Welcome to Miami…

…and to the Fifth Winter Meeting of the Society for Urodynamics and Female Urology. Again this year, the meeting is held in conjunction with the International Society of Pelvic Neuromodulation (ISPiN), the Geriatric Urology Society (GUS) and the Society for Genitourinary Reconstructive Surgery (GURS). Our scientific program remains very topic-oriented toward female urology, BPH, neurourology and voiding dysfunction.

My program co-chairs, Drs. Zimmern, Seigel, Griebling, Kreder and Kaplan, and I have attempted to construct an interesting and educational world-class program. We will start the meeting with a dedicated basic science program, which this year, will focus on BPH. The Sacral Neuromodulation portion of the program will focus on the posterior pelvis with input from our colorectal colleagues. There will be additional breakout sessions in an effort to increase the breadth of topics covered.

Industry sponsored symposia will be held over lunch. We hope many of you will take advantage of these symposia remembering that without the sponsorship of industry the cost of this meeting would be prohibitive.

We are very excited about this meeting. In addition to state of the art lectures, podium presentations and breakout sessions we have allotted more time for discussion and increased audience participation.

Enjoy this great venue overlooking Biscayne Bay. Please plan on joining us for our welcome reception on Thursday night and the banquet Saturday night.

I hope that you are as excited as I am about our scientific program and this vibrant east coast location!

E. Ann Gormley, MD
SUFU Program Chair
Due to the large number of abstracts submitted this year, the selection process was done anonymously. We gratefully acknowledge the participation of:

- Rodney A. Appell, MD
- Charles Butrick, MD
- R. Duane Cespedes, MD
- J. Quentin Clemens, MD
- Deborah R. Erickson, MD
- Gamal M. Ghoniem, MD
- Angelo E. Gousse, MD
- Tomas Griebling, MD
- Howard B. Goldman, MD
- Magdy M. Hassouna, MD
- Michael J. Kennelly, MD
- Stephen R. Kraus, MD
- Karl Kreder, MD
- Gary E. Lemack, MD
- Raul C. Ordorica, MD
- Steven P. Petrou, MD
- Paul Pettit, MD
- Raymond R. Rackley, MD
- Shlomo Raz, MD
- Harriette M. Scarpero, MD
- Steven W. Siegel, MD
- Suzette E. Sutherland, MD
- Alexis E. Te, MD
- J. Christian Winters, MD
- E. James Wright, MD

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

**2008 SUFU Meeting Program Chairs**
- E. Ann Gormley, MD
- Tomas Griebling, MD
- Steven A. Kaplan, MD
- Karl J. Kreder, Jr., MD
- Steven W. Siegel, MD
- Philippe E. Zimmern, MD

We would also like to thank the 2008 SUFU Essay Competition Reviewers:

- Gary E. Lemack, MD (Chair)
- Rodney A. Appell, MD
- J. Christian Winters, MD
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2007 – 2008

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Needs
Attendees of the SUFU program need to be aware of the latest updates and controversies in topics related to female urology, pelvic floor prolapse, neurourolgy, geriatrics, BPH, genitourinary reconstructive surgery and pelvic neuromodulation. This meeting will provide active interactions between clinicians, investigators and basic scientists regarding diagnostic, therapeutics, and research topics related to urinary incontinence, pelvic organ prolapse, voiding dysfunctions, and pelvic neuromodulation. Attendees will benefit from the ongoing review of these topics, which will assist them in assessing patients and determining future research needs.

Objectives
At the conclusion of this program, participants should be able to:

1. Recognize the diagnostic and therapeutic challenges in urinary incontinence, pelvic organ prolapse, voiding dysfunction, and neuromodulatory therapies.
2. Compare surgical treatment options for BPH, urinary incontinence, urethral stricture disease, and pelvic organ prolapse, including complications of their management.
3. Review the physiology of urinary continence, incontinence, pelvic floor disorders and colorectal disorders.
4. Explain the role of new, minimally invasive therapy, for benign prostatic hyperplasia, and integrate this knowledge into their practices.
5. Assess the translational role of basic science research related to topics of pelvic floor dysfunction, stress urinary incontinence, neurogenic bladder and BPH.
6. Recognize the importance of the role of geriatric urology and its application in the clinical practice of the members.
7. Assess and manage complicated female and male incontinence.
8. Describe new concepts of pelvic floor neuromodulation, particularly for colorectal disorder.

CME Accreditation Statement
This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the University of Oklahoma College of Medicine and the Society of Urodynamics and Female Urology. 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 educational activity for a maximum of 25.75 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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

Special Assistance
We encourage participation by all individuals. If you have a disability, advance notification of any special needs will help us better serve you. Call (847) 517-7225 if you require special assistance to fully participate in the meeting.

General Disclaimer of the Society for Urodynamics & Female Urology
The statements and opinions contained in this program are solely those of the individual authors and contributors and not of the Society for Urodynamics and Female Urology. The appearance of the advertisements is not a warranty, endorsement or approval of the products or services advertised or of their effectiveness, quality or safety. The content of this publication may contain discussion of off-label uses of some of the agents mentioned. Please consult the prescribing information for full disclosure of approved uses. The Society for Urodynamics and Female Urology disclaims responsibility for any injury to persons or property resulting from any ideas or products referred to in the abstracts or advertisements.
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Thank you to the following companies who have provided educational grant support:

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SUFU Annual Winter Meeting
Exhibitors
Alphabetical as of 2/12/2008

Allergan Medical Affairs
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General Information

Meeting Registration Hours
Location: Regency Ballroom Foyer (unless otherwise noted)
Thursday, February 28, 2008  7:00 a.m. – 7:00 p.m. (registration located in the Riverfront South Lobby from 7:00 a.m. – 3:00 p.m.)
Friday, February 29, 2008  7:00 a.m. – 5:00 p.m.
Saturday, March 1, 2008  6:30 a.m. – 5:00 p.m.
Sunday, March 2, 2008  6:30 a.m. – 12:00 p.m.

Exhibition Hall Hours
Location: Flagler/Brickell North
Friday, February 29, 2008  9:00 a.m. – 4:00 p.m.
Saturday, March 1, 2008  9:00 a.m. – 4:00 p.m.
Sunday, March 2, 2008  6:30 a.m. – 10:30 a.m.

Speaker Ready Room
Location: Gardenia C
Thursday, February 28, 2008  12:00 p.m. – 6:00 p.m.
Friday, February 29, 2008  7:00 a.m. – 5:00 p.m.
Saturday, March 1, 2008  7:00 a.m. – 5:30 p.m.
Sunday, March 2, 2008  7:30 a.m. – 12:00 p.m.
Program Schedule

2008 Winter Meeting
Society for Urodynamics and Female Urology
Joint meeting with ISPiN, GURS and GUS
February 28 – March 2, 2008
Hyatt Regency Miami
Miami, Florida

*All sessions located in the Tuttle/Monroe Rooms unless otherwise noted.

THURSDAY, FEBRUARY 28, 2008

Arrivals
12:00 p.m. – 4:00 p.m. Executive Committee Meeting

7:00 a.m. – 7:00 p.m. Registration

SUFU BASIC SCIENCE RESEARCH MEETING – Riverfront South Hall
8:00 a.m. Introduction
Roger R. Dmochowski, MD, SUFU President

8:15 a.m. – 9:00 a.m. Panel Discussion:
Urothelium – Translational Research on Interstitial Cystitis
Moderator: Deborah R. Erickson, MD
Panelists: Lori A. Birder, PhD – “Urothelial Nociceptive Functions”
Tony Buffington, DVM, PhD – “Feline Model of IC”
Susan Keay, MD, PhD – “APF Update”

9:00 a.m. – 10:00 a.m. Basic Science Poster Session I
Moderators: Lori A. Birder, PhD
Christopher K. Payne, MD

Poster #BS1
THE EFFECT OF BOTULINUM TOXIN A ON CHEMICAL STIMULATION OF RAT DORSAL ROOT GANGLION CELLS
W. Stuart Reynolds, MD; Alvaro Lucioni, MD; David E. Rapp, MD; Gregory T. Bales, MD; Daniel S. McGehee, PhD (Presented By: W. Stuart Reynolds)

Poster #BS2
THE EFFECTS OF NO DONORS AND MEMBRANE PERMEABLE CGMP ANALOGUE ON MURINE BLADDER SMOOTH MUSCLE
Kevin Monaghan; Salah A. Baker; Junguk Han; Kenton M. Sanders; Sang Don Koh (Presented By: Kevin Monaghan)
Poster #BS3  METHIONINE AND ITS DERIVATIVES INCREASE BLADDER EXCITABILITY BY INHIBITING STRETCH-DEPENDENT K⁺ CHANNELS
Salah A. Baker; Grant W. Hennig; Junguk Han; Fiona C. Britton; Kenton M. Sanders; Sang Don Koh (Presented By: Salah Baker)

Poster #BS4  FUNCTIONAL AND MOLECULAR IDENTIFICATION OF pH-SENSITIVE K⁺ CHANNELS IN MURINE URINARY BLADDER SMOOTH MUSCLE
Kevin Monaghan; Insoo Han; Salah A. Baker; Junguk Han; Fiona C. Britton; Sang Don Koh (Presented By: Kevin Monaghan)

Poster #BS5  GENE EXPRESSION DURING DIFFERENTIATION OF CULTURED UROTHELIAL CELLS FROM INTERSTITIAL CYSTITIS AND CONTROL BLADDERS
Deborah R. Erickson; Justin K. Dixon; Curtis J. Clark; Matthew A. Hersh; Steven R. Schwarze (Presented By: Deborah Erickson)

Poster #BS6  DETRUSOR OVERACTIVITY IN SPONTANEOUSLY HYPERTENSIVE RATS IS ASSOCIATED WITH ALTERATIONS IN CAVEOLAE-MEDIATED SIGNALING EVENTS
V. Cristofaro; S.V. Yalla; M.P. Sullivan (Presented By: Vivian Cristofaro)

Poster #BS7  URETHRAL AFFERENT SIGNALING LEADS TO ACTIVATION OF THE EXTERNAL URETHRAL SPHINCTER AND ABDOMINAL WALL MUSCLES
Eric A. Hurtado; Phillip P. Smith; Christopher P. Smith; Timothy B. Boone; George T. Somogyi (Presented By: Eric Hurtado)

10:00 a.m. – 10:20 a.m.  Break

10:20 a.m. – 11:00 a.m.  Panel Discussion:
Translational Research in Urinary Tract Infection
Moderator:  David T. Uehling, MD
Panelists:  Scott Hultgren, PhD – “Advances in Understanding the Pathophysiology of Urinary Tract Infection in Women”
          David T. Uehling, MD – “Vaginal Mucosal Vaccine for UTI in Women”
          Courtenay K. Moore, MD – “Pathogenesis of Bacterial UTI in Adult Patients with Diabetes”
11:00 a.m. – 12:00 p.m.  **Basic Science Poster Session II**  
Moderators:  
*Matthew O. Fraser, PhD*  
*Larissa V. Rodriguez, MD*

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**Poster #BS8**  
**LOWER GENITOURINARY ANATOMY AND FUNCTION OF LYSYL OXIDASE LIKE-1 KNOCKOUT (LOXL1 KO) MICE WITH AND WITHOUT PELVIC ORGAN PROLAPSE**  
Una J. Lee, MD; A. Marcus Gustilo-Ashby, MD; Firouz Daneshgari, MD; Mei Kuang; Drina Vurbic; Danli Lin, MD; Chris Flask, PhD; Tiansen Li, PhD; Margot S. Damaser, PhD (Presented By: Una Lee)

**Poster #BS9**  
**CHRONIC SOY AND PHYTOESTROGEN TREATMENT LEADS TO SIGNIFICANT FUNCTIONAL AND MORPHOLOGICAL CHANGES IN THE URETHRA OF FEMALE NON-HUMAN PRIMATES**  
Christian Gratzke; George J. Christ; Jay R. Kaplan; Karl-Erik Andersson; Gopal Badlani (Presented By: Christian Gratzke)

**Poster #BS10**  
**TEMPORAL EFFECTS OF VAGINAL DISTENSION AND BILATERAL PUDENDAL NERVE TRANSECTION ON LEAK-POINT PRESSURE AND URETHRAL ANATOMY IN FEMALE MICE**  
Yi-Hao Lin; Guiming Liu; Mei Li; Michael Kavran; Firouz Daneshgari (Presented By: Yi-Hao Lin)

**Poster #BS11**  
**IN VITRO EFFECTS OF A SINGLE NUCLEOTIDE POLYMORPHISM ON EXPRESSION OF EXTRACELLULAR MATRIX PROTEIN LAMININ GAMMA-1 (LAMC1)**  
Valerie A. Arboleda, BS; Eric Vilain, MD, PhD; Larissa V. Rodriguez, MD (Presented By: Valerie Arboleda)

**Poster #BS12**  
**TIME-DEPENDENT CONTRIBUTION OF TERMINAL NERVES AND VASCULTURE TO THE REMODELING OF THE BLADDER IN DIABETIC RAT**  
Mei Li; Guiming Liu; Firouz Daneshgari (Presented By: Mei Li)

**Poster #BS13**  
**PUBOURETHRAL LIGAMENT INJURY CAUSES LONG TERM STRESS URINARY INCONTINENCE IN FEMALE RATS.**  
John Kefer; Westly Kong; Guiming Liu; Mia Swartz; Una Lee; Courtenay Moore; Firouz Daneshgari (Presented By: John Kefer)

**Poster #BS14**  
**INSULIN-LIKE GROWTH FACTOR-I, INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-3, INSULIN-LIKE GROWTH FACTOR RECEPTOR AND URODYNAMIC FUNCTION AFTER PUDENDAL NERVE CRUSH IN DIABETIC FEMALE RATS**  
Hui Q. Pan; Dan Li Lin; Mei Kuang; James Steward; David Sypert; Raymond R. Rackley; Margot S. Damaser (Presented By: Hui Q Pan)

**Poster #BS15**  
**PERIURETHRAL INJECTION OF AUTOLOGOUS ADIPOSE-DERIVED STEM CELLS WITH HEPATOCYTE GROWTH FACTOR-IMPREGNATED PLGA MICROSPHERES FOR TREATMENT OF STRESS URINARY INCONINENCE IN ANIMAL MODEL**  
Dhiren S. Davé, MD; Vanda Gunther-Lopez, MD; Rong Zhang, DDS, PhD; Joanne Leung; Suny Kun; Kiran Gollapudi, BS; Benjamin Wu, DDS, PhD; Larissa V. Rodriguez, MD (Presented By: Dhiren Davé)
12:00 p.m. – 1:30 p.m. Lunch
Location: Japengo, Lobby Level

1:30 p.m. – 2:45 p.m. Panel Discussion:
Translational Research in Neurogenic Bladder
Moderator: Firouz Daneshgari, MD
Panelists: Karl B. Thor, PhD – “Bladder to Brain Pathways”
William D. Steers, MD – “Update on NGF”
Firouz Daneshgari, MD – “Bladder Sensitivity Testing”
Christopher P. Smith, MD – “Botox Mechanism of Action”

2:45 p.m. – 3:15 p.m. Break

3:15 p.m. – 4:00 p.m. Panel Discussion:
Translational Research Priorities in BPH
Moderator: Wade Bushman, MD
Panelists: Robert H. Getzenberg, PhD – “Prostatic Growth and Models of LUT Dysfunction”
Reginald C. Bruskewitz, MD – “New Therapies for BPH”

4:00 p.m. – 5:00 p.m. Basic Science Poster Session III: OAB
Moderators: Stephen R. Kraus, MD
Margot S. Damaser, PhD

Poster #BS16 THE EFFECT OF SACRAL NERVE STIMULATION ON DETRUSOR FUNCTION AND STRUCTURE IN THE SETTING OF BLADDER OUTLET OBSTRUCTION – A RAT MODEL
Carla Mazur, MS; Mohamad Salkini, MD; Wyatt Ho, BS; Craig V. Comiter, MD (Presented By: Craig Comiter)

Poster #BS17 THE EFFECT OF BLADDER OUTLET OBSTRUCTION AND SACRAL NERVE STIMULATION ON MUSCARINIC AND VANILLOID RECEPTORS – A RAT MODEL
Carla Mazur, MS; Mohamad Salkini, MD; Wyatt Ho, BS; Craig V. Comiter, MD (Presented By: Craig Comiter)

Poster #BS18 A ONE-WEEK SUB-ACUTE SAFETY EVALUATION OF A NOVEL TRANSCUTANEOUS STIMULATOR IN A CANINE MODEL
Stephen Wahlgren; Anthony DiUbaldi; Michael Tracey, PhD; David Stoloff DVM; Thomas Barbolt, PhD; Ronnie Toddywala, PhD (Presented By: Jeyakumar Subbaroyan)

Poster #BS19 TEST, RE-TEST RELIABILITY, AND DEVELOPMENT OF A SYSTEMATIC COMPUTER INTERFACE FOR ASSESSMENT OF BLADDER AUTONOMIC SENSORY FUNCTION IN A NOVEL ANIMAL MODEL
Elliott Rouse; Yasuhiro Yamada; Guiming Liu; Fernando Casas; Firouz Daneshgari (Presented By: Yasuhiro Yamada)
Botulinum Toxin Type A Normalizes Alterations in Urothelial ATP and Nitric Oxide Release Induced by Chronic Spinal Cord Injury
Christopher P. Smith; David A. Gangitano; Alvaro Munoz; Nilson A. Salas; Timothy B. Boone; K. Roger Aoki; Joseph Francis; George T. Somogyi
(Presented By: Christopher Smith)

The Effects of Ovariectomy and Estrogen Replacement on Storage and Voiding Function in Female Rats
Eric A. Hurtado; Desiderio Avila, Jr.; Phillip P. Smith; Christopher P. Smith; Timothy B. Boone; George T. Somogyi
(Presented By: Eric Hurtado)

Neuroselective Electrostimulation of the Bladder Afferent Pathways Induces C-Fos Expression in the Regions of the Spine Specific for Bladder Afferent C and A-Delta Fibers
Yasuhiro Yamada; Osamu Ukimura; Guiming Liu; Mei Li; Firouz Daneshgari
(Presented By: Yasuhiro Yamada)

Male and Female Rats Exhibit Distinct Changes in Urethral Outlet Resistance to Botulinum Toxin Type-A
Nilson A. Salas; George T. Somogyi; Timothy B. Boone; Christopher P. Smith
(Presented By: Nilson Salas)

4:30 p.m. – 6:30 p.m. Fellows Forum (for participating fellows only)
Location: Jasmine
Moderators: Eric S. Rovner, MD
Gary E. Lemack, MD
Harriette M. Scarpero, MD

7:00 p.m. – 8:30 p.m. Welcome Reception with Corporate Members in Exhibit Hall
Location: Flagler-Brickell North, Ground Level

Friday, February 29, 2008

7:00 a.m. – 5:00 p.m. Registration
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| 6:30 a.m. – 7:45 a.m. | **Industry Sponsored Breakfast Symposium**<br>
|                 | Location: *Jasmine*<br>
|                 | “Taking A Step Toward A New Treatment Option For Managing Symptoms of OAB”<br>
|                 | Program Chair: *Pamela Ellsworth, MD*<br>
|                 | Associate Professor, Urology, Department of Urology/Surgery, Brown Medical School, Providence, Rhode Island<br>
|                 | Presenters:<br>
|                 | *Michael Chancellor, MD*<br>
|                 | Professor, Urology, Director, Neuourology Research<br>
|                 | Department of Urology<br>
|                 | William Beaumont Hospital, Royal Oak, Michigan<br>
|                 | *Peter Sand, MD*<br>
|                 | Professor, Obstetrics and Gynecology<br>
|                 | Director, Division of Urogynecology and Reconstructive Surgery<br>
|                 | Director, Evanston Continence Center and Fellowship Program in Urogynecology<br>
|                 | Northwestern University Feinberg School of Medicine, Evanston, Illinois<br>
|                 | *David Staskin, MD*<br>
|                 | Director, Section of Voiding Dysfunction, Department of Urology<br>
|                 | New York–Presbyterian Hospital<br>
|                 | Associate Professor, Urology and Obstetrics-Gynecology<br>
|                 | Weill–Cornell Medical College, New York, New York<br>
| 7:00 a.m. – 8:00 a.m. | **Residents and Fellows Breakfast**<br>
|                 | Location: *Brickell South & Center*<br>
|                 | Moderators: *Eric S. Rovner, MD*<br>
|                 | *Gary E. Lemack, MD*<br>
|                 | *Harriette M. Scarpero, MD*<br>
| 8:00 a.m. – 5:00 p.m. | **Video Viewing in Speaker Ready Room**<br>
|                 | Location: *Gardenia C*<br>
| 9:00 a.m. – 4:00 p.m. | **Exhibit Hall Open**

GENERAL SESSION

7:55 a.m. – 8:00 a.m.  Introduction
E. Ann Gormley, MD

ISPiN – General Session
Moderator: Kenneth M. Peters, MD

8:00 a.m. – 8:50 a.m. Pelvic Organ Neurophysiology: Implications for Chronic Pelvic Pain and the Overlap of Chronic Pelvic Pain Disorders
Michael Pezzone, MD, PhD

8:50 a.m. – 9:00 a.m. Q & A

8:50 a.m. – 9:00 a.m. The Posterior Pelvis: Who Let the Colorectal Surgeons In?
Moderator: Anders Mellgren, MD, PhD

9:00 a.m. – 9:15 a.m. Sacral Neuromodulation for Colorectal Disorders
Steve Wexner, MD

9:15 a.m. – 9:30 a.m. Treatment of Rectal Prolapse
Tracy L. Hull, MD

9:30 a.m. – 9:45 a.m. Anatomy of the Posterior Pelvis: What’s Behind the Bladder?
Shane McNevin, MD

9:45 a.m. – 10:15 a.m. Break – Visit the Exhibits

10:15 a.m. – 10:30 a.m. The Value of Colorectal Evaluation
Shane McNevin, MD

10:30 a.m. – 10:45 a.m. The Colorectal Surgeon’s Approach to Rectocele & Obstructed Defecation
Anders Mellgren, MD, PhD

10:45 a.m. – 11:00 a.m. Treatment of Fecal Incontinence
Tracy L. Hull, MD

11:00 a.m. – 11:30 a.m. Questions and Patient Examples
Anders Mellgren, MD, PhD
Tracy L. Hull, MD
Shane McNevin, MD
Industry Sponsored Lunch Symposium
Location: Jasmine
“InterStim Therapy: Best Practices”

Faculty:
Suzzette Sutherland, MD
Metro Urology, St Paul, MN
Jeffrey Welgoss, MD
Northern Pelvic Surgery Associates, Annandale, VA
Lisa Zwiers, PA
Foothills Urology, Broomfield, CO

Basic and Clinical Neuromodulation Podium Session
Moderators: Anurag K. Das, MD
            Kristene E. Whitmore, MD

Podium #1  CHANGES IN URINARY URGENCY, FREQUENCY, AND PELVIC PAIN AFTER SACRAL NEUROMODULATION AND THE ROLE OF THE GLOBAL RESPONSE ASSESSMENT
Kenneth M. Peters; Kim A. Killinger; Ibrahim A. Ibrahim; Paul Villalba
(Presented By: Kenneth Peters)

Podium #2  UNILATERAL VERSUS BILATERAL STAGE I NEUROMODULATION FOR THE TREATMENT OF REFRACTORY VOIDING DYSFUNCTION
Khanh Pham; Michael L. Guralnick; R. Corey O’Connor (Presented By: R. Corey O’Connor)

Podium #3  THE EFFECT OF NEUROMODULATION ON FEMALE SEXUAL FUNCTION
Kenneth M. Peters, MD; Michael Ingber, MD; Kim Killinger, RN; Ibrahim Ibrahim, MD, MPH, PhD (Presented By: Kenneth Peters)

Podium #4  THE VALIDATION OF A SHAM FOR POSTERIOR TIBIAL NERVE STIMULATION
Kenneth M. Peters, MD; Donna J. Carrico, NP, MS; Frank N. Burks, MD
(Presented By: Kenneth Peters)

Podium #5  MODIFIED TECHNIQUE TO AVOID SURGICAL SITE INFECTION: 6-YEAR EXPERIENCE WITH SACRAL NEUROMODULATION
Terry White, MD; Joy Hewitt, RN; Chester C. Wilmot, MD; Niall T.M. Golloway, MD (Presented By: Terry White)

Podium #6  THE EVOLVING ROLE OF OFFICE TEST STIMULATION FOR PATIENTS UNDERGOING SACRAL NEUROMODULATION
Sang Ik Lee; Michelle Laformara; Anurag K. Das (Presented By: Sang Ik Lee)

Podium #7  URODYNAMIC PREDICTORS OF SUCCESSFUL TEST STIMULATION FOR SACRAL NEUROMODULATION IN PATIENTS WITH NEUROLOGIC DISEASE AND VOIDING DYSFUNCTION
Karen E. Smith, MD; Karl Kreder, MD (Presented By: Karen Smith)
Podium #8
SAFETY AND EFFICACY OF CHRONIC PUDENDAL NERVE STIMULATION (CPNS): MEDIUM TERM FOLLOW UP IN TWO CENTERS DATA-COLLECTION
M. Spinelli; S. Malaguti; F. Cappellano; C. Fornara; M. Citeri; L. Zanollo; F. Catanzaro; T. Redaelli (Presented By: M. Spinelli)

Podium #9
THE COMBINATION OF PELVIC FLOOR REHABILITATION WITH PERCUTANEOUS TIBIAL NERVE NEUROMODULATION IN THE TREATMENT OF STRESS URINARY INCONTINENCE
Earl Surwit, MD (Presented By: Earl Surwit)

GU RECONSTRUCTION
Moderators: Karl J. Kreder, Jr., MD
Allen F. Morey, MD

2:30 p.m. – 3:00 p.m. State-of-the-Art Bulbar Urethroplasty: New Perspectives on Procedure Selection
Allen F. Morey, MD

3:00 p.m. – 3:30 p.m. GU Reconstruction Podium Session
Moderators: Karl J. Kreder, Jr., MD
Allen F. Morey, MD

Podium #10 DESCRIPTION OF A SALVAGE TECHNIQUE IN PATIENTS WITH PREVIOUSLY FAILED CONTINENT CATHETERIZABLE ILEOCECAL URINARY DIVERSION
Veronica Triaca; Christian O. Twiss; Ariana L Smith; Ja Hong Kim; Larissa V. Rodriguez; Shlomo Raz (Presented By: Veronica Triaca)

Podium #11 TRENDS IN STRICTURE MANAGEMENT AMONG MALE MEDICARE BENEFICIARIES: UNDERUSE OF URETHROPLASTY?
Jennifer Anger; Jill Buckley; Richard A. Santucci; Christopher Saigal (Presented By: Jennifer Anger)

Podium #12 LONG TERM FOLLOW UP OF PATIENTS WITH INJURY TO SPINAL CORD SUSTAINED PRIOR TO 1977: RETROSPECTIVE REVIEW
Shruthi Sriram; Polina Reyblat, MD; David A Ginsberg, MD (Presented By: Polina Reyblat)

3:30 p.m. – 4:00 p.m. Break – Visit the Exhibits
4:00 p.m. – 5:00 p.m.  #1 Neuromodulation Case Discussion, How I Do It
Location:  Tuttle/Monroe
Moderator:  Steven W. Siegel, MD
Panelists:  Magdy M. Hassouna, MD, PhD
Kenneth M. Peters, MD
Jeffrey L. Cornella, MD
Brian A. Feagins, MD

#2 GU Reconstruction
Location:  Jasmine
Post-Prostatectomy Incontinence: Which Procedure for Which Patient
Moderator:  Craig V. Comiter, MD
Panelists:  O. Lenaine Westney, MD – AUS
Ajay K. Singla, MD – Bone Anchored Sling
Kurt A. McCammon, MD – Obturator Sling

#3 Neurourology
Location:  Brickell South & Center
Moderator:  Jacques Corcos, MD
Panelists:  Victor W. Nitti, MD
Sender Herschorn, MD

5:00 p.m. – 6:30 p.m.  Moderated Poster Session – Neurourology, BPH, Female Urology
Location:  Riverfront South
Moderators:  J. Quentin Clemens, MD
Raymond R. Rackley, MD

Poster #1  VALIDATION OF THE INCONTINENCE SYMPTOM SEVERITY INDEX: A SELF-ASSESSMENT INSTRUMENT FOR VOIDING SYMPTOM SEVERITY IN WOMEN
Christian Twiss; Veronica Triaca; Mayank Patel; Ariana Smith; Ja-Hong Kim; Shlomo Raz; Jennifer Anger; Larissa Rodriguez (Presented By: Christian Twiss)

Poster #2  INCONTINENCE AND PELVIC RECONSTRUCTIVE SURGERY: PRACTICE PATTERNS OF SOUTHEASTERN SECTION AUA UROLOGISTS
Jonathan S. Starkman; Christopher E. Wolter; Melissa R. Kaufman; Roger R. Dmochowski; Harriette M. Scarpero (Presented By: Christopher Wolter)

Poster #3  CHILDHOOD VOIDING DYSFUNCTION IS RELATED TO PELVIC FLOOR DISORDERS IN ADULT WOMEN
Sarit O. Aschkenazi, MD; Sylvia M. Botros, MD; Jennifer Beaumont, MS; Jay-James R. Miller, MD; Tondalaya Gamble, MD; Peter K. Sand, MD; Roger P. Goldberg, MD, MPH (Presented By: Sarit Aschkenazi)
Poster #4  CHANGES IN VOIDING FUNCTION AFTER ANTERIOR COMPARTMENT REPAIR AND PUBOVAGINAL SLING
Christopher E. Wolter; Melissa R. Kaufman; Sanjay G. Patel; Harriette M. Scarpero; Roger R. Dmochowski (Presented By: Christopher Wolter)

Poster #5  ANATOMICAL REVIEW OF THE INTEGRAL THEORY OF FEMALE URINARY INCONTINENCE
S. Crivellaro; E. Kocjancic; J.J. Smith, III; R. Bussani; B. Frea (Presented By: Simone Crivellaro)

Poster #6  THE ADJUSTABLE CONTINENCE THERAPY (ACT) SYSTEM: PRELIMINARY RESULTS OF THE NORTH AMERICA ACT CLINICAL STUDY GROUP
Sherif Aboseif; Steven D. Nash; Joel Slutsky; Neil Baum; Le Mai Tu; Niall Galloway; Peter Pommerville; Suzette E. Sutherland; Ethan I. Franke (Presented By: Sherif Aboseif)

Poster #7  PREOPERATIVE URODYNAMIC TESTING DOES NOT PREDICT POSTOPERATIVE VOIDING DYSFUNCTION AMONG WOMEN UNDERGOING SURGERY FOR SUI: RESULTS FROM A PROSPECTIVE RANDOMIZED TRIAL COMPARING BURCH VERSUS PUBOVAGINAL SLING
Gary Lemack; Stephen Krauss; Heather Litman; Marypat Fitzgerald; Toby Chai; Charles Nager; Larry Sirls; Halina Zyczynski; Jan Baker; Keith Lloyd (Presented By: Gary Lemack)

Poster #8  TRANSVAGINAL MESH SLING WITH BONE ANCHORS: EFFECT OF VALSALVA LEAK POINT PRESSURE AND PRIOR PELVIC SURGERY ON OUTCOMES
David E. Rapp; Fred E. Govier; Kathleen C. Kobashi (Presented By: David Rapp)

Poster #9  LONG TERM DURABILITY AND FUNCTIONAL OUTCOMES AMONG PATIENTS WITH ARTIFICIAL URINARY SPHINCTERS: A 10 YEAR RETROSPECTIVE REVIEW FROM THE UNIVERSITY OF MICHIGAN
Simon Kim, MD, MPH; Gary Faerber, MD; Edward McGuire, MD; Stephanie Daignault, MD; Jerilyn Latini, MD (Presented By: Simon Kim)

Poster #10  ARTIFICIAL URINARY SPHINCTER VS MALE PERINEAL SLING FOR TREATMENT OF POST PROSTATECTOMY INCONTINENCE: WHAT DO PATIENTS CHOOSE?
Elana Rosenberg Litt; Katie N. Ballert; Victor W. Nitti (Presented By: Katie Ballert)

(Non-moderated posters will be up for viewing concurrently.)

Poster #11  PREVALENCE OF UNDIAGNOSED URINARY INCONTINENCE IN WOMEN
J. Quentin Clemens, MD, MSCI; Lauren P. Wallner, MPH; Sina Porten, MD, MPH; Richard T. Meenan, MPH, PhD; Maureen C. O’Keeffe Rosetti, MS; Elizabeth A. Calhoun, PhD; Aruna V. Sarma PhD (Presented By: J. Quentin Clemens)
**Poster #12**
MEASURING URINARY SENSATION: COMPARISON BETWEEN METHOD OF LIMITS AND METHOD OF LEVELS
Carley Davis, MD; Kimberly Kenton, MD, MS; Lior Lowenstein, MD, MS; Elizabeth Mueller, MD, MSSE; Linda Brubaker, MD, MS (Presented By: Carley Davis)

**Poster #13**
THE OUTCOME OF CYSTOCELE REPAIR USING PERIGEE® WITH BIOCOMPATABLE MATRIX (INTEXEN®): OUR EXPERIENCE WITH 26 CASES
Ayman Mahdy; Mostafa Elmissiry; Gamal Ghoniem (Presented By: Ayman Mahdy)

**Poster #14**
THE EFFECT OF POSTERIOR COMPARTMENT REPAIR ON OUTCOME OF SUB-URETHRAL SLING
Christian Twiss; Veronica Triaca; Ramdev Konijeti; Ariana Smith; Ja-Hong Kim; Larissa V. Rodriguez; Shlomo Raz (Presented By: Christian Twiss)

**Poster #15**
COMPARISION OF TWO METHODS OF TEACHING THE PELVIC ORGAN PROLAPSE QUANTIFICATION (POP-Q) SCALE
Una Lee, MD; Sarah McAchran, MD; Firouz Daneshgari, MD (Presented By: Una Lee)

**Poster #16**
STANDARDIZATION OF PELVIC ORGAN PROLAPSE ON MRI
D. M. Werle, MD; J. Smith, MD; D. W. Entrikin, MD; S. S. Lentz, MD; J. R. Leyendecker, MD; G. Badlani, MD (Presented By: David Werle)

**Poster #17**
CYSTOCELE GRADING: DOES SUPINE EXAMINATION CORRELATE WITH STANDING CYSTOGRAPHIC FINDINGS?
Alienor Gilchrist; Amit Gupta; Philippe Zimmern (Presented By: Alienor Gilchrist)

**Poster #18**
IMPACT OF CLINICAL AND URODYNAMIC EVALUATION ON PATIENTS’ CHOICE OF TREATMENT FOR FEMALE STRESS URINARY INCONTINENCE
Mostafa Elmissiry; Ayman Mahdy; Gamal Ghoniem (Presented By: Mostafa Elmissiry)

**Poster #19**
BOVINE DERMIS: A NOVEL BIOLOGIC SUBSTITUTE FOR AUTOLOGOUS TISSUE IN SLING SURGERY
Christopher M. Wilson; B. Jill Williams; Seth Bilello; Alex Gomelsky (Presented By: Christopher M. Wilson)

**Poster #20**
DOES SEVERITY OF OBJECTIVE DEGREE OF STRESS INCONTINENCE (SUI) PREDICT DIAGNOSIS OF SUI BY URODYNAMICS (UDS) OR PHYSICAL EXAM?
Ariana L. Smith; Christian O. Twiss; Ja-Hong Kim; Veronica Triaca; Larissa V. Rodriguez; Shlomo Raz (Presented By: Ariana Smith)
SATURDAY, MARCH 1, 2008

6:30 a.m. – 5:00 p.m.  Registration

6:45 a.m. – 7:45 a.m.  Industry Sponsored Breakfast Symposium
Location: Jasmine
“OAB Sensation – Where Have We Been and Where Should We Be Going?”

Faculty:
Scott A. MacDiarmid, MD
Director, Bladder Control and Pelvic Pain Center
Alliance Urology Specialists, Greensboro, NC
Clinical Faculty, Department of Urology
Wake Forest University, Winston-Salem, NC

David R. Staskin, MD
Associate Professor, Urology and Obstetrics and Gynecology
Weill-Cornell Medical College
Director, Section of Voiding Dysfunction
New York Presbyterian Hospital, NY

9:00 a.m. – 4:00 p.m.  Exhibit Hall Open

8:00 a.m. – 5:00 p.m.  Video Viewing in Speaker Ready Room

7:55 a.m. – 8:00 a.m.  Announcements
E. Ann Gormley, MD

8:00 a.m. – 8:30 a.m.  State-of-the-Art: Male Pelvic Health: The Role of Urology
Steven A. Kaplan, MD

8:30 a.m. – 9:00 a.m.  BPH Podium Session
Moderators: Steven A. Kaplan, MD
William I Jaffe, MD

Podium #13  WHAT IS THE ROLE OF URODYNAMICS IN THE DIAGNOSIS AND TREATMENT OF LUTS IN MEN?
Ravi Kacker; Kimberly L. Cooper; Matthew P. Rutman (Presented By: Ravi Kacker)

Podium #14  DEMONSTRATION OF INVERSE RELATIONSHIP BETWEEN BLADDER COMPLIANCE AND SCHAEFER OBSTRUCTION GRADE IN MEN
Jerry G. Blaivas; Kristina Wittig; Georgia Panagopoulos; Jeffrey P. Weiss
(Presented By: Jerry Blaivas)
Podium #15  PHOTOVAPORIZATION OF THE PROSTATE: COMPARISON OF EARLY COMPLICATIONS IN PATIENTS WITH LARGE (>50 G) VS. SMALLER (≤50G) PROSTATES
Sang Ik Lee; Anurag K. Das (Presented By: Sang Ik Lee)

9:00 a.m. – 9:30 a.m.  Overactive Bladder Podium Session
Moderators:  R. Duane Cespedes, MD  
Sandip P. Vasavada, MD

Podium #16  EFFECTIVENESS AND SAFETY OF TRANSDERMAL OXYBUTYNIN FOR OVERACTIVE BLADDER IN ADULTS PREVIOUSLY TREATED WITH ORALLY ADMINISTERED OXYBUTYNIN
Roger R. Dmochowski, MD; Naomi V. Dahl, PharmD (Presented By: Roger Dmochowski)

Podium #17  EVALUATION OF THE EFFECT OF INJECTION VOLUMES OF INTRAVESICAL BOTULINUM-A TOXIN INJECTIONS IN PATIENTS WITH OVERACTIVE BLADDER SYMPTOMS
Alvaro Lucioni; David E. Rapp; W. Stuart Reynolds; Edward M. Gong; Paula A. Fedunok; Gregory T. Bales (Presented By: Alvaro Lucioni)

Podium #18  CAN WE PREDICT WHO WILL RESPOND TO BOTULINUM TOXIN-A INJECTIONS FOR IDIOPATHIC OVERACTIVE BLADDER?
Brian L. Cohen, MD, MPH; Paholo Barboglio, MD; Angelo E. Gousse, MD (Presented By: Brian Cohen)

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

GERIATRIC UROLOGY
Moderators:  Tomas L. Griebling, MD  
Catherine DuBeau, MD

10:00 a.m. – 10:30 a.m.  Geriatric State-of-the-Art Lecture: Drug Treatment Choice in Older Adults with Incontinence
Catherine DuBeau, MD

10:30 a.m. – 10:55 a.m.  Geriatric Podium Session
Moderators:  Tomas L. Griebling, MD  
Catherine DuBeau, MD

Podium #19  URODYNAMICS FOR ELDERLY (80 YEARS OLD AND MORE) FEMALES. WHO? WHY? WHAT?
Françoise Valentini; Brigitte Marti; Gilberte Robain; Dorothée Henebelle (Presented By: Françoise Valentini)

Podium #20  THE USE OF INTRA-DETRUSOR BOTULINUM TOXIN-A IN THE ELDERLY
Michael J. Matteucci; R.Corey O’Connor; Michael L. Guralnick (Presented By: Michael Guralnick)

Podium #21  WITHDRAWN
10:55 a.m. – 11:00 a.m.  NAFC Award Presentation

11:00 a.m. – 11:15 a.m.  Outcome Measures for Incontinence Treatment (OMIT)  
Results of a SUFU Member Survey
*Philippe E. Zimmern, MD*

11:15 a.m. – 1:00 p.m.  Industry Sponsored Lunch Symposium  
Location: *Jasmine Room*
"Overactive Bladder Management:  
Thinking Beyond Urgency and Frequency"

Faculty:  
*Jerry G. Blaivas, MD*  
Weill Cornell Medical College  
New York, NY

*Gary G. Kay, PhD*  
Georgetown University School of Medicine  
Washington, DC

*Michael B. Chancellor, MD*  
University of Pittsburgh Medical Center  
Pittsburgh, PA

1:00 p.m. – 1:20 p.m.  Presidential Address: SUFU 2006 – 2008, State of the Society  
*Roger R. Dmochowski, MD*

1:20 p.m. – 1:30 p.m.  SUFU Post Prostatectomy Study  
*Victor W. Nitti, MD*

1:30 p.m. – 2:00 p.m.  FDA Regulations and Devices  
*Janine Morris, FDA Branch Chief*

2:00 p.m. – 2:30 p.m.  Stress Incontinence Debate – Which Technique for Which Patient  
Moderator:  
*Kathleen C. Kobashi, MD*  
*David R. Staskin, MD* – Retropubic Tape Procedure  
*Saad Juma, MD* – Obturator Tape Procedure

2:30 p.m. – 2:40 p.m.  Lifetime Achievement / Zimskind Service Award Winners  
Presenter:  
*Roger R. Dmochowski, MD*

2:40 p.m. – 3:00 p.m.  Break – Visit the Exhibits
NEUROUROLOGY
Moderators: Angelo E. Gousse, MD
David A. Ginsberg, MD

3:00 p.m. – 3:30 p.m.  Spinal Cord Regeneration – Where are We in 2008
Steven Casha, MD

3:30 p.m. – 3:50 p.m.  Lumbo to Sacral Nerve Rerouting to Restore Voiding Function
in Spina Bifida
Kenneth M. Peters, MD

3:50 p.m. – 4:30 p.m.  Neurourology Podium Session
Moderators: Angelo E. Gousse, MD
David A. Ginsberg, MD

Podium #22  SEXUAL HEALTH AND ERECTILE DYSFUNCTION IN ADULT MEN
WITH SPINA BIFIDA
Gary W. Bong; Amanda Altman; Corey Wright, Polina Reyblat; Shruthi Sriram;
David A. Ginsberg; Eric S. Rovner (Presented By: Gary W. Bong)

Podium #23  OUTCOMES OF THE OBSTRUCTING SLING FOR TREATMENT OF
INCONTINENCE IN WOMEN WITH MULTIPLE SCLEROSIS
M. Swartz; W. Kong; R. Rackley; S. Vasavada; H. Goldman (Presented By:
Swartz Mia)

Podium #24  CORRELATION OF URODYNAMIC RESULTS WITH LOWER
URINARY TRACT SYMPTOMS IN PATIENTS WITH MULTIPLE
SCLEROSIS
Sender Herschorn; Nicole Golda (Presented By: Sender Herschorn)

Podium #25  PATIENTS WITH MULTIPLE SCLEROSIS AND NEUROVESICAL
DYSFUNCTION ARE AT VERY LOW RISK FOR UPPER TRACT
DETERIORATION
S.G. Fletcher; A.S. Gilchrist; E. Frohman; G.E. Lemack (Presented By: Sophie
Fletcher)

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

4:30 p.m. – 5:30 p.m.  #1 BPH – Which Energy Source?
Location: Tuttle/Monroe
Moderator: Jaspreet Sandhu, MD
Panelists: Alexis E. Te, MD – Green Light
Lori B. Lerner, MD – HoLep
Anup Patel, MD – Bipolar/TURP
#2 Current Issues in Geriatric Urology
Location: Jasmine
Moderator: Tomas L. Griebling, MD
Panelists: Catherine DuBeau, MD – Evaluation and Management of Refractory Urinary Incontinence in Older Adults
Ted Johnson, MD – Nocturia in Elderly Men and Women
Kevin Pranikoff, MD – Urologic Care in Long Term Care Facilities

#3 Urodynamics Credentialing – An Evil Necessity or More Bureaucracy
Location: Brickell South & Center
Roger R. Dmochowski, MD
J. Christian Winters, MD

#4 Pelvic Floor Rehabilitation
Location: Gardenia AB
Moderator: Alain Bourcier, MD
Panelists: Jill Dubbs – Pelvic Floor Rehabilitation After Childbirth
Alain Bourcier, MD – Can Pelvic Floor Rehabilitation Help After Surgery?
Jerry G. Blavias, MD – Pronostic Factors of the Pelvic Floor Rehabilitation Protocol

5:30 p.m. – 7:00 p.m. Moderated Poster Session – Drugs and Devices, BPH, Stress Incontinence/Prolapse
Location: Riverfront South
Moderators: Gamal M. Ghoniem, MD, FACS
Michael J. Kennelly, MD

Poster #21 CREATING TAXONOMY AND ASSESSING PROFICIENCY IN URODYNAMIC EDUCATION OF THE UROLOGY RESIDENT
Harriette Scarpero, MD (Presented By: Harriette Scarpero)

Poster #22 URODYNAMICS CURRICULUM FOR UROLOGY RESIDENTS (UCUR)
E.R. Mueller; K. Kenton; H. M. Scarpero; J.C. Winters (Presented By: Elizabeth Mueller)

Poster #23 ANALYSIS OF RHYTHMIC RECTAL CONTRACTIONS DURING FILLING CYSTOMETRY IN WOMAN
Françoise Valentini; Brigitte Marti; Gilberthe Robain; Dorothée Hennebelle; Pierre Nelson (Presented By: Françoise Valentini)

Poster #24 VALIDATION OF A REAL – TIME URODYNAMIC MEASURE OF URINARY URGENCY
L. Lowenstein; M.P. FitzGerald; K. Kenton; L. Brubaker; I. Gruenwald; Christina Elliott; R. Durazo; E. Mueller; Y. Vardi (Presented By: Lior Lowenstein)
Poster #25  BIOMECHANICAL RELATIONSHIPS BETWEEN URODYNAMIC PRESSURES DURING COUGH AND VALSALVA IN NORMAL AND STRESS INCONTINENT WOMEN
Thomas Spirka; Kimberly Kenton; Margot S. Damaser; Linda Brubaker
(Presented By: Thomas Spirka)

Poster #26  CONSIDER A DIAGNOSIS OF OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH NOCTURIA EVEN WHEN DATTIME OVERACTIVE BLADDER SYNDROME IS PRESENT
L. Lowenstein; M.P. FitzGerald; G. Pillar; K. Kenton; E. Mueller; L. Brubaker
(Presented By: Lior Lowenstein)

Poster #27  CORRELATIONS BETWEEN SUBJECTIVE AND OBJECTIVE DATA IN IDENTIFYING PATIENTS WITH INTERSTITIAL CYSTITIS
Deeptha N. Sastry; Kristene E Whitmore, MD (Presented By: Deeptha Sastry)

Poster #28  PRIMARY CARE PHYSICIAN PRACTICE PATTERNS IN THE MANAGEMENT OF INTERSTITIAL CYSTITIS/ PAINFUL BLADDER SYNDROME
J. Quentin Clemens, MD, MSC1; Elizabeth A. Calhoun, PhD2; Mark S. Litwin, MD, MPH1; Mary McNaughton Collins, MD, MPH1 (Presented By: J. Quentin Clemens)

Poster #29  PILOT STUDY OF ACUPUNCTURE FOR TREATMENT OF INTERSTITIAL CYSTITIS
Christian Twiss; Valerie Arboleda; Veronica Triaca; Ariana Smith; Ja-Hong Kim; Shlomo Raz; Steven Tan; Larissa V. Rodriguez (Presented By: Christian Twiss)

Poster #30  LONG TERM OUTCOMES OF CYSTECTOMY WITH BLADDER SUBSTITUTION IN THE TREATMENT OF WOMEN WITH REFRACTORY INTERSTITIAL CYSTITIS
Nivedita Dhar; Courtenay Moore; Amit Bhatt; Adrian V. Hernandez; Craig Zippe; Sandip Vasavada; Raymond R. Rackley (Presented By: Nivedita Dhar)

(Non-moderated posters will be up for viewing concurrently.)

Poster #31  VESICOVAGINAL FISTULA REPAIR WITH RECTUS ABDOMINIS MYOFASCIAL INTERPOSITION FLAP
W. Stuart Reynolds; Lawrence J. Gottlieb; Alvaro Lucioni; David E. Rapp; David H. Song; Gregory T. Bales (Presented By: W. Stuart Reynolds)

Poster #32  CUTANEOUS PUDENDAL ARTERY BASED ROTATIONAL THIGH FLAP FOR COMPLEX POSTERIOR VAGINAL RECONSTRUCTION
Ja-Hong Kim; Ariana Smith; Christian Twiss; Veronica Triaca; Larissa V. Rodriguez; Shlomo Raz (Presented By: Ja-Hong Kim)

Poster #33  TRANSVAGINAL REPAIR OF ORTHOTOPIC BLADDER VAGINAL FISTULA WITH MARTIUS FLAP: PRESERVATION OF SEXUAL FUNCTION
Samer Kalakish, MD; Scott Macdiarmid, MD (Presented By: Samer Kalakish)
Poster #34  VOIDING FUNCTION IN WOMEN WITH ORTHOTOPIC NEOBLENDER DIVERSION
Melissa R. Kaufman; Christopher E. Wolter; William T. Lowrance; Emily E. Cole; Harriette M. Scarpero; Roger R. Dmochowski; Michael S. Cookson; Joseph A. Smith, Jr. (Presented By: Melissa Kaufman)

Poster #35  URGENCY SEVERITY AND BOTHER QUESTIONNAIRE (USBQ) – A NEW VALIDATED QUESTIONNAIRE FOR THE EVALUATION OF URGENCY
Lior Lowenstein; Lena Hatchett; Kimberly Kenton; Linda Brubaker; Ramon Durazo-Arvizu; Kara Goldman; Elizabeth R. Mueller; Mary P. FitzGerald (Presented By: Lior Lowenstein)

Poster #36  DEPRESSION AND URINARY DISTRESS
T.L. Gamble; R.P. Goldberg; J.R. Miller; S.O. Aschkenazi; J.L. Beaumont; P.K. Sand; S.M. Botros (Presented By: Tondalaya Gamble)

Poster #37  VOLUME OF PREOPERATIVE DETRUSOR OVERACTIVITY PREDICTS PERSISTENT POSTOPERATIVE DETRUSOR OVERACTIVITY
T.L. Gamble; J.R. Miller; S.O. Aschkenazi; J.L. Beaumont; S.M. Botros; P.K. Sand; R.P. Goldberg (Presented By: Tondalaya Gamble)

Poster #38  DOES TREATMENT OF OVERACTIVE BLADDER (OAB) WITH URGENCY URINARY INCONTINENCE (UUI) WITH TOLTERODINE EXTENDED RELEASE (TER) DECREASE RATES OF COITAL INCONTINENCE?
Rebecca Rogers; Harriette Scarpero; Joseph T. Wang; Tamara Bavendam; Jon D. Morrow (Presented By: Harriette Scarpero MD)

Poster #39  INCOMPLETE BLADDER EMPTYING AFTER INTRA-DETRUSOR INJECTION OF BOTULINUM TOXIN-A
Michael J. Matteucci; R.Corey O’Connor; Michael L. Guralnick (Presented By: Michael Guralnick)

Poster #40  BOTULINUM A TOXIN FOR TREATMENT OF OVERACTIVE BLADDER: WHAT ARE THE PREDICTORS OF ELEVATED PVR POST-INJECTION?
Grace Biggs; Katie Ballert; Nirit Rosenblum; Victor Nitti (Presented By: Katie Ballert)

7:30 p.m. – 10:00 p.m.  Annual Banquet
Location:  Jasmine

SUNDAY, MARCH 2, 2008

6:30 a.m. – 12:00 p.m.  Registration

6:30 a.m. – 10:30 a.m.  Exhibit Hall Open

6:30 a.m. – 8:00 a.m.  Breakfast in Exhibit Hall

8:00 a.m. – 12:00 p.m.  Video Viewing in Speaker Ready Room
GENERAL SESSION

7:00 a.m. – 8:00 a.m.  SUFU Business Meeting

8:00 a.m. – 8:30 a.m.  Blaivas Lectureship: “The Use of Injectable Therapy for Urinary Incontinence”
Introduced by: Roger Domchowski, MD
              Rodney A. Appell, MD

8:30 a.m. – 8:45 a.m.  Lapides Award
Moderator:  Kenneth M. Peters, MD

FEMALE UROLOGY – STRESS INCONTINENCE/PROLAPSE

8:45 a.m. – 9:45 a.m.  Female Urology/Prolapse Podium Session
Moderators:
              Mary Pat FitzGerald, MD
              Howard B. Goldman, MD

Podium #26  FEMALE SEXUAL FUNCTION AFTER TRANSOBTURATOR TAPE TECHNIQUE FOR STRESS URINARY INCONTINENCE: TWO YEARS FOLLOW UP
Mostafa Elmissiry; Hassan Abdelwahab; Gamal Ghoniem (Presented By: Mostafa Elmissiry)

Podium #27  THROMBOEMBOLIC COMPLICATIONS OF SLING SURGERY: A CALL FOR DVT PROPHYLAXIS
Jennifer T. Anger; Mark S. Litwin; John L. Gore; Qin Wang; Chris L. Pashos; Aviva E. Weinberg; Larissa V. Rodriguez (Presented By: Jennifer Anger)

Podium #28  IS OBESITY TRULY A RISK FACTOR FOR FAILURE IN SLING SURGERY FOR STRESS INCONTINENCE IN WOMEN?
Rashel M. Haverkorn; Colin M. Goudelocke; B. Jill Williams; William S. Kubricht, III; Alex Gomelsky (Presented By: Rashel M. Haverkorn)

Podium #29  MANAGING THE URETHRA AT THE TIME OF TRANSVAGINAL PELVIC ORGAN PROLAPSE REPAIR: A URODYNAMIC APPROACH
Katie N. Ballert; Grace Biggs; Anthony Iseanalumhe, Jr.; Nirit Rosenblum; Victor W. Nitti (Presented By: Katie Ballert)

Podium #30  DO BIOMECHANICAL PROPERTIES OF ANTERIOR PROLAPSED VAGINAL TISSUE PREDICT SURGICAL OUTCOME REPAIR?
Aliénor Gilchrist; Philippe Zimmern; Aradhana Bhat; Amit Gupta; Roger Eberhart (Presented By: Alienor Gilchrist)

Podium #31  SENSORY NEURAL CHANGES ARE PRESENT IN THE LOWER URINARY TRACT OF WOMEN AFTER RECONSTRUCTIVE PELVIC SURGERY
Carley Davis, MD; Kimberly Kenton, MD, MS; Lior Lowenstein, MD,MS; Elizabeth Mueller, MD,MSSE; Mary Pat FitzGerald, MD, MS; Linda Brubaker, MD, MS (Presented By: Lior Lowenstein)

9:45 a.m. – 10:05 a.m.  Break – Visit the Exhibits
FEMALE UROLOGY – STRESS INCONTINENCE/PROLAPSE
Moderators:  
Gary E. Lemack, MD  
E. Ann Gormley, MD

10:05 a.m. – 10:30 a.m.  
Prize Essay Winner Presentations  
Moderator:  
Gary E. Lemack, MD

Podium #32  
DUAL SIMULATED CHILDBIRTH INJURIES RESULT IN SLOWED RECOVERY OF PUDENDAL NERVE AND URETHRAL FUNCTION  
H.H. Jiang; H.Q. Pan; A.M. Gustilo-Ashby; J. Glaab; P.J. Zaszczurynski; M.S. Damaser (Presented By: HaiHong Jiang)

Podium #33  
SHORT-TERM OUTCOMES OF A RANDOMIZED, DOUBLE-BLIND PLACEBO CONTROLLED TRIAL OF BOTULINUM A TOXIN FOR THE MANAGEMENT OF SEVERE IDIOPATHIC DETRUSOR OVERACTIVITY INCONTINENCE  
Michael Flynn, MD; Cindy Amundsen, MD; Maryann Perevich; George Webster, MD (Presented By: Michael Flynn)

10:30 a.m. – 11:00 a.m.  
Repair of Vesico Vaginal Fistula: Lessons Learned in Africa  
Kristin L. Chrouser, MD

11:00 a.m. – 11:30 a.m.  
Biochemical Basis for SUI/Pelvic Organ Prolapse  
Gopal H. Badlani, MD

11:30 a.m. – 12:00 p.m.  
Genetic Factors in SUI/Pelvic Organ Prolapse  
Larissa V. Rodriguez, MD
1. Call to Order – President, Roger R. Dmochowski, MD

2. Approval of 2007 minutes and thank you to program chairs – E. Ann Gormley, MD

3. Treasurer’s Report – Victor W. Nitti, MD

4. Awards Committee Report – Delbert C. Rudy, MD/Roger R. Dmochowski, MD

5. Membership Committee Report – Alan Wein, MD

6. Nominating Committee Report – Delbert C. Rudy, MD/E. Ann Gormley, MD
   – New Members-at-Large representatives announced

7. Old Business
   (a) Fellowship Update – David R. Staskin, MD
   (b) Residency Core Curriculum Update – J. Chris Winters, MD

8. New Business
   (a) Announcement of 2009 meeting
   (b) Other

9. Adjourn
**Evening Events**

**Thursday, February 28, 2008**

**Welcome Reception 7:00 p.m. – 8:30 p.m.**
Enjoy a beverage and light hors d’oeuvres as you meet with Corporate Members in the exhibit hall.
Dress: Business Casual

**Saturday, March 1, 2008**

**Annual Banquet 7:30 p.m. – 10:00 p.m.**
Finish off the Annual meeting with a night of dining and entertainment with your colleagues.
Dress: Business Casual
Location: Jasmine

**Spouse and Guest Activities**
Miami, Florida has something for everyone.

**Tropical Attractions**
Glass-bottom boats, boats on air, mangrove creeks, and a unique River of Grass — these are not your typical attractions. But then again, what is typical about Miami attractions? Miami attractions capture the imagination and stir the soul.

**Natural Wonders**
Greater Miami has miles and miles of beaches beckoning sun seekers, and nearby parks luring nature lovers to discover a fascinating variety of flora and fauna. In fact, Miami is the only place in the U.S. with two national parks. Everglades National Park is an untamed ecosystem unlike any other on earth, while Biscayne National Park is the only living tropical reef within the continental U.S.

**Golf**
Greater Miami has plenty to brag about when it comes to golf courses. Miami features some of the most difficult courses in the world. Miami even has the only public Miami Beach golf course in the Continental U.S. utilizing Paspalum grass.

**Upscale Specialty**
For the intrepid shopper, Greater Miami and the Beaches is a global marketplace that offers a bounty of choices on par with those found in world-class cities. No matter what your taste, numerous specialty shops are there for the picking.

**Shopping Promenades**
Shopping promenades are a common sight in Greater Miami, as the area’s near-perfect weather affords. Imagine shopping as you stroll along open-aired walkways surrounded by lushly landscape gardens and the soothing sounds of gentle waterfalls.
MARK YOUR CALENDARS!

SUFU at the AUA 2008 Annual Meeting
May 17, 2008
Rosen Center, Junior Ballroom G
Orlando, Florida

SUFU 2009 Winter Meeting
February 25 – 28, 2009
Green Valley Ranch Resort, Spa, Casino
Las Vegas, Nevada
INVITED SPEAKERS’ LECTURE SUMMARIES
POSTER AND PODIUM SESSION ABSTRACTS
**Poster #BS1**

**THE EFFECT OF BOTULINUM TOXIN A ON CHEMICAL STIMULATION OF RAT DORSAL ROOT GANGLION CELLS**

W. Stuart Reynolds, MD; Alvaro Lucioni, MD; David E. Rapp, MD; Gregory T. Bales, MD; Daniel S. McGehee, PhD  
University of Chicago, Chicago, IL

**Introduction and Objectives:** Botulinum toxin A (BnTxA) has previously been demonstrated to modulate sensory nerve activity in animal models. Within the bladder, BnTxA inhibits the neurologic response to stimulation with ATP and capsaicin (CAPS). In this study, we investigated whether BnTxA would inhibit rat dorsal root ganglion (DRG) electrophysiologic responses to chemical stimulation.

**Methods:** Lumbosacral DRGs (L2-S1) were isolated from adult male Sprague-Dawley rats (aged 45-90 days), enzymatically and manually dissociated, and cultured. BnTxA was administered at time of plating to half the dishes. Whole cell patch clamping was performed 24 hours and 48 hours after plating, and the electrophysiologic responses of BnTxA treated cells to ATP and CAPS were compared to control cells.

**Results:** All cells responded to ATP stimulation, with current densities (pA/pF) for 24h control, 24h BnTxA, 48h control, and 48h BnTxA cells of 29.3±10.6, 23.2±8.3, 19.9±4.2, 23.5±8.7 respectively (p=NS). Cell response to CAPS was more variable, with 7/14 (50%) 24h control cells, 8/13 (62%) 24h BnTxA cells, 13/16 (81%) 48h control cells, and 12/13 (92%) 48h BnTxA cells responding. Current densities (pA/pF) for 24h control, 24h BnTxA, 48h control, and 48h BnTxA cells were 51.4±23.2, 16.3±6.5, 62.5±17.1, and 97.8±23.8, respectively. A strong, but non-significant inhibitory trend was seen at 24h hours (p=NS), followed by an excitatory trend for BnTxA treated cells at 48h (p=0.006).

**Conclusions:** BnTxA appears not to have an electrophysiologic effect on cultured DRG cells stimulated by ATP. However, cells stimulated with CAPS may have an initial inhibitory response followed by an excitatory response to BnTxA treatment with prolonged incubation. Further study is needed to elucidate the central effects of BnTxA.

**Poster #BS2**

**THE EFFECTS OF NO DONORS AND MEMBRANE PERMEABLE cGMP ANALOGUE ON MURINE BLADDER SMOOTH MUSCLE**

Kevin Monaghan; Salah A. Baker; Junguk Han; Kenton M. Sanders; Sang Don Koh  
Department of Physiology and Cell Biology, University of Nevada Reno, School of Medicine

**Introduction:** The collection and storage of urine by the detrusor and its periodic expulsion through the bladder neck and urethra are dependent upon complex neural pathways. Noradrenaline and acetylcholine released by the sympathetic and parasympathetic nervous systems, respectively, are important transmitters in regulating excitability of the lower urinary tract. Recently, non-adrenergic, non-cholinergic (NANC) mediators (such as nitric oxide, NO) have been recognized as a modulator of the lower urinary tract. NANC-mediated relaxation of the bladder neck and urethral smooth muscle is associated with increased cGMP levels. However, unlike the bladder neck and urethra, there is as yet no convincing evidence that nerve-mediated relaxation of the detrusor muscle involves NO as a neurotransmitter. Furthermore, no direct electrophysiological evidence has been demonstrated the effects of NO or cGMP on isolated detrusor smooth muscle cells. Thus, we hypothesized that activation of K⁺ channels by NO or cGMP may serve as an effector during the bladder filling.

**Methods:** Bladder tissues from mouse were used for mechanical activity, conventional microelectrode recordings, patch clamp and ELISA to investigate NO responses to K⁺ channels.
**Results:** Tissue strips were precontracted with carbachol (10 µM) prior to application of NO donors, sodium nitroprusside (SNP) and S-nitroso-N-acetylpenicillamine (SNAP). In the presence of carbachol, SNP (up to 10 µM) and SNAP (up to 10 µM) failed to decrease the tone of bladder strips. To determine if bladder smooth muscle relaxes in response to an artificial elevation of cGMP levels we added 8-Br-cGMP (a membrane permeable analogue of cGMP) to the bathing solution. The application of 8-Br-cGMP (1 mM) significantly decreased the tone of precontracted strips of mouse and guinea-pig bladder. Application of carbachol (CCh, 1 µM) induced depolarization with high frequency spike potentials. In the continued presence of CCh, SNP (1 µM) did not change the membrane potential. In voltage clamp experiments, SNP did not increase outward current but 8-Br-cGMP (1 mM) dramatically increased outward currents. These data suggest that the lack of K⁺ channel activation by NO donors may be due to low levels of guanylyl cyclase activity in murine bladder myocytes. Therefore, we compared guanylyl cyclase activity in murine colon (as a control) and bladder tissue samples by measuring cGMP accumulation in response to SNP (10 µM) using enzyme-linked immunoabsorbent assay (ELISA). Exposure to SNP increased the concentration of cGMP in colon samples (as a control) but failed to increase cGMP production in the bladder. These data suggest that guanylyl cyclase activity and cGMP production is low in the murine bladder.

**Conclusion:** Thus, low production of cGMP in the murine bladder may explain the lack of NO-mediated K⁺ channels responses in bladder detrusor.

**Funding:** Supported by NIH P20-RR18751

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**Poster #BS3**

**METHIONINE AND ITS DERIVATIVES INCREASE BLADDER EXCITABILITY BY INHIBITING STRETCH-DEPENDENT K⁺ CHANNELS**

Salah A. Baker; Grant W. Hennig; Junguk Han; Fiona C. Britton; Kenton M. Sanders; Sang Don Koh

Department of Physiology and Cell Biology, University of Nevada School of Medicine

**Introduction:** During the bladder filling phase, the volume of the urinary bladder increases dramatically, with only minimal increases in intravesical pressure, thereby allowing it to fill more easily. To accomplish this, the smooth muscle of the bladder wall must remain relaxed during bladder filling. However, the mechanisms responsible for the stabilization of bladder excitability during stretch are unclear. Stretch of bladder myocytes has been shown to activate stretch-activated non-selective cation (SAC) channels. This can lead to contraction via Ca²⁺ influx through SAC, which trigger Ca²⁺ action potentials in response to depolarization and can induce Ca²⁺ release from intracellular stores. However, stretch does not generate contraction in bladder, but instead results in stabilization of membrane potential. Therefore, we hypothesized that stretch-dependent K⁺ (SDK) channels in bladder smooth muscle cells may inhibit contraction in response to stretch. SDK channels are voltage-independent and are activated by negative pressure. The most likely molecular candidate is the TREK channel (Koh *et al*., 2001). SDK channels were inhibited by sulfur-containing amino acids such as methionine, which is a relatively specific blocker for SDK channels (Park *et al*., 2005). Therefore, in this report, we investigated the molecular identification and functional role of SDK channels in bladder using various methionine derivatives.

**Methods:** Bladder tissues from mouse, guinea pig and monkey were used for molecular, patch clamp, mechanical, electrical, Ca²⁺ imaging and cystometric responses to methionine and its derivatives, which are putative blockers of stretch-dependent K⁺ (SDK) channels.

**Results:** SDK channels are functionally expressed in bladder myocytes. The single channel conductance of SDK channels is 89pS in symmetrical K⁺ conditions and is blocked by L-methionine. Expressed TREK-1 currents are also inhibited by L-methioninol. All three types of bladder smooth muscle cells from mouse, guinea pig and monkey expressed TREK-1 genes. L-methionine, methioninol and methionine methyl ester but not D-methionine increased contractility in concentration-dependent manner. Methioninol further increased contractility and depolarized the membrane in the presence of blockers of Ca²⁺-activated K⁺ conductance. L-methionine induced Ca²⁺ waves that spread long distances through the tissue under stretched conditions and were associated with strong contractions. In cystometrics methioninol injection increased bladder excitability mimicking overactive bladder activity.

**Conclusions:** Therefore, methionine-sensitive SDK channels appear to be important to prevent spread of excitation through the syncitium during bladder filling. Further characterization of methionine compounds may be useful to develop a new group of drugs to be used clinically to target bladder excitability.

**Funding:** Supported by NIH P20-RR18751
FUNCTIONAL AND MOLECULAR IDENTIFICATION OF pH-SENSITIVE K⁺ CHANNELS IN MURINE URINARY BLADDER SMOOTH MUSCLE

Kevin Monaghan; Insoo Han; Salah A. Baker; Junguk Han; Fiona C. Britton; Sang Don Koh
Department of Physiology and Cell Biology, University of Nevada Reno, School of Medicine

Introduction: Bladder contractility is influenced by the resting membrane potential, which is mainly regulated by background K⁺ conductances. The bladder wall can become ischemic when the intravesical pressure rises above capillary pressure due to impaired arterial blood flow as a result of atherosclerosis or other vascular disease. Decreased bladder blood supply has been linked to bladder dysfunction including reduced wall compliance and detrusor overactivity, apparent as an increased contractile response to carbachol and electrical field stimulation. Acute ischemia by hypoperfusion caused a fall in interstitial pH to 6.1. In addition, changes in pH around detrusor muscle have been shown to affect bladder contractility. However, the mechanism of ischemia-induced bladder dysfunction is not fully understood and may involve multiple physiological and structural changes in the bladder nerves, receptors, contractile components and membrane ion channels. In this study, we examined the role of pH-sensitive K⁺ channels in setting resting membrane potential in murine bladder smooth muscle.

Methods: Conventional microelectrode recordings, isometric tension measurements, patch clamp recordings, RT-PCR, Western blots and immunohistochemistry were performed on bladder smooth muscle cells and tissues.

Results: Acidic pH (pH 6.5) depolarized the resting membrane potential of murine bladder smooth muscles and increased muscle tone and contractility. The pH-induced changes were not abolished by neuronal blockers or classical K⁺ channel antagonists. Lidocaine (1mM) and bupivacaine (100 µM) mimicked the outward solution and in the presence of lidocaine no further increase in contractility was induced by reducing the pH to 6.5. Voltage clamp experiments of freshly dispersed bladder myocytes revealed pH 6.5 decreased outward current. Pretreatment of bladder myocytes with the classical K⁺ antagonists tetraethylammonium (10mM), 4-aminopyridine (5mM), glibenclamide (10µM) or apamin (300nM) did not inhibit the effects of low pH on outward current. However, treatment with lidocaine (1mM) abolished the effects of acidic pH on outward current. RT-PCR revealed expression of TASK-1 and TASK-2 gene transcripts in murine bladder, and immunohistochemistry and Western blot analysis showed TASK-1 and TASK-2 channel expression and distribution in smooth muscle tissues and cells.

Conclusion: i) TASK channels are expressed at both the mRNA and protein level in tunica muscularis of the murine bladder. ii) pH-sensitive currents are blocked by lidocaine, a known inhibitor of TASK channels. iii) acidic pH depolarized detrusor muscles in the presence of TTX and the K⁺ channel inhibitors TEA, 4-AP, apamin and glibenclamide. iv) acidic pH increased muscle tone and increased phasic contractility of bladder muscle strips. Based on these functional, molecular and morphological findings we suggest that TASK channels contribute to a prominent background K⁺ current that displays pH and lidocaine sensitivity in murine urinary bladder smooth muscle. Thus, TASK channels likely serve an important role in the regulation of resting membrane potential and contractility of bladder smooth muscle and may contribute to the pathophysiological changes in bladder performance associated with chronic bladder ischemia.

Funding: Supported by NIH P20-RR18751

GENE EXPRESSION DURING DIFFERENTIATION OF CULTURED UROTHELIAL CELLS FROM INTERSTITIAL CYSTITIS AND CONTROL BLADDERS

Deborah R. Erickson; Justin K. Dixon; Curtis J. Clark; Matthew A. Hersh; Steven R. Schwarze
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Introduction and Objectives: Differentiation is essential for urothelial barrier function and is thought to be abnormal in interstitial cystitis (IC). In previous studies using primary cultures of IC urothelium, some aspects of differentiation were increased¹ while others were unchanged or decreased.² To provide a more comprehensive analysis, we grew primary cultures of IC and control urothelium, then used microarray analysis to evaluate gene expression before and after inducing differentiation.
Methods: With Institutional Review Board approval, cold-cup biopsies were taken from IC patients undergoing anesthetic cystoscopy and controls (women having surgery for stress incontinence). The urothelium was cut into 6 – 10 pieces and plated in 6-well plates in Keratinocyte Growth Medium with 5 ng/ml epidermal growth factor (EGF), 50 μg bovine pituitary extract and 30 ng/ml cholera toxin. Cells were expanded in the same medium. To induce differentiation, the medium was changed to DMEM-F12 with 10% fetal bovine serum, 1% antibiotic/antimycotic solution, 1% glutamine, 1U/ml insulin and 5μg/ml EGF for 48 hours. RNA was extracted using Qiagen RNeasy kits and analyzed at the University of Kentucky Microarray Core Facility with Affymetrix HG-U133 Plus 2 Genechips. The analysis included three female nonulcer IC patients and three controls.

Results: By inducing differentiation, 312 genes with a described function were altered at least 3-fold with P<0.01 in both IC and control cells. Among the 162 upregulated genes, several are known to increase with urothelial differentiation: claudins 1, 4 and 7, occludin, cingulin, MAL2, Lewis antigen synthesis enzymes FUT 3 and FUT6 and the uroplakin vesicle protein RAB27B. The 150 downregulated genes included several that are associated with basal urothelium, such as p63, integrins β4, α5 and α6, and extracellular matrix components (e.g. laminins, collagens and fibronectin 1) as well as vimentin, metallothioneins and genes relevant to various signaling pathways: frizzled-8, Notch ligands (Delta-like 1 and Jagged 1 and 2), EGF receptor (ERBB1) and members of the vascular endothelial growth factor (VEGF) family (VEGF, VEGFC and placental growth factor). Our cells also showed significant changes in transcription factors that are previously described for keratinocyte differentiation. For example, differentiation decreased JUN, MAF and basonuclin 1 and increased ELF5, NFATC3 and GATA3. The latter factors may be the reason why our upregulated genes also included components of the skin cornified envelope (periplakin, scilin, envoplakin and involucrin).

Conclusions: Significant alterations in gene expression occurred after changing cultured urothelial cells to a differentiation-inducing medium. Some of these were expected, confirming the ability of IC cells to undergo differentiation in vitro. New findings also were seen, which may lead to better understanding of the urothelial differentiation process.

Funding: University of Kentucky: Microarray Pilot Grant, Endowment for Neuro-urologic Research, and Division of Urology.

Poster #BS6

DETRUSOR OVERACTIVITY IN SPONTANEOUSLY HYPERTENSIVE RATS IS ASSOCIATED WITH ALTERATIONS IN CAVEOLAE-MEDIATED SIGNALING EVENTS
V. Cristofaro; S.V. Yalla; M.P. Sullivan
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Introduction and Objectives: Although the cause of detrusor overactivity (DO) is still unclear, aberrant regulation of multiple signaling pathways may be involved in its pathogenesis. Recent studies showed the importance of caveolae, sarcolemmal microdomains enriched in cholesterol, in regulating signal transduction and mediating contractile responses to several agonists in bladder smooth muscle. In Spontaneously Hypertensive Rats (SHR), an animal model with DO, a significant decrease in the number of caveolae and a reduction in the expression of caveolins (the proteins forming caveolae) were found in vascular, endothelial, and cardiac tissues. This decrease of caveolar elements and the presence of bladder dysfunction in SHR, together with the emerging role of caveolae in modulating signal transduction, suggest that caveolar deficiency in bladder smooth muscle cells may lead to detrusor overactivity by abnormal regulation of specific receptor-activated signaling pathways. This study was designed to investigate whether alterations in membrane caveolae in the bladder of SHR are associated with functional abnormalities which can potentially contribute to DO.

Methods: In vivo cystometry was performed in SHR and in the genetic control Wistar Kyoto Rats (WKY) to verify the degree of DO. Longitudinal bladder strips from SHR and WKY were stretched with 1.5 grams of force in organ bath maintained at 37ºC. Contractile responses to physiologic agonists as well as spontaneous bladder activity (SA) were measured before and after disruption of caveolae. Caveolae disruption was achieved by exposing bladder tissue to methyl-β-cycloexetrin (mβcdx), an agent that depletes membrane cholesterol. Agonist stimulation was repeated after caveolae were restored by soluble cholesterol replenishment.
**Results:** Bladder compliance was markedly diminished and SA was more pronounced in SHR compared to WKY. The amplitude of SA as well as the basal contractile response to phenylephrine (PE) and bradykinin (BK) were significantly higher in SHR compared to WKY. Moreover, SA as well as contractile responses to PE and BK in WKY were significantly increased by disruption of caveolae compared with SHR in which contractile responses were unaffected by caveolae disruption. Carbachol (Cch) and KCl induced contractions were not affected by mßcdx in both SHR and WKY indicating that caveolae are not involved in modulating the signalling pathway activated by these agents and that mßcdx exposure does not alter core contractile mechanisms.

**Conclusion:** Previous studies suggest that contractile responses to PE and BK are negatively regulated by bladder smooth muscle caveolae. In this study, the augmented baseline contractile responses to PE and BK and the attenuated affect of caveolae disruption on these responses in SHR are consistent with a decreased negative regulation of these contractile processes imparted by reduced caveolae in SHR relative to WKY. Thus, our data suggest that loss of bladder smooth muscle caveolae may induce functional abnormalities that are associated with detrusor overactivity.

**Funding:** Research Service, Department of Veterans Affairs, Washington, DC

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**Poster #BS7**

**URETHRAL AFFERENT SIGNALING LEADS TO ACTIVATION OF THE EXTERNAL URETHRAL SPHINCTER AND ABDOMINAL WALL MUSCLES**

Eric A. Hurtado; Phillip P. Smith; Christopher P. Smith; Timothy B. Boone; George T. Somogyi  
Baylor College of Medicine, Houston, TX

**Introduction:** Rat voiding includes contraction of the abdominal wall (the VAR) and a pulsatile contraction of the external urethral sphincter (EUS). The coordination of these somatic reflexes with visceral responses allows the rat to void efficiently. The afferent signals for these two responses may arise from the bladder or urethra. The purpose of this study is to localize the origin of the afferent signaling for these two responses by determining the effect of pressurization of isolated bladder and urethral segments.

**Methods:** Funding was provided by a NIH training grant DK-R01 06699. Suprapubic catheters were acutely placed in urethane anesthetized female SD rats. Another catheter was placed into the distal urethra, and a water tight seal was made by a pursestring suture at the external meatus. EMG electrodes were placed in the rectus abdominis and the EUS. The bladder neck was ligated in one group (BNL), and the mid-urethra ligated in a second group (MUL). The bladder and urethra proximal and distal to this ligature were pressurized with saline independently, and the resultant rectus abdominis and EUS EMG analyzed by integration. EMG responses to pressurization proximal and distal to the bladder neck and mid-urethral ligatures were compared using paired and unpaired t-testing. Correlation analysis between abdominal and EUS EMG value and bladder and urethral pressure were performed in each experimental group.

**Results:** EUS EMG activity was significantly greater in response to urethral vs. bladder pressurization in both BNL and MUL groups. Abdominal EMG in response to urethral pressurization was significantly greater following BNL than MUL. A positive correlation exists between urethral pressure and EUS EMG intensity.

**Conclusion:** Afferent stimulus for the EUS arises in the urethra, and is positively correlated with increasing pressure. More specifically, these results suggest that the afferent signal for this reflex arises within the mid-urethra, since this reflex was observed only during pressurization that involved the mid-urethra. The abdominal EMG is responsive to proximal urethral pressurization, consistent with previous findings that the VAR is triggered by urine flow rather than bladder distension.
LOWER GENITOURINARY ANATOMY AND FUNCTION OF LYSYL OXIDASE LIKE-1 KNOCKOUT (LOXL1 KO) MICE WITH AND WITHOUT PELVIC ORGAN PROLAPSE

Una J. Lee, MD¹; A. Marcus Gustilo-Ashby, MD²; Firouz Daneshgari, MD¹; Mei Kuang¹; Drina Vurbic²; Danli Lin, MD¹,²; Chris Flask, PhD³; Tiansen Li, PhD⁴; Margot S. Damaser, PhD¹,²
¹Cleveland Clinic; ²Louis Stokes VA Medical Center; ³Case Western Reserve University, Cleveland, OH; ⁴Harvard Med School, Boston, MA

Introduction and Objectives: Female pelvic floor dysfunction (FPFD) is a complex and debilitating group of conditions which include urinary incontinence, voiding dysfunction, and pelvic organ prolapse (POP). Mice lacking the protein, lysyl oxidase-like 1 (LOXL1 KO) develop POP and demonstrate voiding dysfunction after pregnancy and delivery. Further characterization of the LOXL1 KO mouse model of FPFD is required to determine its relevance to FPFD in humans. The objective of this study was to compare anatomy and function of the lower urogenital tract (LUT) of LOXL1 KO mice with and without POP.

Methods: Parous LOXL1 KO mice on a mixed C57Bl/6 and Sv129 background were observed for POP (n=62). Degree of POP was quantified using the MOPQ quantification system. LUT anatomy in live anesthetized prolapsed (n=2) and non-prolapsed (n=2) mice was assessed using a 7 Tesla Bruker Biospec MRI scanner. High resolution T1-weighted, fat-suppressed images were obtained and examined qualitatively. Age and parity-matched LOXL1 KO mice were divided into two groups: prolapsed (n=11) and non-prolapsed (n=6). LUT function was assessed using conscious cystometry (CMG) and leak point pressure (LPP) testing. Quantitative histologic analysis was performed on mid-urethra samples stained with vonGieson (elastin) stain. Kaplan Meier curves described the development of POP over time with significant differences determined using a chi-square test. Univariate analysis was performed using t-test on normally distributed data, and Wilcoxon rank sum test on non-normally distributed data. Multivariate analysis was performed using two-way ANOVA. Pairwise multiple comparisons were performed using the Tukey test. P values < 0.05 were considered significant.

Results: By 25 weeks of age, 50% of parous LOXL1 KO mice developed POP. Parity significantly affected the age at which POP developed (p=.016). With each delivery, the age at development of POP decreased by 25%. MRI imaging demonstrated that LOXL1 KO mice without POP had a uniform size and location of the pelvic organs. In contrast, the LOXL1 KO mice with POP had increased variability in the size and location of the bladder and vagina compared with non-prolapsed mice. There were no significant differences in CMG values between age and parity matched LOXL1 KO mice with and without POP, however, multivariate analysis revealed lower LPP in the prolapsed mice compared with non-prolapsed mice when controlled for parity (23.1 ± 3.2 vs. 37.1 ± 4.1 cmH2O; p=0.02). Parity significantly contributed to reduced LPP both between groups and within groups. There was a significant increase in the number of elastin clusters in the external urethral sphincter of LOXL1 KO mice with prolapse (28.7 ± 3.9) compared with LOXL1 KO mice without prolapse (17.8 ± 1.8) and C57Bl/6 controls (9.6 ± 2.9, p=.002).

Conclusion: The LOXL1 KO mouse model is a relevant genetic animal model for the study of FPFD. Parity is the significant factor that triggers POP in LOXL1 KO mice. As in humans, POP in LOXL1 KO mice develops over time, and is associated with one or multiple deliveries. LOXL1 KO mice with prolapse have variable internal pelvic anatomy which clinical examination may not accurately describe. Both parity and POP are associated with a significant decrease in LPP in LOXL1 KO mice. An increase in elastin clusters in the urethra of LOXL1 KO mice with POP suggests that elastin disorganization associated with POP mice may lead to functional abnormalities in animals with POP. Our findings support research that abnormal elastic fiber homeostasis plays an important role in the pathophysiology of FPFD.

Funding: Supported by Cleveland Clinic and Cleveland VAMC.
**Poster #BS9**

**CHRONIC SOY AND PHYTOESTROGEN TREATMENT LEADS TO SIGNIFICANT FUNCTIONAL AND MORPHOLOGICAL CHANGES IN THE URETHRA OF FEMALE NON-HUMAN PRIMATES**

Christian Gratzke; George J. Christ; Jay R. Kaplan; Karl-Erik Andersson; Gopal Badlani
Wake Forest Institute for Regenerative Medicine and Wake Forest University Primate Center, Wake Forest University, Winston-Salem, North Carolina

**Introduction:** Recent research indicates that estrogen treatment following ovariectomy results in morphological and functional changes of the lower urinary tract.

**Objectives:** To determine the effect of chronic soy treatment with isoflavones (“phytoestrogens”) on the contractile response to pharmacological and electrical stimulation as well as on morphological parameters of different regions in the female urethra of non-human primates.

**Methods:** Following ovariectomy, 18 monkeys consumed diets deriving the majority of protein from high phytoestrogen soy (treatment condition, 9 monkeys) or casein (control condition, 9 monkeys) for 32 months. After necropsy, the urethra and bladder were dissected and the urethra was separated in three segments of equal length (segment 1: proximal, segment 2: middle, segment 3: distal). In each segment, contractile responses to pharmacological stimulation with phenylephrine, carbachol and endothelin-1 were tested in a cumulative manner (10⁻⁹-10⁻⁴ M) as well as to electrical field stimulation with increasing frequency (2 Hz, 4 Hz, 8 Hz, 16 Hz and 32 Hz) using the organ bath technique. H&E and Trichrome staining was performed on corresponding histological sections of each segment. Urothelial thickness, area of mucosa and ratio muscle / connective tissue was calculated using image analysis software.

**Results:** Significant differences between treatment conditions were observed in every functional parameter in segment 1. Emax of the response to phenylephrine, carbachol and endothelin-1 were tested in a cumulative manner (10⁻⁹-10⁻⁴ M) as well as to electrical field stimulation at 32 Hz were significantly higher than in the control group. However, there were no differences between the conditions in any of the functional parameters in segments 2 and 3. Soy and phytoestrogen treatment resulted in a significantly increase in urothelial thickness as well as mucosal area over the entire length of the urethra (segments 1, 2, 3). The ratio muscle / connective tissue did not show any significant differences between the groups.

**Conclusions:** Soy-phytoestrogen treatment may be beneficial in patients with stress urinary incontinence due to an increase in response to pharmacological and electrical stimulation at the proximal segment of the urethra as well as an increase in urothelial and mucosal thickness over the entire length of the urethra.

**Funding:** This study was supported by the HL 45666 and HL 79421 and the German Research Foundation (GR3333/1-1).

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**Poster #BS10**

**TEMPORAL EFFECTS OF VAGINAL DISTENSION AND BILATERAL PUDENDAL NERVE TRANSECTION ON LEAK-POINT PRESSURE AND URETHRAL ANATOMY IN FEMALE MICE**

Yi-Hao Lin; Guiming Liu; Mei Li; Michael Kavran; Firouz Daneshgari
Glickman Urological Institute, Cleveland, Ohio; Chang Gung Memorial Hospital, Taiwan

**Objectives:** Vaginal distension (VD) and pudendal nerve injury (PNI) have been used for creation of stress urinary incontinence (SUI) in rats. We have recently reported successful induction of SUI in mice by VD. In this study, we aimed to examine the time course of recovery after VD and PNI in mice and to investigate the possible mechanism of SUI caused by these models.
Materials and Methods: Seventy-two virgin female C57BL/6 mice were randomly distributed into three groups. Vaginal distention (VD) group underwent VD for 1 hour, using a modified 6-Fr Foley catheter with a balloon dilated to 0.3ml. Pudendal nerve transection (PNT) group received bilateral PNT, as described before. Sham VD group only received insertion of the uninflatted 6-Fr Foley catheter for 1 hour. Each group was divided into four subgroups for performing leak-point pressure (LPP) at 0, 4, 10, and 20 days, after VD or PNI. All mice underwent suprapubic tube (SPT) implantation 2 days before performing LPP. After sacrifice, the urethras of the mice were harvested for histological examination and examination of NF-200 immunoreactive nerve terminals. The differences between groups were compared with two-sided Student t-test at 0.05 significance level.

Results: LPPs were significantly lower 0, 4 and 10 days after VD (10.88 ± 1.52, 10.04 ± 2.36, and 10.93 ± 2.11 cm H2O, p<0.05) compared to sham VD (32.02 ± 4.30, 30.20 ± 5.90, and 26.72 ± 1.89 cm H2O). LPPs 20 days after VD (20.47 ± 2.98 cm H2O) and sham VD (25.66 ± 3.26 cm H2O) showed no significant differences (p=0.196), indicating the recovery of the continence in mice occurs 20 days after VD. LPPs were significantly lower 0, 4, 10 and 20 days after PNI (6.85 ± 2.63, 5.01 ± 1.30, 6.90 ± 2.43, and 4.10 ± 0.62 cm H2O, p<0.05) than control (sham VD). Histological examination showed significant decreases of the thickness of urethral striated muscle only 4 days after VD (2.62 ±0.32μm) compared to other time points (p<0.05). The density of immunoreactive neurofilaments in the urethra was significantly reduced 4 days after VD (2.61 ±0.19%, p<0.05) and 4, 10, and 20 days after PNT (2.45 ±0.11, 2.27 ±0.28, 2.57 ±0.65%, p<0.05). The density of neurofilaments 20 days after VD (3.59 ± 0.35%) was similar to 20 days of Sham VD (4.44 ± 0.09%, p= 1.00), indicating the source of recovery of continence function may be related to recovery of these nerve terminals.

Conclusions: VD and PNI cause durable SUI in female mice, as measured by LPP. SUI after VD recovers by 20 days. Such recovery is temporally associated with recovery of the NF-200 immunoreactive nerve terminals in the urethra, indicating a key role for these elements in recovery of continence mechanisms after VD. Our created models could be used for mechanistic investigation of SUI by taking advantage of transgene and knock out technology in mice.

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Poster #BS11

IN VITRO EFFECTS OF A SINGLE NUCLEOTIDE POLYMORPHISM ON EXPRESSION OF EXTRACELLULAR MATRIX PROTEIN LAMININ GAMMA-1 (LAMC1)
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Introduction: Pelvic Organ Prolapse (POP) is a common disorder affecting women in their 60s and 70s. In 2005, Nikolova et al. identified a C to T single nucleotide polymorphism in the promoter region of Laminin Gamma-1 (LAMC1). This mutation lies in the NFIL3/E4BP4 transcription factor binding site of the LAMC1 promoter. This rare mutation was found in 22% of probands with familial pelvic organ prolapse, while having a frequency of 4.9% in the general population (NCBI dbSNP). In this study, we investigate the role of this rare allele on the in vitro regulation of LAMC1 expression in c2c12 myoblasts, a skeletal muscle cell line.
Materials and Methods: A 300-bp region surrounding the mutated NFIL3/E4BP4 binding site was cloned from patients homozygous for the C or the T allele. This region was cloned into TOPO-TA vector (Invitrogen) and subcloned into the PGL3-Promoter vector (Promega). C2c12 myoblasts (ATCC) were seeded in 12-well plates at 100,000 cells/well. These cells were transfected using FuGene HD (Roche) with either empty promoter vector, the promoter with the C allele, or promoter vector with the T allele. The cells were co-transfected with pCMV-Beta-galactosidase in order to control for transfection efficiency. The cells were harvested in TEN buffer after 36 hours and lysed via the freeze-thaw method. Beta-Galactosidase was assayed by Beta-Galactosidase Assay System (Promega) and read on a microplate Spectrophotometer (BioRad). All luciferase readings were read on a TD 20/20 Luminometer (Turner Designs) using the Luciferase Assay System (Promega).

Results: NFIL3/E4BP4 was shown to be highly expressed in c2c12 myoblasts. Preliminary results showed both the C and T allele have a repressive effect on the luciferase expression when compared to the empty promoter vector (p=0.03, p=0.002). There is a trend towards a moderate difference in the level of repression between the C allele (more often present in controls) and the T allele (more often present in patients with POP)

Discussion: POP is a common disease that has few effective treatments. While the majority of POP cases are sporadic, examining gene mutations in families with autosomal dominant inheritance of POP will help to elucidate how genetics and environment interact to cause the disease state. Knowledge of in vitro effects of this mutation will further enhance our understanding of the molecular pathogenesis of POP. Furthermore, we will better understand the role that laminins play in this disorder. Ultimately, through a better understanding of the molecular mechanisms behind POP, we will be able to provide better screening, preventative care, and treatment for this common and debilitating disorder.

Poster #BS12

TIME-DEPENDENT CONTRIBUTION OF TERMINAL NERVES AND VASCULTURE TO THE REMODELING OF THE BLADDER IN DIABETIC RAT
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Introduction and Objectives: Diabetic Bladder Dysfunction (DBD) is among the most common and bothersome complications of diabetes mellitus (DM). Others and we have demonstrated the time-dependent bladder remodeling of the bladder in diabetes. Alterations in the myogenic and neurogenic components of the bladder are among the prominent features of the bladder remodeling. In this study, we aimed to examine the contribution of the terminal nerves and vasculature of the bladder tissues to bladder remodeling in diabetes.

Methods: 36 Sprague-Dawley rats were divided into 3 groups: streptozotocin-induced diabetics, 5% sucrose-induced diuretics, and age-matched controls. Characteristics of the neurofilaments and microvasculature in the equatorial cross-sectional areas of the bladder were examined by immunofluorescence staining for NF200 immunoreactive nerve fibers as a marker for nerve terminals and CD31 as a marker for blood vessel in 1 week, 9 weeks, or 20 weeks after induction. The distribution and density of the nerve terminals and blood vessels were examined under fluorescence microscopy. Digital image analysis was used to quantify the nerve and vascular density. The results between groups were compared with two-sided student t test at significance level of 0.05.

Results: Diabetes caused significant reduction of body weight. Bladder weight increased significantly in diabetic and diuretic rats, but not in controls over the course of diabetes. Total cross-sectional wall areas of the detrusor muscle, urothelium and lamina propria at the equatorial midline increased significantly in bladders of diabetic and diuretic rats compared with controls. Neurofilament-immunoreactive nerve were mainly distributed in the detrusor muscle area. There was seldom distribution in the urothelium or lamina propria. In contrast, most CD31-immunoreactive blood vessels were distributed in the urothelium or lamina propria. The absolute value of the neurofilament-immunoreactive nerve terminals did not change in 1 and 9 weeks, but decreased in 20 weeks after diabetes induction, and did not change in diuretic group within investigated period. When expressed as percentage of the total tissue area, nerve density had a downward decline in diabetic and diuretic animals. There are increased trends of the absolute values of the CD31-immunoreactive blood vessels in diuretic rats within 20 weeks. However, there are increased trends of the absolute values of the CD31 – immunoreactive blood vessels in 1 and 9 weeks but did not changed in 20 weeks in diabetic group. When expressed as percentage of the total tissue area, blood vessel density decreased in diabetic and diuretic group. The decrease in density of the nerve terminals and blood vessel in diabetic group is particularly obvious in 20 weeks after induction.
Conclusions: Diabetes caused marked decrease in density of the NF-200 immunoreactive nerve terminals and CD-31 positive blood vessels after 20 weeks of disease induction, but did not change the distribution of these elements. Diabetes and diuresis differ in causing changes in distribution and density of the nerve terminals and microvasculature in the bladder tissues, suggesting that chronic hyperglycemia may play a direct role in alteration of nerve and microvasculature in the bladder.

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Poster #BS13

PUBOURETHRAL LIGAMENT INJURY CAUSES LONG TERM STRESS URINARY INCONTINENCE IN FEMALE RATS.
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Introduction and Objectives: Mid-urethral slings were invented based on the integral theory of deficiency of pubourethral ligament (PUL) in women. We have hypothesized that injury to PUL in female rat would cause stress urinary incontinence as measured by leak point pressures (LPP), and have presented the short term effects of PUL injury on LPP (Kefer et al: J of Urol. Feb 2008-in press). The aim of this study was to examine the long-term effects of PUL – deficiency as a potential model for SUI through comparison to an established model of SUI.

Materials and Methods: A total of 20 female age-matched Sprague-Dawley rats were randomly assigned to 1 of 3 groups: PUL-transection (PULT) with LPP measured at 28 days, sham-PUL transection with LPP measured at 28 days, and bilateral pudendal nerve transection (PNT) with LPP measured at 28 days post-op. PUL transection was performed according to our previously described method (Kefer et al: J of Urol. Feb 2008-in press). LPP was measured 28 days later via an implanted suprapubic catheter. Following LPP, all animals were sacrificed with intracardiac perfusion of PBS and their suprapubic area was harvested including the urethra, vagina, and pubic arch for histological examination. Wilcoxon rank sum tests were used to evaluate differences in LPP between the experimental groups.

Results: Twenty-eight days after PULT, LPP was significantly decreased in true PULT compared to sham group (15.7 cm±6.46 vs. 42.6 cm±12 cm H2O, p<0.001) and no different from PNT group (15.7 cm±6.46 vs.15.09±4.98, p<0.76), indicating durability of effects of PULT on inducing SUI in female rat. Histological examination of the en-block suprapubic areas shows absence of PUL in PULT group, but not in sham PUL or PNT groups.

Conclusion: Our results demonstrate that deficiency of the PUL in the female rat induces SUI that is comparable to the established SUI model via PNT. Our novel rat model could be used for investigation of mechanisms of SUI in female including the role of urethral hypermobility and potential therapeutic interventions of SUI.

Poster #BS14

INSULIN-LIKE GROWTH FACTOR-I, INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-3, INSULIN-LIKE GROWTH FACTOR RECEPTOR AND URODYNAMIC FUNCTION AFTER PUDENDAL NERVE CRUSH IN DIABETIC FEMALE RATS
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Introduction: Women with diabetes mellitus (DM) have a higher prevalence of lower urinary tract complications than women without DM. DM increases the risk of stress urinary incontinence (SUI) after vaginal delivery, contributing to the high prevalence of SUI. The pudendal nerve (PN) courses through Alcock’s canal and is particularly vulnerable to stretch and crush injury during childbirth, leading to denervation and atrophy of the external urethral sphincter (EUS), and resulting in symptoms of SUI. Insulin-like growth factor-I (IGF-I) and IGF binding protein-3 (IGFBP-3), through IGF-I receptors (IGF-IR), have considerable protective and regenerative functions in the nervous system in DM. However, the relationship between IGF-I, DM, birth trauma and SUI is poorly understood.
Objective: The aims of this study were to determine, 1) if PN crush in DM animals results in increased severity of SUI symptoms, and 2) if these altered responses in DM animals are associated with IGF-I, IGFBP-3 and IGF-IR.

Methods: Seventy-six female virgin Sprague-Dawley rats were divided into DM, diuretic (DU) and untreated control (C) groups with 12-14 each. Each group was subdivided into PN crush (PNC) and sham PNC (SPNC) groups. DM rats (8 weeks prior to PNC) were induced by injection (i.p.) of streptozotocin (35 mg/kg). DU rats were given 5% sucrose in their drinking water for 8 weeks. For PNC, the PN was crushed twice bilaterally by closing a Castroviejo needle holder on it for 30 seconds. For SPNC, rats underwent a dorsal skin incision only. All rats underwent awake cystometry (CMG) and leak point pressure (LPP) testing 11 days after PNC or SPNC. At that time blood was intracardiacally obtained for assessment of IGF-I, IGFBP-3 and IGF-IR mRNA levels by semi-quantitative RT-PCR. The urethra, vagina, bladder and PN were dissected and embedded in paraffin for histological assessment.

Results: CMG data from DM group after PNC were not significantly different from that of SPNC, and from either C or DU animals. However, the leak point pressure during LPP testing was significantly decreased after PNC in DM animals compared to SPNC. There were no differences in leak point pressure between the C and DU groups after either PNC or SPNC. IGF-I mRNA level in DM rats was 40% lower than that of C rats but significantly increased 11 days after PNC compared to SPNC of both DM rats (7 times) and C rats (4 times). Within C and DU groups, IGF-I was moderately elevated after PNC compared to SPNC: 1.6 and 1.7 times, respectively. IGFBP-3 in DM rats was 2 times that of C rats but it was 40% decreased after PNC compared to SPNC, although it was relative higher (80%) when compared to C rats. IGF-IR showed no significant differences between the SPNC groups. It showed, however, a 30 – 40% decrease after PNC in all groups compared to SPNC. Pathology of the EUS, determined by histological assessment of urethral cross-sections, was increased in rats with PNC compared to rats with SPNC in all groups.

Conclusions: PNC leads to significantly decreased urethral resistance in DM rats as demonstrated by LPP. Therefore, PN injury may play an important role in the development of incontinence in DM. Elevated level of IGF-I and decreased levels of IGFBP-3 and IGF-IR after PNC in DM rats may contribute to the dysfunction and its recovery.

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Poster #BS15

PERIURETHRAL INJECTION OF AUTOLOGOUS ADIPOSE-DERIVED STEM CELLS WITH HEPATOCYTE GROWTH FACTOR-IMPREGNATED PLGA MICROSPERES FOR TREATMENT OF STRESS URINARY INCONTINENCE IN AN ANIMAL MODEL

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Objective: Current strategies for treatment of stress urinary incontinence (SUI) fail to target the pathophysiology of intrinsic sphincteric deficiency. Tissue engineering strategies offer methods of smooth muscle regeneration that may restore normal urethral function. We have previously demonstrated that adipose-derived stem cells (ADSC) injected perirectrally can differentiate into smooth muscle cells. In addition, co-injection with biodegradable polymer microspheres provides temporary bulking, a means of preventing cell migration, and scaffolding properties to facilitate the regeneration of smooth muscle. As growth factors are also known to facilitate numerous cell functions including cell differentiation, we have identified hepatocyte growth factor (HGF) as a potential stimulus for smooth muscle differentiation (unpublished data). In this study we design and characterize a system for the controlled delivery of HGF. In addition, we evaluate the use of this system by periurethral co-injection with autologous ADSCs in a previously validated immunocompetent animal model of SUI.
**Materials and Methods:** HGF was encapsulated within 85:15 and 50:50 polylactide-co-glycolide (PLGA) microspheres, which were fabricated using a double emulsion solvent evaporation technique. Microspheres were characterized by scanning electron microscopy and determination of size distribution. The controlled release of protein was assessed by measuring concentrations of released fluorescent-conjugated bovine serum albumin (BSA) by fluorometry. Degradation of microspheres was assessed by measuring remaining mass at 1 month time interval for a period of 6 months. To ensure that HGF released by microspheres remains biologically active, its effects were tested on the proliferation of rat ADSCs in vitro and compared against the effect of exogenously added HGF. Proliferation was assessed by an MTT proliferation assay. Three Sprague-Dawley rats per group per time point underwent baseline determination of retrograde urethral perfusion pressure (RUPP) and abdominal leak point pressure (ALPP) by urodynamics. One week later, rats either underwent a sham operation, transabdominal urethrolysis alone, or urethrolysis followed by the periurethral injection of regular beads alone, HGF beads alone, regular beads with autologous ADSCs expanded in culture, or HGF beads with autologous ADSCs. Postoperative urodynamic parameters were reassessed at 2, 6, and 12 weeks post-urethrolysis, immediately prior to sacrifice, organ bath studies and processing of urethral tissue for histology and immunohistochemistry for smooth muscle and inflammatory cell markers.

**Results:** PLGA microspheres had an average diameter of 20 µm with 80% between 10 and 30 µm. 50:50 PLGA microspheres demonstrated a more significant burst release of protein followed by minimal sustained release compared with a more significant sustained release seen with 85:15 PLGA microspheres. Loss of mass of 50:50 PLGA microspheres was much more rapid compared to the 85:15 formulation with almost complete hydrolysis by 3 months. In contrast, 80% of 85:15 PLGA mass was maintained at 3 months, decreasing to 30% by 6 months. Treatment of rat ADSCs with exogenous HGF contributed to decreased proliferation rates in a dose-dependent fashion. HGF released from 50:50 PLGA microspheres demonstrated similar decrease in proliferation in accordance with the anticipated effect based on quantitation of HGF concentration by ELISA (2.5 ng/ml). Urethrolysis resulted in a significant sustained decrease in RUPP and ALPP which was partially reversed by the periurethral injection of PLGA microspheres (1:1 ratio of 50:50 and 85:15) up until the 6 week time point. At 12 weeks, partial loss of periurethral bulking by urodynamic assessment was seen in rats injected with beads alone. In contrast, rats co-injected with ADSCs had durable and sustained bulking effects out to 12 weeks, suggesting improved durability with co-injection of ADSCs. Histology confirmed the presence of a periurethral mass of hybrid tissue resulting in localization of Dil labeled ADSCs at 12 weeks. No cell migration was noted. Breakdown of PLGA microspheres was noted at the 2 and 12 week time points respectively, with uniform bead morphology seen at 6 weeks. Inflammatory cells within hybrid tissue were noted at all time points and were persistent at the 12 week time point as determined by CD45 staining. Immunofluorescent staining for alpha smooth muscle actin and myosin heavy chain confirmed smooth muscle differentiation of ADSCs as early as 6 weeks with no differences noted between groups with HGF beads and those with regular beads. Organ bath studies confirmed smooth muscle contractility in urethral segments with minimal differences between groups or time points.

**Conclusions:** Periurethral co-injection of PLGA microspheres with autologous ADSCs provides a method of improving the durability of periurethral bulking as assessed by urodynamic parameters in an animal model of SUI. This effect is sustained despite the potential accelerated degradation of microspheres by the immune system in this immunocompetent model. Despite the lack of measurable effect of HGF on smooth muscle regeneration or urodynamic parameters, we have engineered and characterized a system for the controlled release of growth factor. Future in vivo studies evaluating the effects of HGF on smooth muscle differentiation of ADSCs are warranted.
THE EFFECT OF SACRAL NERVE STIMULATION ON DETRUSOR FUNCTION AND STRUCTURE IN THE SETTING OF BLADDER OUTLET OBSTRUCTION – A RAT MODEL
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Purpose: Sacral nerve stimulation (SNS) is indicated for the treatment of urinary frequency, urgency, urge incontinence, and non-obstructive urinary retention in patients who have failed conservative management. It is well established that benign prostatic enlargement can lead to bladder outlet obstruction (BOO), resulting in both structural and functional changes to the detrusor, leading to impaired storage and emptying function. Detrusor hypertrophy can result in impaired storage and emptying function. To date, SNS has not been evaluated in the setting of BOO. We investigate if SNS can reverse the structural and functional changes that occur with BOO in a rat model.

Methods: 24 female Sprague-Dawley rats (200-250 gm) were divided into 4 groups of 6: control (CTRL); BOO alone, SNS alone, and both BOO and SNS (BOO/SNS). BOO was achieved in 12 rats by surgically obstructing the proximal urethra. A 4-0 nylon suture was tied around the proximal urethra using PE-50 tubing as a guide to partially obstruct. A unipolar SNS electrode (Bio-Logic, Inc.) was placed in 12 rats (n=6, SNS group, n=6 BOO/SNS group) via a posterior incision over the sacrum, through the S1 foramen and secured to adjacent muscle. The proximal end of the electrode was tunneled subcutaneously and out posteriorly. The S1-S4 dorsal roots were stimulated by a pulse generator at an amplitude = 1 volt, pulse width = 210 ms, rate = 16 Hz (Medtronic model 3625, Medtronic Inc., Minneapolis, MN) for 8 hours per day, 5 days per week, for 6 weeks. Urodynamics were performed at baseline and after 6 weeks of BOO and/or SNS. Filling cystometry was performed at 50 µl per minute via PE-50 tubing. Measurements included bladder capacity, voiding pressure, and volume at first unstable contraction. At 6 weeks, bladders were harvested and fixed in formalin. Hematoxylin and eosin stains and trichome were then applied to the sectioned bladder tissue. Detrusor muscle hypertrophy and fibrosis were evaluated on a scale of 1 (atrophy) to 5 (hypertrophy), by 2 blinded urologists and a blinded pathologist. Comparison was made to normal controls.

Results: Mean voiding pressure in the BOO group was greater than in the CTRL group (34.9± 2.1 mm Hg vs 23.4 ± 2.0 mm Hg, p=0.02). Addition of SNS did not significantly affect voiding pressure, (mean =29.5 ± 3.3 mm Hg, p=0.2 vs BOO). Mean bladder capacity in the BOO group trended higher compared to CTRL rats (1226 ± 247 µl vs 484 ± 60 µl, p=0.08). The addition of SNS lowered bladder capacity (628.0± 90.6 µl, p=0.05 BOO/SNS vs BOO). Mean volume at the first unstable bladder contraction, a measure of bladder overactivity, was lower in BOO rats compared to CTRL rats (67 ± 16 µl vs 110 ± 24 µl, p=0.02). The addition of SNS mediated and increase in volume at the first unstable contraction (628 ± 91 µl, p=0.002 BOO/SNS vs CTRL and p< 0.001 BOO/SNS vs BOO). Detrusor muscle hypertrophy was greater in the BOO group vs CTRL (median=5 vs 3, p<0.02) and in the BOO group compared to BOO/SNS (median = 5 vs 4, p<0.01). Fibrosis was greater in the BOO group vs CTRL (median=5 vs 3, p<0.01) and in the BOO group vs BOO/SNS (median=5 vs 3, p<0.01).

Conclusions: Partial BOO caused functional and structural changes in the detrusor. BOO mediated an increase in bladder capacity, which was reversed by the addition of SNS. BOO increased detrusor overactivity, as measured by volume at first unstable bladder contraction, which was again reversed by the addition of SNS. In addition to these functional changes, SNS decreased the detrusor muscle hypertrophy and fibrosis caused by partial BOO. SNS appears to ameliorate the adverse functional and structural changes that result from partial BOO in a rat model.
Poster #BS17

THE EFFECT OF BLADDER OUTLET OBSTRUCTION AND SACRAL NERVE STIMULATION ON MUSCARINIC AND VANILLOID RECEPTORS – A RAT MODEL

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Purpose: Lower urinary tract symptoms (LUTS) associated with benign prostatic enlargement (BPE) are prevalent in older men. Recently, there has been interest in detrusor-directed therapy in men with LUTS associated with BPE. In addition to muscarinic receptors, vanilloid receptors have been identified on afferent nerves throughout the detrusor and extending into the urothelium. Sacral nerve stimulation (SNS), which is indicated for the treatment of urinary frequency and urgency, is not approved for men with bladder outlet obstruction (BOO). SNS is thought to act primarily via afferent neuromodulation. We examine the alteration in muscarinic receptor and vanilloid receptor density that may occur with SNS in a rat model of BOO.

Materials and Methods: 24 female Sprague-Dawley rats (200-250 gm) were divided into 4 groups: control (CTRL); BOO alone, SNS alone, and both BOO and SNS (BOO/SNS). BOO was achieved in 12 rats by tying a 4-0 nylon suture around the proximal urethra to partially obstruct. A unipolar SNS electrode (Bio-Logic, Inc.) was placed in 12 rats (n=6, SNS group, n=6 BOO/SNS group) via a posterior incision over the sacrum, through the S1 foramen and secured to adjacent muscle. The proximal end of the electrode was tunneled subcutaneously and out posteriorly. The S1-S4 dorsal roots were stimulated by a pulse generator at an amplitude = 1 volt, pulse width = 210 ms, rate = 16 Hz (Medtronic model 3625, Medtronic Inc., Minneapolis, MN) for 8 hours per day, 5 days per week, for 6 weeks. After 6 weeks, the bladders were harvested. Half of each bladder was fixed and stained with M2, M3 or VR1 primary antibody for immunohistochemical evaluation. The other half of each bladder was frozen in liquid nitrogen, RNA was extracted, and analyzed with quantitative real time polymerase chain reaction (qRT-PCR), for M2, M3 and VR1 mRNA. All slides were scored by 2 blinded urologists and a blinded pathologist (scale 1-5; 1=least stain, 5=most stain).

Results: The BOO group demonstrated greater VR1 and M2 receptor expression than the CTRL group (median VR1 staining = 4 vs 3, p<0.05; median M2 staining = 4 vs 3, p<0.05). The VR1 and M2 receptor expression were also greater in the BOO group vs the SNS alone group. Addition of SNS to obstructed rats mediated normalization of receptor density, with no difference in VR1 or M2 expression in BOO/SNS vs CTRL (median VR1 staining 3 vs 3, p=0.7; median M2 staining 2.5 vs 3, p=0.7). There were no significant differences noted among the groups with respect to M3 receptor expression. The mRNA levels did not correlate with the change in receptor expression. There were no significant differences in mRNA transcription among the groups with respect to M2. In the BOO group there was actually less VR1 mRNA than in the CTRL group (0.46 vs 1.0, p<0.05), which did not correlate with the immunohistochemistry data.

Conclusions: Partial BOO mediated an increase in VR1 and M2 receptor expression in the rat bladder in our model. This difference in receptor density was prevented (normalized) by 6 weeks of SNS in rats with BOO. Alterations in mRNA transcription did not correspond to these changes in receptor density. This pilot study in a rat model of BOO provides evidence that BOO increases the expression of VR1 and M2 receptors in the rat bladder. However, this appears to be an extra-nuclear event. These changes in receptor expression were prevented by sacral neuromodulation. Further studies of changes of protein expression may help to elucidate the precise mechanism of action of SNS, and its potential role as a non-pharmacological and minimally invasive surgical approach for the treatment of LUTS associated with BPE.
A ONE-WEEK SUB-ACUTE SAFETY EVALUATION OF A NOVEL TRANSCUTANEOUS STIMULATOR IN A CANINE MODEL

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Introduction and Objectives: The use of electrical stimulation for the treatment of Overactive Bladder and other lower urinary tract dysfunctions has gained increased interest in recent years. This study characterized the sub-acute safety of a novel transcutaneous waveform using a canine model. The waveform is composed of a carrier signal modulated by a pulse envelope. The carrier waveform is designed to be of sufficiently high frequency to overcome tissue impedance. The pulse envelope contains pulse width, amplitude and shape information designed to stimulate specific nerves. The objective of this study was to determine the local and systemic effects of the transcutaneous waveform applied over sacral spinal nerves S1 – S3 of the canine for a 7-day period.

Methods: Transcutaneous devices were applied over sacral spinal nerves S1 – S3 and activated for a 7-day period (n=5); non-functioning devices were applied to five animals that served as controls. General physical and neurological behavior examinations were performed daily. Animals were observed three times daily following the initiation of the neurostimulation procedures for the presence of pain and/or discomfort. Defecation and urination were also assessed three times daily. Skin reactions at the site of the neurostimulation patch application were assessed at the initiation of the study, at the time of electrode replacement, and prior to euthanasia; using modified Draize scales for skin erythema and edema. Organs and tissues were harvested from the skin/subcutis, muscle and nerves under the neurostimulation patch (including dorsal and ventral roots of S1 – S3, spinal nerves S1 – S3, pudendal, hypogastric and pelvic nerves). Slides of collected tissues were read and interpreted by a veterinary pathologist.

Results: In pretreatment physical examinations and throughout the conduct of the study, all animals were assessed to be within normal species standards, with no differences being observed between the two treatment groups during the study period or in comparison to the pretreatment values. Clinical pathology parameters (i.e. hematology, serum chemistry, coagulation profile) were within normal for all animals prior to group assignment. No biologically meaningful clinical pathology differences were observed between the two groups of animals, or within each group prior to or following treatment. Gross or microscopic pathology findings were incidental and unrelated to nerve stimulation. No microscopic findings were attributed to the applied waveform. Microscopic observations revealed that 4 animals in each treatment group had minimal to mild sub acute inflammation in the superficial dermis, with minimal epithelial hyperplasia, in skin samples collected from or adjacent to the treatment area. These observations were interpreted to be a local reaction to the adhesive and were considered to be non-adverse.

Conclusions: Potential adverse consequences of nerve stimulation using our novel waveform include biological effects of fields induced in tissue from application of the waveform, as well as possible effects on the tissue from electrochemically generated products at the electrodes. However, no adverse local or systemic effects of selective nerve stimulation were observed in any of the test group animals during the conduct of the study or from the histological evaluation of targeted tissues.
TEST, RE-TEST RELIABILITY, AND DEVELOPMENT OF A SYSTEMATIC COMPUTER INTERFACE FOR ASSESSMENT OF BLADDER AUTONOMIC SENSORY FUNCTION IN A NOVEL ANIMAL MODEL
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Cleveland Clinic, Cleveland, OH

Introduction: We have previously reported on development of a device to measure the bladder sensory perception threshold (BST) in rats using the Neurometer®. In this model, the afferent fibers Aβ, Aδ, and C are stimulated using frequencies of 2000 Hz, 250 Hz and 5 Hz, respectively. In our previous work we have used the animal’s startle movement as indication of response to stimuli. Others and we have also observed that animal vocalization correlate to stimuli intensities. Presently, determination and evaluation of the BST is done manually, which may introduce undesired statistical variability.

Objectives: The aims of our study were: a) to test the inter and intra-reader reliability of the BST assessment and b) to develop and integrate an automated audio data collection and analysis system capable of interfacing with a commercial Neurometer® (Neurotron, Inc, Bethesda, MD).

Method: To test observer’s variability of measurement, the BST values were obtained in 6 – 8 weeks old female, Sprague-Dawley rats (n=5) by two observers at two different times. Electrodes were placed surgically in the bladder mucosa and on the tail utilizing skin-dispersion. The electrode was implanted 7 days before BST measurement; BST values were obtained three times per frequency with a total of 108 measurements collected. The observer’s results were concealed from each other. The animals were placed in an acrylic tube to limit movement, and the microphone was positioned above the upper surface of the tube to record their vocalization in response to stimuli. The computer interface controlling the experiment included a graphical user interface (GUI) based on LabView (National Instruments, Austin, TX) with audio data collection and analysis software capable of collecting vocalizations up to 60 kHz. The GUI was interfaced to the Neurometer® via serial communications and was capable of controlling the stimulus amplitude at specified time intervals.

Results: The Spearman’s correlation co-efficient in the measurement of the BST values by the two observers were r= 0.975 (p<0.001) overall. A paired t-test revealed no statistically significant differences between all the BST values measured by two observers (Aβ-fibers, p=0.975, Aδ-fibers, p=0.181 C fibers, p=0.50). The engineering integration phase for the automated audio data collection and analysis system was completed and comprised a commercial laptop computer with a data acquisition card and LabView software, a Neurometer® stimulator, and an ultrasonic microphone and signal conditioning amplifiers (PCB Piezotronics, The Modal Shop, Cincinnati, OH). The GUI was developed in LabView and included the following functionality: 1) communication with the stimulator, 2) synchronized audio data acquisition, and 3) data storage and analysis. The system allowed selection of the BST’s experimental parameters, such as stimulus frequency and intensity, time duration intervals, and overall sequence automation during the trial run. The system sent the pre-determined trial parameters to the stimulator while simultaneously collected audio data from the ultrasonic microphone at a sampling rate of 120 kHz. The GUI calculated and displayed the spectral decomposition of the captured microphone audio data in real time. The trial ended either with vocalization or by a preset timeout.

Conclusion: These results indicated that a) our novel method of testing the bladder sensory function has an acceptable reliability and internal validity; b) the computer-based system successfully manipulated the Neurometer®, and captured the audio data during the determination of the BST. These steps are prerequisites for advancing the automation of BST perception experimental preparations with the objective of making our animal model and system available to other laboratories.
**Poster #BS20**

**BOTULINUM TOXIN TYPE A NORMALIZES ALTERATIONS IN UROTHELIAL ATP AND NITRIC OXIDE RELEASE INDUCED BY CHRONIC SPINAL CORD INJURY**
Christopher P. Smith1; David A. Gangitano1; Alvaro Munoz2; Nilson A. Salas1; Timothy B. Boone1; K. Roger Aoki2; Joseph Francis2; George T. Somogyi1
1Scott Department of Urology, Baylor College of Medicine, Houston, TX; 2Allergan Inc., Irvine, CA

**Introduction and Objectives:** The purpose of this paper was to simultaneously examine changes in urothelial ATP and nitric oxide (NO) release in normal and spinal cord injured (SCI) animals as well as in spinal cord injured animals treated with botulinum toxin type A (BoNT-A) and to correlate changes in transmitter release with functional changes in bladder contraction frequency and with efferent nerve function.

**Methods:** Normal and spinal cord injured rat bladders were injected on day 0 with either vehicle (saline containing bovine serum albumin) or BoNT-A. On day 2, *in vitro* neurotransmitter release and bladder strip contractility studies as well as *in vivo* cystometrographic studies were conducted.

**Results:** Resting ATP release was significantly enhanced following spinal cord injury (i.e. 57% increase, p<0.05) and was unaffected by BoNT-A treatment. SCI increased hypo-osmotic evoked urothelial ATP release by 377% (p<0.05). BoNT-A treatment reduced evoked ATP release in SCI bladders by 83% (p<0.05). In contrast, hypo-osmotic stimulation induced NO release was significantly inhibited following SCI (i.e. 50%, p<0.05) but recovered in SCI rats treated with BoNT-A (i.e. 195% increase in NO release in SCI-BTX treated rats compared to SCI controls, p<0.01). Changes in urothelial transmitter release coincided with a significant decrease in bladder contraction frequency (i.e. 67%, p<0.05) in SCI-BTX rats compared to SCI rats. While no difference was measured between neurally evoked contractile amplitude between SCI and SCI-BTX animals, atropine (1µM) inhibited contractile amplitude to a greater extent (i.e. 76%, p<0.05) in the SCI-BTX group compared to the SCI group.

**Conclusions:** We hypothesize that alterations in the ratio of excitatory (i.e. ATP) and inhibitory (i.e. NO) urothelial transmitters promote bladder hyperactivity in rat bladders following SCI that can be reversed, to a large extent, by treatment with BoNT-A.

**Funding:** Research grant was provided by Allergan Inc., Irvine, CA

**Poster #BS21**

**THE EFFECTS OF OVARIECTOMY AND ESTROGEN REPLACEMENT ON STORAGE AND VOIDING FUNCTION IN FEMALE RATS**
Eric A. Hurtado; Desiderio Avila, Jr.; Phillip P. Smith; Christopher P. Smith; Timothy B. Boone; George T. Somogyi
Baylor College of Medicine; Houston, TX

**Introduction:** Menopause has long been thought to play a role in lower urinary tract symptoms. In order to treat these symptoms, women have traditionally been given hormone replacement therapy, partly with estrogen alone or estrogen combined with progesterone. However, numerous studies in menopausal women have contradicted this theoretical approach including the Women’s Health Initiative which found HRT to increase the incidence of all types of urinary incontinence regardless of whether estrogen was used alone or in combination with progesterone [1]. The purpose of this study was to evaluate the effect of estrogen replacement on the lower urinary tract in a menopausal rat model by evaluating storage and voiding parameters as well as reflex activity of the external urethral sphincter (EUS) and abdominal wall muscles during voiding.
Method: Funding was provided by NIH grants RO1-DK-R01 06699 and T32-DK007763. Twenty female SD rats underwent bilateral ovariectomy under isoflurane anesthesia. These rats were then divided into 2 groups. The control group underwent bilateral ovariectomy alone while the estrogen group also received a 17β-estradiol 0.50 mg/day slow release pellet SQ. At 6-8 weeks, a suprapubic catheter was acutely placed under urethane anesthesia. EMG electrodes were placed in the rectus abdominis and in the EUS, and the animal was placed over a collection cup to estimate the voided volume. The bladder was filled at 0.1 mL/min by an automated pump. Bladder pressure, voided volume, as well as abdominal and EUS EMG were recorded. Post-void residual (PVR) was obtained by performing a Crede maneuver after a void into the collection cup. Leak point pressures (LPPs) were obtained by infusing 0.3, 0.5, and 0.75 mL saline via the catheter and then a Crede maneuver was performed by having the rat in a supine position. We considered a valid value for LPP when urine was visualized at the urethral meatus. The EMG waveforms were mathematically integrated for comparison.

Results: We found that the estrogen replacement group had a significantly longer inter-contraction interval, increased voided volume, and time to first void (p<0.05) as compared to the estrogen deprived controls. EMG activity of the EUS and abdominal wall muscles were not significantly different nor were the LPPs at the volume loads of 0.3, 0.5, and 0.75 mL from the control group. The PVR and voiding efficiencies also were not significantly different between the control and estrogen replacement groups.

Conclusions: We conclude that estrogen replacement improves the afferent signaling in the bladders of ovariectomized rats (increase in ICI, time to first void and voided volume). However, it does not affect PVR, voiding efficiency, and reflex muscle activity of the abdominal wall. The sphincter tone was also unchanged as demonstrated by unaffected LPP and EUS activity.


Poster #BS22

NEUROSELECTIVE ELECTROSTIMULATION OF THE BLADDER AFFERENT PATHWAYS INDUCES C-FOS EXPRESSION IN THE REGIONS OF THE SPINE SPECIFIC FOR BLADDER AFFERENT C AND A-DELTA FIBERS

Yasuhiro Yamada; Osamu Ukimura; Guiming Liu; Mei Li; Firouz Daneshgari
Cleveland Clinic Foundation, Cleveland, OH

Introduction: C-fos, an immediate early gene which can be activated by increased neuronal activity, allows an accurate quantitative evaluation of nociceptive input reaching the spinal cord. Previous study demonstrated that noxious (chemical irritation) and non-noxious stimulation (bladder distension) of the rat lower urinary tract increased c-fos expression in L6 spinal cord, including the superficial lateral and medial dorsal horn (LDH, MDH, respectively), the dorsal commissure (DCM), and the sacral parasympathetic nucleus (SPN). Noxious stimulation activated greater expression in the DCM, whereas non-noxious stimulation induced greater expression of c-fos in the SPN. We have recently developed and validated the use of a model that enables us to stimulate the bladder afferent fibers. In this study, we aimed to compare the quantitative expression of the c-fos in response to incremental neuroselective stimulation of C-, A-delta and A-beta-fibers of the bladder.

Objectives: To asses the effects of neuro-selective electrical stimulation of the bladder A-delta or C fibers afferent pathways on activation of protooncogene c-fos at the spinal cord in the rat.

Materials and Methods: We implanted our newly developed device in the rat bladder which would transfer the Neurometer® generated electrostimulator to the bladder. Sine-wave electrical stimulation at 2000 Hz, 250 Hz and 5 Hz (1.5 and 2.0 mA) (reported to be selective for A-beta, A-delta and C-fibers, respectively) were applied for 90 minutes, and then rats were sacrificed with PBS, followed by 4 % paraformaldehyde. Spinal cord sections were immunoreacted for c-fos protein , and positive cells were counted in four spinal regions: MDH, LDH, DCM and SPN.

Results: The peak of c-fos expression in response to electrical stimulation was located in L6 spinal cord. 250 Hz and 5 Hz stimulation (2.0 mA) significantly increased c-fos expression (81.1 cells/section and 48.8 cells/section, respectively) in L6 spinal cord, compared to control group (29.1 cells/section) (electrode implantation only without stimulation), however 2000 Hz stimulation (2.0 mA) did not significantly induce c-fos expression (31.8 cells/section). 250 Hz stimulation (2.0 mA) induced greater number of c-fos positive cell in SPN (53.7%), whereas 5 Hz stimulation (1.5 and 2.0 mA) activated greater number in DCM (47.7 and 51.2%, respectively).
Conclusions: Neuroselective sine-wave electrical stimulation of C or A-delta fibers in the afferent pathways of the rat bladder increased the c-fos expression at the spinal cord regions that are similar to patterns caused by intravesical capsaicin or reported for bladder distension. Thus, our newly developed model could be used for studies of alterations of the bladder’s afferent pathways in prevalent conditions such as overactive and neurogenic bladder.

<table>
<thead>
<tr>
<th></th>
<th>MDH(%)</th>
<th>LDH(%)</th>
<th>DCM(%)</th>
<th>SPN(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Hz(2.0 mA)(n=6)</td>
<td>9.1±6.4</td>
<td>5.2±1.9</td>
<td>52.1±3.6*</td>
<td>30.7±8.1*</td>
</tr>
<tr>
<td>5 Hz(1.5mA)(n=4)</td>
<td>16.4±13.2</td>
<td>8.8±5.9</td>
<td>47.7±9.6</td>
<td>25.5±10.2**</td>
</tr>
<tr>
<td>250 Hz(2.0mA)(n=6)</td>
<td>6.5±3.6</td>
<td>10.2±9.4</td>
<td>28.1±12.5</td>
<td>53.7±8.2</td>
</tr>
</tbody>
</table>

Asterisk indicates a statistically significant difference in each area between 5 Hz(2.0 mA) and 250 Hz (2.0 mA)( *) or between 5 Hz(1.5 mA) and 250 Hz (2.0mA)( **).

Funding: Supported by grants NIH-NIDDK-DK-04-018; U01-DK61018

Poster #BS23

MALE AND FEMALE RATS EXHIBIT DISTINCT CHANGES IN URETHRAL OUTLET RESISTANCE TO BOTULINUM TOXIN TYPE-A
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Scott Department of Urology, Baylor College of Medicine, Houston, TX

Introduction and Objectives: We have previously demonstrated that botulinum toxin A (BTX-A) inhibits norepinephrine release from the proximal rat urethra (Smith CP et al., J Urol 169:1896, 2003), and significantly decreases leak point pressure (LPP) in female rats. The purpose of these investigations was to compare the effects of BTX-A on female and male rat urethral resistance by measuring changes in leak point pressure (LPP).

Methods: Sprague Dawley rats (n=16) were injected intraperitoneally with saline or 100U of botulinum toxin A (BTX-A) 18 hours prior to experimentation. Following urethane anesthesia, the spinal cord was transected at the T9-T10 level to block reflex bladder contractions induced by elevations in intravesical pressure. Animals were artificially respirated, placed in the vertical position using a tilt table, and intravesical pressure was clamped at increasing 3 cm H2O pressure increments every 15 sec. LPP was determined by visual observation and was recorded before and after administration of the nicotinic receptor antagonist α-bungarotoxin (BGT) 0.4mg/kg/iv, and the ganglionic blocker hexamethonium (HEX) 25mg/kg/iv.

Results: BTX-A significantly decreased LPP in all rats, but to a much greater extent in females (42%, p<0.001) than in males (18%, p<0.05). Similarly, BGT and BGT+HEX significantly decreased LPP in female controls by 46% and 50%, respectively (p<0.0001), but had a markedly less but still significant effect in male controls (12% and 19%, respectively, p<0.05). Neither BGT nor BGT+HEX had any appreciable effect in BTX-A treated male or female animals

Conclusions: In both male and female rats, BTX-A was equally as potent as BGT+HEX in reducing LPP. However, males did not demonstrate as marked a decrease in LPP to either agent as observed in females. We attribute much of these gender related differences to the presence of sperm plugs in male rat urethras and conclude that the male rat may not be a suitable model to measure changes in urethral outlet resistance.

Funding: Botulinum toxin A was provided by Allergan Inc., Irvine, CA
VALIDATION OF THE INCONTINENCE SYMPTOM SEVERITY INDEX: A SELF-ASSESSMENT INSTRUMENT FOR VOIDING SYMPTOM SEVERITY IN WOMEN

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UCLA Department of Urology, Los Angeles, CA

Objective: Most commonly used validated self-assessment instruments for voiding symptoms assess bother due to symptoms or effects of symptoms on quality of life. The Incontinence Symptom Severity (ISS) Index is an 8 item instrument developed for self-assessment of the severity of female urinary storage and voiding symptoms rather than degree of bother or effect on quality of life. Our objective is to assess the validity the ISS for the assessment of female voiding symptoms.

Methods: Internal consistency was assessed via item-total correlations and Cronbach’s alpha. Concurrent validity against the Urogenital Distress Inventory (UDI) was studied in 191 women with urinary incontinence by correlating similar symptom domains of the ISS and UDI-Short Form (UDI-6) plus two additional validated questions from the UDI-Long Form for nocturia (“UDI7”) and the symptom of urgency alone (“UDI8”). Concurrent validity against urinary items of the Pelvic Floor Distress Inventory (PFDI) was similarly assessed in a cohort of 74 women with vaginal prolapse. Criterion validity of ISS item 1, assessing incomplete emptying, was studied by comparing mean post-void residuals (PVRs) amongst the four possible response levels. Criterion validity of ISS items assessing incontinence due to stress (5), urge (6), and physical activity (7), and the item assessing pad use (8) were similarly assessed by comparing mean daily pad use amongst the four response levels for each. Response to change of the ISS was assessed by comparing pre- and post-treatment ISS scores in a cohort of 79 women who completed post-treatment questionnaires. Correlations (r) were performed via Spearman’s rho. Continuous data were analyzed via one-way ANOVA or paired t-test.

Results: Significant item total correlations (ITC) were seen for each ISS item (see table), and Cronbach’s alpha was 0.69. All ISS items significantly correlated with similar items of the UDI-6 and PFDI (see table). Significant post-treatment reductions were observed for all 8 ISS items (see table). A trend of progressively higher PVRs was noted for the 4 response levels of ISS item 1 (0=31, 1=22, 2=54, 3=63; F=0.07). Item 8, assessing pad use, showed a trend of significantly increasing mean pad use with each response level (F<0.0001). ISS items 5, 6, and 7, assessing incontinence with stress, urge, and physical activity also showed significantly increasing trends in mean daily pad use (F<0.0001, F=0.022, F<0.0001, respectively) amongst the four response levels for each.

Conclusions: This study validates the internal consistency, criterion validity, and response to change of the ISS. The ISS Index is suitable for assessing symptom severity and outcomes for treatment of female incontinence and voiding symptoms.

<table>
<thead>
<tr>
<th>ISS</th>
<th>Symptom Domain</th>
<th>ITC</th>
<th>UDI-6</th>
<th>PFDI</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Incomplete Emptying</td>
<td>0.39†</td>
<td>0.70†</td>
<td>0.81†</td>
<td>-0.43*</td>
</tr>
<tr>
<td>2</td>
<td>Sensation of Urgency</td>
<td>0.61†</td>
<td>0.54†</td>
<td>0.58†</td>
<td>-0.88†</td>
</tr>
<tr>
<td>3</td>
<td>Nocturia</td>
<td>0.30†</td>
<td>0.64†</td>
<td>0.69†</td>
<td>-0.35†</td>
</tr>
<tr>
<td>4</td>
<td>Daytime Frequency</td>
<td>0.54†</td>
<td>0.50†</td>
<td>0.60†</td>
<td>-0.65†</td>
</tr>
<tr>
<td>5</td>
<td>Stress Incontinence</td>
<td>0.61†</td>
<td>0.78†</td>
<td>0.85†</td>
<td>-2.38†</td>
</tr>
<tr>
<td>6</td>
<td>Urge Incontinence</td>
<td>0.72†</td>
<td>0.68†</td>
<td>0.67†</td>
<td>-0.82†</td>
</tr>
<tr>
<td>7</td>
<td>Leakage with activity</td>
<td>0.61†</td>
<td>0.55†</td>
<td>0.66</td>
<td>-1.68†</td>
</tr>
<tr>
<td>8</td>
<td>Degree of pad use</td>
<td>0.60†</td>
<td>--</td>
<td>--</td>
<td>-1.11**</td>
</tr>
</tbody>
</table>

†p<0.0001, **p<0.001, *p<0.05
Introduction: Female pelvic floor dysfunction (PFD), including urinary incontinence and pelvic organ prolapse, markedly affects health related quality of life with a prevalence that increases with age. Because treatments are continually evolving, our objective was to assess current practice patterns in the treatment of PFD among urologists of the SESAUA.

Methods: SESAUA urologists were surveyed to assess their practice patterns in the following areas: Stress urinary incontinence (SUI), pelvic organ prolapse (POP), refractory Overactive Bladder (OAB), and urodynamics (UDS). Surveys were mailed to 1500 urologists in September 2006. All data was entered into a computer database using statistical software (Stata 9.0).

Results: Overall, 371 surveys (27%) were completed and entered into a database. The majority of responders were > 40 years (62%), practicing > 10 years (73%), and had a minimum practice distribution encompassing PFD of 25% (90%). Self-assessed competency based upon prior training was high with respect to SUI (86%) and UDS (73%), while only 31% and 19% felt adequately trained with respect to POP and refractory OAB. Consequently, > 40% sought additional postgraduate training through courses offered by AUA and industry, while 5% pursued fellowship training in PFD.

SUI: Midurethral slings (TransObutrator or Retropubic) appear to be the procedure of choice for all types of SUI (primary -78%, mixed-78%, with POP -66%) while most favor bulking agents (35%) or bladder neck slings (24%) for recurrent SUI.

UDS: 91% of urologists routinely perform UDS (Uroflow>CMG>P/F>EMG) and 68% feel that fluoroscopy does not impact patient management. Utilization of UDS prior to surgical intervention was variable: primary SUI (44%), MUI (83%), SUI + POP (74%), and recurrent SUI (97%). POP: 47% of urologists perform pelvic reconstructive surgery for anterior prolapse, while only 22% and 21% performed apical or posterior reconstruction. 54% of urologists collaborate with gynecologists during POP repair, while 28% would utilize mesh or biological interposition grafts. 77% of urologists feel a vaginal vault suspension is indicated with stage 3/4 cystocele and 55% would perform a prophylactic anti-incontinence procedure during pelvic reconstruction.

RefractoryOAB: Despite very few urologists describing competence in performing procedures for rOAB, the majority chose SNS as the ideal therapy (62%) followed by botulinum toxin injection (20%). Overall, most urologists feel a significant demand for PFD providers within their community (58%) and within their practice (42%).

Conclusion: Most urologists are very comfortable providing PFD services related to SUI and UDS. Few urologists describe competence or routinely provide services related to refractory OAB or POP. If urologists wish to play a significant role as women’s health providers for PFD, a more structured and comprehensive training program during residency and fellowship should emphasize pelvic floor reconstructive surgery for POP and new technologies and reconstructive techniques for refractory OAB.
INTRODUCTION AND OBJECTIVES: Childhood Dysfunctional Voiding (CDV) includes daytime and nocturnal urinary and fecal incontinence. Few studies have linked CDV with later onset of voiding dysfunction in women, specifically, between nighttime enuresis and overactive bladder syndrome (OAB). Even less is known regarding the association of CDV with Pelvic Floor Disorders (PFD). We hypothesized that a history of CDV would be significantly associated with bothersome PFD. Furthermore, that CDV would also be independently associated with entities related to PFD, namely, sexual dysfunction, pelvic pain of bladder origin and depression. The objective of this study was to study the relationship between CDV and PFD, specifically UI and its subtypes. Secondarily, we sought to describe the association between CDV and sexual dysfunction, pelvic pain of bladder origin and symptoms of depression.

METHODS: An epidemiologic survey of 346 twin-sisters was performed at 2 annual twin gatherings in 2005 and 2006 in Twinsburg, Ohio, USA. All sister-twin pairs completed validated questionnaires, included the Dysfunctional Voiding Scoring System (DVSS), the Beck Depression Inventory-II (BDI-II), the short Pelvic Floor Distress Inventory (PFDI-20), the short Pelvic Organ Prolapse (POP)/Urinary Incontinence (UI) Sexual Questionnaire (PISQ-12) and the Pelvic Pain and Urgency/Frequency symptom scale (PUF). A multivariable linear mixed effects model was used to assess the total and individual DVSS scores in women with/without UI, and UI subtypes. BDI-II, PFDI-20, PISQ-12 and PUF scores were compared in women with and without a history of CDV. Spearman Correlation Coefficients were calculated between DVSS and scores from the other questionnaires.

RESULTS: There were 344/346 that fully completed the DVSS to be included in the study analysis. More women with UI had a history of CVD (57%) vs. those without CDV (46%). Specifically, there were more women with bothersome SUI (51%) vs. those without CDV (42%) p=.0099, OR 1.77, 95%CI 1.17-2.68. Similarly, more women had UII with CDV vs. those without CDV (37.5% vs. 25%, p=.0031, OR 2.06, CI 1.32-3.23). Women with mixed UI were at greatest risk of having had CDV (47%with CDV vs. 36% without, p=.002, OR 2.16, 95%CI 1.37-3.40). Women with CDV scored significantly worse on the BDI-II (p=.006, Effect Size 0.29), PISQ-12 (p=.0006, ES=0.43), PUF (p<0.0001, ES-0.49) and all three inventories of the PFDI-20 (p<0.0088-.0001, ES=0.3-0.44). A graded significant linear correlation was found between CDV and worsening sores on these questionnaires, with higher CDV scores correlating with worse scores on these measuring instruments. When looking at discordant twins for CDV, women without CVD who have sisters with CVD (n=51) had worse BDI-II vs. those with sisters that did not have CDV (BDI-II score=4.7, SD 5.8 vs. 8.6, SD 8.4, p=.0018, ES-0.57).

CONCLUSIONS: This study showed a significant association between CDV and UI in adult life, strongest in women with mixed UI. Similarly, women CVD scored worse in questionnaires assessing bothersome PFD, depression, painful bladder symptoms, and sexual dysfunction. These results indicate that a history of CDV may pose a significant risk for later development of PFD and related entities such as depression, pelvic pain of bladder origin and sexual dysfunction. Prospective, longitudinal studies are warranted to clarify the role and impact of childhood voiding dysfunctions in the pathophysiology of PFD in adulthood.
Poster #4

CHANGES IN VOIDING FUNCTION AFTER ANTERIOR COMPARTMENT REPAIR AND PUBOVAGINAL SLING
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Department of Urologic Surgery, Vanderbilt University, Nashville, TN

Introduction: Frequently, patients with pelvic organ prolapse also present with some form of incontinence concomitantly. Their presentation can be that of purely urge (UUI) or stress (SUI), or often a mixture of the two (MUI). In this study we wanted to determine our experience with high grade cystocele (Gr. 3 or 4) repair and incontinence symptomatology, namely what happens to the urgency component after repair.

Methods: A retrospective chart review was performed on all patients at our institution who underwent a grade 3 or 4 cystocele repair from January 2002 until June 2006. From these 141 patients, we excluded those with less than 6 months follow up and those without preoperative urodynamics (UDS), and included those who underwent a concomitant sling procedure, leaving 111 patients for evaluation. History and physical data, urodynamic findings, and postoperative outcomes were assessed as follows: SUI was defined as cured/improved based on negative cough stress test, and UUI was defined as cured/improved based on absence of urgency on voiding diary.

Results: The average patient age was 59 years. Average follow up was 29 months. Of the 111 patients, 60 (54%) presented with MUI, 28 (25%) with SUI only, 10 (9%) with UUI only, and 13 (12%) had no incontinence symptoms before UDS and exam. Occult stress incontinence was found in 23 patients (21%). Surgery was successful for SUI in 102 patients (92%), and for prolapse in 99 patients (89%). Urge symptoms were seen in 70 (63%) patients pre-op and 33 (30 %) patients post-op. Patients with MUI were significantly more likely to complain of post operative urgency than those with no complaint of urgency pre-op (22 of 60 vs. 7 of 41, \( p = 0.033 \)). In patients with MUI, detrusor overactivity on UDS was seen in 22 patients and was not predictive of post-op urgency (8 of 22 (36%) vs. 14 of 38 (37%), \( p = 0.91 \)).

Conclusions: In high-grade cystocele patients presenting with complaints of MUI, there is a significantly higher likelihood that they will complain of urge symptoms post operatively, compared to patients not complaining of urgency. While surgical treatment for SUI and prolapse are very successful in these patients, it is important to inform them that their urgency symptoms have a higher chance of persisting. While it is surprising that UDS was not able to predict which patients would be symptomatic post-op, we still advocate their use in all patients undergoing surgery for prolapse and incontinence in order correctly classify their preoperative voiding function, and identify occult incontinence in this patient population.

Poster #5

ANATOMICAL REVIEW OF THE INTEGRAL THEORY OF FEMALE URINARY INCONTINENCE
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*Ospedale S. Maria della Misericordia, Urology Department, Udine, Italy; ^Wake Forest University, Baptist Medical Centre, Urology Department, Winston Salem, NC; **Ospedale Maggiore, Pathology Department, Trieste, Italy

Introduction: The Integral Theory of Female Urinary Incontinence (ITFUI) states that “stress symptoms, urge symptoms, and symptoms of defective flow may all derive, for different reasons, from laxity in the vagina or its supporting ligaments, a result of altered connective tissue”. This theory is based on defective function of several anatomical structures involved in the continence mechanism.

Aims:
1. Dissection and description of the anatomical structures involved in the ITFUI
2. Critical anatomical review of the ITFUI

Material and Methods:
1. 35 fresh cadaveric dissection on female pelvis have been performed in the Pathology Department of the Ospedale Maggiore, Trieste, Italy, focusing on the anatomical structures involved in the ITFUI
2. Images and systematic description of the structures were been collected
3. Critical analysis of the consistency between the anatomy and the functional description in the ITFUI have been carried out
Results:

<table>
<thead>
<tr>
<th></th>
<th>ITFUI</th>
<th>Dissection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puboccygeus mm</td>
<td>0° angle between the pubic bone and the</td>
<td>30° angle between the pubic bone and the muscle</td>
</tr>
<tr>
<td>Pubo-urethral</td>
<td>Below the bladder neck</td>
<td>At the level of the bladder neck</td>
</tr>
<tr>
<td>Striated sphincter</td>
<td>Above the puboccygeus muscle</td>
<td>Below the puboccygeus muscle</td>
</tr>
<tr>
<td>Utero-sacral</td>
<td>Superior and attached to the levator ani</td>
<td>Above and parallel to the levator ani</td>
</tr>
</tbody>
</table>

Discussion: The ITFUI states that the puboccygeus muscle (PCM) has the primary role in the “active closure” since it’s responsible for an anterior horizontal shift of the urethra under stress. According to our anatomical results the movement should be on a 30° axis and should involve the bladder neck. According to the ITFUI pubo-urethral ligaments (PUL) should be, standing above the PMC, the fulcrum of the contraction. According to our results, the PUL are far below the PCM and therefore can’t act as a fulcrum. Additionally, the theory states that the sub urethral sling would be able to restore the PUL anatomy, but the sling is actually wrapped around the urethra giving to it an inferior support rather than a superior attachment to the pubic bone.

One of the possible etiologies of incontinence in the ITFUI is the deficit of the insertion point of the striated sphincter which is located in the vaginal wall. Cadaveric dissection shows that the insertion point of the properly named striated sphincter is in the bulbospongious and bulbocavernous muscle, therefore laxity of the vagina can’t be a direct, anatomical cause of sphincter deficiency. Finally, the uterosacral ligaments should be the fulcrum of the levator plate, which according to the theory would be responsible for a posterior shift of the bladder neck and posterior bladder wall. Our dissection shows that the uterosacral ligaments are above and parallel to the levator ani, thus not providing any attachment to it, therefore they can’t be a fulcrum of a muscle contraction.

Conclusions: ITFUI is a good concept put forth to understand the functional anatomy of continence. We were able to find several anatomic contradictions and points of clarification. Further systematic study of the female pelvic floor anatomy is mandatory to better understand the mechanisms of continence.

Poster #6

THE ADJUSTABLE CONTINENCE THERAPY (ACT) SYSTEM: PRELIMINARY RESULTS OF THE NORTH AMERICA ACT CLINICAL STUDY GROUP
Sherif Aboseif; Steven D. Nash; Joel Slutsky; Neil Baum; Le Mai Tu; Niall Galloway; Peter Pommerville; Suzette E. Sutherland; Ethan I. Franke
Kaiser Permanente, Los Angeles, CA; Kansas City Urology Care, Leawood, KS; Urological Surgeons, Kankakee, IL;Neil Baum Urology, New Orleans, LA; CHUS-Fleurimont, Fleurimont, Quebec; Emory University School of Medicine, Atlanta, GA; Can-Med Clinical Research, Victoria, British Columbia; Metro Urology, Plymouth, MN; Kaiser Permanente, Los Angeles, CA

Introduction: Management of stress urinary incontinence (SUI) associated with intrinsic sphincter deficiency can be difficult after prior failed therapies. The Uromedica Adjustable Continence Therapy (ACT) system is a novel device under FDA investigation that provides bulk at the bladder neck with balloons for urethral coaptation and bladder neck support.

Objective: Determine the efficacy, safety, adjustability, and technical feasibility of the ACT system for treatment of recurrent female SUI.
**Materials and Methods:**

1) Inclusion criteria: female patients with stress urinary incontinence who have failed previous incontinence treatments.
2) Exclusion criteria: insulin dependent diabetes, autoimmune disease, pregnancy, urinary infection, prior pelvic radiotherapy, detrusor dysfunction, untreated bladder pathology, untreated grade 3/4 pelvic prolapse.
3) Baseline and follow-up tests: physical examination, urinalysis, cystourethroscopy, urodynamics, provocative pad weights, 3-day voiding diary, Stamey score, and validated questionnaires.
4) Surgical technique: a small incision is made between the labia majora and minora at the level of the urethral meatus. A trocar is passed under fluoroscopic guidance to the urethrovesical junction. The device is delivered and the balloon filled with 1.5 ml of dilute contrast. The injection port for balloon adjustment is placed into a subcutaneous pouch in the labia majora.
5) Device adjustments: performed percutaneously beginning 6 weeks post-operatively.
6) Complications: all adverse events will be reported and analyzed.

**Results:** 161 subjects have been implanted to date with 1 year of data available on 137 patients. The mean age of implanted patients is 67.8 years (31-94 years). Mean Stamey score improved by ≥1 at 1 year in 76.6% of patients (82/107). Significant improvement in the mean Incontinence Quality of Life Questionnaire score was noted at 1 year; 70.5 versus 36.0 at baseline (p<0.001). Additionally, reductions in the mean Urogenital Distress Inventory (32.7 at 1 year from 61.3 at baseline; p<0.001) and Incontinence Impact Questionnaire (23.4 at 1 year from 54.2 at baseline; p<0.001) scores were noted. Mean provocative pad weight decreased from 49.7 grams at baseline to 11.9 grams at 1 year (p<0.001). Difficulty of surgery was rated as mild, moderate, or severe in 62%, 29%, and 9% of procedures respectively. The mean number of balloon volume adjustments through 1 year was 2.1 (0-8). Device or procedure related adverse events were reported in 56.2% of subjects. Of these, 81% were considered to be of mild severity.

**Conclusions:** Preliminary data suggest the Uromedica ACT system is an effective, simple, and minimally invasive treatment for recurrent female SUI. The balloons are easily adjusted percutaneously to enhance efficacy. Complications are usually of mild severity. Additional follow-up will determine the long-term durability of this device.

**Poster #7**

**PREOPERATIVE URODYNAMIC TESTING DOES NOT PREDICT POSTOPERATIVE VOIDING DYSFUNCTION AMONG WOMEN UNDERGOING SURGERY FOR SUI: RESULTS FROM A PROSPECTIVE RANDOMIZED TRIAL COMPARING BURCH VERSUS PUBOVAGINAL SLING**

Gary Lemack; Stephen Krauss; Heather Litman; Marypat Fitzgerald; Toby Chai; Charles Nager; Larry Sirls; Halina Zyczynski; Jan Baker; Keith Lloyd; WD Steers for the Urinary Incontinence Treatment Network

**Introduction:** Voiding dysfunction (VD) occurs in 2-20% of patients following surgery for stress urinary incontinence (SUI). Urodynamics studies (UDS) have been proposed as a means of identifying patients at risk for VD. Our objective was to determine if preoperative urodynamic findings predict postoperative VD after pubovaginal sling (PVS) and Burch colposuspension (BC).
**Materials and Methods:** Data were analyzed from preoperative, standardized UDS performed on participants in the Stress Incontinence Treatment Efficacy Trial, in which women with SUI were randomized to undergo PVS or BC. VD was defined as use of a bladder catheter (urethral, suprapubic or intermittent) after the 6 week postoperative visit or reoperation for revision or “takedown” of a PVS or BC. UDS parameters investigated were: PVR, maximum flow during non-invasive flowmetry (NIF max), maximum flow during pressure flow study, change in vesical pressure at maximum flow, change in abdominal pressure at maximum flow, and change in detrusor pressure at maximum flow. NIF max values were available in 588 women, intubated maximum flow values in 620, and complete pressure-flow data in 386. The study excluded women with preoperative PVR > 150ml or NIF max of < 12 ml/second unless advanced pelvic prolapse was also present. T tests or Wilcoxon rank sum tests were used to compare mean or median UDS values by treatment group.

**Results:** Among the 655 women who were randomized and underwent surgery, 57 developed VD, including 8 in BC and 49 in PVS groups. Thirty-eight women used a catheter beyond post-op week 6, 3 underwent surgical “takedown” and 16 had both prolonged catheter use (> 6 weeks post-op) and a surgical “takedown”. All 19 women who had surgery takedown were in the PVS group. No pre-operative UDS finding was associated with an increased risk of VD in any group. Mean NIF max values were similar among women with VD compared to those without VD in the entire group (23.4 vs. 25.7 ml/sec, p=0.16), and in the PVS group (23.1 vs. 25.7, p=0.17). Voiding pressures and degree of abdominal straining were not associated with postoperative VD.

**Conclusions:** In this carefully selected group of women with stress-predominant urinary incontinence, preoperative UDS did not predict postoperative voiding dysfunction or the risk for surgical revision in the PVS group. Our findings may be limited by our stringent exclusion criteria, and studying a group believed to be at greater risk for VD could alter these findings. Additional analysis using subjective measures to define voiding dysfunction is also warranted to further determine the ability of UDS to stratify risk of postoperative VD, which appears to be limited in the current study.

**Poster #8**

**TRANSVAGINAL MESH SLING WITH BONE ANCHORS: EFFECT OF VALSALVA LEAK POINT PRESSURE AND PRIOR PELVIC SURGERY ON OUTCOMES**

David E. Rapp; Fred E. Govier; Kathleen C. Kobashi
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**Introduction and Objectives:** A variety of surgical options exist for the treatment of stress urinary incontinence (SUI). Some evidence suggests that severe ISD or previous pelvic surgery may be associated with worse outcomes following transvaginal urethral sling surgery. We believe that the transvaginal bone anchored sling allows for ease of tensioning, and may avoid many of the potential complications associated with the retropubic or transobturator passage of the midurethral sling. Accordingly, the authors feel that, despite our primary use of synthetic mid-urethral slings, the bone-anchored sling may remain useful in the complex patient. Accordingly, we sought to define our outcomes following transvaginal bone anchored sling placement in a more complex patient population.

**Methods:** A retrospective review was performed to assess outcomes in patients undergoing transvaginal mesh sling with bone anchors at our institution between September 2002 and June 2007. Data analysis focused on patients with low valsalva leak point pressures (VLPP) and a history of prior pelvic reconstructive and anti-incontinence surgery. Accordingly, patients were stratified by VLPP less than 60 (Cohort A) and 30 (Cohort B). In addition, cohorts C and D were defined as patients previously undergoing 1 versus 2 or more previous surgeries. Subjective satisfaction was assessed using a questionnaire comprising separate validated incontinence and quality of life questionnaires (UDI-6, IIQ-7), as well as additional items addressing global satisfaction. Patients were asked to fill out questionnaires at 6 months, 12 months, and annually thereafter. Primary study outcomes included patients achieving <1 incontinence episode weekly, validated symptom score levels, overall patient satisfaction, and subjective percent improvement.
Results: Groups A-D comprised 158, 63, 91, and 29 patients, respectively. Of these patients 98 (62%), 42 (67%), 59 (65%), and 20 (69%) of patients completed questionnaire surveillance, with a mean follow-up of 22, 23, 31, and 20 months, respectively. Dry rates and percentage of patients achieving <1 episode of incontinence/weekly were similar when comparing VLPP cohorts (Group A, 22% and 59%) (Group B, 29% and 58%). These outcomes were lower in patients undergoing previous surgery (Group C, 14% and 48%) (Group D, 5% and 35%). Subjective improvements of greater than 70% were reported by 62, 67, 60, and 56% of patients. UDI scores were significantly higher in patients undergoing 2 or more previous surgeries as compared to those with VLPP less than 30. As well, IIQ scores in these patients were significantly higher then the VLPP cohorts, although this finding only achieved significance in those patients with VLPP less than 60.

Conclusions: Our data suggest that the transvaginal mesh sling with bone anchors provides satisfactory outcomes in the treatment of SUI. These benefits are seen in patients with more significant ISD marked by lower VLPPs. Incontinence episodes and subjective satisfaction outcomes seem to be worse in patients with previous surgeries. This finding is particularly pronounced in patients with a history of 2 or more surgeries. Continued efforts are necessary to determine the best method of intervention in the complex patient cohorts.

Poster #9

LONG TERM DURABILITY AND FUNCTIONAL OUTCOMES AMONG PATIENTS WITH ARTIFICIAL URINARY SPHINCTERS: A 10 YEAR RETROSPECTIVE REVIEW FROM THE UNIVERSITY OF MICHIGAN
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University of Michigan Department of Urology

Introduction: The artificial urinary sphincter (AUS) continues to be one of the most effective surgical treatments for severe urinary incontinence. The long-term durability and functional outcome remains unclear. This study sought to report the AUS complication rates, associated risk factors with complications, and long-term quality of life and durability.

Methods: This single institution study reports the outcomes of 124 consecutive index cases of AUS from 1996 to 2006 for complications (infection, erosion, and mechanical failure). Bivariate statistics and multivariable logistic models were used to identify patient (age, comorbid conditions, history of pelvic radiation) and AUS characteristics associated with complications. Functional outcomes and long-term durability were assessed using a cross sectional, validated health related quality of life survey and a product limit estimates, respectively.

Results: Among the 124 male patients, the median follow up was 6.8 years. The overall complication rate for patients undergoing an AUS was 37.0%, with mechanical failure the most common cause (n=29), followed by erosion (n=10) and then infection (n=7). Significant differences between complications and specific patient and AUS characteristics risk factors were not found. Functional outcomes appeared stable with similar mild-moderate urinary incontinence severity and 0-1 daily pad usage at 0-4 years, 4-8 years and >8 year intervals. Long-term durability was notable with 36% having complications (requiring surgical revision or removal) within 10 years and most events occurring within first 48 months.

Conclusions: Long-term durability and functional outcomes are achievable for the AMS 800, but there are appreciable complication rates for erosion, mechanical failure and infection in the first 48 months from implantation.
ARTIFICIAL URINARY SPHINCTER VS MALE PERINEAL SLING FOR TREATMENT OF POST PROSTATECTOMY INCONTINENCE: WHAT DO PATIENTS CHOOSE?

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New York University, New York, NY

Introduction and Objective: Currently there are two surgical procedures to treat post prostatectomy stress incontinence (PPI), artificial urinary sphincter (AUS) and male sling (MS). In a large incontinence practice we sought to determine the patient and physician reasons for choosing an AUS or MPS and compare the surgeon’s primary recommendation to the actual procedure chosen by the patient.

Methods: The charts of 133 consecutive men with PPI who underwent their first surgical procedure to correct incontinence during a time period when both AUS (AMS 800) and MS (InVance sling) were being preformed (April 2004 – Feb. 2007) were reviewed. Secondary procedures and revisions are not included. Patients were informed of the well-established long-term satisfaction rates for AUS as well as the available, shorter-term data on MS. After evaluation, the surgeon made a recommendation to the patient for the preferred operation for the patient’s condition: high grade PPI (gravitational or pad test >400 gms/24 hrs) - AUS; moderate grade PPI (pad test 100-400 gms/24 hrs) - AUS or MS; mild PPI (pad test < 100 gms/24 hrs) or recurrent uncontrolled stricture – MS. Based on surgeon’s recommendation, expected outcomes, and other factors related to surgery and the devices themselves, patients chose the procedure they wanted. Surgeon’s preferred procedure and patient choice were compared and reasons for patient choice were determined.

Results: 84 MS (63%) and 49 AUS (37%) were preformed. There was no difference in the mean age (68.0 vs. 67.5, p=0.73) or time from surgery/radiation causing incontinence until treatment (55.1 vs. 48.8 months, p=0.46) Surgeon recommendation as preferred procedure was AUS in 63(47%), MS in 46 (35%), and either in 24 (18%). When AUS was recommended, 47 men (75%) choose AUS while 16 (25%) choose MS. Of those going against the AUS recommendation 13 (81%) did not want a mechanical device and 3 (19%) said they would prefer to try a non-mechanical procedure first. When the urologist had no preference, 22/24 (92%) chose MS and 2 (8%) chose AUS. The two choosing AUS wanted the more proven definitive procedure. All 18 of those choosing MS did not want a mechanical device. No patient went against the physician recommendation for MS, 21 (88%) of whom stated that their incontinence was not severe enough to warrant an AUS and 3 (12%) who had stricture disease and were at high risk for an AUS complication.

Conclusions: When faced with a choice of AUS vs. MS, most, but not all adhere to urologist recommendation. When faced with no urologist preference 88% choose MPS. The primary reason for not choosing an AUS when it is preferred by the urologist is the desire to avoid a mechanical device.

PREVALENCE OF UNDIAGNOSED URINARY INCONTINENCE IN WOMEN

J. Quentin Clemens, MD, MSCI1; Lauren P. Wallner, MPH1; Sima Porten, MD, MPH2; Richard T. Meenan, MPH, PhD3; Maureen C. O’Keeffe Rosetti, MS1; Elizabeth A. Calhoun, PhD4; Aruna V. Sarma PhD1
1University of Michigan, Ann Arbor, MI; 2University of California San Francisco, San Francisco, CA; 3Center for Health Research, Kaiser Permanente Northwest, Portland, OR; 4University of Illinois at Chicago, Chicago, IL

Introduction and Objective: Many women report they do not discuss their urinary incontinence symptoms with their physicians. We attempted to quantify the rate of under-reporting by comparing patient-reported symptoms with physician coded diagnoses.

Methods: The Kaiser Permanente Northwest (KPNW) (Portland, Oregon) database was queried to identify women between the ages of 25-80 without neurologic disease or genitourinary malignancy. Questionnaires were completed by 875 of these women with no ICD-9 code for urinary incontinence in the medical record. This questionnaire included questions about the presence, type, duration, frequency, and severity of urinary incontinence. From these responses, women with Sandvik severity scores of moderate, severe or very severe were identified. Using the electronic medical record, the outpatient charts of these women were reviewed for the preceding 12 months to assess for documentation of incontinence.
Results: Fully 234 women (26.7%) demonstrated moderate, severe or very severe Sandvik incontinence severity scores. Of these, 43% reported isolated stress incontinence symptoms, 32% reported isolated urge incontinence symptoms, and 25% reported mixed symptoms. Chart reviews identified the presence of documented urinary incontinence symptoms in only 11 of these women (5%). Chart review characteristics are summarized in the Table.

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th>Mean</th>
<th>Median</th>
<th>No. with ≥1 contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Age</td>
<td>25-80</td>
<td>54.8</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>No. Office Contacts</td>
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<td>5.1</td>
<td>4</td>
<td>226/234 (97%)</td>
</tr>
<tr>
<td>No. Primary Care Contacts</td>
<td>0-11</td>
<td>2.4</td>
<td>2</td>
<td>204/234 (87%)</td>
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<tr>
<td>No. Ob/Gyn Contacts</td>
<td>0-10</td>
<td>0.5</td>
<td>0</td>
<td>49/234 (21%)</td>
</tr>
<tr>
<td>No. Contacts to Other Specialists</td>
<td>0-17</td>
<td>2.7</td>
<td>2</td>
<td>187/234 (80%)</td>
</tr>
<tr>
<td>No. Telephone Contacts</td>
<td>0-21</td>
<td>2.9</td>
<td>2</td>
<td>183/234 (78%)</td>
</tr>
</tbody>
</table>

Conclusions: In this population, approximately 25% of women without an incontinence diagnosis reported clinically significant incontinence symptoms. Based on chart review findings, women with undiagnosed incontinence were apparently unrecognized rather than uncoded. Given the availability of effective treatments, continued efforts to educate patients and caregivers to identify incontinence symptoms are warranted.

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Poster #12

MEASURING URINARY SENSATION: COMPARISON BETWEEN METHOD OF LIMITS AND METHOD OF LEVELS
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Introduction and Objective: Given the high-quality evidence supporting the role of afferent innervation in lower urinary tract (LUT) dysfunction, it is essential to validate clinical methods that quantify afferent nerve function. Two methods to assess Current Perception Thresholds (CPT) are Methods of Levels and Methods of Limits. These two methods differ: in the Method of Limits, sensory thresholds are dependent on the rate of change of the stimuli (slope of the ramp) while in the Methods of Levels the subject is forced to choose whether or not a stimulus is felt. Since there may be differences in CPT values obtained, we aimed to compare the 2 methods of obtaining CPT in the LUT to facilitate standardization and understand sources of variability in future studies.

Methods: With IRB approval, 21 women underwent standardized CPT testing of the urethra and bladder prior to and 1 to 2 days after reconstructive pelvic surgery. CPT values were obtained using the Method of Limits followed by the Method of Levels. Method of Limits: Stimulus was increased until the patient first perceived a change in the urethral or bladder sensation. This was recorded as the upper limit. The intensity was then decreased until the patient no longer perceived the stimulus; the last perceived value was recorded as the lower limit. We averaged the upper and lower limits to calculate a CPT by Method of Limits. Method of Levels was evaluated by applying 2 successive stimuli of differing intensities were presented by an automated program in a forced choice manner with the patient signaling which stimulus was stronger. The Neurometer® varied the intensity until the CPT threshold was consistent.
Results: The CPT measurements were highly correlated at all frequencies; however, absolute values obtained by the Methods of Levels were significantly lower than those obtained by the Method of Limits.

<table>
<thead>
<tr>
<th></th>
<th>Method of Levels Mean (STD)</th>
<th>Method of Limits Means (STD)</th>
<th>†P</th>
<th>Spearman’s rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-operative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 Hz</td>
<td>170 (119)</td>
<td>209 (114)</td>
<td>.0001</td>
<td>.934*</td>
</tr>
<tr>
<td>250 Hz</td>
<td>65 (37)</td>
<td>80 (40)</td>
<td>.0001</td>
<td>.926*</td>
</tr>
<tr>
<td>5 Hz</td>
<td>34 (34)</td>
<td>40 (38)</td>
<td>.008</td>
<td>.934*</td>
</tr>
<tr>
<td>Post-operative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 Hz</td>
<td>270 (17)</td>
<td>295 (172)</td>
<td>.0001</td>
<td>.984*</td>
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<tr>
<td>250 Hz</td>
<td>141 (112)</td>
<td>160 (124)</td>
<td>.0001</td>
<td>.988*</td>
</tr>
<tr>
<td>5 Hz</td>
<td>115 (160)</td>
<td>132 (162)</td>
<td>.0001</td>
<td>.961*</td>
</tr>
</tbody>
</table>

†Wilcoxon Signed Rank Test; * p<.001

Conclusion: These two methods may differ because the sensory thresholds in the Method of Limits are dependent on the rate of change of the stimuli (slope of the ramp). While it is possible that repetitive testing has a sensitizing effect, we believe that the observed differences may be due in part to a subject’s reaction time, which includes conscious perception of the stimulus, processing the information, and generating an action to indicate a response. During this period of information processing before the subject indicates a response, the stimulus continues to increase or decrease, leading to a small error in threshold measurement. We propose that future testing be standardized to use the Method of Levels for future lower urinary tract CPT measurements.

Poster #13

THE OUTCOME OF CYSTOCELE REPAIR USING PERIGEE® WITH BIOCOMPATABLE MATRIX (INTEXEN®): OUR EXPERIENCE WITH 26 CASES
Ayman Mahdy; Mostafa Elmissiry; Gamal Ghoniem
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Introduction: Since its use in anterior vaginal wall Prolapse repair, the synthetic Perigee® kit has gained wide satisfaction among female urologists and urogynecologists. This newly designed kit has the advantages of simultaneous repair of multiple fascial defects with short operative time and minimal postoperative morbidity. Unfortunately, the synthetic polypropylene mesh has a high incidence of erosion with a reported incidence of up to 45% (*). Recently a noncrosslinked porcine dermis graft (Intexen®) has been introduced in order to provide better tissue healing and a lower erosion rate.

Objective: The objective of our study is to evaluate outcome after using Perigee® with Intexen® in anterior vaginal Prolapse repair.

Methods: After IRB approval, we reviewed the charts of all patients who had Perigee/Intexen® repair during the period between July 2005 and August 2007. Twenty-six patients were included in this study. The collected preoperative data included patient age, Body Mass Index (BMI), parity, menopausal status, previous vaginal surgeries hysterectomy status presenting symptoms and pertinent physical findings. Success was defined as a postoperative anatomical stage 0 or I using the POP-Q staging system. Intra- and Postoperative complications were also recorded.
Results: The mean patients’ age was 64 years and mean BMI was 26.4. Average parity was 2.5. Twenty-two patients (85%) were postmenopausal. Regarding patients symptoms, all patients had the sense of bladder drooping and/or heaviness. Fourteen (54%) had additional symptoms including urinary incontinence in 11 cases (stress in 5, urge in 4 and mixed in 2 cases) and difficulty of urination (one case). Eleven cases (42.3%) had failed previous attempts for cystocele repair and 14 cases (53.8%) had hysterectomies. On clinical exam, 4 patients (15.4%) had stage II, 19 (73.1%) had stage III and 2 (7.7%) had stage IV anterior vaginal wall Prolapse. Seventeen patients (65.4%) had concomitant anterior and posterior vaginal wall prolapses. Vaginal changes related to low estrogen were found in 15 cases (57.7%). Out of the 26 patients, 24 patients (92%) were available for follow up. The follow up period ranged between 2 and 18 months with an average of 5.75 months. The success rate was 100% with 13 cases (54%) had stage 0 anterior vaginal wall Prolapse after surgery. The complication rate was 25 % with one case had bladder perforation during surgery (4.2%), one had intraoperative incidental cystotomy during dissection with subsequent postoperative urinary tract infection, one had wound dehiscence and one had vaginal erosion. In the last case, we interestingly found the erosion to be related to the (Riv-Fix) part of the upper right arm of the mesh. This part of the graft is the knob at the connection between the synthetic arm and the biologic mesh.

Conclusions: Our short term results with perigee using the noncrosslinked porcine dermis graft (Intexen®) show this is an efficient method of anterior vaginal wall Prolapse repair with high success rate and lower incidence of patient morbidity. Importantly, the use of this material may have a role in decreased incidence of mesh erosion. Long-term prospective studies comparing the outcome of different graft materials in female pelvic Prolapse repair are required.

Poster #14

THE EFFECT OF POSTERIOR COMPARTMENT REPAIR ON OUTCOME OF SUB-URETHRAL SLING

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UCLA Department of Urology, Los Angeles, CA

Objective: While concomitant repair of posterior compartment defects (PCD) has traditionally been thought to improve the cure rate of stress urinary incontinence (SUI) surgery, recent publications suggest PCD repair increases SUI recurrence after surgical SUI treatment. Thus, repair of PCD at the time of SUI surgery remains controversial. Our objective was to determine if concurrent PCD repair affects SUI outcome in patients undergoing a distal urethral polypropylene sling (DUPS).

Methods: All patients completed a 6 month postoperative Urodynamic Distress Inventory-Short Form (UDI-6) and underwent DUPS with concurrent PCD repair (PCDR group) or DUPS alone, leaving a PCD unrepaired (non-PCDR group). Women having concurrent urethrolysis were included, but those having other prolapse surgery were excluded. Baden-Walker grading was performed and concurrent prolapse, prior incontinence surgery, pad use, and SEAPI staging of valsalva leak point pressure (VLPP) was also recorded. Continuous data were compared via t-test and categorical data via Pearson Chi Square.

Results: 54 women were in the non-PCDR group and 40 were in the PCDR group. The mean age of the cohort was 57 years. The PCD grading for the cohort was: grade 0-1= 50%, grade 2= 33%, grade 3-4= 17%. The PCDR group had higher grade PCDs than the non-PCDR group (75% vs. 31% grade 2-4, respectively, p<0.0001). Preoperatively, the PCDR group reported lower mean pad use (2.0 vs. 3.4 pads per day, p=0.02), but equivalent bother due to SUI (100% vs. 93% moderately-severely bothered, p=0.2) compared to the non-PCDR group, respectively. The non-PCDR group did not differ significantly from the PCDR group with respect to age (56 vs. 59 years, p=0.16), cystocele grade (97% vs. 98% ≤ grade 2, p=0.31), uterine/vault prolapse grade (98% vs. 96% ≤ grade 1, p=0.74), VLPP (41% vs. 53% SEAPI stage 2-3, p=0.27), concurrent urethrolysis (21% vs. 35%, p=0.23), or prior anti-incontinence surgery (28% vs. 31%, p=0.68), respectively. Postoperatively, there was no difference in the PCDR and non-PCDR groups with respect to bother due to SUI (85% vs. 87% with none-mild bother, p=0.78) or pad use (0.78 vs. 0.82 pads per day, p=0.88), respectively.

Conclusions: PCD repair at the time of sling placement for SUI does not appear to influence recurrence of SUI symptoms as assessed by patient self-reporting of symptoms and pad use. This early data suggests that in the era of modern sub-urethral sling surgery, SUI outcome appears to be independent of PCD repair. Further investigation via a prospective, randomized trial is needed to confirm these findings.
**Introduction and Objective:** Evaluation and quantification of the degree of pelvic organ prolapse (POP) remains a clinical challenge. In 1996, the International Continence Society (ICS) and International Urogynecological Association (IUGA) developed a standardized method, termed the pelvic organ prolapse quantification scale, the POP-Q. Despite the strength of evidence for reproducibility of the POP-Q measurement, it has not been widely used. One study cited its complexity as one of the barriers to adoption. A method of teaching the POP-Q is needed that is simple and effective in order to increase its use, particularly among urologists. The ABCs of POP-Q is pneumonic to help people remember the anatomic points of the POP-Q. We propose to compare the “ABCs of POP-Q” method with the teaching video of the POP-Q provided by the ICS. We hypothesize that the “ABCs of POP-Q” will be as effective as the ICS video in understanding the concept of the POP-Q and applying it in clinical situations. The objective of this study is to compare the efficacy of two methods of teaching the POP-Q to urology residents.

**Methods:** The participants of the 2007 National Urology Resident Preceptorship Program in Female Pelvic Medicine & Reconstructive Surgery (NURPP) were given instruction on the POP-Q using two teaching methods (1) “ABCs of POP-Q” lecture and (2) the ICS POP-Q video in a cross over design. After consent was obtained, participants were randomized by a numerical method to one of two groups, determining whether they received the “ABCs of POP-Q” lecture first or the ICS video first. After each teaching method, the participants answered a 2 page questionnaire. The questionnaire also included: age, gender, PGY level, previous exposure to the POP-Q, and length of time since exposure to the POP-Q. The questionnaire also asked the participant one question each regarding their understanding and confidence of the POP-Q scale. The final two questions were two examples of POP in which POPQ values were given, and the anatomic representation was drawn on a grid by the participant. Associations of carryover effect and calendar effect were evaluated with the Pearson Chi Square test or Fisher’s exact and the Wilcoxon rank sum test. Associations of the method effect for both period 1 and period 2 were performed with the Mc Nemar Chi Square test and the paired t-test. A p<0.05 was considered significant. SPSS 11.0 (SPSS Inc., Chicago, Illinois, USA) was used for all analysis. This study was approved by the institutional review board.

**Results:** A total of 41 people attending the 2007 NURPP gave consent and participated in this study. 23 participants were in group one and received the “ABC’s of POP-Q” lecture first, then the ICS video. 18 participants were in group 2 and watched the ICS video first, then ABCs of POP-Q lecture. There were no significant differences in the two groups in age, gender, PGY level, or prior POPQ demonstration. The largest represented group was PGY-4 urology residents, 9/23 (39%) in group one, and 11/18 (61%). There were 16 (70%) men and 7 (30%) women in group one, and 13 (72%) men and 4 (28%) women in group two. In order to evaluate for carryover effect of the method given in the first period into the second period, the questionnaire results of the understanding, confidence, and 2 case studies were compared within methods. Based on this analysis, there is evidence of carryover effect. In order to evaluate the calendar (temporal) effect in which the knowledge of the subject is improving or worsening with the simple passage of time, the results were compared within time periods. Based on this analysis, there is no evidence of calendar effect. Given that there is some evidence for carryover effect in this crossover design study, the overall results for the first time period only are presented. There were no significant differences in outcomes of understanding and confidence, as well as in demonstrating the learned knowledge on two clinical case studies of pelvic organ prolapse. The ABCs of POP-Q lecture produced equivalent outcomes when compared to the ICS video.

**Discussion:** Effective medical education and teaching is essential to improving the quality of evidence-based medicine and ultimately patient care. Simplified validated teaching methods are needed. The ABCs of POP-Q was developed to help urology residents who are learning about POP for the first time understand the POP-Q scale.

**Conclusion:** The ABCs of POP-Q is as effective a teaching method as the video produced by the ICS to teach the POP-Q.
**Poster #16**

**STANDARDIZATION OF PELVIC ORGAN PROLAPSE ON MRI**

D. M. Werle, MD; J. Smith, MD; D. W. Entrikin, MD; S. S. Lentz, MD; J. R. Leyendecker, MD; G. Badlani, MD

**Wake Forest University School of Medicine**

**Introduction:** The coexistence of stress urinary incontinence (SUI) and pelvic organ prolapse (POP) occurs as a result of pelvic floor weakening. Assessment requires both anatomical and physiological evaluation. Underdiagnosis of POP by urologists has been reported. The role of dynamic MRI for accurate anatomy of descent is not standardized. Surgical correction of SUI/POP is centered around symptomatic relief and restoration of normal pelvic floor anatomy.

**Objectives:** The intent of this project is to: 1. Review pelvic floor anatomy as seen on MRI pertinent to POP/SUI. 2. Discuss our approach to standardize POP evaluation based on anatomical landmarks seen on MRI. 3. Correlate the findings on MRI to the standard physical evaluation.

**Materials and Methods:** 26 patients presenting with symptoms of SUI and or POP were evaluated with history and physical evaluation, voiding diary and video urodynamic evaluation. A pelvic MRI at rest and with standardized stress instruction (dynamic) was done. Measurements of the prolapse were done based on the H line (AP width of the levator hiatus), M line (vertical descent of the levator hiatus from the pubococcygeal line), and the pubococcygeal line (a line drawn from the inferior aspect of the pubic symphysis to the last coccygeal interspace).

**Results:** The dynamic MRI provided a much more accurate assessment of the middle and posterior compartments, in addition to improving the imaging of the anterior compartment. Static MRI does not provide physiological assessment for SUI and leak pressures. However, coexisting pelvic pathology can be discovered with the dynamic MRI.

**Conclusions:** The cost/benefit ratio is best modeled on the need for reoperation for prolapse that was underdiagnosed at initial surgery.

**Poster #17**

**CYSTOCELE GRADING: DOES SUPINE EXAMINATION CORRELATE WITH STANDING CYSTOGRAPHIC FINDINGS?**

Alienor Gilchrist; Amit Gupta; Philippe Zimmern

**University of Texas Southwestern, Dallas, Texas**

**Introduction and Objectives:** To evaluate the relationship between Baden-Walker physical findings and lateral view standing cystogram in women with symptomatic anterior compartment prolapse.

**Methods:** Following IRB approval, all consecutive patients operated on for symptomatic anterior compartment prolapse between 2004 – 2007 were identified. Baden Walker exam findings were compared to standing cystogram results for all patients. Prolapse was measured in the supine position by the same examiner using the four-point scale described by Baden and Walker. Height of cystocele descent on standing lateral view cystogram with straining was determined by a blinded assessor. Height of the cystocele was measured from the inferior edge of the pubic symphysis to the inferior edge of the cystocele and categorized using the previously described radiographic grading system: grade 1: <2cm, grade 2: 2-5cm, grade 3: >5cm. The assessor was tested for intra-reader reliability. Data were collected regarding age, race, BMI, parity and prior pelvic surgery. All data were analyzed using SAS statistical software. Weighted kappa statistic was used to quantify agreement between Baden Walker and radiographic grading, with acceptable agreement defined a priori as $\kappa > 0.6$. 
Results: One hundred and forty eight women met inclusion criteria with median age 63 years (33-88), median BMI 25 (19-45); 39% had prior pelvic surgery. Frequency of Baden grade and corresponding radiographic grade are found in Table 1. Median height of cystocele for each Baden grade was 0.6cm (IQR 0.4-0.5) for grade 0, 1.2cm (IQR 0.5-1.9) for grade 1, 1.5cm (IQR 0.9-2.4) for grade 2 and 3.1cm (IQR 1.7-4.5) for grade 3 (Figure 1). Intra-rater reliability was high. Poor agreement (κ < 0.2) was found between the two grading systems. Race, age, BMI, parity and prior surgery demonstrated no effect on the agreement between the two systems (κ < 0.2).

Conclusion: Poor agreement was found between the Baden Walker scale and radiographic height of cystocele. Objective characterization of descent can be obtained by cystogram. We found it more reliable than the examination supine as demonstrated by the great range of physical exam grades for a given radiologic value.

<table>
<thead>
<tr>
<th>Rad. grade</th>
<th>Baden grade</th>
<th>patients per grade (%)</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 (0.0)</td>
<td>3 (2.0)</td>
<td>6 (4.1)</td>
</tr>
<tr>
<td>1</td>
<td>2 (1.4)</td>
<td>10 (6.8)</td>
<td>33 (22.3)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>3 (2.0)</td>
<td>26 (17.6)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Total</td>
<td>2 (1.4)</td>
<td>16 (10.8)</td>
<td>66 (44.6)</td>
</tr>
</tbody>
</table>
Materials and Methods: This is a prospective IRB-approved study evaluating women with primary SUI. One hundred sequential women (mean age, 53.8 years) answered questionnaires on initial interview, including the Urinary Distress Index (UDI-6), Incontinence Impact Questionnaire (IIQ-7), the American Urologic Association QoL questionnaire, number of pads per day, as well as questions regarding treatment options. Treatment options included major surgeries, minor surgeries, clinical procedures and medication. The patients were then subjected to physical and urodynamic evaluation before going to the definitive treatment. Statistical analysis was performed using Chi Squared T-tests and the ANOVA logistic regression models with Pearson correlations.

Results: Of the 100 women who submitted the questionnaires, 60 were treated in our institution with their clinical, urodynamic data and final treatment plan being available for analysis. Severe symptoms were found to be significantly correlated with Q-tip angle, Valsalva Leak Point Pressure (VLPP), Maximum Urethral Pressure (MUP), and Functional Urethral Length (FUL) (R= -0.76, p<0.01). The only urodynamic parameter that correlated significantly with quality of life bother was the VLPP (R= -0.29, p=0.011). Many patients shifted to a different treatment modality rather than that they initially choose before evaluation. The important parameters that had a significant relation with this treatment shift were patient’s age, symptom severity, Q-tip angle, and VLPP (p<0.05). The statistically significant correlations are listed in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Correlation</th>
<th>p-Value</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worse UDI-6</td>
<td>Q-tip angle &gt;50, VLPP &lt; 60 cmH2O, MUP &lt; 40 cmH2O, FUL &lt; 3cm</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>Severe QoL Bother</td>
<td>VLPP &lt; 60 cmH2O</td>
<td>&lt;0.011</td>
<td>- 0.29</td>
</tr>
<tr>
<td>Treatment Shift</td>
<td>Young age, Severe UDI-6, Q-tip angle &gt;50, VLPP &lt; 60 cmH2O</td>
<td>&lt;0.05</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: Although patient’s initial choice for treatment is affected by several factors, the final treatment plan is more influenced by the clinical and urodynamic evaluation. The integration of patient’s choice and evaluation may lead to better patient satisfaction.

Poster #19

BOVINE DERMIS: A NOVEL BIOLOGIC SUBSTITUTE FOR AUTOLOGOUS TISSUE IN SLING SURGERY
Christopher M. Wilson; B. Jill Williams; Seth Bilello; Alex Gomelsky
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Introduction and Objectives: Acellular bovine dermis (BOV) is a novel material for surgical treatment of stress urinary incontinence (SUI), and lacks an assessment of clinical outcomes or in vivo biocompatibility. We evaluate this material in a series of women at high risk for surgical failure (advanced age, hypoestrogenic state, failure of previous anti-incontinence surgery, intrinsic sphincter deficiency) and compare outcomes with autologous rectus fascia (ARF) in a similar population.
Methods: Women were assigned to a sling material by hospital, as BOV was not available at one of two participating institutions. All slings were placed at the bladder neck without tension. Pre- and postoperative assessment included pelvic examination, SEAPI assessment (stress incontinence, emptying, anatomy, protection, inhibition), and quality of life (QOL) questionnaires {SF-IIQ-7, UDI-6, and visual analog scale (VAS)}. “Cure” was defined as SEAPI subjective composite=0 and subjective satisfaction. “Cure” of SUI was defined as SEAPI subjective Stress Incontinence subset=0 and a negative cough-stress test. Demographics and perioperative morbidity were abstracted from the hospital and clinic charts. Statistical evaluation of perioperative variables was conducted using Chi-square analysis.

Results: Eighty-five women completed a minimum follow-up of 12 months (48 ARF, 37 BOV). Mean follow-up for the ARF group was statistically longer (29.2 vs. 19.5 months). Women in the BOV group were significantly different from the ARF group in several categories (older, more parous, more undergoing topical hormone replacement, and more with previous pelvic surgery). Preoperative SEAPI scores and QOL measures were not statistically different (NS). Overall cure rates for ARF and BOV were 60.4% and 54.1%, respectively (NS), while cure rates of SUI for ARF and BOV were 81.3% and 83.8%, respectively (NS). Over two-thirds of women in each group had no perioperative complications; however, more women had abdominal wound complications and hospital readmissions due to various factors following ARF sling. For each material, there was a significant postoperative improvement in SEAPI scores and all QOL indices, while improvement was similar between ARF and BOV groups (NS). Histological evaluation of a BOV sling at reoperation for recurrent SUI revealed complete integration without encapsulation.

Conclusions: At short-term follow-up, bovine dermis appears to be a promising substitute for ARF in a population at “high-risk” for surgical failure. Global and SUI-specific clinical outcomes are similar to the ARF sling, and rates of complications appear to be low. As other xenografts have been previously associated with unpredictable biocompatibility outcomes, close long-term follow-up is needed before indications for this material can be expanded.

Poster #20

DOES SEVERITY OF OBJECTIVE DEGREE OF STRESS INCONTINENCE (SUI) PREDICT DIAGNOSIS OF SUI BY URODYNAMICS (UDS) OR PHYSICAL EXAM?
Ariana L. Smith; Christian O. Twiss; Ja-Hong Kim; Veronica Triaca; Larissa V. Rodriguez; Shlomo Raz
UCLA Medical Center, Los Angeles, CA

Purpose: To assess the effectiveness of severity of symptoms of SUI to predict an objective diagnosis of SUI by valsalva leak point pressure (VLPP) on UDS and cough test on physical exam (PE).

Materials and Methods: We evaluated 174 consecutive women (mean age 61.7 years, range 22 to 90) with the complaint of SUI. 86 of these patients reported symptoms of mixed urinary incontinence. Patient history was obtained and the subjective degree of SUI and pad use was graded as 0, 1, 2, or 3 according to the SEAPI classification. PE was performed at half bladder capacity and patients were tested for leakage of urine with cough. Multichannel video UDS were performed according to International Continence Society (ICS) recommendations. VLPP was determined at half bladder capacity with a 7F catheter; the abdominal pressure was measured as the difference from baseline at the time of leakage. Ordinal data was analyzed with Spearman Correlation and nominal data was analyzed with Pearson chi square.

Results: An objective diagnosis of SUI was confirmed in 68% of patients by cough test or VLPP. Although positive cough test had a higher predictive value than VLPP (65 vs. 29% of patients), degree of symptoms of SUI on SEAPI correlated moderately with VLPP values with more severe symptoms being more likely to present with lower VLPP (Table 1, r=0.4, p<0.0001). Association was stronger between subjective degree of incontinence and positive cough test (Table 2, p<0.0001). Although there was a significant correlation between pad use and degree of subjective symptoms (r=0.447, p<0.0001), no significant correlation was found between pad use and VLPP (r=0.1470, p =0.06). There was a highly significant association between pad use and positive cough test (p=0.0003). In patients with mild SUI, VLPP was rarely positive. In this group, if cough test was negative, VLPP was almost never positive (1/34, 2.9%). In patients with subjective grade 2 or 3 SUI VLPP was often positive; if cough test was negative VLPP confirmed objective diagnosis of SUI in 29% of patients.
Conclusions: The subjective degree of SUI predicted the objective findings of SUI by cough test and VLPP. Pad use also predicted cough test, but not VLPP. We conclude that UDS rarely confirm the diagnosis in patients with mild SUI by SEAPI score. UDS did assist with confirmation of symptoms in patients with higher grades of SUI and a negative cough test. A good physical exam is invaluable in reproducing patient symptoms with all grades of incontinence.

<table>
<thead>
<tr>
<th>SUI Grade</th>
<th>No VLPP</th>
<th>VLPP &gt;80</th>
<th>VLPP 30-80</th>
<th>VLPP&lt;30</th>
<th>Cough -</th>
<th>Cough +</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55 (93%)</td>
<td>0 (0%)</td>
<td>4 (7%)</td>
<td>0 (0%)</td>
<td>34 (63%)</td>
<td>20 (37%)</td>
</tr>
<tr>
<td>2</td>
<td>41 (69%)</td>
<td>4 (7%)</td>
<td>10 (17%)</td>
<td>4 (7%)</td>
<td>14 (24%)</td>
<td>44 (76%)</td>
</tr>
<tr>
<td>3</td>
<td>28 (50%)</td>
<td>6 (11%)</td>
<td>9 (16%)</td>
<td>13 (23%)</td>
<td>3 (6%)</td>
<td>49 (94%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pad Grade</th>
<th>0 (81%)</th>
<th>1 (6%)</th>
<th>2 (13%)</th>
<th>0 (0%)</th>
<th>9 (69%)</th>
<th>4 (31%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17 (89%)</td>
<td>0 (0%)</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>11 (62%)</td>
<td>7 (39%)</td>
</tr>
<tr>
<td>2</td>
<td>22 (69%)</td>
<td>4 (13%)</td>
<td>3 (9%)</td>
<td>3 (9%)</td>
<td>7 (24%)</td>
<td>22 (76%)</td>
</tr>
<tr>
<td>3</td>
<td>64 (66%)</td>
<td>7 (7%)</td>
<td>15 (15%)</td>
<td>11 (11%)</td>
<td>23 (24%)</td>
<td>73 (76%)</td>
</tr>
</tbody>
</table>

Table 1: VLPP and Cough test in patients with grades 1-3 symptomatic SUI and grades 0-3 pad use.

**Poster #21**

**CREATING TAXONOMY AND ASSESSING PROFICIENCY IN URODYNAMIC EDUCATION OF THE UROLOGY RESIDENT**

Harriette Scarpero, MD
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN

**Introduction and Objectives:** As of 2002, a mandate from the Accreditation Council for Graduate Medical Education (ACGME) requires the development and or implementation of new assessment techniques that address and evaluate resident performance within the core competencies. This study addressed this challenge to create a competency based curriculum and assessment method for urodynamic (UDS) teaching. The one year experience with this curriculum innovation is reported.

**Methods:** First creating taxonomy for UDS, knowledge and skill sets were divided into five measurable components: terminology and theory, setting up the study, running the study, interpreting the study, and reporting UDS. Within the five components, specific skills were enumerated. Assessment was by an objective structured assessment of technical skills (OSAT). The grading scale used was a 5 item scale of proficiency from novice to expert (Dreyfus model). All residents received a copy of the curriculum with supporting references. First and second year urology residents (N= 5) participated in this UDS proficiency program during an outpatient clinic rotation. One day a week, during the 3 month rotation was spent performing UDS with a single attending urologist (HS). The measurable components of UDS were explained and demonstrated during all of those UDS tests. UDS knowledge and skills were reinforced by a series of didactic lectures on urodynamics, UDS interpretation conferences, and an UDS lab practicum. At the end of the rotation, residents performed a supervised UDS study and were evaluated by the described method by the same attending urologist (HS). Resident satisfaction and perception of learning benefit from the program were assessed by an anonymous questionnaire at the end of the rotation. Questionnaires were kept and responses recorded by a third party to guard against identification.

**Results:** For the educator this taxonomy simplified the ability to assess levels of performance and separate proficiency in skills and knowledge. It provided a standardized and repeatable method by which to evaluate progression of proficiency. Anonymous feedback from resident questionnaires (4 of 5 responding) suggested that practical teaching methods of supervised UDS performance, the UDS lab, and review of UDS tracings is preferred over didactic lectures related to UDS and voiding dysfunction. This program was perceived to cover all urodynamic learning needs, improve resident UDS comprehension, and improve their confidence with UDS performance.

**Conclusion:** A competency based approach to UDS teaching can be achieved as early experience in one urology residency program suggests. The educational benefit of this curriculum requires continued evaluation which would be strengthened by the addition of new objective assessment methods and multicenter collaboration.
Poster #22

URODYNAMICS CURRICULUM FOR UROLOGY RESIDENTS (UCUR)
E.R. Mueller; K. Kenton; H. M. Scarpero; J.C. Winters
Loyola University Medical Center Maywood, IL; Vanderbilt University Medical Center Nashville, TN; Louisiana State University Health Sciences Center New Orleans, LA

Introduction: The Society of Urologic Chairpersons and Program Directors (SUCPD) recognized the need for a standardized urodynamics (UDS) curriculum for urology residents in the United States. The Society of Female Urology and Urodynamics (SUFU) embraced this task as one of their educational objectives. One logical and systematic approach to curriculum development includes defining the problem, performing a needs assessment, the development of goals and specific objectives, educational strategies, implementation and evaluation/feedback. The needs assessments should target both the learners (residents) and the experts in the field. We report the results of two needs assessments that were performed in 2006.

Methods: We administered a needs assessment questionnaire on urology resident urodynamic training to participants of the 2006 SUFU Annual Meeting and a 2006 University Of Chicago sponsored urology review course (BRC). SPSS (Version 13) was used for data entry and analysis. Chi-square test of association was used for nominal data. Data were considered significant at the .05 level.

Results: One hundred and twenty-nine questionnaires were completed and analyzed. Fifty-four (42%) of the questionnaires were obtained at the BRC and the remaining from the SUFU annual meeting. Eighty-two percent of responding physicians at the SUFU meeting had obtained fellowship training. Eighty-seven percent of residents and 32% of post-resident physicians (attendings) received their urodynamics training during their residency. Residents currently receive lectures (77%), interpret (84%) and observe (82%) urodynamics in their residency. Only 31% of residents have performed an urodynamics procedure. Eighty-two percent and 89% of residents and attendings believe residents would benefit from more formal training and 80% of both groups believe that residents should perform urodynamics testing prior to leaving residency. Lastly, 83% of residents and 63% of attendings believe that urology residents should be “experts” in urodynamics prior to graduation.

Conclusions: We are developing a curriculum to teach urodynamics to urology residents in the United States. The needs analysis along with the expert opinion of the members of SUCPD and SUFU have identified that urodynamics training is residency is currently inadequate. Data from the needs analysis will be used to design the urodynamics curriculum.


Poster #23

ANALYSIS OF RHYTHMIC RECTAL CONTRACTIONS DURING FILLING CYSTOMETRY IN WOMAN
Françoise Valentini; Brigitte Marti; Gilberte Robain; Dorothée Henebelle; Pierre Nelson
UMR S 731 INSERM/Université Pierre et Marie Curie-Paris 6, France

Introduction and Objectives: Rhythmic or random rectal contractions, independent of bladder activity are frequently observed during filling cystometries. Usually they are imputed either to a neurological disease [1], or to ageing [2]. The aim of this retrospective study was to try to find if the rhythmic rectal contractions (RRCs) were associated with a specific lower urinary tract symptom or/and a urodynamic diagnosis.
**Methods:** The population consisted of 534 consecutive women, 382 patients without a history of neurological disease (non-N) and 152 with a history of neurological disease (N) (stroke, multiple sclerosis, lumbar injury...). They don’t have gastro-intestinal complaint and underwent a urodynamic session in our laboratory between January 2005 and December 2006 for lower urinary tract symptom. Filling cystometry was performed at a filling rate of 50 mL/min (normal saline at room temperature) until maximum bladder capacity. Vesical and urethral pressures were recorded using a triple lumen catheter 10F. Rectal pressure was measured using a punctured balloon filled with 2 mL of saline solution in order to avoid pressure artefacts. Pressure transducers were zeroed according with the ICS recommendations. RRCs were defined as changes in the rectal pressure of at least 3 cm H<sub>2</sub>O independent of the total vesical pressure.

**Results:** Sixty-nine (12.9%) patients (47 non-N, 22 N) exhibited RRCs with a low frequency (1-4/min). Amplitude of RRCs was ≤ 15 cm H<sub>2</sub>O (8.1± 3.1 cm H<sub>2</sub>O) in 67 (97.1%) women. Occurrence of RRCs was not significantly associated with a history of neurological disease (14.5% N vs 12.3% non-N). The table describes the incidence of urge syndrome and detrusor overactivity (DO) (ICS definition):

<table>
<thead>
<tr>
<th></th>
<th>non-N</th>
<th>N</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urge syndrome</td>
<td>32 (68.0%)</td>
<td>13 (59.1%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Detrusor overactivity</td>
<td>11 (23.4%)</td>
<td>10 (45.5%)</td>
<td>.04</td>
</tr>
</tbody>
</table>

Urge syndrome was frequently associated with RRCs whatever the sub-group (significantly more than in the population without RRCs). At the opposite, RRCs occured more frequently in patients with a history of neurological disease who had obvious DO during the cystometry (no increased frequency of DO in the non-N group). The mean age of RRC patients was not significantly different 65.5±15.2 years (non-N) vs 62.7±18.0 years (N); however patients with RRCs were significantly older than the negative population (64.6±16.1 vs 56.3±17.9 years; p = .0002).

Other observations: RRCs occurred during all the filling phase in 30 non-N and 19 N patients, appeared at first desire to void in only 9 non-N and disappeared at first desire to void in 8 non-N and 3 N patients. Isolated stress urinary incontinence was observed in only 7 non-N patients (mean age 56.8 years) whom 5 had RRCs during all the filling phase.

**Conclusion:** RRCs cannot be considered as artefactual events during filling cystometry in woman. RRCs occur in the older population, are frequently associated with urgency whatever the population (with a history of neurological disease or not). In the population with a history of neurological disease detrusor overactivity is frequent. These findings bring to the fore the role of ageing and possibly of the common neurologic innervation of lower urinary and gastrointestinal tracts in the occurrence of rhythmic rectal contractions.


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**Poster #24**

**VALIDATION OF A REAL – TIME URODYNAMIC MEASURE OF URINARY URGENCY**

L. Lowenstein<sup>1</sup>; M.P. FitzGerald<sup>1</sup>; K. Kenton<sup>1</sup>; L. Brubaker<sup>1</sup>; I. Gruenwald<sup>2</sup>; Christina Elliott<sup>1</sup>; R. Durazo<sup>3</sup>; E. Mueller<sup>1</sup>; Y. Vardi<sup>2</sup>

<sup>1</sup> Department of Obstetrics and Gynecology, Loyola Medical Center; <sup>2</sup> Division of Neuro Urology, Rambam Medical Center, Technion faculty of Medicine, Haifa,Israel; <sup>3</sup>Department of Preventive Medicine & Epidemiology

**Introduction and Objectives:** To validate a new device, the Urgeometer, for measurement of urinary urgency during urodynamic testing (UDS).
Methods: The Urgeometer continuously records patients’ perceptions of urgency (0='No urgency at all’ to 100='The most urgency I can imagine’) during UDS. The Urgeometer has a moveable lever with 100 mm excursion from left to right, with the left anchor labeled ‘No urge to void’ and right anchor ‘Most extreme urgency I can imagine’. Urgeometer output is connected to a channel on a Laborie UDS instrument during filling cystometry, creating a continuous display of reported urgency. We performed a retrospective chart review of patients who underwent UDS with Urgeometer for clinical care and also performed UDS on nine subjects without urinary symptoms. Subjects completed validated urinary symptom questionnaires, Urinary Distress Inventory (UDI-6) and Medical Epidemiologic and Social Aspects of Aging (MESA). Demographic data and urodynamic diagnoses were recorded. Growth curve models with random intercepts were fit to the data to capture the trend of urgency by increasing percentage of maximum cystometric capacity (MCC). ANOVA was used to compare urgency at 50% of MCC across diagnosis groups.

Results: 51 subjects with the following urodynamic diagnoses were included: 9 (18%) mixed incontinence (MUI), 18 (34%) detrusor overactivity incontinence (DOI), 15(30%) urodynamic stress incontinence (USI) and 9(18%) no urodynamic abnormalities. Figure 1 shows increase in urgency as percent MCC increases by urodynamic diagnoses. Growth curve models estimate change in urgency per 1% increase in %MCC for each group. Incremental growth varies between 0.69 and 0.72 for normal and USI groups compared to 0.82 and 0.92 for MUI and DOI groups. In the volume range between 35% and 75% of MCC, urgency values differed significantly between groups (p<.04). A moderate correlation was found between urge sensation at 50% of MCC and UDI6 and MESA urge subscale scores (ρ=0.34, p<0.03 and ρ=0.39, p<0.02 respectively).

Conclusions: The Urgeometer provides a continuous record of urgency during bladder filling and correlates well with urodynamic diagnoses and symptoms consistent with overactive bladder.

Increase in urge sensation as the percent MCC increases in four different urodynamic diagnostic groups

Funding: Astellas Pharmaceutical

Poster #25

BIOMECHANICAL RELATIONSHIPS BETWEEN URODYNAMIC PRESSURES DURING COUGH AND VALSALVA IN NORMAL AND STRESS INCONTINENT WOMEN
Thomas Spirka¹; Kimberly Kenton²; Margot S. Damaser¹,²; Linda Brubaker²
¹Dept. of Biomedical Engineering, Cleveland Clinic, Cleveland, OH; ²Division of Female Pelvic Medicine & Reconstructive Surgery, Loyola University, Chicago, IL; ³Research Service, Louis Stokes VA Medical Center, Cleveland, OH

Introduction and Objectives: Precision in relational descriptions between standardized urodynamic pressures during cough and valsalva events and the functional event (leakage) is likely to advance our understanding of the etiology of stress urinary incontinence. The objective of this study was to quantify the relationship between vesical, abdominal, and urethral pressures during cough and valsalva in continent and stress incontinent women.
Methods: Using an IRB-approved, NIH funded protocol, standardized urodynamic data, including vesical, abdominal, and urethral pressures, were acquired from 2 groups of women; (1) **continent women** had no incontinence symptoms or urodynamic findings; (2) **stress incontinent women** had symptoms and urodynamic findings of stress incontinence. Urodynamic pressure data were obtained during cough and valsalva maneuvers at maximum cystometric capacity. Phase plots were created by plotting simultaneous abdominal pressures versus vesical pressures and vesical pressures versus urethral pressures obtained every 0.2s during each cough and valsalva maneuver. Linear regression was used to fit linear trend lines to the corresponding phase plots for each event using the least squares method. Quality of fit was evaluated using the coefficient of determination. Data is presented as mean ± standard deviation. Slopes of linear trend lines were compared using the Mann Whitney Rank Sum Test with p<0.05 indicating a significant difference between groups.

Results: Twelve women were stress incontinent, and the remaining 11 were continent. The slope of trend lines fit to abdominal pressure versus vesical pressure phase plots for non-leaking events and leaking events were 0.94 ± 0.14 and 0.93 ± 0.10, respectively, and were not significantly different. The slopes for leaking and non-leaking valsalva maneuvers were 0.91 ± 0.08 and 0.95 ± 0.14, respectively. The slope for leaking coughs was 0.94 ± 0.12 and the slope for non-leaking coughs was 0.94 ± 0.14. No significant differences were observed when the slopes of the trend lines fit to phase plots of abdominal pressure versus vesical pressure for valsalva maneuvers was compared with the trend lines obtained from coughs when both leaking and non-leaking events were considered. The results were similar for the trend lines obtained for vesical pressure versus urethral pressure: slopes for leaking and non-leaking events were 1.24 ± 0.32 and 1.11 ± 0.28. The resulting slopes for trend lines associated with leaking and non-leaking valsalva maneuvers (1.08 ± 0.29 and 1.32 ± 0.39, respectively) and leaking and non-leaking coughs (1.14 ± 0.27 and 1.18 ± 0.25, respectively) were also not significantly different. The coefficient of determination was 0.979 ± 0.08 for trend lines used to define the relationship between abdominal and vesical pressure and 0.859 ± 0.15 for those used to define the relationship between vesical and urethral pressure.

Conclusions: The relationship between simultaneously recorded urodynamic pressures is highly consistent and does not vary during cough or valsalva or between continent and stress incontinent subjects. The slope of the linear trend line fit to phase plot data is not significantly different from 1, indicating complete pressure transmission of abdominal pressure changes to the bladder and urethra. We conclude that pressure transmission changes are not a cause of leakage in stress incontinent patients.

Funding: Supported by NIH K23 & K24 awards, the Cleveland Clinic, and the Cleveland VAMC

Poster #26

CONSIDER A DIAGNOSIS OF OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH NOCTURIA EVEN WHEN DATTIME OVERACTIVE BLADDER SYNDROME IS PRESENT

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Introduction and Objectives: To corroborate the association between obstructive sleep apnea (OSA) and nocturia among patients with nocturia symptoms, and to explore the association between ultradian sleep cycle and nocturia.

Methods: A prospective study recruited subject to two groups. Participants in the Nocturia group reported at least one nightly awakening to void. Non-nocturic controls reported no nocturia and no symptoms of urgency or frequency. All participants completed validated urinary symptom questionnaires including the ICQ-N and the MESA. Demographic data, including age, race, and medical history was recorded from patients’ charts. Sleep studies were performed using the ambulatory sleep apnea monitor (Watch PAT-100) Participants slept with the device for one night at home. The device was returned the following morning along with two urine samples; one from the last void before bedtime and a second voided sample from the first void in the morning. Both samples were analysed for osmolarity. Statistical analyses consisted of Fischer exact test for proportions and Spearman’s correlations. All tests considered significant at the 5% level.
**Results:** Thirty-one patients, mean age was 65 years (range 39-81), twenty-one with nocturia and 10 non-nocturics, were included in the study. Sixteen (76%) of the 17 patients with nocturia had a clinical diagnosis of OAB. Seventeen (76%) women with nocturia had OSA, compared to 4 (40%) of the control group (p<.001). Out of the patients with OAB 13 (81%) had diagnosed with OSA. Significantly more study patients (80%) had a decrease in urine osmolarity overnight compared with control 4 (30%) patients of the control group (p=.<.005). Neither apnoea hypopnoea index (AHI) nor the respiratory distress index (RDI) correlated with the total scoring of the ICIQ-N or MESA. A moderate inverse correlation was found between the percentage of REM sleep time (pREM) and nocturic frequency (ρ= -.51, p=.004). Patients’ reported bother from nocturia and its interference with daily activities were also negatively correlated with pREM(ρ= -.49, p=.009, ρ= -.42, p=.02 figure 1). Significant negative correlation was also found between the pREM sleep and total score on QOL-Nqol (ρ= -.49, p=.05). Study patients had lower median pREM compared to controls (18±7 vs. 24±6, p=.004).

**Conclusions:** OSA is highly prevalent among patients with nocturia, even when OAB is clinically suspected of being present. In addition, a negative association between REM sleep and nocturia/nocturial impact was observed, perhaps since reduced REM sleep may indicate anxiety.

**Poster #27**

**CORRELATIONS BETWEEN SUBJECTIVE AND OBJECTIVE DATA IN IDENTIFYING PATIENTS WITH INTERSTITIAL CYSTITIS**

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**Introduction:** Interstitial cystitis is a diagnosis based on clinical symptoms including urinary frequency, urgency and bladder pain in the absence of other pathologic findings. Diagnosis of interstitial cystitis is often difficult and delayed since it is a diagnosis of exclusion. Previous studies have not found questionnaires to be effective in identifying patients with interstitial cystitis (IC)/ painful bladder syndrome (PBS). Our hypothesis is that severity of symptoms reported in questionnaires such as visual analog scales, O’Leary-Sant scales and the short form Urinary Distress Inventory correlate with severity of interstitial cystitis revealed by reduced bladder capacity, glomerulations, presence of Hunner’s ulcers, and/or mast cell counts.

**Objective:** To evaluate correlations between symptoms of IC/PBS and physical findings on cystoscopy, bladder overdistension and bladder biopsy.

**Methods:** Patients who underwent cystoscopy and bladder overdistension from June 1, 2006 – 2007 were identified by procedure codes. All charts from this time period were reviewed for data points including age, sex, duration of symptoms, medical history, previous pelvic surgery, central nervous system injury, recurrent urinary tract infections, and inciting factors for symptoms. Questionnaires were also reviewed as a means of quantifying symptoms. The questionnaire’s included three, ten point visual analog scales for urgency, frequency and pain, O’Leary-Sant Symptoms Index (ICSI) and Problem Index (ICPI), and the Short Form Urinary Distress Inventory (UDI-6). From the cystoscopy and overdistension, bladder capacity, glomerulations (0-5), and presence of Hunner’s ulcers were recorded. Subjects were excluded from the study if malignancy was found during the procedure, if cystoscopy was not performed for IC/PBS, or if questionnaires were done greater than 6 months from the date of surgery. Pearson’s correlations were then performed to determine significant correlations between the data.

**Results:** A total of 138 charts were reviewed. Thirty subjects were excluded using the criteria above and twenty patients did not fill out questionnaires. The remaining eighty-eight charts were used in the data analysis. The mean age was 40 years old. Significant correlations were found between the urgency visual analog scale and bladder capacity (p=.032), glomerulations (p=.05) and presence of Hunner’s ulcers (p=.028); the frequency visual analog scale and bladder capacity (p=.004) and glomerulations (p=.004); the ICSI and glomerulations (p=.031) and presence of Hunner’s ulcers (p=.037), the ICPI and bladder capacity (p=.024) and glomerulations (p=.01); and the UDI-6 and glomerulations (p=.04).
Conclusions: Our study revealed a significant correlation between the severity of symptoms and cystoscopic findings in patients with IC/PBS.


**Poster #28**

**PRIMARY CARE PHYSICIAN PRACTICE PATTERNS IN THE MANAGEMENT OF INTERSTITIAL CYSTITIS/ PAINFUL BLADDER SYNDROME**

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**Introduction and Objective:** To define primary care physicians’ (PCPs’) practice patterns in the management of interstitial cystitis/painful bladder syndrome (IC/PBS).

**Methods:** We developed a vignette describing a woman with IC/PBS symptoms, followed by questions about etiology, management strategies, and familiarity with IC/PBS. We mailed the questionnaire to 556 PCPs in Boston, Los Angeles and Chicago.

**Results:** We received 290 completed questionnaires (response rate 52%). Two-thirds of respondents correctly identified the hallmark symptom of IC/PBS (bladder pain/pressure). Regarding etiology, 90% correctly indicated that IC/PBS was non-infectious disease, 23% incorrectly reported that it was caused by sexually transmitted diseases, and 39% incorrectly indicated that it was caused by a psychiatric illness. Management strategies are presented in the table.

<table>
<thead>
<tr>
<th>Management/ Treatment</th>
<th>Almost always</th>
<th>More than ½ of the time</th>
<th>About ½ of the time</th>
<th>Less than ½ of the time</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to specialist</td>
<td>28.0%</td>
<td>25.5%</td>
<td>14.6%</td>
<td>15.1%</td>
<td>10.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Test for STDs</td>
<td>61.9%</td>
<td>18.4%</td>
<td>7.1%</td>
<td>4.2%</td>
<td>5.4%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Post-void residual</td>
<td>10.0%</td>
<td>7.8%</td>
<td>10.0%</td>
<td>12.1%</td>
<td>29.0%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>38.8%</td>
<td>20.3%</td>
<td>7.6%</td>
<td>9.7%</td>
<td>12.2%</td>
<td>11.4%</td>
</tr>
<tr>
<td>CT scan abd/pelvis</td>
<td>8.5%</td>
<td>11.9%</td>
<td>10.2%</td>
<td>17.4%</td>
<td>32.6%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Cervical cultures</td>
<td>42.4%</td>
<td>17.2%</td>
<td>6.3%</td>
<td>12.6%</td>
<td>12.6%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Urine cytology</td>
<td>14.5%</td>
<td>8.1%</td>
<td>11.9%</td>
<td>17.9%</td>
<td>24.3%</td>
<td>23.4%</td>
</tr>
<tr>
<td>Pelvic ultrasound</td>
<td>30.8%</td>
<td>27.4%</td>
<td>16.0%</td>
<td>8.4%</td>
<td>9.3%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>17.7</td>
<td>13.5</td>
<td>10.1</td>
<td>11.8</td>
<td>22.8%</td>
<td>24.1%</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>10.3</td>
<td>23.5</td>
<td>14.5</td>
<td>15.8</td>
<td>14.5%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>2.7</td>
<td>7.7</td>
<td>12.0</td>
<td>23.6</td>
<td>24.9%</td>
<td>29.2%</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>6.8</td>
<td>19.9</td>
<td>20.3</td>
<td>15.3</td>
<td>20.8%</td>
<td>16.9%</td>
</tr>
<tr>
<td>Bladder analgesics</td>
<td>4.2</td>
<td>10.6</td>
<td>16.1</td>
<td>14.8</td>
<td>25.8%</td>
<td>28.4%</td>
</tr>
<tr>
<td>Pentosan polysulfate</td>
<td>2.1</td>
<td>2.1</td>
<td>0.9</td>
<td>4.7</td>
<td>15.5%</td>
<td>74.7%</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>1.3</td>
<td>0.4</td>
<td>0.9</td>
<td>3.0</td>
<td>15.9%</td>
<td>78.5%</td>
</tr>
</tbody>
</table>

**Conclusions:** Although most PCPs indicate familiarity with IC/PBS, they manage the condition infrequently. They also appear to have significant knowledge deficits about the clinical characteristics of IC/PBS, and they indicate variable practice patterns in the diagnosis and treatment of the condition. Educational efforts directed at PCPs will likely improve the care of these patients.

**Funding:** NIDDK
PILOT STUDY OF ACUPUNCTURE FOR TREATMENT OF INTERSTITIAL CYSTITIS
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UCLA Department of Urology and UCLA Center for Neurovisceral Sciences and Women’s Health†, Los Angeles, CA

Objective: Acupuncture has been used to successfully treat painful conditions and has been shown to reduce urinary storage symptoms. It is felt to be a form of neuromodulation. The study objective was to determine if acupuncture is effective in alleviating the pain, voiding, and sexual symptoms associated with interstitial cystitis (IC).

Methods: Patients with a new clinical diagnosis of IC were invited to participate in this institutional review board approved protocol. All patients had a history of bladder pain relieved by voiding and a history of daytime urinary frequency and urgency for at least 9 months. All patients had a negative cytology, urinalysis, and cystoscopy. 7 female patients enrolled in the study and underwent weekly acupuncture treatments for 12 weeks. All patients were treated with a standardized protocol involving identical acupuncture points with electrical stimulation. Patients were evaluated pre- and post- treatment with several validated self-assessment instruments. Overall IC symptoms were assessed via the O’Leary-Sant IC Symptom and Problem Indices (ICSI and ICPI). Overall pain was assessed via a Visual Analogue Pain (VAP) Score. Urinary symptoms were assessed with the Urogenital Distress Inventory-Short Form (UDI-6). Sexual function was assessed with the Female Sexual Function Index (FSFI). In addition, patients completed the Quality of Life Due to Urinary Symptoms Score (QoL) and the Patient Global Assessment of Improvement (PGII). Comparisons were performed via the paired t-test. Data were analyzed on an intent-to-treat basis.

Results: The study results are summarized in the table. There was a 19% (p=0.04) improvement in quality of life due to urinary symptoms as assessed by QoL score. The ICSI and ICPI demonstrated 23% and 21% improvement, respectively, but did not reach statistical significance. 83% of patients reported improvement in bladder pain in the ICSI, and the overall degree of improvement was 35% (p=0.007). No significant change was observed in the VAP score. There was a 15% improvement in the UDI-6 composite score (p=0.05) and improvements were observed in the urinary frequency (22%, p=0.08), difficulty emptying (42%, p=0.29) and abdominal/genital pain (23%, p=0.10) UDI-6 subdomains. There was no significant improvement in overall sexual function assessed via the FSFI. Of the 5 (71%) patients who completed the post-treatment PGII, all reported slight improvement in their overall condition after treatment.

Conclusions: In this small pilot study of IC patients, 3 months of acupuncture treatment led to a modest improvement in overall urinary and painful bladder symptoms, but did not improve overall sexual function. The majority of patients reported a small degree of improvement in their overall condition. The long-term effect of this therapy on IC symptoms is unknown. A larger randomized study evaluating the role of acupuncture in the treatment of IC is warranted.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Mean Pre-Treatment</th>
<th>Mean Post-Treatment</th>
<th>Percentage Improvement</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICSI</td>
<td>13.3</td>
<td>10.2</td>
<td>23.3%</td>
<td>0.08</td>
</tr>
<tr>
<td>ICPI</td>
<td>9.4</td>
<td>7.4</td>
<td>21.3%</td>
<td>0.23</td>
</tr>
<tr>
<td>VAP Score (cm)</td>
<td>3.9</td>
<td>4.5</td>
<td>-15.4%</td>
<td>0.66</td>
</tr>
<tr>
<td>UDI-6</td>
<td>44.4</td>
<td>37.9</td>
<td>14.6%</td>
<td>0.05</td>
</tr>
<tr>
<td>FSFI</td>
<td>23.8</td>
<td>27.1</td>
<td>13.9%</td>
<td>0.59</td>
</tr>
<tr>
<td>QoL</td>
<td>4.7</td>
<td>3.8</td>
<td>19.1%</td>
<td>0.04*</td>
</tr>
</tbody>
</table>

Funding: The Fishbein Family IC Research Foundation
Objective: We sought to determine whether self-reported long-term outcomes of women with refractory interstitial cystitis (IC) as measured by two validated questionnaires, the Female Sexual Function Index (FSFI) and the patient global assessment survey (GAS), supports the use of cystectomy with bladder substitution in the treatment of refractory IC.

Methods: Records of 15 consecutive female patients with IC who were refractory to conservative therapies and underwent cystectomy with bladder substitution (8 with an Indiana pouch diversion and 7 with Studer pouch diversion) were assessed. Female sexual function was assessed using the FSFI, a 19-item questionnaire that analyzes six domains (desire, arousal, lubrication, orgasm, satisfaction, and pain) of sexual function. Pain, voiding symptoms, bowel function, night time ability to sleep and quality of life (QOL) was measured using the GAS instrument. Due to the recent creation of the FSFI instrument, preoperative data was collected retrospectively and comparison between preoperative and postoperative scores was performed with the Wilcoxon rank sum test.

Results: A total of 15 women with a median age of 33 years are included. Mean follow-up from the time of cystectomy with diversion was 6 years (range: 1.5-14). Preoperative and postoperative scores regarding sexual function showed a significant improvement, with a total mean FSFI score of 13 versus 25, respectively (p=0.0006) (Table 1). All patients reported no change (worsening or improvement) in bowel function after surgery. Table 2 summarizes the results of the other patient reported domains. None of the domains revealed worsening of symptoms or recurrence of pain symptoms in the diversion.

Table 1: Preoperative and postoperative results of the FSFI domains

<table>
<thead>
<tr>
<th>Domains</th>
<th>Pre-operative (mean, SD)</th>
<th>Post-operative (mean, SD)</th>
<th>P value (p &lt;0.05 is significant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire</td>
<td>1.9 (0.3)</td>
<td>4.3 (0.7)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Arousal</td>
<td>1.2 (0.4)</td>
<td>3.3 (0.8)</td>
<td>0.0006</td>
</tr>
<tr>
<td>Lubrication</td>
<td>3.8 (0.6)</td>
<td>4.8 (0.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>Orgasm</td>
<td>1.2 (0.4)</td>
<td>4.7 (0.5)</td>
<td>0.0004</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>1.8 (0.4)</td>
<td>3.7 (0.7)</td>
<td>0.0006</td>
</tr>
<tr>
<td>Pain</td>
<td>2.8 (0.9)</td>
<td>4.7 (0.5)</td>
<td>0.0007</td>
</tr>
<tr>
<td>Total</td>
<td>12.7 (1.3)</td>
<td>25.3 (2.5)</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Table 2: Results of the GAS

<table>
<thead>
<tr>
<th>Markedly Improved</th>
<th>Moderately Improved</th>
<th>Slightly Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>11/15</td>
<td>4/15</td>
</tr>
<tr>
<td>Voiding Symptoms</td>
<td>11/15</td>
<td>4/15</td>
</tr>
<tr>
<td>Nighttime Sleep</td>
<td>11/15</td>
<td>4/15</td>
</tr>
<tr>
<td>QOL</td>
<td>11/15</td>
<td>2/15</td>
</tr>
</tbody>
</table>
**Conclusion:** This is the first study assessing long term outcomes of patients with refractory IC who underwent cystectomy and bladder substitution. In this cohort of patients, cystectomy with bladder substitution leads to durable improvement in sexual function, pain relief (without recurrence of pain in the diversion), voiding symptoms, sleep, and overall quality of life as measured by the FSFI and GAS.

**Poster #31**

**VESICOVAGINAL FISTULA REPAIR WITH RECTUS ABDOMINIS MYOFASCIAL INTERPOSITION FLAP**

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¹ Section of Urology; ² Section of Plastic and Reconstructive Surgery, Department of Surgery, University of Chicago, Chicago, IL

**Objectives:** Complex, recurrent vesicovaginal fistulas (VVF) can be very challenging to repair and often require interposition of non-irradiated, well-vascularized tissue between the urinary system and the vagina. We report on our experience using a rectus abdominis myofascial (RAM) interposition flap for VVF repair.

**Methods:** A retrospective analysis was performed to identify patients who had undergone VVF repair with RAM interposition. Data was collected focusing on preoperative patient characteristics, etiology of VVF, intraoperative parameters, including surgical techniques, and postoperative patient outcomes.

**Results:** We have used a RAM interposition flap for VVF repair in 5 patients. All VVF were post-surgical; no patient received radiation therapy. VVF proceeded total abdominal hysterectomy (TAH) or radical cystectomy in 3 and 2 cases, respectively. Both cases of VVF after radical cystectomy occurred in conjunction with orthotopic diversion (neobladder-vaginal fistula). In 3 patients with post-TAH VVF, a total of 5 previous failed repairs were attempted prior to RAM interposition. In one patient with neobladder-vaginal fistula, who had received adjuvant chemotherapy, RAM interposition failed and the patient ultimately required cutaneous urinary diversion after two subsequent failed attempts at repair (68 months follow-up). The remaining 4 patients (80%) have had no evidence of recurrent VVF or voiding abnormalities, with a mean follow-up of 19 months (range 8-32 months).

**Conclusions:** Rectus abdominis muscle can be a successful interposition flap during repair of complex, recurrent VVF. In our experience, this has been successful in the majority of cases, particularly in younger patients with nonmalignant processes.

**Poster #32**

**CUTANEOUS PUDENDAL ARTERY BASED ROTATIONAL THIGH FLAP FOR COMPLEX POSTERIOR VAGINAL RECONSTRUCTION**

Ja-Hong Kim; Ariana Smith; Christian Twiss; Veronica Triaca; Larissa V. Rodriguez; Shlomo Raz

UCLA Dept of Urology, Los Angeles, CA

**Introduction:** Complex posterior vaginal wall restoration in patients with limited vaginal access from severe vaginal narrowing poses a special challenge to pelvic reconstructive surgeons. Although various types of flaps have been described, the pudendal artery based inner thigh pedicle flaps (Singapore flap) have shown to be a well-vascularized, sensate, and safe alternative that provides adequate cosmesis. We present our experience using a modified technique of cutaneous pudendal artery based rotational thigh flap for repair of complicated posterior vaginal wall defects.

**Objectives:** To describe the operative technique of the modified cutaneous pudendal artery based rotational thigh flap and report on early cosmetic and functional outcome.
**Methods:** With the patient in lithotomy position, a generous incision is made at the five o'clock position in the lateral wall of vagina through the labia majora and levator muscles deep to the perirectal space. Just lateral to the labia majora at the level of the ischiorectal fossa, this incision is continued as an inverted U-shaped pedicle flap (Fig 1) preserving much of the perforating vessels from the posterior labial neurovascular branch of the internal pudendal artery and nerve. The long axis of the full thickness flap is rotated medially, transposed into the posterior wall defect, and anchored at the deep apex of the vaginal incision. Interrupted sutures are used to approximate the superior and inferior aspect of the lateral vaginal incision to the flap. In the distal vagina the margins of the flap are approximated to the edges of the incised labia widening the introitus. The inferior margin of the labia majora with its deep fibro-fatty tissue is then elevated and laterally transferred to allow for a tension free closure of the donor site defect in the inner thigh (Fig 2).

**Results:** From 2004 to 2007, 12 patients underwent complex vaginal reconstruction of the posterior vaginal wall using the cutaneous pudendal artery based rotational thigh flap. Indications for repair included refractory post radiation fistulas (7), severe iatrogenic vaginal narrowing (2), absent posterior vaginal wall from previous surgery (2), and labial substitution after radical vulvectomy for Paget’s Disease. Unilateral flap was sufficient for vaginal reconstruction in all but one patient who required bilateral extensive vulvar reconstruction for Paget’s Disease. The same patient also experienced delayed wound healing. All complications occurred after post-radiation fistula repairs. One patient had fistula recurrence, which was cured after secondary fistula closure with flap re-advancement. Early graft infection occurred in another radiation fistula repair, which healed with conservative management. All had good cosmetic appearance with functional restoration (Fig 3) except for one patient with radiation fistula whose vaginal depth was not satisfactorily preserved. There was 100% graft survival.

**Conclusion:** The cutaneous pudendal artery based rotational thigh flap provides a reliable, safe, versatile, and technically easy alternative for restoring extensive posterior vaginal wall defects. Rotating the full thickness pedicle flap rather than tunneling under the labia simplifies the dissection and adds vaginal depth, width to the introitus, and bulk to the posterior vaginal wall. Special care should be given to post radiation fistula repairs which appear to have higher rate of complications.

**Poster #33**

**TRANSVAGINAL REPAIR OF ORTHOTOPIC BLADDER VAGINAL FISTULA WITH MARTIUS FLAP: PRESERVATION OF SEXUAL FUNCTION**

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**Introduction and Objectives:** A pouch-vaginal fistula is a rare and devastating complication following cystectomy and orthotopic bladder substitution. Transvaginal multi-layer closure of the fistulae could threaten vaginal length and volume which are often already compromised in women following cystectomy. Though successful transvaginal closure has been described, there is no data regarding preservation of sexual function. We present 5 consecutive cases of successful transvaginal multi-layer closure of pouch-vaginal fistula with interposition of martius flap, in which vaginal size and sexual function were preserved postoperatively.
**Methods:** 5 women (mean age 51 years) underwent cystectomy and orthotopic bladder substitution for invasive bladder carcinoma (4) and interstitial cystitis (1). Interposition of omentum was used in all cases. All patients reported postoperative total urinary incontinence secondary to a fistula located at the pouch-urethral anastomosis. Fistula size ranged between 0.5 – 2.0 cm. All patients had adequate vaginal length and volume following cystectomy, allowing for sexual intercourse. Patients were surgically managed with a transvaginal multi-layer closure of the fistula and interposition of martius flap. Foley catheter urinary diversion was used for 3 weeks postoperatively.

**Results:** Successful closure of the fistula was achieved in all cases. No appreciable loss of vaginal length or volume was noted on physical examination 4 months postoperatively. All patients reported successful vaginal penetration and sexual intercourse following surgery.

**Conclusion:** Preservation of vaginal length and volume allowing for sexual intercourse is possible following transvaginal closure of orthotopic bladder vaginal fistula.

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**Poster #34**

**VOIDING FUNCTION IN WOMEN WITH ORTHOTOPIC NEOBLADDER DIVERSION**

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**Introduction and Objectives:** Voiding function following cystectomy and orthotopic neobladder in female patients remains a topic of substantial interest with few large series available for analysis. Herein we describe our experience with postoperative voiding issues in female neobladder patients over an 11 year period.

**Methods:** A retrospective review of the Vanderbilt cystectomy database from 1995 to 2006 was performed to evaluate female patients who underwent radical cystectomy with orthotopic ileal neobladder urinary diversion. Patient charts were assessed for demographics, preoperative and postoperative voiding function, surgical technique, urinary infection, need for further procedures, and diversion related complications.

**Results:** Forty-seven female patients were identified that underwent orthotopic urinary diversion. Six patients without sufficient follow up were excluded and electronic medical records of 41 patients were examined. Average patient age at time of surgery was 60.7 years (range 34 – 74 years). Thirty-eight (92.7%) patients had radical cystectomy with sparing of the anterior vaginal wall. Eight patients had concurrent hysterectomy (19.5%). Of the five patients without vaginal sparing, all had either some degree of incontinence or retention at last follow up. Excluding patients with neobladder-vaginal fistulas prior to repair, 6 patients reported diurnal incontinence (15.8%), with 6 indicating daytime only incontinence (15.8%), and 10 patients with nighttime only incontinence (26.3%). Overall complete continence in patients with vaginal sparing was 42%. Two patients had documented stress incontinence preoperatively and both experienced significant post-diversion incontinence including one patient with a neobladder-vaginal fistula at the site of a prior transvaginal tape. The average number of pads per day was 3.7 for those with diurnal incontinence, 2.8 for daytime only, and 0.7 for nighttime only. These differences were significant for diurnal versus nighttime (p = 0.002) and daytime versus nighttime (p = 0.027). Eight patients (19%) reported urinary infections associated with fever or local symptoms. Twenty-nine women (76%) were able to adequately empty their neobladder with a mean postvoid residual of 32 cc. Twelve patients had difficulties with urinary retention with a mean postvoid residual of 326 cc (p = 0.0008) that necessitated self intermittent catheterization. Neobladder-vaginal fistulas were diagnosed in 3 patients (7.3%). Six patients underwent urethral bulking agent injections for treatment of their incontinence (14.6%). Three women required further surgical procedures specifically related to their urinary diversion including 1 neobladder stone and 2 ureteral-neobladder anastomotic strictures.

**Conclusions:** We present our experience with orthotopic urinary diversion in a large series of female patients undergoing cystectomy for bladder cancer. All of the patients who did not have vaginal sparing had postoperative voiding dysfunction although the contribution of a wider resection to these results is uncertain. However, even with vaginal sparing, thorough preoperative evaluation of voiding function along with appropriate counseling is mandatory to insure that patient expectations match expected outcomes. Additionally, prospective studies including perioperative urodynamics and quality of life assessment are planned that should further allow us to determine which women are appropriate candidates for orthotopic urinary diversion.
URGENCY SEVERITY AND BOTHER QUESTIONNAIRE (USBQ) – A NEW VALIDATED QUESTIONNAIRE FOR THE EVALUATION OF URGENCY

Lior Lowenstein1; Lena Hatchett2; Kimberly Kenton1; Linda Brubaker1; Ramon Durazo-Arvizu2; Kara Goldman1; Elizabeth R. Mueller1; Mary P. FitzGerald1

1Department of Obstetrics and Gynecology, Loyola Medical Center; 2Department of Preventive Medicine & Epidemiology, Loyola University Medical Center

Introduction and Objectives: Urinary urgency is a key symptom of overactive bladder syndrome (OAB), and may be more bothersome to a patient than the symptom of urinary frequency, but there are few clinically validated tools available for its assessment. Our objective was to develop a validated, clinically useful, patient-oriented questionnaire for the assessment of urgency and associated life impact.

Materials and Methods: After IRB approval, we interviewed 6 urogynecologists and urologists from across the country and 10 patients with OAB symptoms about urinary urgency, measures to evaluate its severity, and its effect on patients’ everyday life. Based on this data, we composed the first draft of our questionnaire, which consists of two parts. USBQ-S was developed for the evaluation of the severity of urgency. USBQ-QOL was developed for the evaluation of the effect of urgency on patients’ quality of life. A focus group of 7 patients with OAB symptoms completed the draft questionnaire and gave feedback. Three expert physicians and a behavioral scientist then revised the questionnaire. To establish face and content validity, three groups of patients were chosen based on clinical and urodynamic diagnoses and asked to complete the revised version of the USBQ and also the Urinary Distress Inventory (UDI-6), Incontinence Impact Questionnaire (IIQ-7) and Overactive Bladder Questionnaire (OAB-q). Cronbach’s alpha was used to assess the internal consistency of the USBQ-S and USBQ-QOL. Pearson’s correlation coefficient was compare responses to the USBQ-S and USBQ-QOL instruments to IIQ-7, UDI-6 and OAB-q scores. Discriminatory validity was ascertained by comparing USBQ scores by the clinical groups (controls without urgency vs patients with OAB) using a two-sample t-test and the area under the ROC curve. Exploratory factor analysis was applied to estimate factor loading and to determine the individual contribution of each item to the composite score.

Results: The 53 patient participants with mean age of 56 (29-87) years: 33 patients had a clinical diagnosis of OAB, 10 patients had urodynamic Detrusor Overactivity Incontinence and 10 had Urodynamic Stress Incontinence. Cronbach’s alpha for the USBQ-S and USBQ-QOL were 0.85 and 0.90 respectively. USBQ-S scores correlated with USBQ-QOL scores (rho = 0.69). USBQ-QOL also moderately correlated with UDI-6 (r= 0.49), IIQ-7 (r= 0.77) and OAB-q (r= 0.73). Similar correlations were found between the USBQ-S and USBQ-QOL instruments to IIQ-7, UDI-6 and OAB-q scores. Mean USBQ-QOL and USBQ-S scores differed by clinical diagnosis, with OAB patients reporting higher USBQ-S mean than the controls (66±18 vs 34±24, p<0.001), and USBQ-QOL (48±22 vs 19±25, p<0.005). The area under the ROC curve, to assess “urgency” discrimination, was 0.87 and 0.82 for USBQ-S and USBQ-QOL. The items had loading scores in the range 0.48 to 0.85.

Conclusion: The USBQ is an easily-understood questionnaire with adequate validity for use in research and in clinical practice to describe the severity and life impact of urinary urgency.

Funding: Pfizer, Inc.

DEPRESSION AND URINARY DISTRESS

T.L. Gamble; R.P. Goldberg; J.R. Miller; S.O. Aschkenazi; J.L. Beaumont; P.K. Sand; S.M. Botros

Evanston Northwestern Healthcare

Objective: To assess the effect of depression on Urinary Distress Inventory (UDI) quality of life (QOL) scores using a sample of identical twin sisters.
Methods: We administered an anonymous survey including the Pelvic Floor Distress Inventory (PFDI) and Beck Depression Inventory (BDI-II) to identical twin sisters at the world’s largest annual twin gathering in Twinsburg, Ohio for the past two years. Depression was defined as a BDI II score >13 and subjects were screened for stress and urge urinary incontinence. We used generalized estimating equation analyses to examine the differences in urge and stress urinary incontinence between depressed and non-depressed twins, adjusted for twinning. A multivariable model was used to compare PFDI scores for the Urinary Distress Inventory (UDI) between depressed and non-depressed twins. A subset of the sample consisting of twin pairs discordant for depression was then analyzed using McNemar’s test for categorical variables and paired t-tests for continuous variables. Effect sizes (ES=mean difference / standard deviation) were calculated to aid in interpretation of score differences.

Results: 542 sisters completed the survey. Ninety percent were Caucasian, 5% African American, 2% Hispanic, and 3% other. The prevalence of mild to severe depression was 15%. There were no significant differences in age, race, BMI, income, parity, or menopausal status between the depressed and non-depressed groups. Forty-six percent of the depressed women reported urge incontinence versus 23% of the non-depressed women (p=0.03). A significant difference was also observed on the UDI, mean score of 20.5 for depressed women versus 9.1 for the non-depressed women (ES=.75, p=0.008). There was no significant difference in stress incontinence between groups (54% versus 38%, p=0.16). When we analyzed a subset of 41 twin pairs discordant for depression, there were no significant differences in rates of urge or stress urinary incontinence or severity of incontinence between the depressed and non-depressed twins. Furthermore, there were no significant differences in mean UDI scores between groups.

Conclusions: Prior studies have shown that depression poorly affects QOL scores. In this cohort, depression was associated with higher rates of UUI, more severe UUI, and worse QOL scores. Surprisingly, however, when we controlled for urge urinary incontinence rate and severity by evaluating twin sisters discordant for depression, depression did not negatively impact QOL scores. All other factors being equal, depression does not appear to negatively affect quality of life scores in women with urinary incontinence.

Poster #37

VOLUME OF PREOPERATIVE DETRUSOR OVERACTIVITY PREDICTS PERSISTENT POSTOPERATIVE DETRUSOR OVERACTIVITY

T.L. Gamble; J.R. Miller; S.O. Aschkenazi; J.L. Beaumont; S.M. Botros; P.K. Sand; R.P. Goldberg

Evanston Northwestern Healthcare

Objective: To determine significant preoperative predictors of persistent postoperative detrusor overactivity (DO) in patients with mixed urinary incontinence that undergo sling procedures.

Materials and Methods: A cohort of 656 patients who underwent stress incontinence procedures was analyzed retrospectively and patients with mixed incontinence extracted. Pre and postoperative objective measures were examined. Patients who had persistent and resolved detrusor overactivity were compared on sling type, demographic, subjective, clinical, and urodynamic parameters using chi-squared tests and two sample t-tests. Multiple logistic regression was then used to evaluate the impact of multiple simultaneous predictors on DO outcome.

Results: Transvaginal bladder neck slings, midurethral slings, and abdominal burch procedures were included. 314 patients with preoperative detrusor overactivity (DO) had postoperative urodynamic testing available for evaluation of DO status. 83/314 patients resolved DO postoperatively whereas 231/314 had persistent DO. Significant predictors of postoperative DO included SUI procedure, age, parity, DO volume, average closure pressure, and maximum flow rates. Among sling types, transobturator had the highest rate of resolved detrusor overactivity, followed by retropubic midurethral slings. Bladder neck slings were associated with the lowest likelihood of DO resolution. When patients with resolved versus persistent DO were compared, significant differences included age (61 versus 67 years old, p<.0007), preoperative DO volume (514 vs. 452 mL, p<.013), mean urethral closure pressure (36cmH2O vs. 24 cmH2O, p<.0001), and maximum flow rates (29cc/sec vs. 18cc/sec, p<.034). After adjusting for sling type and age, preoperative DO volume was the only independent predictor of resolving detrusor overactivity after sling procedures. For every 100mL increase in DO volume, the risk of persistent DO decreases 20%.
Conclusions: When treating women with mixed incontinence symptoms, choice of SUI procedure may have important implications with respect to persistence of DO postop. The only independent predictor of persistent postoperative detrusor overactivity was the preoperative volume at which DO occurred.

<table>
<thead>
<tr>
<th>Outcome = persistent DO</th>
<th>Odds Ratio</th>
<th>95% Confidence Limits</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOT vs. bladder neck slings</td>
<td>0.232</td>
<td>0.104 0.515</td>
<td>0.0049</td>
</tr>
<tr>
<td>Retropubic vs. bladder neck slings</td>
<td>0.335</td>
<td>0.138 0.814</td>
<td></td>
</tr>
<tr>
<td>SPARC vs. bladder neck slings</td>
<td>0.373</td>
<td>0.140 0.994</td>
<td></td>
</tr>
<tr>
<td>Abdominal Burch vs. bladder neck slings</td>
<td>0.694</td>
<td>0.169 2.842</td>
<td></td>
</tr>
<tr>
<td>Age, per year</td>
<td>1.023</td>
<td>1.001 1.046</td>
<td>0.0443</td>
</tr>
<tr>
<td>DO volume, per 1 ml</td>
<td>0.998</td>
<td>0.997 1</td>
<td>0.0374</td>
</tr>
</tbody>
</table>

Poster #38

DOES TREATMENT OF OVERACTIVE BLADDER (OAB) WITH URGENCY URINARY INCONTINENCE (UUI) WITH TOLTERODINE EXTENDED RELEASE (TER) DECREASE RATES OF COITAL INCONTINENCE?
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Introduction and Objectives: Coital incontinence is thought to be related to urethral and/or pelvic floor dysfunction and secondary to stress urinary incontinence. In this post hoc analysis, we evaluated the effects of treatment of OAB with TER vs placebo (PBO) on responses to 2 items from the validated, self-administered Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ) that assess the occurrence and fear of coital incontinence in sexually active women with OAB and UUI.

Methods: This was a 12-week, multicenter, double blind, PBO-controlled, randomized trial. Eligible women had self-reported OAB and UUI for ≥3 months; baseline 5-day diary documenting ≥8 voids per 24 h including ≥3 urgency-related voids per 24 h and ≥0.6 UUI episodes per 24 h; rated their bladder condition as causing at least “some moderate problems”; and described themselves as being sexually active and in a heterosexual relationship for ≥6 months. Subjects with predominant stress urinary incontinence were excluded. Subjects were randomized to TER (n=202) or PBO (n=211) and completed the PISQ at baseline and week 12. Treatment differences in week 12 changes on the “UI during sex” and “fear of incontinence restricts sex” items were analyzed; response options on each item ranged from 0 (always) to 4 (never). Differences were grouped into 4 categories: major improvement (≥2-point increase), minor improvement (1-point increase), no change, and deterioration (≥1-point decrease).

Results: TER treatment resulted in a significant improvement in the response distribution on the coital incontinence item compared with PBO (P=0.0439; Figure). This corresponded to a larger decrease from baseline to week 12 in the percentage of subjects receiving TER who reported always experiencing coital incontinence (7% to 1%) compared with subjects receiving PBO (4% to 2%), and a larger increase in subjects receiving TER who reported never experiencing coital incontinence from baseline week 12 (27% to 49%) compared with subjects receiving PBO (28% to 39%). Differences between TER and PBO in improvements in the response distribution on the fear of incontinence restricts sex item were not statistically significant (P=0.1857; Figure).
Conclusion: Coital incontinence is present in the majority of women with UUI. TER treatment significantly improved the response distribution of sexually active women reporting coital incontinence compared with PBO. Fear of incontinence decreased in approximately one third of the subjects; this was not significantly different from placebo.

Funding: Sponsored by Pfizer, Inc.

Poster #39

INCOMPLETE BLADDER EMPTYING AFTER INTRA-DETRUSOR INJECTION OF BOTULINUM TOXIN-A
Michael J. Matteucci; R.Corey O’Connor; Michael L.Guralnick
Medical College of Wisconsin, Milwaukee, Wisconsin

Introduction: The intra-detrusor injection of Botulinum toxin-A (BTX-A) is becoming an accepted treatment option for the management detrusor overactivity (DO) refractory to medical management. Retention of urine is a potential complication following delivery of BTX-A into the bladder wall. We reviewed our experience with patients who developed incomplete bladder emptying (IBE) following intra-detrusor injection of BTX-A for non-neurogenic DO.

Methods: A retrospective chart review was performed on all patients undergoing cystoscopic intra-detrusor injections of BTX-A for refractory non-neurogenic DO. Each patient received a total of 100-200 units of BTX-A. All patients had urodynamically proven detrusor overactivity without bladder outlet obstruction or urinary retention. Clinical and pre-op urodynamic characteristics were compared between patients that developed IBE, defined as a post void residual (PVR) urine volume of >150mL, and those that did not develop IBE. Minimum follow-up was 6 months.

Results:

<table>
<thead>
<tr>
<th>Parameter (mean)</th>
<th>IBE Patients (n = 14)</th>
<th>Non-IBE Patients (n = 9)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male:Female</td>
<td>3:11</td>
<td>2:7</td>
<td>0.05</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>68.1</td>
<td>57.2</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>PVR (mL)</td>
<td>265.1</td>
<td>42.0</td>
<td></td>
</tr>
<tr>
<td>Dose injected (units)</td>
<td>178.6</td>
<td>185.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Qmax (mL/s)</td>
<td>12.3</td>
<td>16.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Pdet max (cmH2O)</td>
<td>39.0</td>
<td>30.2</td>
<td>0.44</td>
</tr>
<tr>
<td>PdetQmax (cmH2O)</td>
<td>29.4</td>
<td>28.7</td>
<td>0.56</td>
</tr>
<tr>
<td>Max DO amplitude (cmH2O)</td>
<td>40.2</td>
<td>46.3</td>
<td>0.45</td>
</tr>
<tr>
<td># with trigone injected</td>
<td>5</td>
<td>4</td>
<td>0.3</td>
</tr>
<tr>
<td>Mean duration of IBE</td>
<td>2.9 months</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: IBE may result in over 60% of the patients treated with BTX-A for non-neurogenic DO at standard dosages. This effect is temporary. Older patients appear to be at higher risk. Preoperative urodynamic studies were not predictive in determining post-procedural IBE. As well, trigonal injection did not appear to increase the risk of IBE.
Introduction and Objective: Given the paralytic effect of botulinum A toxin, the possibility of urinary retention of this therapy when given for overactive bladder is cautioned in our patients. We report the utility of urodynamic parameters in comparison to post procedure postvoid residual (PVR) measures in patients who received botulinum A toxin injection in the detrusor muscle for idiopathic overactive bladder.

Methods: A total of 74 patients (10 men, 64 women) with a mean age of 72yrs (range 31 to 94yrs) with nonneurogenic overactive bladder (including urgency, frequency, urge/unaware incontinence) received detrusor injections (# ranged from 10-30 injections of 100-300U) of botulinum A toxin. Videourodynamic studies were performed prior to treatment. Pretreatment urodynamic parameters were compared to post PVR measures to determine if any parameter would predict the likelihood of urinary retention. Urinary retention was defined as any increase in post-PVR that required foley placement or CIC for a temporary period of time. PVRs were checked by bladder scan at 1-2 weeks time.

Results: Upon comparison of pretreatment urodynamic parameters of normal desire (p=0.0.130), volume at first IDC (p=0.866), pdetmaxIDC (p=0.759), capacity (p=0.871), volume voided as a percent of capacity (VV/Capacity (p=0.087)), Qmax (p=0.769), pdetqmax (p=0.698), preop pvr (p=0.049), and age (p=0.32) versus post procedure PVR, preop PVR was found to be of significance. Three female patients ages 39, 69, and 81 required limited CIC or foley placement. Two of the three patients required CIC for 2 and 6 weeks, respectively and one required foley placement for a week. One male patient age 87yo required continued suprapubic tube drainage with no relief of symptoms. Of note, 3 of the 4 patients who experienced increased PVRs requiring short-term intervention received 20 injections of 0.5cc 100U. The other injection doses used in this cohort were not among those requiring intervention.

Conclusion: Pretherapy urodynamic parameters failed to provide any predictive information for postprocedure retention. However, higher preop PVRs provided a warning that those patients would have a greater likelihood of requiring post-procedure intervention.
Podium #1

CHANGES IN URINARY URGENCY, FREQUENCY, AND PELVIC PAIN AFTER SACRAL NEUROMODULATION AND THE ROLE OF THE GLOBAL RESPONSE ASSESSMENT
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Introduction and Objectives: In chronic urologic conditions, evaluating patients’ perceptions of symptom improvement in addition to assessing objective parameters is crucial when evaluating treatments. Although global response assessments (GRA) have been used in urologic research to measure perceptions of treatment response, the GRA has not been standardized and few studies have scrutinized objective outcomes data by response to treatment as reported on the GRA. The purpose of this study is to explore the use of the GRA to evaluate changes in voiding frequency, urgency and pelvic pain in patients with urgency-frequency syndrome and interstitial cystitis (IC) after implantation of a prosthetic sacral nerve stimulation device (InterStim®).

Methods: Patients having a staged InterStim® implantation were enrolled in a prospective, observational, longitudinal study. Data on participants with a primary diagnosis of urgency-frequency or IC were evaluated for this analysis. Changes in pre-implant and 3 months post-implant mean 24-hour voiding frequency and voided volume, as well as urgency and pelvic pain scores rated on a 10-point scale (“0” equaling no urgency or pain and “10” equaling severe), were calculated from voiding diary data and were compared to the GRA measuring changes in frequency, urgency and pelvic pain symptoms at 3 months post-implant. The GRA asks participants to rate their perception of change in each symptom on a 7 point Likert-type scale as “markedly worse, moderately worse, mildly worse, same, slight improvement, moderately improved, and markedly improved”. Treatment responders were defined as those reporting “moderately” or “markedly improved”. All others were considered non-responders.

Results: Of 52 enrolled participants with IC or urgency-frequency, 39 (75%) proceeded to Stage II. Of those, 30/39 (57.7%) had IC, 8/39 (15.4%) had a primary diagnosis of urgency-frequency with a secondary diagnosis of pelvic pain, and 14/39 (26.9%) had urgency-frequency. Subjects were 90.4% female, 94.2% white, and a mean age of 48.5 (SD 15.4). Changes in pre-implant and 3 months post-implant mean 24-hour voiding frequency and voided volume, as well as urgency and pelvic pain scores rated on a 10-point scale (“0” equaling no urgency or pain and “10” equaling severe), were calculated from voiding diary data and were compared to the GRA measuring changes in frequency, urgency and pelvic pain symptoms at 3 months post-implant. The GRA asks participants to rate their perception of change in each symptom on a 7 point Likert-type scale as “markedly worse, moderately worse, mildly worse, same, slight improvement, moderately improved, and markedly improved”. Treatment responders were defined as those reporting “moderately” or “markedly improved”. All others were considered non-responders.

Conclusions: The results of this study showed that at three months after InterStim®, the GRA responder group demonstrated statistically significant improvements in urinary frequency from 19 to 10.2 times per day (p=0.000) and average voided volume increased from 116.2 to 187.3 cc per void (p=0.004). Mean urgency score decreased from 5.6 to 3.7(p=0.018), and mean pain score decreased from 4.3 to 1.3 (p=0.048). Non-responders also had slight improvements in voiding frequency (19.6 to 13.7 times per day), average voided volume (102.8 cc to 125.6 cc), and urgency (5.9 to 5.3), however these changes were not statistically significant. Although non-responders also reported slightly worse pelvic pain (increased from 4.9 to 5.0) at three months, the difference was not clinically or statistically significant.

Funding: Provided by the Ministrelli Program for Urologic Research and Education (MPURE)

Podium #2

UNILATERAL VERSUS BILATERAL STAGE I NEUROMODULATION FOR THE TREATMENT OF REFRACATORY VOIDING DYSFUNCTION
Khanh Pham; Michael L. Guralnick; R. Corey O’Connor
Medical College of Wisconsin, Milwaukee, Wisconsin

Introduction and Objectives: Sacral neuromodulation has become an established therapy for the treatment of refractory voiding dysfunction. The standard stage I neuromodulation trial involves unilateral placement of a percutaneous lead in the third sacral (S3) foramina. Patients with a 50% or greater improvement in voiding symptoms following the stage I trial period progress to stage II (permanent) implantation. We sought to determine if bilateral S3 lead placement during stage I improves the “success” rate for advancing to stage II sacral neuromodulator placement.
Methods: A retrospective chart review of 124 (20 male and 104 female) patients that underwent stage I sacral neuromodulator (InterStim®, Medtronic Inc., Minneapolis, Minnesota) implantation in the S3 foramina for the treatment of refractory urinary urgency/frequency, non-obstructive urinary retention or pelvic pain was performed. Patients were divided into two cohorts based on unilateral versus bilateral stage I lead placement. Both groups were compared with regards to overall “success”, defined as a trial period that resulted in a 50% or greater improvement in symptoms and, therefore, progression to stage II (permanent) implantation. The procedures were performed by two surgeons and the decision for unilateral or bilateral lead placement was based on surgeon preference.

Results: Fifty-five (44%) patients underwent unilateral stage I lead placement while 69 (56%) received bilateral S3 leads. Successful stage I trials were reported in 32/55 (58%) and 53/69 (76%) of unilateral and bilateral cohorts, respectively (p = 0.03). Five wound infections were reported - two (3.6%) following unilateral and three (4.3%) after bilateral stage I lead placement. No other complications were encountered.

Conclusions: Patients receiving bilateral stage I S3 leads demonstrated significantly improved outcomes when compared to those receiving unilaterally placed leads.

Podium #3

THE EFFECT OF NEUROMODULATION ON FEMALE SEXUAL FUNCTION
Kenneth M. Peters, MD; Michael Ingber, MD; Kim Killinger, RN; Ibrahim Ibrahim, MD, MPH, PhD
Ministrelli Program for Urology Research and Education (MPURE), William Beaumont Hospital, Royal Oak, MI

Introduction and Objectives: Recent studies suggest that Interstim® neuromodulation therapy may improve female sexual dysfunction. We prospectively evaluated women undergoing Interstim® implantation for urgency, frequency, urinary retention or Interstitial Cystitis (IC) to determine if neuromodulation would have any effect on the Female Sexual Function Index (FSFI) or any of its domains (desire, arousal, lubrication, orgasm, satisfaction, pain). A perfect score is 36 on the FSFI.

Methods: Sexually active patients who are part of the Interstim® database at William Beaumont Hospital and have had a minimum of 6 months follow-up were included in the study. Patients completed a FSFI both preoperatively and at follow-up visits. Data was analyzed with paired 2-tail t-test.

Results: Of 35 women who were sexually active when enrolled in the study, 16 have had a minimum of 6 months follow-up. Mean (SD) FSFI was 15.8 (6.6) preoperatively, and at 6 months was 19.9 (6.7) (p=0.033). While the mean score of each individual domain of the FSFI improved postoperatively, only the sexual satisfaction score had a statistically significant increase after Interstim® implantation (2.43 to 3.90, p=0.003). At three months, differences were seen but were not statistically significant.

Conclusions: Interstim® neuromodulation therapy appears to improve female sexual dysfunction and the sexual satisfaction score on the FSFI. Additional studies and long-term results are needed to confirm the findings in our study and to determine if any of the other domains of the FSFI are improved with neuromodulation therapy.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Mean (SD) FSFI Score preop (n=16)</th>
<th>Mean (SD) FSFI Score 6 months (n=16)</th>
<th>2-tailed p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire</td>
<td>2.475 (1.38)</td>
<td>2.889 (1.41)</td>
<td>0.173</td>
</tr>
<tr>
<td>Arousal</td>
<td>2.780 (1.23)</td>
<td>3.300 (1.53)</td>
<td>0.139</td>
</tr>
<tr>
<td>Lubrication</td>
<td>3.319 (1.76)</td>
<td>3.69 (1.72)</td>
<td>0.362</td>
</tr>
<tr>
<td>Orgasm</td>
<td>2.343 (1.88)</td>
<td>3.086 (1.78)</td>
<td>0.169</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>2.425 (1.39)</td>
<td>3.900 (1.60)</td>
<td>0.003</td>
</tr>
<tr>
<td>Pain</td>
<td>2.925 (1.66)</td>
<td>3.050 (1.03)</td>
<td>0.703</td>
</tr>
<tr>
<td>Total FSFI</td>
<td>15.80 (6.62)</td>
<td>19.85 (6.65)</td>
<td>0.033</td>
</tr>
</tbody>
</table>

Funding: Ministrelli Program for Urology Research and Education (MPURE)
THE VALIDATION OF A SHAM FOR POSTERIOR TIBIAL NERVE STIMULATION
Kenneth M. Peters, MD; Donna J. Carrico, NP, MS; Frank N. Burks, MD
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Introduction and Objective: Posterior tibial nerve stimulation (PTNS) is used to treat urgency and frequency in people with overactive bladder (OAB). There is a known large placebo effect in the treatment of OAB. It has been reported that 50% – 60% of people with OAB who are treated with PTNS will have improved bladder symptoms. There have been no documented sham controlled trials using PTNS. The challenge of developing a sham for PTNS is that subjects have a 34 gauge needle inserted and feel electrical stimulation in their foot during treatment. The purpose of this study was to determine the efficacy of a new sham for PTNS. This novel design evaluated the subject’s perception of a sham treatment in relation to the actual PTNS treatment.

Methods: This was a blinded sham-controlled pilot study. Thirty healthy volunteers (15 women and 15 men) were recruited by word of mouth and randomized into two equal groups: one group with the PTNS on the right and sham on the left; the other group with the PTNS on the left and sham on the right. The subjects were blinded by a drape obscuring their view of their lower extremities. The sham utilized a Streitberger placebo needle placed at the actual PTNS placement site along with a TENS unit pad placed below the small toe to deliver an electrical current to the ipsilateral foot while avoiding major organ reflexology stimulation points. The TENS unit was activated at 20 Hz until the subject felt stimulation. PTNS was performed on the opposite foot in the standard fashion, with a 34 gauge needle placed at the posterior tibial nerve and the grounding pad placed on the bottom of the foot below the small toe to mimic the sham placement of the TENS pad. The PTNS device was activated at 20 Hz until the subject felt stimulation in the foot. The subjects had 1 session for the simultaneous testing of the PTNS vs. sham that included 15 minutes of stimulation. At the end of the test session, subjects were asked to complete a questionnaire about the location of the sensation, the type of sensation felt during the test, and to identify which leg had the sham and which one had the PTNS or to state it is unknown. Results were analyzed using a Chi-square test where appropriate (expected frequency>5), otherwise a Fisher’s Exact test was used. The primary endpoint for our study was a subject that could identify the sham greater than 50% of the time and proposed that up to 75% correct identification would be acceptable.

Results: The two groups were similar with respect to sex, age, ethnicity and educational level. We examined the data to see if subjects were able to positively identify the sham. There were 14 shams total on the right of which 4/14 (29%) were correctly identified. There were 16 shams total on the left of which 6/16 (37.5%) were correctly identified. In total, 10/30 (33%) of the shams were identified correctly. We would expect 50% to be identified simply by guessing and proposed that up to 75% correct identification would be acceptable. With only 33% being correctly identified, it is safe to assume that subjects are unable to identify whether they are receiving a sham or the PTNS and therefore, the developed protocol provides a reasonable sham for this proposed study. We examined females and males separately to see if one group was able to identify the sham more often. Although females tended to identify the sham correctly more often than males (40% vs. 27%) this is still below the expected 50% and well below the acceptable 75% identification rate.

Conclusions: Our protocol provides an efficacious sham for the further study of PTNS. With availability of an effective sham, additional research can be performed in a blinded manner and compared to a reliable sham procedure to nullify the known placebo effect of this therapy.

Funding: Ministrelli Program for Urology Research and Education (MPURE)
MODIFIED TECHNIQUE TO AVOID SURGICAL SITE INFECTION: 6-YEAR EXPERIENCE WITH SACRAL NEUROMODULATION

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1Department of Gynecology and Obstetrics; 2Department of Urology, Emory University School of Medicine, Atlanta, Georgia

Objective: Procedures for sacral neuromodulation (SN) are considered minimally invasive; however, surgical site infection is not uncommon and may result in removal of the device and discontinuation of therapy. The objective of this study was to study the incidence of infection in patients undergoing SN therapy with a surgical technique designed to minimize the risk of infection.

Methods: This was a retrospective chart review of all patients that underwent management of lower urinary tract dysfunction with SN at the Emory Continence Center from January 2001 through August 2007. All procedures were performed with modifications to the standard technique to prevent infection: skin preparation with alcohol in addition to betadine, use of an occlusive drape between the perineum and the operative site, use of a mirror to visualize motor response at the perineum and avoid breaks in sterile technique, scar excision for stage 2 implantation of the internal pulse generator (IPG), irrigation of wounds with antibiotic solution, and postoperative oral antibiotic prophylaxis during the test interval with percutaneous temporary or permanent leads. Data on patient demographics, specific SN procedures, postoperative infection, and explantation of IPG were entered into a database and analyzed. The primary outcome was the rate of postoperative surgical site infection.

Results: 102 patients (63 women and 39 men) underwent procedures related to SN therapy, including percutaneous nerve evaluation, stage 1 evaluation with permanent lead, stage 2 implantation of IPG, removal / repositioning of lead, replacement of IPG due to battery expiration, and explantation of IPG. 38 patients underwent SN therapy for intractable symptoms of overactive bladder, and 64 patients had a diagnosis of urinary retention. Mean (standard deviation) age was 48.3 (5.2) years. Mean (standard deviation) length of clinical follow-up after initial procedure was 21.5 (21.3) months. The overall infection rate was 3/102 (2.9%). One case of infection resulted in removal of permanent leads after stage 1. Of the 58 patients that underwent implantation of IPG, one patient had explantation for infection over the IPG site; another case of infection resulted in treatment with oral antibiotics but did not require explantation. The overall IPG explantation rate was 5/58 (8.6%). The other 4 cases of explantation were due to diminished efficacy of SN therapy despite therapeutic adjustments and multiple attempts at reprogramming the device.

Conclusions: Surgical modifications to SN therapy were associated with a low postoperative infection rate and only one case of explantation due to infection. Prospective trials are needed to determine optimal techniques that will minimize the risk of surgical complications.

THE EVOLVING ROLE OF OFFICE TEST STIMULATION FOR PATIENTS UNDERGOING SACRAL NEUROMODULATION

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Introduction and Objectives: Sacral neuromodulation (SNS) has become an accepted modality in the treatment of refractory voiding dysfunction. As originally described, SNS was carried out in the office setting under local anesthesia and insulated wires were placed in the S3 and/ or S4 foramen based primarily on the appropriate sensory and motor responses. Live fluoroscopy was not performed and the patient generally had sacral films after the procedure to check wire position. If the patient had appropriate improvement in symptoms, a permanent sacral lead and implantable pulse generator (IPG) were placed under general anesthesia with a sacral cutdown procedure to place the lead directly at the periosteal level. With increased use and new developments, the implantation procedure became much less invasive. Currently, the most common method used for SNS is the staged procedure where a tined quadripolar lead is initially placed in the operating room (OR) for “test” stimulation, and if the patient responds, the lead is connected to an IPG. We evaluated our results using a modified office test stimulation to determine its efficiency and role in patients undergoing SNS.
Methods: 52 consecutive patients undergoing office based percutaneous test stimulation (PTS) for refractory voiding dysfunction were evaluated retrospectively. All patients were tested under local anesthesia with 0.5% lidocaine. Sensory and motor responses were confirmed with an insulated foramen needle and a coiled insulated wire was placed in both the left and right S3 foramen under fluoroscopic guidance. The patient was implanted with lead and IPG in the OR if there was at least 50% subjective and objective (voiding diary) improvement in symptoms. If the patient had an equivocal response or did not appropriately feel the stimulation, a staged procedure was performed, and if the patient had “good” test stimulation (appropriate sensory responses) but did not respond, he/she was tried on other treatment options.

Results: Of the 52 patients, 38 were women and 14 were men. Mean patient age was 59.1±18.8 yrs. Mean follow up days after PTS was 7.4±2.1 days. Based on symptoms, the patients were categorized into 3 groups: frequency/urgency in 24 patients (46%), urge incontinence in 24 patients (46%), and non-obstructive retention in 4 patients (8%). Overall results: 52 patients underwent PTS and 34 patients (65%) had 50% or greater improvement in symptoms. Of these 34, 27 patients (52% overall) have had permanent IPG placement thus far. Of the 24 patients with frequency/urgency syndrome, 16 (67%) had at least 50% improvement on test stimulation and 13 have had permanent IPG placement. Of the 24 patients with urge incontinence, 16 (67%) had at least 50% improvement on test stimulation and 13 of them also have had IPG placement thus far. Of 4 patients with non-obstructive retention, 2 (50%) were able to void. 1 of the 2 patients has had a permanent IPG.

Conclusions: The office based PTS can be an efficient procedure with reliable results in experienced hands. With increasing availability of fluoroscopy in office-based practices, PTS should be an option for most patients as it is less invasive and uses far less resources. In this group of patients, the percentage of patients with 50% improvement in symptoms is similar to that reported in the staged procedure.

Podium #7

URODYNAMIC PREDICTORS OF SUCCESSFUL TEST STIMULATION FOR SACRAL NEUROMODULATION IN PATIENTS WITH NEUROLOGIC DISEASE AND VOIDING DYSFUNCTION
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Department of Urology, University of Iowa Hospitals and Clinics, Iowa City, IA

Introduction and Objectives: We evaluated various urodynamic parameters as potential predictors for successful test stimulation for Sacral Neuromodulation in patients with neurologic disease and voiding dysfunction.

Methods: This is a retrospective analysis of patients with neurologic disease and voiding dysfunction (neurogenic bladders) who underwent evaluation for Interstim device implantation. All patients underwent preoperative urodynamics (UDS). Multiple UDS parameters were analyzed to determine if any factor predicted successful test stimulation.

Results: 42 patients (M=16, F=26; mean age=47.5, range 18-80) with voiding dysfunction presumed secondary to neurologic disease underwent test stimulation for Sacral Neuromodulation. Patient neurologic diagnoses were as follows: multiple sclerosis=5, stroke (CVA) =6, Parkinson’s disease =1, Cerebral Palsy=2, traumatic brain injury=1, spinal cord injury/disease=21, other=6. Patients were stratified based on urologic complaint, and diagnoses were as follows: retention (R) =23, urge incontinence (UI) =19. Of those patients who underwent initial testing, 28/42 (67%) went on to Implantable Pulse Generator (IPG) placement (R=15/23 or 65%, UI=13/19 or 68%).

In the Retention group (n=23), 15 patients had successful test stimulation and went on to implantation of IPG. Mean Urodynamic bladder capacity was 688ml vs. 664ml in the failure group (TFG) and implantation group (IG) respectively. All 7 patients (100%) in the TFG had documented detrusor instability (DI) on UDS, whereas 3/15 (20%) in the IG had documented DI (p=0.0004). Urge incontinence (UI) was documented in 2/7 patients (29%) in the TFG vs. 2/15 patients (13%) in the IG (p=0.3865). Abnormal compliance was documented in 3/7 patients (43%) in the TFG, and in 3/15 patients (20%) in the IG (p=0.2617). Abnormally increased EMG signal was seen in 4/7 patients (57%) in the TFG, and 3/15 (20%) patients in the IG (p=0.0815).

In the UI group (n = 19), 13 patients had successful test stimulation and went on to implantation of IPG. Mean Urodynamic bladder capacity was 291ml in the TFG vs. 298ml in the IG. All 6 patients (100%) in the TFG had documented DI vs. 12/13 patients (92%) in the IG (p=0.4853); 4/6 patients (67%) in the TFG had UI on UDS vs. 5/13 patients (38%) in the IG (p=0.2524). Abnormal compliance was documented in 1/6 (17%) patients in the TFG, and in 0/13 (0%) patients in the IG (p=0.1311). Abnormally increased EMG signal was seen in 2/6 (33%) patients in the TFG, and in 4/13 (31%) patients in the IG (p=0.9128).
Conclusions: In patients with urinary retention and neurogenic voiding dysfunction, the presence of DI is a strong predictor of subsequent failure of test stimulation for Sacral Neuromodulation. We did not identify any specific urodynamic predictors of failure of test stimulation for Sacral Neuromodulation in the patients with urge incontinence and neurogenic voiding dysfunction.

Podium #8

SAFETY AND EFFICACY OF CHRONIC PUDENDAL NERVE STIMULATION (CPNS): MEDIUM TERM FOLLOW UP IN TWO CENTERS DATA-COLLECTION
M. Spinelli°; S. Malaguti; F. Cappellano*; C. Fornara*; M. Citeri°; L. Zanollo°; F. Catanzaro*; T. Redaelli°
°Neurourology – Spinal Unit, Niguarda Hospital, Milan; *Urology Dept. Multimedica – Sesto San Giovanni, Milan

Introduction and Aim of Study: Further clinical evidence for the safety and efficacy of CPNS with tined lead under neurophysiological guidance comes from a two-centre chart-review study. The study aimed at evaluating the efficacy and safety of this therapy in patients with urinary and bowel disorders, such as neurogenic and idiopathic OAB, urinary retention, painfull bladder syndrome (PBS), constipation and sphincter deficit.

Materials and Methods: The chart-review study included 54 patients (mean age of 46.9 years) with refractory urinary and bowel disorders who received test stimulation between January 2003 and March 2006. The data collection forms included questions on patient demographics, diagnosis, implant date, implant side, complications and adverse events. Thirty-nine patients (72.2%) were diagnosed with neurogenic or idiopathic OAB, the remaining 15 (27.8%) had other indications (5 with IC/painful bladder syndrome (PBS), 5 with constipation, 3 with urinary retention and 2 with sphincter deficit). Five patients with neurogenic OAB had concomitant constipation, 1 had faecal incontinence and 1 had a trauma of the lumbal spine (L2). Patient demographics are shown in table 1.

Successful test screening was defined as an 80% or greater improvement in symptoms. Overall, test screening was successful in 34 patients (63.0%) who consequently received a permanent implant. Twenty-three (59.0%) of the patients with OAB (20 with neurogenic and 3 with idiopathic disease) were permanently implanted. Eleven (73.3%) of the patients with other indications were permanently implanted, including all patients with IC/PBS or sphincter deficit, 3 patients with constipation and 1 patient with retention. (Table 1).

Table 1: Patient demographics and primary diagnosis of patients who received test screening and those who received permanent implant of the neurostimulator

<table>
<thead>
<tr>
<th>Patient demographics</th>
<th>Test screening All (N = 54)</th>
<th>Patients with OAB (N = 39)</th>
<th>Permanent implant All (N = 34)</th>
<th>Patients with OAB (N = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>15</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>21</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Mean age</strong> (range):</td>
<td>46.9 (19-78)¹</td>
<td>43.8 (19-67)²</td>
<td>46.9 (19-67)³</td>
<td>42.7 (19-64)⁴</td>
</tr>
<tr>
<td><strong>Primary diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAB</td>
<td>39</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurogenic</td>
<td>32</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idiopathic</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC/PBS</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retention</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sphincter deficit</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1: N=43; 2: N=31; 3: N = 31; 4: N=22
As the number of patients with indications other than OAB was limited, other analyses of patient characteristics and efficacy of PNS with InterStim™ Therapy were only performed on the 23 patients with OAB with permanent implant of the neurostimulator.

The implant side of the neurostimulator varied between subjects (Table 2). Fourteen patients (61%) had not received any treatment, other than conservative therapy, before PNS with InterStim™ Therapy. Five patients with OAB who had successful test stimulation (21.7%) were refractory to anticholinergic drugs or botox injections; 4 patients, including 3 with idiopathic OAB, had a history of perineal surgery (SNS or hysterectomy) (Table 2).

**Results:** All patients with OAB were requested to complete a voiding diary for 7 days, providing information on micturition frequency, number of UI episodes and bladder capacity before and after implant. The mean duration of follow-up was 17.4 months (± 11.3) ranging between 1 and 33 months (median follow-up 19.2 months). Chronic PNS led to a significant decrease in the mean number of voids per 24 h from 13.4 at baseline to 5.3 (-60.4%) after permanent implant ($P < 0.0001$, Wilcoxon signed rank test), the mean number of UI episodes per day decreased from 5.0 to 0.7 (-88.2%) ($P < 0.0001$, Wilcoxon signed rank test) and the mean bladder capacity increased from 153.8 mL to 386.3 mL (+164.9%) ($P < 0.0001$, Wilcoxon signed rank test) (Figure 7). Comparable results were obtained when only patients with neurogenic OAB were considered.

**Table 2: Medical history and implantation information**

<table>
<thead>
<tr>
<th>Previous treatment</th>
<th>All patients with OAB (N = 23)</th>
<th>Patients with neurogenic OAB (N = 20)</th>
<th>Patients with idiopathic OAB (N = 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative therapy</td>
<td>14</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Anticholinergic drugs</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Hysterectomy with bilateral annexectomy for pelvic endometriosis</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SNS</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implant side</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Left</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Bilateral</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

**Discussion:** Safety data included intra- and immediate post-operative complications and adverse events of all 54 patients as well as follow-up data of the 34 patients with permanent implant of the neurostimulator. No complications were documented during the test or permanent implantation procedures. During the follow-up period, 2 patients with permanent implant of the neurostimulator reported adverse events, 1 of these patients (with idiopathic OAB) was eventually explanted.

**Conclusion:** The results of this study support the efficacy and safety of PNS with InterStim™ Therapy in patients with neurogenic and idiopathic OAB and suggest that this therapy can also successfully be applied in patients with PBS, constipation or sphincter deficit. Importantly, almost 40% of the patients who had symptom improvement after PNS were refractory to other treatment modalities such as anticholinergics, botox injections or perineal surgery, suggesting PNS with InterStim™ is also a valuable alternative when conservative treatments or even surgery have failed.

Podium #9

THE COMBINATION OF PELVIC FLOOR REHABILITATION WITH PERCUTANEOUS TIBIAL NERVE NEUROMODULATION IN THE TREATMENT OF STRESS URINARY INCONTINENCE

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Introduction: Stress incontinence has been show to be successfully treated by pelvic muscle floor rehabilitation with or without biofeedback or electrical stimulation. However, the best success (dry) rate reported is only 58%. Percutaneous tibial nerve stimulation (PTNS) has been approved by the FDA for overactive bladders and urge incontinence (Urgent PC, Uroplasty Inc.). There is good basic science neurophysiologic data to suggest that PTNS should strengthen the pelvic floor muscles as well, through the sacral neurological complex of nerves.

Objectives: To determine if the combining of pelvic floor muscle training (PFMT), biofeedback, and electrical stimulation at 100 Hz (Hollister Inc.Evadri System), with neuromodulation of the tibial nerve (PTNS) could safely and successfully treat stress urinary incontinence.

Material and Methods: 212 patients with stress urinary incontinence were treated in a prospective trial. Urodynamics were performed on all patients with urge incontinence, significant pelvic prolapse (stage 2 or>), previous surgery, neurological injuries, significant insensible loss or a question as to the diagnosis. Patients with urge incontinence, noncompliant bladders or significant ISD (MUC or MUCP < 35) were excluded from the investigation. Therapy consisted of a combination of pelvic floor muscle training (PFMT) and biofeedback, electrical stimulation at 100 Hz (pudental nerve neuromodulation); and PTNS. Patients were treated with eight twice-weekly sessions of PFMT, biofeedback and electrical stimulation at 100 Hz (pudental nerve neuromodulation). Immediately following the electrical stimulation (same clinic visit), all patients underwent 12 twice weekly percutaneous tibial nervestimulations (PTNS) treatments. Patients were followed at 3-month intervals with vaginal manometry to motivate them to do their exercises twice per day. Successful treatment was defined as absence of incontinence episodes (dry) at the 3-month follow-up visit

Results: Patients ranged in age from 40 – 87 with median age of 62. The median duration of incontinence was 3 years; the mean number of accidents per day was two. The results in these 212 patients with stress incontinence revealed an 87% success rate (dry) and at the 3-month follow-up visit. The remaining 13% of patients had a mean improvement of 78% in incontinence episodes. There were no significant side effects (infection, bleeding, etc.). There have been two relapses. Median follow-up is now 19 months.

Conclusion: Combining electrical stimulation at 100 Hz (neuromodulation of the pudental nerve), biofeedback, and pelvic floor exercises (PFMT), with percutaneous tibial nerve neuromodulation (PTNS) is a safe, very effective treatment for stress urinary incontinence and significantly more effective than PFMT alone. Confirmatory and randomized trials need to be done, to validate these results.

Podium #10

DESCRIPTION OF A SALVAGE TECHNIQUE IN PATIENTS WITH PREVIOUSLY FAILED CONTINENT CATHETERIZABLE ILEOCECAL URINARY DIVERSION

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Introduction: The etiology of incontinence varies greatly in patients with continent catheterizable urinary diversions (CCD). The cause of incontinence varies from uninhibited pouch contractions and poorly compliant high-pressure reservoirs to incompetent continence mechanisms. Reported rates of incontinence vary from 0.6% to 28% [Farnham et al, 2004]. Treatment options for patients with incompetent stomas include revision and tapering of the distal segment as well as injection of bulking agents. We present a series of patients with previously failed CCD who were rendered continent after rectus muscle cross-over of their catheterizable limbs. The purpose of this study is to describe a novel and minimally invasive technique for restoring stomal continence in patients with previously failed CCD and presents a series of patients that have undergone this procedure de novo.
Materials and Methods: A total of 28 patients underwent rectus muscle cross-over as a part of their CCD creation. Five patients had previously failed CCD and complained of stomal incontinence. Twenty-three patients were treated de novo. Indication for CCD creation was transitional cell carcinoma (7); neurogenic bladder (9); interstitial cystitis (4); radiation cystitis/trauma (4) and refractory urinary incontinence (4). All information regarding continence was obtained by patient interview and physical exam. Follow-up was available for 26 patients. Technique Description: The rectus fascia is exposed and incised. Six to 8 cm of rectus muscle belly is exposed. Two muscle bundles are identified on one side of the mid-line and isolated with a penrose drain. The muscles are crossed over. A foley catheter intubating the catheterizable segment is passed through the opening between the muscle bundles. The segment is brought out to the skin and the stoma is created. The rectus muscle tone exerts continuous pressure on the stomal limb passing between the crossing muscle bundles, thereby facilitating continence. Results: The median patient age was 52 years with a mean follow-up of 15.1 months. Postoperatively the median interval between catheterization was 4.8 hours (range 2 to 6 hours). Of the 5 patients that underwent rectus muscle cross over as a salvage procedure, 4 of 5 (80%) were dry in between catheterizations. One patient reported leaking in between catheterizations. This patient had a second revision of her ileal limb secondary to bowel necrosis and continues to be wet in between catheterizations. All patients who underwent de novo rectus muscle cross-over as a part of their CCD creation reported being dry in between catheterizations. Conclusion: Rectus muscle cross-over is a simple and feasible method of continence enhancement for ileocecal reservoirs. This technique can also be applied, as a salvage procedure in patients with previously failed CCDs. Long-term follow-up is necessary to confirm the validity of this technique's outcomes.

Podium #11

TRENDS IN STRICTURE MANAGEMENT AMONG MALE MEDICARE BENEFICIARIES: UNDERUSE OF URETHROPLASTY?
Jennifer Anger1; Jill Buckley2; Richard A. Santucci3; Christopher Saigal1; The Urologic Diseases of America Project 1UCLA, Los Angeles, CA; 2Lahey Clinic, Burlington, MA; 3Wayne State U, Detroit, MI

Introduction and Objectives: We sought to analyze trends in male urethral stricture management through the use of 1992-2001 Medicare claims data, and to determine whether some racial and ethnic groups bear a disproportionate burden of urethral stricture disease. Methods: We analyzed Medicare claims for fiscal years 1992, 1995, 1998, and 2001. ICD-9 diagnosis codes were used to identify men with urethral stricture. Demographic characteristics assessed included patient age, race, and comorbidities as measured by the Charlson index. Treatments were identified by CPT-4 procedure codes and stratified into four treatment types: (1) urethral dilation, (2) direct-vision internal urethrotomy (DVIU), (3) urethral stent/steroid injection, and (4) urethroplasty.
Results: Overall rates of stricture diagnosis decreased from 10,088 per 100,000 population in 1992 to 6,897 in 2001. Of male Medicare beneficiaries age 65 and over with a diagnosis of stricture, the majority had one or two comorbid conditions. Stricture prevalence was highest among African American and Hispanic men, although urethroplasty rates were highest among Caucasians. DVIU was the most common treatment, followed by urethral dilation, urethral stent/steroid injection, and urethroplasty (Table 1). Urethroplasty rates remained stable, but quite low (0.6-0.8%), over the period of study. Conclusions: Overall rates of stricture diagnosis decreased from 1992 to 2001. Despite our knowledge of the poor overall efficacy of urethrotomy and dilation, the complications of urethral stent placement for stricture disease, and the superior efficacy of urethroplasty over other treatments, urethroplasty rates remained the lowest among all treatments. Although we are unable to determine treatment success with these data, these findings suggest an overuse of less efficacious modalities and an underuse of urethroplasty.
Table 1. Procedure rates among male Medicare beneficiaries with a diagnosis of urethral stricture (rate per 100,000 population)

<table>
<thead>
<tr>
<th></th>
<th>DILATION</th>
<th>DVIU</th>
<th>STENT/INJECTION</th>
<th>URETHROPLASTY</th>
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<tr>
<td>1992</td>
<td>596</td>
<td>692</td>
<td>3.9</td>
<td>7.3</td>
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<td>1995</td>
<td>480</td>
<td>653</td>
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<tr>
<td>1998</td>
<td>373</td>
<td>571</td>
<td>19</td>
<td>8.4</td>
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<td>2001</td>
<td>309</td>
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Funding: National Institute of Diabetes and Digestive and Kidney Diseases

Podium #12

LONG TERM FOLLOW UP OF PATIENTS WITH INJURY TO SPINAL CORD SUSTAINED PRIOR TO 1977: RETROSPECTIVE REVIEW
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Objective: Our aim was to retrospectively analyze renal function and upper tract status of spinal cord injury (SCI) patients followed at Rancho Los Amigos National Rehabilitation Center with at least 30 years of follow-up.

Methods: We retrospectively reviewed the medical records and upper tract imaging studies of 54 patients (41 male, 13 female, mean age 62.1 years, range 45-83) that sustained SCI prior to 1977. These patients are routinely followed at our institution on annual basis. Renal function was assessed by the serum creatinine level and glomerular filtration rate (GFR), determined using MDRD calculation. Upper tracts were assessed by renal ultrasound.

Results: Mean follow-up was 40.3 years. Patient level of injury includes: 20 cervical level, 33 thoracic level and 1 cauda equina syndrome. Mechanism of injury includes: 21 gunshot wound, 20 motor vehicle accident, 6 fall, 3 diving accident, 2 transverse myelitis, and one each with benign AVM and stab wound. At the present time, bladder management includes: 29 reflex voiders (17 with sphincterotomy in the past), 12 patients on clean intermittent catheterization, 7 with indwelling catheters (6 urethral and 1 suprapubic), 4 with continent cutaneous stoma, and 2 with ileovesicostomy.

Annual ultrasound reports for the past 10 years were available for review. New onset of hydronephrosis was found in 5 patients (9%). A total of 12 patients (22.2%) underwent GU surgery within the past 10 years (8 external sphincterotomies, 2 urelume stent placements, one ileovesicostomy, and one ileocystoplasty). Mean serum creatinine at the last follow-up visit in 2006/2007 was 0.6mg/ml (range 0.3-1.1) and mean serum creatinine in 1996 – 1997 was 0.7mg/ml (range 0.5-1.8). Mean GFR in 2006/2007 was 152.8 ml/min/1.73m² (range 65-374) and mean GFR in the previous decade was 130.1ml/min/1.73m² (range 75-207).

Conclusion: It is well known that routine care of the genitourinary tract improves survival and overall quality of life among patients with SCI. Annual evaluation of upper tracts using renal ultrasound and evaluation of renal function utilizing serum creatinine level are commonplace and standard of practice at many institutions to screen for potential renal deterioration. Our review shows that only 9% (5 patients) of the patients had new onset hydronephrosis in the third and fourth decade following the initial injury to the spinal cord (only one patient out of 5 in the 4th decade group). Hence, for a select group of patients with stable bladder management and an unusually long period of follow-up after SCI, annual follow up may not be regularly indicated. Our further analysis will focus on identifying the risk factors predisposing long-term SCI survivors to upper tract damage.
Podium #13

WHAT IS THE ROLE OF URODYNAMICS IN THE DIAGNOSIS AND TREATMENT OF LUTS IN MEN?
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Objective: In order to evaluate the diagnostic and treatment utility of urodynamics (UDS) in men with lower urinary tract symptoms (LUTS) consisting of LUTS suggestive of BOO, overactive bladder (OAB), and post-prostatectomy incontinence (PPI), we compared the clinical diagnosis and plan with the diagnosis and plan after UDS.

Materials and Methods: A retrospective chart review identified 118 consecutive neurologically intact male patients referred for UDS; 110 with LUTS suggestive of BOO or OAB, and 17 patients with PPI. All clinical diagnoses from the initial visit were reviewed. After UDS, we determined whether UDS confirmed or ruled out the initial diagnosis and if additional diagnoses were made. A change in the treatment plan was also noted independent of a change in diagnosis.

Results: Among 118 patients in the study, UDS changed the diagnosis in 55 (46.6%) and the plan in 37 (31.4%). Of 81 patients with a diagnosis of LUTS suggestive of BOO at initial clinical evaluation, 74 (91.3%) were found to have BOO after UDS. Of 37 patients without a clinical diagnosis of LUTS suggestive of BOO, 18 (48.6%) were determined to have BOO after UDS. A pre-UDS diagnosis of BOO was 79.5% sensitive and 70.8% specific for a diagnosis of BOO confirmed by UDS. Of 48 patients without a diagnosis of OAB at initial clinical evaluation, 34 (70.8%) were determined to have detrusor overactivity (DO) after UDS. Of 70 patients without a diagnosis of BOO pre-UDS, 24 (34.3%) were found to have DO after UDS. A pre-UDS diagnosis of OAB was 58.6% sensitive and 78.4% specific for a UDS diagnosis of DO. The only new diagnosis after UDS other than BOO and OAB was dysfunctional voiding, which was found in 3 patients (2.5%). The change in diagnosis led to a change in the treatment plan for 2 patients (1.7%). Among 17 patients with an initial pre-UDS diagnosis of PPI, 9 (52.9%) had a new diagnosis after UDS [6 with BOO (35.3%) and 3 with OAB (17.6%)]. The change in diagnosis led to a change in the treatment plan in 8 (47.1%) of the patients. The rate of treatment change was not significantly different between the PPI patients and patients with LUTS (OR = 1.96; [0.687 - 5.60]; p= 0.26).

Conclusion: Urodynamic studies have diagnostic utility for men with LUTS. They are most useful for ruling out OAB and least useful for ruling in BOO. Since nearly a third of the patients had a change in their treatment plan after UDS, it is reasonable to conclude that the undergoing UDS translates into actual changes in care. Most changes in the diagnosis and treatment plan were related to a new diagnosis of BOO or OAB after UDS. A new diagnosis of dysfunctional voiding was not a common reason for diagnostic or treatment changes in men with LUTS. The value of UDS in terms of altering the treatment plan does not differ significantly for patients with LUTS and patients with PPI.

Podium #14

DEMONSTRATION OF INVERSE RELATIONSHIP BETWEEN BLADDER COMPLIANCE AND SCIAFFER OBSTRUCTION GRADE IN MEN
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Objectives: To determine whether there is a relationship between urinary bladder compliance in men with lower urinary tract symptoms (LUTS) and 1) the degree of urethral obstruction, 2) the presence or absence of detrusor overactivity and 3) prostate size.

Methods: This was a retrospective observational study of 85 consecutive men identified from our database who underwent evaluation because of persistent LUTS. All patients completed validated questionnaires, focused history & physical examination, bladder diary, urinalysis & culture, cystoscopy & videourodynamic studies (VUDS).

Inclusion Criteria: men 18 years of age an older with persistent LUTS who have undergone urodynamic evaluation.
Exclusion Criteria: urethral stricture, prostate cancer, prior prostate surgery, active bladder cancer, neurogenic bladder. Urethral obstruction was defined by the Schafer bladder outlet obstruction nomogram. Grades 0 – 1 are unobstructed and grades 2 – 6 describe those with increasing degrees of obstruction. Large capacity bladder was defined by cystometric bladder capacity in excess of 750 ml with pdetmax <20 cm H2O. Prostate size is recorded as 0 – 4. Zero (0) is a smaller than normal prostate; 1+ is normal and 2 – 4+ describe increasing prostatic sizes.

Statistical Analysis: Associations between ordinal variables were examined using Spearman’s rho. All statistical procedures were performed using SPSS 11.5 (Chicago, Ill.). A p<.05 was considered a priori to be statistically significant.

Results: Bladder compliance was not normally distributed, rather, it was skewed to the right. There was a significant inverse correlation between Schafer obstruction grade and compliance in the total sample of 85 patients (Spearman’s rho = -.28, p=.011). Thus, as the values of Schafer obstruction grade increase, the values of compliance decrease. In contrast, there was no correlation noted between bladder compliance on the one hand, and either presence of detrusor overactivity (spearman's rho= -.17, p=.33) or large capacity bladder (Spearman's rho= -.12, p=.65) Bladder compliance was not found to be related to prostate size; (Spearman’s rho=.076, p=.50).

Conclusions: There is an inverse relationship between bladder compliance and Schafer obstruction grade, but not with the presence of detrusor overactivity, large capacity bladder or prostate size. Since low bladder compliance is an important risk factor for the development of upper urinary tract disease, proactive treatment and careful monitoring of patients with high degrees of urethral obstruction should be considered. References:

References:

Funding: The Institute for Bladder and Prostate Research, New York, NY

Podium #15

PHOTOVAPORIZATION OF THE PROSTATE: COMPARISON OF EARLY COMPLICATIONS IN PATIENTS WITH LARGE (>50 G) VS. SMALLER (≤50G) PROSTATES
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Introduction and Objectives: At our institution, selective laser photovaporization of the prostate (PVP) is becoming the preferred method of decreasing urethral resistance in patients with obstructive urinary retention or refractory lower urinary tract symptoms (LUTS) secondary benign prostate enlargement. We compared the operative data and short term complications in those patients undergoing therapy with large (>50 g) prostates compared to those with smaller (≤50g) prostates.

Methods: We retrospectively reviewed the medical records of all patients undergoing PVP from June 2005 to April 2007 at our institution. The patients either were in urinary retention or had symptomatic LUTS and had failed less invasive therapies. The PVP was performed using an 80 W High-power potassium-titanyl-phosphate photoselective laser at a wavelength of 532 nm (Laserscope) emitting green light. Prostatic gland volume was estimated based on digital examination, transrectal ultrasonography or other radiographic means such as computerized tomography as available. The value of 50cc was used as a cut-off between the small and large volume prostate. Perioperative data including the operative time, volume of bleeding and applied energy was collected. Postoperative catheter duration and postoperative hospital stay were assessed. Any postoperative complications within the first 30 days were included in the analysis.
Results: 92 patients, of whom 46 (50%) had large volume prostates (>50g) and 46 (50%) had smaller volume prostates (≤50g) underwent successful PVP. Two patients with large (>100 g) prostates did require bugbee electrode fulguration of minor bleeders during the case but did not require conversion to electrosurgical transurethral resection. The average age of the patients with large volume prostates was 71.4±9.2 years and that of the patients with smaller volume prostate was 70.6±6.4 years. Mean prostatic volume in the two groups was 85.4±27.3g and 39.2±7.4g, respectively. Mean PSA level was higher in the group with large volume prostates (4.9±3.8 ng/ml versus 2.2±1.9ng/ml, p<0.01). Mean operation time was longer in the group with large volume prostate compared to the group with small prostates (85.4±27.3 minutes versus 44.3±17.0 minutes) but did not reach statistical significance. Mean total energy applied during the procedure was significantly higher in the group with large volume prostates (107.8 ±56.9 Kj versus 165.0±86.5 Kj, p<0.01). There was no statistically significant difference in the length of foley catheterization (LOC) and length of hospital days (LOD) between the two groups (LOC: 1.5±1.4 days versus 1.2±0.5 days; LOD: 1.2±0.5 days versus 1.2±0.8 days). In both groups, no major complications occurred intraoperatively, and no patients had significant blood loss requiring a blood transfusion nor significant fluid absorption causing hyponatremia. Two of five patients who had their procedures performed with therapeutic warfarin levels, had gross hematuria between 2 – 3 weeks postoperatively requiring catheterization and irrigation.

Conclusions: PVP is a relatively safe procedure with minimal morbidity. Although patients with larger prostates require more operative time and total energy, there are no significant differences in intraoperative or early postoperative complications. Although patients may undergo the PVP procedure on therapeutic warfarin therapy without intraoperative or early postoperative bleeding complications, these patients do have some risk of bleeding within the first month.

Podium #16

EFFECTIVENESS AND SAFETY OF TRANSDERMAL OXYBUTYNIN FOR OVERACTIVE BLADDER IN ADULTS PREVIOUSLY TREATED WITH ORALLY ADMINISTERED OXYBUTYNIN

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Introduction and Objectives: The effectiveness and tolerability of transdermally delivered oxybutynin (OXY-TDS) were studied in adults with overactive bladder (OAB), including those who had been treated previously with orally administered oxybutynin (OXY-oral).

Methods: Participants had OAB and were ≥18 years old. Study treatment was open-label OXY-TDS (3.9 mg/day; new patch twice weekly) for as long as 6 months. The primary effectiveness end point was change in health-related quality of life (HRQoL) as measured by mean change from baseline to study end in domain scores of King’s Health Questionnaire (KHQ). A 1-sample t test was used to analyze the significance of KHQ domain score changes. Tolerability was assessed through descriptive statistics of treatment-emergent adverse events. Support was provided by Watson Laboratories.

Results: Of 2878 participants, 525 (18.2%) had been treated previously with extended-release oxybutynin and 376 (13.1%) with immediate-release oxybutynin. In participants who had stopped taking OXY-oral because of ineffectiveness (n=413), HRQoL improved significantly (P<.01) after OXY-TDS therapy, in 8 of 10 KHQ domains (Figure). In participants who had discontinued prior use of OXY-oral because of adverse effects (n=206), treatment-related anticholinergic adverse events were infrequently reported during OXY-TDS therapy (eg dry mouth, n=10 [4.9%]; constipation, n=8 [3.9%]; dizziness, n=4 [1.9%]).
**Conclusions:** HRQoL improved during OXY-TDS therapy in adults with OAB who had stopped taking OXY-oral because of ineffectiveness. The incidence of treatment-related anticholinergic adverse events during OXY-TDS therapy was low in participants who had stopped OXY-oral because of adverse effects.

**KHQ Domain**

- General Health Perception
- Incontinence Impact
- Symptom Severity
- Role Limitations
- Physical Limitations
- Social Limitations
- Personal Relationships
- Emotions
- Sleep/Energy
- Severity (coping) Measures

*Participants who had stopped OXY-oral because of lack of effectiveness.*

*Mean Change in KHQ Domain Score After Treatment With OXY-TDS*

* \( P < .01 \) vs baseline.

**Podium #17**

**EVALUATION OF THE EFFECT OF INJECTION VOLUMES OF INTRAVESICAL BOTULINUM-A TOXIN INJECTIONS IN PATIENTS WITH OVERACTIVE BLADDER SYMPTOMS.**

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**Introduction and Objective:** Botulinum toxin Type A (BTX) has been shown to be effective in the treatment of patients with detrusor overactivity (DO). Despite this success, the protocol for BTX intravesical injection has not yet been standardized, particularly with regards to injection volume, dose, or injection sites. The optimal injection volume is of significant debate, as larger dilution volumes may allow for better BTX tissue diffusion and action whereas lower injection volumes may be associated with lessened discomfort. We report our initial results of a prospective, randomized study designed to compare the effect of injection volumes in patients receiving BTX for DO.

**Methods:** Patients failing high-dose anticholinergic therapy for DO underwent cystoscopy and bladder injection of BTX. All patients received a total of 200 units of BTX divided among thirty evenly distributed intramural injections. Patients were randomized to receive injection volumes of 0.1cc, 0.5cc, or 1.0cc per injection. Prior to injection patients were evaluated using validated UDI-6 and IIQ-7 questionnaires. DO was confirmed with urodynamic evaluation. Patient response to BTX was determined by UDI-6 and IIQ-7 questionnaires (subjective evaluation) as well as urodynamics (objective evaluation) performed at 6-8 weeks and 6 months after treatment.
Results: A total of 30 patients have received BTX injection, of which 29 have undergone post-operative urodynamic evaluation. Mean patient age was 70 years (33-89 years). Mean follow up after BTX therapy was 327 days (120-360 days). At 6-week follow-up, total UDI-6 and IIQ-7 scores improved significantly from 26 to 11, from 21 to 6.8, and from 22 to 8 for the 0.1, 0.5 and 1.0 cc injections groups, respectively (p<0.05). There was no statistical significant difference in improvement between the groups. A total of 6, 8, and 7 patients reported a complete or improved response following 0.1, 0.5, and 1.0 cc BTX injection, respectively. Urodynamic evaluation revealed an average statistically significant increase in bladder capacity from 222 to 444 cc, 226 to 400 cc, and 289 to 422 cc, for the 0.1 cc, 0.5 cc, and 1.0 cc injection groups respectively. The bladder compliance increased significantly in all groups but the 1.0cc injection group (p=0.14). Both the 0.5 cc and 1.0 cc groups had one patient each with transient urinary retention. In 6, 5, and 5 patients there was complete resolution of uninhibited detrusor contractions of which 1, 0, and 1 patient experienced urge incontinence for the 0.1, 0.5, and 1.0cc groups respectively.

Conclusion: We report the first prospective evaluation comparing the use of different dilution volumes for intravesical injection of BTX in the treatment of DO. Accordingly, BTX demonstrates both subjective and objective improvements in the treatment of DO. All injections groups achieved statistically significant improvements with respect to symptom score improvement. All but the 1.0cc injection group demonstrated significant improvement in bladder compliance. Patient accrual and evaluation is ongoing to assess these issues in a larger cohort of patients with upto 1 year follow-up.

Funding: Research Grant by Allergan, Inc.

Podium #18

CAN WE PREDICT WHO WILL RESPOND TO BOTULINUM TOXIN-A INJECTIONS FOR IDIOPATHIC OVERACTIVE BLADDER?
Brian L. Cohen, MD, MPH; Paholo Barboglio, MD; Angelo E. Gousse, MD

Introduction: Patients who are refractory to antimuscarinic treatment for idiopathic overactive bladder (I-OAB) are often offered intra-detrusor injection of botulinum toxin-A (BTX-A) for symptom relief. There exists very little data addressing factors that predict responsiveness to BTX-A therapy.

Objective: To evaluate demographic and urodynamic (UDS) variables that may help predict which I-OAB patients will respond to BTX-A therapy.

Methods: 20 patients with OAB-Dry (urgency and frequency without urge urinary incontinence (UUI)) and 27 patients with OAB-Wet (those with urgency, frequency, and UUI) refractory to oral antimuscarinic therapy were enrolled in a randomized prospective trial to assess response to 100 and 150 units of intra-detrusor BTX-A. Univariate and multivariate analysis were performed to assess various demographic data and UDS parameters that may affect one’s response to BTX-A.

Results: All OAB-Dry patients had normally compliant bladders, and none of the demographic or UDS variables that were assessed were found to be significant predictors of response to therapy (p>0.05 for all variables). (Table 1) For the 27 patients with OAB-Wet, younger age was a statistically significant predictor of a successful response to therapy. Additionally, patients with higher maximal detrusor pressures (pDetMax) tended to respond more frequently than those with lower pDetMax. (Table 2) When these variables were placed in a logistic regression model for multivariate analysis, neither were significantly associated with response to BTX-A intra-detrusor injection response. (p=0.14 for pDetMax and p=0.13 for age).

Conclusions: Pre-BTX-A injection urodynamics in patients with I-OAB-Dry is not useful for predicting which patients may respond to BTX-A therapy. Additionally, younger patients with I-OAB-Wet responded to therapy better than older patients, and those with higher pDetMax tended to respond better as well. However, neither variable was a significant predictor in a multivariate analysis. Future studies should continue to search for factors that may predict success to BTX-A therapy so that this expensive treatment option is used resourcefully.
Table 1. OAB – DRY UDS Comparison between Responders and Non-Responders

<table>
<thead>
<tr>
<th>IMP</th>
<th>N =</th>
<th>PVR</th>
<th>MCC</th>
<th>pDetMax</th>
<th>pVesMax</th>
<th>Vol Voided</th>
<th>pDetQMax</th>
<th>Max Flow</th>
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<tr>
<td>&lt; 40%</td>
<td>5</td>
<td>29+/−36</td>
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<td>&gt; 40%</td>
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Table 2. OAB – WET UDS Comparison between Responders and Non-Responders

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<th>MCC</th>
<th>pDetMax</th>
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Table 3. OAB – Nl Compl UDS Comparison between Responders and Non-Responders

<table>
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<th>IMP</th>
<th>N =</th>
<th>NI Compl</th>
<th>DO</th>
<th>Dose 200 U</th>
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<th>Dose 100 U</th>
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<th>Sex=Male</th>
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<tr>
<td>&lt; 50%</td>
<td>10</td>
<td>9/10</td>
<td>8/10</td>
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<td>68+/−13</td>
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<tr>
<td>&gt; 50%</td>
<td>17</td>
<td>9/17</td>
<td>12/17</td>
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<td>3</td>
<td>4</td>
<td>55+/−15</td>
<td>1</td>
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IMP = improvement, PVR = post-void residual, MCC = maximal cystometric capacity, pVesMax = maximal vesical pressure, vol voided = volume voided, pDetQMax = detrusor pressure at maximal flow, DO = presence of detrusor overactivity, NI Compl = normal compliance

Podium #19

URODYNAMICS FOR ELDERLY (80 YEARS OLD AND MORE) FEMALES. WHO? WHY? WHAT?
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Introduction and Objectives: Urodynamics is considered as the gold standard for the evaluation of patients with lower urinary tract symptoms (LUTS). With the ageing of the whole population, more and more elderly females undergo urodynamics for LUTS. Our objectives were to analyze the population of women aged of 80 years and more who underwent urodynamics as outpatients in our laboratory, to search for why they were evaluated and what diagnosis was made.

Material and Methods: Among 534 women who underwent urodynamics for LUTS between January 2005 and December 2006, 67 (12.5%) (mean age 83.1 years; range 80-92y.) were included. Urodynamics was performed with the Laborie’s Dorado® unit. A complete urodynamic session included one free uroflow (FF), cystometry and pressure-flow (PF) study (10F triple-lumen urethral catheter, filling rate 50 mL/min) in seated position, urethral pressure profilometry and a second free flow. Clinical evaluation comprised of history of LUTS (major complaint when concomitant LUTS), previous history of neurological disease (stroke, multiple sclerosis, lumbar injury…) or dementia, of pelvic floor status and of previous pelvic surgery. Urodynamic assessment comprised of the feasibility of each test and of the results of the cystometry. Then, proposed diagnosis were analyzed.
Results:
Motive for Urodynamics: incontinence was the main complaint: 18 urge, 16 mixed and 9 stress; other complaints were 7 pollakiuria, 10 dysuria or retention and 1 cystitis; 6 patients with prolapsus had pre-operative evaluation.
Previous History: 15 neurological disease (22%), 9 dementia, 12 pelvic organ prolapse and 13 previous pelvic surgery.
Feasibility of the Tests: interpretable tests (urinated volume > 100 mL) were obtained for only 21 FF vs 57 obtained voidings at arrival (36.8 %) but 32/45 obtained PF (71.0%) and 40/43 obtained FF (93.0%) at end of the session. A significant result is the low percentage of interpretable FF at arrival compared with the 60.8% observed in the population less than 80 years old.
Cystometry: bladder overactivity was found in 28 patients (41.8%) of whom 10 (35.7 %) had a history of neurological disease, result consistent with previous studies. Rhythmic rectal contractions were observed in 20 patients (29.8%) of whom 5 (25.0%) had a history of neurological disease; that result confirms our finding of a high prevalence of rectal contractions in elderly patients.
Final Diagnosis: bladder overactivity was the main diagnosis, found in 28 patients (41.8%); sphincter incompetence concerned only 13 (19.4%) patients, detrusor hypocontractility was found in 9 (13.4%), 4 (6.0%) had nocturnal polyuria, 10 (14.9%) had various or uncertain diagnosis and 3 (4.4%) had normal testing.
Conclusion: In that population of very old females, the main complaint is associated with urge (urge or mixed incontinence, pollakiuria). Prevalence of bladder overactivity and of occurrence of rhythmic rectal contractions during cystometry increases significantly in that population. A surprising result is the small group of patients whom proposed diagnosis is sphincter incompetence. At least, the low success in FF at arrival compared to that PF and FF at the end of the session suggests that anxiety and a unfriendly environment can play an important role in addition to the changes in rate of urine production with ageing.

Podium #20

THE USE OF INTRA-DETRUSOR BOTULINUM TOXIN-A IN THE ELDERLY
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Introduction: The intra-detrusor injection of Botulinum toxin-A (BTX-A) is becoming an accepted treatment option for the management of refractory detrusor overactivity (DO). Little data exists regarding the safety and efficacy of BTX-A in elderly patients. We report our experience using intra-detrusor BTX-A in elderly patients with DO refractory to medical management.

Methods: A retrospective chart review was performed on all patients >65 years of age who underwent cystoscopic intra-detrusor injections of BTX-A for refractory idiopathic DO. Each patient received a total of 100-200 units of BTX-A. All patients either failed or did not tolerate medical treatment for urodynamically proven DO. Prior to BTX-A injection, no patient demonstrated bladder outlet obstruction or urinary retention. Charts were reviewed with regard to pre-operative urodynamic studies, pad usage, post-void residual (PVR) urine volume by bladder scan, complications and post procedural subjective improvement.

Results: Ten elderly patients (eight female and two male) with a mean age of 75.3 years (range 65-85) were available for analysis. Five of 10 (50%) patients reported a greater than 50% subjective improvement in overactive bladder symptoms with a mean duration of 4.1 months (range 2-11). Daily pad usage decreased from 6.3 to 3.6 pads/day following BTX-A injection. Nine of ten patients (90%) developed incomplete bladder emptying (IBE) with a PVR >150mL (mean 344, range 185-590). IBE was managed with double voiding in 5, intermittent catheterization in 3 and placement of an indwelling catheter in 1 patient. The IBE effect of BTX-A on these patients had an average duration of 2.9 months (range 0.25-7 months). No other complications were noted.

Conclusions: Intra-detrusor injections of BTX-A in elderly patients with refractory DO appears to be safe and significantly improve symptoms. At standard doses injected, the majority of patients experienced incomplete bladder emptying, although this was easily managed.
Podium #21

URINARY RETENTION IS UNCOMMON AFTER COLPOCLEISIS WITH CONCOMITANT MIDURETHRAL SLING
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Introduction and Objectives: The optimal method for treating stress urinary incontinence at the time of colpocleisis is not known. Women undergoing colpocleisis with concomitant fascial sling have been found to have unacceptably high rates of postoperative urinary retention requiring surgical takedown. Our objective was to determine whether the use of midurethral slings in the setting of colpocleisis is associated with similarly high rates of postoperative urinary retention.

Methods: In this IRB approved study, we reviewed data from consecutive women who had colpocleisis for treatment of symptomatic prolapse with concomitant midurethral synthetic sling between January 2005 and January 2007 in a tertiary care center. Prior to surgery, a standardized assessment of pelvic organ prolapse quantification (POPQ) and multichannel urodynamic testing were completed. Surgery included the midurethral sling (retropubic or trans-obturator approach with Gynecare™ polypropylene mesh) following the modified Le Fort colpocleisis. Approximately three months after surgery, patients underwent standardized postoperative evaluation including prolapse assessment and standing cystometrogram. Urinary retention was defined a measured post void urine residual (PVR) greater than 100 mL at any time after surgery.

Results: Thirty-three women with a mean age of 79 years (65-90) were included in the analysis. No follow-up data was available for one patient. The median follow up for the remaining 32 patients was 9 months (3-23 months). Prior to surgery, the median POP-Q stage was 3 (range 2-4), and nearly all (94%) had incontinence symptoms. Preoperative urodynamic diagnoses included: urodynamic stress incontinence (USI) 50% (N=16); both USI and detrusor overactivity incontinence (DOI) 43% (N=14); DOI 4% (N=1); no USI or DOI 4% (N=1). As expected in women with advanced prolapse, 30% (N=10) had urinary retention (PVR>100 ml) prior to surgery. Postoperatively, prolapse symptoms were resolved in 30/31 patients. Standardized post-operative cystometrogram diagnoses included: 6% USI and 18% DOI. Stress incontinence was reported by 13% of patients and approximately one third (34%) reported urge incontinence. Urinary retention was resolved in eight of 10 women with preoperative urinary retention. No patient had a persistently elevated PVR beyond 6 weeks or symptoms of voiding dysfunction requiring surgical revision of sling.

Conclusion: Concomitant midurethral sling at the time of colpocleisis results in low rates of stress incontinence without significant postoperative urinary retention and may play a role in the clinical care of elderly women undergoing colpocleisis for advanced prolapse.

Podium #22

SEXUAL HEALTH AND ERECTILE DYSFUNCTION IN ADULT MEN WITH SPINA BIFIDA
Gary W. Bong; Amanda Altman; Corey Wright, Polina Reyblat; Shruthi Sriram; David A. Ginsberg; Eric S. Rovner
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Introduction: Increasing medical advances to treat myelomeningocele have allowed more patients with Spina Bifida (SB) to survive into adulthood. As a result, Urologists are now faced with issues related to sexual maturity in men with SB. Our goal was to perform a questionnaire-based survey to assess multiple aspects of sexual health in this population.

Methods: Males age 18 or older with SB were mailed validated anonymous questionnaires including the Sexual Health Inventory for Men (SHIM) and the QUALIVEEN continence survey which measures disease-specific aspects with respect to limitations, constraints, feelings and general quality of life. Comparative numerical data were analyzed using the student’s t test.
Results: Of the 60 men surveyed, there were 30 respondents (50%). Median age was 25 (range 18 – 66). 63% reported being sexually active and on average were 8.4 years older than those not sexually active (25.5 vs 33.9, p = 0.047). Based on the SHIM data, 94.4% of the sexually active respondents had some degree of erectile dysfunction (27.8% severe, 22.2% moderate, 16.7% mild to moderate and 27.8% mild). The predominant problems were obtaining erections firm enough for penetration (88.9%) and difficulty with maintaining erections (77.8%). Sex is satisfactory half of the time or more in only 38.9% of these men. According to the QUALIVEEN survey, 44% felt badly about their sex life, 28% responded positively and the remainder were indifferent. Those with severe ED also had worse urinary continence problems, but only 3 patients reported that incontinence affected intercourse. Ambulation status (walking vs wheelchair) did not correlate with sexual activity or degree of ED (R² = -0.08).

Conclusions: The majority of respondents participating in this study experience erectile dysfunction in varying degrees, indicating this topic should be addressed with all adult males with SB. Obtaining erections firm enough for penetration and maintaining erections appear to be predominant problems. Sexual satisfaction rates were low and only 28% were pleased with their sex life. Sexual activity was complicated by urinary incontinence in 17% of patients in this study. Wheelchair-bound patients had similar rates of sexual activity and ED compared to ambulatory patients and, therefore, cannot be used as a predictive measure.

Podium #23

OUTCOMES OF THE OBSTRUCTING SLING FOR TREATMENT OF INCONTINENCE IN WOMEN WITH MULTIPLE SCLEROSIS
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Introduction and Objectives: Incontinent women with multiple sclerosis (MS) present a particular challenge to the urologist. Severe cases are sometimes treated with urinary diversion and obstructing slings. However, our review of the literature did not reveal any guidelines for this approach or studies that addressed use of obstructing urethral slings in this population. Our aim was to review our experience using obstructing slings in women with multiple sclerosis and refractory urge or mixed incontinence that have had previous urinary diversion.

Methods: Following institutional review board approval, a retrospective study was designed. A search of our database was performed from 2002 to present to identify women with MS who underwent an obstructing sling procedure. A systematic electronic chart review was then performed using a standardized data collection sheet. Specifically, data on patient characteristics, indications, surgical procedure, follow-up and surgical outcomes were abstracted from the chart. The operative outcome was considered to be a failure if the leakage was subjectively the same as before surgery or a further anti-incontinence surgery was required.

Results: We identified seven women with a mean age of 52.1 years (range 41-61) who had previous urinary diversion with continued leakage per urethra. The mean postoperative follow-up was 26.4 months (range 5-60). Most (N=4) had a previous suprapubic tube placed and the remainder had an iliovesicostomy diversion. The majority 71.4% were on anticholinergic medication. Cases for obstructing sling were selected if they had refractory urge or mixed urinary incontinence despite diversion and anticholinergic therapy. Four women had a synthetic sling placed (prolene) and for the remaining women, a biological material was used (one porcine dermis, two small intestinal submucosa). Outcomes were available for five (71.4%) patients. Three (42.9%) patients required a bladder neck closure — two were performed at 3 months and one at 32 months. Two (28.9%) patients had leakage postoperatively that was unchanged from preoperative leakage and did not opt for further surgery. The two (28.9%) remaining patients were lost to follow-up.

Conclusions: Use of the obstructing sling for treatment of refractory urge or mixed incontinence in patients with MS has not been successful in our hands. It is difficult to perform large prospective studies in this population, and our study is limited by the retrospective design. However, based on this small study, we would counsel the patient that the chance of achieving dryness is low using an obstructing sling.
CORRELATION OF URODYNAMIC RESULTS WITH LOWER URINARY TRACT SYMPTOMS IN PATIENTS WITH MULTIPLE SCLEROSIS
Sender Herschorn; Nicole Golda
University of Toronto, Toronto, Ontario

Introduction and Objectives: The aims of this study were to compare presenting lower urinary tract symptoms (LUTS) in men and women with multiple sclerosis (MS) who underwent urodynamics studies (UDS), to compare UDS results, and to correlate symptoms with UDS results.

Methods: This was a retrospective study of all patients with MS who presented for UDS over a 16-year period. All patients completed a standardized history that included a detailed assessment of urologic and related symptoms. UDS consisted of filling and voiding, when possible, subtracted detrusor pressure measurements. Data were recorded at the time of patient encounter and analyzed subsequently with Visual dBase 5.7 and Graphpad Instat Version 3.06. All subjects provided informed consent at the time of UDS. The study was funded internally.

Results: The history and first available UDS from 184 patients (123 women and 61 men) were reviewed. Follow-up studies were not included in the analysis. The mean ages of the women (48.1 years) and the men (55.5 years) were significantly different (P<0.05). Impairment of mobility was similar in both groups. Similar numbers of women and men presented with storage LUTS (including frequency, urgency, urgency incontinence (UUI), and nocturia>1) (103/123 versus 46/61) and voiding LUTS (81/123 versus 39/61). The use of either intermittent catheterization (IC) or indwelling catheter was similar in both groups (P>0.05). However, more women complained of urinary incontinence (UI) than men (99/123 versus 34/61) (P=0.0034). The UDS results showed significant differences between women and men in that higher maximum detrusor pressure on filling (40.1 versus 50.23 cm water; P=0.0290) and detrusor pressure at maximum flow (PdetQmax)(34.45 versus 47.24 cm water; P=0.0158) were seen in men. Detrusor overactivity (DO) was present in similar numbers of women and men (79/123 versus 46/61) (P<0.05). The finding of DO was not related to the complaint of UUI in either men or women, however, more women with stress incontinence (SUI) had DO than those without SUI (P=0.0245). There were no differences in initial residual urine, PdetQmax, or Qmax between men and women who had voiding symptoms. However, men without voiding symptoms had lower Qmax values than women without voiding symptoms. Overall more men than women had urodynamic obstruction (15/61 versus 6/123; P=0.0003). There were no significant differences seen between women with and without voiding LUTS apart from a higher initial residual (P=0.0185). There were also no significant differences in parameters between men with and without voiding LUTS.

Conclusions: The relative numbers of men and women who presented reflected the prevalence of the disease in the population. Women and men present with similar LUTS although incontinence is more common in women. DO was the most common finding and was similar in both groups. Overall urodynamic findings are very similar in women and men and did not correlate well with symptoms. In the investigation and management of patients with MS, UDS must be interpreted in the overall context of the patients’ disease. Other clinical parameters must also enter into the management algorithm.
PATIENTS WITH MULTIPLE SCLEROSIS AND NEUROVESICAL DYSFUNCTION ARE AT VERY LOW RISK FOR UPPER TRACT DETERIORATION
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University of Texas Southwestern Medical Center at Dallas, Dallas, Texas

Introduction: In contrast to patients with traumatic spinal cord injury, patients with neurovesical dysfunction associated with Multiple Sclerosis (MS) may be at lower risk for upper tract deterioration. Although urodynamic abnormalities are found in over 80% of MS patients, a low prevalence (< 0.5%) of subsequent renal complication is reported. In a previous study we found a 16.7% prevalence of abnormal ultrasound (US) findings in MS patients presenting to our institution with urodynamic abnormalities. No association was found between ultrasound abnormalities and demographic parameters (age, sex, time since MS diagnosis, type of MS) or urodynamic findings (detrusor-sphincter dyssynergia, detrusor overactivity). The purpose of this current retrospective study was to determine the prevalence, over time, of adverse changes on renal ultrasound in this patient population. Furthermore, we sought to identify any demographic or urodynamic parameters that set these patients at risk for such changes.

Methods: Following IRB approval, data were derived from all patients with MS referred to the neurourology clinic during 5-year period from 2000 – 2005. All patients were referred for evaluation and management of lower urinary tract symptoms. The database was specifically queried for patients with initial screening renal US and a follow up US at least one year later. When US data could not be found, abdominal CT results were used if available. Demographic parameters (including age, time since diagnosis (TSD), and % patients with secondary progressive versus relapsing remitting MS), as well as laboratory values (creatinine) and urodynamic results were evaluated for risk factors associated with the development of upper tract abnormalities.

Results: Of the 152 patients referred and evaluated, 120 underwent initial ultrasound evaluation of the upper tracts. On follow up, 43 patients had completed both urodynamic evaluation and a second US study. Seven were male, and 36 were female patients. At presentation, the median age was 49 years, and the median time since MS diagnosis was 13 years. Median follow up between ultrasound evaluations was 28 months. Only 3 of the 43 (6.8%) presented initially with an abnormal US (2 with mild to moderate unilateral hydronephrosis, 1 with mild cortical thinning). Of those 3 patients, one patient’s US findings remained the same (managed with surveillance only), the other two patients actually demonstrated improvement on renal US at 2-year follow up (1 instituted CIC in the interim, 1 remained on surveillance only). Only 2 patients with a normal US at screening developed an abnormal US on follow up. Of those 2 patients, one was managed with CIC; the other was managed with surveillance only. The remaining 7 patients on CIC had normal US results throughout the study period. Among urodynamic parameters, only pdet Qmax emerged as a significant variable in the development of deleterious upper tract changes (29 vs. 60 cm H20; p=0.003) on univariate analysis. No demographic factors (age, TSD, or percentage of patients with secondary progressive MS) were associated with renal deterioration.

Conclusion: With a median time between ultrasounds follow up of 28 months, only 6.8% of patients in this study experienced any abnormal US findings. No patients in this study were found to have abnormal US findings more severe than mild hydronephrosis. Only pdet Qmax appeared to predict increased risk for a worsening US. Further ongoing evaluation with longer follow up may identify those at risk of progression, though this current large dataset suggests that, at a tertiary care center, the risk of upper tract deterioration in patients with neurogenic bladder secondary to MS appears to be quite low.
Introduction: Since Delorme\(^1\) had presented the transobturator tape technique for the treatment of Urinary Stress Incontinence (USI), the acceptability for this technique increased and even many surgeons are considering it as the primary choice of treatment for USI. Sexual dysfunction after Tension-free vaginal tape was reported to occur in 14.3\(^2\). Few studies addressed this issue in patients who underwent Transobturator tape especially on the long term.

Objective: To assess the long term impact of transobturator tape on female sexual function.

Patients and Methods: After IRB approval, a retrospective chart review was done for women who underwent transobturator tape for urinary stress incontinence from May 2004 to October 2005. Patients who had concurrent pelvic surgery or were sexually inactive before the procedure were excluded. PISQ-12 questionnaire \(^3\) was then mailed to all patients to assess the sexual function. A modification in the last question in PISQ-12 was made to compare the postoperative intensity of orgasm with that preoperatively. Sexual outcome was measured for each individual item as well as the total score.

Results: Fifty patients underwent transobturator tape technique with a mean patient age of 51.9 years and mean parity of 2.1. Thirty-seven patients (74\%) had pure urinary stress incontinence, while 13 patients (26\%) had mixed urinary incontinence. Out of 50 patients who were mailed the questionnaire, 36 responded (72\% response rate), of them, 30 patients were sexually active. Mean follow up was 22.5 months (13- 35 months). Total mean sexual function score based on PISQ-12 was 9.7. The means and standard deviations of all the individual PISQ-12 questions are listed in table 1.

Table 1:

<table>
<thead>
<tr>
<th>PISQ-12</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Desire</td>
<td>1.17</td>
<td>0.87</td>
</tr>
<tr>
<td>2. Climax</td>
<td>1.1</td>
<td>0.92</td>
</tr>
<tr>
<td>3. Excitement</td>
<td>1.03</td>
<td>0.76</td>
</tr>
<tr>
<td>4. Satisfaction</td>
<td>1.2</td>
<td>1.03</td>
</tr>
<tr>
<td>5. Pain</td>
<td>0.43</td>
<td>0.63</td>
</tr>
<tr>
<td>6. Coital incontinence</td>
<td>0.27</td>
<td>0.58</td>
</tr>
<tr>
<td>7. Fear of incontinence</td>
<td>0.43</td>
<td>0.77</td>
</tr>
<tr>
<td>8. Avoidance secondary to bulge</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. Negative emotions</td>
<td>0.17</td>
<td>0.46</td>
</tr>
<tr>
<td>10. Erection problems</td>
<td>1</td>
<td>1.34</td>
</tr>
<tr>
<td>11. Premature ejaculation</td>
<td>0.77</td>
<td>1.28</td>
</tr>
<tr>
<td>12. Orgasm intensity</td>
<td>2.13</td>
<td>0.51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9.7</strong></td>
<td><strong>2.1</strong></td>
</tr>
</tbody>
</table>

According to the individual questions of PISQ-12, the majority of women had satisfactory sexual function scores; with 22 (73.3\%) reported high level of sexual desire, 23 (76.6\%) achieved climax on sexual intercourse, and 22 (73.3\%) had sexual satisfaction. Twenty-eight patients (93.3\%) never or seldom had dyspareunia and 27 patients (90\%) never or seldom had coital incontinence.

When the postoperative orgasm was compared to the preoperative one, 22 patients (73.3\%) had same orgasm intensity. Two patients (6.7\%) had more intense orgasm that was attributed to the disappearance of coital incontinence that was present preoperatively. Four patients (13.3\%) had less intense orgasm due to male partner problems. The last 2 patients (6.7\%) experienced less intense orgasm due to either coital incontinence (1) or dyspareunia (1).
Conclusion: Transobturator tape technique for the treatment of urinary stress incontinence does not have a significant negative impact on the postoperative female sexual function. Decreased postoperative sexual function, when reported, is usually related to male partner problems rather than tape-related problems.


Podium #27

THROMBOEMBOLIC COMPLICATIONS OF SLING SURGERY: A CALL FOR DVT PROPHYLAXIS
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1UCLA, Los Angeles, CA; 2Abt Associates, Cambridge, MA

Introduction and Objectives: Pay-for-performance measures implemented across the United States emphasize deep venous thrombosis (DVT) prophylaxis for many surgical procedures. However, the literature lacks data on thromboembolic complications after female pelvic surgery. In this study we used Medicare claims data to determine the rate of thromboembolic complications after sling surgery among female Medicare beneficiaries age 65 and over. We sought to determine factors influencing the risk of thromboembolic complications.

Methods: We analyzed the 1999-2001 Medicare Public Use Files provided by the Centers for Medicare and Medicaid Services on a 5% national random sample of beneficiaries. Women undergoing sling procedures between January 1, 1999 and July 31, 2000 were identified by Physicians Current Procedural Terminology Coding System (4th edition, CPT-4) code 57288 (sling procedure for stress incontinence, fascia or synthetic) and tracked for 12 months. Diagnoses of thromboembolism, including DVT or pulmonary embolism (PE), occurring within one year after the index sling procedure were identified with ICD-9 codes. By controlling for covariates in multivariate analysis, we sought to determine risk factors for developing a thromboembolic event, including patient factors (race, age, and comorbidity), surgeon factors (volume and specialty), and whether concomitant prolapse surgery was performed at the time of the sling.

Results: A total of 1,356 slings were performed on a 5% national random sample of female Medicare beneficiaries during the 18-month index period. This extrapolates to 27,120 slings. Concomitant prolapse surgery was performed in 467 (34.4%) cases. Thromboembolic complications occurred in 1.8% of women undergoing a sling alone and in 3.6% of women undergoing concomitant prolapse surgery (p=0.06). Multivariate analysis revealed that concomitant prolapse surgery was associated with twice the risk of thromboembolic complications (OR 2.11, 95% C.I. 1.03-4.32). No other patient or surgeon variables significantly influenced the rate of thromboembolic complications.

Conclusions: Thromboembolic complications occurred in 1.8% of women undergoing sling surgery for stress incontinence and doubled in women undergoing concomitant sling and prolapse surgery. The increased rate of DVT/PE among women undergoing combined surgery may be a function of increased operative time in the dorsal lithotomy position. Women undergoing sling surgery represent a target population for appropriate DVT prophylaxis.

Funding: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Individual National Research Service Award 1 F32 DK072874-01

Podium #28

IS OBESITY TRULY A RISK FACTOR FOR FAILURE IN SLING SURGERY FOR STRESS INCONTINENCE IN WOMEN?
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Introduction and Objectives: Obese women have been previously shown to have similar durable outcomes after undergoing pubovaginal slings (PVS) constructed from autologous rectus fascia (ARF), porcine dermis (PD), and polypropylene midurethral slings (PP). We compare the outcomes in an obese population with non-obese women (BMI<30) undergoing the same three procedures.

Funding: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Individual National Research Service Award 1 F32 DK072874-01
Methods: Of women undergoing PVS since 2001, we identified 412 women with a BMI<30 (94 ARF, 157 PD, 161 PP) and 297 with BMI≥30 (66 ARF, 114 PD, 117 PP) with a minimum of 12-month follow-up. There was no statistical bias toward choosing a sling material based on BMI. Pre- and postoperative assessment included pelvic examination, SEAPI assessment (stress incontinence, emptying, anatomy, protection, inhibition), and quality of life (QOL) questionnaires {Incontinence Impact Questionnaire (IIQ SF-7), Urogenital Distress Inventory (UDI-6), and Global Satisfaction visual analog scale (VAS)}. “Cure” was defined as subjective-SEAPI composite = 0 and subjective satisfaction. “Cure” of SUI entailed a SEAPI (Stress Incontinence) subset=0 and a negative cough-stress test. Demographics and perioperative morbidity were abstracted from the hospital and clinic charts. Statistical evaluation of perioperative variables was conducted using chi-square analysis.

Results: Women undergoing PP PVS were statistically different from the other 2 groups (shorter mean follow-up period, higher valsalva leak point pressures and less concomitant prolapse). After controlling for BMI, age, race, parity, presenting symptoms, and preoperative pad use were not statistically (NS) different within each sling group. After controlling for BMI, preoperative SEAPI scores, IIQ, UDI, and VAS were not statistically different within each sling group. Over 60% of women in each group had no intraoperative or postoperative complications (NS), and women with BMI≥30 had no increase in complications when compared with BMI<30. Overall cure rates were significantly higher for PP (78.4% vs. 58.5% (ARF) and 50.4% (PD)). SUI-specific cure rates were also significantly higher for women undergoing PP PVS as compared to the other two materials. Statistically significant improvement in postoperative SEAPI scores, IIQ, UDI, and VAS was achieved for each group. After controlling for BMI, the difference in cure rates, SEAPI scores, and QOL measures within each group was not statistically different.

Conclusions: While there appear to be differences in global and SUI-specific outcomes based on sling material and concomitant surgery, obesity in itself does not appear to be a risk factor for poorer results and additional complications in women undergoing sling surgery with autografts, xenografts, or synthetic materials.

Podium #29

MANAGING THE URETHRA AT THE TIME OF TRANSVAGINAL PELVIC ORGAN PROLAPSE REPAIR: A URODYNAMIC APPROACH
Katie N. Ballert; Grace Biggs; Anthony Isenalumhe, Jr.; Nirit Rosenblum; Victor W. Nitti
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Introduction and Objective: At the time of surgical repair of pelvic organ prolapse (POP) the decision of whether or not to perform a simultaneous anti-incontinence procedure is one of much debate. The objective of this study is to evaluate the protocol we used to determine if a midurethral synthetic sling (MUSS) would be placed at the time of transvaginal prolapse repair.

Methods: We retrospectively reviewed the charts of 165 patients following transvaginal repair of Stage 3 or 4 POP. 56 patients were excluded. 110 patients were managed according to the protocol outlined below and had either 3 months follow-up (107) or were included because they required further intervention prior to 3 months follow-up (3). All patients underwent a complete history and physical including determination of the complaint of stress or urge incontinence. Preoperative urodynamics (UDS) were initially performed without reduction of the prolapse. If stress urinary incontinence (SUI) was not demonstrated with valsalva or cough maneuvers, a ring pessary of appropriate size was placed and the study was repeated. The patient was then designated as having urodynamic SUI if incontinence was demonstrated without a pessary, occult SUI if incontinence was demonstrated only after a pessary was placed, or no incontinence if incontinence was not demonstrated at all. The urodynamic findings were used to determine whether a MUSS would be placed at the time of prolapse repair. Patients that demonstrated urodynamic or occult urinary incontinence underwent simultaneous MUSS placement. Those who did not demonstrate urodynamic or occult stress incontinence did not undergo placement of MUSS. Charts were reviewed to determine if further intervention for stress incontinence (bulking agent or MUSS) or obstruction was required.
Results: Fifty-four patients reported clinical SUI preoperatively. Forty-four patients demonstrated either urodynamic SUI or occult SUI on preoperative UDS and had a MUSS placed at the time of prolapse repair. Three (6.8%) subsequently required surgical intervention due to obstruction from the sling. No patient required further intervention for SUI. Ten patients that reported clinical SUI preop did not demonstrate urodynamic or occult SUI and per the protocol did not have a MUSS placed at the time of prolapse repair. Three patients (30%) subsequently required intervention for clinical SUI due to post-op SUI. Thirty-two patients demonstrated either occult SUI (28) or urodynamic SUI (4), and therefore, underwent MUSS placement. Three (9.4%) subsequently required surgical intervention due to obstruction from the sling, and one (3.1%) required intervention for SUI.

In summary: Overall risk of intervention due to obstruction after sling placement – 7.9%. Risk of intervention due to obstruction in patients with only occult SUI and sling - 10.7%. Risk of intervention for SUI in patients with no clinical SUI and no sling - 8.3%. Risk of intervention for SUI in patients with clinical SUI, but no sling - 30%. The overall risk of intervention for SUI if sling performed - 1.3%.

Conclusions: When using our urodynamic protocol to manage the urethra at the time of transvaginal prolapse repair the risk of requiring further surgical intervention due to obstruction (7.9%) is essentially equal to the risk for requiring intervention due to SUI if no clinical, urodynamic or occult incontinence was present and no sling placed. However, in patients that report clinical SUI preoperatively despite no urodynamic or occult SUI there is a much higher rate of further intervention for SUI (30%). In these patients deviation from the protocol is recommended.

Podium #30

DO BIOMECHANICAL PROPERTIES OF ANTERIOR PROLAPSED VAGINAL TISSUE PREDICT SURGICAL OUTCOME REPAIR?
Aliénor Gilchrist; Philippe Zimmern; Aradhana Bhat; Amit Gupta; Roger Eberhart
University of Texas Southwestern, Dallas, Texas

Introduction and Objectives: To evaluate the predictive merit of the biomechanical properties of freshly harvested vaginal tissue during advanced prolapse repair with the clinical outcome at a minimum one year follow-up.

Methods: Following IRB approval, the biomechanical properties of vaginal tissue obtained during advanced (grade 3 or 4 Baden-Walker or Stage III-IV POP-Q) prolapse repair were studied between 2002 and early 2005 in post-menopausal women. All patients underwent an anterior vaginal wall suspension* with cystocele repair and associated prolapse repair as indicated. Full thickness vaginal wall tissue samples were transported immersed in normal saline for the first half of the samples, then on a moistened saline soaked gauze for the remainder. All measurements were performed within two hours of harvest. Left and right samples were analyzed initially and found to be comparable; so only left samples were arbitrarily analyzed for the remainder of the study. Uniaxial tensile testing was performed using Bionix 858 MTS systems. Samples were pre-loaded at 2.2 Newtons and stretched at 0.5mm/sec, continuing until tissue tore. Stress-strain curves (Young’s modulus-YM in Newton/mm²) were obtained for each tissue by investigators blinded to the clinical scenario. Minimum follow-up was one year. Failure of the repair was defined as recurrence on exam with Baden Grade ≥ 2 or re-operation for recurrent bladder or mixed bladder/apical prolapse. Data regarding age, BMI, race, length of follow-up, preoperative and postoperative VCUG at 6 months measurements of cystocele descent, hormone replacement, prior surgeries including hysterectomy, were collected and analyzed using SAS statistical software. Strength of the Young’s modulus correlation was assessed using two sided Wilcoxon test with p<0.05 as significant.

Results: In this prospective study, thirty-two patients met our entry criteria. Median follow-up was 34 months (12-62). Median age was 72 years (53-85), BMI 24 (19-39), 28% used topical and 43% systemic hormone therapy. 31% patients had prior prolapse or incontinence surgeries and 56% prior hysterectomy. Seven patients were failures, of which six underwent abdominal re-operation with mesh. Most failures occurred in the first 18 months. Median YM was statistically different in tissue samples transported in immersed versus moistened media (3.8 vs. 7.6, p=0.0081). YM values were not associated with risk of failure, with median YM in successful repairs at 5.3 versus 6.4 in failures (p=0.49). When controlling for tissue transport protocol, no association was noted between YM and failures (Hazard ratio 2.2, p=0.44). Parity, BMI, prior incontinence or prolapse surgery, hysterectomy, HRT and stage of organ prolapse had no association with YM values. Median descent of cystocele on standing lateral VCUg preoperatively was 2.8 cm (0.9-9) compared with mean post-operative values of 0.6cm in successful repairs and 2.9cm in failures.
**Conclusions:** This first prospective study to assess the impact of the biomechanical properties of vaginal tissue prolapsed repair outcome found no correlation between Young’s modulus and the clinical result at 2-3 years follow-up. In this limited sample, such a finding suggests that retropubic scarring and pelvic floor muscle properties may be more important for a successful reparative outcome than the intrinsic qualities of the vaginal wall.


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**Podium #31**

**SENSORY NEURAL CHANGES ARE PRESENT IN THE LOWER URINARY TRACT OF WOMEN AFTER RECONSTRUCTIVE PELVIC SURGERY**

Carley Davis, MD; Kimberly Kenton, MD, MS; Lior Lowenstein, MD, MS; Elizabeth Mueller, MD, MSSE; Mary Pat FitzGerald, MD, MS; Linda Brubaker, MD, MS

Division of Female Pelvic Medicine and Reconstructive Surgery, Loyola University, Chicago, IL

**Introduction and Objective:** Changes in urinary tract sensation may be associated with symptoms and response to treatment. Our aim was to determine whether reconstructive pelvic surgery (RPS) induces measurable changes in afferent nerve fibers in the lower urinary tract.

**Methods:** After IRB approval, we prospectively recruited consecutive women planning RPS. Participants underwent 2 forms of standardized neurophysiologic testing in the bladder and urethra pre-operatively and 1-2 days after RPS. *Current Perception Threshold* (CPT) testing quantifies afferent nerve function (A-β, A-δ, and C fibers) by applying sine wave stimuli at 3 frequencies (2000 Hz, 250 Hz, and 5 Hz). Higher CPT suggests decreased sensation consistent with neuropathy. *Sacral Reflex Testing* is conducted by applying electrical stimulus to the urethra or bladder with responses recorded from the anal sphincter (urethral anal reflex (UAR) and bladder anal reflex (BAR)). UAR and BAR measure the latency between stimulus and muscle response and reflect integrity of urethral and bladder afferent fibers, the pelvic plexus, and efferent fibers to the anal sphincter. Immediately prior to post-operative neurophysiologic testing, catheterized postvoid residual urine volumes (PVR) were measured after instilling 300 ml of saline into the bladder and a spontaneous void attempt.

**Results:** Twenty-one patients with mean age of 59±12 years participated: 71% had vaginal RPS, and 29% had an abdominal RPS. Median postoperative PVR was 40ml (range 10-120).

<table>
<thead>
<tr>
<th></th>
<th>Pre-operative Median (IQR)</th>
<th>Post-operative Median (IQR)</th>
<th>*P value</th>
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<tr>
<td><strong>Bladder (mV)</strong></td>
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<tr>
<td>CPT 5 Hz</td>
<td>232 (121-515)</td>
<td>614 (204-774)</td>
<td>.09</td>
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<tr>
<td>CPT 250 Hz</td>
<td>301 (206-799)</td>
<td>488 (204-861)</td>
<td>.88</td>
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<td>CPT 2000 Hz</td>
<td>628 (307-910)</td>
<td>696 (407-809)</td>
<td>.09</td>
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<tr>
<td><strong>Urethra (mV)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPT 5 Hz</td>
<td>22 (6-57)</td>
<td>56 (34-114)</td>
<td>.001</td>
</tr>
<tr>
<td>CPT 250 Hz</td>
<td>59 (37-94)</td>
<td>112 (53-185)</td>
<td>.003</td>
</tr>
<tr>
<td>CPT 2000 Hz</td>
<td>139 (91-200)</td>
<td>232 (111-327)</td>
<td>.01</td>
</tr>
<tr>
<td><strong>UAR Latency (ms)</strong></td>
<td>47 (36-70)</td>
<td>67 (36-91)</td>
<td>.221</td>
</tr>
<tr>
<td><strong>BAR Latency (ms)</strong></td>
<td>55 (34-85)</td>
<td>61 (42-88)</td>
<td>.83</td>
</tr>
</tbody>
</table>

*CPT were significantly higher in the urethra after RPS. UAR and BAR latencies were not significantly longer following surgery; however, UAR were absent in 8 women (38%) after RPS compared to 2 women (9%) prior to surgery (p<.003). BAR were absent in 11 women (52%) after RPS compared to only 5 (24%) prior to surgery (p<.01). PVR did not correlate with any CPT values or BAR or UAR latencies (p>.05).

**Conclusions:** RPS has a short-term desensitizing affect on the urethra, consistent with small fiber afferent neuropathy. Likewise, absent sacral reflexes are more common post-operatively, which is also consistent with neuropathic changes after RPS. Further studies are needed to determine the clinical significance of this finding.
Podium #32

DUAL SIMULATED CHILDBIRTH INJURIES RESULT IN SLOWED RECOVERY OF PUDENDAL NERVE AND URETHRAL FUNCTION

H.H. Jiang1; H.Q. Pan1; A.M. Gustilo-Ashby1; J. Glaab1; P.J. Zaszczurynski1,2; M.S. Damaser1,2
1Biomedical Engineering Dept, Cleveland Clinic, Cleveland, OH; 2Research Service, Louis Stokes VA Medical Center, Cleveland, OH

Introduction and Objectives: Both pelvic floor muscle trauma and pudendal nerve injury have been implicated in stress urinary incontinence (SUI) development after childbirth. We used animal models to investigate how combinations of these injuries affect the rate of neuromuscular recovery.

Methods: 60 female Sprague-Dawley rats were divided into 5 groups: vaginal distension (VD), pudendal nerve crush (PNC), PNC and VD (PNC+VD), pudendal nerve transection (PNT) and controls. Rats in each group were studied 4 days (n=5) and 3 weeks (n=6) after injury. For VD, a modified 10F Foley catheter was dilated to 3ml inside the vagina for 4 hours. For PNC, the pudendal nerve was crushed twice bilaterally for 30s. The PNC+VD group received both of the above procedures. For PNT, the pudendal nerves were transected bilaterally. We simultaneously recorded pudendal nerve motor branch potentials (PNMBP), external urethral sphincter electromyography (EUS EMG) and the transurethral bladder pressure under urethane anesthesia (1.2g/kg i.p.). The presence of a guarding reflex (increased frequency & amplitude of PNMBP and EUS EMG activity) during leak point pressure (LPP) testing was determined by application of an external increase in bladder pressure in the absence of active bladder contraction.

Results: In controls, a guarding reflex was present as demonstrated by increased PNMBP and EUS EMG activity during LPP testing (Fig. A). Four days after VD, the EUS EMG activity was diminished, but PNMBP activity was near normal. After 3 weeks, EUS EMG showed a significant recovery in both frequency & amplitude. Four days after PNC, both EUS EMG and PNMBP activity were diminished, but demonstrated significant recovery after 3 weeks. Four days after PNC+VD, both EUS EMG and nerve activity were diminished, and little recovery was observed after 3 weeks. PNMBP and EUS EMG activity in the PNT group was similar to that of PNC+VD animals and did not recover. LPP results (Fig. B, * indicates a significant difference compared to control, p<0.05.) are consistent with the reduction in EUS EMG and PNMBP activity.

Conclusion: Urethral sphincter nerve and muscle function recovers more slowly after PNC+VD than after either PNC or VD alone. The pudendal nerve may regenerate more slowly after PNC+VD, explaining the slow recovery of nerve and muscle function. Future work will be aimed at testing methods to facilitate neuroregeneration and recovery after this clinically relevant dual injury.

Funding: Supported in part by NIH RO1 38679-08.
SHORT-TERM OUTCOMES OF A RANDOMIZED, DOUBLE-BLIND PLACEBO CONTROLLED
TRIAL OF BOTULINUM A TOXIN FOR THE MANAGEMENT OF SEVERE IDIOPATHIC DETRUSOR
OVERACTIVITY INCONTINENCE
Michael Flynn, MD1; Cindy Amundsen, MD2; Maryann Perevich1; George Webster, MD2
1Univ of Rochester, Rochester NY; 2Duke Univ Medical Center, Durham, NC

Introduction and Objectives: To determine the short-term effectiveness of Botulinum-A toxin (BTX) compared to
placebo on urinary incontinence when administered cystoscopically to subjects with severe idiopathic detrusor
overactivity (IDO)

Methods: This study was supported by grants from the National Institutes of Health, the Physicians Healthcare
Initiative and a vial grant from Allergan Pharmaceuticals. Subjects were recruited for separate trials at each
institution and combined for this preliminary report. Inclusion criteria for both trials included multiple leakage
episodes related to IDO on a 3 day bladder diary, a 24-hr pad weight ≥100 gms and failed anticholinergic
medications. Exclusion criteria included cough leak point pressure <100cm H2O, postvoid residual (PVR) >100ccs,
evidence of a urinary tract infection (UTI) or a known neurologic etiology condition affecting the bladder. Subjects
were randomized to placebo, 200u or 300u of BTX and the detrusor injected at 8-10 sites above the trigone.
Evaluations were performed at baseline, 3 and 6 weeks. Evaluations at all visits included urinalysis, 3-day bladder
diary, 24-hr pad weight and IIQ-7 and UDI-6 questionnaires. At baseline and the 6-week visit, cystometrograms,
pressure flow studies, and PVR were performed. Results were analyzed using a paired T-test.

Results: Data for 41 subjects was available, 21 from the University of Rochester and 20 from Duke University. Data
for the 2 BTX groups were combined. Because this is an interval analysis, p was set to 0.01. There was no difference
in baseline values between the groups for all outcomes. The 3 and 6 week data is similar. Table I shows baseline and
six-week results. There were no differences in nocturia, diurnal frequency, daily frequency, peak flow or detrusor
pressure at peak flow at 6 weeks. Six subjects receiving BTX had PVR> 200 ccs and 2 required intermittent clean
catheterization. Five subjects in the BTX group and 3 subjects in the placebo group (NS) experienced a UTI.

<table>
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<tr>
<th>Table 1</th>
<th>Placebo Baseline</th>
<th>Placebo 6 weeks</th>
<th>p</th>
<th>BTX Baseline</th>
<th>BTX 6 weeks</th>
<th>BTX % Improvement</th>
<th>p</th>
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<tr>
<td>Incontinence episodes/day</td>
<td>7.62</td>
<td>7.25</td>
<td>0.748</td>
<td>8.06</td>
<td>3.08</td>
<td>61.79%</td>
<td>&lt;.0001</td>
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<td>24 pad weight (gms)</td>
<td>388</td>
<td>342</td>
<td>0.263</td>
<td>483</td>
<td>154</td>
<td>68.12%</td>
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<td>Number of pads/day</td>
<td>5.25</td>
<td>5.07</td>
<td>0.834</td>
<td>5.04</td>
<td>2.38</td>
<td>52.78%</td>
<td>&lt;.0001</td>
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<td>IIQ-7 score</td>
<td>44.1</td>
<td>35.21</td>
<td>0.237</td>
<td>60.48</td>
<td>21.68</td>
<td>64.15%</td>
<td>&lt;.0001</td>
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<tr>
<td>UDI-6 score</td>
<td>43.6</td>
<td>37.77</td>
<td>0.348</td>
<td>50.7</td>
<td>30.28</td>
<td>40.28%</td>
<td>&lt;.0001</td>
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<td>Max cystometric capacity (cc)</td>
<td>253</td>
<td>251</td>
<td>0.947</td>
<td>261</td>
<td>334</td>
<td>27.97%</td>
<td>&lt;.0001</td>
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<tr>
<td>Vol 1st uninhibited contraction (cc)</td>
<td>154</td>
<td>149</td>
<td>0.927</td>
<td>146</td>
<td>242</td>
<td>65.75%</td>
<td>&lt;.0001</td>
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Conclusions: Botulinum A Toxin can significantly reduce urge urinary incontinence due to IDO. There is a risk of
urinary retention requiring self catheterization. Additional studies are needed to determine ideal doses,
concentration, site of injection, dosing intervals and the cost effectiveness of this therapy.
SUFU 2008 Videos

Video #1  ROBOT-ASSISTED LAPAROSCOPIC VESICO-VAGINAL FISTULA REPAIR
Megan Schimpf, MD²; Jeffrey Morgenstern, MD¹; Paul Tulikangas, MD³; Joseph Wagner, MD¹
(Presented By: Megan Schimpf)
¹Department of Urology, Hartford Hospital; ²Division of Urogynecology, Hartford Hospital;
³Division of Urogynecology, Hartford Hospital

Video #2  TRANSVAGINAL PLACEMENT OF AN ARTIFICIAL URINARY SPHINCTER
Eric Hurtado, MD¹; Rebecca McCrery, MD²; Rodney Appell, MD³ (Presented By: Eric Hurtado)

Video #3  COLPOCLEISIS FOR STAGE IV PELVIC ORGAN PROLAPSE:
KEY POINTS IN SURGICAL TECHNIQUE
Sarah McAchran, MD; Una Lee, MD; Sandip Vasavada, MD (Presented By: Sarah McAchran)
Cleveland Clinic

Video #4  LAPAROSCOPIC AUGMENTATION CYSTOPLASTY
David Rapp, MD; Anthony Woodruff, MD; Fred Govier, MD; Paul Kozlowski, MD; Kathleen
Kobashi, MD (Presented By: David Rapp)
Virginia Mason Medical Center

Video #5  TRICKS OF THE TRADES IN INTERSTIM-II: A TRUE MINIMALLY INVASIVE
SURGERY (MIS)
Gamal Ghoniem; Mostafa Elmissiry; Hassan Abdelwahab (Presented By: Gamal Ghoniem)

Video #6  MODIFIED LEFORT COLPOCLEISIS: ENTEROCELE REPAIR CORRECTING
ANTERIOR WALL LENGTH DISCREPANCY
Gamal Ghoniem; Mostafa Elmissiry; Hassan Abdelwahab; Carolyn Langford
(Presented By: Gamal Ghoniem)

Video #7  ROBOT-ASSISTED PROLAPSE AND UTERINE LAPAROSCOPIC LIFT (PULL) USING
A COMBINED ABDOMINAL AND VAGINAL APPROACH
Swartz Mia, MD, MS; Raj Goel, MD; Courtenay Moore, MD; Howard Goldman, MD; Sandip
Vasavada, MD; Raymond Rackley, MD; Jihad Kaouk, MD (Presented By: Swartz Mia)
Cleveland Clinic

Video #8  ROBOT-ASSISTED LAPAROSCOPIC ILEOVESICOSTOMY
Erin T. Bird; Kristofer R. Wagner; Parviz K. Kavoussi; Patrick S. Lowry; Robert A. Probe
(Presented By: Erin T. Bird, MD)
Richard E. Symmonds Division of Urology, Departments of Surgery and Orthopedics Texas
A&M Health Science Center, Scott & White, Temple, TX
Application for Membership

Date __________________________

Name ___________________________ Degree(s) ___________ Sex _____

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Country _______________ Telephone __________________________ Fax ______________

E-mail __________________________ Birthdate __________________________

Home Address ____________________________________________________________

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Residency ________________________________________________________________

Fellowship ________________________________________________________________

Current Position __________________________________________________________

Number of Refereed Publications ________________

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List two FULL members of the society who will forward reference letters on your behalf:

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An individual (MD, PhD, DO) with a strong interest in the field, who has been in practice for at least one year. The individual must submit two letters of recommendation from Full members. This category includes voting rights on society issues.

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An individual with an interest in the field who does not satisfy the criteria as Member including individuals working in-training (resident, fellow, post-doc), allied health professional (nurse, NP, PA) or individuals in industry-related positions. Letters of recommendation are not needed. There are no voting privileges.
Alphabetical Index of Presenters
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Due to time limitations, authors who do not have a time and date listed will not be presenting their abstracts at this meeting. See Abstracts section for complete text.

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AB# – 2/28/08 11:00 a.m. – Poster# BS10

Lowenstein, Lior
AB# – 3/1/08 5:30 p.m. – Poster# 24
AB# – 3/1/08 5:30 p.m. – Poster# 26
AB# – 3/1/08 5:30 p.m. – Poster# 35
AB#31 3/2/08 9:35 a.m.

Lucioni, Alvaro
AB#17 3/1/08 9:10 a.m.

Mahdy, Ayman
AB# – 2/29/08 5:00 p.m. – Poster# 13

McAchran, Sarah Elizabeth
AB# – 2/29/08 8:00 a.m. – Video# 3

Monaghan, Kevin
AB# – 2/28/08 9:00 a.m. – Poster# BS2
AB# – 2/28/08 9:00 a.m. – Poster# BS4

Mueller, Elizabeth R.
AB# – 3/1/08 5:30 p.m. – Poster# 22

O'Connor, R. Corey
AB#2 2/29/08 1:10 p.m.

Pan, Hui Q.
AB# – 2/28/08 11:00 a.m. – Poster# BS14

Peters, Kenneth Michael
AB#1 2/29/08 1:00 p.m.
AB#3 2/29/08 1:20 p.m.
AB#4 2/29/08 1:30 p.m.

Rapp, David
AB# – 2/29/08 8:00 a.m. – Video# 4
AB# – 2/29/08 5:00 p.m. – Poster# 8

Reyblat, Polina
AB#12 2/29/08 3:20 p.m.

Reynolds, William Stuart
AB# – 2/28/08 9:00 a.m. – Poster# BS1
AB# – 3/1/08 5:30 p.m. – Poster# 31

Salas, Nilson
AB# – 2/28/08 4:00 p.m. – Poster# BS23

Sarmast, Zubair
AB# – 2/29/08 5:00 p.m. – Poster# 9
Sastry, Deeptha
AB# – 3/1/08 5:30 p.m. – Poster# 27

Scarpello, Harriette Miles
AB# – 3/1/08 5:30 p.m. – Poster# 21
AB# – 3/1/08 5:30 p.m. – Poster# 38

Schimpf, Megan
AB# – 2/29/08 8:00 a.m. – Video# 1

Smith, Ariana L.
AB# – 2/29/08 5:00 p.m. – Poster# 20

Smith, Christopher Patrick
AB# – 2/28/08 4:00 p.m. – Poster# BS20

Smith, Karen Elaine
AB#7 2/29/08 2:00 p.m.

Spinelli, Michele
AB#8 2/29/08 2:10 p.m.

Spirka, Thomas
AB# – 3/1/08 5:30 p.m. – Poster# 25

Surwit, Earl
AB#9 2/29/08 2:20 p.m.

Swartz, Mia A.
AB# – 2/29/08 8:00 a.m. – Video# 7
AB#23 3/1/08 4:00 p.m.

Tracey, Michael R.
AB# – 2/28/08 4:00 p.m. – Poster# BS18

Triaca, Veronica
AB#10 2/29/08 3:00 p.m.

Twiss, Christian Owen
AB# – 2/29/08 5:00 p.m. – Poster# 1
AB# – 2/29/08 5:00 p.m. – Poster# 14
AB# – 3/1/08 5:30 p.m. – Poster# 29

Valentini, Francoise A.
AB#19 3/1/08 10:30 a.m.
AB# – 3/1/08 5:30 p.m. – Poster# 23

Werle, David
AB# – 2/29/08 5:00 p.m. – Poster# 16

White, Terry
AB#5 2/29/08 1:40 p.m.

Wilson, Christopher M.
AB# – 2/29/08 5:00 p.m. – Poster# 19

Wolter, Christopher E.
AB# – 2/29/08 5:00 p.m. – Poster# 2
AB# – 2/29/08 5:00 p.m. – Poster# 4

Yamada, Yasuhiro
AB# – 2/28/08 4:00 p.m. – Poster# BS22
AB# – 2/28/08 4:00 p.m. – Poster# BS19