions is expected to be equal to the number of applicants by approximately the year 2020. With every year there were an additional 3.5 positions in OB/GYN programs as compared to 3 positions in combined programs and only 1.2 positions in Urology programs. OB/GYN programs appeared to be less likely to be unfilled than other program types although this was not statistically significant (OR=6.03, 95% CI=−0.25−3.85, p=0.09). On multivariate analysis neither program region nor specialty was a significant predictor of current number of programs (p=0.73, p=0.14, respectively).

Conclusion: While the FPMRS fellowship accreditation is designed for graduates of both urology and gynecology, there are more programs designated as OB/GYN than as Urology or OB/GYN-Urology. There may be more opportunities for gynecology residents to pursue subspecialty training in FPMRS than for urology residents, which may shape the demographics of FPMRS workforce in the future.
THE EFFECT OF AGE ON RE-INTERVENTION FOR STRESS URINARY INCONTINENCE

Bilal Chughtai, MD1, Jessica Buck1, Jialin Mao2, Richard Lee, MD1, Alexis Te, MD1, Steven Kaplan, MD1 and Art Sedrakyan2
1Department of Urology, Weill Medical College of Cornell University, New York-Presbyterian Hospital, New York, NY; 2Department of Public Health, Weill Medical College of Cornell University, New York-Presbyterian Hospital, New York, NY
(Presented by: Jessica Buck)

Introduction: Stress urinary incontinence (SUI) prevalence increases with age. In managing SUI after failure of conservative treatment that includes behavior modification, fluid restriction, and pelvic floor muscle therapy, slings are today’s most common second line therapy. Our objective is to determine surgical outcomes after sling placement for stress urinary incontinence in various age groups.

Methods: Using the New York State Department of Health Statewide Planning and Research Cooperative System (SPARCS) database, we identified female patients undergoing sling surgery between 2003 and 2011 using Common Procedural Terminology, Fourth Edition (CPT-4) code from state ambulatory surgery database (SASD). Events and percentages were presented for patient demographics, comorbidities and hospital and surgeon volumes. Unadjusted analysis for 90-day safety included urologic and non-urologic complications. All analyses were performed using SAS v9.3 (SAS Institute Inc., Cary, NC).

Results: We identified 35,134 patients undergoing sling procedures between 2003 and 2011, and the majority of them were younger than 65 (78.8%). When compared to younger age groups, patients over 65 had higher risks of urinary tract infections (UTI), urinary as well as mechanical complications and non-urologic complications. Limitations of the study include the retrospective nature of the cohort approach and the potential that some attrition from NY State happened during the study period.

Conclusion: Slings are a safe treatment option for patients suffering from SUI. There is a small, but significant, increase in non-urological complications and treatment failure for older patients. Older patients are less likely to receive slings when being re-treated for SUI.

Table 1 Re-intervention <=5 years

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Treatment failure</th>
<th>Repeated procedure</th>
<th>Time to first re-intervention &lt;1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>332 (2.3%)</td>
<td>258 (77.9%)</td>
<td>150 (45.2%)</td>
</tr>
<tr>
<td>50-64</td>
<td>324 (2.5%)</td>
<td>219 (67.8%)</td>
<td>182 (56.2%)</td>
</tr>
<tr>
<td>65-79</td>
<td>226 (3.7%)</td>
<td>137 (60.6%)</td>
<td>134 (59.3%)</td>
</tr>
<tr>
<td>&gt;=80</td>
<td>44 (4.0%)</td>
<td>25 (56.8%)</td>
<td>30 (68.2%)</td>
</tr>
</tbody>
</table>

Table 2 Adjusted outcomes (OR)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Treatment failure</th>
<th>Non-urologic complications</th>
<th>Urologic complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>ref</td>
<td>1.07 (0.91-1.27)</td>
<td>1.46 (1.21-1.77)</td>
</tr>
<tr>
<td>50-64</td>
<td>1.00 (0.73-1.38)</td>
<td>1.88 (1.34-2.63)</td>
<td>3.01 (1.81-5.00)</td>
</tr>
<tr>
<td>65-79</td>
<td>0.95 (0.84-1.07)</td>
<td>1.20 (1.04-1.39)</td>
<td>1.69 (1.32-2.17)</td>
</tr>
<tr>
<td>&gt;=80</td>
<td>1.58 (1.12-2.23)</td>
<td>3.0 (1.81-5.00)</td>
<td>1.69 (1.32-2.17)</td>
</tr>
</tbody>
</table>
VALIDATION OF THE SEAPI-S QUESTIONNAIRE
Elizabeth Tourville, MD, Joel Funk, MD, FACS, Christian Twiss, MD, FACS
University of Arizona College of Medicine
(Presented by: Elizabeth Tourville, MD)

Introduction: Unlike the SEAPI−QMM (Stress-related, Emptying ability, Anatomy, Protection, Inhibition, Quality of life, Mobility, and Mental status) patient questionnaire, the SEAPI−S is a physician-administered instrument to evaluate urinary incontinence. While the SEAPI−QMM has been validated, the SEAPI−S has not been formally validated, but is still commonly utilized in patient assessment and research. The objective is to evaluate the concurrent validity of the SEAPI−S with the validated UDI−6 (Urogenital Distress Inventory) and ISS (Incontinence Severity Score) in women undergoing evaluation for pelvic floor disorders.

Methods: A retrospective chart review was performed on new female patients presenting for evaluation of pelvic floor disorders from January 2013 to June 2014. Data was available on 46 patients who had a completed SEAPI−S, UDI−6 and ISS. Associations between similar symptom domains of the SEAPI−S, UDI−6 and ISS were evaluated by Pearson Chi Square analysis on an intent-to-treat basis. The study was approved by University of Arizona IRB.

Results: The mean age of the cohort was 63.3 years. Significant associations were noted between the SEAPI−S and the UDI−6 with regard to their common symptom domains of stress incontinence (SUI), Emptying, and urge incontinence (UUI). (Table 1) The UDI−6 does not assess pad use or urethral mobility (Anatomy). Additional significant associations were noted between the SEAPI−S and UDI−6 with regard to Emptying and Abdominal Pain, Anatomy and Small amount of leakage, Protection (pad use) and SUI, respectively. Significant associations were observed between the SEAPI−S and ISS with regard to their common symptom domains of SUI, Emptying, and Protection (pad use). (Table 1) Additional significant associations between the SEAPI−S and ISS were also noted for symptoms commonly associated with SUI, Emptying, and Protection. (Table 1)

Conclusion: Physician administration of the SEAPI−S correlates well with patient self-reporting of the same symptom domains on validated self-completed questionnaires. The SEAPI−S is a valid method for assessing symptoms relating to female urinary incontinence.

<table>
<thead>
<tr>
<th>UDI-6</th>
<th>SEAPI-1 SUI</th>
<th>SEAPI-2 Emptying</th>
<th>SEAPI-3 Anatomy</th>
<th>SEAPI-4 Protection</th>
<th>SEAPI-5 UUI</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDI-6-1</td>
<td>0.229</td>
<td>0.203</td>
<td>0.595</td>
<td>0.215</td>
<td>0.391</td>
</tr>
<tr>
<td>UDI-6-2 (UUI)</td>
<td>0.105</td>
<td>0.767</td>
<td>0.506</td>
<td>0.122</td>
<td><strong>0.013</strong></td>
</tr>
<tr>
<td>UDI-6-3 (SUI)</td>
<td><strong>0.006</strong></td>
<td>0.089</td>
<td>0.689</td>
<td><strong>0.023</strong></td>
<td>0.345</td>
</tr>
<tr>
<td>UDI-6-4 (Small amount)</td>
<td>0.074</td>
<td>0.057</td>
<td><strong>0.023</strong></td>
<td>0.116</td>
<td>0.179</td>
</tr>
<tr>
<td>UDI-6-S (Emptying)</td>
<td>0.881</td>
<td><strong>0.023</strong></td>
<td>0.235</td>
<td>0.555</td>
<td>0.237</td>
</tr>
<tr>
<td>UDI-6-6 (Abd pain)</td>
<td>0.419</td>
<td><strong>0.019</strong></td>
<td>0.329</td>
<td>0.518</td>
<td>0.105</td>
</tr>
<tr>
<td>ISS</td>
<td><strong>&lt;0.001</strong></td>
<td><strong>0.111</strong></td>
<td><strong>0.065</strong></td>
<td><strong>0.129</strong></td>
<td><strong>0.212</strong></td>
</tr>
<tr>
<td>ISS 1 (Emptying)</td>
<td>0.222</td>
<td>0.020</td>
<td>0.399</td>
<td>0.168</td>
<td>0.056</td>
</tr>
<tr>
<td>ISS 2 (Urgency)</td>
<td>0.815</td>
<td><strong>0.002</strong></td>
<td>0.655</td>
<td>0.396</td>
<td>0.237</td>
</tr>
<tr>
<td>ISS 3 (Nocturia)</td>
<td><strong>0.004</strong></td>
<td><strong>0.005</strong></td>
<td>0.864</td>
<td>0.500</td>
<td>0.591</td>
</tr>
<tr>
<td>ISS 4 (Frequency)</td>
<td>0.339</td>
<td>0.576</td>
<td>0.263</td>
<td><strong>0.036</strong></td>
<td><strong>0.102</strong></td>
</tr>
<tr>
<td>ISS 5 (SUI)</td>
<td><strong>0.001</strong></td>
<td>0.511</td>
<td>0.607</td>
<td><strong>0.012</strong></td>
<td>0.284</td>
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<tr>
<td>ISS 6 (UIU)</td>
<td>0.907</td>
<td>0.411</td>
<td>0.091</td>
<td>0.155</td>
<td></td>
</tr>
<tr>
<td>ISS 7 (Activity Leakage)</td>
<td>0.059</td>
<td>0.689</td>
<td>0.273</td>
<td><strong>&lt;0.001</strong></td>
<td>0.297</td>
</tr>
</tbody>
</table>
MANAGEMENT OF PATIENTS SEEKING CARE FOR STRESS URINARY INCONTINENCE OVER THE PAST FOUR YEARS: HAVE RATES OF MESH SLINGS DECREASED?

Aqsa Khan, MD, Nirit Rosenblum, MD, Benjamin Brucker, MD, Scott Smilen, MD, Ekene Enemchukwu, MD, Victor Nitti, MD
New York University, New York, NY

(Presented by: Aqsa Khan, MD)

Introduction: Release of the updated FDA Public Health Notification for vaginal mesh in July 2011, elicited concern for its use, thereby prompting release of a position statement by SUFU and AUGS in January 2014 regarding its safety for the use of slings. We sought to assess for changes in management trends in patients presenting to our institution with stress urinary incontinence (SUI).

Methods: Chart analysis was performed on patients assigned a primary International Classification of Diseases (ICD–9) diagnosis code of 625.6 for SUI at initial consultation by two providers at our institution between June 1, 2010 and May 31, 2014. Those with the code for mixed incontinence (788.33) or with pelvic organ prolapse with occult SUI were excluded to identify those presenting primarily for stress incontinence. Types of procedures performed per period were also analyzed: urethral bulking, mesh sling, or pubovaginal sling. Trends were assessed in six-month periods, for a total of 8 periods.

Results: A total of 285 new patients were identified with an increasing trend per period over time, except in the fifth period. One-hundred-and-eight patients underwent 134 procedures. Ninety-four patients underwent one, 11 had two, and five had three or more procedures. Six had repeat bulking(s), seven had a sling followed by bulking, and three had repeat sling placement. The median proportion that had a procedure per period was 39%, with a decreasing proportion from the third (57%) to fifth (33%) and last periods (15%). Initially all procedures were mesh slings, with a rapid decline in the third period and an increase in bulking procedures. Subsequently, there was a rise again in sling placement, namely with a drastic increase in pubovaginal slings. Of the 15-pubovaginal slings placed, ten were placed in patients that had a prior anti-incontinence surgery (eight for sling failure, vaginal mesh, or fixed urethra, and two in patients with mesh extrusion and/or erosion). Five were performed in patients that had never had prior surgery (two for very high-grade incontinence, and three in patients that expressed concern for mesh).

Conclusion: An increasing number of patients were seen for management of stress incontinence; 38% elected to undergo a procedure. There was a progressive decrease in the proportion of patients having anti-incontinence procedures after release of the FDA notification. An overall decrease in use of mesh slings was balanced by an increase in bulking, and more notably, placement of pubovaginal slings.
**Introduction:** In July 2011, the release of the updated FDA Public Health Notification regarding placement of mesh for vaginal procedures sparked concern in women seeking care for incontinence. In January 2014, SUFU and AUGS released a position statement regarding the safety of mesh use for slings as an adjunct to the notification. We sought to assess trends in incontinence management at our institution following release of both statements.

**Methods:** Patients that underwent either urethral bulking or sling procedure(s) at our institution between June 1, 2010, and May 31, 2014, were identified by Current Procedure Terminology (CPT-4 codes) 51715 and 57288, respectively. Chart analysis was performed to identify which procedures were performed, the type of sling placed (single incision, obturator, retropubic, or autologous fascia pubovaginal), and whether they were performed at time of prolapse repair. The data was analyzed in six-month periods, for a total of eight periods.

**Results:** Over four years, 473 patients underwent procedures. Urethral bulking was performed in 145 patients (251 total injections). Three-hundred-and-twenty-eight patients underwent 339 sling placements. There was a decline in the number of slings placed in the third period (32 compared to cohort median of 44) with a subsequent rise back to baseline. Conversely, urethral bulking decreased from 42 to 24 injections from the first period to the last. Single incision slings were no longer placed after the third period. Transobturator slings, initially the most commonly placed, were gradually replaced by retropubic slings and pubovaginal slings, which were utilized in 70% and 26% of cases by the last period. Four pubovaginal slings were placed because of patients’ concern of mesh. Thirty percent of slings were placed at the time of prolapse repair, with the lowest proportion during the first and last periods (17% and 24%) and the highest from June to November 2012 (50%).

**Conclusion:** Four-year trends in management of anti-incontinence procedures demonstrate a decrease in urethral bulking and a temporary decrease in sling procedures corresponding to the release of the FDA Notification. There was a rapid increase in the proportion of retropubic and pubovaginal slings. A small but notable number of patients elected to have a pubovaginal sling because of concern for mesh. Long-term analysis will need to be performed to continue to assess the impact of the notification on trends on anti-incontinence procedures.
INTRODUCTION: Our office sought to be a center of excellence for the treatment of overactive bladder (OAB). Despite being involved with research in the overactive bladder arena and being a referral center for refractory OAB cases, we suspected that many patients were not receiving available therapies. We wanted to improve the quality of care and outcomes for our OAB patients.

METHODS: We quantified our current state using overactive bladder related ICD9 and CPT codes, recording the number of patients seeking care, number of patients receiving non-pharmacotherapies, limited demographic information, and number of appointments. After in-depth investigation of our current state, Lean Six Sigma analysts from Medtronic Inc.’s continuous improvement division led multiple urology providers and employees through a five-day Kaizen (lean meeting) to analyze current barriers to care, to envision an ideal state, and to develop interventions for improved access to and quality of care delivered.

RESULTS: In 2012 and 2013 our office treated 8485 patients for overactive bladder related diagnoses. Thirty percent of patients had only one appointment. Thirteen percent of patients received conservative non-pharmacologic therapies (biofeedback or physical therapy) and 6% received advanced treatments (interstim, posterior tibial nerve stimulation, or Botox). Of those receiving non-pharmacotherapy, 8% received more than one type of therapy. Multiple interventions were developed to potentially improve the quality of care delivered. Many of these revolved around improved patient education and expectation management, frequent patient reassessment of satisfaction and improvement, streamlining processes to decrease number of appointments and wait time to therapy, and developing a “program” for our patients and providers.

CONCLUSION: Despite the intrinsic limitations of medications due to low efficacy and adherence, only 19 percent of our patients receive non-pharmacotherapy for overactive bladder, and patient dropout of therapies is high. After extensive analysis of our current state, multiple interventions have been proposed to improve access to care. Repeat analysis within our office, with associated quality of life data, will determine if these interventions were successful at improving incontinence outcomes and quality of care delivered to our overactive bladder population.
**Poster #NM40**  
**EFFECT ON CONCURRENT PROLAPSE SURGERY ON URGENCY AND FREQUENCY OUTCOMES FOLLOWING TVTO**  
MaryEllen Dolat, MD, Andrew Colhoun, MD, Joseph Habibi, MD, Zachary McDowell, BS and David Rapp, MD  
1VCU School of Medicine, Richmond, VA; 2Virginia Urology Center for Incontinence and Pelvic Floor Reconstruction, Richmond, VA  
(Presented by: Andrew Colhoun, MD)

**Introduction:** Recent literature has demonstrated a significant proportion of patients undergoing mid-urethral sling (MUS) placement experience improvement in urgency outcomes. The effect of concurrent pelvic organ prolapse (POP) surgery on urgency and frequency outcomes following MUS is unknown.

**Methods:** We performed a retrospective cohort analysis of patients undergoing TVTO in conjunction with POP repair (cystocele with mesh graft (CM), cystocele with cadaveric fascia (CF), colpopcelsis(C), and sacrocolpopexy(SCP)). Outcomes included validated measures of urgency and frequency (ICIQ-FLUTS frequency and urgency domains), measured pre-operatively and at six-weeks, one- and two-years post-operatively. Multi-variate analyses using mixed-effects regressions were used to assess for differences in outcomes over time based on POP repair type.

**Results:** 102 patients were identified for study analysis (CM, n=45; CF, n=37; SCP, n=16; C, n=4). Four patients undergoing colpocleisis were excluded from primary analysis given lack of sufficient cohort size. When adjusted for effects of covariates (age, prior hysterectomy/incontinence repair/prolapse surgery, preoperative POP stage), improvement in ICIQ-FLUTS frequency and urgency domains was seen in all three surgery groups across 2-year follow-up (p<0.05). There were no significant differences between POP surgery types in comparison of frequency and urgency outcomes at any assessment point or over time.

**Conclusion:** Patients undergoing concurrent POP surgery and TVTO demonstrate improvements in validated frequency and urgency outcomes through 2-years. No significant differences are seen in comparison of outcomes across a variety of POP repair types.

**Poster #NM41**  
WITHDRAWN

**Poster #NM42**  
WITHDRAWN
THE DIGITAL FOOTPRINT OF ACADEMIC UROLOGISTS: HOW, DOES FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY STAND?

Bradley Gill, MD, MS1, Margaret Knoedler, BS2, Paurush Babbar, MD1, Daniel Shoskes, MD1 and Sandip Vasavada, MD1

1Cleveland Clinic, Cleveland, Ohio; 2Tulane University School of Medicine, New Orleans, Louisiana

(Presented by: Bradley Gill, MD, MS)

Introduction: In the digital age, internet searches are the primary source of medical insight and physician contact information for many patients. Similar to e-commerce, digital venues exist to share opinions and ratings of physicians. When searching online for physicians, such ratings sites often appear on the first page of search results, which most people do not navigate past. This project described the digital footprint of academic urologists in female pelvic medicine and reconstructive surgery (FPMRS) practices.

Methods: Using Microsoft Internet Explorer, a search using Google was performed for all Society for Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction board members, past presidents, and fellowship directors. The first page of search results was reviewed and each hit was categorized as one of the following: Institutional Page (IP), Group or Society Page (GS), Rating Site (RS), Online Interview or Multimedia (MM: Podcast, YouTube), Journal Article or Book (JB), Social Media (SM: Twitter, Google+, Blog, Facebook), professional profile (PP: Map, LinkedIn, WebMD, Doximity), or hit for another person (AP). Results were restricted to individuals currently in practice with the absence of a specific type of site for an individual excluded during analyses. General descriptive statistics were calculated, as were paired comparisons between SUFU roles and basic correlations with the number of rating sites.

Results: A median 11 [Q1–Q3: 10–11] hits returned on the first page with 2 [2–3] being IP and 1 [1–2] being a GS. Frequent RS, with 4 [3–5] hits, were noted while AP 6 [3–7] were most common. Little SM use appeared, with only 1 [1–1] SM, 1 [1–2] PP, and 1 MM [1–2] hit. Similarly, only 1 [1–2] JB returned. Overall, 6 [5–7] results were physician-controllable content. Having IP (correlation coefficient: −0.38, p 0.001) and GS (−0.34, p 0.023) were negatively associated with RS hits. As expected, GS were 3.41 (p 0.009) times more common among SUFU board members, while past SUFU presidents were 3.03 (p 0.046) times more likely to have JB, and SUFU fellowship directors were 1.43 (p 0.021) more likely to have IP return.

Conclusion: There is poor visibility of high-stakes SUFU members in social media with many having physician rating sites or results for other individuals comprise most of their web search results. Increased social media involvement could help benefit SUFU visibility.
**Video #1**  
**CHRONIC PELVIC PAIN & SUI RESOLUTION AFTER LAPAROSCOPIC TVT _REMOVAL & BURCH/PARAVAGINAL REPAIR**  
John Miklos, Robert Moore, DO, Orawee Chinthakanan, MD  
International Urogynecology Associates, Atlanta, GA  
(Presented by: John Miklos)

A patient with synthetic mesh retropubic sling continues to suffer from stress urine incontinence as well as a cystocele and new onset vaginal and lower abdominal pain. Her symptoms are successfully treated with a combined vaginal and laparoscopic TVT removal with simultaneous Burch and paravaginal repair.

**Video #2**  
**OBTURATOR NEURALGIA: COMPLETE RESOLUTION AFTER TRANSVAGINAL LAPAROSCOPIC TVT REMOVAL**  
John Miklos, Robert Moore, DO, Orawee Chinthakanan, MD  
International Urogynecology Associates, Atlanta, GA  
(Presented by: John Miklos)

A patient sustains obturator neuralgia and gait disturbance after a TVT synthetic retropubic sling. Complete resolution of symptoms were noted after removal of the obturator muscle and never embedded synthetic mesh by both a transvaginal and laparoscopic approach.

**Video #3**  
**THE 26−MINUTE SACRAL COLPOPEXY: DO WE NEED ROBOTIC TECHNOLOGY?**  
John Miklos, Robert Moore, DO  
International Urogynecology Associates, Atlanta GA  
(Presented by: John Miklos)

The purpose of this video is to not only demonstrate the technical steps and efficiency of laparoscopic sacral colpopexy, but also review the comparative laparoscopic and robotic assisted sacral colpopexy literature and challenge robotic surgeons conventional wisdom.

**Video #4**  
**TRANSABDOMINAL SACROCOLPOPEXY WITH RECTUS FASCIA GRAFT**  
Adrienne Quirouet, MD¹, Nitya Abraham, MD² and Howard Goldman, MD¹  
¹Cleveland Clinic, Cleveland, OH; ²Montefiore, Bronx, NY  
(Presented by: Adrienne Quirouet, MD)

This video will demonstrate Transabdominal sacrocolpopexy with rectus fascia graft.

**Video #5**  
**ROBOTIC URETERAL REIMPLANTATION FOR IATROGENIC DISTAL URETERAL INJURY**  
Sarah McAchran, MD, Granville Lloyd, MD  
Madison, WI  
(Presented by: Sarah McAchran, MD)

Open ureteral reimplantation is the gold standard treatment of distal ureteral injuries. This video outlines the benfits of approaching this surgery robotically and illustrates key points in the repair and provides suggestions for optimizing outcomes.
Video #6
IDENTIFICATION OF THE S3 FORAMEN DURING TRANSFORAMINAL SACRAL NEUROMODULATION LEAD PLACEMENT- A NOVEL "ROLLING PEN" TECHNIQUE
Kristi Hebert, MD, Amanda Saltzman, MD1, Howard Woo, MD2 and Ryan Krlin, MD3
1Louisiana State University/Ochsner Clinic Foundation, New Orleans, Louisiana; 2Ochsner Clinic Foundation; 3Louisiana State University
(Presented by: Amanda Saltzman, MD)

We describe a novel technique for identifying the S3 foramen during sacral neuromodulation implantation. This technique eliminates the need for fluoroscopy during foramen identification and is currently being used by the 2 highest volume sacral neuromodulation implanters in the state of Louisiana.
**Reducing Operating Room Turnover Time for Robotic Pelvic Surgery**

Colby E. Perkins, BA1, Ken Catchpole, PhD2, Lauren N. Wood, MD3, Jonathon Solnik, MD4, Raymund M. Avenido, RN2, Paul L. Strauss, MD5, Karyn S. Eilber, MD2, and Jennifer T. Anger, MD, MPH3

1David Geffen School of Medicine at UCLA, Los Angeles, CA; 2Department of Surgery, Cedars-Sinai Medical Center, Los Angeles, CA; 3Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA; 4Department of Obstetrics and Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA; 5Department of Anesthesiology, Cedars-Sinai Medical Center, Los Angeles, CA

(Presented by: Lauren N. Wood, MD)

**Introduction:** Operating room (OR) turnover times for robotic pelvic surgery are typically longer than that of open surgery and often vary significantly within a single institution. Roles for OR staff during turnover are not well defined. We sought to improve robotic OR turnover time by designating roles for staff members involved in OR turnovers.

**Methods:** Observation of 45 baseline robotic OR turnovers was performed by trained observers. Room ready time (RRT) was defined as a patient exiting the OR until the room was cleaned and ready to receive the next patient. Total turnover time (TTT) was defined as time of first patient exiting to second patient entering the OR. Following baseline data collection, tasks were assigned using the “pit stop” model (Catchpole, 2007). Roles included “circulator”, “scrub technician”, “robotic support” and “environmental services 1” and “2”. These pre-assigned roles were specified on cards mounted in the OR. All assignments were unambiguous. Post intervention observations were conducted and RRT and TTT were compared pre- and post intervention.

**Results:** TTT was 100.5 minutes (min) (n=45, 95% confidence interval (CI)=89.3–111.4) pre-intervention, 43.4 min (n=10, 95% CI=29.3–57.5) one month after the intervention, and 50.5 min (n=34, 95% CI 44.5–56.6) at three months post intervention. The difference in the mean TTT between the baseline (n=45) and three months post intervention (n=34) was 50.0 min (95% CI=36.0–64.0, t=7.1, df=77, p<0.0001). Average RRT was 42.2 min (n=45, 95% CI=36.7–47.7) before the intervention, which was reduced to 21.8 min (n=10, 95% CI 18.4–25.2) after one month and 25.6 min at three months (n=34, 95% CI 23.2–28.0). The difference in the mean RRT between the baseline (n=45) and three months post intervention (n=34) was 16.6 min (95% CI=9.8–23.4, t=4.9, df=99, p<0.0001). (Figure 1).

**Conclusion:** With the implementation of the “pit stop” model, OR TTT and RRT can be significantly reduced after one month and sustained at three months. However, multiple outside factors were found to prevent a reduction in TTT to align with RRT, such as preoperative area delays.

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**Figure 1:** Room ready time (RRT) and total turnover time (TTT) at baseline and post intervention.
Podium #19
ASSESSING THE LEARNING CURVE OF ROBOTIC SACROCOLPOPEXY
Brian Linder, MD, Mallika Anand, MD, Amy Weaver, MS, Joshua Woelk, MD, Christopher Klingele, MD, Emanuel Trabuco, MD, John Occhino, MD, John Gebhart, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

Introduction: To evaluate the learning curve of robotic sacrocolpopexy, adjusted for surgical risk.

Methods: The records of 145 robotic sacrocolpopexies performed by urogynecologists at Mayo Clinic, Rochester, MN from February 2007 to December 2013 were reviewed. Outcomes of interest included operative time, intraoperative complications (cystotomy, bowel or ureteral injury), and intraoperative or postoperative complications with a Clavien-Dindo grade ≥ 2 within six weeks of surgery. The learning curve was evaluated by risk-adjusted cumulative summation (cusum) analysis for all cases performed by the surgeon with the highest robotic sacrocolpopexy volume (n=114). Risk-adjusted cusum analysis was performed by comparing a calculated complication risk score to observed patient outcomes, and then cumulatively recalculating the rate of expected versus observed complications after each procedure, allowing for a longitudinal evaluation of the learning curve.1 Proficiency was defined as the point at which the surgeon’s cusum curve crossed the reference line, indicative of a complication rate better than expected, given the patient’s risk factors.

Results: During the seven-year time frame of the study, median operative time decreased from 5.3 hours during the first 12 months to 3.6 hours in the most recent 12 months, and plateaued after 60 cases. A higher ASA classification was associated with a significantly increased risk of intraoperative complication (p=0.02), and a higher Charlson Comorbidity Index was associated with intraoperative or postoperative complications (p=0.01). In risk-adjusted cusum analyses, accounting for these two factors, as well as BMI and number of vaginal deliveries, proficiency was identified at 55 cases for intraoperative complications and 84 cases for intraoperative or postoperative complications.

Conclusion: Operative time plateaued after the first 60 cases, whereas complication rates continued to decrease beyond this. Proficiency, as determined by a risk-adjusted cusum analysis for complication rates, was achieved after performing approximately 84 robotic sacrocolpopexies. Evaluation of postoperative complications as well as intraoperative complications, in a risk-adjusted model, is critical in depicting the learning curve.

Funding: None

Podium #20
DERMAL GRAFT (AXIS) AUGMENTED CYSTOCELE REPAIR; FIVE YEARS FOLLOW-UP
Saad Juma, MD
Incontinence Research Institute, Encinitas, CA
(Presented by: Saad Juma, MD)

Introduction: Surgical repair options for Pelvic organ prolapse (POP) include; native tissue, allograft, xenograft and synthetic graft repair. Human dermal allograft has excellent tensile strength and no histocompatibility antigen. The objective is to evaluate long-term (>5 years) safety and efficacy of cystocele repair using solvent dehydrated dermal graft (AXIS).

Methods: Records of 368 patients who had dermal graft (AXIS) augmented cystocele repair were reviewed. Those with minimum follow-up of 60 months are the subjects of this study. Quality of life questionnaire [Incontinence Impact Questionnaire IIQ, Urogenital Distress Inventory UDI, and Visual Analogue Scale VAS] are used to measure subjective outcome, and grade of cystocele on pelvic exam is used to measure objective outcome. Recurrent cystocele grade≥2 and/or repeat cystocele repair are considered objective failure. Student t-test is used for statistical analysis.

Results: Fifty-one patients with mean age 64 years, BMI 26.8, and follow-up 92±21 (60−141) months met the inclusion criteria. Preoperatively, 41 had stress incontinence (SUI), 32 urge incontinence (UUI), and mean pad/day use was 1.65. Mean scores on IIQ 13, UDI 10, and VAS 1.3. Eight patients had symptomatic grade 1, 19 grade 2, 20 grade 3, and 4 grade 4 cystocele. All patients had cystocele repair with/without vaginal sling and/or POP repair procedures as needed. Postoperatively, 18 had SUI, 23 UUI, and pad/day 1.11 (P=0.07). Mean QOL scores are IIQ 4.3 (P<0.05), UDI 4.15 (P<0.05), and VAS 6.47(P<0.05). Twenty-nine had no recurrent cystocele, 15 had grade 1, 4 grade 2, and 3 grade 3 cystocele. Eleven (22.91%) had recurrent cystocele grade ≥2 and/or repeat cystocele repair. One patient had transient hydronephrosis with spontaneous resolution, one had sling extrusion that was excised, and one had sling removal for urethral obstruction. No dyspareunia, dermal graft extrusion, visceral, neural or vascular injury.

Conclusion: This retrospective series is the first for cystocele repair using dermal graft with >5 years follow-up. It represents the series with the longest follow up for dermal graft augmented cystocele repair reported to date. Subjective and objective outcomes are consistent with those reported in other series at shorter follow-up. These data validate the safety and efficacy of dermal grafts for pelvic reconstruction procedures.

Financial support: Educational grant, Coloplast Corporation, Minneapolis, MN.
PROLAPSE RECURRENCE AFTER TRANSVAGINAL MESH REMOVAL

Tanner Rawlings¹, Rebecca S. Lavelle, MD², Burhan Coskun, MD², Feras Alhalabi, MD², Alana Christie² and Philippe E. Zimmern, MD²
¹UT Southwestern Medical School, Dallas, Texas; ²UT Southwestern Medical Center, Dallas, Texas
(Presented by: Tanner Rawlings)

Introduction: Due to patients’ concerns regarding pelvic organ prolapse (POP) recurrence after transvaginal mesh removal (TMR), we reviewed our rate of POP recurrence after TMR.

Methods: Following IRB approval, a prospective database of women undergoing TMR for complications after transvaginal mesh placement with at least one year minimum follow-up was queried for POP recurrence. Exclusion criteria included TMR via an abdominal approach (3). Recurrent POP was defined as either > Stage 1 on examination or need for re-operation at the site of TMR. Outcome measures were based on POP-Q at last visit.

Results: From 2007–2013, 47 of 67 women met inclusion criteria (Table 1). Thirteen women were lost to follow up and four had less than one year follow up. Mesh types included Avaulta (5), Prolift (23), Perigee (6), Elevate (2), Pinnacle (1) Prosima (1) and unknown (9). Interval between insertion and removal was 45 months (10–165). Indications for TMR are reported in Table 1a, with 94% presenting with multiple indications. POP recurrence rate was 17% (n=8), at a mean follow-up of 29 months (12–78). Six patients underwent surgery for recurrent POP at mean 15 months (5–52). Two patients chose observation. Repair procedures included native tissue repair with anterior vaginal wall suspension with cystocele repair (4) and mesh sacrocolpopexy (2) (Table 1b). No posterior POP recurrence were noted.

Conclusion: At a mean 2–3 years follow-up, POP recurrence at the site of TMR was seen in 17%, with the majority electing to undergo surgical repair.

Table 1a: Baseline Patient Characteristics and POPQ Measurements

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (Range)</th>
</tr>
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<tbody>
<tr>
<td>Mean age</td>
<td>56 (38-77)</td>
</tr>
<tr>
<td>Mean parity</td>
<td>2 (0-8)</td>
</tr>
<tr>
<td>Mean BMI</td>
<td>24 (20-29)</td>
</tr>
<tr>
<td>Post-menopausal patients (%)</td>
<td>35</td>
</tr>
<tr>
<td>Hormone replacement therapy (%)</td>
<td>23</td>
</tr>
<tr>
<td>Patients reporting sexual activity (%)</td>
<td>42</td>
</tr>
<tr>
<td>Dyspareunia (%)</td>
<td>18</td>
</tr>
<tr>
<td>Pelvic pain (%)</td>
<td>27</td>
</tr>
<tr>
<td>Mesh erosion (%)</td>
<td>23</td>
</tr>
<tr>
<td>UTI (%)</td>
<td>24</td>
</tr>
<tr>
<td>Vaginal discharge (%)</td>
<td>10</td>
</tr>
<tr>
<td>POPQ before mesh erosion</td>
<td>-26 (-3-0)</td>
</tr>
<tr>
<td>POPQ After mesh erosion</td>
<td>-28 (-3-0)</td>
</tr>
</tbody>
</table>

Table 1b: Location of mesh excision and recurrence characteristics

<table>
<thead>
<tr>
<th>Location</th>
<th>n</th>
<th>R (%)</th>
<th>Ant (A)</th>
<th>Initial</th>
<th>Post-up</th>
<th>Last Visit</th>
</tr>
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<tbody>
<tr>
<td>Anterior</td>
<td>11</td>
<td>2</td>
<td>A (2)</td>
<td>6.9 (5-8)</td>
<td>-1.5</td>
<td>-3</td>
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<tr>
<td>Posterior</td>
<td>9</td>
<td>0</td>
<td></td>
<td>-1</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>Anterior/Posterior</td>
<td>4</td>
<td>3</td>
<td>M (1) A (2)</td>
<td>9 (6-13)</td>
<td>-2</td>
<td>-3</td>
</tr>
<tr>
<td>Apex</td>
<td>17</td>
<td>2</td>
<td>M (1) A (1)</td>
<td>31 (10-52)</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>Ant/Post/Apex</td>
<td>2</td>
<td>2</td>
<td></td>
<td>-3</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>Apex/Anterior</td>
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<tr>
<td>Anterior/Posterior</td>
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<td>0</td>
<td></td>
<td>-1</td>
<td>-1</td>
<td>-2</td>
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</table>

Table 2: Time to reoperation (months) and POPQ Measurements

<table>
<thead>
<tr>
<th>Site of R</th>
<th>Initial</th>
<th>Post-up</th>
<th>Last Visit</th>
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<tbody>
<tr>
<td>Aa</td>
<td>-1.5</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>Ap</td>
<td>-28</td>
<td>-3</td>
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Podium #22
ANALYSIS OF SEXUAL FUNCTION CHANGES IN WOMEN UNDERGOING PELVIC ORGAN PROLAPSE REPAIR WITH ABDOMINAL OR VAGINAL APPROACHES
Priyanka Gupta, MD1, Michael Ehlerdt, MD1, James Payne2, Kim A. Killinger, MSN1, Judith A. Boura, MS1,2, Wendy Price RN, BSN1, Melissa Fischer, MD1,2 and Larry T. Sirls, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Introduction: Discomfort with sexual intercourse contributes to sexual inactivity in women with pelvic organ prolapse (POP). We examined changes in sexual activity after abdominal and transvaginal POP repair.

Methods: Women enrolled in our prospective, longitudinal prolapse database that had abdominal (AR) or transvaginal repair (TVR) of POP between 12/19/2008 through 6/4/2014 were evaluated. Patients were assessed with the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ−12) and the Pelvic Floor Distress Inventory (PFDI−20) preoperatively, and postoperatively at six months and one and two years. Data were analyzed with Pearsons Chi square, Fisher’s Exact, Wilcoxon rank sum tests, and repeated measures.

Results: 204 of 300 women met inclusion criteria: 74/204 had AR and 130/204 had TVR. The AR group were younger (60 vs. 64 yrs; p=0.019), had higher-grade mean anterior prolapse (3.1 vs. 2.6; p=0.006), apical prolapse (3.1 vs. 2.1; p<0.0001), and uterine prolapse (3.0 vs. 2.1; p=0.027). Marital status, parity, menopausal status, and/or midurethral sling placement were similar between groups. In both groups approximately 50% of patients were sexually inactive prior to surgery. (Table 1) The most common reason for inactivity was due to discomfort for AR and no partner for TVR. At six months, one year, and two years the number of patients that were inactive due to discomfort decreased, however, the proportion of sexually inactive patients in each surgical group was not statistically different at any time point. PISQ scores improved similarly in both the AR and TVR groups over time (p<0.0001), as did PFDI scores (p<0.0001). The majority of women in the AR and TVR groups were satisfied/extremely satisfied with treatment at one year (77.5% and 64.8%) and two years (73.9% and 73.5%).

Conclusion: Sexual function improved similarly in patients after abdominal and transvaginal POP surgery.

Funding: Ministrelli Program for Urology Research and Education (MPURE)
Podium #23
ASSESSING RESIDENT SURGICAL VOLUME BEFORE AND AFTER INITIATION OF A FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY FELLOWSHIP
Zaid Chaudhry, MD, Christopher Tarnay, MD
UCLA, Los Angeles, CA
(Presented by: Zaid Chaudhry, MD)

Introduction: Resident surgical volume is an important proxy for resident surgical proficiency. This data is used by the Accreditation Council on Graduate Medical Education (ACGME) for the purposes of setting national standards. Past studies in general surgery have shown mixed effects of fellowship on resident surgical volumes showing either no change or decreased experience. This has not been clearly assessed in pelvic surgery. The field of female pelvic medicine and reconstructive surgery (FPMRS) was recently accredited and now programs will continue to contend with balancing fellow and resident surgical experience. The main objective of our study is to examine obstetric and gynecology resident surgical trends of vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH) which includes robotic assistance. These two procedures are performed commonly by pelvic reconstructive surgeons. We covered six years, consisting of three years before and after initiation of a FPMRS fellowship at a single institution.

Methods: ACGME case logs were reviewed for residents who graduated from the three years before the start of the fellowship (2008−2011) and the three years after (2011−2014). Each resident class has a complement of seven residents. VH and LH values were compared using the t-Test with a p<0.05 being significant. VH and LH values from the primary urogynecologist at our institution were reviewed during this same time period to examine trends in division volume.

Results: In the three years before the start of the fellowship, 20 residents had complete data while 21 residents had complete data after the start of the fellowship. The mean number of total VH performed before fellowship initiation was 28.4 (+/− 7.1). The mean number of VH after the fellowship was 22.1 (+/−5.6). The difference between these two groups was significant (p=0.0036). During this same time period, mean VH procedures by the urogynecologist increased. The mean number of LH before the start of the fellowship was 30.3 (+/− 10.8). The mean number of LH after the start of the fellowship was 33.5 (+/−6). The difference between the groups was not statistically significant (p=0.25). During this same time period, mean LH procedures by the urogynecologist increased.

Conclusion: Resident VH numbers showed a significant decline after initiation of the FPMRS fellowship while LH numbers did not significantly change. Further analysis of other FPMRS fellowships is needed to examine these trends along with assessing resident involvement in FPMRS cases.
READMISSIONS AND HEALTH RESOURCE UTILIZATION SUBSEQUENT TO ROBOTIC SACROCOLPOPEXY
Vani Dandolu, MD, MPH, MBA, Meghana Reddy, Lannah Lua, MD, Prathamesh Pathak B. Parm, MS
UNSOM, Las Vegas, NV
(Presented by: Vani Dandolu, MD, MPH, MBA)

Introduction: To report on rate of readmissions and health resource utilization during the first 90 days after Sacrocolpexy with and without robotic assistance

Methods: Marketscan CCAE databases 2008–2012 were used for analysis. Urogynecologic procedures and concurrent use of robot were identified by cpt procedure codes. Entire cost for hospitalization including Hospital, Physician, all providers, pharmacy and facility costs were identified (total cost). Cost for laparoscopic sacrocolpexy with and without concurrent hysterectomy in robotic and non-robotic categories were calculated. For the same categories, costs were calculated during the first 90 days after the procedure for all inpatient/outpatient/Emergency room /pharmacy claims. Cost was inflation-adjusted to mid-year estimate for 2014 using the medical component of CPI.

Results: There were 133,281 urogynecologic procedures over five years. Robot use gradually increased and in the year 2012, 24.62% sacrocolpexy procedures reported concurrent robotic use. The rates were similar whether the procedure was associated with hysterectomy or not.

Mean total cost averaged $18,598 for robotic SCP with hysterectomy vs. $15,502 for laparoscopic SCP with hysterectomy. The difference was less ($1517) when hysterectomy was not involved.

Follow-up costs (for all inpatient/outpatient/Emergency room /pharmacy claims) during the first 90 days after procedure were much less in robotic cases. In sacrocolpexy with hysterectomy f/u costs for 90 days were $2427 vs. $3707 when robot was not used. In cases without hysterectomy the difference was $3528 (robotic) vs. $4786 (laparoscopic). Because of lower follow up costs, the total cost for procedure and follow-up was similar in robotic and laparoscopy cases ($20,303 vs. $20,044) without hysterectomy; however, in cases with hysterectomy robotic cases continued to be pricier $21,026 vs. $19,210.

Readmissions were reported in 3.25% of robotic cases vs. 4.88% of laparoscopic cases (OR=0.65, 95%CI 0.52–0.83). There difference in rate of at least one ER visit (11.0 vs. 10.4%) or outpatient visits ≥10 in first 90 days (8.74% vs. 8.36%) was minimal.

Conclusion: Readmission rates and costs (pharmacy, inpatient and outpatient costs together) during first 90 days after sacrocolpexy were lower with robotic assistance.
OUTCOME OF DIRECT VISUAL INTERNAL URETHROTOMY (DVIU) FOR POST-URETHROPLASTY STRICTURES

Stephen Mock, MD, Elizabeth Brown, MD, W. Stuart Reynolds, MD, Melissa R. Kaufman, MD, PhD, Douglas F. Milam, MD, Roger R. Dmochowski, MD
Vanderbilt University Medical Center, Nashville, TN
(Presented by: Stephen Mock, MD)

Introduction: Urethroplasty is regarded as a definitive procedure for male urethral stricture disease (USD) as it is a highly successful, durable and cost-effective treatment. Nevertheless, recurrence can occur and limited data exists regarding optimal approaches in these circumstances. This analysis reports outcomes of DVIU in the setting of post-urethroplasty recurrent stricture.

Methods: Patients who underwent urethroplasty and subsequent DVIU between 1999 and 2013 were identified by CPT codes. Patient demographics, surgical details, and stricture properties were retrospectively reviewed. Excluded were patients who underwent DVIU at the non-urethroplasty site, those who had a multiple prior urethroplasties, and those who had a history of Urolume stent placement. Treatment success was defined as lack of symptomatology and need for no additional interventions, including dilation and self-intermittent catheterizations (SIC). Statistical analysis was performed via two sample t-test or Fisher exact tests, as appropriate to evaluate variables associated with success.

Results: Four-hundred-and-thirty-six (436) urethroplasties were performed in 404 patients between 1999 and 2013. Sixty patients recurred (14.8%) and underwent either an endoscopic procedure (77%) or a repeat urethroplasty (13%). Thirty-four (34) met incision criteria (Table 1). DVIU was successful in 11 of 34 patients (32%); repeat DVIU was successful in five of six patients. Of the failures, patients were managed with SIC (9), repeat urethroplasty (3), urethral dilations (3), observation (1). Treatment success did not differ by age, stricture length, time between urethroplasty and DVIU, etiology, stricture location, nor urethroplasty type (p=0.54, 0.64, 0.96, 0.79, 0.72, 0.31, respectively). Multivariate regression analysis of these factors was not significant.

Conclusion: DVIU for a post urethroplasty stricture recurrence may be offered as a minimally invasive treatment option, with nearly one-third of patients with a durable response, and the majority of DVIU initial failures demonstrating success following a second procedure. Surprisingly, no patient or operative findings tested were correlated with improved outcome.

Table 1. Patient and operative findings

<table>
<thead>
<tr>
<th>Patient and operative findings</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (years)</td>
<td>47.6 (18-80)</td>
</tr>
<tr>
<td>Median stricture length (cm)</td>
<td>3.75 (1.5-7)</td>
</tr>
<tr>
<td>Urethroplasty to DVIU (months)</td>
<td>9.7 (1.0-59)</td>
</tr>
<tr>
<td>Urethroplasty to last visit (months)</td>
<td>33.7 (6.6-177)</td>
</tr>
<tr>
<td>Etiology of stricture</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>17 (50)</td>
</tr>
<tr>
<td>Pelvic fracture</td>
<td>11 (32)</td>
</tr>
<tr>
<td>Iatrogenic</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Radiation</td>
<td>2 (6)</td>
</tr>
<tr>
<td>STD</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Dermatologic</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Stricture location</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Meatal/foreskin/penile</td>
<td>5 (15)</td>
</tr>
<tr>
<td>Bulbar</td>
<td>16 (47)</td>
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<tr>
<td>Prostatiomembranous</td>
<td>13 (38)</td>
</tr>
<tr>
<td>Urethroplasty technique</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Anastomotic</td>
<td>13 (38)</td>
</tr>
<tr>
<td>Buccal onlay</td>
<td>18 (53)</td>
</tr>
<tr>
<td>Pedicle flap</td>
<td>3 (9)</td>
</tr>
</tbody>
</table>
PREDICTORS OF SYMPTOMATIC URETERO-ENTERIC ANASTOMOTIC STRICTURES AFTER RADICAL CYSTECTOMY AND URINARY DIVERSION

Katherine Brewer, MD¹, Gillian Stearns, MD², Guido Dalbagni, MD² and Jaspreet Sandhu, MD²

¹Icahn School of Medicine at Mount Sinai; ²Memorial Sloan Kettering Cancer Center

(Presented by: Katherine Brewer, MD)

Introduction: Uretero-enteric anastomotic strictures (UAS) are relatively uncommon after radical cystectomy (RC). They are associated with significant morbidity, often requiring prompt surgical intervention. Little published data exists regarding predisposing factors for UAS. In this study we determined predictors of symptomatic UAS following RC and urinary diversion.

Methods: There were 3,027 consecutive patients who underwent open RC at our institution between 1995 and 2014. Data was collected from institutional surgical and morbidity databases as well as individual medical records. Symptomatic UAS was defined as antegrade percutaneous nephrostomy tube insertion secondary to either rising creatinine or hydronephrosis. Clinicopathologic characteristics were compared between those who developed UAS and those who did not. Patients requiring nephrostomy tube less than 30 days postoperatively for a urine leak were only included if leak resolved and symptomatic UAS later developed. Statistical analysis was performed with Chi-squared and Student’s t-test.

Results: Symptomatic UAS developed in 101 out of 3027 patients (3.3%) following RC with a mean and median postoperative follow-up of 24 and 12.9 months respectively (0.5 to 90.2 months). Fifty-one patients had left sided strictures, 37 right, and 13 bilateral. Three factors were found to be predictive in the development of UAS: gender, type of urinary diversion and neoadjuvant chemotherapy. 83.2% of patients developing UAS were male as compared to 74.2% of patients without stricture development (p=0.04). There was a statistical difference in urinary diversion between groups, in which patients with continent urinary diversions were more likely to develop UAS (p<0.01). Patients receiving neoadjuvant chemotherapy were more likely to develop stricture, occurring in 39.2% of UAS patients and 19.4% non-UAS patients (p<0.01). No statistical difference was found between the two groups when comparing patient age, body mass index (BMI), and ASA.

Conclusion: Patient factors such as gender, urinary diversion approach, and neoadjuvant chemotherapy influence the development of symptomatic UAS after radical cystectomy and urinary diversion. Patient characteristics and disease-specific factors may help predict which patients are vulnerable to formation of uretero-enteric anastomotic strictures.
A PROSPECTIVE EVALUATION OF COMPLICATIONS AFTER ARTIFICIAL URINARY SPHINCTER PLACEMENT AND THEIR IMPACT ON DEVICE SURVIVAL

Brian Linder, MD, Joshua Piotrowski, Matthew Zieglemann, MD, Tanner Miest, Marcelino Rivera, MD, Christina Ogle, MD, Daniel Elliott, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)

**Introduction:** To evaluate peri-operative complications in patients undergoing primary artificial urinary sphincter placement and the potential impact of these complications on device outcomes.

**Methods:** We prospectively evaluated the outcomes of 197 consecutive AUS implantation procedures performed at Mayo Clinic from 2012−2014 for post-prostatectomy incontinence. Of these, 100 were primary implantations and comprise the study cohort. Perioperative complications were defined as occurring within the first six weeks postoperatively and classified by Clavien-Dindo Classification. After office evaluation at 6 weeks, patients were followed symptomatically. Patient follow-up was obtained through office examination and telephone correspondence.

**Results:** Patients undergoing primary AUS implantation had a median age of 72.1 (IQR 66, 76). The overall rate of any complications within 6 weeks of surgery (Clavien I−V) was 35%, including urinary retention (30%), cellulitis (1%), device infection (2%) and urethral erosion (2%). No significant differences in pertinent clinical comorbidities such as age (p=0.69), hypertension (p=0.95), coronary artery disease (p=0.57), diabetes mellitus (p=0.17), BMI (p=0.47), prior pelvic radiation therapy (p=0.45), prior urethral sling placement (p=0.91) or transcorporal urethral cuff placement (p=0.22) were found between those with and without complications. The median follow-up was similar between those with and without postoperative urinary retention (p=0.14). The presence of postoperative urinary retention was associated with adverse six-month device survival (75% versus 89%; p=0.03).

**Conclusion:** The most common complication of AUS placement is urinary retention and serious adverse events following AUS placement are rare. The presence of postoperative urinary retention is associated with adverse short-term device survival rates.

Financial Funding: None
Michael Ehlert, MD, Kim A. Killinger, RN, MSN, Judith A. Boura, Jason Gilleran, MD, Priyanka Gupta, MD, Cheryl Wolfert RN, Jamie Bartley, DO, Kenneth M. Peters, MD
Beaumont Health System, Royal Oak, MI
(Presented by: Michael Ehlert, MD)

Introduction: Some have hypothesized that patients with lower functional bladder capacity (FBC) experience less improvement in symptoms after staged neuromodulation procedures. Therefore, we evaluated the impact of baseline FBC on generator implant rate and symptom changes.

Methods: Adults enrolled in our prospective observational neuromodulation study were evaluated. Functional bladder capacity (FBC) was defined as average volume per void on three day voiding diary. Data were collected from medical records, and validated Interstitial Cystitis Symptom/Problem Indices (ICSI−PI) and Overactive Bladder Questionnaire (OABq) symptom severity and health related quality of life (HRQOL) domains, and examined with descriptive statistics, Wilcoxon rank sum tests, logistic regression, and Spearman Correlation Coefficients.

Results: Of 242 patients (mean age 59.1 ± 16.8 years; 84% female), most had urinary urgency/frequency with or without urge incontinence (62%) and a sacral lead placed (81%); 19% had the lead placed at the pudendal nerve. Mean FBC at baseline was 156.5 ± 96.6 ml. 223/242 (92%) had ≥50% improvement in overall symptoms after lead placement with subsequent generator implant. Baseline FBC was similar between implanted/not implanted patients (p=0.25), however implanted patients had a median 20.7% increase in FBC after lead placement compared to explanted patients whose FBC decreased by median 2.7% (p=0.005). Logistic regression identified a strong relationship between percent change in FBC after lead placement and generator implant (p=0.0058) but there was no relationship between baseline FBC (ml) and subsequent generator implant. At three months, a lower pre-implant FBC weakly predicted a greater improvement in OAB−q HRQOL from baseline (p=0.035; r = −0.23). FBC (ml) at baseline, or percent change in FBC after lead placement, had no relationship with achieving at least 50% improvement in ICSI−PI or OAB−q symptom severity scores at three months.

Conclusion: Lower baseline FBC should not be a contraindication to neuromodulation since there was no impact on outcomes. Improved FBC after lead placement may have contributed to overall improvements in symptoms leading to generator implant. Improvement in FBC was equal to or greater than that seen in medical treatment trials for OAB.

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DIFFERENCES BETWEEN VOLTAGE THRESHOLD FOR MOTOR RESPONSE DURING STAGE 1 NEUROMODULATION IMPLANT

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(Presented by: Jason Gilleran, MD)

Introduction: Sacral neuromodulation is performed as a staged implant using motor responses to identify the S3 nerve root. The voltage required for motor response is presumably higher than sensory response while awake but has yet to be quantified. The objective of this study was to examine differences in voltage required for motor response during lead placement and sensory response at first postoperative programming session.

Methods: A retrospective review of data from a prospective, longitudinal database on neuromodulation patients since 2003 was performed. Only unilateral S3 lead implants were included. The threshold (in volts) for levator bellows and/or toe dorsiflexion was recorded during lead placement and before final deployment. Data were categorized by the number of electrodes (1−2, 3, or 4) eliciting motor response and compared using Kruskal-Wallis tests. The voltage threshold for sensory response at the first postoperative programming session was recorded and compared to the threshold for motor response.

Results: Of 532 patients who underwent lead placement under sedation, 244 had complete data for motor response on all four electrodes. Motor response was identified in 25 (11%) with 1−2 electrodes, 48 (20%) on three electrodes, and 171 (70%) on four electrodes. At implant, patients with <4 active electrodes required higher mean voltages per electrode (See table). Mean time to first postoperative session was 13 days (0−48). Mean voltages for sensory threshold at first postoperative programming were significantly lower (See table).

Conclusion: Ability to obtain response on all four electrodes is associated with lower voltage thresholds. The voltage required to elicit a motor response at time of staged implant is higher than that for sensory response, regardless of whether or not one is able to use all four electrodes or <4. Identifying motor response may be limited by patient body habitus, exposure of the inner buttock or perineum, or sedation, accounting for higher voltages. It remains to be seen if intraoperative electromyography could better predict the sensory response postoperatively.

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THE IMPACT OF PRIOR BACK SURGERY ON UROLOGIC DIAGNOSES AND NEUROMODULATION OUTCOMES
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(Presented by: Jamie Bartley, DO)

Introduction: The impact of spine surgery on bladder symptoms/treatments is not well known. We evaluated patients with a history of back surgery to explore primary indication for neuromodulation and whether prior back surgery impacted treatment outcomes.

Methods: Adults enrolled in our prospective observational neuromodulation study that had a lead placed at the sacral or pudendal nerve were evaluated. Those with comorbid neurological diagnosis were excluded. Medical records were reviewed for history/operative details, and outcomes were measured at three, six, 12 and 24 months with Interstitial Cystitis Symptom/Problem Indices (ICSI−PI), Overactive Bladder Questionnaire (OAB−q) symptom severity (SS)/health related quality of life (HRQOL), voiding diaries, and Global Response Assessments (GRA). Data were examined with Pearson’s Chi-square, Fisher’s Exact, and Wilcoxon rank sum tests.

Results: Of 405 patients (mean age 58.2 ± 17 years; 86% female; 80% had a sacral lead placed), 64 (16%) had history of back surgery; 37 surgeries were lumbar. Back surgery patients were older than the no back surgery group (mean 65±14 vs. 57±17 years; p=0.001) and a higher proportion had urge urinary incontinence (UUI) (65.6% vs. 45.8%; p=0.001); generator implant rates were similar (92.2% vs. 91.2%; p=0.80). For ICSI−PI composite scores, both groups improved but were only significantly different at 12 months, where scores were better in the back surgery group (mean 11.8 ± 7.7 vs. 15.8 ± 7.5, p=0.013). OAB−q scores also improved in both groups; HRQOL was significantly better in the back surgery group at 12 months (median 85 vs. 71, p=0.041). Average volume/void, voids/24 hours, urgency, and proportion of patients using catheters did not differ at any time point. The back surgery group had more incontinence episodes/day at preimplant (mean 5.6 ± 4.9 vs. 4.0 ± 5.4; p=0.007) and in the two weeks following lead implant (3.3 ± 4.0 vs. 2.1 ± 3.2; p=0.004). No other time points were significantly different. Most patients in both groups reported moderate/marked improvement in overall bladder symptoms at 3, 6, and 12 months and groups did not differ on the GRA at any time point.

Conclusion: Overall, prior back surgery does not affect clinical outcomes of neuromodulation and the higher prevalence of UUI may reflect older age in the back surgery group compared to controls.

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LEAD POSITION DURING PUDENDAL NEUROMODULATION: A RADIOGRAPHIC ASSESSMENT

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(Presented by: Michael Ehlert, MD)

Introduction: Neuromodulation has been approved for the treatment of overactive bladder symptoms, urinary retention, and fecal incontinence. Placement of the lead at the pudendal nerve has shown efficacy for those who fail sacral neuromodulation. To date there has been no standardized location for optimal pudendal lead placement. We aim to categorize lead location in a large series of pudendal neuromodulation patients.

Methods: Retrospective review of patient charts undergoing pudendal lead placement between 2004–2013 for sacral neuromodulation at our institution. All leads were placed with operative EMG monitoring. Intra-operative fluoroscopy images and pelvic plain film radiographs showing leads were examined. Posterior-anterior imaging measurements were taken from lead-tip to the pelvic sidewall, and pubic tuberosity, as well as lead angle from vertical. Additional corrections for image rotation and magnification were recorded. Lateral measurements from lead-tip to the sacrum posteriorly and cranially were taken. Group averages, standard deviations, and extremes were calculated.

Results: 115/231 (49.7%) had images available for measurement. 67 had fluoroscopy images from the day of implant, and the remaining images were taken at a median of 6.5 months post-op. 74 leads were placed on the right, 41 on the left. There was considerable variation in lead placement, with distance from the pelvic sidewall varying from 0.25−5.65 cm (mean 2.7cm +/-1.03). Lead depth as measured from the pubic tubercle varied the most from −9.7 cm below to 5.1 cm cephalad (mean −1.6 cm +/-2.31). Most leads were angled toward to sidewall (mean 11.7 degrees +/- 10). Only 86 patients had images adequate for lateral measurements. Mean distances to the sacrum were 4.9cm +/-1.7 posteriorly and 9cm +/- 2.9 cephalad.

Conclusion: Pudendal lead placement location for sacral Neuromodulation varies considerably. Without definite landmarks, intra-operative EMG monitoring confirming stimulation of the nerve is required. Correlation with lead voltages and outcomes is needed to assess for optimal positioning.
EFFECT OF AGEING ON DETRUSOR FORCE IN WOMEN. EVALUATION FROM MATHEMATICAL MODELING OF PRESSURE-FLOW STUDIES
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(Presented by: Françoise A. Valentini, MD, PhD)

Introduction: Our hypothesis to evaluate the detrusor force in women was that voiding was governed by the detrusor force (k) and a “urethral resistance” (U) similar to an obstruction. The VBN mathematical model of micturition (1−2) allows to evaluate k and U from analysis of pressure-flow (P-F) recordings. Our objectives were, after checking the correlation between k and U for some clinical conditions, to search for an effect of ageing on these parameters.

Methods: P-F studies of non-neurogenic women were retrospectively analyzed. Criteria for inclusion were P-F tracings providing maximum flow rate Qmax and detrusor pressure at Qmax (pdet.Qmax) without significant contribution of abdominal pressure (<±3 cm H2O between onset of flow and Qmax), an voided volume >100 mL, and a non-interrupted flow. Simulations needed to know Vini and the urethral catheter diameter. Evaluated parameters were k (without unit) and U (unit cm H2O). Standard values were k = 1.0 and U = 0.

Results: The population comprised of 125 women, mean age 58.0±17.2 y [range 20−90 y]. 1) Both parameters were identified. VBN parameter k range was [0.14 − 1.55]. U range was [0.0 − 73.0 cm H2O]. 2) There was a significant correlation (p<.0001) between k and U (Fig): k = .259 + .015*U (R² =.723) for the whole population. 3) A significant correlation between k and U was also found independently of the main complaint (stress, mixed or urge incontinence, frequency and other). 4) K and U were slightly dependent of urodynamic diagnosis (lower in sphincter incompetence, higher in detrusor overactivity, vs. normal UDS but not significant). 5) Seven sub-groups were defined according with age: the values of k and U remained similar in sub-groups less than 50y old (mean menopause age in France is 50.1y) and decreased regularly with ageing (Fig).

Conclusion: From our analysis, the detrusor force is evaluated in women who void without major straining efforts with a non-interrupted flow. The detrusor force is smaller than in men [1] and the range less spread out. As in men, there is an adjustment of the detrusor force to compensate a “urethral resistance”. Effect of ageing is only significant after menopause.
Poster #M27
INTRADETRUSOR BOTULINUM TOXIN INJECTIONS FOR THE MANAGEMENT OF IMPAIRED BLADDER COMPLIANCE REFRACTORY TO ANTI-CHOLINERGIC DRUGS
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(Presented by: Dane Johnson, MD)

Introduction: To evaluate the therapeutic effect of intradetrusor ona botulinum toxin A (BTX–A) injections in patients with poorly compliant neurogenic bladders.

Methods: We retrospectively evaluated patients with neurogenic bladder secondary to spinal myelopathy who underwent treatment with BTX–A at our institution between Jan. 2009 – Dec. 2013. Indications for BTX–A treatment included persistent urinary incontinence from over-activity or poor bladder compliance. All patients underwent video urodynamic testing to objectively establish baseline urinary tract characteristics. All patients included in study had poorly compliant bladders, defined as <30 mL/cm H20. Patients who reported clinical symptomatic improvement in urinary incontinence following BTX–A injection underwent repeat video urodynamics. Bladder compliance was then re-calculated. Patient characteristics were compared between patients who demonstrated objective and symptomatic improvement following BTX–A injections versus patients without improvement. Patient demographics and characteristics evaluated in this review included age, etiology of neurogenic bladder, urinary symptoms, and any prior anti-spasm medication usage. Improvement in compliance was defined as improvement of >5mL/cmH20 following BTX–A injections.

Results: Twenty-seven patients with anticholinergic refractory, poorly compliant bladders due to spinal myelopathy underwent BTX–A injections, with mean compliance of 11.9 ml/cm H20. Mean patient age was 36.4 years (18−74) and mean duration of neurogenic bladder was 19.3 years (0.75−46 years). Symptomatic clinical improvement was reported by 14/27 patients (52%) following BTX–A injection. Repeat urodynamic studies of the 14 clinically improved participants confirmed a successful objective increase in bladder compliance in 10 (37%), with mean improvement of compliance to 22.8 ml/cm H20. There were no pre-procedural factors predictive for BTX–A success.

Conclusion: BTX–A significantly improved objective end-fill storage pressures in 37% of neurogenic patients with poorly compliant bladders refractory to anticholinergic medications. No pre-procedural factors were predictive of successful injection of the toxin.
Poster #M28
URODYNAMIC FINDINGS OF LOW BLADDER COMPLIANCE IN END STAGE RENAL DISEASE PATIENTS AWAITING RENAL TRANSPLANTATION ARE NOT ASSOCIATED WITH DECREASED GRAFT SURVIVAL OR URINARY COMPLICATIONS AFTER TRANSPLANT
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(Presented by: John Stoffel, MD)

Introduction: We investigated whether urodynamic findings of low bladder compliance in end stage renal disease (ESRD) patients awaiting renal transplantation were associated with decreased graft survival or urinary specific complications after transplant.

Methods: ESRD patients undergoing urodynamic testing prior to renal transplant were retrospectively identified. All patients underwent a standardized fluoroscopic urodynamic testing (UDS) per ICS guidelines. Bladder compliance was calculated as maximum bladder capacity over change in storage detrusor pressure and low compliance was defined as <20 cc/cm H20. ESRD patients were stratified into low and high compliance groups and assessed for graft survival, and urinary specific complications after renal transplant. Graft survival was determined by serum creatinine, renal biopsies and Doppler ultrasounds. Complications were defined as serum creatinine nadir occurring >3 months after transplant, transplant ureter obstruction needing radiologic or operative intervention, and urinary tract infection requiring oral or intravenous antibiotics.

Results: Thirty four UDS studies (27 males, seven females) were performed for ESRD patients prior to renal transplant between 2006−2012. Mean patient age was 57 years and diabetes mellitus was the most common cause of ESRD (44%) followed by glomerulonephritis (28%). Median time on dialysis was 26 months at time of UDS testing. Low bladder compliance was identified in 62% of UDS studies. Urine output of <50cc/day was associated with greater risk for low bladder compliance on pre transplant urodynamics, compared to urine output >250 cc/day (OR 13.5, p=0.007), and there was a 34% increased risk for low compliance on urodynamics for every six months on dialysis (p=0.005). Twenty three of the ESRD patients underwent renal transplant, including 15 with pre-transplant low bladder compliance on UDS. Overall graft specific survival was 91%. Pre transplant low bladder compliance on urodynamics was not associated with increased risk of graft failure, an increased post transplant creatinine nadir (p=0.50), ureteral complications (p=0.88), or post transplant urinary tract infections (p=0.90).

Conclusion: Urodynamic findings of low bladder compliance were prevalent in this ESRD cohort prior to transplant but low compliance was not associated with increased graft failure or post transplant urinary complications.

Poster #M29
COULD A NEWLY PROPOSED URODYNAMIC PARAMETER CHANGE URODYNAMIC DIAGNOSIS OF BLADDER OUTLET OBSTRUCTION IN MALE PATIENTS?
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(Presented by: Michael Vainrib, MD)

Introduction: Urodynamic study (UDS) is a part of the work-up in patients with suspected bladder outlet obstruction (BOO). The influence of non-invasive uroflowmetry (NIUFM) parameters on the diagnosis of BOO at pressure-flow study (PFS) was evaluated.


Results: 233/387(60%) adult male patients with suspected BOO underwent UDS. 54/233(23%) with a mean age of 64.3 had successful NIUFM (voided volume ≥150ml) before UDS. 24/47(51%) had equivocal PFS and 13/47(28%) had BOO based on Abrams-Griffith number (AGN) and 7/54 had no BOO. Maximal flow rate (MFR) at NIUFM was used to define “adjusted” AGN (AAGN=PdetQmax−2MFR@NIUFM). In equivocal BOO group, 13/24(54%) had a significant reduction in AAGN (28.1vs12.0,p=0.00016) along with significantly higher MFR (ml/sec) (15.8vs7.8,p=0.0077) and insignificant change in mean voided volume (ml) (VV) (293.6vs262.0,p=0.63) and mean post-voided residual (ml) (PVR) (132.5vs262,p=0.1) between NIUFM and PFS, respectively. In BOO group, 4/13(30%) had a significant reduction in AAGN (52.1vs29.1,p=0.0166) along with significantly higher MFR (19.8vs8.3,p=0.0166) and insignificant change in mean VV (479.5vs289.5,p=0.164) and mean PVR (165.8vs132.3,p=0.85) between NIUFM and PFS, respectively.

Conclusion: UDS is an accessory tool in the diagnosis of patients with BOO. However, our study showed that 54% of patients with equivocal and 30% with BOO at PFS could have unobstructed AAGN due to significantly higher MFR at NIUFM. The use of AAGN could change clinical decision especially in young patients.
Poster #NM44

GENDER DIFFERENCES IN URINARY BOTHER DUE TO STRESS URINARY INCONTINENCE
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(Presented by: Matthew Nielsen, MD)

Introduction: Stress urinary incontinence (SUI) is a common urologic problem affecting both men and women; however differences in quality of life (QOL) and urinary bother between men and women with SUI are not well defined. Our objective is to assess differences in QOL between men and women with SUI.

Methods: A retrospective chart review on patients presenting with a chief complaint of stress urinary incontinence between May 1, 2010, and July 1, 2014. All patients completed ICIQ−SF, UDI−6, IIQ−7 and SF−36 questionnaires at their initial visit. Two-tailed t-tests were used to compare groups.

Results: A total of 304 patients completed each of the questionnaires during our study period. Men in the cohort were older (71.4 years vs. 65.6 years, p<0.001) and were more likely to use tobacco (32% vs. 18%, P<0.03), but demographics were otherwise similar. Women had a longer duration of incontinence (93 months vs. 67 months, P=0.03) and more likely to have undergone prior surgery for incontinence (30% vs. 20%, P=0.05). On ICIQ questionnaire, men reported more episodes of urinary leakage and increased volume of leakage; however, interference with daily life was similar between the groups (P=NS). In patients reporting SUI on the UDI−6 questionnaire, bother was significantly higher in females compared with males (3.2 vs. 2.8, p=0.01). IIQ−7 showed that women complained of incontinence causing more travel bother, and women were more frustrated with their leakage (P<0.01 and P<0.02, respectively). On SF−36, overall women felt less healthy than men (P=0.038) and were more limited by their health in all levels of activity (P<0.01 for each). Physical health also interfered with normal social activity more in women (P=0.01). Men were noted to have more energy, less depression, more happiness and decreased fatigue compared to women (P<0.01 for each).

Conclusion: Overall there was much similarity in the degree of bother between men and women presenting with SUI. However, despite men reporting worse degrees of incontinence, more bother was seen in females on the UDI−6 questionnaire and more interference with daily living on IIQ−7. This difference may be related to more honest reporting in female patients, longer duration of symptoms in females or possibly true differences in the way females approach SUI compared with males. Knowledge of this potential disparity may help us to tailor our discussions when evaluating a patient presenting with SUI to our office.
Poster #NM45

PLACEMENT OF AN INFLATABLE PENILE PROSTHESIS (IPP), DOES NOT CHANGE CONTINENCE OUTCOMES IN PATIENTS WITH A PRIOR PLACED TRANSOBTURATOR SLING (TOS)

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(Presented by: Divya Ajay, MD)

Introduction: Urinary incontinence and erectile dysfunction are well-recognized issues after various treatments for prostate cancer and can affect long-term quality of life. 10% of men undergo surgery for incontinence after a prostatectomy and 2% of men undergo placement of a penile prosthesis for erectile dysfunction. The reported success rate of the TOS is 76–91%. Simultaneous placement of an IPP and TOS is reported to have good outcomes; however, consecutive placement of an IPP after a TOS has not been studied. We sought to determine if placement of an IPP with a functional TOS in place changes continence outcomes.

Methods: We conducted an IRB-approved retrospective study of all patients with post-prostatectomy incontinence that underwent placement of a TOS at our institute between 1996 and 2013. Patients who underwent placement of an IPP after a TOS were identified using our patient data portal (DEDUCE). Factors that could change TOS outcomes including 24 hour pad weight, low Valsalva leak point pressure (VLPP), and radiation therapy were examined. Outcomes were measured by patient-reported success at last follow-up visit, with “dry” as use of no pads or one safety pad over 24 hours. Failure or being “wet” defined as persistent leakage, or any more than one pad over 24 hours.

Results: Ten patients underwent placement of an IPP at a median of 21 months (range 2–38) after TOS placement. Pre-TOS average 24 hour pad weight was 250 g (SD 307), VLPP was 65 (SD 34), and none of these patients had adjuvant radiation therapy. One-hundred percent of them were dry after TOS placement, and all reported no change in continence outcomes after placement of the IPP with a median follow-up of 3.5 months (range 1–34).

Conclusion: In a small cohort of men with post-prostatectomy incontinence, placement of an IPP does not change continence outcomes in patients with a prior TOS. Confirmatory studies are warranted.

Funding source: None

Poster #NM46

URETHRAL MANAGEMENT DURING ARTIFICIAL URINARY SPHINCTER EXPLANTATION FOR EROSION

Brian Linder, MD, Daniel Elliott, MD
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(Presented by: Brian Linder, MD)

Introduction: To evaluate outcomes of patients with urethral erosion of an artificial urinary sphincter managed with device explanation and prolonged catheterization without formal urethral repair.

Methods: 704 consecutive AUS device implantations from 1998–2012 at our institution were reviewed. A total of 21 patients (3%) underwent device implantation and subsequent explanation for erosion at our institution. Fourteen patients had further follow up and comprise our study cohort. All cases, regardless of the degree of erosion or co-morbidities, were managed with an indwelling urethral catheter for four to six weeks with no concomitant urethral reconstruction at the time of explanation. Patients were followed by a pericatheter retrograde urethrogram at six weeks.

Results: The median age at surgery was 74 years (IQR 71, 80.5). Risk factors for delayed wound healing were highly prevalent: median BMI 27.1, hypertension (9/14), prior tobacco use (50%), multiple prior artificial sphincter procedures (6/14) and prior pelvic radiation/cryoablation therapy (9/14). With a mean follow up of 17 months (IQR 7, 24), three patients (21%) developed bulbar urethral strictures. Of the entire cohort 7/14 (50%) underwent subsequent AUS reimplantation.

Conclusion: AUS erosion represents significant morbidity to the patient. In our large series we found that minimal intervention with explanation of the AUS and four to six weeks of catheter drainage without concomitant urethral repair may allow for adequate urethral healing.
Poster #NM47
THE EFFECT OF BMI ON PRIMARY ARTIFICIAL URINARY SPHINCTER OUTCOMES AMONG MALES WITH STRESS URINARY INCONTINENCE
Boyd Viers, MD, Brian Linder, MD, Marcelino Rivera, MD, Laureano Rangel, Matthew Ziegelmann, MD, Daniel Elliott, MD
(Presented by: Boyd Viers, MD)

Introduction: In general, obesity is a risk factor for complications following urological surgery. Meanwhile, there is a paucity of data characterizing risk factors associated with artificial urinary sphincter (AUS) device survival and complications following implantation. As such, the objective of our study was to assess the association between preoperative body mass index (BMI) and primary AUS device outcomes.

Methods: From 1999−2014, 1153 AUS procedures were performed; of which, 646 men, with available BMI, underwent primary AUS implantation for stress urinary incontinence. Overall device, mechanical failure, non-mechanical failure and erosion/infection-free survival were estimated, after stratifying by BMI, using the Kaplan-Meier method and compared with the log rank test. Hazard regression models were used to analyze the association between BMI and AUS survival outcomes.

Results: In total, 109 (17%), 299 (46%) and 238 (37%) men with a BMI of <25, 25−29.9 and ≥30 underwent primary AUS placement. BMI ≥30 was associated with younger patient age and a greater incidence of diabetes, hypertension and open prostatectomy (all p<0.05). Relative to those with a BMI 25−29.9 and ≥30, men with a BMI <25 had significantly worse five-year non-mechanical (57% vs. 74% vs. 71%; p = 0.02) and erosion/infection-free survival (83% vs. 88% vs. 93%; p = 0.04); meanwhile, there was no difference in mechanical failure-free (82% vs. 85% vs. 75%; p = 0.7) or overall device survival(51% vs. 68% vs. 58%; p = 0.2). Univaritately, patient age (HR 0.98; p = 0.002) was associated with overall device survival; however BMI was not (HR 0.97; p = 0.10).

Conclusion: Our results suggest that greater BMI may be protective against erosion/infection and non-mechanical failure but not overall device survival among men with stress urinary incontinence undergoing primary AUS placement. Accordingly, BMI may be useful in preoperative patient risk stratification and counseling.

Funding: None

Poster #NM48
A COMPARISON OF ARTIFICIAL URINARY SPHINCTER DEVICE OUTCOMES AMONG PATIENTS WITH AND WITHOUT DIABETES
Boyd Viers, MD, Brian Linder, MD, Marcelino Rivera, MD, Laureano Rangel, Matthew Ziegelmann, MD, Daniel Elliott, MD
(Presented by: Boyd Viers, MD)

Introduction: As the age adjusted male incidence of diabetes continues to rise, accordingly, we can expect to see an increase in the number of men with stress urinary incontinence that undergo artificial urinary sphincter (AUS) placement. In general, patients with diabetes are at increased risk of adverse outcomes following surgical intervention. However, to date, little is known regarding the impact of diabetes on AUS survival. As such, the objective of our study was to assess the association between diabetes and AUS outcomes including mechanical failure, erosion/infection, non-mechanical failure and overall device survival.

Methods: From 1999−2014, 1153 AUS procedures were performed; of which, 650 men underwent primary AUS implantation for stress urinary incontinence. After stratifying by the presence of diabetes, overall device, mechanical failure, non-mechanical failure and erosion/infection-free survival were estimated using the Kaplan-Meier method and compared with the log rank test. Hazard regression models were used to analyze the association between diabetes and AUS survival outcomes.

Results: In total, 108 of 650 (17%) men undergoing primary AUS placement had diabetes. The presence of diabetes was associated with older age, greater body mass index and an increased incidence of diabetes, hypertension, and open prostatectomy (all p<0.05). Among men with diabetes, there was no significant difference in one and five-year overall device survival (83% vs. 85% and 62% vs. 59%; p = 0.8), mechanical failure (95% vs. 96% and 78% vs. 82%; p = 0.7), non-mechanical failure (88% vs. 89% and 79% vs. 69%; p = 0.5) and erosion/infection-free survival (90% vs. 94% and 90% vs. 89%; p = 0.7) relative to those without a history of diabetes. Univaritately, patient age (HR 0.98; p = 0.002) was associated with overall device survival; however diabetes was not (HR 1.06; p = 0.8).

Conclusion: Despite a perceived risk, we found little difference in AUS survival outcomes among men with diabetes undergoing primary AUS placement relative to patients without diabetes. Clinically, the implications of these findings will assist the urologist with preoperative counseling and risk stratification of men with diabetes seeking anti-incontinence surgery.

Funding: None

Poster #NM49
URODYNAMIC STUDY OUTCOMES AFTER HYSTERECTOMY
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(Presented by: Michael Vainrib, MD)

Introduction: Hysterectomy could have serious consequences on bladder function but the research is mixed. The aims of the study were to describe and compare the outcomes of urodynamic study (UDS) in patients after hysterectomy to those without pelvic surgeries (PS).

Methods: A retrospective review of patients who had UDS was performed. 151 female patients were identified. 92 had no prior PS. Patients with prior prolapse or incontinence surgeries or after hysterectomy with concomitant PS were excluded.

Results: 18 patients were identified. Mean age at UDS was 71.6 (range 52–87) years. Common indication (83%) for UDS were storage predominant LUTS. Non-invasive uroflowmetry was successfully performed in 13/15 (87%) patients with a mean MFR=11.8 (range 0.1−42) ml/sec, AFR=4.5 (0.1−12.2) ml/sec, Voided Volume (VV) = 135 (0.1−461) ml, Post-void residual (PVR) = 136 (0−520) ml. Mean volumes at first sensation, first and strong desires were 164, 208 and 413 ml, respectively. Maximal cystometric capacity was 444 (126−1007) ml. 4/18 patients had Detrusor overactivity (DO) and 3/4 had DO + leak, 2/18 had SUI only and 3/18 patients had mixed, DO±leak and SUI. All had normal compliance bladder. At Pressure-Flow Study mean MFR = 18.7 (0−42) ml/sec, AFR = 8 (0−22.8) ml/sec, VV = 325 (0−825) ml, PVR = 133 (0−813) ml, Pdet at MFR = 14.2 (0−36) cm H2O. Ten, six and one patients had good, reduced and no contraction detrusor, respectively. 17/18 (94%) had no outlet obstruction. UDS performed for similar indications in patients after hysterectomy compared to those with no prior PS showed no significant differences in outcomes.

Conclusion: Patients after hysterectomy had similar UDS outcomes as patients with no prior PS.
Poster #NM50

DYNAMIC COMPLIANCE: A NOVEL METRIC FOR THE URODYNAMIC FILLING PHASE
Andrew Colhoun, MD1, John Speich, PhD2, Jay Sulek, MD1, Paul Ratz, PhD3, R. Wayne Barbee, PhD4, J. Tyler Roseman, MD1 and Adam Klausner, MD1

1Department of Surgery/Division of Urology, Virginia Commonwealth University School of Medicine, Richmond, Virginia; 2Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University School of Engineering, Richmond, Virginia; 3Departments of Biochemistry and Pediatrics, Virginia Commonwealth University School of Medicine, Richmond, Virginia; 4Department of Emergency Medicine, Virginia Commonwealth University School of Medicine, Richmond, Virginia

(Presented by: Andrew Colhoun, MD)

Introduction: Although bladder compliance has previously been considered a "static" urodynamic property, recent pre-clinical studies have established that repeated passive fills of the bladder can acutely increase compliance. Moreover, acute compliance changes can be reversed by active contraction, a process we call "dynamic compliance." In addition, compliance may be decreased in animal models of detrusor over activity due to greater changes in dynamic compliance. The goal of this study was to identify and quantify dynamic compliance during urodynamics in patients with OAB.

Methods: Individuals with OAB defined as ICIq–OAB question 5a ≥3 were enrolled in an IRB-approved extended urodynamics protocol. An initial fill was used for clinical purposes and to determine cystometric capacity (Ccap). Four repeat fills were then initiated at a rate 10%Ccap/min as follows: 1) fill to 30% Ccap and passively empty via syringe aspiration, 2) fill to 60%Ccap and passively empty, 3) fill to Ccap and void (voluntary or involuntary) and 4) fill to Ccap and void. Extracted data from the bladder pressure (Pves) were graphed for each fill and data were then normalized to Pves at 75ml in fill 1 for statistical analysis.

Results: Five patients completed the study and had results available for analysis. In comparison to repeat-fill 1, dynamic compliance was increased (lower Pves throughout filling) in subsequent fills (fills 2 and 3) (Figure 1A). This was likely due to strain softening during filling not restored by passive emptying. Voiding then occurred at the end of fill 3, and the final fill (fill 4) showed the reversibility of this process (decreased dynamic compliance). Normalized data at 75 ml infused volume (Figure 1B) showed increased dynamic compliance (decreased pressure/volume) after passive emptying (Fill #3: 0.72 ± 0.10 vs. Fill #1: 1.0, p<0.05) that was reversed after active voiding (Fill #4: 0.93 ± 0.03 vs. Fill #1: 1.0).

Conclusion: This study demonstrates that dynamic compliance exists and can be quantified during urodynamics in patients with OAB. Measurement of dynamic compliance could potentially be used in future studies to identify sub-sets of individuals with compliance-mediated OAB.

Clinical relevance: Urodynamics

![Graph A](image1.png)

![Graph B](image2.png)

**Fig 1.** Repeat fills after passive emptying (Fill 1 → Fill 2 → Fill 3) showed reduced Pves during the filling phase (A) and at 75ml volume (B) due to strain softening. Repeat fill after active voiding (Fill 3 → Fill 4) showed increased Pves due to strain softening reversal revealing dynamic compliance. *p<0.05, n=5.
Poster #NM51
BODY MASS INDEX IMPACTS REOPERATION RATES BUT NOT OVERALL OUTCOMES OF NEUROMODULATION
Priyanka Gupta, MD1, Michael Ehler, MD2, Kim A. Killinger, MSN1, Judith A. Boura, MS1,2, Jason Gilleran, MD1,2, Cheryl Wolfert, RN1, Jamie Bartley, DO1,2 and Kenneth M. Peters, MD1,2
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Introduction: Optimal tined lead placement during staged neuromodulation procedures may be influenced by body habitus. The objective of this study was to explore the impact of body mass index (BMI) on short and long term outcomes of neuromodulation.

Methods: Adults enrolled in our prospective observational neuromodulation study were evaluated. Records were reviewed for history/operative details, complications and reoperations. Patients were grouped into BMI <30 and BMI ≥30. Voiding diaries were collected at baseline, between stages, and at three, six, 12 and 24-months. Interstitial Cystitis Symptom/Problem Indices (ICSI−PI) and Global Response Assessments (GRA) at baseline and three, six, 12 and 24 months assessed symptoms. Data were examined with Pearson’s Chi-square, Fisher’s Exact, and Wilcoxon rank sum tests.

Results: 546 patients (mean age 57.9 ± 17 years; 83 female; 65% with overactive bladder with/without urinary incontinence) were evaluated. When BMI <30 (n=337) and BMI ≥30 (n=209) groups were compared, the BMI <30 group had a lower proportion of females (p=0.001) and urological diagnoses were significantly different (p<0.0001); fewer patients had urge incontinence (38.6% vs. 68.4%), and more primarily had interstitial cystitis (26.4% vs. 12.0%). The prevalence of fecal incontinence or pelvic pain as a primary diagnosis did not differ. Both groups had similar operative times, rates of conversion to stage II implantation, and complications. Those in the BMI <30 group had more reoperations and/or explants (30.3% vs. 22 %; p=0.035) at median 456 vs. 577 days (p=0.84). Those with BMI <30 had significantly fewer incontinence episodes/day at preimplant, between stages, and 3, 6, 12, and 24 months. In this group, incontinence episodes decreased from mean 3.7 ± 5.5 to 2.4 ± 3.7 at two years compared to 5.3 ± 4.9 to 3.2 ± 3.3 in the BMI ≥30. GRA and ICSI−PI responses at each time point were similar in both groups; the majority were moderately/markedly improved on the GRA and ICSI−PI scores improved significantly over two years (p<0.0001 for both groups).

Conclusion: Patients with lower BMI had significantly more reoperations and/or explants, perhaps due to lead or generator problems, and less urge incontinence. Other outcomes were similar between groups.

Funding: Ministrelli Program for Urology Research and Education (MPURE-Philanthropy)

Poster #NM52
NATIONAL PRACTICE PATTERNS IN INFECTION PROPHYLAXIS FOR INTERSTIM –A SURVEY OF HIGH-VOLUME PROVIDERS
Eugene Lee, MD, Alvaro Lucioni, MD, Una Lee, MD, Kathleen Kobashi, MD
Virginia Mason, Seattle, WA
(Presented by: Eugene Lee, MD)

Introduction: Sacral neuromodulation using the Interstim device is a safe and effective treatment for urgency, frequency, urgency incontinence, non-obstructive urinary retention, and fecal incontinence. However, there is no standard recommendation regarding infection prophylaxis. Therefore, we surveyed the infection prophylaxis patterns of high-volume Interstim providers in order to describe current practice patterns in peri-operative infection prophylaxis.

Methods: A web-based survey was sent to 35 high-volume providers identified by Medtronic, including urologists, gynecologists, and colorectal surgeons.

Results: Our response rate was 89% (31/35). Most providers were urologists (51%) followed by gynecologists (39%) and colorectal surgeons (10%). The majority (74%) have performed more than 200 procedures and 22% have done more than 500. The length of the testing period is generally 1–2 weeks. Only 13% of the providers surveyed routinely screen for MRSA. All providers administer pre-operative antibiotics (most commonly cefazolin or vancomycin) and 81% administer post-operative antibiotics (most commonly cephalexin and TMP–SMX), with the majority prescribing 5–7 days. Six providers (19%) do not prescribe any post-operative antibiotics. In addition, 71% of respondents employ adjunctive measures, with intra-operative wound irrigation and/or pre-operative chlorhexidine shower being frequently used. After both stage 1 and 2, 19% of providers prohibit showering for >3 days post-operatively, while 61% permit showers after 1–2 days and 19% advocate no bathing restrictions at all.

Conclusion: We present the infection prevention practices of high-volume Interstim implanters in the US. Further study is warranted to guide evidence-based practice in infection prophylaxis for Interstim.

Poster #NM53
OUTCOMES OF BILATERAL LEAD PLACEMENT FOR STAGE I OF SACRAL NEUROMODULATION TRIAL.
Adrienne Quirouet, MD, Ashley King, MD, Howard Goldman, MD, Raymond Rackley, MD, Courtenay Moore, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)

Introduction: It is unclear which patients should be considered for bilateral lead placement during a sacral neuromodulation trial. The objective of this study was to review the outcomes of bilateral stage I lead placement in select cases of refractory voiding dysfunction at our institution. Our practice has typically been to reserve bilateral lead placement for patients who have exhausted other therapeutic options.

Methods: A retrospective review was performed from March 2010 to September 2014 of all cases of bilateral lead placement at the time of stage I to study the rate of bilateral versus unilateral utilization (were both or one lead ultimately used) during stage II.

Results: Bilateral lead placement at stage I was undertaken in 45 patients. Indications included refractory urgency incontinence, (23 patients), nonobstructive urinary retention (16 patients), and refractory overactive bladder without incontinence (six patients). Sacral neuromodulation was the only non-surgical option or these patients. Overall, the rate of progression to stage II was 77.8% (35/45 patients) and in 13/35 patients (37.1%) both leads were utilized while in 22/35 patients (62.9%) only one lead was utilized. The rate of progression to stage II was 88.9% for idiopathic refractory urgency incontinence, 68.8% for non-obstructive urinary retention and 16.7% in refractory overactive bladder without incontinence. Of the 22 patients who underwent unilateral utilization, eight (36.4%) used the side with the better response in the operating room at the time of stage I, and 2 (9.1%) used the contralateral side because of greater clinical benefit during the trial period on the side with the poorer response in the operating room. Six patients (27.3%) had an equal response in both leads in the operating room but clinically did better on one side and ultimately had only one lead utilized.

Conclusion: While a significant portion (37.1%) of patients trialled with bilateral leads went on to have both leads utilized, the majority of patients who went on to stage II had only one of the two leads utilized. In select patients, there may still be a benefit to a trial with bilateral rather than unilateral leads, but further prospective studies are needed to determine which patients would benefit most from bilateral lead placement during stage I.
Poster #NM54
PREDICTORS OF INCOMPLETE BLADDER EMPTYING REQUIRING CIC FOLLOWING INTRADETRUSOR ONABOTULINUMTOXINA
Ekene Enemchukwu, MD, MPH, Neha Talreja, MD, Darren Bryck, MD, Andres Flores-Aguayo, MD, Victor Nitti, MD
NYU Langone Medical Center, New York, NY
(Presented by: Ekene Enemchukwu, MD, MPH)

Introduction: Intradetrusor OnabotulinumtoxinA at 100 units has been shown to significantly reduce OAB symptoms and improve quality of life in patients’ refractory to anticholinergics in two large randomized trials. However, there was a 6.1−6.9% risk of retention requiring intermittent catheterization in those trials. Although the need for catheterization does not affect patient satisfaction, its risk may deter some patients from electing treatment with onabotulinumtoxinA. Although certain patient characteristics are thought to be associated with incomplete emptying, little is known about the risk factors and whether other baseline factors are predictive. Our aim was to determine the incidence of CIC initiation in a non-clinical trial population and identify the predictors of incomplete emptying in patients with OAB with incontinence.

Methods: We conducted a retrospective chart review of patients treated with intradetrusor onabotulinumtoxinA between 2010 and 2014. All patients had refractory OAB and were treated with 100U. Neurogenic, DO patients were excluded. Predictors of incomplete emptying (post void residual > 200 ml) without CIC and retention requiring CIC were determined using logistic regression models fit for each UDS and uroflow parameter as well as patient demographic factors. CIC was initiated if there was a PVR of 200−350mL with symptoms or >350 ml with or without symptoms.

Results: 109 patients met inclusion criteria. Seven patients (6.4%) patients required CIC for a mean duration of nine weeks. Mean age was 74.8 (± 9.1). Mean pre-injection PVR was 65.4 (± 89.6). Demographic data, past medical and surgical history, uninstrumented uroflow values and urodynamics parameters were not predictive of urinary retention or incomplete emptying +/− CIC (Table 1).

Conclusion: Urinary retention is an infrequent yet undesirable potential side effect of intradetrusor onabotulinumtoxinA. Catheterization rates in real world practice are similar to clinical trials. We did not find any predictors of retention in our OAB with incontinence population. Our analysis is limited by its retrospective nature and sample size. Larger, prospective trials may be needed to determine if any reliable predictors exist.

Table 1: Patient characteristics, uroflow and urodynamics parameters and biostatistics logistic regression

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mean ± SD</th>
<th>p-value</th>
<th>OR (95% CI)</th>
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<tr>
<td>Age (years)</td>
<td>74.8 ± 9.1</td>
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<tr>
<td>Pre-injection PVR (mL)</td>
<td>65.4 ± 89.6</td>
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<td>UDS PVR (mL)</td>
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<td>Uroflow velocity (mL/sec)</td>
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<td>Voided volume (mL)</td>
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<td>Post-void residual (mL)</td>
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<tr>
<td>Other potential predictors</td>
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Poster #NM55
TRENDS IN SECOND LINE THERAPY USE FOR OVERACTIVE BLADDER BEFORE AND AFTER FDA APPROVAL OF ONABOTULINUMTOXINA
Ekene Enemchukwu, MD, MPH, Neha Talreja, MD, Victor Nitti, MD
NYU Langone Medical Center, New York, NY
(Presented by: Ekene Enemchukwu, MD, MPH)

Introduction: Behavioral therapy and medications are first and second line therapies for overactive bladder (OAB). There are seven FDA approved medications available, including six anticholinergics and one beta3 agonist. However, studies have shown poor adherence rates due to inadequate efficacy, intolerable side effects and refractory symptoms. In 2013, the FDA approved onabotulinumtoxinA for OAB as a third line option. We sought to determine the trends in second and third line therapy use in our practice before and after FDA approval of onabotulinumtoxinA.

Methods: We conducted a retrospective analysis of all patients who received intradetrusor onabotulinumtoxinA injections for refractory OAB between 2010 and 2014. Patients with missing medication histories or neurogenic detrusor overactivity were excluded (n=12). The number of second line therapies prescribed prior to the first injection were collected. Lowess regression was used to identify period specific changes in prescribing patterns over time. Spearman correlation was used to compare the pre and post 2013 periods to validate any observed trends.

Results: 93 consecutive patients receiving onabotulinumtoxinA injections were identified. Mean age was 71. An average of 2.5 medications were prescribed prior to onabotulinumtoxinA. The number of medications prescribed prior to injection showed an overall increase between January 2010 and September 2014 (Rs= 0.21, p= 0.03). There was a notable rise between 2010 and 2013 but a downward trend (Rs = −0.23, p = 0.13) between January 2013 and September 2014, after FDA approval.

Conclusion: We observed an overall upward trend in the number of medications prescribed from 2010 and 2014. Although not statistically significant, we noted a downward trend in the number of medications prescribed after the FDA approval of onabotulinumtoxinA. This may reflect a tendency on the part of the physicians to avoid anticholinergic cycling. We are limited by our sample size and the retrospective nature of this analysis, which did not allow us to account for other confounding factors that may have affected the decision to proceed to OnabotulinumtoxinA. We are prospectively collecting data to better determine trends over time.

![Figure 1. Overall Trends 2010 to 2014](attachment:image.png)
Poster #NM56
REMOVAL OF SACRAL NEUROMODULATION DEVICES FOR MAGNETIC RESONANCE IMAGING
Adrienne Quirouet, MD, Howard Goldman, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)

Introduction: Until recently, magnetic resonance imaging (MRI) has been contraindicated in patients with sacral neuromodulation devices. In February 2012, Medtronic released a guideline stating that 1.5-Tesla MRI examinations of the head could be safely performed. However, it is not recommended that these patients undergo any other form of MRI. Thus, need for MRI represents one of the indications for removal of the device. To our knowledge, the rate of removal for this indication has not been published in the literature. The primary aim of this study is to evaluate how many patients undergo explant to have an MRI done and which of these patients subsequently undergo reimplantation.

Methods: We performed a retrospective chart review of all patients that underwent either revision or removal of a sacral neuromodulation device at a single institution from January 2011 to October 2013 by searching the current procedural terminology (CPT) code for this procedure. Clinic notes and operative reports were reviewed for relevant data.

Results: A total 75 patients underwent removal of a sacral neuromodulation device during this time period. Of these, 29 had lead removal only after an unsuccessful stage I procedure. Of the remaining 46 patients, 13 (28%) underwent removal in order to undergo an MRI study. Only three of these patients reported efficacy of the device prior to removal. None of the patients were reimplanted post MRI.

Conclusion: Need for MRI represents a significant proportion of sacral neuromodulation device removals. Reimplantation post MRI was not observed in our cohort.
Neuromodulation/OAB - Moderated Podium Session

Podium #27

PUDENDAL NEUROMODULATION AFTER FAILED SACRAL STIMULATION

Kenneth M. Peters, MD1,2, Priyanka Gupta, MD1, Michael Ehlert, MD1, Kim A. Killinger, MSN1, Judith A. Boura, MS1,2, Cheryl Wolfert, RN1, Jamie Bartley, DO1,2 and Jason Gilleran, MD1,2

1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI

(Presented by: Kenneth M. Peters, MD)

Introduction: Many patients benefit from sacral neuromodulation (SNM) yet some do not achieve significant clinical improvements. Patients that fail SNM may benefit from increased afferent stimulation via tined lead placement at the pudendal nerve. We evaluated two-year outcomes in patients that had a pudendal lead placed after failed sacral neuromodulation (SNM).

Methods: Adults enrolled in our prospective observational neuromodulation study that had a pudendal lead placed were evaluated. Medical records were reviewed. Outcomes were measured at three, six, 12 and 24 months with Interstitial Cystitis Symptom/Problem Indices (ICSI−PI), Overactive Bladder Questionnaire (OABq) symptom and quality of life (QOL) domains, voiding diaries, and Global Response Assessments (GRA). Data were examined with Pearson’s Chi-square, Fisher’s Exact, and Wilcoxon rank sum tests.

Results: Of 103 patients that had a pudendal lead placed, 48 (46.6%) had prior SNM (mean age 54 ± 18 years; 85% female). Primary urologic diagnoses were urinary urgency/frequency with urge incontinence (18/48; 37.5%), interstitial cystitis/bladder pain syndrome (11/48; 22.9%), urgency/frequency (8/48; 16.7%), urinary retention (8/48; 16.7%), and pelvic pain (3/48; 6.3%). Mean operative time for lead placement was 48 ± 19 minutes and 45/48 (93.8%) underwent generator implantation. Overall, 11 patients required 12 reoperations after lead implant; five of these occurred within the first two years. Four were explanted at median 42 months (25th, 75th: 21.9, 50.9 months). 10/11 patients had symptom worsening as a reason for reoperation. Lead migration was identified in two patients. On average, 45% (range 31 to 50%) of survey responders that had prior SNM reported moderate or marked improvement in urgency, frequency, and urge incontinence at three, six, 12 and 24 months on the GRA. Significant improvements were seen over two years in ICSI−PI composite score (p<0.0001), OABq symptom severity (p<0.0001), and QOL improved (p<0.0001). When compared to pudendal patients that had not had prior SNM, urologic diagnoses, operative time, generator implant rate, reoperations, lead migration, and GRA responses were similar; ICSI−PI and OABq scores also improved significantly over time (p<0.0001 and p<0.0001 respectively).

Conclusion: Pudendal neuromodulation is a reasonable alternative for patients regardless of prior sacral failure.

Funding: Ministrelli Program for Urology Research and Education (MPURE–Philanthropy)
RESULTS OF A PROSPECTIVE, MULTICENTER STUDY EVALUATING THE EFFICACY AND SAFETY OF SACRAL NEUROMODULATION THROUGH 36 MONTHS IN SUBJECTS WITH SYMPTOMS OF OVERACTIVE BLADDER

Steven Siegel, MD, Jason Bennett, MD\textsuperscript{1}, Jeffrey Mangel, MD\textsuperscript{2}, Craig Comiter, MD\textsuperscript{3}, Erin Bird, MD\textsuperscript{4}, Tomas L. Griebling, MD, MPH\textsuperscript{5}, Suzette E. Sutherland, MD\textsuperscript{6}, Shenita Bolstrom, MS\textsuperscript{7}, Fangyu Kan, MS\textsuperscript{7} and Karen Noblett, MD\textsuperscript{8}

\textsuperscript{1}Female Pelvic Medicine, Grand Rapids, MI; \textsuperscript{2}MetroHealth Medical Center, Cleveland, OH; \textsuperscript{3}Stanford University, Stanford, CA; \textsuperscript{4}Scott and White Healthcare, Temple, TX; \textsuperscript{5}University of Kansas, Kansas City, KS; \textsuperscript{6}University of Washington, Seattle, WA; \textsuperscript{7}Medtronic, Minneapolis, MN; \textsuperscript{8}University of California, Irvine, CA

(Presented by: Steven Siegel, MD)

**Introduction:** This prospective, multicenter post-approval study evaluated the success rate of sacral neuromodulation (SNM) with the InterStim\textsuperscript{®} System at 36-months. Subjects with bothersome symptoms of overactive bladder (OAB) including urinary urge incontinence (UI) or urgency-frequency (UF), who had not exhausted all medication options (failed at least one anticholinergic medication and had at least one medication not tried) were included.

**Methods:** Enrolled subjects discontinued OAB medications before and during baseline voiding diary completion. Subjects with successful test stimulation received an SNM implant. Therapeutic success was defined as a UI or UF response; for UI as a \( \geq 50\% \) improvement in average leaks/day, for UF as a \( \geq 50\% \) improvement in voids/day or a return to normal voiding frequency (<8 voids/day). Therapeutic success through 36-months was evaluated for all implanted subjects with data at baseline and follow-up.

**Results:** Of the 340 subjects who went through test stimulation, 272 were implanted with SNM. For subjects implanted with full system, 91\% were female and mean age was 57 years. At baseline, UI subjects had 3.1±2.7 leaks/day; UF subjects had 12.6±4.5 voids/day. Subjects showed sustained therapeutic success as presented in the figure. OAB responder rate at 36 months was 83\% (95\% CI: 77–88\%). At 36-months, UI subjects had a mean reduction from baseline of 2.3±2.4 leaks/day; UF subjects had a mean reduction of 5.3±4.0 voids/day (both \( p<0.0001 \)). There were no unanticipated adverse device effects during a mean follow-up of 33 months post implant. Device-related adverse events occurred in 44\% (121/272) of subjects post-implant; with one event of implant site erosion being serious. Eighty-nine percent of these device-related adverse events were resolved at the time of the data freeze for this analysis.

**Conclusion:** This multicenter study shows that SNM is safe and effective through 36-months of follow-up when offered to subjects with OAB symptoms, without requiring failure of all medications.
SUFU Winter Meeting Full Abstracts

Podium #29
SINGLE CENTER EXPERIENCE: SACRAL NEUROMODULATION REPROGRAMMING RATES
Sara Lenherr, MD, Cynthia Stroup PA−C, Heather Crossley, BA, Anne Pelletier Cameron, MD, John Stoffel, MD, Ann Oldendorf, MD, J. Quentin Clemens, MD, MSCI
University of Michigan, Ann Arbor, MI
(Presented by: Sara Lenherr, MD)

Introduction: Sacral neuromodulation (SNM) offers a minimally invasive technique for the management of neurogenic and nonneurogenic lower urinary tract dysfunction. After permanent device placement, many patients report a decline in efficacy prompting reprogramming attempts to achieve a better response. Our aim is to determine what diagnoses and patient factors are associated with reprogramming episodes.

Methods: A retrospective review was performed on all patients undergoing permanent SNM device placement January 2008 through February 2014. Patients were classified by clinical indication for SNM. Clinical indication for SNM and demographics were correlated with total number of reprogramming visits over time. Number of in-person reprogramming visits with a specially trained physician assistant were recorded for each patient.

Results: 270 unique patients (18.5% male) underwent permanent SNM device placement. Demographics and indication for SNM are listed in Table, with the most patients diagnosed with urgency urinary incontinence (57%) followed by urinary retention (13%). Of those patients, 167 (62%) had at least one reprogramming session for a total of 321 reprogramming sessions. Rates of reprogramming by diagnosis are in table, with 163 and 158 reprogramming visits total within the first 12 months and >12 months, respectively after IPG implantation. The overall cohort underwent 1.4 ± 0.8 reprogramming sessions within the first year of device placement.

Conclusion: In our practice, SNM reprogramming visits are common and persistent across all diagnoses for greater than one year follow-up. This series represents one of the largest experiences to date with SNM reprogramming requirements.

Source of Funding: Department of Urology internal funding and S. Lenherr efforts are funded by NIH/NIDDK T32 DK07782.

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<tr>
<th>Diagnostic category</th>
<th>N (%)</th>
<th>Age (y) Mean ± SD</th>
<th>Male gender (N, %)</th>
<th>BMI (kg/m²) Mean ± SD</th>
<th>Reprogramming events (RP)</th>
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<tr>
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<tr>
<td>Urgency urinary incontinence</td>
<td>155 (57)</td>
<td>60 ± 15</td>
<td>17 (11)</td>
<td>33 ± 7</td>
<td>1.4 ± 0.7, 1.6 ± 0.8</td>
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<td>Urgency/frequency (dry)</td>
<td>20 (7)</td>
<td>60 ± 15</td>
<td>12 (60)</td>
<td>28 ± 7</td>
<td>1.9 ± 0.9, 1.7 ± 1.5</td>
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<tr>
<td>Urinary retention</td>
<td>35 (13)</td>
<td>49 ± 13</td>
<td>13 (37)</td>
<td>30 ± 7</td>
<td>1.4 ± 0.6, 1.6 ± 0.9</td>
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<tr>
<td>Neurogenic bladder</td>
<td>22 (8)</td>
<td>50 ± 16</td>
<td>5 (23)</td>
<td>32 ± 7</td>
<td>2.4 ± 1.5, 1.6 ± 1.5</td>
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<tr>
<td>IC/PBS</td>
<td>16 (6)</td>
<td>38 ± 12</td>
<td>3 (14)</td>
<td>30 ± 8</td>
<td>1.3 ± 0.6, 2 ± 1.4</td>
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<tr>
<td>Fecal incontinence &amp; wet/dry urgency</td>
<td>14 (5)</td>
<td>59 ± 12</td>
<td>0</td>
<td>33 ± 9</td>
<td>1.4 ± 0.8, 1 ± 0.5</td>
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<tr>
<td>Fecal incontinence only</td>
<td>8 (3)</td>
<td>59 ± 12</td>
<td>0</td>
<td>33 ± 12</td>
<td>1.0 ± 0.0, 3.0 ± 0.0</td>
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</tbody>
</table>

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HEATING OF THE INTERSTIM SACRAL NEUROMODULATION DEVICE IN A SIMULATED PHANTOM MODEL DURING LUMBAR AND PELVIC MAGNETIC RESONANCE IMAGING (MRI)
Adrienne Quirouet, MD, Stephen Jones, MD, PhD, Pallab Bhattacharyya, PhD, Howard Goldman, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Adrienne Quirouet, MD)

Introduction: All MRI studies other than a 1.5-Tesla MRI of the head are currently contraindicated in patients implanted with InterStim sacral neuromodulation devices. This contraindication exists primarily due to concerns over possible heating of the device during scanning. The objective of the study was to perform simulations to assess whether heating of the device would occur during lumbar and pelvic MR scanning under various scenarios.

Methods: Testing was conducted using a phantom model consisting of a polyacrylic gel-filled container that approximates a patient's head and torso. A tined lead connected to an InterStim II implantable pulse generator (IPG) was set up in the phantom positioned as it would be in a human. Four fluoroptic sensors were used to record temperature changes, one each on the IPG case, the "proximal" lead contact, the "distal lead contact", and one as a control in the gel. The phantom was then placed in a 1.5-Tesla MRI scanner. A standard lumbar and pelvic MRI protocol was performed which included six lumbar and eleven pelvic MRI sequences. The sequence that had the highest specific absorption rate (SAR) was then repeated, first with variations in the position of the phantom relative to the coil and then after disconnection and removal of the IPG.

Results: When the lead was connected to the IPG no significant temperature increases (greater than 1 °C) were detected for any of the lumbar or pelvic sequences. Figure 1 shows the temperature changes for the sequence with the greatest SAR. Similarly, none of the variations in the position resulted in significant heating. In contrast, when the IPG was disconnected and removed, heating of up to 5 °C was observed in the lead.

Conclusion: These simulations provide preliminary evidence that the risk of heating is low for lumbar and pelvic MRI in the setting of an intact InterStim system (lead connected to an IPG). However, when the lead is disconnected from the IPG there appears to be potential for heating. Further studies should evaluate the safety of MRI in patients with intact InterStim devices.

Figure 1. Temperature change during coronal HASTE sequence of a pelvic MRI in a phantom model with an intact InterStim device (lead connected to IPG).
Obtaining Sacral Motor Reflexes on <4 Electrodes at Time of Stage 1 Tined Lead Placement Does Not Affect Clinical Outcome

Jason Gilleran, MD, Kim Killinger, MSN, Judith Boura, Michael Ehlert, MD, Priyanka Gupta, MD, Cheryl Wolfert, Jamie Bartley DO, Kenneth Peters, MD
William Beaumont Hospital, Royal Oak, MI
(Presented by: Jason Gilleran, MD)

Introduction: Sacral neuromodulation for management of refractory urgency, frequency, and urge urinary incontinence involves surgical placement of a lead at the S3 nerve root and confirming placement by obtaining motor response on a quadripolar tined lead at time of placement. It is not clear whether obtaining response on all four electrodes is required to achieve short term or long-term success. We evaluated motor response after lead placement and its affect on short term and long-term outcomes.

Methods: A retrospective review of a prospective neuromodulation database was performed to identify patients with unilateral S3 lead placement who demonstrated motor response (bellows and or great toe flexion) on stimulation of 1−4 electrodes. These were categorized as 1−2 (n=25), 3 (n=48) and 4 active electrodes (n=171) at lead placement. Stage 1 success, reoperation and reprogramming rates, mean voltage at implant and first postoperative visit, and Interstitial Cystitis Symptom/Problem Indices (ICSI−PI) were analyzed using Pearson’s Chi-square, Fisher’s Exact, Kruskall-Wallis or Wilcoxon rank tests.

Results: Of 532 patients, 244 met inclusion criteria, categorized into 1−2 (n=25), 3 (n=48), and 4 active electrodes (n=171). Successful stage 1 with generator implant at Stage II was seen in 84.0, 89.6, and 90.1% respectively for the 1−2, 3, and 4 active electrodes groups. There were no significant differences between groups in terms of age, indications for neuromodulation, or stage 1 success. Overall reoperation rates, including revisions at 24 months did not differ (p=0.72 and p=0.50). Mean reprogramming sessions at 2 years were higher, but not significantly different, in patients that had only 1−2 active leads at implant (2.8) compared to 2.1 and 2.0 in the 3 and 4 active leads groups,(p=0.5). Mean composite (total) ICSI-PI scores at baseline were 23, 24, and 22 (p=0.11) for the 1−2 active electrodes, 3, and 4 active electrodes groups respectively, and composite scores improved in all groups over 2 years (p<0.0001 for all).

Conclusion: Motor response on 4 electrodes is not necessary for successful Stage 1 trial. Although the goal is to maximize the number of active electrodes during lead placement, two-year outcomes did not differ between groups. Thus, obtaining at least one functional electrode is needed for clinical success.

Funding: Ministrelli Program for Urology Research and Education (MPURE)
Podium #32
*SACRAL FORAMEN LOCALIZATION FOR NEEDLE PLACEMENT: DIAGNOSTIC ULTRASOUND VS. FLUOROSCOPY
Peter Rodine, MPH1, Phillip Falkner, DVM2, Tim Brelje, MS2, Katie Fullerton2 and Poornima Bedi, MS2
1Medtronic; 2Medtronic, Minneapolis, MN
(Presented by: Peter Rodine, MPH)

Introduction: FDA-approved methods for localization of the sacral foramen (SF) to facilitate placement of a foramen needle at the initial stages of a Sacral Neuromodulation (SNM) evaluation include use of bony landmarks (via palpation) or fluoroscopy (FL). Access to FL equipment is not universally available, and physicians have expressed interest in other means of localization of the SF other than palpation. Diagnostic ultrasound (DU) is a common and readily-available tool for most physicians who perform SNM evaluations; this led Medtronic to investigate the use of DU as an alternative method of visualization.

Methods: This study was designed to evaluate whether DU is not inferior to FL in locating the SF. The primary endpoint was the number of needle thrusts needed to properly place a needle in the S2, S3, or S4 SF. The test plan involved four physicians, four cadavers, two means of visualization—DU & FL, and the foramen on both sides of the sacrum. A paired test design was employed, where four physician implanters were randomized to perform 16 needle placements. Iodoban drapes were applied between tests to blind physicians to previous needle insertions. The study employed a pre-determined sequence of placement procedures and rotation of the cadaver stations mid-test in order to control other confounding factors, including left side or right side, sequence between DU and FL by cadaver, BMI of cadaver, and sequence between cadavers by implanter.

Results: The four participating physicians represented different levels of experience with SNM implantation: two with less than one year implant experience, two with >1 year of implant experience. One cadaver had a BMI of 25, two had BMIs of 30−40 and one a BMI ≥40. Placements were successful in 63 of 64 attempts to insert a foramen needle in the target SF. The mean number of thrusts was 7.8 for all 64 placements with a standard deviation (SD) of 8.1. The mean number of thrusts ±SD was 7.6 ±6.3 with DU and 8.1 ± 9.7 with FL. The mean ±SD thrust difference was −0.5 ± 10.1 (DU lower than FL). The 95% confidence interval for the mean thrust difference was −4.1 to +3.1. The upper bound of +3.1 is well below the non-inferiority margin of +5 (p = 0.002).

Conclusion: The results demonstrate the non-inferiority of DU to FL when used to assist in placement of a foramen needle during SNM testing. Visualization of the sacral foramen via DU can be used to facilitate placement of test stimulation needles in the S2, S3 or S4 sacral foramen.

*Not CME Accredited
REAL-WORLD PATTERNS OF OVERACTIVE BLADDER (OAB) CARE IN THE UNITED STATES (US) BASED ON AN OBSERVATIONAL STUDY

Howard Goldman, MD¹, Jennifer Anger, MD, MPH², Canan Esinduy, MD³, Kelly Zou, PhD³, David Russell, MD³, Xuemei Luo, PhD³, Fady Ntanios, PhD³, Martin Carlsson, MS³ and J. Quentin Clemens, MD⁴

¹Lerner College of Medicine, Cleveland Clinic, Cleveland, OH; ²Cedars–Sinai Medical Center, Beverly Hills, CA; ³Pfizer Inc, New York, NY; ⁴University of Michigan, Ann Arbor, MI

(Presented by: Howard Goldman, MD)

Introduction: The socioeconomic burden of OAB symptoms in the US is immense. Despite this, the majority of data available in the literature about outcomes of treatment and patterns of care is limited to clinical trials and clinical series. The objective is to examine national practice patterns for incident OAB in men and women using a national observational dataset.

Methods: The Humedica electronic health records database was queried. It consists of a network of provider organizations treating approximately 30 million patients (pts) in 38 states throughout the US. Pts with an incident International Classification of Diseases, Ninth Revision (ICD–9) diagnosis of OAB or OAB symptoms (based on one of 16 diagnosis codes for urge incontinence, urinary frequency, urinary urgency, nocturia) between 7/1/2009 and 6/30/2012 were identified and followed until 9/30/2013. Inclusion criteria were 1) continuous enrollment in the 1 year pre-index (before diagnosis date) and 6 month post-index period; 2) no OAB diagnosis in the one-year pre-index period; 3) two separate OAB diagnoses >30 days apart to confirm OAB diagnoses at or after the index date. Pt comorbidities, demographics, diagnostic testing performed and medication usage were analyzed.

Results: Of 19,309,600 subjects enrolled during the study period, 46,648 subjects had a diagnosis of OAB with follow-up of ≥6 months and met all inclusion criteria. This included 35,315 women and 11,333 men. Compared with women, men with OAB were more likely to undergo measurement of a postvoid residual (32% vs. 22%) and a diagnostic cystoscopy (10% vs. 7%). Women were more likely than men to undergo urodynamics (7% vs. 3%). Overall, 34% of women and 19% of men diagnosed with OAB were prescribed anticholinergic medication. Anticholinergic use varied by gender and age (See Table 1).

Conclusion: Overall, anticholinergic medication was prescribed to a minority of pts diagnosed with symptoms of OAB, indicating possible underuse of a potentially effective therapy. Men were less likely to receive medical therapy than women, despite the fact that OAB is equally prevalent in both sexes. Diagnostic testing was performed in a small minority of pt overall. No financial support was received for this study.

<table>
<thead>
<tr>
<th>Table 1. OAB Patterns of Care Data</th>
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<tr>
<td>Medication or Diagnostic Test</td>
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<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>OAB Medication Prescription during The Whole Follow-up Period (through 9/30/2013)</td>
</tr>
<tr>
<td>Any OAB medications</td>
</tr>
<tr>
<td>Any Anticholinergic</td>
</tr>
<tr>
<td>Diagnostic Tests during the Entire Follow-up Period (through 9/30/2013)</td>
</tr>
<tr>
<td>Any Diagnostic Tests</td>
</tr>
<tr>
<td>Post-void Residual</td>
</tr>
<tr>
<td>Cystoscopy</td>
</tr>
<tr>
<td>Urodynamics</td>
</tr>
<tr>
<td>Lab Test: Utitialysis</td>
</tr>
<tr>
<td>Lab Test: Urine Culture &amp; Sensitivity</td>
</tr>
<tr>
<td>Lab Test: Urine Cytology</td>
</tr>
<tr>
<td>Lab Test: Blood Work</td>
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</table>
FACTORS AFFECTING SEXUAL FUNCTION AMONG AGING WOMEN WITH PELVIC FLOOR DISORDERS
Lauren N. Wood, MD, Jenna F. Borok, BS, Karyn S. Eilber, MD, Catherine Bresee, MS, Ronald T. Luu, BS, Alex J. Hannemann and Jennifer T. Anger, MD, MPH
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(Presented by: Lauren N. Wood, MD)

Introduction: Pelvic floor disorders (PFDs) have an adverse impact on health related quality of life and sexual function. We aimed to assess the effect of specific PFDs on sexual function among aging women. We also measured the effects of the presence of a stable relationship on sexual function in this population.

Methods: Women with PFDs were consecutively recruited in a tertiary Female Pelvic Medicine and Reconstructive Surgery practice. Subjects were administered validated questionnaires (modified version of the Study of Sexual Attitudes and Behaviors survey and the Female Sexual Function Index (FSFI) and participated in an interview with open-ended questions. Grounded theory methods were applied for the qualitative analysis.

Results: Fifty-seven women with various PFDs participated in this study. PFDs included POP (n=9), UI (n=21), POP/UI (n=5), UTI (n=9), pelvic pain (n=6), and other (n=7). Seventeen percent of the cohort was age 50–59, 23% age 60–69, 37% age 70–80, and 6% age 80 or older. Sixty-two percent had a stable partner. Forty-seven percent were not currently sexually active. The main reason for sexual inactivity among women with PFDs was the absence of a partner. Sexually active women had significantly better FSFI scores than sexually inactive women (average total FSFI score 26.18 vs. 5.05, p = 0.005). FSFI scores of sexually active women with a stable partner were not significantly different from those without a partner (25.8 vs. 30.5, p = 0.34). Similarly, FSFI scores among sexually inactive women with a stable partner were not statistically different from sexually inactive women without a partner (5.5 vs. 3.6, p = 0.99). There was no difference in FSFI scores amongst women with POP/UI versus other diagnoses. Several concepts emerged from our qualitative analysis: about half of the women did not want to talk about their sex life, many women avoided intercourse because of pelvic pain and potential for UTIs, and women with incontinence did not avoid sexual activity, despite concerns about potential leakage.

Conclusion: Among aging women with PFDs, UI or POP did not appear to be a deterrent from sexual activity. Rather, pelvic pain appeared to be the only pelvic floor disorder that resulted in avoidance of sexual activity. The presence of a stable partner did not have a significant impact on sexual function scores in either the sexually active or the non-sexually active population.
Poster #M31
THE EFFECT OF HYDRODISTENTION VERSUS TRANSURTHRAL FULGURATION OF BLADDER IN INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME (IC/BPS) PATIENTS: PROSPECTIVE, MULTICENTER, RANDOMIZED CLINICAL TRIAL

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(Presented by: Jang-Hwan Kim, MD)

Introduction: Hydrodistention (HD) and fulguration are recommended third-line treatment options for patients with interstitial cystitis/bladder pain syndrome (IC/BPS). Fulguration and/or injection of triamcinolone to the bladder is specifically recommended in patients with Hunner’s lesions. However, to our knowledge, there is no randomized clinical trial supporting the superiority of fulguration to HD. We performed a prospective, multicenter, randomized trial comparing the efficacy of HD and fulguration in IC/BPS patients with Hunner’s lesions.

Methods: Patients who have had symptoms of IC/BPS for at least six months and had Hunner’s lesion were enrolled and randomly divided into HD (group1) and transurethral fulguration (group2) groups. We assessed bladder pain with the visual analogue scale (VAS) and assessed symptoms using ICIQ and PUF questionnaires before, one, two, four and six months after treatment. The primary end point of the study was VAS at one month.

Results: A total of 38 patients who have IC/BPS with Hunner’s lesion were enrolled from Sep. 2012 to June 2014 and randomized to receive HD (17 patients) or fulguration (21 patients). No medication was given after the procedure and the patients were allowed to dropout when pain and other symptoms warranted further treatment by the patient. During the progression of the study, the authors felt a clear superiority of one procedure over the other and enrollment after the 38th patient was stopped for ethical reasons. There was no statistically significant difference in age, symptom period, and VAS before treatment between the two groups. However, VAS was lower in the fulguration group (2.56±1.72 vs. 4.47±3.12, p=0.03). In addition, the dropout rate of the HD group was higher from one month on and at six months was nearly twice as high as the fulguration group. Those that remained at 6 months showed no significant difference in PUF score between the two groups.

Conclusion: Transurethral fulguration is more effective than HD in relieving pain and low urinary tract symptoms in the short and long term in patients with IC/BPS with Hunner’s lesions. Transurethral fulguration should remain the choice of treatment for those with Hunner’s lesions.

Table 1. Fulguration vs. Hydrodistention

<table>
<thead>
<tr>
<th></th>
<th>Fulguration</th>
<th>Hydrodistention</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>63.76±7.70</td>
<td>63.82±9.34</td>
<td>0.982</td>
</tr>
<tr>
<td>Symptom period(yr)</td>
<td>3.57±4.30</td>
<td>3.76±2.64</td>
<td>0.872</td>
</tr>
<tr>
<td>VAS – preop</td>
<td>7.76±1.786</td>
<td>8.00±1.937</td>
<td>0.696</td>
</tr>
<tr>
<td>Post 1 mon</td>
<td>2.56±1.72</td>
<td>4.47±3.12</td>
<td>0.03</td>
</tr>
<tr>
<td>Drop rate at 6 mon(%)</td>
<td>33.33</td>
<td>64.71</td>
<td>0.054</td>
</tr>
</tbody>
</table>

Poster #M32
THE PREVALENCE OF MYCOPLASMA GENITALIUM IN WOMEN WITH INTERSTITIAL CYSTITIS OR CHRONIC IRRITATIVE URINARY SYMPTOMS
Jacqua De La Cruz, MD, Lisa Rahangdale, MD, MPH, Emily Davidson, MD, Marcia Hobbs, PhD, Catherine Matthews, MD
UNC, Chapel Hill, NC
(Presented by: Jacqua De La Cruz, MD)

Introduction: Interstitial cystitis (IC) is a chronic, inflammatory disorder of the bladder that is characterized by bladder pain, urinary urgency, urinary frequency, dyspareunia, pelvic pain and/or nocturia. Proposed etiologies include an inflammatory injury, autoimmune response and decreased bladder epithelium repair. An infectious etiology with an atypical organism not easily identified on routine urine culture, has been postulated as a cause. In a European cohort of 153 women, the prevalence of Mycoplasma hominis and Ureaplasma urealyticum in women with chronic urinary symptoms was 52.9% collectively. The prevalence of M. genitalium, another potential atypical infectious organism of the lower urinary tract, was identified in 9.2% of women presenting with urethritis to STI clinics, as compared to 2.6% in non-urethritis patients. Hence, if M. genitalium was associated with acute urethritis, then it is biologically plausible that it may also be prevalent in women with chronic urinary symptoms. Our objective was to evaluate the prevalence of M. genitalium in women presenting to a tertiary urogynecology clinic with chronic irritative urinary symptoms.

Methods: This was a prospective pilot study of all women presenting to a urogynecology clinic with chronic urinary symptoms. Potential participants were identified based on ICD−9 codes for cystitis, dysuria, urinary frequency, urinary urgency via Carolina Data Warehouse and electronic medical records. Women were contacted with informed consent obtained for screening with a Pelvic Pain, Urgency and Frequency (PUF) questionnaire. Individuals with PUF scores ≥15 were invited to participate by giving a voided specimen for testing for M. genitalium via a nucleic acid amplification test (NAAT) at the microbiology lab.

Results: We enrolled fifty participants who met eligibility criteria and screened positive with PUF scores ≥15. We found all study participants' urine samples were negative for M. genitalium. Our study population had a mean age of 53.0 ± 15.9 with PUF scores of 19.9 ± 5.0 and BMI of 27.7 ± 6.7. The median days since antibiotic usage was 90 (59,365). Twenty percent of participants were on chronic narcotics and fifty-two percent were taking central acting medications for pain. Thirty-eight percent were taking medications used to treat IC.

Conclusion: In this small pilot study, we did not identify M. genitalium as a potential infectious etiology in women with chronic irritative urinary symptoms.
Poster #M33
RELATIONSHIP AMONG PELVIC FLOOR TONE, VOIDING COMPLAINTS, AND PELVIC FLOOR DISTRESS IN WOMEN WITH UROGENITAL PAIN
Michael Ehlert, MD1, Priyanka Gupta, MD1, Emily Dove-Medows, CNM, MSN1, Larry T. Sirls, MD1, Donna Carrico, RN, MSN1, Janice Tomakowsky, PhD1, Mireya Diaz, PhD2, Jason Gilleran, MD1, Jamie Bartley, DO1 and Kenneth M. Peters, MD1
1Beaumont Health System, Royal Oak, MI; 2Henry Ford Health System
(Presented by: Michael Ehlert, MD)

Introduction: Women presenting with urogenital pain often have lower urinary tract symptoms (LUTS). Pelvic floor dysfunction and hypertonicity is thought to contribute to these symptoms. Physical therapy and myofascial release are effective for both conditions, suggesting a common underlying pathophysiology. We aim to investigate the association among pelvic floor tone, LUTS, and pelvic organ distress.

Methods: Retrospective review of consecutive new patients presenting to a multidisciplinary women’s urology center reporting urogenital pain >0/10 on a numeric rating scale. Analyzed variables include patient social and medical history, voiding and pelvic symptoms including Overactive Bladder Questionnaire (OABq), Pelvic Floor Distress Inventory (PFDI−20) and physical exam findings. Levator muscles were assessed vaginally by palpation and pain rated by the patient on 0−10 scale on both right and left sides. Association between mean distress measures and mean scores was assessed using the Pearson correlation coefficient.

Results: 182 women had valid exam, OABq and PFDI−20 scores. 91/182 (50%) of women with reported urogenital pain had no tenderness on levator exam. There was a weak association with increasing mean levator scores and PFDI total score. A mean levator score ≥4 predicted a PFDI score ≥100 with 60.4% sensitivity and 68.7% specificity. PFDI sub-domains of urinary, colorectal-anal and pelvic floor also increased with higher mean levator scores. Interestingly, urinary symptoms and health related quality of life (HRQOL) as measured by the OABq were significantly increased with higher levator scores (rho=0.57, p<0.01 and 0.47, p<0.04, respectively) Figure 1.

Conclusion: Half of women with urogenital pain do not have pelvic floor hypertonicity. Increasing pelvic floor tone leads to more pelvic floor distress. Increasing levator muscle tenderness is moderately associated with worsening LUTS and quality of life.

Figure 1 Overactive bladder questionnaire scores and levator tenderness

![Figure 1 Overactive bladder questionnaire scores and levator tenderness](image-url)
THE CHARACTERISTICS OF WOMEN TESTING POSITIVE FOR MYCOPLASMA HOMINIS AND UREAPLASMA UREALYTICUM IN THE URINARY TRACT

Jessie Liang, MD, Sarah Rentrop, BS, Andrea Balthazar, BS, Clifton F. Frilot II, PhD, Alex Gomelsky, MD
LSU Health-Shreveport, LA
(Presented by: Jessie Liang, MD)

Introduction: Mycoplasma hominis (M) and Ureaplasma urealyticum (U) may be isolated from cervicovaginal specimens in >50% of asymptomatic, sexually active women. M/U can also produce localized urogenital diseases, but much of the literature has focused on these opportunistic infections in “at risk” populations such as those in developing nations. While there is some data regarding the asymptomatic female carriers of M/U, the literature is deficient in characterizing the symptomatic female population. We characterize the population of women with urinary storage or emptying symptoms who test positive for M/U.

Methods: This is a retrospective, IRB-approved chart review of all women who were tested for M/U in our urology clinic between 1/1/11 and 5/15/14. Pregnant women, prisoners and those <18 years of age were excluded. Demographic variables and follow-up data were abstracted from the electronic health record.

Results: Of 514 women who underwent culture for M/U, 208 (40.5%) tested positive (+): 21 (10.1%) were M(+), 155 (74.5%) were U(+), and 32 (15.4%) were (+) for both. The predominant symptom was dysuria (79.3%), followed by urinary urgency (55.2%), frequency (47.6%), urgency urinary incontinence (36.1%), and pelvic pain (30.3%). Nearly 53% were premenopausal and 57.7% were active or previous smokers. Microscopic hematuria was present in 14.4% and only 4.3% had previously documented infections with gonorrhea and/or chlamydia. Over 68% previously had ≥1 culture-proven urinary tract infection (UTI), predominantly with gram-negative bacteria; however, only 12.5% had a concomitant UTI at the time of (+) M/U. Symptom improvement was seen in 81.3% after patient and current partner were treated with doxycycline, but 4.8% became re-infected with M/U during the follow-up period and required additional therapy. During the course of work-up, 25.5% underwent cystoscopy and none were diagnosed with transitional cell carcinoma.

Conclusion: Over 90% of our population testing (+) for M/U had Ureaplasma and most had dysuria as the main symptom. A history of prior sexually-transmitted infections was typically absent. Despite the heavy prevalence of previous or current smokers in our population, the prevalence of microhematuria was low and any cystoscopic evaluations were negative for malignancy. The development of this patient profile may assist in more rapid screening and cost-effective management of women with urinary symptoms in the future.
ASSOCIATION OF PELVIC FLOOR MYOFASCIAL TRIGGER POINTS PSYCHOLOGICAL DISTRESS AND UROLOGIC DYSFUNCTION IN WOMEN WITH PELVIC PAIN

Emily Dove-Medows, CNM, MSN¹, Priyanka Gupta, MD¹, Michael Ehlert, MD¹, Jamie Bartley, MD¹, Jason Gilleran, MD¹,⁵, Janice Tomakowsky, PhD¹, Mireya Diaz, PhD³, Donna Carrico NP, MS¹, Larry T. Sirls, MD¹,⁵ and Kenneth M. Peters, MD¹,⁵
¹Beaumont Health System, Royal Oak, MI; ²Oakland University William Beaumont School of Medicine, Rochester, MI; ³Henry Ford Health System, Detroit, MI
(Presented by: Priyanka Gupta, MD)

Introduction: Myofascial trigger points of the pelvic floor can be present in women with pelvic pain and are an indication of pelvic floor hypertonicity. The aim of this study to is to explore the relationship among trigger points, pelvic pain, urologic dysfunction, anxiety and depression.

Methods: A retrospective chart review of patients presenting to a multidisciplinary women’s urology center between July 2012 and December 2013. Women completed patient history questionnaires including the Overactive Bladder Questionnaire (OAB-q), Pelvic Floor Distress Inventory (PFDI), Generalized Anxiety Disorder−7 (GAD), and the Patient Health Questionnaire−8 (PHQ), which assesses depression. Women had a one-on-one interview and pelvic exam with a clinician during which trigger points were identified. Women were categorized by the presence or absence of trigger points and if present, bilateral or unilateral trigger points were identified.

Results: 324 out of 382 women had complete questionnaires and physical exams. 231 women reported that they had urogenital pain, dyspareunia or both. Of this group, 118/231 had trigger points while 113/231 did not. In patients with urogenital pain and trigger points, 51/107 had bilateral trigger points. Women with missing data were omitted from the analysis. Women with trigger points had more pelvic floor symptoms (Table 1). The number of trigger points was not associated with OAB6 (rho=0.4), OAB13 (rho=0.02) or PFDI (rho=0.12). Women with bilateral trigger points had more colorectal distress (CRADI) than patients with unilateral trigger points (p=0.035). Women with trigger points did not have increased urinary or psychological symptoms compared to women without trigger points.

Conclusion: Pelvic trigger points are associated with a higher level of pelvic symptom bother as measured by higher PFDI score in women with pain and/or dyspareunia. Women with trigger points do not have more urinary symptoms, depression, or anxiety. The presence of bilateral trigger points is associated with more colorectal symptom burden than unilateral trigger points.

Table 1: Association of Trigger Points with Urologic and Psychological Symptoms

<table>
<thead>
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<th>Test</th>
<th>Trigger Points</th>
<th>No Trigger Points</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td>N</td>
<td>118</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>POPD1</td>
<td>31.8±22.7</td>
<td>22.5±20.5</td>
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<tr>
<td>CRADI</td>
<td>22.3±24.3</td>
<td>15.6±18.2</td>
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<tr>
<td>UDI</td>
<td>38.9±26.4</td>
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</tr>
<tr>
<td>PFDI</td>
<td>92.7±62.5</td>
<td>70.7±50.8</td>
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</tr>
<tr>
<td>GAD-7</td>
<td>8.6±6.2</td>
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<td>PHQ-8</td>
<td>8.3±6.4</td>
<td>7.0±6.1</td>
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<tr>
<td>N</td>
<td>118</td>
<td>101</td>
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<tr>
<td>OABq</td>
<td>16.3±7.9</td>
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</table>
**Poster #NM57**

NEW TECHNIQUES IN TRANURETHRAL NEEDLE ABLATION LEADS TO PATIENT PREFERENCE OF PROSTIVA OVER MEDICAL MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA

Craig Smith, MD
DuPage Medical Group, Naperville, IL
(Presented by: Craig Smith, MD)

**Introduction:** Typically patients with lower urinary tract symptoms secondary to benign prostatic hyperplasia (BPH) experience symptom improvement when treated with alpha-blockers (AB) and, after a period of time, 5-alpha reductase inhibitors (5ARI). We have observed a majority of patients, despite a good response to medical therapy, prefer to be off prostate medications if an alternative therapy can provide as good or better response, cause minimal discomfort, and provide durable symptom relief. Advances in treatment techniques and prostatic blocks have accomplished this in our practice

**Methods:** A retrospective review of patients electing in-office transurethral needle ablation (Prostiva RF Therapy –Urologix, Minneapolis, MN) as an alternative to medications over a three-year period was performed. Chart review and telephone interviews were utilized to collect quality of life (QOL) data pre-procedure and at three, six, 12 and 24 months. A new prostatic block technique was utilized pre-procedure, and patient comfort was assessed using the Numeric Pain Score (NPS).

**Results:** 87 patients who received AB, 5ARI or combination therapy prior to transurethral needle ablation were evaluated. Mean QOL pre-procedure and at three months were 2.96 and 0.52, respectively. QOL at six, 12 and 24 months were similar to the three-month 0.46−0.54. NPS data demonstrated a score of 0 (N=67), 1 (N=10), 2 (N=8) and 6 (N=1). No patients have requested a return to AB or 5ARI medications.

**Conclusion:** QOL improvements, intra-procedure comfort, and no retreatment have led patients in our practice to prefer in-office Prostiva as an alternative to BPH medications. As more urologists become familiar with the newer techniques and blocks we speculate that the popularity of in-office prostatic procedures will increase, driven by patient preference.

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**Poster #NM58**

MULTI INSTITUTIONAL EXPERIENCE WITH THE GREENLIGHT SIMULATOR

Bilal Chughtai, MD, Vannita Simma-Chiang, MD, Leanna Laor, MD, Alexander Sarkisian, MD, Claire Dunphy, BA, Abby Isaacs, MS, Matthew Rutman, MD, Richard Lee, MD, MBA, Steven Kaplan, MD, Art Sedrakyan, MD, PhD and Alexis Te, MD

1Weill Cornell Medical College, New York, NY; 2Columbia University Medical Center, New York, NY
(Presented by: Vannita Simma-Chiang, MD)

**Introduction:** The objective of this study was to evaluate the GreenLight Laser SimTM in resident education in a retrospective multi institutional study using a structured curriculum.

**Methods:** Residents from two tertiary care hospitals participated in this study. The curriculum included four SIM modules and four SIM cases on the GreenLight Laser SimTM. Participants of various training levels were evaluated by grams of tissue vaporized in allotted time, average sweep speed, blood loss, and average laser-tissue distance throughout the study.

**Results:** Twenty residents completed 331 trials on the simulator. Increased number of trials on the simulator was associated with a statistically significant increase in vaporization efficiency and reduced laser distance. No significant difference was noted between training level or simulator trial number when examining the average sweep speed or blood loss. Residency level was not found to be associated with improved outcomes.

**Conclusion:** This study demonstrates that use of the GreenLight Laser SimTM is associated with improved vaporization efficiency. The simulator is a useful tool in resident education and instruction of important safety principles and procedural techniques and can help improve vaporization efficiency.
**Poster #NM59**

**PATTERNS OF MEDICAL MANAGEMENT OF OVERACTIVE BLADDER (OAB) AND BENIGN PROSTATIC HYPERPLASIA (BPH) IN THE US: WHO, DOES BETTER?**

Jennifer Anger, MD, MPH¹, Howard Goldman, MD², Xuemei Luo, PhD³, Martin Carlsson MS³, Douglass Chapman MS³, Kelly Zou, PhD³, Fady Ntanios, PhD³, David Russell, MD¹, Canan Esinduy, MD³ and J. Quentin Clemens, MD⁴

¹Cedars-Sinai Medical Center, Beverly Hills, CA; ²Lerner College of Medicine, Cleveland Clinic, Cleveland, OH; ³Pfizer Inc, New York, NY; ⁴University of Michigan, Ann Arbor, MI

(Presented by: Jennifer Anger, MD, MPH)

**Introduction:** BPH and OAB are highly prevalent conditions that place a large burden on the US health care system. Medical management is the mainstay of therapy for both conditions, but few datasets are available that analyze patterns of medication usage and long-term persistence. Our objective is to analyze patterns of prescription medication usage for incident BPH in men and incident OAB in men and women using US observational data.

**Methods:** Truven Health MarketScan® Commercial and Medicare Supplemental Research databases include de-identified medical claims and prescription drug claims for individuals in the US with employer-sponsored health insurance, as well as individuals with Medicare supplemental coverage. The data are pooled from diverse points of care, including large employers, managed care organizations, hospitals and public organizations, thus providing greater generalizability than single payer databases. Men age 18+ had incident BPH with two diagnoses of BPH ≥30 days apart and no BPH diagnosis for one year prior, based on ICD−9 codes for BPH, bladder neck obstruction, urinary retention, and incomplete bladder emptying. Men and women age 18+ were diagnosed similarly with incident OAB, based on ICD−9 codes for OAB symptoms (urinary frequency, urgency, nocturia, urge incontinence). Other criteria included continuous enrollment for 1 year before and 6 months after the first diagnosis date. Medication continuation (persistence), switching, and discontinuation were analyzed through September 30, 2013.

**Results:** 31,701 women and 7,208 men were prescribed OAB medication; 69,079 men were prescribed medication for BPH (Table 1). Medication persistence was much higher overall for BPH than OAB (56% vs 34%, respectively), and was highest among men with BPH age 65+ (62%). Patients age 18−64 were less likely to continue medication than older adults (age 65+) for both BPH and OAB.

**Conclusion:** Persistence was higher with BPH than OAB medications overall, likely reflecting a combination of better efficacy and tolerability of BPH medications.

No financial support was received for this study.

<table>
<thead>
<tr>
<th>Table 1. OAB and BPH Rx Usage Patterns during the Follow-up Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OAB Medications</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Overal N=35,599</td>
</tr>
<tr>
<td>Males N=7,208</td>
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<tr>
<td>Males 18-64 Years N=3,808</td>
</tr>
<tr>
<td>Males 65+ Years N=3,728</td>
</tr>
<tr>
<td>Females N=31,701</td>
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<tr>
<td>Females 18-64 Years N=18,783</td>
</tr>
<tr>
<td>Females 65+ Years N=11,915</td>
</tr>
<tr>
<td><strong>Continued</strong></td>
</tr>
<tr>
<td>13,098 (33.66%)</td>
</tr>
<tr>
<td>2,538 (35.21%)</td>
</tr>
<tr>
<td>1,131 (32.50%)</td>
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<tr>
<td>1,407 (37.74%)</td>
</tr>
<tr>
<td>10,560 (33.31%)</td>
</tr>
<tr>
<td>6,364 (32.17%)</td>
</tr>
<tr>
<td>4,196 (35.21%)</td>
</tr>
<tr>
<td><strong>Discontinued</strong></td>
</tr>
<tr>
<td>22,169 (56.98%)</td>
</tr>
<tr>
<td>4,074 (56.52%)</td>
</tr>
<tr>
<td>2,070 (59.71%)</td>
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<td>1,996 (53.54%)</td>
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<td>10,095 (57.08%)</td>
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<td>11,565 (58.46%)</td>
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<tr>
<td>6,530 (54.79%)</td>
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<tr>
<td><strong>Switched</strong></td>
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<tr>
<td>3,642 (9.36%)</td>
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<tr>
<td>596 (8.27%)</td>
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<td>271 (7.75%)</td>
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<td>1,854 (9.37%)</td>
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<table>
<thead>
<tr>
<th><strong>BPH Medications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overal (Males only) N=69,079</td>
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<tr>
<td>Males N=35,336</td>
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<td>Males 65+ Years N=32,743</td>
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<td>Females N=31,701</td>
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<tr>
<td>Females 18-64 Years N=18,783</td>
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<tr>
<td>Females 65+ Years N=11,915</td>
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<td><strong>Continued</strong></td>
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<tr>
<td>38,762 (56.11%)</td>
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<tr>
<td>38,762 (56.11%)</td>
</tr>
<tr>
<td>18,600 (51.19%)</td>
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<tr>
<td>20,182 (61.50%)</td>
</tr>
<tr>
<td><strong>Discontinued</strong></td>
</tr>
<tr>
<td>25,585 (37.04%)</td>
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<tr>
<td>25,585 (37.04%)</td>
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<td>15,102 (41.56%)</td>
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<td>10,483 (32.02%)</td>
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<td>4,732 (6.85%)</td>
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<td>4,732 (6.85%)</td>
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<td>2,634 (7.25%)</td>
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<td>2,098 (6.41%)</td>
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Poster #NM60
"REGULAR MONITORING" IN OLDER WOMEN ON LONG-TERM NITROFURANTOIN PROPHYLAXIS: WHAT, DOES IT MEAN PRACTICALLY?
Lauren Rego¹ and Philippe E. Zimmern, MD²
¹UT Southwestern Medical School, Dallas, Texas; ²UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

Introduction: To review the current literature for recommendations or guidelines for "regular monitoring" (1) of older women on chronic Nitrofurantoin (NF) prophylaxis to prevent/detect adverse reactions (ARs).

Methods: The recent Beers criteria (2012)(1) recommended avoiding NF for long-term suppression due to the "potential for pulmonary toxicity and availability of safer alternatives". A literature search was performed on PubMed for national organizations, textbooks and any report or publication advocating methods of follow-up to detect and prevent chronic NF-related adverse reactions. Articles were excluded if not in English, or if they studied men, children, or pregnant women.

Results: Thirteen sources recommended various methods to improve the safety of women on long-term NF suppression. Monitoring recommendations for older women were vague, calling for increased scrutiny and education either in general (N=5), or on the part of the physician (N=10) and/or patient (N=3). Two studies (2008, 2012) recommended biannual chest x-rays, liver function tests, and kidney function monitoring, but with no supportive prospective data to justify these guidelines. No studies documented the role of these preventative guidelines in the early detection of long-term NF-related AR, and none addressed the cost-effectiveness of these additional monitoring tests.

Conclusion: While many sources give a variety of recommendations on monitoring an older woman on long-term NF prophylaxis, none appeared to be scientifically tested in the long-run to either detect ARs or prevent them altogether.

1. Beers Criteria Update for Potentially Inappropriate Medication Use in Older Adults. JAGS 2012; 60 616–.
EVALUATION OF BASELINE PHYSICAL AND COGNITIVE FUNCTION IN WOMEN UNDERGOING PELVIC FLOOR SURGERY

Maria Nieto, MD¹, Cassandra Kisby, MD², Catherine Matthews, MD¹ and Jennifer Wu, MD, MPH¹
¹University of North Carolina, Chapel Hill, NC; ²Duke University, Durham, NC

(Presented by: Maria Nieto, MD)

Introduction: Despite data that physical and cognitive function impairment are associated with increased perioperative morbidity, limited data exist regarding these parameters in women planning pelvic floor surgery.

Objective: To assess baseline physical function and cognition in patients scheduled for pelvic reconstructive surgery and to evaluate factors associated with pre-operative upper and lower body function.

Methods: Among a convenience sample of 79 women scheduled for surgery, we collected data on sociodemographics, BMI, and the Functional Comorbidity Index (FCI). We also evaluated Katz Activities of Daily Living (ADL) and Instrumental ADLs. For ADLs, a score of 6 indicates full function, 4 = moderate impairment, and ≤2 = severe functional impairment. IADLs total score ranges from 0 to 8, with lower scores representing less ability to live independently. To evaluate upper body function, we used specifically designed dynamometers to assess handgrip and pinch strength. We evaluated the maximum handgrip and pinch strength based on two efforts. For lower body function, we used the Timed Up and Go Test (TUG), which measures the time required for a patient to rise from a chair, walk three meters, return back to the chair and sit down. Patients with normal function can perform the test in <12 seconds. The Mini-Mental State Exam (MMSE) was used to evaluate cognitive impairment (range 0–30, mild impairment 21–26, moderate 11–20, and severe 0–10).

Results: Mean age was 60.1±14.2 years, a majority were Caucasian (83.7%) and mean BMI was 28.7±6 kg/m2. Overall comorbidity index was low (mean FCI 4.0±2.9), and there was a high level of independence (mean ADL 5.5±0.5; mean IADLs 7.8±1.0). For upper body function, maximum handgrip and pinch strength were 49.0±6.8 lbs and 13.9±3.7 lbs, respectively, which represents normal/above average scores. For lower body function, the mean TUG test was 12.9±5.4 seconds, reflecting mildly impaired mobility. Age, BMI, MMSE, and FCI were significantly associated TUG scores in a multivariate linear regression analysis which also adjusted for IADLs. For cognition, the mean MMSE mean score was 29.0±1.7, and only 3.8% had mild cognitive impairment; no one had moderate-severe impairment.

Conclusion: Women undergoing elective pelvic reconstructive surgery had good physical and cognitive function. The simple Timed Up and Go Test was the tool most likely to identify patients with poorer physical function.

Poster #NM62
REPAIR OF PELVIC ORGAN PROLAPSE IN THE INTERSTITIAL CYSTITIS PATIENT
Natasha Ginzburg, MD, Darlene Morrissey, DO1, Peter O'Hare, MD1, Ryan Sidebottom, DO2 and Kristene Whitmore, MD3
1Drexel University College of Medicine, Philadelphia, PA; 2Albert Einstein Medical Center, Philadelphia, PA; 3Pelvic and Sexual Health Institute, Philadelphia, PA
(Presented by: Natasha Ginzburg, MD)

Introduction: Interstitial cystitis/bladder pain syndrome (IC/BPS) is characterized by bladder or pelvic pain, often associated with urinary urgency and frequency. It has been hypothesized that patients with IC/BPS have a hypersensitivity to stimuli, possibly due to both visceral and CNS mechanisms. Interestingly, patients with IC/BPS tend to have higher rates of previous pelvic and urologic surgery prior to their diagnoses. Some argue that these interventions were unknowingly prompted by undiagnosed symptoms of IC/BPS, while others suggest that pelvic surgery may be a trigger for development of IC/BPS. Because of this association, many surgeons are reluctant to operate on patients with IC/BPS. Little data is available on syndrome specific outcomes in patients with IC/BPS after prolapse surgery.

Methods: This is a single center retrospective study of patients with a diagnosis of IC/BPS who underwent pelvic organ prolapse repair at the Pelvic and Sexual Health Institute between May 2010 and December 2012. Medical records were reviewed for basic demographics, co-morbidities, number of deliveries, surgical history, preoperative physical exam data, preoperative and post operative IC/BPS standardized questionnaires (UDI−6, UIQ−7, ICPI, ICSI, and PFIQ), operative reports, and postoperative physical exam data. Patients were excluded if they were less than 18 years of age, pregnancy after prolapse repair, history of prior prolapse repair, and incomplete questionnaires.

Results: 23 patients were identified, ages 32 to 92. Three patients had posterior repairs, 10 had anterior repairs with or without sacrospinous fixation, nine had anterior and posterior repairs, and 12 patients received concomitant slings. Mean follow up was 19months. The comparison of the mean pre and post-operative symptom scores revealed that UIQ−7, ICSI, and UDI−6 scores all significantly improved (preop 32.14, postop 19.5, p=0.016), (preop 10, postop 7.09, p=0.017), and (preop 9.00, postop 6.32 p=0.002) respectively. Neither PFIQ−7 scores (p=0.17) or ICPI scores (p=0.37) revealed a significant improvement or decline.

Conclusion: Pelvic surgery is safe to perform on IC/BPS patients as it does not appear to be associated with any worsening of IC/BPS symptoms, and may in fact help improve symptoms.
TRIGGER POINT INJECTIONS FOR THE MANAGEMENT OF LOWER URINARY TRACT SYMPTOMS AND SEXUAL PAIN
Sonia Bahlani, MD1, Alexandra King, MD candidate2 and Robert Moldwin, MD2
1The Smith Institute for Urology, New Hyde Park, NY; 2North Shore-LIJ, New Hyde Park, NY
(Presented by: Sonia Bahlani, MD)

Introduction: Patients with pelvic floor dysfunction (PFD) often report lower urinary tract symptoms including urinary frequency, hesitancy, and nocturia. Sexual pain is found in up to 42% of patients with PFD. The etiology of these symptoms is often musculoskeletal with the frequent finding of hyperirritable, tender muscular foci termed “trigger points (TrP)” within the pelvis. The objective of this study was to evaluate the efficacy of anesthetic trigger point injections for symptom management in patients with PFD.

Methods: 48 patients with PFD who received trigger point injections were identified through medical record review. Trigger point injections (TPI) were performed using a 25 gauge spinal needle through a transvaginal, paravaginal, or pararectal approach. Direct patient questioning and VAS scores were used to evaluate post-procedural symptomatology. Categoric data were compared with the chi-square test; binary data were compared with McNemar’s test. Continuous data was analysed via paired t-test. No data was considered censored. All analyses were performed using SPSS version 22.0.

Results: 48 patients with PFD were included. Median age of patients was 47 years [43.1−52.5]. 36 (75%) of these patients are female and 12 (25%) patients are male. Total average volume injected was 4.3ml, with a range of 2−10 ml per session in 0.25−0.5 ml increments. 31 patients (64.6%) that received trigger point injections reported improvement in urinary hesitancy (p<0.0001), nocturia (p<0.0001), and associated constipation (p<0.0001). 82% of patients reported improvement in pain levels after TPI. Average improvement in pain scores was 3.41 points. In total, 22 of 48 (45.8%) patients reported sexual pain. 12 of 19 (63.2%) female patients with sexual pain reported a decrease in dyspareunia (p<0.0001). Three of three male patients (100 %) with ejaculatory pain felt improvement in symptoms (p=.25). No adverse events were noted.

Conclusion: The identification of TrPs of the pelvic floor and surrounding musculature is important to the care of patients with PFD. 70% of patients with PFD reported symptom improvement after receiving trigger point injections. The use of trigger point injections for treatment of sexual pain and lower urinary tract symptoms yields impressive clinical results and can be easily performed in the office setting with small anesthetic doses and very low morbidity.
ASSOCIATIONS AMONG PSYCHOLOGICAL DISTRESS, DYSPAREUNIA AND LEVATOR PAIN IN WOMEN WITH PELVIC PAIN
Janice Tomakowsky, PhD 1, Priyanka Gupta, MD 1, Michael Ehlert, MD 1, Emily Dove-Medows, CNM, MSN 1, Mireya Diaz, PhD 2, Donna Carrico NP, MS 1, Larry T. Sirls, MD 1,3, Jason Gilleran, MD 1,3, Jamie Bartley, DO 1,3, and Kenneth M. Peters, MD 1,3
1Beaumont Health System, Royal Oak, MI; 2Henry Ford Health System, Detroit, MI; 3Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Introduction: Women who present to urology specialty centers often have a complex array of interrelated concerns, particularly women with pelvic/urogenital pain problems. This study examined the associations among pain variables, including urogenital pain, dyspareunia, levator pain, and distress (depression and anxiety) in a sample of women who were seeking evaluation from a multidisciplinary urology center.

Methods: Consecutive women presenting for initial evaluations were targeted. Intake questionnaires assessed medical and behavioral health history, anxiety (Generalized Anxiety Disorder−7) and depression (Patient Health Questionnaire−8). Women rated their current urogenital pain (0–10) and also rated their levator tenderness on vaginal palpation by clinician examiners (left and right sides, 0–10).

Results: Of 380 women, two cohorts were established: 1) Women with and without urogenital pain (Pain Cohort, n=287), and 2) Women with and without dyspareunia (Dyspareunia Cohort, n=213). The cohorts overlapped; 78% of the women with urogenital pain also had dyspareunia. Associations were assessed among presence of pain, depression and anxiety using t-tests and Chi-square analyses. Women with urogenital pain had significantly higher anxiety and depression scores, and women with dyspareunia had significantly higher depression scores (Table 1). Association between mean levator pain scores and distress (anxiety, depression) in each cohort was assessed via Pearson correlation: in the Pain Cohort, rho=0.22 and 0.19 (with anxiety and depression, respectively, p<0.05); and in the Dyspareunia Cohort, rho=0.19 and 0.18 (with anxiety and depression, respectively, p<0.05).

Conclusion: This study affirmed the association between psychological distress and pelvic pain, and found substantial overlap in urogenital pain complaints with dyspareunia. For some women, dyspareunia may uniquely contribute to the distress associated with pain through its association with depression—a topic for further investigation, but the presence of levator pain only marginally affects distress.
**Poster #NM65**  
**HISTORY OF BULLYING AND ABUSE ARE NOT ASSOCIATED WITH INCREASED PELVIC FLOOR SYMPTOMS**  
Priyanka Gupta, MD, Tori Nault, MD, Michael Ehleret, MD, Emily Dove-Medows CNM, MSN, Donna Carrico NP, MS, Jamie Bartley, DO, Jason Gilleran, MD, Larry T. Sirls, MD, Marlene Seltzer, MD, and Kenneth M. Peters, MD  
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI  
(Presented by: Priyanka Gupta, MD)

**Introduction:** Bullying is an aggressive behavior that is widely prevalent in our society particularly during the school-age years. Studies of the impact of bullying show significant somatic adverse effects. We investigate associations of bullying and abuse with pelvic floor symptoms and urogenital pain in women presenting to a multidisciplinary women's urology center.

**Methods:** Retrospective review of a prospective database of patients presenting to a multidisciplinary women's urology center between July 2012 and December 2013. Women answered questions about bullying and abuse history, sexual health, rated their urogenital pain (on a 0–10 scale) and completed the Pelvic Floor Dysfunction Inventory (PFDI–20) and Overactive Bladder Questionnaire (OAB–q). Statistical analyses evaluated victims of bullying and/or abuse compared to those who were not victims with Chi squared and t-tests.

**Results:** 380 patients were reviewed. 257 patients completed questions about bullying victimization, 94/257 (36.6%) reported they were victims of bullying. 376 answered questions on abuse victimization, 94/376 (25.0%) reported they were victims of abuse. Victims of bullying and abuse did not have higher PFDI–20 scores (p=0.865, p=0.411) or OAB–q scores (p=0.833, p=0.881) compared to women who were not bullied or abused. Neither victims of bullying nor victims of abuse reported increased overall, bladder, or pelvic pain compared to non-victims (p>0.05).

**Conclusion:** Bullying and abuse did not predict increased pelvic floor distress, OAB symptoms or increased urogenital pain.

### Table 1: Urinary and Pelvic Floor Symptoms by Bullying and Abuse History

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Victim of Bullying (N=94/257)</th>
<th>History of Abuse (N=94/376)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (Mean score)</td>
<td>No (Mean score)</td>
</tr>
<tr>
<td>PFDI–20 Score</td>
<td>210.64</td>
<td>209.24</td>
</tr>
<tr>
<td>OAB–q Score</td>
<td>36.58</td>
<td>35.99</td>
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<tr>
<td>Overall Pain</td>
<td>3.93</td>
<td>4.07</td>
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<tr>
<td>Bladder Pain</td>
<td>3.23</td>
<td>2.56</td>
</tr>
<tr>
<td>Pelvic Pain</td>
<td>3.97</td>
<td>3.37</td>
</tr>
</tbody>
</table>

*Not all women answered each question in this section*
IMPACT OF BULLYING AND ABUSE ON SEXUAL HEALTH

Priyanka Gupta, MD1, Tori Nault2, Michael Ehlert, MD1, Emily Dove-Medows CNM, MSN1, Donna Carrico NP, MS1, Jamie Bartley, DO1,2, Jason Gilleran, MD1,2, Larry T. Sirls, MD1,2, Marlene Seltzer, MD1,2 and Kenneth M. Peters, MD1,2

1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI

(Presented by: Priyanka Gupta, MD)

Introduction: As many as one in four women have been the victim of bullying, abuse or both. There is a lack of literature describing the impact of these experiences on women’s sexual health. This study examines the relationship between bullying, abuse and sexual health.

Methods: A retrospective chart review of 380 patients presenting to a multidisciplinary women’s center between July 2012 and December 2013. Women completed patient history questionnaires about bullying, abuse, and sexuality followed by a one-on-one interview with a clinician. Patients who did not answer questions were excluded from the analysis.

Results: 380 patients were identified. 376 women responded to questions about any exposure to bullying and abuse, of which 94/376 reported a history of abuse and 94/257 reported being a victim of bullying. Victims of bullying were more sexually active compared to those who were not bullied (70% vs. 55%, p=0.020), Table 1. Victims of bullying reported more dyspareunia compared to women without a bullying history (72% vs. 57% p=0.031). Women with a history of abuse (75% vs. 59% p=0.015) and women with combined history of abuse and bullying (81% vs. 60% p=0.020) had more dyspareunia than patients without a history of abuse or bullying. Victims of bullying were less satisfied with their sexual activity status compared to women without a bullying history (40% vs. 56% p=0.047). Women with a history of abuse were also less satisfied with their sexual activity status (37% vs. 53% p=0.031). Women with neither bullying nor abuse histories were more satisfied with their sexual status compared to those with a history of abuse and bullying (64% vs. 42% p=0.001).

Conclusion: Abuse and bullying victimization have an impact on female sexuality. Victims of bullying are more sexually active, have more dyspareunia, and are less satisfied with their sexual status compared to those who were not bullied. Women with a history of abuse also have dyspareunia and are less satisfied with their sexual status.

<table>
<thead>
<tr>
<th>TABLE 1: Sexual Health in Victims of Abuse and Bullying</th>
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<tbody>
<tr>
<td>Victim of Bullying*</td>
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<td>Yes</td>
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<tr>
<td>---------------------------------------------</td>
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<tr>
<td>Sexually Active</td>
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<tr>
<td>Dyspareunia</td>
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<td>Satisfied with my sexual activity status</td>
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<th>History of Abuse*</th>
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<td>Dyspareunia</td>
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*Not all women answered each question in this section.
Poster #NM67

CYSTOSCOPIC YIELD IN THE EVALUATION OF RECURRENT URINARY TRACT INFECTION
Matthew Pagano, MD, Yanina Barbalat, MD, Kimberly Cooper, MD
Columbia University College of Physicians and Surgeons, New York, NY
(Presented by: Matthew Pagano, MD)

Introduction: Current guidelines are lacking for the workup of women with recurrent urinary tract infection (UTI), though it is common clinical practice to perform cystoscopy and imaging. This study aims to correlate results of these studies to determine overall yield and predictive value in finding significant pathology.

Methods: A retrospective database was examined for all women presenting to a single urologist with chief complaint of recurrent UTI from 1/2010 to 7/2014. All women who underwent a cystoscopy were included; patients with gross or microscopic hematuria were excluded. Cystoscopic findings and imaging including renal/bladder ultrasound (RBUS) or abdominal computed tomography (CT) were reviewed.

Results: A total of 123 women (mean 63 years) had outpatient flexible cystoscopy performed. Patients considered high risk for abnormal findings included 22 patients with immunosuppression for solid organ transplant, 20 with prior gynecologic surgery, and 3 with prior nephrolithiasis. A total of 8 cases (6.5%) yielded significant cystoscopic findings: debris/foreign material (two), bladder diverticulum (two), urethral stenosis (two), bladder carcinoma in situ (one), and ureterocele (one). Five of these cases (4.1%) had unique findings only discovered by cystoscopy. A total of 105 patients (85.4%) had imaging available, including 88 RBUS and 17 abdominal CT scans. A total of 17 significant findings were noted in 14 patients (13.3%), including kidney stones (nine), solid renal mass (two), complex renal cysts (two), diverticulum (one), ureterocele (one), bladder debris (one), and hydronephrosis (one). The negative predictive value (NPV) of normal imaging was 95%. Patients considered high risk were not predictive of abnormal cystoscopy (p=0.50), though risk of abnormal imaging trended near significance (p=0.08).

Conclusion: The overall yield of cystoscopy is relatively low in the workup of recurrent UTI. Imaging studies alone have high NPV (95%) in ruling out significant pathology, though a small number of diagnoses (4.1%) would have been missed by foregoing cystoscopy. No studied risk factor was predictive of abnormal cystoscopy or imaging.

<table>
<thead>
<tr>
<th></th>
<th>Normal-risk (n=76)</th>
<th>High-risk (n=43)</th>
<th>Total (n=123)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal Cystoscopy</td>
<td>6 (7.9%)</td>
<td>2 (4.6%)</td>
<td>8 (6.5%)</td>
</tr>
<tr>
<td>Abnormal Imaging</td>
<td>6 (7.9%)</td>
<td>8 (18.6%)</td>
<td>14 (11.4%)</td>
</tr>
</tbody>
</table>
Poster #NM68
UPPER TRACT IMAGING ABNORMALITIES RELATED TO RECURRENT URINARY TRACT INFECTIONS RARELY FOUND IN WOMEN
Lauren Rego¹, Alana Christie² and Philippe E. Zimmern, MD²
¹UT Southwestern Medical School, Dallas, Texas; ²UT Southwestern Medical Center, Dallas, Texas
(Presented by: Lauren Rego)

**Introduction:** To investigate the rate of upper tract imaging abnormalities as possible source for UTI recurrence in women with documented RUTIs.

**Methods:** Following IRB approval, a prospective database of non-neurogenic women with documented RUTIs (≥ 3 UTI/year) was reviewed for relevant demographic and clinical data (Table 1), as well as radiology-interpreted upper tract imaging study (renal ultrasound (US), CT scan, IVP) findings. Patients were excluded for irretrievable image (3), no imaging study performed (13), an obvious source for RUTI (intermittent catheterization, indwelling catheter, > stage 2 anterior prolapse) (8), or history of pyelonephritis (1). Any upper tract-imaging anomaly was recorded.

**Results:** Obtained: From 2006 to 2014, 170 of 280 women with RUTIs were studied, including US alone (N=76), CT alone (N=47), US and CT (N=38), and IVP with US or CT (N=9). Out of total imaging findings (N=84 in 76 women), 81/84 (96.4%) were noncontributory: duplicated systems (10), non-obstructing renal stone (16), renal cyst (46), renal tumor (1), questionable small renal lesion (8). In 3/76 women (3.6%), mild unilateral hydronephrosis appeared related to RUTI; but no clinical parameters (BMI, gravida, parity, immunosuppression, history of urethral dilation or kidney stones, degree of cystocele, infecting strain, post-void residual) were correlated with these upper tract findings. Six of 15 (40%) patients with kidney stone history had stones on imaging (ranging from 1−3 mm) versus 10/155 (6.5%) of patients that did not have such history had stones on imaging (p < 0.0001).

**Conclusion:** In this cohort of predominantly Caucasian post-menopausal women, upper tract imaging yielded a low percentage of significant findings associated with RUTIs, thus questioning the routine practice of upper tract studies in this population.

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Table 1. Patient demographics (N = 170)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N/Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (avg. ± std. dev.)</td>
<td>62.7 ± 14.9</td>
</tr>
<tr>
<td>BMI (avg. ± std. dev.)</td>
<td>26.4 ± 6.5</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>160/170 (94%)</td>
</tr>
<tr>
<td>Other</td>
<td>10/170 (5%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>13/170 (3%)</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>7/170 (4%)</td>
</tr>
<tr>
<td>Post-Menopausal</td>
<td>133/163 (82%)</td>
</tr>
<tr>
<td>Sexually Active</td>
<td>57/107 (53%)</td>
</tr>
<tr>
<td>Voiding Dysfunction</td>
<td>72/165 (44%)</td>
</tr>
<tr>
<td>History of Urethral Dilation</td>
<td>32/169 (19%)</td>
</tr>
<tr>
<td>History of Kidney Stones</td>
<td>15/169 (9%)</td>
</tr>
<tr>
<td>Cystocele</td>
<td></td>
</tr>
<tr>
<td>Stage 0</td>
<td>99/155 (64%)</td>
</tr>
<tr>
<td>Stage 1</td>
<td>45/155 (29%)</td>
</tr>
<tr>
<td>Stage 2</td>
<td>11/155 (7%)</td>
</tr>
<tr>
<td>Current Chemotherapy</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2/170 (1%)</td>
</tr>
</tbody>
</table>
THE PAIN ASSOCIATED WITH ALLERGIES IN A FEMALE PELVIC MEDICINE AND RECONSTRUCTIVE SURGERY CLINIC
Margaret Mueller, MD,1 Marisa Peri2, Bhumy Dave, MD,1 Alix Leader-Cramer, MD,1 Christina Lewicky-Gaupp, MD,1 Lisa Johnson, MD1 and Kimberly Kenton, MD, MS3
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(Presented by: Margaret Mueller, MD)

Introduction: Central sensitization is a process of the nervous system which results in enhanced responsiveness of the central neurons to input from receptors. This hypersensitivity has been postulated as a theory to explain the symptoms in chronic pain syndromes and may account for sensitivity to medications, leading one to have multiple medication allergies. We aim to determine whether self-reported medication allergies are more common among women with pain diagnoses than women without pain diagnoses presenting for pelvic floor care.

Methods: We performed a retrospective cohort study of new patients presenting to a female pelvic medicine & reconstructive surgery (FPMRS) specialist over one year at a tertiary care academic institution. Consecutive new patients were identified from billing records. Electronic medical records were reviewed and demographic information, primary pelvic floor diagnoses, pain diagnoses and self-reported medication allergies were collected. We identified the following pain conditions from the initial visit: interstitial cystitis/ painful bladder syndrome (IC/PBS), chronic pelvic pain, vulvodynia, dysmenorrhea, endometriosis, irritable bowel disease, fibromyalgia, myofascial pain, and migraines. Total number of allergies and pain diagnoses were calculated. Chi-squared and Mann-Whitney U tests were used to compare categorical and continuous variables respectively.

Results: Of the 1520 women presenting for pelvic floor care 153 (10%) reported three or more allergies. 333 (22%) had at least one pain diagnosis with 46 (14%) of these women having IC/PBS. Three or more allergies were more common in women with any pain diagnosis and IC/PBS compared to women without pain (20.7% and 21.7% versus 7.1% p<0.0005). Women with at least one pain diagnosis were more likely to be younger (p <0.001), of Latina ethnicity (p<0.05), and to report more allergies (p<0.001). Likewise those diagnosed with IC/PBS were more likely to be younger (p<0.001), report more allergies (p<0.001), carry more pain diagnoses (p<0.001), and be smokers (p<0.001). The total number of pain diagnoses was also correlated with the number of self-reported allergy (Spearman's correlation coefficient 0.183, p<0.001).

Conclusion: Excessive medication allergies are more common in women with urologic and other chronic pain diagnoses. Future studies should determine the relationship between allergies or perceived allergies and urologic pain.

EXPRESSION OF URINARY CYTOKINE IN BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS AS A DIAGNOSTIC BIOMARKER
Hana Yoon, MD, PhD1, Jae Yup Hong, MD, PhD2, Jung Hwan Shon, MD, PhD3 and Young Ho Kim, MD, PhD4
1Ewha Womans University; 2Cha University; 3Jesang Hospital; 4Soonchunhyang University
(Presented by: Hana Yoon, MD, PhD)

Introduction: Chronic inflammatory reaction is considered to be one of the major pathophysiologic mechanisms in development of bladder pain syndrome/interstitial cystitis (BPS/IC). In this study, we aimed to investigate the changes of inflammatory reaction related cytokines to find a diagnostic biomarker for BPS/IC.

Methods: Subjects were adults aged more than 20 years old prospectively divided into two groups as BPS/IC (4 males and 12 females) and age matched healthy control (6 females) groups. BPS/IC was diagnosed based on patients’ symptoms according to ICS definition. Urine samples were collected using urethral catheter. For cytokine evaluation, expression of SDF–α(stromal cell derived factor–α), TRAIL(TNF-related apoptosis inducing ligand), and IL–6 (Interleukin–6) were assessed and analyzed using multiple antigen bead assay (Luminex, Austin, Texas, USA).

Results: Mean age of each group was BPS/IC: 64(48–74) years old and control: 58(52–70) years old, respectively (p>0.05). Urinary expression of SDF–α, TRAIL and IL–6 were significantly elevated in BPS/IC group compared with the control group (SDF–α p=0.041; TRAIL p=0.0398; IL–6 p=0.02).

Conclusion: SDF–α, TRAIL and IL–6 were significantly elevated in BPS/IC urine. The results support that inflammation takes significant role in developing BPS/IC. And inflammatory cytokines such as SDF–α, TRAIL, and IL–6 could be considered as the significant biomarker for diagnosis and treatment response.
THE DIAGNOSTIC AND TREATMENT PATTERNS OF UROLOGISTS IN THE UNITED STATES FOR INTERSTITIAL CYSTITIS

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(Presented by: Dana Kivlin, DO)

Introduction: Interstitial cystitis and bladder pain syndrome is still not completely understood making it challenging to both diagnose and treat. The current literature elucidating this disease process is relatively sparse and without a clear consensus with regards to diagnosis and treatment it is important to evaluate how practicing Urologists are managing these patients.

Methods: Urologists across the United States completed a 19-item survey addressing diagnostic and treatment methods for interstitial cystitis. Participation was voluntary and no compensation was provided for completion of the survey.

Results: Ninety-five surveys were completed and returned. The majority of respondents consider themselves to be general Urologists (92%) and most prefer to manage IC/BPS patients themselves with only 33% referring these patients. Almost half (47%) believe that the etiology of IC is still unknown. Cystoscopy with hydrodistension is the most common approach to diagnosis (70%) followed closely by validated symptoms scores (65%). Oral medication is the most commonly used treatment (92%) of which pentosan polysulfate is the most commonly used agent. Oral medication is followed by intravesical and bladder hydrodistention, at 77% and 74%, respectively. Most Urologists selected multiple different treatments modalities. AUA Guidelines were followed by only 15% of the respondent Urologists.

Conclusion: This study provides a unique snapshot into the current common practices for both diagnosing and managing patients with interstitial cystitis. The pattern for the management of interstitial cystitis remains variable with most Urologists using multiple modalities for both diagnosing and treating IC/PBS, which commonly leads to a diagnosis of exclusion that can be managed, but not cured. This variability and inconsistency with any one diagnostic and or treatment modality reflects the weakness of our current understanding of this disease process. This underscores the need for more dedicated research in this field. Until the pathophysiology is better delineated, diagnosis and treatment will remain without consensus.
CHARACTERISTICS OF WOMEN PRESENTING WITH UROGENITAL PAIN AND DYSPAREUNIA IN A MULTIDISCIPLINARY UROLOGY CLINIC

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1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI; 3Henry Ford Health System, Detroit, MI

(Presented by: Priyanka Gupta, MD)

Introduction: Pelvic pain is a complex condition with several intervening psychosocial and medical factors. The objective of this study is to compare characteristics between women presenting with pelvic pain and those without at a multidisciplinary women’s urology center.

Methods: A retrospective review was performed between July 2012 and December 2013 of women evaluated in a women’s urology center including intake questionnaires on medical history, symptoms, and urogenital pain, self reported on a 0–10 scale. Patients reported the severity of levator muscle pain with palpation during vaginal examination by the clinician (left and right on a 0–10 scale). Patients were divided into subgroups of urogenital pain or dyspareunia. Statistical significance of differences between groups was assessed by t-test or Chi-square test for continuous and categorical variables respectively.

Results: 324/380 of patients had complete information and were included. 207/324 reported urogenital pain >0 and 112/324 reported dyspareunia. Within the urogenital pain group 77/207 (37%) did not have dyspareunia, which allowed for examination of characteristics of each group. Women with urogenital pain were younger, had a restricted-diet, used less alcohol, were less likely to smoke, and were more likely to have a history of abuse than patients without pain. (Table 1) Women with urogenital pain reported less pad use, more daytime voids, greater emotional distress, and used more pain medications than the control group. Dyspareunia patients were more interested in discussing sexual health and had less satisfaction with sexual status. Both urogenital pain and dyspareunia patients were more likely to have a history of multiple pelvic surgeries and bilateral levator muscle pain >0 on examination compared to the controls.

Conclusion: Patients with urogenital pain are younger and at presentation already employ more behavioral modification techniques. Dyspareunia patients are more interested in their sexual health. Both groups have had multiple pelvic surgeries and have levator muscle tenderness on examination. Patients with levator muscle tenderness should be strongly considered for pelvic floor physical therapy.
Poster #NM73

NEUROMETER MEASUREMENT OF CURRENT PERCEPTION AND PAIN TOLERANCE THRESHOLDS IN PATIENTS WITH PAINFUL BLADDER SYNDROME

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Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

**Introduction:** Bladder pain syndrome/interstitial cystitis (BPS/IC) is a complex syndrome with frequent systemic effects. Multiple studies evaluating pain tolerance utilizing contact heat stimulus and thumbnail pressure have demonstrated hyperalgesia in patients with BPS/IC. We aim to describe current perception thresholds (CPT) and pain tolerance thresholds (PTT) of the index finger in patients with BPS/IC.

**Methods:** Six men and four women who have been prospectively enrolled in the NIH funded Cyclosporine in Interstitial Cystitis study underwent initial evaluation with the Neurometer System. These patients failed at least three treatments for BPS/IC. Index finger CPT and PTT studies were performed at 5 Hertz (Hz), 250 Hz, and 2000 Hz to selectively depolarize small unmyelinated C fibers, small myelinated A-delta fibers, and large myelinated A-beta fibers, respectively. To examine these thresholds, the neurometer was selected for its ability to generate a constant current stimulus by accounting for variations in tissue impedance, its capacity to evaluate sensory nerve function in fiber sub-populations, its sensitivity to detect sensory changes, as well as its proven reproducibility and reliability. This is in contrast to previously published more subjective methods for measurement of PTT such as heat or thumbnail pressure.

**Results:** The mean age (SD) of this patient population was 48.3 (14.6) years and the mean duration (SD) of their symptoms was 108 (86) months. Patients’ mean (SD) Interstitial Cystitis Symptom Index and Problem Index scores were 15.3 (2.7) and 14.4 (2.0), respectively. Mean CPT (SD) of the index finger at 5 Hz was 0.52 (0.29) milliAmperes (mA), at 250 Hz was 0.98 (0.39) mA, and at 2000 Hz was 2.4 (0.87) mA. These values are not statistically different from published norms. Mean PTT (SD) of the index finger at 5 Hz was 5.20 (3.56) mA, at 250 Hz was 5.02 (3.34) mA, at 2000 Hz was 7.99 (2.24) mA, which does not appear to be statistically different from -non-BPS/IC patients.

**Conclusion:** Evaluation of CPT and PTT with the neurometer offers advantages for both PTT testing as well as sensitivity. Patients with BPS/IC have current perception and pain thresholds that are not different from published norms. This is in contrast to several previous studies reporting hyperesthesia in this patient population.
Poster #NM74
LONG-TERM OUTCOME OF URETHROVAGINAL FISTULA REPAIR
Dominic Lee, MD¹ and Philippe E. Zimmer, MD²
¹UT Southwestern Medical Center, Dallas, Texas; ²UT Southwestern Medical Center
(Presented by: Dominic Lee, MD)

Introduction: To review long-term functional outcomes after urethro-vaginal fistula (UVF) repair.

Methods: Following IRB approval, the charts of women who underwent transvaginal non-irradiated UVF repair with minimum six months follow-up were reviewed. Extracted data included demographics, etiology, prior repairs, surgical UVF repair procedure, secondary interventions, and functional outcomes. Surgical outcomes were assessed by validated questionnaires; Urogenital distress inventory (UDI−6), Impact on Incontinence questionnaire (IIQ−7), Female sexual function index (FSFI) and Visual analogue scale for QoL. Two groups were compared: (1) synthetic sling related versus (2) non-sling related UVF. Descriptive statistics were applied with p< 0.05 for significance.

Results: From 1996 to 2013, 18 patients underwent UVF repair. Mean age was 46 years (range 20−66), with BMI 29 (range 21−42), and mean follow-up at 52 months (range 9−142). Overall repair success rate was 95%. One recurrence occurred in a renal transplant woman on immunosuppressant who eventually required a cystectomy and ileal conduit. Size of UVF defect was from 1 mm to 2 cm. Prior failed UVF repair was recorded in 11 women (61%). Of the 18 women, one had primary repair without tissue interposition while 17 had Martius fat pad graft (MFPG)(2), autologous pubovaginal sling (PVS) (11), or both (4). As shown in Table 1, there was no statistical difference in UDI−6 outcomes between the two groups for Q2 and Q3, but statistical difference noted for Q4: 1.9 vs. 0.8 (p=0.03) and Q5: 1.3 vs. 0 (p=0.02). No differences in IIQ−7 were noted between the two groups (p=0.14). Of the 18 patients, four remained sexually active and of those, two responded to FSFI (50%) with low scores. Reoperation rate was 33% (6 women) with three requiring bulking agent for recurrent SUI, two transurethral laser for residual urethral sling mesh strands, and one urethral dilation.

Conclusion: This large contemporary series of non-radiated UVF indicates a satisfactory outcome in UVF closure repair at a mean four−five-years long-term follow-up, with the synthetic sling related group performing worse.

Table 1: Outcome of following urethrovaginal fistula (UVF) repair

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sling</th>
<th>Non-sling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>50±13</td>
<td>42±14</td>
<td>46±14</td>
</tr>
<tr>
<td>BMI (mean)</td>
<td>28±5.5</td>
<td>34±12</td>
<td>30±7.4</td>
</tr>
<tr>
<td>Gravida</td>
<td>2±1</td>
<td>2±1</td>
<td>2±1</td>
</tr>
<tr>
<td>Para</td>
<td>2±1</td>
<td>2±1</td>
<td>2±1</td>
</tr>
<tr>
<td>Sling type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOT</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUS</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of fistula (mm)</td>
<td>50±85</td>
<td>50±76</td>
<td>51±80</td>
</tr>
<tr>
<td>Anatomical closure (%)</td>
<td>9±189</td>
<td>8±172</td>
<td>9±176</td>
</tr>
<tr>
<td>Leak (%)</td>
<td>8±96</td>
<td>4±144</td>
<td>6±127</td>
</tr>
<tr>
<td>Q1: Frequency</td>
<td>1.0±1.2</td>
<td>0.9±1.1</td>
<td>1.0±1.2</td>
</tr>
<tr>
<td>Q2: Urge Leak</td>
<td>2.2±1.1</td>
<td>0±0.0</td>
<td>1.4±1.1</td>
</tr>
<tr>
<td>Q3: Stress Leak</td>
<td>1.3±1.3</td>
<td>0.5±0.6</td>
<td>1.0±0.0</td>
</tr>
<tr>
<td>Q4: Smell Leak</td>
<td>1±0</td>
<td>0±0</td>
<td>0±0</td>
</tr>
<tr>
<td>Q6: Emptying difficulty</td>
<td>4.3±1.2</td>
<td>0±0</td>
<td>0±0</td>
</tr>
<tr>
<td>Q5: Pain</td>
<td>1.0±1.0</td>
<td>0±0</td>
<td>0±0</td>
</tr>
<tr>
<td>Total</td>
<td>7.6±5.4</td>
<td>4.6±2.1</td>
<td>6.1±3.4</td>
</tr>
<tr>
<td>BG-7</td>
<td>7.7±11</td>
<td>1±0</td>
<td>5±9.2</td>
</tr>
<tr>
<td>Visual Analogue Scale</td>
<td>3±14</td>
<td>15±0</td>
<td>9±0.0</td>
</tr>
<tr>
<td>Sexual Activity</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>No (%)</td>
<td>19±0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown (%)</td>
<td>1±0</td>
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</tr>
<tr>
<td>Yes (%)</td>
<td>2±2</td>
<td></td>
<td>4±2</td>
</tr>
</tbody>
</table>

RP=retropubic, TOT=transobturator, SUS=single incisional
PRESENTATION OF FEMALE URETHRAL DIVERTICULUM: HOW COMMON IS THE CLASSIC TRIAD OF THE THREE “D’S”
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD
Medical University of South Carolina, Charleston, SC
(Presented by: Drew Freilich, MD)

Introduction: Historically, the clinical presentation of urethral diverticula have been associated with a classic triad of signs and symptoms including dysuria, dyspareunia and post void dribbling. In the modern era of diagnostic imaging, it is unclear whether such a pattern of presentation remains common.

Methods: Following IRB approval, we reviewed the case records of 54 consecutive female patients who underwent transvaginal urethral diverticulectomy (TVUD) with or without concomitant procedures such as anti-incontinence surgery or Martius flap. Urinary symptoms were documented before and after. Any complaint at any time of the “classic triad” of dysuria, dyspareunia and post-void dribbling was considered positive for this study. Results of treatment were documented by physical examination, patient symptom assessment and imaging.

Results: The mean age of the patients was 52 years (range 29 to 77). 54% of patients were African-American and 46% were Caucasian. The most common presenting symptoms were recurrent urinary tract infection (UTI) (70%), stress urinary incontinence (SUI) (65%), dyspareunia (61%), vaginal mass (61%), urinary urgency (48%), dysuria (39%). The classic triad was present in only 7% of patients. On physical examination the most common findings were a tender anterior vaginal wall (52%) and urethral discharge (32%). 11% of patients were incidentally diagnosed during physical examination. At a mean postoperative follow-up of 14 months (range 0 to 72), the most commonly reported symptoms were frequency (20%), SUI (15%), dyspareunia (5%), and recurrent UTI (7%). No patient reported a classic triad after surgery.

Conclusion: Stress urinary incontinence, irritative bladder symptoms, vaginal mass, and dyspareunia are the most common presentations of UD. The classic triad of the “3 D’s” is an uncommon presentation and thus patients without these symptoms should not be excluded from further evaluation for UD. Surgical reconstruction results in resolution of the majority of presenting symptoms.

There were no external sources of funding.
OUTCOMES OF TREATMENT OF STRESS URINARY INCONTINENCE ASSOCIATED WITH FEMALE URETHRAL DIVERTICULA
Drew Freilich, MD, Ross Rames, MD, Ahmed El-Zawahry, MD, Michelle Koski, MD, Eric Rovner, MD
Medical University of South Carolina, Charleston, SC
(Presented by: Drew Freilich, MD)

Introduction: Female urethral diverticula (UD) may present with a variety of different symptoms including stress urinary incontinence (SUI). Surgical repair of SUI may be done concomitantly with urethral diverticulectomy. However, some surgeons may be reluctant to repair SUI at the time of urethral diverticulectomy due to the additional surgical time and potential morbidity of anti-incontinence surgery. We assessed surgical outcomes of the concomitant treatment of SUI at the time of transvaginal urethral diverticulectomy (TVUD).

Methods: Following IRB approval, we identified patients with a UD and SUI who underwent TVUD between 2004 and 2014. SUI was documented before and after surgery using subjective and objective parameters. Martius flap and/or autologous pubovaginal fascial slings (APVS) were used selectively based on surgeon and patient preference. Postoperatively, all patients were imaged prior to catheter removal with voiding-cystourethrogram.

Results: There were 35 pts (65%) with UD and concomitant SUI. Mean age was 52 years (range 34–77). There were 18 Caucasians, 17 African American. Mean follow-up was 15.4 months (Range 0–72). 22/35 patients with SUI underwent APVS concomitant to TVUD. Of these 22 patients 4 had prior SUI surgery. 77% of patients who underwent a simultaneous APVS at the time of TVUD had resolution of SUI. 7 of 11 patients who underwent TVUD without APVS had resolution of SUI postoperatively (2 patients were lost to follow up). Five developed de-novo SUI following TVUD. Surgery resulted in the improvement or resolution of the majority of preoperative symptoms including recurrent urinary tract infection (UTI) (77% vs. 11%), dyspareunia (63% vs. 6%), and urgency (49% vs. 14.3%) (preoperative vs. postoperative). Complications included two patients with prolonged urinary retention following APVS requiring sling lysis. There was one patient with a recurrent UD 18 months postoperatively.

Conclusion: SUI is often associated with female UD. Surgical reconstruction of UD often results in satisfactory control of urinary symptoms including SUI when both are treated concomitantly. Treatment of SUI with APVS when undergoing TVUD is feasible with satisfactory outcomes. There is no external funding to report.
TEMPORAL TRENDS IN CONCOMITANT CYSTECTOMY WITH URINARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE

Elizabeth T. Brown, MD, MPH, David Osborn, MD, Stephen Mock, MD, Amy Graves MPH, Laurel Milam, Douglas Milam, MD, Melissa Kaufman, MD, PhD, Roger Dmochowski, MD, W. Stuart Reynolds, MD, MPH
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(Presented by: Elizabeth T. Brown, MD, MPH)

Introduction: Controversy persists regarding the necessity of concomitant cystectomy with urinary diversion for benign indications. Beyond single institution reports, sparse data is available to describe how concurrent cystectomy is employed on a national level.

Objective: This study aims to analyze temporal trends in cystectomy at the time of urinary diversion for benign indications in a nationally representative population.

Methods: Patients undergoing urinary diversion with or without concurrent cystectomy for benign indications were identified from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS) data from 1998–2011 using ICD–9 diagnostic and procedure codes. Patients were categorized as diversion alone (ICD9 56.51) or with concurrent cystectomy(ICD9 57.79, 57.71). We abstracted hospital- and patient-level factors, including Elixhauser Comorbidity Index, and analyzed temporal trends by year, incorporating standard weighting techniques for NIS data.

Results: A total of 3,292 patients underwent urinary diversion for benign indications during the 14-year period with 2,427 (73%) patients undergoing urinary diversion only and 865 (27%) patients undergoing diversion with concurrent cystectomy. During the study time frame, there was a significant increase in the proportion of urinary diversions with concomitant cystectomy from 19% to 34% (p=0.0008, Figure 1). Increasing comorbidity(p=0.026), teaching hospital(vs. non-teaching)(p=0.025), and Medicare insurance(vs. private insurance)(p=0.009) were all associated with increased concurrent cystectomy over time. Geographically, use of concurrent cystectomy decreased in the Midwest and West relative to the Northeast (p=0.033 and 0.024, respectively), with no changes in the South. Age, gender, and hospital location (urban vs. rural) did not demonstrate significant changes.

Conclusion: In the US, there has been an overall increase in the use of cystectomy at the time of urinary diversion for benign indications, although factors driving the clinical decisions for this increase does not demonstrate consistency across analyzed factors. Future opportunities exist to describe this shift in practice patterns and outcomes from benign cystectomy.
Poster #NM78
IMMEDIATE POST-OPERATIVE COMPLICATIONS OF CONCOMITANT CYSTECTOMY WITH URNARY DIVERSION FOR BENIGN INDICATIONS IN THE NATIONWIDE INPATIENT SAMPLE
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(Presented by: Elizabeth T. Brown, MD, MPH)

Introduction: Controversy exists as to whether concomitant cystectomy with urinary diversion for benign indications increases the risk of post-operative complications. Beyond single institution reports, little data exists to describe post-operative complications of concurrent cystectomy on a national level.

The goal of this study was to analyze immediate post-operative complications in patients undergoing cystectomy at the time of urinary diversion for benign indications in a nationally representative population.

Methods: We identified patients undergoing urinary diversion with or without concurrent cystectomy for benign indications from the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS) data from 1998−2011 using ICD−9 diagnostic and procedure codes. Patients were categorized into those who underwent diversion alone (ICD9 56.51) or with concurrent cystectomy (ICD9 57.79, 57.71). We abstracted hospital- and patient-level factors, including Elixhauser Comorbidity Index, and analyzed immediate post-operative complications during the surgical hospitalization, incorporating standard weighting techniques for NIS data.

Results: Of the total 3,292 patients, 73% underwent urinary diversion only and 27% underwent concurrent cystectomy with diversion. The most common indications were neurogenic bladder, radiation cystitis, interstitial cystitis, and recurrent fistula. The two groups differed slightly by age, gender, diagnoses, and comorbidity. Overall, 31% of patients experienced a complication, of which the most common were gastrointestinal (14.8%), infectious (5.5%), urinary (6.7%), and cardiac (2.2%). After logistic regression modeling to adjust for independent factors, a cystectomy at the time of diversion was associated with a significantly increased risk of post-operative complications over diversion alone (OR = 1.21, 95% CI: 1.00−1.47). This risk was increased in patients with older age and medical co-morbidity, but decreased for patients at urban hospitals, in the South and with private insurance.

Conclusion: In the US, there is an increased prevalence of immediate post-operative complications with the use of concomitant cystectomy at the time of urinary diversion for benign indications. Often, these patients are older, and commonly have a higher comorbidity index. This data raises critical questions in this complex patient population and further analysis will provide important information to guide patient counseling.
EXTRACELLULAR MATRIX MATERIAL DERIVED FROM PORCINE URINARY BLADDER: INITIAL EXPERIENCE IN PATIENTS WITH VESICO-VAGINAL FISTULA

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(Presented by: Jose Flores, MD)

Introduction: Vesico-vaginal fistula (VVF), a chronic inflammatory communication. MatriStem, a sterile extracellular matrix product (ACell Corporation, Columbia, MD), was designed to promote wound healing and tissue repair. Derived from porcine urinary bladder, it contains numerous growth factors, collagens, an intact epithelial basement membrane, and antimicrobial factors.

Objective: Our objective was to assess our initial experience with MatriStem in patients with VVF.

Methods: For our retrospective review, we obtained the medical records of 40 consecutive patients who were seen for VVF during 2013 and 2014 in the urology clinic at the University of Minnesota medical center. The cases that were treated with MatriStem both micronized particles or grafts to repair VVF were selected. Clinical variables; VVF causes and locations; and types of procedures performed such as open, endoscopy or robotic surgery, their surgical outcomes, and complications were assessed for the review. We had no financial funding or potential conflict of interest.

Results: Of the 40 VVF patients, eight were treated with MatriStem (mean age, 48.25 years; mean body mass index, 28.6). Comorbidities included type 2 Diabetes mellitus (n = 1), endometrial cancer (n = 1), and rectal cancer (n = 1). The most common previous surgery was hysterectomy (n = 4); in addition, two patients had undergone pelvic radiation, and 4 cases had undergone one or more attempts to repair their VVF before the MatriStem procedure. VVF causes were hysterectomy (n = 4), proctectomy (n = 1), pelvic organ prolapse repair or other pelvic surgery (n = 2), and C-section with bladder injury (n = 1). The mean VVF duration before the MatriStem procedure was 51 weeks. In seven patients, the VVF location was in the posterior bladder behind the trigone. In six patients, the MatriStem procedure was performed by robotic surgery; in three we injected micronized particles of MatriStem via cystoscopy and vaginoscopy. The mean number of MatriStem graft placement attempts was 1.63; the mean duration of the procedure was 194.87 minutes. We noted no major complications during and after the procedure. The mean duration of urinary catheter use was 6.3 weeks. A total of six of the MatriStem patients progressed to full healing, with their VVF remaining closed for six months after the procedure.

Conclusion: MatriStem effectively treats VVF. Further investigation is needed to establish MatriStem as a standard treatment for VVF patients.
**Introduction:** Radical Cystectomy (RC) is standard of care for management of invasive bladder cancer. Continent urinary diversion is preferred by some patients and orthotopic urinary diversion (OUD) has become the procedure of choice for most men. OUD in women, however, is much less common. The main reason for this is the approximately 30% rate of hypercontinence (HC) in women. One of the reasons for the high rate of HC in women might be lax support of pelvic structures as seen in women with pelvic organ prolapse. As such, we performed abdominal sacrocolpopexy (ASC) at the time of OUD in women to see if it led to decreased rates of HC.

**Methods:** Following IRB approval, a retrospective review of all female patients receiving OUD and ASC at a single center from 1995–2013 was performed. ASC was performed after RC was complete, the ileal neobladder had been fashioned, and prior to the urethro-enteric anastomosis. A flap of posterior peritoneum was created by dissecting the peritoneum off the sigmoid colon and the posterior vaginal wall to the vaginal. The distal leaf of mesh or a 2 cm strip of rectus fascia was then sutured to the proximal anterior vaginal wall and the apex using interrupted permanent sutures. The proximal end was next sutured to the anterior longitudinal ligament at the sacral promontory. The peritoneal flap was then used to cover the mesh, effectively placing it in the retroperitoneum. HC was defined as the need to perform intermittent catheterization (IC) due to an inability to empty the neobladder as assessed by post-void residual measurements at any time after discharge. Variables assessed included: postoperative complications, use of mesh, rate of HC, and rate of post-operative incontinence.

**Results:** A total of nine women underwent cystectomy with OUD and concurrent ASC during the specified time period, all for urothelial carcinoma. Average patient age was 54 years (27–69). Mean followup was 61.6 months (5–123 months). None of those who underwent ASC had HC or incontinence post-operatively. Polypropylene mesh was used in six of the patients who underwent ASC, with rectus fascia used in the remaining three. No mesh-related complications were noted in this cohort. Pelvic abscess was noted in one patient who underwent ASC with rectus fascia.

**Conclusion:** ASC at the time of radical cystectomy and OUD is safe and effective. It appears to be associated with decreased rates of HC and is associated with minimal additional morbidity.
FEMALE URETHRAL DIVERTICULECTOMY: PERIOPERATIVE OUTCOMES OF A MULTI-INSTITUTIONAL PROSPECTIVE DATABASE

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(Presented by: Deborah Sperling, MD)

Introduction: Few studies have been done to evaluate the perioperative outcomes of urethral diverticulectomy. We sought to assess these outcomes using a large multi-institutional prospectively collected database.

Methods: Patients were identified using the American College of Surgeons National Surgical Quality Improvement Program (ACS−NSQIP) Participant User Files (2007−2012) and the Current Procedural Terminology (CPT) code for female patients who underwent urethral diverticulectomy (53230). Preoperative variables and postoperative complications were outcomes of interest. Multivariable logistic regression models were used to assess the impact of preoperative variables on the rate of overall complications, urinary tract infections, prolonged operative time and prolonged length of stay.

Results: 122 urethral diverticulectomies were performed during the study period. The cohort was relatively healthy with no reported pre-operative comorbidities. The average procedure length was 84 minutes, and most patients went home the same day. The overall complication rate was only 3.3%. The most common complication was urinary tract infection; all 4 patients with complications developed a urinary tract infection, and one also developed a superficial wound infection. In multivariate analysis, preoperative variables including patient characteristics, smoking status, lab values and comorbidities were not found to have a statistically significant effect on the rate of overall complications or specifically on urinary tract infections, prolonged operative time or length of stay.

Conclusion: To our knowledge, our study represents the largest multi-institutional cohort of female patients having undergone urethral diverticulectomy. These patients were a relatively healthy group. The procedure is short and most patients go home the same day. The complication rates are very low with the most common complication being urinary tract infection.
INTRODUCTION: Age greater than 65 years is considered a predictor for successful pessary use. However, the evidence available to support this is scarce. We hypothesize that women greater than 65 years of age will have higher subjective improvement (PGI-I) than younger patients in a prospective pessary study.

METHODS: This is a preliminary report of a prospective study evaluating the impact of pessary use among POP patients seeking treatment in Chile. Patients have been recruited since September 2013. Patients were evaluated by POPQ, pelvic US, stress test, two-hour pad test, PFDI-20, P-QoL and GHQ-12 (a psychologic health screening test). At least three months of follow up (f/u) was required for inclusion. Subjective improvement was evaluated with PGI-I –a patient answer of “very much or much better” was considered as improvement.

Student’s t-Test, Mann-Whitney U, Chi-Square and Fisher’s Exact Test were used as appropriate. A logistic regression was performed to confirm age (younger than 65) as an independent risk factor.

RESULTS: 64 women with POP were included. 35 (57.4%) patients were <65 years old. The pessary types used were Gellhorn (56.3%), Ring (31.3%), Donut (9.4) other (3.2%). The univariate analysis by age status is shown in Table 1. No differences were found in pad and stress test. Those over age 65 tended to have more advanced anterior and apical prolapse. There was a trend to higher rate of improvement in older patients (77.1 vs. 93.1% p= 0.097). These slight differences disappear after controlling for confounding factors in a multivariable analysis.

CONCLUSION: Six months after placement 84% of patients report clear subjective improvement using a pessary. The improvement rate is higher in older patients, but could be explained by other confounding factors instead of age. One potential explanation is that patients with worse baseline anterior and apical POP could consider any change at f/u as a much more important improvement. However, our current study is underpowered to find statistically significant differences. A sample size 19 fold greater is needed to obtain a power of 0.8.

Funding: FONIS/CONICYT-Chile.
STRONG ASSOCIATION BETWEEN PROLAPSE-RELATED SYMPTOM SCORES AND DEPRESSIVE SYMPTOMS AMONG PELVIC ORGAN PROLAPSE (POP) PATIENTS – A CROSS-SECTIONAL STUDY

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(Presented by: Javier Pizarro-Berdichevsky, MD)

Introduction: Many women with POP exhibit depressive symptoms (DS); however, there is no consensus whether women with prolapse have more DS than women without POP and if there is a relationship of DS with worse POP symptoms and QoL. We hypothesize that women with DS and POP have worse symptoms and QoL scores.

Methods: This report is part of a prospective study evaluating the impact of pessary use among POP patients seeking treatment in Chile. Patients have been recruited since September 2013. Patients were evaluated by POPQ, pelvic US, voiding diaries, stress test, 2 hr pad test, PFDI−20, P−QoL and GHQ−12 (a psychologic health screening test) for DS. A GHQ−12 score ≥5 was “positive”. A sample size of 78 was needed to find correlation with higher score in the PFDI−20. Student’s t-Test, Mann-Whitney U, Chi-Square and Fisher’s Exact Test were used as appropriate. A logistic regression was performed to confirm GHQ−12 as an independent risk factor.

Results: 91 women with POP were included. 47 (51.6%) patients had a positive GHQ−12. The univariate analysis by GHQ−12 status is shown in Table 1. No differences were found in POPQ, pad and stress test. GHQ−12 was associated with higher scores in PFDI−20 and 7 of 9 domains of the P−QoL. GHQ−12 persisted as an independent risk factor for worse P−QoL scores after multivariable analysis (table 2).

Conclusion: A “positive” screening for DS was associated with worse scores in PFDI−20 and P−QoL. However there were not differences in objective measurements. This could be explained by the fact that depressed patient’s interpreted their symptoms differently. The study is limited by lack of: control group, diagnostic interview for DS, analysis between GHQ−12 continuous score and prolapse-related outcomes. At completion of the larger prospective study, we will be better able to understand if there is any causality between DS and POP symptoms and QoL.
Video #7
DORSAL ONLAY BUCCAL MUCOSA URETHROPLASTY FOR BENIGN FEMALE STRicture DISEASE
Marisa Clifton, MD, Herman Bagga, MD, Nitya Abraham, MD, Kenneth Angermeier, MD, Sandip Vasavada, MD
Cleveland Clinic Foundation, Cleveland, OH
(Presented by: Marisa Clifton, MD)

Female urethral stricture disease is a rare entity that can be difficult to treat. Urethral dilation is associated with repeat procedures and definitive management should be heavily considered in this patient population. Herein, we describe the case of a woman with a midurethral stricture and the operative technique of dorsal onlay buccal mucosa urethroplasty.

Video #8
Surgical management of urethral diverticulum
Brad Gill, MD, Adrienne Quirouet, MD, Sandip Vasavada, MD
Cleveland Clinic, Cleveland, OH
(Presented by: Brad Gill, MD)

Surgical management of a complex urethral diverticulum.

Video #9
SKENE’S GLAND CYST EXCISION
Philippe E. Zimmern, MD, Gary E. Lemack, MD
UT Southwestern Medical Center, Dallas, TX
(Presented by: Philippe E. Zimmern, MD)

Introduction: To review our experience with the long-term outcome after Skene’s gland cyst excision
Methods: A surgical database of all procedures performed by two surgeons at one institution was reviewed for Skene’s gland cyst excision. Data extracted from an electronic medical record or medical charts were presenting symptoms, pre-operative evaluation, site of excision, peri-operative complications, and clinical outcomes. Technique of surgical excision is presented in the attached movie, and includes cystoscopy, dissection of cyst wall from the floor of the urethra with scissors or bovie on low setting, distal urethroplasty as indicated, complete removal of the cyst wall, and primary vaginal wall closure. Urethral Foley catheter is left indwelling for 3–5 days afterwards and sexual function is resumed after completion of vaginal healing.
Results: From 2001 to 2013, ten women were studied. Mean age was 45 (range: 29 to 66). Presenting symptoms were: dyspareunia (4), urinary tract infections (4), vaginal mass (1) and voiding dysfunction (1), with half of women having more than one presenting symptoms. Evaluation included an MRI in all women, and a voiding cystourethrogram in five to exclude a urethral diverticulum. Skene’s gland cyst was observed on the left (5) or right (5) sides, with no cases being bilateral. No peri-operative complications were reported. All procedures were done on an outpatient basis. A distal meatoplasty was done in two women, and a urethral dilation in another two. Mean follow-up was 3.5 years (range 3 to 96 months). One woman died of unrelated cause (stroke). Four women had mild stress urinary incontinence in follow-up years, one requiring pelvic floor therapy, the others simple observation. Two have been treated for occasional urinary tract infections. One underwent a distal urethroplasty six years later after a failed urethral dilation. Eight of ten women who were sexually active remained sexually active post-operatively.
Conclusion: Excision of Skene’s gland cyst is a safe procedure with acceptable long-term functional outcomes.

Video #10
COLPOCLEISIS: TECHNICAL CONSIDERATIONS, PEARLS, AND PITFALLS
Brian Linder, MD, John Gebhart, MD, John Occhino, MD
Mayo Clinic, Rochester, MN
(Presented by: Brian Linder, MD)
We present a surgical video describing the management of pelvic organ prolapse with colpocleisis, including considerations for appropriate patient selection, technical pearls and pitfalls. Excellent subjective and anatomic outcomes can be achieved with this obliterate procedure, however, adequate counseling is imperative.

**Video #11**

**URETHRAL RECONSTRUCTION AND REPAIR OF A COMPLEX URETHROVAGINAL AND VESICOVAGINAL FISTULA**
Gillian Wolff, MD, Richard Kershen, MD
Tallwood Urology and Kidney Institute, Hartford Hospital, Hartford, CT
(Presented by: Gillian Wolff, MD)

Twenty-one-year-old woman, G1P1, with a history of complicated vaginal delivery leading to severe injury to the urethra and near complete urethral loss. We performed a transvaginal reconstruction with simultaneous pubovaginal sling, which resulted in normal voiding and continence.

**Video #12**

**VAGINAL HYSTERECTOMY AND UTEROSACRAL LIGAMENT SUSPENSION: A UROLOGIST’S GUIDE TO NATIVE TISSUE APICAL REPAIR**
Lee Richter, MD, Andrew Sokol, MD
MedStar Washington Hospital Center, Washington, DC
(Presented by: Lee Richter, MD)

We provide tips and tricks to performing vaginal hysterectomy and uterosacral ligament suspension.
EMG EVIDENCE OF DECREASED STRIATED URETHRAL SPHINCTER ACTIVITY IN WOMEN WITH DETRUSOR OVERACTIVITY INCONTINENCE

Kimberly Kenton, MD, MS
Northwestern University Chicago, IL
(Presented by: Kimberly Kenton, MD, MS)

Introduction: Increasing data suggest that sensory and motor abnormalities of the urethra may contribute to urgency incontinence. Our aim was to compare striated urethral sphincter function using concentric needle EMG in well-characterized continent and incontinent women.

Methods: After IRB approval, we recruited continent women from the community and women with urinary incontinence (UI) symptoms presenting for specialty care to undergo standardized multichannel urodynamics (UDS) and urethral function testing with concentric needle EMG using Interference Pattern Analysis (IPA) (Medtronic Keypoint.NET). EMG parameters obtained include: turns (change in direction of motor unit (MU) amplitude by 100μV), amplitude, turn/amplitude ratio (number of MU activated during muscle contraction), number of short segments (portion of EMG signal with sharp activity), % activity (percent of time sharp activity occurs). Many EMG parameters were not normally distributed. Therefore, before statistical calculations, we performed log-transformations and checked for normal distribution both visually and with the Kolmogorov-Smirnov test. ANOVA and independent t-test were used to compare EMG parameters between groups.

Results: Obtained: 76 women (30 continent; 46 UI) with a mean age±SD of 48±15 participated. On UDS, 30 demonstrated no UI, 30 urodynamic stress incontinence (USI), and 16 detrusor overactivity incontinence (DOI). Continent women had increased number of turns (201±110 vs. USI 131±88 & DOI 102±38, P=.025); turn/amplitude ratio (.72±.36 vs. USI .50±.30 & DOI .37±.14, P=.006); and % activity (8.3±5.8 vs. USI 5.3±4.5 & DOI 3.6±1.6, P=.035) compared to women with DOI and USI. However, NO IPA EMG parameters differed significantly between the incontinence groups.

Conclusion: The striated urethral sphincters of women with DOI show EMG findings consistent with neuropathy similar to those of women with USI. In neuropathic states, fewer MUP exist therefore the voltage generated by each surviving MU is greater, which results in fewer turns per amplitude. Similarly, in patients with neuromuscular disorders, an increase in MU duration results in more summation and cancellation of small spikes and gives rise to low numbers of turns per second. These findings suggest that neuropathic changes in the striated urethral sphincter may contribute to DOI in some women.

Supported by NIH-NICHHD K23HD047325-05
Introduction: Diabetes mellitus type II (T2DM) is thought to be an important cause of urinary incontinence among many health care practitioners and their patients. However, prior investigations of diabetes and urinary incontinence have lacked robust epidemiologic principles. We investigated the associations not only of diabetes, but among measures of diabetic severity with stress and urge urinary incontinence (SUI, UUI) in women in a nationally representative U.S. data sample.

Methods: We performed a cross-sectional analysis of female adult participants in the 2001–2010 National Health and Nutrition Examination Survey (NHANES). Urinary incontinence was ascertained by self-report. Diabetic severity was defined by calculated measures of glycemic control (hemoglobin A1c (HbA1c) and fasting plasma glucose levels (FPG)) and insulin resistance (fasting plasma insulin (FPI) levels and the homeostasis model assessment of insulin resistance (HOMA–IR) definition). Logistic regression models, adjusted for sociodemographic variables, common risk factors and comorbidities, were fitted for each measure of T2DM severity and the presence of SUI and UUI.

Results: The prevalence of self-reported SUI was 41.0%, and UUI was 25.4%. Compared with women with a normal HbA1c, participants with T2DM had a significant increased prevalence of both SUI (38.6% vs. 52.5%) and UUI (21.7% vs. 40.3%). HbA1c, FPG, FPI and HOMA–IR were each significantly associated with SUI and UUI in unadjusted models. However, measures of glycemic control and insulin resistance were not independently associated with an increased risk of either SUI or UUI in multivariable regression analysis. In further model diagnostics, glycemic control and insulin resistance all only became non-significant when body mass index (BMI) was added to the model, suggestive of a confounding effect.

Conclusion: Despite an increased prevalence of SUI and UUI among women with diabetes, a direct association between diabetic severity and urinary incontinence risk does not exist. As is suggested by other recent data, BMI plays a much more important role as do several other shared factors for either SUI or UUI (increasing age, parity and functional mobility limitations).
Podium #44
A RANDOMIZED COMPARISON OF SINGLE INCISION MID-URETHRAL SLING (MINIARC™) AND TRANSOBTURATOR MID-URETHRAL SLING (MONARC™) FOR TREATMENT OF STRESS URINARY INCONTINENCE: 2-YEAR CLINICAL OUTCOMES
Jan-Paul Roovers ¹, René P. Schellart, MD², Bart Kimpe, MD, PhD³, Jean-Philippe Lucot, MD, PhD⁴, Prof. Dirk de Ridder, MD, PhD⁵ and Katrien O. Rengerink¹
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(Presented by: Katrien O. Rengerink)

Introduction: Standard midurethral slings (SMUS, e.g. Monarc™) have become the surgical treatment of choice for women with stress urinary incontinence (SUI). Single-incision mini-slings (SIMS, e.g. MiniArc™) have been introduced to reduce postoperative pain and improve recovery with comparable effectiveness. The objective is to compare subjective and objective cure, morbidity and discomfort between MiniArc and Monarc in symptomatic SUI women. Here we present 2Y follow-up data.

Methods: Women with symptomatic SUI were randomly allocated to MiniArc (97 subjects) or Monarc (96 subjects) in five European teaching hospitals (NTR3783, supported by unrestricted research grant of AMS, MN, USA.). Prior SUI surgery and/or a pelvic organ prolapse stage ≥2 were excluded. FU will be continued until 3Y. Primary outcome was subjective cure, defined as being not or mildly bothered by SUI based on Patient Global Impression of Improvement questionnaire (IPG−I). Secondary outcomes were post-op pain, objective cure (defined as a negative cough stress test), generic quality of life (SF−36), operation time, morbidity and re-interventions.

Results: Sixty-five MiniArc and 66 Monarc patients reached 2Y. There were no statistically significant differences in patient characteristics (mean age 53 years, mean BMI 26kg/m2). Operating time was shorter (11 vs. 16 minutes, p<0.01) and blood loss was less (20mL vs. 50mL, p<0.01), in the SIMS group. All patients left the hospital the day of surgery, regardless of the performed procedure.

Subjective cure rate was 84% in the SIMS group and 88% in the SMUS group. Objective cure rate was 91% and 92%, respectively. Mean pain VAS score during the first three days post-op was nine following MiniArc and 22 following Monarc (p<0.01).

Forty-two AEs occurred in the MiniArc group and 56 in the Monarc group. The most common AEs were UTI and post voiding residual volume >150 ml: 11 and five SIMS subjects vs. 15 and 8 SMUS subjects, respectively. In the MiniArc group two retropubic TVT’s were performed because of failure. Three re-operations had to be performed in the Monarc group; one to correct a tape exposure, one to release the tape unilateral because of obstructive micturition and one retropubic TVT was performed because of failure. SF-36 questionnaire scores showed similar physical and social functioning for both interventions.

Conclusion: At 2Y, MiniArc proved to be non-inferior to Monarc regarding subjective and objective cure, and superior with respect to post-op pain.

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Podium #45
CLINICAL AND COST COMPARISON OF TWO TRIAL OF VOID METHODS AFTER OUTPATIENT MID URETHRAL SLING PLACEMENT
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(Presented by: Michael Ehlert, MD)

Introduction: Women with stress urinary incontinence (SUI) may undergo an outpatient mid urethral sling (MUS) placement to improve their SUI. One risk of this procedure is postoperative urinary retention. Prior to discharge, a trial of void (TOV) is performed by one of two methods: retrograde fill just prior to foley removal in the recovery room, or bladder instillation and removal of foley in the operating room (OR fill). Previous studies have shown higher rates of TOV success and greater patient satisfaction with retrograde instillation method. Our aim was to compare successful voids, time in recovery, and costs (recovery room and total) between these two methods.

Methods: A retrospective chart review was performed on successive patients that underwent an outpatient MUS between January 2013 and April 2014 by 3 urologists. Women that had concomitant prolapse repair, hysterectomy, or other surgical procedure deemed to prolong recovery room stay, or bladder/urethral injury during MUS placement were excluded. Intraoperative, postoperative, and cost data were collected and analyzed with Fisher's Exact and Wilcoxon rank sum tests.

Results: 93 of 183 women (mean age 56.1 ± 12 years; mean BMI 28.9 ± 5.9) met inclusion criteria. 43 (46%) had a retrograde TOV with median fill amount of 250 cc, and 50 (54%) had an OR fill (median fill amount 200 cc); age and BMI were similar between groups. Most patients in the retrograde group (81%) and all patients in the OR fill group had a transobturator sling placed. Median operative time was longer in the retrograde group (22 vs. 15.5 minutes; p=0.003). The retrograde fill cohort had a longer overall mean length of stay (5.55 ± 1.5 vs. 4.96 ± 1.5 hours; p=0.041) and higher median indirect costs ($1136 vs. $1090; p = 0.043). The retrograde fill and OR fill groups did not differ in TOV failure rate (6/43 vs. 4/50; p=0.50), median recovery room costs ($697 vs. $627; p = 0.51), median direct costs ($2531 vs. $2544; p = 0.69), or median total costs ($3661 vs. $3584; p = 0.41). No patient had urinary retention requiring catheter reinsertion after successful trial of void.

Conclusion: Both TOV methods achieved similar clinical outcomes. The OR fill group had lower indirect costs, which may be attributable to shorter OR time and LOS.

Funding: Ministrelli Program for Urology Research and Education (MPURE)
Podium #46
URGENCY INCONTINENCE AFTER REVISION OF AN OBSTRUCTING MID-URETHRAL SLING
Iryna Makovey, MD1, Nitya Abraham, MD2, Howard Goldman, MD2 and Sandip Vasavada, MD2
1Cleveland Clinic; 2Cleveland Clinic, Cleveland, OH
(Presented by: Iryna Makovey, MD)

Introduction: Synthetic mid-urethral sling (MUS) incision has been utilized to treat patients with new iatrogenic voiding dysfunction after sling surgery for stress urinary incontinence. While obstructive voiding symptoms improved in over 90% of after sling incision, outcomes of patients with storage symptoms is not well defined. This study examines urgency urinary incontinence (UUI) outcomes after revision of an obstructing synthetic MUS.

Methods: This is a retrospective review of a single center experience with revision of obstructing synthetic MUS. 107 patients who underwent synthetic MUS revision for iatrogenic voiding dysfunction were identified and analyzed. Appropriate statistical testing was performed.

Results: Median time to sling revision was 21 months (IQR 5 –48). Prior to sling revision 63% complained of UUI. After sling revision four groups were identified based on UUI outcomes: 48% patients with persistent UUI, 17% with de novo UUI, 15% with resolution of UUI, and 20% patients who did not report any UUI either prior to or after sling revision. Only patients with preoperative storage symptoms had detrusor overactivity (DO) on urodynamics (UDS). When compared to patients with persistent UUI, patients with de novo UUI were more likely to have retention prior to incision (OR 4.42, CI 1.04 –18.9, p < 0.0447), early (< 6 months) incision (OR 4.3 CI 1.30 –14.2, p < 0.0170), recurrent stress incontinence (OR 8.4, CI 2.37 –29.7, p < 0.0006), but less likely to have trialed anticholinergics (OR 0.048, CI 0.006 –0.393, p < 0.0047) and none had DO on pre sling incision UDS as compared to 41.6% DO rate for those with persistent UUI (p < 0.0054). On multivariate analysis anticholinergic use (OR 24.4, CI 2.52–236.2, p < 0.0058) and incision >6 months (OR 0.17 for early incision, 0.03–1.00, < 0.0499) were associated with persistent UUI vs. de novo UUI after adjusting for other variables.

Conclusion: The rate of resolution of UUI was 15% and rate of persistent UUI 48% after revision of an obstructing synthetic MUS. Patients with persistent UUI are more likely to have a delay in sling incision >6 months, have trialed anticholinergics, and have evidence of DO on UDS indicating an underlying overactive bladder disease. Those who develop de novo UUI have the highest rates of recurrent SUI and the anatomic outlet may need to be addressed. There is no evidence for use of UDS in patients without storage symptoms preoperatively.

Funding: None
Introduction: Given the opportunity to offer similar benefits to laparoscopy (shorter recovery, less post-operative pain, and better cosmesis) with a more favorable learning curve, surgeons performing vaginal vault suspension have begun to incorporate robot-assistance in their practice. Little is known as to whether access to robot-assisted vaginal vault suspension (RAVVS) is equally distributed among those who could benefit. To investigate this question, we sought to explore factors influencing utilization of RAVVS using data from the Nationwide Inpatient Sample (NIS). Because utilization is so closely tied to costs, we also examined hospital costs related to RAVVS.

Methods: From the 2009−2011 Nationwide Inpatient Sample, patients undergoing vaginal vault suspension were identified. Multivariable logistic regression was used to evaluate variables associated with RAVVS utilization. Multiple linear regression evaluated variables associated with hospital costs.

Results: Of the 125,869 patients who underwent vaginal vault suspension, 14,601 (12%) were RAVVS. Total in-hospital complication rates were similar between RAVVS (8%) and non-RAVVS (7%) approaches (p=0.360). The proportion of patients undergoing RAVVS increased throughout the study period (OR 1.58, p<0.001), with this increase being most pronounced in the South (OR 2.22, p<0.001). Patients with private insurance (OR 1.73, p=0.001) or Medicare (OR 1.43, p=0.033) as their primary payer were at significantly increased odds of RAVVS as compared to Medicaid. Fifty-four percent of RAVVS patients versus 48% of non-RAVVS underwent concurrent hysterectomy (p=0.007). RAVVS was independently associated with a $4879 increase in hospital costs (95% CI $4204−$5553, p<0.001) as compared to non-RAVVS. There were independent regional differences in cost associated with vaginal vault suspension, with the West being the most expensive (p<0.001).

Conclusion: Rates of RAVVS utilization have increased nationwide, most prominently in the South. Although utilization has equalized among United States regions, there still exists a disparity in access to RAVVS. Healthcare providers must be conscientious of this disparity when choosing treatment approach.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hospital Cost</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robotic approach</td>
<td>$4879</td>
<td>$4204-5553</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ECI</td>
<td>$854</td>
<td>$605-1102</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Concurrent sling</td>
<td>$1335</td>
<td>$936-1733</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Concurrent hysterectomy</td>
<td>$874</td>
<td>$617-1110</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>$1517</td>
<td>$1340-1694</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>South</td>
<td>$1048</td>
<td>$924-1172</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>West</td>
<td>$4531</td>
<td>$3699-5363</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$316</td>
<td>$300-332</td>
<td>0.278</td>
</tr>
<tr>
<td>2011</td>
<td>$1065</td>
<td>$960-1170</td>
<td>0.002</td>
</tr>
<tr>
<td>Constant</td>
<td>$5731</td>
<td>$4980-6482</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Abbreviation: CI: confidence interval

*The regression model is adjusted for all covariates presented within this table*
Podium #48
THE LONG-TERM SAFETY, TRENDS AND RE-INTERVentions IN THE SURGICAL MANAGEMENT OF STRESS URINARY INCONTINENCE

Bilal Chughtai, MD 1, Jessica Buck 1, Jialin Mao 2, Abby J. Isaacs 2, Richard Lee, MD 1, Alexis Te, MD 1, Steven Kaplan, MD 1 and Art Sedrakyan 2

1Department of Urology, Weill Medical College of Cornell University, New York–Presbyterian Hospital, New York, NY; 2Department of Public Health, Weill Medical College of Cornell University, New York–Presbyterian Hospital, New York, NY

(Presented by: Jessica Buck)

Introduction: We determined short-term safety and long-term re-interventions following surgical treatment of stress urinary incontinence among female Medicare beneficiaries.

Methods: We analyzed a 5% national random sample of Medicare claims from 2000 to 2011 of female beneficiaries who underwent sling or bulking procedures, based on CPT-4 and ICD-9 procedure codes. Individual patient’s first sling or bulking procedure in the claim was identified. 90-day adverse events and re-interventions during the follow-up period were captured using ICD-9 diagnosis, procedure and CPT-4 codes. Statistical analysis for categorical data was performed to determine differences in distribution of patient demographics and comorbidities. Outcomes including 90-day adverse events and re-interventions were compared between treatment groups. Time to event was used to determine freedom from re-intervention after therapy.

Results: We identified 21,134 and 3,475 patients undergoing sling and bulking procedures between 2000 and 2011. There was a 29.7% increase in sling procedures and 59.5% decrease in bulking procedures from 2000 to 2011. 90-day adverse events of both procedures were rare, with exception of mild risk of urinary retention (Sling 11.3%, Bulk 8.4%). Smaller proportion of patients receiving slings had re-interventions compared to those who had bulking therapy. 53.2% sling patients and 76.3% bulking patients who had subsequent procedures received same procedure at first re-intervention.

Conclusion: Both sling and bulking procedures are safe in terms of short-term performance. Patients who received initial treatment of bulking agent injection are more likely to have re-interventions. Patients who had re-interventions tend to repeat the therapy instead of converting to another procedure.

Table 1. Medicare beneficiaries undergoing sling or bulking procedure between 2000 and 2011: re-intervention

<table>
<thead>
<tr>
<th>Re-intervention</th>
<th>Sling</th>
<th>Bulk</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequencies</td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>None</td>
<td>19580(92.6%)</td>
<td>2147(61.8%)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1142(5.4%)</td>
<td>831(23.9%)</td>
<td></td>
</tr>
<tr>
<td>&gt;=2</td>
<td>421(2.0%)</td>
<td>498(14.3%)</td>
<td></td>
</tr>
</tbody>
</table>

1st subsequent procedure

<table>
<thead>
<tr>
<th>Procedure type</th>
<th>Sling</th>
<th>Bulk</th>
<th>Other</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st patient</td>
<td>1563</td>
<td>1329</td>
<td>&lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Procedure time</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>596(40.0%)</td>
<td>760(62.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;=1 year</td>
<td>893(60.0%)</td>
<td>450(37.2%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHILDHOOD SEXUAL AND VIOLENCE TRAUMA MORE PREVALENT IN PATIENTS WITH OVERACTIVE BLADDER

Clinton Morgan, BA, Joel Vetter, MS, H. Henry Lai, MD
Washington University School of Medicine, St Louis, MO
(Presented by: H. Henry Lai, MD)

Introduction: A history of childhood trauma is prevalent in adult syndromes such as interstitial cystitis/bladder pain syndrome (IC/BPS). IC/BPS patients with a history of childhood sexual trauma report higher bladder pain scores, rates of depression, and a poorer quality of life than those without sexual trauma. Even though there are some overlap of symptoms between OAB (overactive bladder) and IC/BPS, there have been no studies that investigated the relationship between OAB and childhood trauma. The objectives of this study were to: (1) assess the prevalence of childhood and recent trauma in a sample of patients with OAB, and (2) correlate their traumatic exposure with symptom patterns.

Methods: This IRB-approved study enrolled consented patients diagnosed with OAB (n=51) and age-matched healthy controls (n=30). Participants were given the Childhood Traumatic Events Scale (CTES) and Recent Traumatic Events Scale, assessing their exposure to the following trauma: death of a close friend or family member, major upheaval in relationships, traumatic sexual exposure, victim of non-sexual violence, or major illness or injury. Among OAB patients, traumatic exposure was correlated to their frequency, urgency, incontinence, and pain symptoms.

Results: Childhood sexual trauma (before the age of 17) was more prevalent in patients with OAB compared to controls (29.4% vs. 6.7%, p=0.015), while childhood non-sexual violent trauma also tended to be more prevalent in patients with OAB (23.5% vs. 6.7%, p=0.053). There was no difference in childhood traumatic events between OAB patients and controls in the form of deaths (p=0.280), upheaval (p=1.00), or illness/injury (p=0.683). There was no difference in recent traumatic events (within the last three years).

Within the OAB group, there was a strong correlation between higher total childhood traumatic score and more severe bladder pain (p=0.005), pubic pain (p=0.026), overall discomfort (p=0.02), and worse mood (p=0.001) than OAB patients who did not report childhood sexual and/or violence trauma. There was no correlation between childhood traumatic exposure and the severity of their frequency, urgency, and incontinence symptoms (p>0.05, Spearman's).

Conclusion: This is the first report, to our knowledge, of a high prevalence of childhood trauma in patients with OAB, and that those patients experiencing such trauma have more pain symptoms, lower mood, and overall discomfort.

Funding: NIDDK, HHMI
A RANDOMIZED, CONTROLLED CLINICAL TRIAL OF AN INTRAVESICAL PRESSURE-ATTENUATION BALLOON SYSTEM FOR THE TREATMENT OF STRESS URINARY INCONTINENCE IN FEMALES

Jean Jacques Wyndaele, MD, Stephan De Wachter, MD, Giovanni Tommaselli, MD, Roberto Angioli, MD, Michel de Wildt, MD, Karel Everaert, MD, Dirk Michielsen, MD and Gommert van Koeveringe, MD

University Hospital Antwerp; Universita Degli Studi Di Napoli “Federico II”, Naples, Italy; Universita di Roma Campus Biomedico, Rome, Italy; Catharina Ziekenhuis, Eindhoven, The Netherlands; Universitair Ziekenhuis Gent, Gent, Belgium; Universitair Ziekenhuis Brussel, Brussels, Belgium; University Medical Center (MUMC+), Maastricht, The Netherlands
(Presented by: Jean Jacques Wyndaele, MD)

Introduction: This abstract describes a novel technique for treating SUI that focuses on reducing the transient spikes in intravesical pressure by insertion of a free-floating intravesical balloon filled with compressible gas. The objective was to evaluate the efficacy, safety and tolerability of a novel pressure-attenuation balloon for the treatment of female stress urinary incontinence (SUI) using a prospective, randomized, single blind, multi-center design, evaluated at three months.

Methods: Sixty-three females with SUI were randomized 2:1 to treatment with a balloon (N=41) or sham procedure (N=22). The sham (control) entailed the same procedure without the deployment of a balloon. Endpoints were evaluated at 3 months and included a composite endpoint that required both ≥10 point increase in the 22-item Incontinence Quality of Life Survey (I−QOL) and ≥50% decrease in provocative pad weight. Additional endpoints included incontinence episode frequency, and PGI-I assessment.

The deflated balloon is pre-inserted inside the tip of a 19 French (F) delivery system and inserted into the bladder through a sheath, inflated and released. The balloon is removed under direct visualization using a custom optical grasper through a sheath.

Results: In an ITT analysis, 63% of women in the treatment group achieved the composite endpoint, compared to 31% in the Control Group (P=.0200). In a per protocol analysis, 81% of women in the treatment arm had a 50% decrease in pad weight test vs. 45% in the Control Group (P = .0143); 41.6% of the treatment patients were dry on pad weight test (≤1gram) vs. 0% in the Control Group (P<.001), and 58% of treated patients reported improvement on a PGI-I assessment vs. 25% of women in the Control Group (P=.023). Adverse events in the treatment group included dysuria (12.2%), gross hematuria (9.8%), and UTI (7.3%).

Conclusion: Results from the trial show statistically significant improvements in clinically relevant objective and subjective measures of SUI. The pressure attenuation system was safe and caused no urinary retention during the three-month follow-up period. Additional follow-up is warranted to assess the long-term durability of this therapy.

This study was funded by Solace Therapeutics.
ANTICHOLINERGIC CYCLING AND TREATMENT OUTCOMES IN OVERACTIVE BLADDER PATIENTS WITH URINARY INCONTINENCE

ANTICHOLINERGIC CYCLING AND TREATMENT OUTCOMES IN OVERACTIVE BLADDER PATIENTS WITH URINARY INCONTINENCE

Michael Chancellor, MD, Alon Yehoshua, PharmD, MS¹, Karen Campbell, PharmD¹, Manher Joshi, MD¹ and Riya Pulicharam, MD²
¹Allergan, Irvine, CA; ²Healthcare Partners, Torrance, CA
(Presented by: Michael Chancellor, MD)

Introduction: Overactive bladder (OAB) is a prevalent medical condition, affecting 16.5% of US adults. Anticholinergic (Ach) therapies are recommended as first-line pharmacotherapy in OAB (following behavioral therapy). A high failure rate to the first prescribed Ach is well documented in the literature. There is a paucity of studies, however, on follow-on Ach use and treatment outcomes in patients after they fail their first prescribed Ach. In this study, we analyzed Ach cycling in a cohort of OAB patients with urinary incontinence (UI).

Methods: We conducted a retrospective claim analysis linked to a patient survey administered to OAB patients, who were members of a California-based managed care organization. Study participants had ≥1 UI episodes/day and initiated Ach therapy between January 2008 and May 2012. Claims data were used to track health resource utilization through May 2013. A one-time patient questionnaire was administered to collect information on urinary symptoms, bother, satisfaction levels, etc.

Results: A total of 620 patients were enrolled into the study (79.2% women; mean age 73.3 years, standard deviation [SD]: 12.5). Patients were followed up for an average of 3.0 years based on their claims data. During the follow-up period, patients cycled through one to six unique Achs; 65% of the study population used only one Ach while 35% used ≥2 Achs (Table). Most patients (71.1%) discontinued Achs by the end of follow-up; discontinuation rates remained high with ≥2 Achs. The mean UI episodes/day observed ranged from 3.3−3.9 with use of one through six Achs. Over 80% of patients continued to be bothered by their bladder symptoms, whether or not they remained on Achs.

Conclusion: In this population of OAB patients, the mean UI episodes/day and the percent of patients still bothered by bladder symptoms remained relatively constant, regardless of the number of Achs attempted (one to six). In addition, discontinuation rates were high regardless of number of Achs attempted. This analysis suggests that continual Ach cycling is not an optimal treatment approach following failure of the first prescribed Ach.

Supported by Allergan, Inc.

Table: Anticholinergic cycling in 620 overactive bladder patients with urinary incontinence

<table>
<thead>
<tr>
<th></th>
<th>All patients N=620 (100%)</th>
<th>1 Ach N=402 (65%)</th>
<th>2 Ach N=169 (27%)</th>
<th>3+ Ach¹ N=49 (8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of continued Ach users**</td>
<td>n=179 (29)</td>
<td>n=88 (22)</td>
<td>n=70 (41)</td>
<td>n=21 (43)</td>
</tr>
<tr>
<td>Number of discontinued Ach users***</td>
<td>n=441 (71)</td>
<td>n=314 (78)</td>
<td>n=69 (59)</td>
<td>n=28 (57)</td>
</tr>
<tr>
<td>Current UI episodes/day, mean (SD)</td>
<td>3.52 (3.4)</td>
<td>3.63 (3.5)</td>
<td>3.3 (3.4)</td>
<td>3.39 (2.6)</td>
</tr>
<tr>
<td>Continued</td>
<td>3.81 (3.8)</td>
<td>3.49 (3.3)</td>
<td>3.90 (4.6)</td>
<td>3.19 (2.3)</td>
</tr>
<tr>
<td>Discontinued</td>
<td>3.48 (3.3)</td>
<td>3.67 (3.8)</td>
<td>2.88 (2.0)</td>
<td>3.54 (2.8)</td>
</tr>
<tr>
<td>Currently using pads/diapers, N (%)</td>
<td>370 (60)</td>
<td>221 (55)</td>
<td>118 (71)</td>
<td>31 (63)</td>
</tr>
<tr>
<td>Continued</td>
<td>118 (65)</td>
<td>51 (58)</td>
<td>51 (73)</td>
<td>14 (67)</td>
</tr>
<tr>
<td>Discontinued</td>
<td>254 (55)</td>
<td>170 (55)</td>
<td>87 (69)</td>
<td>17 (61)</td>
</tr>
<tr>
<td>Still bothered by bladder problems, N (%)</td>
<td>375 (60)</td>
<td>255 (88)</td>
<td>95 (92)</td>
<td>28 (80)</td>
</tr>
<tr>
<td>Continued</td>
<td>96 (92)</td>
<td>44 (92)</td>
<td>42 (98)</td>
<td>10 (77)</td>
</tr>
<tr>
<td>Discontinued</td>
<td>280 (88)</td>
<td>211 (87)</td>
<td>53 (88)</td>
<td>16 (100)</td>
</tr>
</tbody>
</table>

*3+ Ach group includes patients cycled through 3-6 Achs
**Continued Ach use includes intermittent use
***Discontinued Ach user had >45 days treatment gap at end of study
ONABOTULINUMTOXINA HAS A POSITIVE SAFETY AND EFFICACY PROFILE IN OVERACTIVE BLADDER (OAB) PATIENTS <65 AND ≥65 YEARS OF AGE

Courtenay Moore, MD1, Albert Kaufmann, MD2, Manher Joshi, MD3, Yan Zheng, PhD4 and Sender Herschorn, MD5
1Cleveland Clinic, Cleveland, OH; 2Kliniken Maria Hilf GmbH, Mönchengladbach, Germany; 3Allergan Inc., Irvine, CA; 4Allergan Inc., Bridgewater, NJ; 5University of Toronto, Toronto, ON, Canada
(Presented by: Courtenay Moore, MD)

Introduction: The efficacy and safety of onabotulinumtoxinA (onabotA) was examined in younger and older patients with OAB inadequately managed with ≥1 anticholinergic.

Methods: In a subanalysis of two phase 3 trials including OAB patients aged <65 and ≥65 years (y) treated with 100U onabotA or placebo, changes in urinary incontinence (UI) episodes, positive response on the Treatment Benefit Scale (TBS), postvoid residual urine volume (PVR) ≥200mL, clean intermittent catheterization (CIC) rates, and adverse events (AEs) were evaluated.

Results: Patients <65y (placebo=323, onabotA=312) and ≥65y (placebo=225, onabotA=245) had similar baseline characteristics, including UI episodes (5.0 and 6.1 UI episodes/day) and PVR (18.9mL and 23.6mL), respectively. At week 12, onabotA reduced UI episodes compared with placebo, regardless of age (<65y: −2.6 vs. −1.0, p<0.001; ≥65y: −3.1 vs. −0.9, p<0.001). More onabotA patients reported a positive TBS response versus placebo (<65y: 61.7% vs. 30.6%, p<0.001; ≥65y: 61.8% vs. 24.2%, p<0.001). In both age groups, PVR ≥200mL was greater for onabotA versus placebo (<65y: 9.0% vs. 0.6%, p<0.001; ≥65y: 12.9% vs. 1.3%, p<0.001), as were CIC rates (<65y: 5.4% vs. 0.3%; ≥65y: 7.9% vs. 0.4%). In both treatment groups, older patients experienced more urinary tract infections (UTI, 32.9% onabotA, 15.2% placebo) than younger patients (19.9% onabotA, 5.7% placebo), but otherwise had similar safety profiles.

Conclusion: Regardless of age, onabotA provided similar and clinically relevant efficacy, significantly reducing UI episodes and demonstrating a positive TBS response. Patients ≥65y experienced more UTIs with both onabotA and placebo than patients <65y; the safety profile was otherwise similar between age groups.

Sponsored by Allergan, Inc.
Podium #35
UNDERACTIVE BLADDER IS NOT A SYMPTOM COMPEX
Melissa Laudano, MD¹, Matthew Benedon² and Jerry Blaivas, MD²,³
¹Weill Cornell Medical School, NY, NY; ²Institute for Bladder and Prostate Research, New York, NY; ³Weill Cornell Medical School, New York, NY
(Presented by: Melissa Laudano, MD)

Introduction: Detrusor underactivity (DU) is defined as a contraction of reduced strength and/or duration, resulting in prolonged bladder emptying and/or (residual urine). The term “underactive bladder” has recently been suggested as the clinical correlate of DU. We sought to determine whether DU can be defined by a clinical symptom complex analogous to that for overactive bladder (OAB) symptoms.

Methods: This is a retrospective IRB-approved review of patients with a urodynamic diagnosis of DU. DU was defined according to ICS definitions. In addition, patients with an acontractile detrusor during urodynamics were considered to possibly have underactive detrusor. The data was analyzed two ways—by both including and excluding patients with an acontractile detrusor to assess the minimum and maximum incidence of UAB in our database. Patient symptoms were characterized using the lower urinary tract symptom score (LUTSS) and its sub-scores including voiding, storage, overactive bladder symptoms (from the overactive bladder symptom score) and incontinence sub-scores. Urodynamic data, including detrusor pressure at maximum flow (Pdet@Qmax), pdetmax, detrusor contraction duration, maximum flow (Qmax), and post void residual (PVR) were collected. Unintubated Qmax and PVR were also obtained. The affected cohort of patients was compared to a control group consisting of patients with a urodynamic diagnoses of bladder outlet obstruction (BOO), as defined by prostatic, urethral, and bladder neck obstruction.

Results: Of 4,272 consecutive patients the incidence of DU was 12% AD 12%, and BOO 21%. The LUTSS questionnaires were completed in 476 patients. See table 1 for complete comparison data between both cohorts. In this cohort, the possible range of DU was 12% (DU alone) to 24% (DU + AD). Aside from urodynamic criteria and PVR, the only differences between DU and BOO was a higher incidence of OAB symptoms in the latter, however, both groups had a high incidence of OAB.

Conclusion: DU, unlike OAB, is a urodynamic diagnosis, not a clinical one. There is no symptom complex that correlates with UAB; rather, it should be based on urodynamics and PVR.

<table>
<thead>
<tr>
<th></th>
<th>DU</th>
<th>BOO</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (men/women)</td>
<td>120 (30/90)</td>
<td>152 (138/14)</td>
<td>N/A</td>
</tr>
<tr>
<td>Age</td>
<td>69.86 (11.45)</td>
<td>68.10 (12.55)</td>
<td>NS</td>
</tr>
<tr>
<td>LUTSS</td>
<td>25.47 (9.02)</td>
<td>22.90 (11.46)</td>
<td>NS</td>
</tr>
<tr>
<td>Voiding Score</td>
<td>7.81 (2.93)</td>
<td>7.76 (4.88)</td>
<td>NS</td>
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<tr>
<td>Storage Score</td>
<td>15.68 (8.22)</td>
<td>13.06 (7.18)</td>
<td>NS</td>
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<td>OABSS</td>
<td>13.48 (6.37)</td>
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<td>Incontinence Score</td>
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<td>2.39 (2.93)</td>
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<td>Qmax (ml/s)</td>
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<td>6.78 (12.33)</td>
<td>NS</td>
</tr>
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<td>PVR (ml)</td>
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<td>12.41 (35.47)</td>
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<td>Pdet@Qmax (mm H2O)</td>
<td>11.37 (19.41)</td>
<td>42.42 (35.0)</td>
<td>&lt;0.05</td>
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Podium #37

A RETROSPECTIVE COMPARISON OF PERSISTENCE ON PHARMACOTHERAPY FOR OVERACTIVE BLADDER SYNDROME AMONGST SPECIALTIES

Alexis Tran, DO, Peter Sand, MD, Janet Tomezsko, MD, Ying Zhou, CBRI, Miriam Seitz, MD, Adam Gafni-Kane, MD, Sylvia Botros, MD
Chicago, IL
(Presented by: Alexis Tran, DO)

Introduction: Persistence with long-term medication for chronic diseases is low (50%) and in OAB, even lower. Claims data report rates as low as 10%-18% in community settings. Sub-optimal persistence remains a challenge. We hypothesize that FPMRS' persistence is higher than other prescribing specialties. Objectives: Compare FPMRS' persistence on OAB pharmacotherapy to Internal Medicine (IM) and General Urology (GU) within an integrated healthcare delivery system.

Methods: This was a retrospective cohort study. OAB prescription was identified by ICD-9 codes, yielding 2737 patients with OAB and >/= 1 OAB prescription from 1/03-7/14. Charts were reviewed in a 6:3:1 proportion for FPMRS, IM, GU. Based on an analysis of frequency of prescriptions by these specialties, this resulted in a chart review of 150 randomly selected charts from FPMRS, 75 from IM and 25 from GU. 6 patients overlapped in clinical care among the divisions. Data collection included clinical, demographic and prescription information, specialty, use of refractory therapies. The primary outcome was persistence, defined as days on continuous pharmacotherapy. Discontinuation was classified as >45 day gap. Patients who switched to another brand were persistent. For patients who presented to multiple divisions for OAB care, persistence was categorized under the initial prescribing specialty.

Results: 261 records were analyzed and 96.8% initiated pharmacotherapy. Mean age was 73. Mean persistence for FPMRS, GU and IM was 701, 267, 397 days, respectively. At 12 weeks, 6 months, 1 year, FPMRS had the highest persistence of 91%, 84% and 75% vs. 74%, 67%, 48% (GU) and 78%, 69%, 57% (IM). (p=.004, p=.0104, p=.0019) FPMRS had a mean of 2.24 medication switches vs. .59 (GU), 1.06 (IM). (p<.0001) 70% of FPMRS patients switched to a second medication. Mean number of OAB medications used was 2.73 (FPMRS), 1.74 (GU), 1.86 (IM). (p<.0001) Among overall non-continuers, 37% restarted therapy after 287 (FPMRS), 665 (GU) and 383 (IM) mean days. However, 62% of non-continuers permanently discontinued medication. FPMRS had the highest dual therapy use with 20% vs. 0% (GU) and 4% (IM). (p=.0038)

Conclusion: Persistence was higher among FPMRS subspecialists than general urologists and primary care physicians. These data suggest that persistence is higher under subspecialist supervision, which may indicate improved patient satisfaction.
EFFECT OF DEEP BRAIN STIMULATION (DBS) ON LOWER URINARY TRACT SYMPTOMS (LUTS) OF PARKINSON’S DISEASE PATIENTS (PD)

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1Vanderbilt University Medical Center, Nashville, TN; 2Walter Reed National Military Center, Bethesda, MD

(Presented by: Stephen Mock, MD)

Introduction: In patients with PD, DBS is a therapeutic option that can lead to improvements in motor symptoms but whose success depends on individual risk-benefit assessment. While PD is often accompanied by LUTS, it is not currently a consideration in DBS implantation nor in target choice (subthalamic nucleus (STN) or globus pallidus interna(GPi)) and little data is available on its effect on LUTS. The study aim is to determine the effect of DBS on LUTS and whether LUTS would be an appropriate additional factor in the decision for implantation and target choice.

Methods: From November 2013 to the present, we prospectively measured urinary function in patients with PD slated for DBS surgery both before and six months post DBS implantation via validated questionnaires. The approval for DBS implantation and target were based on consensus agreement from a monthly multidisciplinary conference and factors in consideration include severity of PD, response to medical therapy, gait, cognition, psychiatric and behavioral issues, among others. Since medications for PD are known to affect LUTS and can be adjusted based on DBS response, total and dopamine agonist specific Levodopa equivalent doses (LED) were compared pre and post operatively. Statistical analysis was performed with paired t tests to identify differences as a result of treatment effect.

Results: Thirty-three (33) patients consented to the study of which 11 have currently reached the six-month post implantation follow up. These include seven men and four women. No patients were taking anti-cholingeric medication pre-operatively. There were eight STN and three GPI targets. Median age is 61 years old (range 39–69). Median time between diagnosis of PD and implantation was 8.4 years (range 2.4–12.4). Post implantation outcomes are shown in Table 1.

Conclusion: Interim analysis suggests DBS does not have an appreciable effect on LUTS. Whether this holds true as patient follow up matures remains to be seen. In addition, as more patients reach longer follow up, subgroup analysis will be possible, exploring, for example, whether severity of LUTS, implantation target, or LED will have differential results.

| Table 1. Pre and post DBS outcomes (Mean) |
|-----------------|-----------------|-----------------|
| AUA-SI          | Baseline 6.6±4.1| 6.5±5.3         | 0.82 |
| QOL             | 2.6±1.6         | 2.0±1.3         | 0.33 |
| OAB-q           | 9.5±5.9         | 9.6±8.3         | 0.37 |
| SHIM            | 11.6±10.0       | 11.4±9.7        | 0.34 |
| Dopaminergic-specific LED | 160±79 | 186±198 | 0.77 |
| Total LED       | 1147±699        | 867±601         | 0.93 |
| PGH             | 3.6±0.9         |                 |      |
INOSINE ALTERS MARKERS OF SENSORY NEUROTRANSMISSION AND IMPROVES DETRUSOR OVERACTIVITY FOLLOWING SPINAL CORD INJURY
Claire Doyle, PhD1, Yeun Goo Chung, MD, PhD1, Kyle Costa, BSc2, Vivian Cristofaro, PhD3, Maryrose P Sullivan, PhD3 and Rosalyn M Adam, PhD1
1Boston Children’s Hospital & Harvard Medical School, Boston, MA; 2Boston Children’s Hospital, Boston, MA; 3VA Boston Healthcare System & Harvard Medical School, West Roxbury, MA
(Presented by: Claire Doyle, PhD)

Introduction: Spinal cord injury (SCI) has devastating effects on its victims, with estimated yearly treatment costs approaching $10 billion. Detrusor overactivity (DO) and the associated loss of bladder control are among the most challenging complications of SCI. Anticholinergic agents are the mainstay for treatment of DO. However, their use is limited by significant side effects such that a search for new treatments is warranted. Inosine is a naturally occurring purine nucleoside with known neuroprotective and neurotrophic effects. Inosine is known to improve motor function in a rat model of spinal cord hemisection. However, its effect on lower urinary tract function has not been determined. The objectives of this study were to determine the effect of inosine on voiding function following SCI and to delineate potential mechanisms of action.

Methods: Adult male Sprague-Dawley rats underwent spinal cord compression by application of an aneurysm clip at T8 for 30 sec. Inosine (225 mg/kg) or vehicle was administered daily via intraperitoneal injection. In a subset of rats, Fast Blue dye was injected into the bladder to facilitate labeling of afferent neurons and dorsal root ganglia. At six-weeks after SCI, rats underwent cystometry to assess voiding behavior. DRGs were harvested for staining with NF200 (to mark Adelta fibers), IB4 (to mark C fibers) and TRPV1.

Results: Inosine administration decreased DO following SCI, as determined by fewer non-voiding contractions during filling, compared to vehicle-treated SCI rats (2.2 ± 2.2 vs. 4.6 ± 3.3, p = 0.014). Exposure of bladder muscle strips from SCI rats to inosine (1mM) also decreased the frequency and amplitude of spontaneous activity compared to untreated strips (p<0.05). Staining revealed a decrease in IB4-immunopositive C fiber neurons in DRGs from inosine-treated rats compared to vehicle treated rats (32 ± 13 vs. 105 ± 55 neurons at L6; 54 ± 26 vs. 75 ± 24 neurons at S1). Conversely, NF200-positive Adelta fiber neurons increased in DRGs from inosine-treated rats compared to controls (72 ± 19 vs. 67 ± 8 Adelta fiber neurons at L6; 100 ± 34 vs. 56 ± 20 neurons at S1). Preliminary findings also suggested a decrease in the number of TRPV1 positive fibers in DRGs of inosine-treated rats compared to controls.

Conclusion: Inosine attenuates detrusor overactivity in SCI rats, and may achieve its effects, in part, through modulation of sensory neurotransmission.
Funding: R01DK077195; PVA 2909
THE EPIDEMIOLOGY OF HAND FUNCTION AS IT AFFECTS BLADDER MANAGEMENT IN PERSONS WITH SPINAL CORD INJURY

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1Department of Urology, Stanford University School of Medicine, Stanford, CA; 2Department of Physical Medicine and Rehabilitation, Santa Clara Valley Medical Center, San Jose, CA; 3Department of Urology, Santa Clara Valley Medical Center, San Jose, CA & Department of Urology, Stanford University School of Medicine, Stanford, CA
(Presented by: Dimitar Zlatev, MD)

Introduction: In patients with spinal cord injury (SCI) a lack of adherence to clean intermittent catheterization (CIC) has been shown, with up to 50% discontinuing CIC within five-years of injury. Limitations in hand function are often cited as a reason for this conversion. With no prior studies examining motor function as a whole, we aim to provide insight into why CIC “dropout” occurs and to determine a “true” target percentage for CIC in SCI patients.

Methods: We assessed discharge data from Form I of the 2006–National Spinal Cord Injury Database. Neurologic motor scores for C5 to T1 (involved in control of upper extremity movement) were transformed into a binary variable consisting of the ability (“strong”) or inability (“weak”) to achieve active motion against moderate or full resistance. We then generated an algorithm based on expert opinion and published literature (Figure 1) to categorize a person’s ability to perform CIC based on hand function alone.

Results: Of the 4481 patients evaluated, 77.3% were unable to volitionally void. Of this subset of patients, 58.8% were categorized as able to catheterize, 12.9% as possibly able to catheterize, and 4.3% as only able to catheterize with surgical assistance. We found discrepancies associated with various forms of discharge bladder management. Of patients discharged with an indwelling catheter, 33.4% had adequate hand function for CIC, with another 17.1% possibly able and 6.4% potentially able to self-catheterize with surgical intervention (total 56.9%). In the group performing CIC at discharge, 14.1% had inadequate hand function for CIC and 3% would be unable to perform CIC without surgical intervention.

Conclusion: CIC “dropout” may occur at least in part due to inadequate upper extremity motor function. Based on our data, in a “best case” scenario approximately 76% of SCI patients who cannot void volitionally could potentially perform CIC given proper assistance (mechanical, surgical, etc).

Financial Funding: None to disclose
THE PATTERN OF UROLOGIC INVESTIGATIONS AND MONITORING AMONG TRAUMATIC SPINAL CORD INJURED PATIENTS
Blayne Welk, MD, MSc¹, Kuan Liu, MSc² and Salimah Shariff, PhD²
¹London ON; ²ICES Western
(Presented by: Blayne Welk, MD, MSc)

Introduction: There is limited evidence available on which to base the urologic followup of traumatic spinal cord injured (TSCI) patients. Surveys of physicians, and available guidelines suggest that these patients should have regular urologic investigations. The purpose of this study was to evaluate the actual frequency of urologic investigations (urodynamics, cystoscopy, and renal imaging) in a cohort of TSCI patients.

Methods: Linked administrative data from the province of Ontario, Canada was used. We identified incident TSCI patients using a validated algorithm. We included all patients who were discharged from a rehabilitation hospital between 2002−2012, and had a minimum of one-year of follow-up. We used specific physician billing codes from the Ontario Health Insurance Plan to measure our outcomes. The Cochran Armitage test was used to assess for linear trends over time.

Results: We identified 1551 incidence TSCI patients. Median follow-up was 5.0 (IQR 2.9–7.5) years. Within this cohort, 74% were male, and the mean age was 48 (IQR 33–63) years. 66% of patients (1022/1551) were seen by a urologist a median of 0.7 (IQR 0.2–3.0) years after SCI.
Urodynamics were carried out at least once in 50% of TSCI patients, a median of 0.67 (IQR 0.16–0.61) years after injury (1 and 3 year rate for initial urodynamic studies was 41% and 48% respectively). Cystoscopy was carried out at least once in 48% of patients, a median of 1.1 (IQR 0.22–1.29) years after TSCI (1 and 3 year rate for initial cystoscopy was 34% and 43% respectively). Renal imaging was carried out at least once in 80% of patients, a median of 0.79 (IQR 0.06–0.91) years after injury (1 and 3 year rate for initial renal imaging was 61% and 77% respectively). Over the 10-year study period, there was no significant change in the proportion of patients undergoing any these investigations. The proportion of patients who had renal imaging every two years after their injury was 30%, and the proportion of patients who had urodynamics every two years after their injury was 10%.

Conclusion: While renal imaging is commonly carried out at least once after a TSCI, only about half of TSCI patients undergo urodynamics or cystoscopy. There has been no significant change in the proportion of patients being investigated over time. Very few patients actually have a predictable regimen of urologic investigations. This should be taken into account during the development of new neurogenic bladder guidelines.


Introduction: Urethral cuff erosion is a problematic complication of AUS implantation with historical rates between two to 15%. Erosion requires device removal followed traditionally by urinary drainage for several weeks. A potential sequelae of this is US formation and its resulting management, which may delay or prevent future AUS re-implantation. It is highly debated if urethral repair (UR) at the time of explantation will result in decreased US formation compared solely with urethral catheter drainage. The aim of this study is to determine US rates in men who underwent UR at time of AUS removal and the subsequent AUS reimplantation rates.

Methods: Patients who underwent AUS device explantation between 1999 and 2013 were identified by CPT code (53446). Patient demographics, operative reports, and stricture properties were retrospectively reviewed. UR was performed, whenever possible, by reapproximating ventral urethral mucosal edges only and sparing dorsal manipulation. US was defined as requiring any intervention (self-intermittent catheterization, urethral dilation, direct visual internal urethrotomy (DVIU) or urethroplasty). Demographics and subgroup analysis were compared with student t-test or Fisher exact test, as appropriate.

Results: Thirty-two (32) patients met inclusion criteria (Table 1). Twenty-three (23) men underwent UR at time of explanation of which nine (39%) developed a stricture. Nine men did not have UR performed due to dorsal location (4), poor tissue quality (3), and for unknown reasons (2). Of these men, three of nine (33%) developed a stricture. Eleven (11) of 23 (47.8%) men who underwent UR had a subsequent AUS reinsertion. On multivariate regression analysis, there was no association between US and history of radiation, hormonal therapy, diabetes, or prior explanation.

Conclusion: UR at the time of AUS explanation for urethral erosion is associated with a nearly 40% rate of subsequent US. Interestingly, no patient factors known to influence tissue healing were associated with stricture occurrence. Eventually, almost half of this complex population underwent future AUS reinsertion.
Poster #M37
PERIOPERATIVE OUTCOMES FOLLOWING OPEN AND MINIMALLY INVASIVE SACRAL COLPOPEXY. ANALYSIS OF THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM (NSQIP) DATABASE
Ahmed Sarhan, MD, Ahmad Shabsigh, MD, Ketul Shah, MD
Dept. of Urology, The Ohio State University
(Presented by: Ahmed Sarhan, MD)

Introduction: Perioperative outcomes quantify the quality of care provided by certain procedure in an objective way. Our aim is to compare the perioperative outcomes following sacral colpopexy either through open (OSC) or minimally invasive (MISC) approach.

Methods: We performed a retrospective review of prospectively collected database (NSQIP) of all patients who underwent open and minimally invasive sacral colpopexy between 2005 and 2012. Patient’s demographics and perioperative outcomes were compared between the two groups.

Results: Between 2005 and 2012, a total of 1520 cases were identified. 581 patients (38.2%) underwent open sacral colpopexy (OSC) while 939 patients (61.8%) were managed through minimally invasive sacral colpopexy (MISC). Operative time as well as duration from anesthesia start to surgery start was significantly longer in MISC (219 min. vs. 169 min, P= 0.0001 and 73.2 min. vs. 36.2 min. P= 0.0001 respectively) while length of hospital stay was significantly shorter in MISC (2.9 days vs. 1.5 days, P= 0.0001). Superficial surgical site infection was more commonly reported with OSC (2.6% vs. 0.6%, P= 0.002). Pulmonary embolism was also more common with near significant difference (0.7% vs. 0.1%, P= 0.07). Blood transfusion due to blood loss was less frequently observed in the MISC, however the different wasn’t statistically significant (1.2% vs. 0.5%, P= 0.13). Other post operative outcomes were comparably distributed between the two groups. Of note general surgery surgeons were significantly the least to perform MISC compared to urologist and gynecologists (25% vs. 62.2% vs. 63.1%, P= 0.003).

Conclusion: Both OSC and MISC have comparable perioperative outcomes. The selection of the optimum approach for every patient should be carried out in light of general and local factors.

Poster #M38
THE IMPACT OF COMORBID CHRONIC PAIN SYNDROMES ON SEXUAL ACTIVITY AND DYSPAREUNIA AFTER PELVIC ORGAN PROLAPSE REPAIR
Priyanka Gupta, MD 1, Michael Ehlert, MD 1, James Payne2, Kim A. Killinger, MSN 1, Judith A. Boura, MS12, Melissa Fischer, MD12 and Larry T. Sirls, MD12
1Beaumont Health System, Royal Oak, MI; 2Oakland University William Beaumont School of Medicine, Rochester, MI
(Presented by: Priyanka Gupta, MD)

Introduction: Some have suggested that women with coexisting chronic pain syndromes (CPS) have increased risk of dyspareunia after pelvic organ prolapse repair (POP), particularly with transvaginal mesh. We compared sexual activity and dyspareunia in women with and without a comorbid chronic pain syndrome after POP repair via an abdominal or transvaginal approach.

Methods: Women enrolled in our prospective, longitudinal prolapse database that had surgical repair for POP between 12/19/2008 through 6/4/2014 were evaluated. Medical records were reviewed, and sexual activity and dyspareunia were assessed with the Pelvic Organ Prolapse/Urinary Incontinence (PISQ−12) preoperatively, and at six months, one and two years postoperatively. Data were analyzed with Pearsons Chi square, Fisher’s Exact, Wilcoxon rank sum tests, and repeated mixed measure analyses.

Results: Of 300 women, 192 (mean age 62.1 ± 10.5 years, 95.1% caucasian) met inclusion criteria; 69/192 underwent an abdominal repair and 123/192 underwent transvaginal repair of POP. 58/192 (30%) had a CPS; four had interstitial cystitis/bladder pain syndrome, three had irritable bowel syndrome, two had fibromyalgia, nine had migraines and 42 had arthritis. Preoperatively, less patients with CPS were sexually active (21/56 vs. 72/134; p=0.041) but similar proportions in each group reported any dyspareunia. Similar proportions in the CPS vs. no CPS groups had transvaginal mesh placed (27/42 vs. 56/81; p=0.59). Postoperatively, the proportions of women in the CPS vs. no CPS groups that reported being sexually active at six months, and one and two years were not significantly different. The numbers of women providing data decreased over time. Women with CPS had increased incidence of dyspareunia at six months (13/18 vs. 19/55; p=0.032), one year (10/13 vs. 13/43; p=0.017), and two years (7/11 vs. 3/20; p=0.019) compared to women with no CPS. PISQ scores significantly improved in patients without CPS (p<0.0001).

Conclusion: Women with comorbid chronic pain syndromes may be at increased risk for dyspareunia after POP repair. Further studies are needed in larger cohorts of patients.
Funding: Ministrelli Program for Urology Research and Education (MPURE)

Poster #M39
DOES PELVIC ORGAN PROLAPSE QUANTIFICATION EXAM (POPQ) D-POINT PREDICT UTEROSACRAL LIGAMENT SUSPENSION OUTCOMES?

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(Presented by: Lee Richter, MD)

Introduction: To determine if there is a correlation between the preoperative D-point and anatomic outcomes for apical prolapse after transvaginal uterosacral ligament suspension (USLS).

Methods: This retrospective cohort study included subjects undergoing transvaginal USLS from 2008 through 2013 who had at least one year follow-up. Demographic information, pre and postoperative pelvic organ prolapse quantification exam (POPQ) measurements, need for re-treatment or repeat surgery, and assessment of pelvic floor symptoms were reviewed. Optimal postoperative anatomic outcome for the vaginal apex was defined as no apical (“C point”) descent more than one-third into vaginal canal.

Results: Of 324 women undergoing USLS during the study period, 125 met inclusion criteria and had follow-up at one year or more. Median age was 63 yrs (range 28−87 yrs). Concomitant procedures included anterior/posterior repair and mid-urethral sling. Mean follow-up time was 22.8 months (range 12−63). At last follow-up, 96% met criteria for apical success. A more negative preoperative D-point was significantly related to improved postoperative apical support, with each 1 cm descent in preoperative D-point resulting in a postoperative C-point that was 0.21 cm lower (p value = 0.0005). Based on the receiver operating characteristic (ROC) curve, a “cut-off” D-point value of −4.25 (sensitivity = 0.8, specificity = 0.65) was determined to be a predictor of postoperative apical success at one year or more (Figure 1). When success was defined as absence of anterior/posterior wall beyond the hymen, there were 13 failures in the anterior wall (three with concurrent apical failure), all had undergone concomitant anterior repairs. There were two posterior wall failures, one had concomitant posterior repair. Of 10 (8%) patients with symptomatic prolapse (vaginal bulge), two met criteria for anatomic failure, both in the anterior and apical compartments. Two patients with vaginal bulge symptoms underwent reoperation for recurrence, one met anatomic criteria for anterior and apical failure.

Conclusion: The preoperative D-point can be considered a predictor of postoperative apical support and a relationship exists between the preoperative D point and anatomic apical success.
Introduction: To determine the incidence of and risk factors for wound infection and breakdown in women who sustain obstetric anal sphincter injuries (OASIS).

Methods: We conducted a prospective cohort study funded by the Evergreen Women’s 2012 Health Initiative of women who sustained OASIS during vaginal delivery of a full term singleton infant at a tertiary care institution from September 2011 to April 2014. Demographic as well as birthing data was collected using the Enterprise Data Warehouse (EDW). Chart abstraction was performed for data not included in the EDW. Women were seen in the Female Pelvic Medicine and Reconstructive Surgery Clinic at approximately one, two, six and 12 weeks postpartum, as well as annually, for perineal examination and evaluation. Categorical variables were analyzed using Chi-squared analysis; continuous variables were analyzed using t-tests (parametric) and Mann-Whitney U tests (non-parametric).

Results: 268 women with OASIS were enrolled during the study period. 87.7 percent of women were nulliparous. The mean age of patients at delivery was 32.6 ± 3.8 years, and mean BMI at delivery was 28.8 ± 4.1 (kg/m²). 15.3% of patients had chorioamnionitis, while 81.0% had a third degree laceration. Most underwent an operative vaginal delivery (66.4% forceps and 6.0% vacuum). During follow-up time, 33.6% of women had a wound complication; 19.4% were diagnosed with wound infection and 24.6% with wound breakdown. A total of nine patients, or 3.4%, required post-delivery take back to the operating room for either perineal wound revision or sphincteroplasty.

On bivariate analysis, risk factors for wound infection and breakdown included operative vaginal delivery (66.4% forceps and 6.0% vacuum). During follow-up time, 33.6% of women had a wound complication; 19.4% were diagnosed with wound infection and 24.6% with wound breakdown. A total of nine patients, or 3.4%, required post-delivery take back to the operating room for either perineal wound revision or sphincteroplasty.

Conclusion: Operative vaginal delivery, specifically forceps-assisted vaginal delivery, is an independent risk factor if wound complication in patients sustaining OASIS. Antibiotics during delivery and postpartum hospitalization are protective against wound complication in patients with OASIS.
Introduction: Indications for mesh removal include pain, bladder outlet obstruction, exposure, and erosion and as well as others. For mesh exposure in the genital tract or chronic urinary tract perforation, the optimal method of surgical treatment is not well defined. Some authors have suggested that a "radical" removal of all mesh is indicated in such settings whereas others have suggested a minimally invasive approach such as mesh trimming of the exposed portion and/or laser or endoscopic removal of mesh in the urinary tract. We reviewed our experience with subtotal transvaginal (TV) mesh removal in such cases.

Methods: For patients with mesh exposure or erosion, we perform a subtotal mesh removal consisting of excision of the TV portion of the mesh from pubic rami to rami. Radical removal of the entire mesh specimen in uninvolved deeper pelvic structures is not performed. TV retropubic exploration is performed when the mesh is eroded into the lower urinary tract in this location.

Results: Of 242 mesh cases, 101 were either due to exposure into the genital tract (75) or perforation into the urinary tract (36) or a combination. Of the exposed mesh, 42 were slings, eight were POP mesh, and 25 were both. Of the mesh complications due to perforation, there were 15 slings, five POP mesh and 16 were both. 46/101 had undergone prior minimally invasive interventions at outside institutions: 36 partial excision or mesh "trimming", six laparoscopic/robotic excisions, and four endoscopic lasering. At a mean follow-up of eight months (range 0 to 66 months), 35/101 patients underwent repeat surgery for any indication; of which only three were related to unresected mesh from the first procedure. These three patients had repeat mesh excision for persistent point tenderness over unexposed POP mesh arms not previously resected. Three additional patients developed mesh extrusion of other previously placed mesh remote from the first mesh explant during follow-up requiring excision. Complications included one ureteral injury and one unexpected bladder perforation.

Conclusion: Subtotal TV mesh removal for cases of mesh exposure in the genital tract or urinary tract perforation seems to provide reasonable short outcomes with respect to the need for subsequent mesh removal procedures. This suggests that radical removal of all indwelling mesh may not be necessary in the majority of cases. Longer term follow-up is necessary in this cohort.
Poster #M42
LONG-TERM OUTCOMES OF ABDOMINAL VS. VAGINAL APICAL PROLAPSE REPAIR AMONG FEMALE MEDICAIRE BENEFICIARIES
Aqsa Khan, MD1, Karyn Eilber, MD2, Ning Wu, MS3, Chris Pashos, PhD3 and Jennifer Anger, MD, MPH2
1New York University, New York, NY; 2Cedars-Sinai Medical Center, Los Angeles, CA; 3United BioSource Corporation, Lexington, MA
(Presented by: Aqsa Khan, MD)

Introduction: Various studies comparing vaginal to abdominal apical repairs have reported higher recurrence and reoperation rates than abdominal repairs, and higher rates of postoperative complications when concomitant mesh is used. Our objective was to compare long-term rates of prolapse management and complications in women who underwent an apical prolapse repair by either a vaginal or an abdominal approach.

Methods: Public Use Files from the Centers for Medicare and Medicaid were accessed to obtain data for a 5% random sample of female Medicare beneficiaries with one of many ICD−9 diagnosis codes for pelvic organ prolapse in 1999. Women were further stratified as having an apical prolapse repair by either a vaginal or an abdominal approach. CPT−4 procedure codes and ICD−9 diagnosis codes were used to analyze complications at 3 months and reoperation rates at ten years.

Results: In the 5% random sample of beneficiaries in 1999, 2,172 women had apical prolapse repairs. We restricted our analysis to 300 women that had an isolated apical repair without concomitant repair of any other compartment. Abdominal versus vaginal apical prolapse repair was performed in 126 and 174 women respectively. Higher prolapse reoperation rates at 10 years were performed in women who had a vaginal repair compared to abdominal (20.7% vs 7.9%, p=0.003). 5.2% vs 0.8% underwent colpocleisis (p=0.049), 3.5% vs 0% had an anterior/posterior repair (p=0.042), 4.6% vs 0.8% had a combined anterior, posterior, and apical repair (p=0.089), and 5.8% vs 0.8% had a repeat apical procedure (p=0.028). Management with a pessary was also higher (6.9% vs 1.6%, p=0.049). Within three months of surgery, perioperative complications were higher in the vaginal group, specifically higher rates of surgical complications (13.2% vs 4.8%, p=0.017), dyspareunia (52.3% vs 38.1%, p=0.019), urinary retention (20.1% vs 11.1%, p=0.04), and non-surgical (i.e. cardiopulmonary) complications (33.9% vs 22.2%, p=0.029).

Conclusions: Women who underwent a vaginal apical repair had higher recurrence rates as indicated by repeat prolapse surgery by ten years post-operatively, and higher rates of surgical and non-surgical complications (e.g. dyspareunia and urinary retention). With the understanding that claims-based data lacks clinical detail including severity assessment and rationale for specific procedures, our findings indicate possible long-term superiority of abdominal approaches to apical repair.
Impact of MRI Defecography on Clinical Evaluation and Surgical Management of Pelvic Organ Prolapse

Maude Carmel, MD, Gaurav Khatri, MD, April Bailey, MD, Philippe Zimmern, MD
UT Southwestern Medical Center, Dallas, TX
(Presented by: Maude Carmel, MD)

Introduction: There has been an increasing use of MRI defecography (MRID) in the past few years for the evaluation of pelvic organ prolapse (POP). This test can improve the accuracy of POP staging compared to physical examination (PE) or traditional MRI by being a dynamic imaging modality with Valsalva maneuver. Its clinical utility in the decision for surgical treatment has yet to be demonstrated. We evaluated the difference in surgical management based on PE or MRID in patients with POP.

Methods: We identified all patients who underwent MRID for the evaluation of POP from 2011 to 2013 at our institution. A blinded fellowship trained FPMRS urologist reviewed all charts. Presence of stage I–II or III–IV cystocele, uterine or apical descent, enterocele or rectocele was assessed according to POP–Q staging that was noted on PE. The degree of confidence in the accuracy of staging for each type of POP was graded on a scale from one to five, five being extremely confident. The reviewer selected the indicated surgical treatment and their degree of confidence that this was the best treatment. The same process was repeated using the MRID. POP staging and treatment plan chosen upon PE or MRID were compared. Primary outcome was to assess a change in the surgical plan with MRID. Secondary outcome was to assess a difference in POP staging with MRID.

Results: A total of 41 patients underwent MRID for the evaluation of POP. The surgical plan based on MRID was different in seven patients (17.1%) compared to PE. In six of these patients, the route of surgery was changed from vaginal to robotic surgery after MRID secondary to a more significant vault descent on MRID compared to PE. The degree of confidence that this was the best treatment was statistically higher after MRID (p<0.001). MRID upstaged the stage of cystocele in 15 patients (36.6%), identified vault descent that was missed on PE in seven patients (17.1%), enterocele in eight patients (19.5%) and rectocele in 14 patients (34.1%). The degree of confidence in prolapse staging was statistically higher with MRID (p<0.001).

Conclusion: In addition to changing the original surgical treatment plan in one of five women tested, MRID increased the physician confidence in diagnosis and selection of the best surgical option.

Funding: none

ABDOMINAL SACROCOLOPSEXY MESH COMPLICATIONS: PRESENTATION AND SURGICAL REMOVAL TECHNIQUES

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UCLA Department of Urology, Los Angeles, CA

(Presented by: Judy M. Choi, MD)

Introduction: Abdominal sacrocolpopexy (ASC) with mesh has been regarded as the most durable operation for advanced pelvic organ prolapse (POP). Although there is a 10.5% risk of ASC mesh erosion at seven years, there are no established guidelines for the management of ASC mesh complications. We describe our experience with ASC mesh complications, including patient presentation and surgical removal techniques.

Methods: A retrospective review was performed using medical records of patients referred to our tertiary care center for ASC mesh complications from January 2012 to October 2014.

Results: Twenty patients were included. Mean time from original ASC to presentation was 49.3 months (9–142 months). 13/20 (65%) had a concomitant procedure at time of ASC, including 6 total abdominal and five supracervical hysterectomies. Presenting symptoms included vaginal pain (70%), suprapubic pain (65%), dyspareunia (65%), urinary incontinence (65%), defecatory dysfunction (55%), and lower back pain (50%). 65% had recurrent POP (60% anterior, 35% posterior, 10% apical, 20% enterocele), 60% had epithelial penetration and 25% had mesh extrusion.

Sixteen underwent transabdominal ASC removal and four underwent transvaginal ASC removal. The ASC mesh was completely removed in all cases. In the transabdominal approach, a lower midline incision was used to obtain access to the ASC mesh. In the transvaginal approach, the ASC mesh was traced superiorly to the sacral promontory. 80% had a concomitant POP repair (14 with ASC using autologous rectus fascia, two with paravaginal repairs). 35% underwent removal of additional vaginal mesh. Mean hospital length of stay was longer for those who underwent transabdominal ASC removal compared to the transvaginal group (6.4 days vs. 2 days). In two patients, ASC mesh was found to penetrate the surrounding organs (1 bladder, 1 colon).

Mean follow-up time was 6.7 months (1–26 months). 80% reported drastic improvement of their pain. 8/20 (40%) had recurrent POP, one of whom underwent subsequent repair.

Conclusion: We describe two surgical approaches for complete ASC mesh removal (transabdominal and transvaginal), both of which resulted in improvement of patient symptoms. Although abdominal sacrocolpopexy with mesh remains a valuable tool in the treatment of POP, physicians should recognize symptoms resulting from ASC mesh complications and familiarize themselves on surgical techniques for ASC removal.
**Poster #M45**

**DETAILED COST ANALYSIS OF ROBOTIC SACROCOLPOPEXY COMPARED TO TRANS-VAGINAL MESH REPAIR**

Michael Ehlert, MD¹, Jonathan Park² and Larry T. Sirls, MD¹

¹Beaumont Health System, Royal Oak, MI; ²Oakland University William Beaumont School of Medicine, Rochester, MI

(Presented by: Michael Ehlert, MD)

**Introduction:** Containing healthcare costs is a primary goal of health care reform. Publications have focused on models and reimbursement tables to approximate the cost of treatments. Studies comparing the true costs of surgical pelvic organ prolapse repairs are lacking. We report an evaluation of the hospital realized cost difference between transvaginal mesh prolapse repair and robot-assisted sacrocolpopexy.

**Methods:** Consecutive transvaginal mesh prolapse surgery and robot assisted sacrocolpopexy cases from Jan. 2012 to Dec. 2013 were evaluated. Patient clinical and operative data, including operative time, additional vaginal repairs, mid-urethral sling, and hysterectomy were recorded. The total institutional costs (direct and indirect) for each procedure were obtained and subcategorized by area (recovery room, operative cost, anesthesia, in-patient stay, labs, surgical supplies). Independent samples t-test and Chi squared analysis were performed.

**Results:** 120 women underwent trans-vaginal mesh repair, 106 underwent robotic sacrocolpopexy. BMI was similar between groups (28.1 vs. 27.5) as was mid-urethral sling placement (50% vs. 59%). Robotic patients were younger (61 vs. 67 yrs., p<0.001) and more likely to undergo concomitant hysterectomy (58.5% vs. 26.7%). There were similar rates for additional compartment repairs. Amortized costs for robotic purchase and maintenance were included with all depreciated equipment and realized by all patients undergoing surgery at the institution. Overall mean robotic operative time was longer with and without hysterectomy (279 min vs. 174 min, p<0.001 and 201 min vs. 91 min, p<.001). Average total costs were higher with robotic technique ($9675.7 vs. $6718.92, p<0.001), primarily driven by anesthesia ($1141 vs. $675, P<0.001) and operative ($6883 vs. $4487, p<0.001) costs. No differences for total costs were seen in laboratory fees, recovery room, or inpatient nursing. Robotic approach was also significantly more costly for those undergoing concomitant hysterectomy ($12482 vs. $9821, p<0.001), again driven by anesthesia and operative costs ($3405 more combined).

**Conclusion:** Trans-vaginal prolapse repair is less costly than robotic sacrocolpopexy, mainly due to lower anesthesia and intraoperative costs. Length of surgery and additional robotic supplies drive the majority of increased operative costs. Costs attributed to robot purchase and maintenance does not uniquely factor into the procedure costs.
Poster #NM84
ROBOTIC SACROCOLPOPEXY AND CONCOMITANT RECTOCELE VAGINAL REPAIR
Paholo B. Romo, MD, MPH¹ and Veronica Triaca, MD²
¹DHMC, Lebanon, NH; ²Concord Hospital, Concord, NH
(Presented by: Paholo B. Romo, MD, MPH)

Introduction: Rectocele vaginal repair (RVR) and the timing of this surgery in symptomatic women undergoing robotic sacrocolpopexy (RS) for concomitant symptomatic apical pelvic organ prolapse (POP) are controversial. The aim of our study was to review our data in order to look for predictors that can help the algorithm for both treatment and timing of RVR in women with symptomatic apical prolapse undergoing RS.

Methods: IRB approved single site retrospective cohort of women who had RS with concomitant mid-urethral sling, with/without hysterectomy and rectocele repair from April 2010 to February 2013 (prospectively maintained). Women with complete data and at least 12 months follow up were included in our review. Failure was determined by repeat surgery or those symptom atic women considering this. We used PFDI–20 and PFIQ–7. Pearson’s Chi-square and Wilcoxon two sample test were used for categorical variables.

Results: Complete follow up data was available for 137 of 150 women who underwent RS; 34 (25%) had concomitant RVR. There were 94 women with difficulty emptying their bowels or constipation (symptomatic) and 53 performed vaginal splint according to PFDI–20. All women who underwent RVR were symptomatic (34/94) and almost half of these were splinting (16/53). There were 13 (9%) women who had posterior POP failure at last follow up (mean 16 months) and three of these underwent previous rectocele repair (3/34). Sixty women did not have concomitant RVR and ten of these had posterior POP failure. When analyzing symptoms, preoperative splinting was significantly associated with failure in those patients who underwent concomitant repair (3/16 vs. 0/18, p=0.054). Furthermore, splinting was also associated with the need for rectocele repair in those who did not undergo concomitant RVR (9/37 vs. 1/23 p=0.044). Pelvic organ prolapse grading was not a significant predictor. All women who underwent simultaneous RVR had rectocele grade 2 or worse and this was not statistically associated with splinting (p=0.846). There was only one patient (0.007%) with failure at both anterior and apical compartments who underwent repeat surgery, but did not undergo RVR and did not develop bowel symptoms afterwards.

Conclusion: Our data suggests that symptomatic women who require to splint will benefit from concomitant RVR at the time of RS; nonetheless women undergoing concomitant RVR have a small risk of failure at the posterior compartment.
Poster #NM85

ARE WOMEN WITH ADVANCED PELVIC ORGAN PROLAPSE TREATED BY OPEN MESH SACROCOLPOPEXY AT RISK OF SECONDARY INCISIONAL HERNIA?
Feras Alhalabi, MD, Chasta Bacsu, MD, Omer Gulpinar, MD, Daniel Scott, MD, Philippe E. Zimmern, MD
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(Presented by: Philippe E. Zimmern, MD)

Introduction: To study if vaginal hernia is a predisposing factor for incisional hernia (IH), a cohort of women with symptomatic pelvic organ prolapse (POP) who underwent corrective repair by open mesh sacrocolpopexy (MSC) and had long-term follow-up was reviewed to determine their rate of subsequent IH.

Methods: Following IRB approval, the charts of women entered in a prospective Access database who underwent open MSC at a tertiary institution were reviewed. Data collected included demographics, MSC and incisional hernia repairs, and long-term outcome. Patients were excluded if the follow-up after MSC was less than one year. Data was reviewed by a neutral investigator not involved in patient care (FA).

Results: From 1999 to 2012, 75 of 88 women met inclusion criteria with mean duration follow up at 65 (48−84) months. Thirteen were either lost to follow-up or had follow-up less than one year. Seven women underwent symptomatic IH repair, with a mean onset of IH diagnosis after MSC at 18 months (range: 6−72). Six repairs were done open for midline suprapubic defects (Figure 1), and one by laparoscopy after a prior Pfannenstiel incision. No incisional hernia recurrence were noted at mean 20 months (range: 2−72) follow-up. No risk factors were identified in the IH group compared to those who did not form a secondary IH.

Conclusion: IH after open MSC occurred in 7.9%, a rate comparable to what has been reported in women undergoing abdominal procedures through midline or Pfannenstiel incisions. POP does not appear to be a predisposing factor for secondary IH.

Figure 1: Lateral voiding cystourethrogram demonstrating anterior bladder hernia over pubic symphysis after mesh sacrocolpexy

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RECURRENT CYSTOCELE: CORRELATION WITH INTRINSIC HOST FACTORS
Saad Juma, MD
Incontinence Research Institute, Encinitas, CA
(Presented by: Saad Juma, MD)

Introduction: and objective: Pelvic organ prolapse (POP) is a major health issue for women in the reproductive age and beyond. Recurrent POP after surgical repair may be due to technique, graft material, and/or host intrinsic factors. Our objective is to evaluate the correlation between intrinsic host factors and recurrent prolapse.

Methods: Patients who had cystocele repair using solvent dehydrated dermal graft (AXIS) and who completed a minimum follow-up of 24 months are included. Pre and post-operative grade of cystocele on pelvic exam is used to measure objective outcome. Multiple host factors and their correlation with recurrent cystocele are analyzed. Correlation coefficient (CC) was used for statistical analysis.

Results: Patients (N=116) with mean follow up 62±31 (24−141) months met the inclusion criteria. Mean age 65 years and mean BMI 26.48. Mean vaginal deliveries 2.77, Cesarean(C) section 0.069, and 58 has had hysterectomy. Eight patients had symptomatic grade 1, 44 grade 2, 52 grade 3, and 10 grade 4 cystocele. All patients had dermal graft (AXIS) augmented cystocele repair with/without vaginal sling, and 10 had concomitant hysterectomy. Postoperatively, 66 had no recurrent cystocele, 23 had grade 1, 13 grade 2, and 8 grade 3 cystocele. Eleven (19.09%) had recurrent cystocele ≥ grade 2. The correlation coefficient for host factors and recurrent cystocele ≥ grade 2 are; grade of cystocele preoperatively CC+0.446, history of hysterectomy CC+0.283, number of vaginal deliveries CC +0.272, age CC+0.260, length of follow up +0.132, concomitant hysterectomy +0.072, Cesarean section 0.00, and BMI −0.091.

Conclusion: A single surgeon (technique) using single graft repair (graft) and follow up > 24 months reduce the likelihood of recurrence due to technique or graft related factors. The intrinsic host factors that correlate with recurrent cystocele ≥ grade 2 in descending order are; preoperative grade of cystocele, prior hysterectomy, number of vaginal deliveries, age, length of follow up, and concomitant hysterectomy. C-section does not, and BMI demonstrated reverse correlation. These findings indicate a correlation between multiple intrinsic host factors and the likelihood of clinically significant recurrent cystocele following dermal graft augmented cystocele repair. These factors should be addressed with the patient when surgical repair is being considered.

Financial support: Educational grant, Coloplast Corporation, Minneapolis, MN.
COST ANALYSIS OF THE ANTERIOR VAGINAL WALL SUSPENSION PROCEDURE IN THE REPAIR OF STRESS URINARY INCONTINENCE WITH EARLY GRADE ANTERIOR COMPARTMENT PROLAPSE
Tanner Rawlings, Alana Christie and Philippe E. Zimmern, MD
UT Southwestern Medical School, Dallas, Texas
(Presented by: Tanner Rawlings)

Introduction: To evaluate the contemporary cost of the Anterior Vaginal Wall Suspension (AVWS) procedure.

Methods: The cost of AVWS for women undergoing AVWS alone (with no associated procedure) was analyzed from a prospective long-term database. Costing data was obtained from a tertiary care institution for operating room expenses, medical and surgical supplies, pharmacy, anesthesia supplies, and room and bed. Professional fees for the AVWS procedure were obtained from the Medicare Fee for Service Schedule. Costs for 2012 were adjusted by 3% to match 2013 costs. Due to non-normality in the data, the non-parametric Wilcoxon Rank Sum test was used to test for differences in cost by fiscal year or payer type. The Student t-test was used to ensure this population was a representative sample by testing for differences between the patients in this sample compared to the remainder of the patients that have undergone AVWS without concomitant surgery at our institution.

Results: For 2012 –2013, 34 of 48 women met inclusion criteria (Table 1 A). One charity case was excluded, and others had concomitant procedures like hysterectomy. With the 3% inflation adjustment for 2012, the mean total cost was $3681 ± $764, with a median cost of $3664. Anesthesia, operating room, and room and bed costs differed significantly from 2012 to 2013. Only pharmacy cost differed between payer mix and Medicare. The sample analyzed had a shorter mean surgery time (69.6 min) compared to the overall AVWS population (86 min) (Table 1 B). This cost data compares favorably to the average cost reported in contemporary U.S. literature for Tension free vaginal tape (TVT) ($8082 –9579), Transobturator tape (TOT) ($9017), and BC ($9320 – $10545) [1,2,3]

Conclusion: The AVWS mean total cost was $3681, with an increase in cost from 2012 to 2013 related to anesthesia, operating room, and room and bed costs, a figure much lower than most reported costs for comparable anti-incontinence procedures.

References:
Poster #NM88
EIGHT-YEAR REVIEW OF SURGICAL MANAGEMENT OF ICS/IUGA CATEGORY 1–4 TRANSGINGINAL MESH COMPLICATIONS FOLLOWING PROLAPSE KITS
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(Presented by: Kirk Anderson, MD)

Introduction: Polypropylene mesh kits have been shown to improve anatomic outcomes in pelvic organ prolapse (POP) surgery, however, there is an 18% re-operation rate for complications directly related to mesh. Our objective was to categorize TVM complications and describe the surgical management at a single institution.

Methods: We retrospectively reviewed medical records of patients undergoing transvaginal removal of polypropylene mesh from the vagina and lower urinary tract due to complications from TVM prolapse kits. Patients were categorized according to the ICS/IUGA classification system of urogynecologic graft complications. Patients who had only complications from mid urethral sling were excluded from this study. All patients underwent near total removal of the TVM prolapse kit, wash out protocol, reconstruction followed by selective prolapse repair. Additionally, patients with stress incontinence underwent pubovaginal sling with autologous rectus fascia.

Result: Eighty-two patients underwent near total surgical removal of TVM POP kit with a mean follow-up of 16 months. An isolated transvaginal approach was used in 62 (76%) patients that required only POP kit removal, while 20 (24%) patients required concomitant retropubic approach for removal of a retropubic mesh sling. The mean age was 58 years and mean BMI was 29. Thirty-five (43%) patients had prior attempt of partial mesh excision. The indication for mesh removal was ICS category 1 (mesh pain with intact epithelium), 2–3 (small-large mesh exposure), and 4 (urinary tract perforation) in 25 (30%), 47 (58%) and 10, (12%) respectively. Concomitant reconstructive procedures included reinforced repair with biological graft using sacrospinous ligament fixation (n=26, 32%), anterior colporrhaphy (n=47, 57%), and pubovaginal sling using rectus fascia (n=23, 28%). Near complete removal of mesh was accomplished in all patients. Post-operative complications included blood transfusion (n=4), rectovaginal fistula (n=2), ureteral obstruction (n=2) and pudendal nerve neuropathy (n=1). Residual symptoms included vaginal pain (n=3), incomplete bladder emptying (n=8), SUI (n=11) and urge incontinence (n=5). Additional surgery included rectovaginal fistula repair (n=2), pubovaginal sling using rectus fascia (n=8), sling lysis (n=3) and robotic sacroc当地pexy (n=2).

Conclusion: TVM excision can resolve complications after placement of TVM prolapse kits in a single operation.
IMPACT OF BODY MASS INDEX ON SURGICAL OUTCOMES IN WOMEN WITH PELVIC FLOOR DISORDERS

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University of Minnesota, Minneapolis, MN
(Presented by: Jose Flores, MD)

Introduction: The overweight and obesity rate in women is estimated to be 64%. Obesity has been associated with pelvic organ prolapse (POP), pelvic dysfunction, and complications after POP and stress urinary incontinence (SUI) operations. Our objective was to assess POP, urethral hypermobility, and urine leakage due to stress, as well as surgical outcomes and postoperative complications, after POP and SUI operations in overweight and obese women compared with women with a normal body mass index (BMI).

Methods: For our study period (July 1, 2009, through December 31, 2013), we obtained the medical records of 167 participants and then divided them into 3 subgroups (normal BMI < 25; overweight, i.e., BMI of 25 to 30; and obese, i.e., BMI > 30). We assessed clinical variables and pelvic examination findings. For those with at least 1 year of follow-up, we also assessed surgical outcomes and postoperative complications. To evaluate the variables, we used analysis of variance and the chi-square test. We also performed multivariate logistic regression and correlation assessments. A P value < 0.05 was considered statistically significant. We had no financial funding or potential conflict of interest.

Results: Of 167 participants, 26.9% were overweight; 40.1%, obese. We observed that, as BMI increased, so did the incidence of diabetes mellitus (P = 0.00001), the number of pregnancies (P = 0.02), and the prevalence of urethral hyper-mobility (P = 0.04). In our non-adjusted logistic regression assessment, we found that obesity increased the odds of reported urine leakage due to stress by 2.3-fold and of urethra hyper-mobility by 4-fold. However, we found no correlation between BMI and the incidence of cystocele (r = 0.071) or incidence of rectocele (r = 0.038). We did find a weak correlation between a higher BMI and an increased incidence of urine leakage due to stress (r = 0.2). Of the 111 participants who were evaluated after POP and SUI operations, 13 had minimal surgical complications. At one year of follow-up, we did not find any significant difference in surgical outcomes and postoperative complications.

Conclusion: In our study, we found that increased BMI was associated with higher pregnancies as well as higher incidence of both diabetes mellitus and urethral hyper-mobility that have been associated with pelvic floor disorders. We did not find any significant difference in surgical outcomes and postoperative complications.
Poster #NM90
PESSARY USE AS A FIRST LINE TREATMENT FOR PELVIC FLOOR DISORDERS
Meghan Griffin, DO1, Youngwu Kim, MD2, Richard Roberts, MD2 and Husam Abed, MD1
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(Presented by: Meghan Griffin, DO)

Introduction: Describe pessary utilization in a busy urogynecology practice where pessary fitting and care is done by the treating physician and not a mid-level provider.

Methods: This is a retrospective study of patients who were fitted with a pessary in a busy urogynecology practice between February 2010 and February 2013. Demographic data was collected as well as information about primary diagnosis, type of pessary, number of visits to accomplish the best fit, type of care (self versus clinic), and discontinuation rate.

Results: Three hundred and eighty-six patients underwent pessary fitting during the study period. Mean age was 62 years and mean BMI was 31. The main diagnoses were prolapse in 189 patients (49%) and urinary incontinence in 167 patients (42%). The majority of patients had stage 2 pelvic organ prolapse or higher (347/386) and 184 (48%) were sexually active. The most commonly used pessary types were the ring (42%), ring with knob (32.4%), and incontinence ring (14.2%). Regarding pessary cleaning, 197 (51%) were performing self-care, and 135 (35%) had pessary care in the clinic. The majority of patients had a good fit after three visits (67%) and the discontinuation rate was 30%.

Conclusion: Pessary utilization as a primary line of treatment for pelvic organ prolapse and urinary incontinence is a feasible approach. The main types of pessaries include the ring, ring with knob and incontinence ring.
THE EFFICACY AND SAFETY OF TWO SURGICAL MESHES, PROLIFT® AND EASYCELE®, FOR THE TREATMENT OF ANTERIOR VAGINAL WALL PROLAPSE

Joong Shik Lee, Professor¹, Hyo Serk Lee, Urologist², Young Sik Kim, Urologist³, Ju Tae Seo, Professor⁴ and Young Ho Kim³
¹Department of Urology, Cheil general hospital, Kwandong University, Seoul, Korea; ²Department of Urology, Cheil general hospital, Kwandong university, Seoul, Korea; ³Department of Urology, Ilsan Hospital, National Health Insurance Corporation, Ilsan, Korea; ⁴Department of Urology, Cheil general hospital, Kwandong university, Seoul, Korea
(Presented by: Joong Shik Lee, Professor)

Introduction: Several methods of surgical mesh is a medical device that is generally used to repair and reinforce weakened tissue in pelvic organ prolapse (POP). However, there are a few concerns about using surgical mesh to correct POP, because of their post-operative complications. The aim of this study is to compare the long-term efficacy and safety of Prolift® and Easycele® for anterior vaginal wall prolapse repair.

Methods: A total of 63 female prospective patients enrolled. All enrolled patients had an anterior vaginal wall prolapse classified higher than stage II according to the POP−Q system. Patients with vaginal atrophy, previous pelvic radiation history, or plans for future pregnancy were excluded. Among these patients, 36 patients had stress urinary incontinence. Patients with urinary incontinence underwent mid urethral sling operation with concomitant TVT®. The Easycele® procedure is designed to penetrate the internal obturator muscle and obturator foramen. Symptoms and quality of life (QoL) of patients were evaluated with a Pelvic Floor Distress Inventory (PFDI) score. Cure, improve and fail were defined as stage 0, I and II respectively, according to the POP−Q stage system.

Results: Among the total 68 patients, 32 patients received the Prolift® procedure and 36 patients received the Easycele® procedure. The mean follow up period was 23.2±12.3 months, and 48 post-operative patients were included in the final analysis. There were no intraoperative complications in either procedure. The PFDI showed significant improvement in UDI scores for both procedures. Vaginal erosion was observed in one patient who received the Easycele® procedure. After repair of anterior vaginal wall prolapse using Prolift® and Easycele®, anterior compartment descent was corrected for most patients.

Conclusion: Anterior vaginal wall prolapse repair using Prolift® and Easycele® is an effective procedure. This procedure had a low complication rate and a high success rate. For anterior vaginal prolapse patients, surgical repair using surgical mesh was effective and safe. The type of surgical procedure selected by surgeons will depend upon the type of POP observed.

Financial finding: No
ABDOMINAL SACROCOLOPPEXY WITH CONCURRENT TOTAL ABDOMINAL HYSTERECTOMY IN THE ROBOTIC ERA
Allison Polland, MD1, Katherine Brewer, MD1, Gillian Stearns, MD2 and Jaspreet Sandhu, MD3
1Icahn School of Medicine at Mount Sinai; 2Memorial Sloan Kettering Cancer Center; 3Memorial Sloan Kettering Cancer Center
(Presented by: Allison Polland, MD)

Introduction: Abdominal sacrocolpopexy (ASC) is commonly performed for management of apical pelvic organ prolapse. Erosion, a recognized risk of the procedure, was found to be more likely in patients who underwent concurrent total hysterectomy in studies prior to the robotic era. Robotic surgery allows for easier suturing which may result in improved vaginal cuff closure. The purpose of this study was to determine erosion rate for laparoscopic or robotic abdominal sacrocolpopexy with concurrent total hysterectomy.

Methods: After IRB approval, 36 patients who underwent robotic or laparoscopic total abdominal hysterectomy or laparoscopic assisted total vaginal hysterectomy, in many cases for oncologic purposes, with concurrent ASC at a single institution between June 2006 and June 2013 were identified. Preoperative risk factors were recorded. Presence of apical mesh erosion or mid-urethral sling erosion was identified by physical exam.

Results: There were a total of 36 cases (34 robotic and 2 laparoscopic), fourteen had concurrent sling placement. Two patients who had undergone robotic ASC (5.9%) and one patient who had undergone laparoscopic ASC had mesh erosion at the vaginal apex at a mean follow up of greater than 2 years. Two patients had erosion of the mid urethral sling which was asymptomatic and managed conservatively. In two cases the vaginal cuff was closed transvaginally due to surgeon preference in one and robot failure in the other; neither of these patients had erosion. In all other cases the cuff was closed robotically. Within the cohort, eight patients were smokers, only one of these patients had mesh erosion. Eight patients underwent chemotherapy before or after mesh placement, only one of these patients had mesh erosion. One patient in the cohort underwent intravaginal radiation and experienced mesh erosion. Two patients reported dysuria preoperatively, this resolved in one of the patients after surgery. Sixteen patients reported urgency and frequency preoperatively and only twelve reported these symptoms after surgery. There was no significant difference between these groups on paired t-test.

Conclusion: While prior studies have suggested rates of apical mesh erosion as high as 14% when sacrocolpopexy is performed concurrent with total abdominal hysterectomy, the rate is significantly lower in the current robotic series. This may be a safe and valuable option to offer patients who require total abdominal hysterectomy.
Introduction: Hysterectomy is the second most common major surgical procedure performed in women. Recently, studies have shown long-term adverse effects on the pelvic floor.

Objectives: Our dual objective was to (1) evaluate the prevalence of pelvic organ prolapse (POP) and of urine leakage due to stress as well as surgical outcomes and postoperative complications, after POP and stress urinary incontinence (SUI) operations in women with and without hysterectomy and (2) assess any significant differences between those two cohorts.

Methods: For our study period (July 1, 2009, through December 31, 2013), we obtained the medical records of 165 participants. We assessed clinical variables and pelvic examination findings. For participants with at least one year of follow-up, we also assessed surgical outcomes and postoperative complications. We divided participants into two subgroups (with and without hysterectomy); to compare them, we used the Student t test or chi-square test. We obtained the relative risk (RR) and odds ratio with a 95% confidence interval (CI). We performed both non-adjusted and adjusted logistic regression assessments. A P value < 0.05 was considered statistically significant. We had no financial funding or potential conflict of interest.

Results: Of 165 participants, 41.8% had undergone hysterectomy. Those with hysterectomy were significantly older (P = 0.003) and had a significantly increased risk for severe cystocele (RR, 1.75; 95% CI, 1.13 to 2.73; P = 0.011). In our non-adjusted and adjusted logistic regression assessments, we found that those with hysterectomy had increased odds of severe cystocele by almost three-fold. Of the 105 participants who were evaluated after POP and SUI operations, 13 had minimal surgical complications; we did not find any significant difference between the subgroups. Women with hysterectomy had longer POP and SUI operations (mean, 84.4 minutes) than those without hysterectomy (mean, 60.9 minutes; P = 0.045). Also, at one year of follow-up, more women with hysterectomy had pelvic pain (17.4%) than those without hysterectomy (1.7%; P = 0.004).

Conclusion: Hysterectomy has traditionally been thought to disrupt the local vascular nerve supply and change the anatomic relationships between bowel, bladder, and vagina. In our study, we found that women with hysterectomy had a significantly increased risk for severe cystocele, significantly longer POP and SUI operations, and significantly more pelvic pain at one-year follow-up.
- **FULL MEMBER**: A (MD, or DO) who has completed residency training and demonstrates strong interest in the field. A PhD or basic science researcher recognized within the field or Physicians in fellowship training programs related to the field. The individual must submit two letters of recommendation from Full members. The admission period is rolling. This category includes voting rights on society issues.

- **AFFILIATE MEMBER**: An individual with an interest in the field who does not satisfy the criteria as Member including physicians in residency training, medical students, allied health professional (nurse, NP, PA) and physical therapists. Letters of recommendation are not needed. The admission period is rolling. There are no voting privileges.

- **AFFILIATE INTERNATIONAL MEMBER**: An individual (MD, PhD, DO) in good standing in their parent organization that has a signed letter of collaboration with SUFU. There are no voting privileges and no subscription to the journal of the society. Letters of recommendation are not needed. The admission period is rolling. There are no voting privileges.

- **CORPORATE MEMBER**: An industry related individual with an interest in the field who does not satisfy the criteria for Member or Affiliate Member. Letters of recommendation are not needed. The admission period is rolling. There are no voting privileges.

### Membership Application

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### Home Address

- **City**: ____________________________  
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- **Fax**: ____________________________

### Email and Date of Birth

- **Email**: ____________________________  
- **Date of Birth**: ____________________________

### Residency

- ____________________________

### Fellowship

- ____________________________

### Current Position

- ____________________________

### Number of Refereed Publications

- ____________________________

### List two FULL members of the society who will forward reference letters on your behalf:

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2) ____________________________

**Please send this application along with your CV to:**  
Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction  
Two Woodfield Lake  
1100 East Woodfield Road, Suite 350  
Schaumburg, IL 60173  
Phone: (847) 517-7225  Fax: (847) 517-7229  Email: info@sufuorg.com

**Signature of Applicant**: ____________________________  
**Date**: ____________________________
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