Welcome to the Bahamas!

Dear Friends:

I would like to take this opportunity to welcome you to the beautiful Westin LuCaya Resort in the Bahamas. I can imagine no more beautiful place to have our annual winter meeting. This year it is a great honor that we acknowledge several other sister societies in our program with specific topical presentations including the Society for Genitourinary Reconstructive Surgery, the Geriatric Urology Society, and the International Continence Society. We also are thrilled to be again presenting the program with the International Society of Pelvic Neuromodulation. The program represents a unique and distinguished faculty. The topics are timely and thought provoking.

We have also arranged several social events in addition to satellite symposia to further broaden the reach and activities associated with the meeting.

I would like to take this opportunity on behalf of the Executive Board of the Society for Urodynamics and Female Urology to again welcome you and we look forward to having a wonderful and stimulating meeting.

Sincerely,
Roger R. Dmochowski, M.D.
Program Chairman
Society for Urodynamics and Female Urology
January 25, 2006

Dear Society Members and Guests:

Welcome to the beautiful Bahama Islands and our second annual merged meeting of SUFU and ISPiN.

A lot of special effort went into this year’s meeting because it was originally scheduled for Cancun, Mexico but due to hurricane Emily it had to be moved. The new venue is even more wonderful that Cancun and we all reap the benefits of the hard work that went into changing the site.

The program that has been assembled by all the program directors was designed to meet the varied needs of the esteemed multi-disciplinary providers that have attended. Attempting to cover all the complex disorders that involve the pelvic floor can be a challenging task, but one that I hope you’ll agree has been met very nicely by this year’s program.

The program was also designed to have ample time to allow for a free exchange of information, not only during the question and answer sessions, and the break-out sessions, but also at the beach and the poolside. So enjoy yourself as you relax and learn.

Sincerely,
Chip Butrick
President ISPiN
Dear Members and Contributors,

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
- Gamal M. Ghoniem, MD
- Angelo E. Gousse, MD
- Magdy M. Hassouna, MD
- Michael J. Kennelly, MD
- Kathleen Kobashi, MD
- Stephen R. Kraus, MD
- Raul C. Ordoñez, MD
- Kenneth M. Peters, MD
- Steven P. Petrou, MD
- Paul Pettit, MD
- Shlomo Raz, MD
- Harriette M. Scarpero, MD
- Steven W. Siegel, MD
- E. James Wright, MD

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

2006 SUFU/ISPiN Meeting Program Chairs

We would also like to thank the 2006 SUFU Essay Competition Reviewers:

- Gary E. Lemack, MD (Chair)
- Firouz Daneshgari, MD
- Delbert Rudy, MD
- Harriette Miles Scarpero, MD
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Society of Urodynamics and Female Urology, Inc.
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- Uroplasty
Needs:
Attendees of the SUFU/ISPiN program need to be aware of the latest updates and controversies in topics related to female urology, pelvic floor prolapse, BPH, 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 and 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 and dysfunction, and neuromodulatory therapies.

2. To compare surgical treatment options for BPH and pelvic organ prolapse, including complications of their management.

3. To review the physiology of urinary continence, incontinence, and pelvic floor disorders.

4. To explain the role of new minimally invasive therapy, for benign prostatic hyperplasia, and integrate this knowledge into their practices.

5. To assess the translational role of basic science research related to topics of pelvic floor dysfunction.

6. To recognize the importance of the role of geriatric urology and its application in the clinical practice of the members.

7. To assess and manage complicated female and male incontinence.

8. To describe new concepts of pelvic floor neuromodulation and new types on interventions, which use these modalities.
### Meeting Registration Hours
*Location: Grand Ballroom Foyer*

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### Exhibition Hall Hours
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### Speaker Ready Room
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Program Schedule

Joint Annual Meeting of the
Society for Urodynamics and Female Urology,
International Society of Pelvic Neuromodulation,
Genito-Urinary Reconstructive Surgery Society,
Geriatric Urologic Society,
and International Continence Society

February 22 - 25, 2006
Westin Our Lucaya Beach & Golf Resort
on the Grand Bahama Island in the Bahamas

WEDNESDAY, FEBRUARY 22, 2006

8:00 a.m. - 4:30 p.m. Executive Committee Meeting
Location: Whale Cay

3:00 p.m. - 7:00 p.m. Registration
Location: Grand Ballroom Foyer

4:00 p.m. - 7:00 p.m. Speaker Ready Room Open
Location: Samana Cay

4:30 p.m. - 7:00 p.m. Fellows Forum (for participating fellows only)
Location: Royal Palm Room
Moderators: Eric Rovner, MD; Gary Lemack, MD;
Harriette Miles Scarpero, MD

7:00 p.m. - 8:30 p.m. Welcome Reception - JUNKANOO
Location: The Westin Our Lucaya Resort on the Beach

THURSDAY, FEBRUARY 23, 2006

6:30 a.m. - 4:30 p.m. Speaker Ready Room Open
Location: Samana Cay

6:30 a.m. - 5:00 p.m. Registration
Location: Grand Ballroom Foyer

6:30 a.m. - 7:30 a.m. Breakfast for “new and prospective members”
Location: Hoffman’s Cay

7:00 a.m. - 8:30 a.m. Breakfast for all attendees in exhibit hall
Location: Grand Ballroom Foyer
7:00 a.m. - 4:00 p.m.  Exhibit Hall Open
Location: Grand Ballroom Foyer

7:30 a.m. - 7:40 a.m.  Introduction of Program Chairs
Roger Dmochowski, MD
Location: Salon II

Program Chairs:
Charles Butrick, MD (ISPiN)
Linda Cardozo, MD (ICS)
Firouz Daneshgari, MD (Basic Science)
Roger Dmochowski, MD (SUFU)
Tomas Griebling, MD (GUS)
Steven Kaplan, MD (BPH)
Anthony Stone, MD (GURS)

7:40 a.m. - 8:15 a.m.  Urothelium as a Sensory Organ
Location: Salon II
Moderator: Karl-Erik Andersson, MD, PhD
Speaker: William C. deGroat, PhD

8:15 a.m. - 10:00 a.m.  Neuromuscular Mechanisms and Interventions for Voiding Dysfunction
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Location: Grand Ballroom Foyer

10:30 a.m. - 12:30 p.m.  Podium Session I
Location: Salon II
Moderators: Kathleen C. Kobashi, MD; Michael Albo, MD

10:30 AM  #1  THE EFFECT OF PREOPERATIVE DETRUSOR INSTABILITY ON THE SURGICAL OUTCOME OF TVT IN WOMEN WITH SUI
Yitzhak Berger, MD and Peter Castillo, MD (Presented By: Yitzhak Berger, MD)
10:38 AM  #2  A 52-WEEK TRIAL OF CALCIUM HYDROXYLAPATITE VS. BOVINE DERMAL COLLAGEN FOR TREATMENT OF STRESS URINARY INCONTINENCE
Robert Mayer, MD, Roger Dmochowski, MD and Rodney Appell, MD
(Presented By: Robert Mayer, MD)

10:46 AM  #3  DETRUSOR OVERACTIVITY AND URGE INCONTINENCE FOLLOWING SLING PROCEDURES
Sylvia Botros, MD, Jay James Miller, MD, Mohamed Akl, MD, Yoram Abramov, MD, Roger Goldberg, MD, Sanjay Gandhi, MD, Jennifer Beaumont, MS and Peter Sand, MD (Presented By: Sylvia Botros, MD)

10:54 AM  #4  FUNCTIONAL URINARY BLADDER TISSUE ENGINEERED FROM ADIPOSE STEM CELLS
Gregory Jack, MD, Rong Zhang, PhD, Benjamin Wu, PhD, Min Lee, BS, Yuhan Xu, PhD and Larissa Rodriguez, MD (Presented By: Gregory Jack, MD)

11:02 AM  #5  QUANTITATIVE FLUORESCIN UPTAKE IN EVALUATION OF INTERSTITIAL CYSTITIS BLADDER PERMEABILITY
Robert Mayer, MD and Ronald Wood, PhD (Presented By: Robert Mayer, MD)

11:10 AM  #6  THE IMPACT OF CHILDBIRTH ON SEXUAL FUNCTION: INSIGHT THROUGH AN IDENTICAL TWINS STUDY
Sylvia Botros, MD, Yoram Abramov, MD, Jay-James Miller, MD, Peter Sand, MD, Angel Nickolov, MD, Sanjay Gandhi, MD and Roger Goldberg, MD (Presented By: Sylvia Botros, MD)

11:18 AM  #7  INCONTINENCE AND PELVIC ORGAN PROLAPSE IN PAROUS/NULIPAROUS PAIRS OF IDENTICAL TWINS
Gunhilde Buchsbaum, MD (Presented By: Gunhilde Buchsbaum, MD)

11:26 AM  #8  UNDER-REPORTING OF MAJOR COMPLICATIONS OF SLING PROCEDURES
Donna Y. Deng, MD, M. Grey Maher, MD, Arthur Mourtzinos, MD, Matthew Rutman, MD, Larissa Rodriguez, MD and Shlomo Raz, MD (Presented By: Donna Y. Deng, MD)

11:34 AM  #9  OVER EXPRESSION OF STEM CELL-HOMING MOLECULES IN RAT PELVIC ORGANS FOLLOWING VAGINAL DISTENSION
Lynn Woo, MD, Adonis Hijaz, MD, Mei Kuang, MS, Marc Penn, MD, PhD, Margot Damaser, PhD and Raymond Rackley, MD (Presented By: Lynn Woo, MD)

11:42 AM  #10  THE ROLE OF THE NF-KB SIGNALING PATHWAY IN THE PATHOGENESIS OF INTERSTITIAL CYSTITIS
Raymond Rackley, MD, Mei Kuang, MS, Ashwin Vaze, MD, Joseph Abdelmalak, MD, Sandip Vasavada, MD and Joseph DiDonato, Ph D (Presented By: Raymond Rackley, MD)

11:50 AM  #11  CLINICAL AND URODYNAMIC PREDICTORS OF SUCCESS FOR PERMANENT IMPLANTATION OF SACRAL NERVE STIMULATOR
Adonis Hijaz, MD, Courtenay Moore, MD, Shika Sharma, MD, Tara Frenkl, MD, Denise Babniew, PhD, Angelo Baccala, MD, Raymond Rackley, MD, Sandip Vasavada, MD, Howard Goldman, MD and Firouz Daneshgari, MD (Presented By: Courtenay Moore, MD)
36 MONTH FOLLOW-UP WITH ADJUSTABLE CONTINENCE THERAPY (ACT) IN FEMALE STRESS INCONTINENCE DUE TO INTRINSIC SPHINCTER DEFICIENCY (ISD)
Ervin Kocjancic, Roberto Carone, Giovanni Bodo, Simone Crivellaro, Alessandro Giammò, Elisabetta Costantini, Paolo Gontero and Bruno Frea
(Presented By: Ervin Kocjancic)

ISCHEMIC EFFECTS OF VAGINAL DISTENSION AND DIABETES ON THE PELVIC FLOOR TISSUES OF THE FEMALE RAT
Ja-Hong Kim, MD, Courtenay Moore, MD, Firouz Daneshgari, MD, Lateef Saffore, BS and Margot Damaser, PhD (Presented By: Ja-Hong Kim, MD)

BILATERAL CAUDAL EPIDURAL (S2-S4) NEUROMODULATION FOR REFRACTORY IDIOPATHIC URINARY RETENTION: A SALVAGE PROCEDURE
Mary Grey Maher, MD, Arthur Mourtzinos, MD, Nasim Zabihi, MD, U. Zehra Laiwalla, MD, Shlomo Raz, MD and Larissa V. Rodriguez, MD (Presented By: Mary Grey Maher, MD)

DIFFERENTIAL GENE EXPRESSION IN POSTMENOPAUSAL WOMEN WITH STRESS URINARY INCONTINENCE
Gunhilde Buchsbaum, MD and Erin Duecy, MD (Presented By: Gunhilde Buchsbaum, MD)

Lunch - Plated
Location: Willy Broadleaf Restaurant

AUA Office of Research Update/Opportunities
Location: Salon II
Monica Liebert, PhD

SUFU/ISPiN - Cooperative Clinical Trials Group (status)
Location: Salon II
Firouz Daneshgari, MD
CONCURRENT SESSIONS 2:00 p.m. - 3:30 p.m.

**BPH SESSION**
Location: Salon II

2:00 p.m. - 2:30 p.m.  
**Point-Counterpoint: 60-Year-Old Male, PSA of 3, TRUS Volume of 30 Grams with Urinary Frequency: Best Medical Regimen?**
Moderator: Philippe Zimmern, MD

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  - Doug Milam, MD .............................................41

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  - Gopal H. Badlani, MD .....................................47

- **TUNA**
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  - Muta M. Issa, MD ..........................................50

**Questions and Answers**

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**Special Considerations**  
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**Urinary Incontinence:**  
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Location: Grand Ballroom Foyer

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**Moderated Poster Session I**  
Location: Pavilion  
Moderators: Beth Mueller, MD; Erin T. Bird, MD; Lindsey Kerr, MD

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**Poster #1**  
**ANALYSIS OF LONG-TERM OUTCOMES OF SINGLE POLYPROPYLENE MESH IN TOTAL PELVIC FLOOR RECONSTRUCTION**  
Kaytan Amrute, MD, Evan Eisenberg, MD, Ardeshir Rastinehad, MD, Leslie Kushner, PhD and Gopal Badlani, MD (Presented By: Kaytan Amrute, MD)

**Poster #2**  
**ASSESSMENT OF AFFERENT AUTONOMIC SENSORY FUNCTION IN RAT BLADDERS**  
Robert Abouassaly, MD, Giuming Liu, MD, PhD, Jefferson Katims, MD and Firouz Daneshgari, MD (Presented By: Robert Abouassaly, MD)

**Poster #3**  
**ALTERATIONS IN THE CONTRACTILE PROPERTIES, TOTAL MYOSIN CONTENT, AND A1 ADRENERGIC RECEPTOR PROTEIN IN VAGINAL MUSCULARIS FROM WOMEN WITH PROLAPSE**  
Gina Northington, MD, Maureen Basha, PhD, Lily Arya, MD, MS, Mark Morgan, MD and Samuel Chacko, DVM, PhD (Presented By: Gina Northington, MD)

**Poster #4**  
**RHO KINASE IS REQUIRED FOR M2 MEDIATED BLADDER CONTRACTIONS WHEREAS M3 RECEPTORS ACTIVATE ALTERNATIVE, PARALLEL PATHWAYS: FINDINGS FROM MUSCARINIC RECEPTOR KNOCK OUT MICE**  
Michael Ruggieri, PhD, Jurgen Wess, PhD and Alan Braverman, PhD (Presented By: Michael Ruggieri, PhD)

**Poster #5**  
**RAT BLADDER OUTLET OBSTRUCTION (BOO) PRODUCES ALTERED BLADDER SENSORY NEURON ACTION POTENTIALS**  
David McKenna, MS, Christopher Langdale, MS, Stuart Portbury, BS, China Chien, BS, Karl Thor, PhD, Matthew Fraser, PhD, Venkateswarlu Karicheti, PhD and Edward Burgard, PhD (Presented By: Karl Thor, PhD)
Poster #6  TREATMENT OF STRESS URINARY INCONTINENCE USING ADIPOSE DERIVED STEM CELL: RESTORATION OF URETHRAL FUNCTION
Xiaoyong Zeng, MD, PhD, Gregory Jack, MD, Rong Zhang, DDS, PhD, Benjamin Wu, DDS, PhD and Larissa Rodriguez, MD (Presented By: Larissa Rodriguez, MD)

Poster #7  VOIDING DYSFUNCTION FOLLOWING EXPLANTATION OF SYNTHETIC MID-URETHRAL SLINGS DUE TO TAPE EROSION
Jonathan Starkman, MD, Alex Gomelsky, MD, Harriette Scarpero, MD and Roger Dmochowski, MD (Presented By: Jonathan Starkman, MD)

Poster #8  IS THERE AN OPTIMAL PARAMETERS SETTING FOR SACRAL NEUROMODULATION THAT CAN IMPACT THE CLINICAL OUTCOME?
Ervin Kocjancic, John Smith, Simone Crivellaro, Paolo Gontero and Bruno Frea (Presented By: Ervin Kocjancic)

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Matthew Fraser, PhD, China Chien, BS, Mary Katofiasc, BS, Christopher Langdale, MS, Jacqueline Brooks, BS, Melissa Young, Kenneth Olejar, BS, Venkateswarlu Karicheti, PhD and Karl Thor, PhD (Presented By: Matthew Fraser, PhD)

Poster #11  CAV2.2 BLOCKADE INHIBITS ACUTE BLADDER IRRITATION AND CALCIUM CURRENTS IN BLADDER-IDENTIFIED NOCICEPTIVE AFFERENTS IN THE RAT
Matthew Fraser, PhD, China Chien, BS, Angela Bookout, BS, Karl Thor, PhD and Edward Burgard, PhD (Presented By: Matthew Fraser, PhD)

Poster #12  LEVATOR ANI TRIGGER POINT INJECTIONS: AN UNDERUTILIZED TREATMENT FOR CHRONIC PELVIC PAIN
Carolyn Langford, DO, Gamal Ghoniem, MD, FACS and Szilvia Udvari Nagy, MD (Presented By: Carolyn Langford, DO)

Poster #13  VARIATIONS IN STRESS INCONTINENCE MANAGEMENT BY SURGEON SPECIALTY
Jennifer Anger, MD, Mark Litwin, MD, MPH, Qin Wang, MA, Chris Pashos, PhD and Larissa Rodriguez, MD (Presented By: Jennifer Anger, MD)

Poster #14  THE ANTERIOR VAGINAL WALL SUSPENSION FOR MODERATE-TO-LARGE CYSTOCELE
Jason Gilleran, MD, Christina Poon, MD, Elizabeth Takacs, MD, Mohamed Mubasher, PhD and Philippe Zimmern, MD (Presented By: Jason Gilleran, MD)
Poster #15  PREDICTIVE VALUE OF URODYNAMIC FINDINGS DURING VAGINAL PACK REDUCTION OF MODERATE-TO-LARGE CYSTOCELE IN STRESS INCONTINENCE OUTCOME AFTER SUCCESSFUL REPAIR OF CYSTOCELE
Jason Gilleran, MD and Philippe Zimmern, MD (Presented By: Jason Gilleran, MD)

Poster #16  THE SPIRAL SLING SALVAGE ANTI-INCONTINENCE SURGERY FOR THE FEMALE PATIENT WITH REFRACTORY STRESS URINARY INCONTINENCE: SURGICAL OUTCOME AND SATISFACTION DETERMINED BY PATIENT DRIVEN QUESTIONNAIRES
Arthur Mourtzinos, MD, Mary Maher, MD, Mathew P. Rutman, MD, Nasim Zabihi, MD, U. Zehra Laiwalla, MD, Shlomo Raz, MD and Larissa V. Rodriguez, MD (Presented By: Arthur Mourtzinos, MD)

Poster #17  THE DISTAL URETHRAL POLYPROPYLENE SLING AND ITS EFFECT ON URGE INCONTINENCE DETERMINED BY PATIENT DRIVEN QUESTIONNAIRES
Arthur Mourtzinos, MD, Mary Grey Maher, MD, Nasim Zabihi, MD, U. Zehra Laiwalla, MD, Shlomo Raz, MD and Larissa V. Rodriguez, MD (Presented By: Arthur Mourtzinos, MD)

Poster #18  SYMPTOMS AND ANATOMY ARE POORLY CORRELATED IN WOMEN WITH ADVANCED PROLAPSE
Yashika Dooley, MD, Kristine West, BS, Marypat Fitzgerald, MD, Kimberly Kenton, MD, MS and Linda Brubaker, MD, MS (Presented By: Yashika Dooley, MD)

Poster #19  VAGINAL EXTRUSION RATES FOR DIFFERENT TECHNIQUES OF SYNTHETIC SLING PLACEMENT
Brian Yamada, MD, Fred Govier, MD and Kathleen Kobashi, MD (Presented By: Brian Yamada, MD)

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Mohit Khera, MD, MBA, MPH, Nilson Salas, MD, George Somogyi, MD, PhD, Mary-Frances Jett, PhD, Anthony Ford, MD, Philip Nunn, MD, Christopher Smith, MD, MBA, Susanna Kiss and Timothy Boone, MD, PhD (Presented By: Mohit Khera, MD, MBA, MPH)

Poster #21  DETRUSOR OVERACTIVITY AND VALSALVA INDUCED LEAKAGE ON URODYNAMICS IN WOMEN WITH MIXED, PURE STRESS AND PURE URGE URINARY INCONTINENCE. IS THERE A DIFFERENCE?
Paholo Barboglio, MD, Rolando Rivera, MD, David Meinbach, MD and Angelo Gousse, MD (Presented By: Paholo Barboglio, MD)

Poster #22  M2 MEDIATED CONTRACTIONS OF HUMAN BLADDER FROM ORGAN TRANSPLANT DONORS IS ASSOCIATED WITH AN UP REGULATION OF UROTHELIAL MUSCARINIC RECEPTORS
Brett Lebed, MD, Alan Braverman, PhD, Mitchell Linder, BS and Michael Ruggieri, PhD (Presented By: Brett Lebed, MD)
Poster #23  BLadder dysfunction in experimental autoimmune encephalitis: a mouse model for studying bladder dysfunction in demyelinating disease  
Michael Aleman, MD, Tara Frenkl, MD, Guiming Liu, PhD, Lateef Saffore, MS, Justin Johnson, MS, Vincent Tuohy, PhD and Firouz Daneshgari, MD  
(Presented By: Michael Aleman, MD)

Poster #24  A statistical comparison of pad numbers versus pad weights in the quantification of urinary incontinence  
Drew Dylewski, MD, Margaret Jamison, PhD, Kristy Borawski, MD, Neil Sherman, MD, Cindy Amundsen, MD and George Webster, MB, FRCS  
(Presented By: Drew Dylewski, MD)

Poster #25  Patient related risk factors for recurrent stress urinary incontinence in women undergoing repeat anti-incontinence surgery  
Firouz Daneshgari, MD, Courtenay Moore, MD, Hassan Frinjari, MD and Denise Babineau, PhD  
(Presented By: Courtenay Moore, MD)

Poster #26  How safe is sacral nerve stimulation for pelvic floor disorders- Mayo Clinic experience  
Paul Pettit, MD, Anita Chen, MD and Karen Bryant, PA-C  
(Presented By: Paul Pettit, MD)

Poster #27  Surgical interventions following Interstim® sacral nerve modulation implant – 11 year experience  
Jerzy B Gajewski, MD  
(Presented By: Jerzy B Gajewski, MD)

Poster #28  Neurophysiological and clinical long term follow up in sacral neuromodulation: a hypothesis of neuroplasticity  
Michele Spinelli, MD, Silvia Malaguti, MD, Marco Citeri, MD, Jessica Tarantola, MD and Tiziana Redaelli, MD  
(Presented By: Michele Spinelli, MD)

Poster #29  Comparison between change in 24-hour pad weight, AUA symptom score, ICIQ-SF score, and PGI-I score in patient evaluation after male perineal sling  
Christian Twiss, MD, Melissa Fischer, MD and Victor Nitti, MD  
(Presented By: Christian Twiss, MD)

Poster #30  Determining the course variation of the dorsal nerve of the clitoris: implications for pelvic organ interventions  
Ashwin Vaze, MD, Howard Goldman, MD, Sandip Vasavada, MD, Raymond Rackley, MD, Joseph Abdelmalak, MD, J. Stephen Jones, MD and Kenneth Gustafson, Phd  
(Presented By: Ashwin Vaze, MD)

Poster #31  Telemetry based method to screen new drug candidates in female rats with urethral obstruction  
Venkateswarlu Karicheti, PhD, Elizabeth Stone, DVM, Christopher Langdale, MS, Matthew Fraser, PhD, China Chien, BS and Karl Thor, PhD  
(Presented By: Karl Thor, PhD)
7:15 p.m. - 9:00 p.m.  
**Industry-Supported Symposium**  
Location: Royal Palms I & II  

**Sacral Nerve Stimulation: Are There Factors Associated With Clinical Success?**  
Cindy Amundsen, MD  

**Economic & Quality of Life Considerations Associated With Sacral Nerve Stimulation**  
Sherif Aboseif, MD  

**Minimally Invasive BPH Therapies**  
James Meyer, MD

**FRIDAY, FEBRUARY 24, 2006**  

6:30 a.m. - 4:30 p.m.  
**Speaker Ready Room Open**  
Location: Samana Cay  

6:30 a.m. - 5:00 p.m.  
**Registration**  
Location: Grand Ballroom Foyer  

6:30 a.m. - 8:00 a.m.  
**Breakfast for all attendees in exhibit hall**  
Location: Grand Ballroom Foyer  

6:30 a.m. - 3:00 p.m.  
**Exhibit Hall Open**  
Location: Grand Ballroom Foyer  

8:00 a.m. - 4:00 p.m.  
**Video Viewing in Speaker Ready Room**  
Location: Samana Cay

**CONCURRENT SESSIONS 7:00 a.m. - 10:00 a.m.**

**BASIC SCIENCE SESSION**  
Location: Salon II  

7:00 a.m. - 8:00 a.m.  
**Animal Models of Stress Urinary Incontinence**  
Moderator: Margot Damaser, PhD  

**Methods of Measuring Urethral Resistance in Animal Models**  
Margot Damaser, PhD ...............................................60  

**Simulated Childbirth Injuries**  
Tom Lue, MD ............................................................62
Models of Neurogenic Stress Incontinence
Matthew Fraser, PhD .................................................64

8:00 a.m. - 9:00 a.m.
Neuromodulatory Characteristics of the
Lower Urinary Tract
Moderator: Toby C. Chai, MD

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Lori Birder, PhD ........................................................65

Current Perception Threshold
Kimberly Kenton, MD ...............................................66

9:00 a.m. - 10:00 a.m.
Use of Stem-Cell in Incontinence Treatment
Introduction: Adonis Hijaz, MD
Keynote: Speaker to be announced
Commentary: Michael B. Chancellor, MD

GURS SESSION
Location: Salon III

7:30 a.m. - 10:00 a.m.
Salvage Surgery for Continence
Moderator: Anthony R. Stone, MD

7:30 a.m. - 8:30 a.m.
Male Problems: Management of the
Complex Post Prostatectomy Patient
Karl J. Kreder Jr., MD
Artificial Sphincter Failures: What to Do?
Gregory T. Bales, MD ...............................................67

8:30 a.m. - 10:00 a.m.
Female Problems: Tape/Mesh Problems in
Female Reconstruction
Shlomo Raz, MD ..........................................................68

Lower Urinary Tract Fistulae
Christopher R. Chapple, Bsc, MD, FRCS ..................70
Management of the Devastated Urethra
Anthony R. Stone, MD ..............................................80

ICS NEUROGENIC SESSION
Location: Salon IV

8:00 a.m. - 10:00 a.m.
ICS Neurourology Promotions Committee:
Advanced Urodynamics, Case Studies in
Neurogenic Voiding Dysfunction
Panelists: Jacques Corcos, MD; John C. Hairston, MD;
Victor W. Nitti, MD
10:00 a.m. - 10:30 a.m.  Break - Visit the Exhibits
Location: Grand Ballroom Foyer

10:30 a.m. - 12:30 p.m.  Podium Session II
Location: Salon II
Moderators: Howard Goldman, MD; Wendy Leng, MD

10:30 AM  #16  MUSCARINIC RECEPTOR SIGNAL FOR CONTRACTION OF HUMAN BLADDER IS MEDIATED BY RHO KINASE
Michael Ruggieri, PhD, Leo Doumanian, MD and Alan Braverman, PhD
(Presented By: Michael Ruggieri, PhD)

10:38 AM  #17  URODYNAMIC PREDICTORS OF OUTCOMES WITH PHOTOSELECTIVE LASER VAPORIZATION PROSTATECTOMY IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA PREOPERATIVE RETENTION
Mara Monoski, MD, Ricardo Gonzalez, MD, Jaspree Sandhu, MD, Balaji Reddy, MD and Alexis Te, MD (Presented By: Mara Monoski, MD)

10:46 AM  #18  THE ROLE OF ANGIOTENSIN II IN STRESS URINARY INCONTINENCE – A RAT MODEL
Mohamad Salkini, MD, Hardeep Phull, BA, Christina Escobar, MD, Todd Purves, MD and Craig Comiter, MD (Presented By: Mohamad Salkini, MD)

10:54 AM  #19  FEASIBILITY OF ARTIFICIAL URINARY SPHINCTER AFTER MALE SLING FAILURE
Joshua Broghammer, MD, Ajay Singla, MD, FRCS,FACS, Neelesh Aggarwal, MD, Hakan Vuruskan, MD and Mark Fisher, MD (Presented By: Joshua Broghammer, MD)

11:02 AM  #20  PREDICTIVE FACTORS FOR INVOLUNTARY DETRUSOR CONTRACTIONS ON PREOPERATIVE URODYNAMICS IN PATIENTS UNDERGOING MALE PERINEAL SLING
Melissa Fischer, MD, Christian Twiss, MD and Victor Nitti, MD (Presented By: Melissa Fischer, MD)

11:10 AM  #21  COMPARING THE IMPACT OF TRANSDERMAL OXYBUTYNIN ON NOCTURIA AND RELATED SYMPTOMS IN MEN AND WOMEN WITH OVERACTIVE BLADDER: RESULTS FROM THE MATRIX STUDY
Patrick Shenot, MD, Roger Dmochowski, MD, Scott MacDiarmid, MD, Norman Zinner, MD and Marilyn Mcllwain, BSc (Presented By: Patrick Shenot, MD)

11:18 AM  #22  ARTIFICIAL URINARY SPHINCTER IMPLANTATION FOR MALE INTRINSIC SPHINCTER DEFICIENCY: THIRTEEN-YEAR EXPERIENCE FROM BAYLOR
Elias Hsu, MD, H. Henry Lai, MD and Timothy Boone, MD/PhD (Presented By: Elias Hsu, MD)

11:26 AM  #23  A COMPARISON OF TURP AND TRANSURETHRAL ETHANOL INJECTION FOR BLADDER OUTLET OBSTRUCTION
Evan Eisenberg, MD, Art Rastinehad, MD, Mahesh Desai, MD, Anant Kumar, MD and Gopal Badlani, MD (Presented By: Evan Eisenberg, MD)
ARTIFICIAL URINARY SPHINCTER VS BONE ANCHORED MALE SLING FOR POST-RADICAL PROSTATECTOMY URINARY INCONTINENCE
Ajay Singla, MD, FRCS,FACS, Neelesh Aggarwal, MD and Murat Samli, MD
(Presented By: Ajay Singla, MD, FRCS,FACS)

INTRAVESICAL BOTULINUM TYPE A TOXIN INJECTION IN PATIENTS WITH OVERACTIVE BLADDER: TRIGONE VS. TRIGONE-SPARING INJECTION
Alvaro Lucioni, MD, David Rapp, MD, Edward Gong, MD, Paula Fedunok, MD and Gregory Bales, MD
(Presented By: David Rapp, MD)

PREVALENCE OF SELF-REPORTED INTERSTITIAL CYSTITIS (IC) AND INTERSTITIAL CYSTITIS-LIKE SYMPTOMS IN THE COMMUNITY
Kenneth Peters, MD, Ibrahim Ibrahim, MD, Donna Carrico, RNC,MS,NP, Kim Killinger, RN, Alessandra Graziottin, MD, MariaVictoria Estanol, MD and Ananias Diokno, MD
(Presented By: Kenneth Peters, MD)

PATIENT PERCEIVED OUTCOMES OF INVASIVE TREATMENTS CLASSICALLY USED FOR INTERSTITIAL CYSTITIS
Ginger Isom-Batz, MD, Jennifer R. Hill, MD, Kay Zakariasen, Georgia Panagopoulos, PhD and Elizabeth Kavaler, MD
(Presented By: Ginger Isom-Batz, MD)

CAUDAL EPIDURAL S2-4 NEUROMODULATION FOR THE TREATMENT OF SEVERE AND REFRACTORY INTERSTITIAL CYSTITIS, PELVIC PAIN AND OVERACTIVE BLADDER
Nasim Zabihi, Arthur Mourtzinos, Mary Grey Maher, Shlomo Raz, Larissa V Rodriguez. The Geffen School of Medicine at UCLA, Los Angeles, CA.
(Presented By: Nasim Zabihi, MD)

RANDOMIZED TRIAL OF SACRAL VS. PUDE NDAL NERVE STIMULATION FOR INTERSTITIAL CYSTITIS: FOLLOW-UP DATA
Kenneth Peters, MD, Kevin Feber, MD and Richard Bennett, MD
(Presented By: Kenneth Peters, MD)

LONG-TERM SATISFACTION AFTER SACRAL NEUROMODULATION FOR REFRACTORY URGE INCONTINENCE
Cindy Amundsen, MD, Raymond Foster, MD, Elizabeth Anoia, MD and George Webster, MBFRCS
(Presented By: Cindy Amundsen, MD)

12:30 p.m. - 1:30 p.m. Lunch - Boxed
Location: Grand Ballroom Foyer
ISPiN SESSION
Location: Salon II

1:30 p.m. - 3:00 p.m.  Pelvic Organ Prolapse
Moderator: Chip Butrick, MD

Pathophysiology of Pelvic Organ Prolapse
J. Christian Winters, MD ...........................................83
Apical Support: The Key and the Various Options
Peter K. Sand, MD ..........................................................84
Augmented Repairs: When and How
Vincent Lucente, MD
Debate: Biologic Vs. Synthetics for Pelvic Organ Prolapse Repairs
Vincent Lucente; Peter K. Sand, MD; J. Christian Winters, MD

BPH SESSION
Location: Salon III

1:30 p.m. - 2:30 p.m.  What Surgery for BPH Should I Master?
Moderators: Timothy B. Boone, MD, PhD; Steven A. Kaplan, MD

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Jerry G. Blaivas, MD ..................................................91
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William I. Jaffe, MD .....................................................97
Green Light
Alexis E. Te, MD .......................................................99
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2:30 p.m. - 3:00 p.m.  BPH Case Presentations
Panel: Jerry G. Blaivas, MD; Alexis E. Te, MD;
William I. Jaffe, MD; Douglas F. Milam, MD
SUFU SESSION
Location: Salon IV

1:30 p.m. - 3:00 p.m. Slings: The Way I Do It and What is the Future
Moderator: Toby C. Chai, MD

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David R. Staskin, MD ................................................103

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3:30 p.m. - 4:30 p.m. ISPiN Advanced Neuromodulation
Location: Salon II
Moderator: Raymond R. Rackley, MD

Complications and Failed Implants
Steven W. Siegel, MD ...............................................108

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Kenneth M. Peters, MD .............................................111

Best Practices: Tips and Pearls
Paul D. Pettit, MD

3:30 p.m. - 4:30 p.m. GURS Complex Incontinence Case Presentations
Location: Salon III
Moderator: Anthony R. Stone, MD
Panelists: Karl J. Kreder Jr., MD; Gregory T. Bales, MD;
Shlomo Raz, MD; Christopher R. Chapple, Bsc, MD, FRCS;
Roger Roman Dmochowski, MD

4:30 p.m. - 7:00 p.m. Investigator Meeting
Location: Hoffman’s Cay

7:30 p.m. - 12:00 p.m. SUFU/ISPiN Annual Banquet
Location: Salon II-IV
Cocktails (7:30 p.m. - 8:00 p.m.)
Dinner/Dancing (8:00 p.m. - 12:00 p.m.)
SATURDAY, FEBRUARY 25, 2006

6:30 a.m. - 8:00 a.m.  **Industry-Supported Breakfast Debate:**  
“Overactive Bladder: Debating the Controversies in Therapeutic Management”  
Location: Bond’s Cay

Faculty:

Scott MacDiarmid, MD (CHAIR)  
Wake Forest University School of Medicine  
Founder and Director, WFUP Continence Center  
Winston-Salem, North Carolina

Rodney Appell, MD  
Professor, Scott Department of Urology and Department of Obstetrics and Gynecology  
Baylor College of Medicine  
Houston, Texas

Peter Sand, MD  
Director, Evanston Continence Center  
Director, Division of Urogynecology & Reconstructive Pelvic Surgery  
Department of Obstetrics and Gynecology  
Northwestern University  
Evanston, Illinois

David Staskin, MD  
Associate Professor, Department of Urology  
New York Weill-Cornell Medical Center  
New York-Presbyterian Hospital  
Ithaca, New York

7:00 a.m. - 11:30 a.m.  **Speaker Ready Room Open**  
Location: Samana Cay

7:00 a.m. - 4:00 p.m.  **Registration**  
Location: Grand Ballroom Foyer

7:00 a.m. - 8:30 a.m.  **Breakfast for all attendees in exhibit hall**  
Location: Grand Ballroom Foyer

7:00 a.m. - 1:00 p.m.  **Exhibit Hall Open**  
Location: Grand Ballroom Foyer
7:00 a.m. - 8:00 a.m. **Residents and Fellows Breakfast**
Location: Bonds Cay
Moderators: Eric Rovner, MD; Harriette Scarpero, MD; Gary Lemack, MD

**Formation of Sub-Society for Fellows in Female Urology - Update**
Tara Frenkl, MD, MPH

8:00 a.m. - 1:00 p.m. **Video Viewing in Speaker Ready Room**
Location: Samana Cay

8:00 a.m. - 8:10 a.m. **Lifetime / Zimskind Award Winners**
Location: Salon II
Presenter: Rodney Appell, MD

8:10 a.m. - 8:30 a.m. **Prize Essay Winner Presentations**
Location: Salon II
Moderators: Gary Lemack, MD; Del Rudy, MD

**08:10 AM**

A RANDOMIZED PROSPECTIVE STUDY COMPARING THE EFFICACY OF TWO TEST STIMULATION TECHNIQUES FOR SACRAL NEUROMODULATION IN URGE INCONTINENT WOMEN \( \geq 55 \) YEARS OF AGE
Kristy Borawski, MD, Raymond Foster, MD, George Webster, MB, FRCS and Cindy Amundsen, MD (Presented By: Kristy Borawski, MD)

**Resident Essay Contest Winner - Clinical**

**08:20 AM**

BLADDER SMOOTH MUSCLE CAVEOLAE DIFFERENTIALLY REGULATE SIGNAL TRANSDUCTION PATHWAYS
Vivian Cristofaro, PhD, Ziv Radisavljevic, MD/PHD, Tomas Golabek, MD, Craig Peters, MD, Subbarao Yalla, MD and Maryrose Sullivan, PhD (Presented By: Vivian Cristofaro, PhD)

**Resident Essay Contest Winner – Basic Science**

8:30 a.m. - 9:00 a.m. **STATE-OF-THE-ART LECTURES:**
**Urinary Tract Pharmacotherapy: The Present & Future**
Location: Salon II
Moderator: Roger Dmochowski, MD

**Present:** Alan Wein, MD .................................................113
**Future:** Karl-Erik Andersson, MD, PhD
**SUFU SESSION**
Location: Salon III

9:00 a.m. - 10:00 a.m.  Outcomes and Practice Guidelines for Urinary Incontinence
Moderator: Rodney Appell, MD

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  Paul Abrams, MD ......................................................114
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  Christopher R. Chapple, Bsc, MD, FRCS .................134
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  Eric Rovner, MD ........................................................149
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10:00 a.m. - 10:30 a.m.  Break
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10:30 a.m. - 12:00 p.m.  Botox as Pharmacomodulation
Location: Salon III
Moderator: Douglas F. Milam, MD

- **Theory and Results**
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  Christopher P. Smith, MD .........................................154

**ICS SESSION**
Location: Salon IV

9:00 a.m. - 9:50 a.m.  ICS Update
Moderator: Linda Cardozo, MD ................................159

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Walter Artibani, MD

9:20 a.m.  ICS Standardization of Terminology
Paul Abrams, MD ..........................................................167
9:50 a.m. - 11:30 a.m.  International Consultation on Incontinence (ICI)
Evidence Based Management of Urinary Incontinence

9:50 a.m.  Introduction and Evaluation
Paul Abrams, MD

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Linda Cardozo, MD ...................................................176

10:25 a.m.  Management of Urinary Incontinence in Men
Walter Artibani, MD

10:45 a.m.  Management of Urinary Incontinence in Neuropaths
J-J Wyndaele, MD .....................................................178

11:05 a.m.  Questions and Answers

12:00 p.m. - 1:00 p.m.  Lunch - Boxed
Location: Grand Ballroom Foyer

1:00 p.m. - 2:00 p.m.  SUFU Business Meeting
Location: Salon III

1:00 p.m. - 2:00 p.m.  ISPiN Business Meeting
Location: Salon IV

2:00 p.m. - 4:00 p.m.  Moderated Poster Session II
Location: Salon II
Moderators: E. Ann Gormley, MD; Karl M. Luber, MD

Poster #33  EVOLUTION OF TRANURETHRAL ETHANOL ABLATION OF THE PROSTATE (TEAP) IN FOUR PROSPECTIVE MULTI-CENTRE STUDIES
Evan Eisenberg, MD, Mark Plante, MD, Jorge Gutierrez, MD and Gopal Badlani, MD (Presented By: Evan Eisenberg, MD)

Poster #34  SACRAL NEUROMODULATORY THERAPY FOR VOIDING DYSFUNCTION: ONE INSTITUTION’S EXPERIENCE
Ann Lavers, MD, Suzette Sutherland, MD, Angeline Carlson, PhD, Jyothi Kesha, MD and Steven Siegel, MD (Presented By: Ann Lavers, MD)

Poster #35  THE IMPACT OF SACRAL NERVE STIMULATION ON PATIENTS REPORTING NOCTURNAL ENURESIS
Tamra Lewis, MD, Ann Lavers, MD, Suzette Sutherland, MD, Jyothi Kesha, MD and Steven Siegel, MD (Presented By: Tamra Lewis, MD)

Poster #36  FISTULA AND FETAL OUTCOMES IN PATIENTS ACHIEVING PREGNANCY AFTER VESICOVAGINAL FISTULA REPAIR IN NIGERIA
Kristin Chrouser, MD, Deborah Lightner, MD and Carolyn Kirschner, MD (Presented By: Kristin Chrouser, MD)
Poster #37  ANGIOTENSIN II PLAYS A ROLE IN INTERSTITIAL CYSTITIS – A MURINE MODEL
Hardeep Phull, BA, Mohamad Salkini, MD, Todd Purves, MD PhD, Joel Funk, MD, Duan Copeland, MD and Craig Comiter, MD (Presented By: Hardeep Phull, BA)

Poster #38  EFFECT OF A FIXED DOSE OF EXTENDED-RELEASE OXYBUTYNIN ON URGE AND NON-URGE URINARY INCONTINENCE
John Lavelle, MB, BCh and Scott MacDiarmid, MD (Presented By: John Lavelle, MB, BCh)

Poster #39  CORRELATION OF MESA AND VLPP WITH OTHER MEASURES OF URINARY INCONTINENCE SEVERITY
Michael Albo, MD, Lisa Wruck, PhD, Toby Chai, MD, Ananias Diokono, MD, Linda Brubaker, MD, Stephen Kraus, MD, John Kusek, MD, Gary Lemack, MD, Jerry Lowder, MD and William Steers, MD (Presented By: Michael Albo, MD)

Poster #40  COMPARING STRESS URINARY INCONTINENCE OUTCOMES OF TENSION-FREE VAGINAL TAPE WITH TRANS-OBTURATOR TAPE SLING: A RETROSPECTIVE COHORT STUDY
Jay-James Miller, MD, Sylvia Botros, MD, Mohamad Akl, MD, Jennifer Beaumont, MS, Roger Goldberg, MD MPH, Yoram Abramov, MD and Peter Sand, MD (Presented By: Jay-James Miller, MD)

Poster #41  IMMORTALIZATION OF BLADDER UROTHELIAL CELLS USING TELOMERASE TRANSFECTION: NOVEL INNOVATION OF RESEARCH TOOLS FOR MOLECULAR BIOLOGY STUDIES
Humphrey Atiemo, MD, Raymond Rackley, Mei Kuang, Joseph Abdelmalak, Ashwin Vaze, Stephen Jones, Sandip Vasavada and Joseph DiDonato (Presented By: Humphrey Atiemo, MD)

Poster #42  PATHOPHYSIOLOGY OF LOWER URINARY TRACT SYMPTOMS (LUTS) AFTER BRACHYTHERAPY FOR PROSTATE CANCER
Jerry Blaivas, MD, Jeffrey Weiss, MD and Mark Jones (Presented By: Jerry Blaivas, MD)

Poster #43  IS THE REGIONAL DIFFERENCE IN VAGINAL WALL CONTRACTION DUE TO A DIFFERENCE IN THE SMOOTH MUSCLE MYOSIN ISOFORM?
Maureen Basha, PhD, Shaohua Chang, PhD, Elaine Smolock, MS, Robert Moreland, PhD, Alan Wein, MD and Samuel Chacko, DVM, PhD (Presented By: Maureen Basha, PhD)

Poster #44  INJECTION TECHNIQUE TO OPTIMIZE THE SUCCESS OF MUSCLE DERIVED CELL INJECTION TO TREAT STRESS URINARY INCONTINENCE
Lesley Carr, MD, FRCSC, Deborah Steele, RN, Shannon Steele, RN, David Wagner, Ryan Pruchnic, MSc, Ron Jankowski, PhD, Janet Erickson, RN, Fernando de Miguel, Johnny Huard and Michael Chancellor, MD (Presented By: Lesley Carr, MD, FRCSC)
Poster #45  COMPLICATIONS OF SLING SURGERY AMONG FEMALE MEDICARE BENEFICIARIES
Jennifer Anger, MD, Mark Litwin, MD, MPH, Qin Wang, MA, Chris Pashos, PhD and Larissa Rodriguez, MD (Presented By: Jennifer Anger, MD)

Poster #46  THE PREVALENCE OF URINARY INCONTINENCE AMONG COMMUNITY-DWELLING ADULT MEN: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY
Jennifer Anger, MD, Mark Litwin, MD, MPH, Christopher Saigal, MD, MPH, Lynn Stothers, MD, MHSc, FRCSC, David Thom, MD, MPH, PhD and Larissa Rodriguez, MD (Presented By: Jennifer Anger, MD)

Poster #47  LONG-TERM PREDICTORS OF SUCCESS OF THE MALE BULBOURETHRAL SLING
Neil Grafstein, MD, Jaspreet Sandhu, MD and Eilber Karyn, MD (Presented By: Neil Grafstein, MD)

Poster #48  POOR TISSUE RESPONSE TO PELVICOL™ IN INCONTINENCE AND PROLAPSE SURGERY: INCIDENCE AND MANAGEMENT
Walter J. Simoneaux, MD, Rashel M. Haverkorn, MD, Diane Young, MS, William S. Kubricht III, MD and Alex Gomelsky, MD (Presented By: Rashel M. Haverkorn, MD)

Poster #49  ARTIFICIAL URINARY SPHINCTER AND IN-VANCE MALE SLING IN THE TREATMENT OF POST-PROSTATECTOMY INCONTINENCE: A COMPARISON STUDY
Madalena Liu, MD, Sender Herschorn, MD and Richard Baverstock, MD (Presented By: Madalena Liu, MD)

Poster #50  TRANS OBTURATOR TAPE: TWO YEARS FOLLOW UP
Saad Juma, MD and Gilberto Brito, MD (Presented By: Saad Juma, MD)

Poster #51  FIBROBLASTS FROM WOMEN WITH AND WITHOUT SUI ARE DIFFERENTIALLY RESPONSIVE TO ESTROGEN
Leslie Kushner, PhD, Mahesh Mathubuthram, PhD, Pui Yan Chiu, MS and Gopal H. Badlani, MD (Presented By: Leslie Kushner, PhD)

Poster #52  COMPARISON OF CLINICAL HISTORY AND UROGENITAL DISTRESS INVENTORY (UDI-6): IS THERE CONCORDANCE?
Rolando Rivera, MD, Paholo Barborgio, David Meinbach and Angelo Gousse (Presented By: Rolando Rivera, MD)

Poster #53  HIGH-POWER KTP PHOTOSELECTIVE LASER VAPORIZATION PROSTATECTOMY: THE NEW YORK PRESBYTERIAN EXPERIENCE
Ricardo R. Gonzalez, MD, Balaji N. Reddy, MBBS, Jaspreet S. Sandhu, MD, Steven A. Kaplan, MD and Alexis E. Te, MD (Presented By: Ricardo R. Gonzalez, MD)

Poster #54  SACRAL NEUROMODULATION FOLLOWING UROGYNECOLOGIC PROCEDURES FOR REFRACTORY STORAGE SYMPTOMS
Jonathan Starkman, MD, Harriette Scarpero, MD, Douglas Milam, MD and Roger Dmochowski, MD (Presented By: Jonathan Starkman, MD)
4:00 p.m. - 6:00 p.m.  

**Industry-Supported Reception:**  
“The Natural History of OAB and Implications for Optimizing Treatment Outcomes”  
Location: Hoffman’s Cay

Faculty:

Karl M. Luber, MD, FACOG (Program Chair)  
Director, Female Pelvic Medicine and Reconstructive Surgery  
Kaiser Foundation Hospital  
Assistant Clinical Professor  
University of California  
San Diego, California, USA

Jean-Jacques Wyndaele, MD, DSci, PhD, FEBU, FISCOS  
Professor  
Department of Urology  
University of Antwerp  
Edegem, Belgium

Linda D. Cardozo, MD, FRCOG  
Professor of Urogynaecology  
King’s College Hospital  
Denmark Hill  
London, United Kingdom
1. Call to Order - President, Philippe E. Zimmern, MD
2. Approval of 2005 minutes and thank you to program chairs - Roger R. Dmochowski, MD
3. Treasurer's Report - E. Ann Gormley, MD
4. Awards Committee Report – Rodney Appell, MD
5. Membership Committee Report - Alan Wein, MD
6. Old Business
   (a) Fellowship Update – Tim Boone, MD
7. New Business
   (a) Bylaw Changes
   (b) Announcement of 2007 meeting
   (c) Other
8. Adjourn
International Society of Pelvic Neuromodulation
Annual Business Meeting Agenda
Saturday, February 25, 2006
1:00 p.m. – 2:00 p.m.

1. Attendance
2. Finances
3. Future Programs
4. Going Forward
5. Other
Evening Events

WEDNESDAY, FEBRUARY 22, 2006

Welcome Reception – JUNKANOO
Time: 7:00 p.m. – 8:30 p.m.
Join SUFU for a JUNKANOO! This is a carnival-style festival unique to the Bahamas. A traditional Junkanoo gala is a joyful and exuberant celebration of freedom and life. Not unlike Carnival in Brazil or Mardi Gras in New Orleans, this celebration is indeed jubilant! An ever-changing kaleidoscope of color, movement, sound, music, food, activities and fun, JUNKANOO is a feast for the senses. All of the elements blend, providing brilliant Bahamian memories for all. Enjoy the evening on the beach with your friends and family!
Dress: Resort Casual

FRIDAY, FEBRUARY 24, 2006

SUFU/ISPiN Annual Banquet
Time:  7:30 p.m. – 8:00 p.m. Cocktails
8:00 p.m. – 12:00 p.m. Dinner/Dancing
To wrap up the meeting, enjoy cocktails and hors d’oeuvres, followed by a delicious dinner and dancing.
Dress: Business Dress

Spouse and Guest Activities
The concierge will be pleased to coordinate a variety of activities for your stay in The Bahamas, such as swimming with dolphins or sharks, visiting Abaco National Park or Inagua National Park, journeying by mail boat between the islands, strolling along the pink sand beach of Harbour Island, visiting art galleries, sport fishing, sailing, swimming and scuba diving, and shopping at the International Bazaar.

Designed and certified by Runner’s World Magazine, Runner’s World Maps are available to hotel guests and feature 3-mile and 5-mile jogging/walking routes from the hotel, as well as local running tips.

Camp Lucaya Kid’s Club
At Camp Lucaya kids club, kids enjoy all kinds of activities designed to entertain, teach and challenge. The list includes arts and crafts, Bahamian poetry and folklore, theme parties, beach Olympics, and even an explorers’ club. Located at the Sheraton at Our Lucaya, the camp is open to all guests staying at The Westin or Sheraton. Best of all, the kids will be having so much fun, you can sneak off and relax.

Camp Lucaya hours
All week 9:00 a.m. – 5:00 p.m.
Thursday through Saturday 6:00 p.m. – 10:00 p.m. (peak periods only)

Program includes snacks and drinks throughout the day. Lunch is included with the half-day and full-day program. Evening program includes dinner. Discounts are available for siblings.

Nursery hours
9:00 a.m. – 5:00 p.m.; closed 12:30 p.m. – 1:30 p.m.
Leave your child in well-trained hands. Maximum stay of two hours.
$10 per hour, per child.
INVITED SPEAKERS’ LECTURE SUMMARIES
PODIUM AND POSTER SESSION ABSTRACTS
PODIUM #1

THE EFFECT OF PREOPERATIVE DETRUSOR INSTABILITY ON THE SURGICAL OUTCOME OF TVT IN WOMEN WITH SUI
Y. Berger, P.A. Castillo; Saint Barnabas Medical Center, Livingston, NJ

INTRODUCTION AND OBJECTIVES: To assess the impact of preoperative findings of overactive bladder (OAB) on the outcome of TVT in women with symptoms of mixed urinary incontinence (MUI) and the predictable postoperative resolution of OAB.

MATERIALS AND METHODS: Surgical outcomes of 513 patients were retrospectively reviewed with a mean follow-up of one year. Initially, the ENTIRE series was used to compare ALL patients with preoperative presentation of stress urinary incontinence (SUI) alone (Group A1 as a control group) to patients with mixed urinary incontinence (Group A2). We further reviewed the impact of the preoperative SUI and MUI on post surgical outcome in two subgroups of patients. Group B comprised of patients who underwent TVT alone (Group B1) and they were compared to those who had combined surgery (Group B2), i.e., TVT in conjunction with hysterectomy, anterior or posterior colporrhaphy. In a third subgroup (Group C), patients who had prior anti-incontinence surgery were compared to our entire series (Group A) to evaluate any impact that prior failed anti SUI surgery might have on the resolution of SUI and OAB symptoms.

RESULTS: Of a total of 513 patients, Group A1 comprised 281 patients (55%), who presented with symptoms of SUI alone, and A2 was comprised of 232 patients (45%), who presented with symptoms of MUI. In Group A1 of 281 patients, 12 (4.2%) developed de-novo symptoms of UUI requiring treatment with anticholinergic medications. In group A2, symptoms of UUI were resolved in 162 patients (70%) and persisted in 70 patients (30%) requiring further treatment. SUI symptoms resolved in 92% of Group A1, while 8% (n=39) had persistent symptoms of SUI requiring periurethral collagen injections. Group B1, with 303 patients, consisted of patients who underwent TVT alone, while Group B2 consisted of 210 patients that underwent TVT in conjunction with additional pelvic surgery. In group B1 there were 147 (49%) patients who presented with preoperative MUI and the remaining having SUI alone. In this B1 MUI group, 44 patients (30%) had persistent UUI. And in 170 (89%), symptoms of SUI resolved. Among the 210 patients (Group B2) who had combined surgery, 85 (40%) present with preoperative symptoms of UUI, 26 (31%) of which continued to have persistent UUI postoperatively. In this combined group, symptoms of SI resolved in 204 patients (97%) and persisted in 6 patients (3%). In Group C, there were 60 patients with preoperative SUI, who had prior anti-incontinence procedures. Of these women, 31 (52%) had preoperative MUI as well. Following the TVT, 8 (13%) of group C had persistent SUI requiring collagen injections and 52 (87%) had resolution of SUI. Of the 31 patients with preoperative UUI among group C, 17 (55%) had persistent UUI and in 14 (45%) it resolved.

CONCLUSION: This series reaffirms that TVT is an effective (over 90% cure rate) and safe procedure to treat symptoms of SUI in women, even with preoperative presentation of MUI. Our series also revealed a 70% resolution of preoperative OAB symptoms women with MUI who underwent TVT surgery. In reviewing these data we can preoperatively counsel our patients on the statistical probability of curing their symptoms of both SUI and OAB with TVT surgery.
PODIUM #2

A 52-WEEK TRIAL OF CALCIUM HYDROXYLAPATITE VS. BOVINE DERMAL COLLAGEN FOR TREATMENT OF STRESS URINARY INCONTINENCE

Robert D. Mayer, MD\textsuperscript{a}; Roger R. Dmochowski, MD\textsuperscript{b}; Rodney A. Appell, MD\textsuperscript{c}

INTRODUCTION and OBJECTIVE: The objective was to evaluate the safety and effectiveness of soft tissue augmentation of the urethral sphincter with calcium hydroxyapatite (CaHA; Coaptite \textsuperscript{®}) compared with bovine collagen in patients with stress urinary incontinence (SUI).

METHOD: This 12-month prospective, randomized, comparative, multi-center, single-blind, parallel clinical trial of Coaptite and collagen for soft tissue augmentation of the urethral sphincter in the treatment of SUI enrolled 296 women. Multiple transurethral or periurethral injections (up to five) were permitted up to the six-month visit. Twelve-month efficacy data were available for 231 patients. Extended follow-up provided 24-month data on 39 of the Coaptite-treated patients.

RESULTS: Safety and effectiveness. Results of this clinical study indicated that Coaptite and collagen were both well tolerated. No systemic adverse events were observed with either product. Stamey Urinary Incontinence Scale improvement of at least one grade was the primary endpoint of the study. The primary hypothesis — primary efficacy endpoint of non inferiority to collagen— was statistically met.

<table>
<thead>
<tr>
<th>Follow-up</th>
<th>CaHA</th>
<th>Collagen</th>
<th>p-Value</th>
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<tr>
<td></td>
<td>N</td>
<td>n (%)</td>
<td>N</td>
</tr>
<tr>
<td>12 Months</td>
<td>131</td>
<td>83 (63.4)</td>
<td>100</td>
</tr>
<tr>
<td>24 months</td>
<td>39*</td>
<td>26 (66.7)</td>
<td>Not followed</td>
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* Number of patients for follow up at the time of abstract preparation

Number of injections. More patients with collagen required multiple injections during the study versus Coaptite patients.

<table>
<thead>
<tr>
<th>Number of Injections</th>
<th>CaHA (158)</th>
<th>Collagen (138)</th>
<th>p-Value</th>
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<tbody>
<tr>
<td>1 Injection</td>
<td>60 (38.0%)</td>
<td>36 (26.1%)</td>
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<tr>
<td>&gt; 1 Injection</td>
<td>98 (62.0%)</td>
<td>102 (73.9%)</td>
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Injected Volumes. The initial volume of material injected at the first injection visit was significantly less for Coaptite patients when compared to collagen patients (2.15 mL vs. 3.39 mL respectively; \( p < .0001 \)). Total volume of material was also significantly less for the Coaptite patients compared to the collagen patients (4.0 mL vs. 6.6 mL, respectively; \( p < .0001 \)).

CONCLUSIONS: Coaptite is an appropriate and well-tolerated treatment for patients with SUI. Fewer patients required multiple injections with Coaptite; injection volumes were less for Coaptite; no skin test was required. This new soft tissue augmentation material carries an excellent safety profile and appears to provide durable improvement.

\textsuperscript{a}University of Rochester, Rochester, NY, \textsuperscript{b}Vanderbilt University, Nashville, TN \textsuperscript{c}Baylor School of Medicine, Houston, TX

Study Investigators: Christopher Amling, Rodney Appell, Theodore Benderev, Roger Dmochowski, Christopher Graham, Karny Jacoby, Ira Klimberg, Robert Mayer (Principal), Victor Nitti, Curt Powell, Delbert Rudy, Peter Sand, Jeffery Snyder, Kevin Tomera, Christian Winters
**PODIUM #3**

**DETRUSOR OVERACTIVITY AND URGE INCONTINENCE FOLLOWING SLING PROCEDURES**


**Purpose:** Persistent or *de novo* detrusor activity (DO) or urge urinary incontinence (UUI) following sling surgeries pose a dilemma for both patients and surgeons treating stress urinary incontinence due to their adverse impact on the patients’ quality of life and satisfaction from the surgery. Few studies have directly compared the rates of persistent or *de novo* DO and UUI after various sling types. We sought to compare the rates of resolution and onset of *de novo* DO and UUI between TOT’s, midurethral sling procedures and transvaginal bladder neck slings.

**Materials and Methods:** We identified 464 subjects with urodynamic stress or mixed urinary incontinence that underwent midurethral slings (SPARC=52, TVT=91), bladder neck slings anchored to Cooper’s ligament (Capio CL =195) and TOT’s (Monarc=126). All subjects had a routine office evaluation including a detailed history and subjective assessment of UUI using Likert’s scale, physical exam, urinanalysis, postvoid residual, Q-tip test and multichannel urodynamic testing pre- and 3 months postoperatively. Comparisons were made between bladder neck slings and midurethral slings, midurethral slings and transobturator slings, and bladder neck slings and transobturator slings. Student’s t-tests, McNemar’s tests and Chi-Square tests were used where appropriate. Multivariate logistic regression was performed to detect possible confounding factors.

**Results:** Subjects in the bladder neck sling group were significantly older, had greater use of HRT and more prior anti-incontinence surgeries than those in the midurethral sling or transobturator groups. There were no significant differences preoperatively between the midurethral and TOT groups with respect to mean age 58-60 (p=0.38), median parity 2 (p=0.94), mean BMI 27-28 (p=0.68), prior pelvic surgery or prior incontinence surgery. Preoperatively, subjects who underwent bladder neck slings had higher rates of subjective urge urinary incontinence (85% Capio CL vs. 68% midurethral sling vs. 64% Monarc p<0.01) and DO (75% vs. 60% vs. 65%, p=0.01) than the midurethral sling and TOT groups, as well as increased rates of low pressure urethra over midurethral slings (61% vs.10% p<0.01). There were no preoperative differences between subjective UUI and DO rates between midurethral and TOT sling subjects.

Of patients who had DO and/or UUI preoperatively more patients in the midurethral sling and TOT groups had resolution of DO than in the bladder neck sling group (38% vs.15%vs 48%, p<0.01) as well as resolution of UUI (48% vs.32% vs. 65%, P<0.01). Resolution of subjective UUI was higher in patients who received the Monarc than those who received the midurethral slings, however this did not reach statistical significance (p=0.08). There was no difference in rates of resolution of DO between midurethral and TOT sling patients (p=0.52).

Subjects in the midurethral sling and TOT groups had significantly lower rates of *de novo* DO than subjects in the bladder neck sling group (29% vs. 60% vs. 22%, p<0.01). There was a significant difference in the rate of *de novo* UUI between the TOT group versus the Midurethral and Capio CL groups (29% Capio vs.21% midurethral vs. 0% Monarc, p<0.01). No patients in the Monarc group developed *de novo* UUI.

After adjusting for confounding variables in the bladder neck sling group, the only significant predictors of postoperative DO were preoperative DO (p<0.001) and sling type (p<0.001). After adjusting for preoperative DO, bladder neck slings significantly increased the risk for persistent DO (OR 3.7) compared to midurethral slings and (OR 5.5) compared to TOT’s. When adjusting for possible confounding factors in the TOT vs. midurethral sling group, the Monarc procedure significantly increased the chance of resolution of UUI over the TVT (OR=3.12) or SPARC procedures (OR=3.03) postoperatively.

**Conclusions:** Our study indicates that patients who undergo midurethral and transobturator slings have increased rates of resolution of both DO and UUI over bladder neck slings as well as lower rates of *de novo* DO. In fact, patients who undergo bladder neck slings have a three fold increase in persistence of DO over midurethral slings and a fivefold increase over TOT’s. With regards to *de novo* UUI, TOT’s have a three fold increase in resolution of UUI symptoms over Midurethral slings and did not demonstrate any *de novo* UUI symptoms. The effect of slings on DO and UUI should be taken into consideration when counseling patients for surgery.
PODIUM #4

FUNCTIONAL URINARY BLADDER TISSUE ENGINEERED FROM ADIPOSE STEM CELLS
Gregory Jack, MD, Rong Zhang, PhD, Benjamin Wu, PhD, Min Lee, BS, Yuhan Xu, PhD and Larissa Rodriguez, MD (Presented By: Gregory Jack, MD)

Introduction and Objective: Advancements in tissue engineering may obviate the use of gastrointestinal tissue in reconstructive urology. We investigated the use of adipose stem cells for tissue engineering bladder smooth muscle using a three-dimensional synthetic bladder construct.

Methods: Adipose stem cells (ASCs) were processed from human lipoaspirate. ASCs were differentiated into smooth muscle phenotype (SM-ASCs) using smooth muscle inductive culture media. A three dimensional scaffold of poly-lactic-glycolic acid (PLGA) was molded from electropulled microfibers layered under a porous sponge. Scaffolds were seeded with $1 \times 10^6$ SM-ASCs. Female nude rats ($n=45$) underwent laparotomy, removal of bladder dome, and repair with: A) suture closure (partial cystectomy, $n=15$ rats), B) unseeded PLGA (PLGA, $n=15$), or C) SM-ASC seeded construct (tissue engineered, $n=15$). Animals were followed at serial time points for 12 weeks post-operatively with bladder cystometry, isometric studies, and histology.

Results: Tissue engineered constructs maintained smooth muscle mRNA and protein in vitro. Partial cystectomy resulted in decreased bladder volumes. Tissue engineered animals maintained bladder capacity and compliance at all time points in vivo, while PLGA animals had time dependent decreases in capacity and poor compliance. Isometric tissue baths demonstrated dose dependent contraction of the tissue engineered grafts with $10^{-4}$M carbachol (2.4g/100mg); PLGA grafts were unresponsive (0.2g/100mg). Histology confirmed viable SM-ASCs and organized smooth muscle in the tissue engineered grafts. 12 weeks after implantation, SM-ASCs expressed smooth muscle actin and myosin heavy chain. SM-ASC and host cells were oriented parallel to PLGA microfibers.

Conclusions: Bladder augmentation using SM-ASC engineered constructs resulted in superior bladder capacity, contractility, and smooth muscle organization compared to unseeded scaffolds. Electropulled PLGA microfibers combined adipose stem cells may provide an alternative source of organized smooth muscle in the future.
PODIUM #5

Quantitative Fluorescein Uptake for Evaluation of Interstitial Cystitis Bladder Permeability
Robert Mayer M.D. and Ronald Wood, Ph.D.
University of Rochester, Dept. Of Urology and OB-GYN

Objective: An abnormality of urothelial permeability permitting substances in urine to cause local irritation has been proposed as a pathophysiologic mechanism of Interstitial Cystitis. We undertook a study to evaluate Quantitative Fluorescein Uptake from the bladder as a diagnostic parameter of abnormal permeability barrier function in Interstitial Cystitis.

Methods: Twelve patients with IC and 11 controls were recruited; baseline parameters included general medical history, O’Leary Sant symptom and problem index scores, and a voiding diary. Fluorescein (10 mg/ml; 50 or 100 ml) was instilled into the bladder followed by intensive plasma sampling q 1-2 minutes for 30 minutes for fluorescein. Due to some initial values being just above detectable levels the initial volume of instillation 50ml (500 mg) was increased to 100 ml (1 gm fluorescein) after the first 10 patients. Algorithms were developed to automatically correct for increased absorbance associated with hemolysis, if any.

Results: The IC patients were middle age (mean age 50 vs control 42) and had been diagnosed and treated for a mean of almost 5 years prior to entry into the study. The IC and control groups were significantly different in regards to symptoms: IC Symptom Index (mean- SD) : IC 10.2 (2.8) control 2.1 (1.9) ; IC Problem Index: IC 8.5 (3.9), Control 0 (0). Voiding diaries confirmed significantly different frequency (mean: IQR: IC 13.5: 8.5 Control 6.5: 0.5. Fluorescein uptake was an orderly process in all patients and in controls. The pattern of uptake was consistent with a two compartment system with the curve reaching a peak around 20 minutes despite the continued presence of dye in the bladder; increased volume of instilled dye did not appreciably increase maximal values. The algorithm for hemolysis performed well to correct for artifactual values. The uptake calculated at 20 minutes did not show evidence of increased uptake in the IC patients; rather, the control patients had significantly greater uptake when corrected for plasma volume estimates based on BMI. Mean: IQR. IC 0.021: 0.009 vs Control 0.034 : 0.027. A 2 way ANOVA for diagnosis and volume infused, the IC patients had significantly less uptake than controls.

Conclusions: Unexpected findings- qualified by low numbers at present. Rather than demonstrating enhanced permeability, IC patients appear to have less maximal uptake and less variability of uptake than control patients. Though the IC patients’ age, prior therapy and long duration of symptoms may play a role in explaining the findings, the current results do not suggest that enhanced urothelial permeability is responsible for persistent symptoms in chronic IC patients. Supported by NIDDK 3 U01 DK065255-03S1
Objective: The effects of childbirth on sexual function are not clearly understood, and few studies have extended beyond the postpartum. We sought to assess the impact of childbirth on female sexual function, using an identical twin study design. Unlike most observational cohort studies, this unique design provides nearly complete control over genetic differences between individuals, helping to elucidate environmental factors.

Materials and Methods: A comprehensive survey including the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) was administered to 562 twin sisters. 276 identical, sexually active twins were included in this analysis. Demographic, environmental and obstetrical factors were analyzed for possible impact on total PISQ-12 scores. Bivariate regression models for repeated measures were utilized to account for correlated data within twin pairs. Three models were utilized: (A) 138 sexually active identical twin pairs (n=276) to evaluate the effect of parity and general risk factors, (B) 98 sexually active parous-parous twin pairs (n=196) to examine the impact of birth mode, and (C) 76 sexually active twins with previous vaginal deliveries only (n=152) to examine the role of episiotomy and operative delivery. Statistical analyses were performed using SAS, with p<0.05 considered significant.

Results: The mean (SD) PISQ-12 score was 99.3 (11.7). Age ≥50 (score difference –5.4,p=0.019), SUI (-3.3, p=0.02), UUI (-5.9, p<0.001), parity (-6.5, p<0.001), and fecal incontinence (-5.7, p=0.048) were associated with decreased mean PISQ scores in the univariate analysis. According to the multivariate analysis parity (p<0.001) and UUI (p=0.009) were the only factors remaining independently predictive of diminished sexual function. Significantly higher mean scores were observed for nulliparous women 105.5 (11.6) compared to women with parity=1 (99.5, - 5.3 p<0.001) and women with parity >2 (100.6, - 4.93, p<0.001) in the multivariate analysis. Mode of delivery did not significantly affect mean PISQ scores (p=0.763). Weight of largest baby, BMI, hysterectomy had no apparent impact on sexual function scores. Among women who had vaginal deliveries only (model C), neither episiotomy nor operative delivery were associated with change in PISQ scores (p=0.553).

Upon analysis of individual items in the questionnaire, parity was predictive of decreased desire and feelings of excitement at the time of intercourse. Parity did not affect dyspareunia, leakage with intercourse, erectile dysfunction or change in orgasm from six months prior.

Conclusions: This study of biologically identical twins provides unique control over numerous known and unknown genetic factors. Our findings indicate that nulliparous women reported superior sexual satisfaction scores compared with parous women, regardless of age, presence or absence of episiotomy and mode of delivery. Childbirth appears to have a lasting impact on the psychological, rather than physical domain of sexual function, well beyond the postpartum period.
INCONTINENCE AND PELVIC ORGAN PROLAPSE IN PAROUS/NULLIPAROUS PAIRS OF IDENTICAL TWINS
Gunhilde M. Buchsbaum, M.D., University of Rochester Medical Center, Rochester, New York

INTRODUCTION: It is estimated that 1 in 10 women will undergo surgery for repair of pelvic organ prolapse or urinary incontinence. (1) Vaginal delivery is believed by many to be the major risk factor for stress urinary incontinence and pelvic organ prolapse. (2) The etiology of urinary incontinence is likely multi-factorial, including inherited factors. The association of vaginal delivery and of familiality is best evaluated in identical twins, since they share all their genetic material.

OBJECTIVE: To evaluate the role of vaginal delivery in the development of urinary incontinence and pelvic organ prolapse in identical twins.

METHODS: Four sets of identical twins were identified from 101 pairs of nulliparous, postmenopausal women and their biological sisters who have had at least one vaginal delivery. All of these sister pairs completed a comprehensive questionnaire, and underwent clinical evaluation on urinary incontinence and genital prolapse as part of a study. Women with signs or symptoms of urinary incontinence underwent multi-channel urodynamic evaluation. Data on demographic variables, continence status, type of incontinence, and pelvic organ prolapse were recorded. Findings of identical twin sisters were compared to each other.

RESULTS: The ages of the pairs of identical twins ranged from 52 to 55 years. The parous sister in all of the pairs had two vaginal deliveries. The differences in BMI between twin pairs ranged from 0 to 1.6. In two pairs, both sisters reported no urinary incontinence, and in one pair both sisters reported incontinence with activities. In the remaining pair, the nulliparous sister reported incontinence while the parous sister reported no incontinence. Clinically, there was no evidence of incontinence in both of the twin pairs reporting continence. Both twins of the pair reporting symptoms of stress urinary incontinence were clinically diagnosed with stress incontinence at VLPP of 120 and 130 cm H2O in the nulliparous and the parous sister respectively. The sisters in the symptomatically discordant pair were both diagnosed with stress incontinence with VLLP of 130 and 120 cm in the nulliparous and the parous sister respectively. When considering the degree of prolapse as truly different if the prolapse observed in one sister was two or more stages apart from that of the other sister using the Baden-Walker system, three twin pairs were concordant in all three compartments. In the remaining pair of twins, the parous twin had a grade 2 rectocele, while the nulliparous twin had no rectocele.

CONCLUSIONS: All four pairs of identical twins were diagnosed with identical continence status. No difference in any parameter was observed between nulliparous women and their parous identical twins. There was no difference in the apical relaxation in all four twin pairs. Three pairs were identical with regard to the anterior and posterior compartment as well. The parous twin had the greater degree of relaxation by examination in the diverging pair. This was not of clinical significance. Vaginal delivery was not associated with urinary incontinence within postmenopausal identical twins with different parity status.

REFERENCES:
UNDER-REPORTING OF MAJOR COMPLICATIONS OF SLING PROCEDURES
Authors: *Donna Y. Deng, Mary Grey Maher, Arthur Mourtzinos, Matthew Rutman, Larissa V. Rodriguez and Shlomo Raz
*University of California San Francisco, San Francisco, CA
University of California Los Angeles, Los Angeles, CA

Introduction & Objective: The popularization of minimally invasive sling kits has increased their use tremendously since the introduction in 1996 for treatment of stress urinary incontinence. Multiple large series in literature have reported the rate of serious complications from slings to be extremely low with few requiring any major intervention. The FDA has a database (Manufacturer and User Facility Device Experience = MAUDE) that monitors voluntary reporting of untoward events that arise from the use of any device. We compared the rates of major complications from sling procedures between that accepted in literature to that from the FDA database and a busy tertiary referral center.

Methods: A systematic review of the literature was performed of all large series of sling procedures that included complications in their analysis between 2001 and present. During the same time period, all patients referred to UCLA for complications after placement of a sling were reviewed. Review elicited sling type, time of onset of complication, type of complication, associated symptoms, and the procedure required to remedy the complication. The MAUDE database was queried for all complications involving TVT, SPARC™, or TOT slings from 1999 to July 2005.

Results: Major complications of a sling procedure is consistently reported to be <1% in literature. A total of 26 patients referred to UCLA were found to have major complications after sling placement (TVT 13, SPARC 9, TOT 4). At exploration, most of the patients were found to have mesh in the urethra. Nine patients underwent urethrolysis with removal of mesh and urethral reconstruction. Seven patients had the sling placed through the bladder and required partial cystectomy. Three patients developed a urethrovaginal fistula and required repair with Martius flap. What was more astounding were the complications reported in the FDA database that is not reflected in the academic literature. Of the 700 TVT, 66 SPARC, and 103 TOT complications reported, there were 33 major vascular injuries leading to 2 deaths, 38 bowel injuries leading to 6 deaths, 46 unrecognized bladder injuries, 26 unrecognized urethral injuries, 10 nerve entrapment, and 2 cases of necrotizing fasciitis. Unfortunately there is no national registry for all slings performed in the United States and therefore we lack a true denominator in determining the complication rate. However, the number of severe complications from the voluntary FDA database and our experience total 180 as compared to the 51 from all the published series combined which includes a significant number of international studies. Large US series contained only 11 major complications.

Conclusions: There is great discrepancy between the raw data from the literature as compared to the FDA database and to our experience. This discrepancy in the major complication rates of sling procedures is likely a result of referral patterns and under-reporting as well as surgeon experience. Although effective, with the new plethora of such procedures, we need to proceed with caution as serious complications do occur.
Introduction and Objectives: Vaginal delivery is a known risk factor for stress urinary incontinence (SUI), and rat models demonstrate the development of SUI symptoms following vaginal distension (VD). Prior studies have also revealed a direct relationship between VD and regional tissue hypoxia, suggesting that ischemic damage to the lower urinary tract is a contributing factor to the development of SUI. A rat model of cardiac ischemia has allowed identification of stromal-derived factor-1 (SDF-1) and monocyte chemotactic protein-3 (MCP-3), cytokines that are transiently over-expressed in myocardial tissues after ischemic injury. They are known to function as “homing molecules” that signal innate stem cell migration to sites of damage, promoting subsequent tissue repair. Given the focal hypoxia observed with vaginal distension, we sought to determine the expression of SDF-1 and MCP-3 by pelvic organ tissues after vaginal distension and to characterize the time course of cytokine expression.

Material and Methods: Sixteen virgin female Sprague-Dawley rats were randomized into 4 groups. The first group underwent 4-hour vaginal distension under anesthesia followed by immediate tissue harvest and sacrifice. The second group also underwent vaginal distension, but tissue procurement was delayed for 24 hours. The third group was a sham group that underwent 4 hours of anesthesia only, followed by immediate tissue harvest. The final group served as unanesthetized controls. Tissues of interest included urethra, anterior vaginal wall, bladder base, and anterior rectal wall, which were immediately snap-frozen upon removal. Total RNA was isolated from the frozen tissues, and reverse transcription was performed. Resultant cDNA was used for quantitative PCR, and amplification was targeted to SDF-1 and MCP-3. Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) expression was utilized as an internal control. The critical threshold value for each sample was determined, and data were analyzed relative to expression in the control group.

Results: There was no difference between the expression in urethral or vaginal tissues of rats in the sham and control groups (relative expression=1.1). MCP-3 expression in the urethra was increased 20-fold (relative expression = 20.4) immediately after vaginal distension when compared to either shams or controls. Twenty-four hours after vaginal distension, urethral MCP-3 expression was 6 times control values. Relative MCP-3 expression in anterior vaginal wall tissues was increased 8- and 3-fold immediately and 24 hours after vaginal distension, respectively. There was no difference in MCP-3 expression in the anterior rectal wall and bladder base specimens in any group compared to controls. In contrast to the cardiac model, SDF-1 over-expression was not observed in any of the tissues following vaginal distension.

Conclusion: MCP-3 and SDF-1 have been identified as homing molecules responsible for stem cell recruitment and migration after injury in a cardiac ischemia model. Our study has demonstrated significant over-expression of MCP-3 in rat urethral and vaginal tissues immediately following vaginal distension with above-normal but decreasing expression 24 hours later. Surprisingly SDF-1 was not over-expressed. We are currently investigating the association between MCP-3 over-expression and the induction of targeted stem cell migration and tissue regeneration. The successful characterization and control of such a repair mechanism in the lower urinary tract would introduce the potential for novel, non-operative treatments and/or preventive measures for SUI.

Supported by the Cleveland Clinic Foundation
THE ROLE OF THE NF-κB SIGNALING PATHWAY IN THE PATHOGENESIS OF INTERSTITIAL CYSTITIS
Raymond Rackley*, Mei Kuang, Ashwin Vaze, Joseph Abdelmalak, Sandip Vasavada, and Joseph DiDonato. Cleveland Clinic Foundation, Glickman Urological and Lerner Research Institutes, Cleveland, OH

Introduction and Objectives: Interstitial cystitis (IC) is a chronic debilitating inflammatory condition of the bladder with an unknown etiology. Recent studies have indicated that urine and cellular markers of IC may be transcriptionally regulated by nuclear factor-κB (NF-κB) that has aberrant expression in biopsy samples of IC patients. Our hypothesis is that the NF-κB signaling pathway is an essential signaling mechanism for the pathogenesis of the inflammatory response of the bladder in IC. To test this hypothesis, we have compared NF-κB signaling in primary cultures of normal and IC urothelium exposed to TNF-α to determine whether the activated signaling we see clinically represents a dysfunctional (aberrant internal cellular control of the signaling pathway) versus functional (signaling pathway response to external cellular stimulation) urothelial response to extracellular stimulation.

Methods: Normal (NU) and IC urothelium cells were established in Keratinocyte-SFM. Expanded cells were switched to serum-free MEM for 24hrs before treated with TNF-α over a 24 hour time course and whole cell extracts were prepared for EMSA and Western blot analyses. In order to determine if the potential functional role of NF-κB signaling in urothelium serves to prevent apoptosis, in-situ cell death assays were performed in all cells treated with TNF-α for up to 96 hrs.

Results: EMSA and Western blot analyses showed that IC cells have dysfunctional NF-κB signaling compared to NU when challenged with a one time dose of TNF-α. The NU cells always have an ~2 fold increase in NF-κB activation over baseline. This strong activation declines after 30mins, but then is followed by weaker rebound activation around 6hrs. In comparative difference, the IC cells have a more potent activation after 30mins, but the second rebound wave never appears. Furthermore, the cytoprotective outcome of comparative NF-κB signaling was tested via in-situ cell death assays. Compared to NU that had no cell death increasing over time, apoptosis was induced in IC cells by TNF-α treatment. Furthermore, with twice a day challenge of TNF-α treatment, the apoptosis rate rose to 46.7%, 77.1% and 95.9% for 24hrs, 48hrs and 96hrs, respectively.

Conclusions: Comparison of the TNF-α activated NF-κB signaling pathway in normal and IC cells established in primary culture reveals that the aberrant expression previously characterized from clinical samples represents a dysfunctional urothelial response (aberrant internal cellular control of the signaling pathway) to extracellular stimulation. Furthermore, this dysfunctional signaling results in cytoprotective losses that lead to urothelial apoptosis. This novel finding is consistent with a growing number of investigations that have hypothesized innate or acquired cellular differences in signaling function of IC urothelium that result in the pathogenesis of IC that has previously been thought to arise from a functional response of normal urothelium to extracellular stimulation.

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Introduction & Objective: Implantation of Sacral Nerve Stimulator (SNS) has become a part of active treatment options for refractory overactive bladder (OAB) and idiopathic urinary retention (IUR). However, little is known about the predictors of SNS outcome, including the clinical variables that could predict the progression from test stimulation (stage I) to permanent implantation (stage II). The aim of this study was to examine the clinical and urodynamic parameters that could predict successful progression from stage I to stage II in patients undergoing SNS for indications of OAB and IUR in our institution.

Methods: After IRB approval, the medical record of 235 patients who underwent SNS treatment in our institution between 2002 to mid 2005 was reviewed. Using a standardized method of data extraction, information on a total of 50 clinical and urodynamics variables were examined. In addition to the demographic and past medical/surgical history, the examined variables included: parity, type of incontinence, presenting symptoms, body mass index, elements of bladder diary and storage and voiding parameters of urodynamic study (UDS) prior to test stimulation. A univariate logistic regression was done to determine which variables were potential predictors of successful progression from temporary to permanent implantation. For means of continuous variables, a Wilcoxon test was used. For proportions of categorical values, a Fisher exact test was used with a significance level of 0.05.

Results: There were a total of 149 patients with diagnosis of OAB, and 37 patients with diagnosis of IUR. The patients with OAB who had successfully progressed from stage I to stage II were younger (53.52 ±1.48 vs. 59.88 ±2.49; p=0.0250), had fewer pregnancies (2.31 ±0.21 vs 3.82 ±0.63; p= 0.0281) and were less likely to be current smokers (0.23 vs. 0.03; p= 0.0147). None of parameters of detrusor overactivity (DO), first sensation volume, peak Pdet at DO, prior treatment with anticholinergics, biofeedback, or prior history of anti-incontinence or prolapse surgery could predict the successful progression from stage I to stage II in the OAB group at a significant level. For the IUR group, being a female (p=0.021) with a lower body mass index (p=0.013) was associated with success. Bladder volume at first sensation (56.46 ±16.23 vs 159.44 ±50.99) predicted the success in progression from stage I to stage II in IUR group (p=0.0383).

Conclusions: Bladder volume at first sensation, and lower body mass index predicted the success of progression from stage I to stage II in patients with IUR in our center. Use of of a neural network for identification of clinical and UDS predictors of success of SNS is warranted.
36 MONTH FOLLOW-UP WITH ADJUSTABLE CONTINENCE THERAPY (ACT) IN FEMALE STRESS INCONTINENCE due to INTRINSIC SPHINCTER DEFICIENCY (ISD)
E. Kocjancic 1, R. Carone 2, G. Bodo 2, S. Crivellaro 1, A. Giammo 1, E. Costantini 3, P. Gontero 1, B. Frea 1

(1) University of Piemonte Orientale, Urology, Novara, Italy, (2) Ospedale Maria Adelaide, CRF, Torino, Italy, (3) University of Perugia, Urology, Perugia, Italy

INTRODUCTION & OBJECTIVES: We have been implanting a new minimally invasive periurethral prosthesis for stress urinary incontinence since Dec/1999 in a multicenter study. The Adjustable Continence Therapy (ACT) implant is designed for easy post-operative adjustment via percutaneous needle access. We present an experience with a mean 3 years follow-up. While the longest follow-up is 4 years.

MATERIAL & METHODS:
1. ACT's, made from silicone elastomer consists of two balloons placed via small labial incisions at the bladder neck. Each balloon is attached via a short length of tubing to an injectible port that is implanted in the fat of the labia, allowing for future balloon fluid volume adjustment, as required.
2. 67 female patients with type III stress urinary incontinence (SUI), with severe degree of ISD, were evaluated using direct visual stress test, the Incontinence Quality of Life (I-QoL) questionnaire and abdominal leak point pressure (ALPP) evaluation prior to implantation with the ACT prosthesis. This was repeated at 1, 3, 6, 12, 24, 36 and 42 months post-op.

RESULTS:
1. Follow up: 55/67 (82%) of the patients have reached 36 months, or greater follow-up.
2. The IQOL score increased from 35.2 +/- 20.7 at the baseline to 69.9 +/- 24.6 at 36 months (p< 0.00011)
3. The ALPP increased from a mean baseline value of 60.6 +/- 38.4 cm H2O (range 1-150) to 86.2 +/- 45.1 cm H2O (range 5-180), as the last observed follow-up (p-value: 0.0032).
4. Overall impression : 41/67 (62%) patients are completely dry, 11/67 (16%) are significantly improved, while 15/67 (22%) have had insignificant or no improvement.
5. Complications reported were: bladder perforation (intra-operative) 8%, pelvic pain 4%, Urgency 1%, port erosion 10%, balloon dislocation or migration 13%, UTI in 15% All complications were easily managed without serious sequel for the patients. In the worse case this device can be easily removed in a few minutes via a local anaesthetic, thus reversing the procedure.

CONCLUSIONS:
1. The ACT's adjustability, allowing the addition or removal of the balloon's volume, is a kind of fine-tuning that allows us to maintain continence despite any changes in tissue and the pelvic anatomy due to aging without resorting to another surgery.
2. The analysis of the IQOL graphs demonstrate that once the patient is showing a response by 3 m. post op. we can expect that this result will be maintained in the long term.
Introduction and Objective: Women with diabetes are twice as likely to develop stress urinary incontinence (SUI) compared to non-diabetic women. Vaginal delivery of large baby weight (seen in diabetic women) is also a risk factor for SUI. We have hypothesized that diabetes results in increased reduction of hypoxia and reduced blood flow to the pelvic organs during vaginal delivery. The aim of this study was to examine the ischemia related effects of vaginal distension and diabetes on the tissues of the pelvic floor in female rats.

Methods: Six to eight weeks after establishment of diabetes mellitus (DM) in virgin female Sprague Dawley rats by streptozotocin (60 mg per kg I.P.), ten diabetic rats and 10 age and weight match control rats were randomly assigned to four groups of: DM with vaginal distension (DM+VD), DM with sham vaginal distension (DM+SVD), control with vaginal distension (CT+VD) and control with sham vaginal distension (CT+SVD). The animals were anesthetized and underwent either a three hour vaginal distension or sham distension. One hour after distension, each rat was injected (i.p.) with a 60 mg/kg solution of Hypoxyprobe-1 (pimonidazole, Natural Pharmacia International, Inc., Research Triangle Park, NC) in saline. Hydroxyprobe once injected into animals rapidly distributes to all body tissues but only adducts with proteins in ischemic cells. Just prior to the end of vaginal or sham distension 1,200,000 coral microspheres in 0.48cc saline was infused into the carotid artery and a reference blood sample specimen was simultaneously obtained from each rat through the femoral artery catheter. After removal of the distension catheter and while still under anesthesia, an identical number of purple and yellow microspheres were infused into the carotid artery 15 and 60 minutes after distension and other reference blood sample specimen were obtained. Immediately after the 3rd microsphere infusion, the rats were euthanized and the kidney (control tissue as it is not affected by vaginal distension) bladder, urethra, and vagina were removed. Half of the tissues were sent for microsphere quantification and half for immunohistochemical staining. Quantification of fluorescent microspheres in each blood sample and tissue specimen was performed by Interactive Medical Technologies. The differences in mean of microsphere concentration from each group were compared by ANOVA.

Results- The blood flow to urethra and vagina, but not to bladder was significantly reduced in both diabetic and control animals 60 minutes after vaginal distension. There was no statistically significant differences between diabetic and control groups at any time points. The examination of the tissues stained with hydroxyprobe showed a marked difference in vaginal and urethral tissue degree of ischemia between diabetic and control animals. There were no noted differences among groups in hydroxyprobe staining of the bladder.

Conclusions- Vaginal distension causes equally significant reduction of blood flow to the urethra and vagina in diabetes and non-diabetes. Diabetes is associated with a more pronounced tissue ischemia of the vaginal and urethral tissues exposed to vaginal distension in female rat. Ischemia of the tissues involved in urinary continence mechanism may contribute to a higher risk of SUI in diabetes.

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Introduction and Objective: Idiopathic urinary retention is a relatively rare condition which significantly affects a patient’s quality of life (QOL). In most instances, patients need to perform intermittent catheterization indefinitely. InterStim® sacral neuromodulation is used to treat this condition with a success rate of 50-70%. Few alternatives exist for patients who fail S3 neuromodulation. We report our experience with bilateral S2-S4 neuromodulation in patients with idiopathic retention who have failed S3 InterStim® neuromodulation.

Methods: Between July 2004 and May 2005 12 patients with idiopathic urinary retention underwent S3 InterStim® placement and were considered clinical failures. All patients had prior complete physical and neurological exams, urodynamic studies, cystoscopy and radiological studies to rule out any treatable cause of the retention. Of these patients, 6 chose to undergo bilateral S2-S4 neuromodulation. Using the caudal approach bilateral electrodes were placed in the epidural space stimulating S2-S4 bilaterally. Patients with more than a 50% clinical response underwent placement of the Synergy® IPG device. Patients were evaluated with the validated short form of the Urinary Distress Inventory Questionnaire (UDI-6), a QOL questionnaire (0=Delighted, 6=Terrible), a voiding diary and post-void residuals (PVRs) both preoperatively, and 6 months post implantation.

Results: Eighty percent of the patients were women. Two of the patients had prior bilateral S3 InterStim®. Five of the 6 patients had return of micturition and decreased PVRs and underwent placement of the permanent Synergy® IPG device. At six month follow up, four of the five patients are voiding spontaneously to completion. The remaining patient improved more than 50% and now catheterizes once a day for a PVR of 200cc. Overall, UDI-6 scores improved. There was a significant decrease in obstructive symptoms on the UDI-6 (p<0.013). The overall QOL score after implantation improved from 6 to 3 (p<0.001).

Conclusions: This is the first report of the use of bilateral S2-S4 neuromodulation for the treatment of intractable idiopathic urinary retention. In this small series, the therapy was successful in the majority of patients who failed unilateral, or bilateral, S3 stimulation.
DIFFERENTIAL GENE EXPRESSION IN POSTMENOPAUSAL WOMEN WITH STRESS URINARY INCONTINENCE
G.M. Buchsbaum, M.D. E.E. Duecy, M.D. University of Rochester Medical Center, Rochester, NY

INTRODUCTION: In postmenopausal women, genetic predisposition may be more important than parity in the development of urinary incontinence. A Danish population based self-report twin study reported heritability for stress urinary incontinence (SUI) in the middle aged and elderly to be 19% and 57% respectively. (1) Investigations into a genetic etiology of SUI have focused on the possible role of collagen, a key component of the connective tissue that supports the bladder neck. However, recent studies utilizing microarray technology have not identified substantial differences in expression of collagen family proteins. (2,3)

OBJECTIVE: To compare differential gene expression in postmenopausal women with and without stress urinary incontinence.

METHODS: This study was supported by a grant from the University of Rochester Functional Genomics Center and Nathan Shock Microarray Core Subsidization. Five postmenopausal women were enrolled. Three women had SUI and were undergoing continence surgery; the two controls were continent. Subjects were matched for age and race, and none had pelvic organ prolapse beyond stage one. Full thickness biopsies of the vaginal epithelium underlying the urethrovesical junction were obtained. Microarray analysis was performed on each biopsy specimen using Affymetrix high-density oligonucleotide arrays, Hewlett-Packard GeneArray scanner, and Affymetrix Microarray Analysis Suite 5.0. Differences in genes expression of more than two-fold were considered for further evaluation. These genes were then grouped by functionality.

RESULTS: A total of 54,675 genes were compared. In women with SUI, a total of 1788 genes were over-expressed compared with controls. Of these 1,465 genes were over-expressed by more than 2-fold, 248 by more than 4-fold, and 75 by more than 8-fold. Under-expressed compared to controls were a total of 1,676 genes; of these 1,400 genes by 2-fold, 233 by 4-fold, and 43 by 8-fold. Within the collagen family of proteins, collagens XXIVα1 and XXVα1 were under-expressed more than 3-fold compared to controls. Procollagen C-endopeptidase enhancer, a glycoprotein involved in the assembly of fibrillar collagens in the extracellular matrix, was more than 9-fold over-expressed in women with SUI. In these women collagens XXVIIα1, Vα2, IVα2, and IVα1 were each more than 2-fold over-expressed. Collagen family proteins involved in post-translational modification of procollagen, cell adhesion, and fibroblast apoptosis were also over-expressed in women with SUI compared to controls.

CONCLUSION: The presence or absence of SUI may be related to differential gene expression. Differences in expression of genes within the collagen family of proteins may lead to structural changes in the support tissues contributing to SUI.

REFERENCES:
MUSCARINIC RECEPTOR SIGNAL FOR CONTRACTION OF HUMAN BLADDER IS MEDIATED BY RHO KINASE
Michael R. Ruggieri, Sr., Leo R. Doumanian and Alan S. Braverman. Philadelphia, PA

Introduction and objective: The aims of this study were to determine the contractile signal transduction cascade activated by the muscarinic receptor in human bladder smooth muscle strips.

Methods: Smooth muscle strips suspended under 1 gram basal were stimulated by exposure to isotonic Tyrode’s solution containing 120 mM KCl. After peak tension was recorded and washing, the strips were exposed to either vehicle or one of the following enzyme inhibitors with and without 10 nM darifenacin; rho kinase (ROCK) inhibitor Y-27632 (Y), phosphoinositide phospholipase C (PI-PLC) inhibitor ET-O-18CH3 (ET), protein kinase C (PKC) inhibitor chelerythrine (CHEL), protein kinase A (PKA), ROCK, and protein kinase G inhibitor H89 or the ROCK, PKA, PKG, and PKC inhibitor H7. After 30 minutes, a cumulative concentration response curve to carbachol was determined. Each inhibitor was tested on 5-7 different bladder specimens from organ transplant donors.

Results: Inhibition of ROCK attenuates the maximal carbachol contraction and decreases carbachol potency. The darifenacin affinity for inhibition of the residual contraction following ROCK inhibition is reduced to values that are within the reported range for M2 receptors. ET and CHEL have no apparent effect. D609 inhibits maximal contraction with no effect on carbachol potency or darifenacin affinity. H89 has the same effect on contraction as ROCK inhibition with Y, however, H89 has no effect on darifenacin affinity. H7 has no statistically significant effects but tends to reduce the carbachol maximum and carbachol potency.

Conclusions: The residual contraction following ROCK inhibition with Y appears to be M2 mediated based on the low darifenacin affinity. This suggests that ROCK is activated by the M3 receptor contractile signal. Inhibition of PI-PLC or PKC has no effects, suggesting that these enzymes are either not required or that parallel pathways exist to mediate contraction when the pathways activated by these enzymes are blocked. The inhibition of maximal contraction by D609 suggests that either PC-PLC activation is required for maximal contraction or that D609 has additional effects other than inhibition of PC-PLC.

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URODYNAMIC PREDICTORS OF OUTCOMES WITH PHOTOSELECTIVE LASER VAPORIZATION PROSTATECTOMY IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA AND PREOPERATIVE RETENTION

Mara A. Monoski, Ricardo R. Gonzalez, Jaspreet S. Sandhu, Balaji Reddy, and Alexis E. Te
Department of Urology, New York Presbyterian Hospital Cornell University Weill Medical College, New York, New York

Introduction/Objectives: Photoselective Laser Vaporization (PVP) has been shown to be an effective and durable therapy for men with symptomatic benign prostatic hyperplasia (BPH). The goals of this study were to determine whether preoperative urodynamic parameters could 1) predict outcome in men with history of acute urinary retention (AUR), and 2) aid in counseling these men.

Methods: 40 men with AUR attributed to BPH underwent PVP between 4/02 and 1/04. Based on preoperative urodynamic diagnoses, patients were divided into groups based on presence or absence of detrusor overactivity (DO) and impaired detrusor contractility (IDC). Postoperative parameters including International Prostate Symptom Score (IPSS), maximum flow rate (Qmax), and post void residual (PVR) were collected at 1, 3, 6, and 12 months after PVP. An 80W KTP side-firing laser (Laserscope Greenlight PV) was used to perform PVP.

Results: Eight (20%) patients had IDC, and thirty patients had DO (75%) preoperatively. At one month postoperative, men without preoperative DO had a significantly lower IPSS than those with preoperative DO (7.5 v 11.7, p=0.05). Men without preoperative IDC had a significantly lower IPSS at one month postoperative compared to men with preoperative IDC (9.7 v 15.2, p=0.04). The flow rate in men with preoperative IDC one and six months postoperative was significantly lower than in men without preoperative IDC (1mo: 8.2 v 17.6, p=0.02; 6mo: 12.1 v 20.5, p=0.05). Lastly, men with preoperative IDC also had a significantly higher PVR at one month postoperative compared to men without preoperative IDC (325.9 v 99.2, p=0.00). Five of thirty (17%) men with preoperative DO and one out of ten (10%) men without preoperative DO required anticholinergics postoperatively. One out of eight (13%) men with preoperative IDC and five out of thirty-two (16%) men without preoperative IDC required anticholinergics postoperatively. Two out of eight men (25%) with preoperative IDC developed bladder neck contractures within one year postoperative requiring surgical correction. One out of eight men (13%) with preoperative IDC required a reoperative PVP for recurrent AUR due to a bladder neck contracture.

Conclusions: Preoperative urodynamic parameters predict outcome in men with AUR undergoing PVP. In this study, all men with AUR benefit from PVP with an improvement in IPSS, flow rate, and PVR regardless of the presence of DO or IDC. Postoperatively, patients with DO have more symptoms (higher IPSS) than men without DO, and are almost twice as likely to require anticholinergics. Men without IDC have better IPSS, flow rates and PVRs compared to men with IDC. 3 out of 8 men with IDC needed a reoperation within the first year. Preoperative urodynamics can help manage patient expectations and care post-PVP.
Introduction and Objectives: Angiotensin II (Ang II) has been demonstrated to function throughout the upper and lower urinary tract. Our group has recently identified Ang II receptors in the striated sphincter of the mouse urethra. We investigate the role of Ang II in urinary continence and stress incontinence in a rat model.

Methods: 80 virgin female Sprague-Dawley rats (approximately 200 gm) were evaluated with measurement of abdominal leak point pressure (ALPP) and retrograde urethral pressure profile (RUPP). 30 rats were subjected to pudendal nerve crush injury, 30 were subjected to circumferential urethrolysis, 10 underwent sham surgery (incision only), and 10 served as controls (no surgery). The urethrolysis rats, pudendal nerve injury rats, and control rats were treated with a daily dose of 20 mg/kg AT1 receptor inhibitor (Losartin, n=10), AT2 receptor antagonist (PD 123319, 10 mg/kg, n=10), or Ang II (10 mg/kg, n=10). The 30 pudendal nerve injury rats were similarly treated with AT1 inhibitor, AT2 inhibitor, or Ang II. The sham surgery rats were injected with saline only.

Results Obtained: There was no significant change in RUPP or ALPP following sham surgery or sham injection. Following urethrolysis, RUPP decreased from 21.6 ± 6.7 to 13.8 ± 4.9 mm Hg (p<0.01) and ALPP decreased from 38.9 ± 10.6 to 22.7 ± 5.7 mm Hg (p<0.01). Following pudendal nerve injury, RUPP decreased from 21.0 ± 5.9 to 13.5 ± 5.5 mm Hg (p<0.01), and ALPP decreased from 42.2 ± 10.9 to 24.6 ± 11.2 mm Hg (p<0.01). Following AT-1 receptor inhibition, RUPP decreased from 21.1 ± 6.8 mm Hg to 12.1 ± 3.7 mm Hg (p<0.01, Fig. 1) and ALPP decreased from 42.1 ± 9.3 mm hg to 26.4 ± 6.7 mm Hg (p<0.01). Following AT-2 receptor antagonism, RUPP decreased from 21.2 ± 6.3 to 13.7 ± 5.8 mm Hg (p<0.01, Fig. 2), and ALPP decreased from 40.8 ±12.3 to 31.2 ± 7.4 mm Hg (p<0.01). Ang II administration did not significantly alter RUPP and ALPP in normals, but did restore normal urethral resistance in urethrolysis and nerve injury rats. Following Ang II administration in the urethrolysis group, mean RUPP increased from 15.6 ± 3.9 to 20.7 ± 7.1 mm Hg (p<0.01), and ALPP increased from 22.3 ± 4.7 to 40.0 ± 13.4 mm Hg (p<0.01). In the pudendal nerve injury group, RUPP increased from 12.2 ± 6.1 to 19.6 ± 9.9 mm Hg, (p<0.01, Fig. 3), and ALPP increased from 25.9 ± 15.8 to 38.5 ± 13.4 mm Hg (p<0.01).

Conclusions: Ang II plays a functional role in the maintenance of urethral tone and stress continence, and specific Ang II receptor blockade lowers urethral sphincter muscle tone. AT-1 and AT-2 receptor inhibition significantly lower urethral resistance, similar to neurogenic and urethrolytic injury. Ang II restores the urethral tone in rats with intrinsic sphincteric insufficiency secondary to neurologic injury and secondary to circumferential urethrolysis.
FEASIBILITY OF ARTIFICIAL URINARY SPHINCTER AFTER MALE SLING FAILURE
Joshua Broghammer, MD, Ajay Singla, MD, FRCS,FACS, Neelesh Aggarwal, MD, Hakan Vuruskan, MD and Mark Fisher, MD (Presented By: Joshua Broghammer, MD)

Hypothesis / aims of study: To evaluate feasibility and efficacy of artificial urinary sphincter (AUS) in patients following failed bone anchored male sling for treatment of persistent post prostatectomy urinary incontinence.

Study design, materials and methods: A total of 64 patients with post prostatectomy incontinence underwent 66 (2 re-do procedures) bone anchored perineal male sling procedures. An absorbable biomaterial sling was placed in 16 patients and non-absorbable silicon mesh was placed in 50 patients. At a mean follow up of 30 months, 18 patients failed the procedure. Sling was removed in 2 patients because of mesh infection. 10 of 18 failed patients and 1 of 2 patients who had sling removed underwent implantation of AUS. Out of these 11 patients, six had absorbable biomaterial and 5 had non-absorbable material. Two patients underwent re-do sling procedure because of refusal for AUS. Urodynamic evaluation was performed preoperatively in all patients and postoperatively in failed patients. Outcome was evaluated with the number of pads used both pre & post-operatively.

Results: AUS was implanted through perineal approach in 8 patients and trans scrotal in other 3 patients. There was no difficulty encountered during urethral dissection in absorbable sling group as no sling material was identified. In patients with synthetic mesh, the sling was divided in the middle to expose the underlying urethra without difficulty. Following AUS implantation, the cure rate was 72.7% (8 patients) and improved rate was 9.1% (1 patient). One patient failed after AUS implantation, one developed infection, necessitating removal of AUS after 1 month. Mean pad usage decreased from 4.63±0.67 to 0.81±1.32. The mean duration between sling procedure and AUS implantation was 13.4 months (range 4-32) and mean follow up after AUS implantation was 14.2 months (range 5-20).

Interpretation of results: AUS is effective in recurrent post prostatectomy stress urinary incontinence with success rate around 82%. Type of sling material and severity of incontinence contributed to the male sling failure.

Concluding message: AUS implantation after failed male sling can easily be performed with high success. Previous sling surgery does not preclude future AUS implantation.
PODIUM #20

PREDICTIVE FACTORS FOR INVOLUNTARY DETRUSOR CONTRACTIONS ON PREOPERATIVE URODYNAMICS IN PATIENTS UNDERGOING MALE PERINEAL SLING

Melissa Fischer, Christian Twiss, Victor Nitti
New York University, New York, New York

Introduction and Objectives: Urinary incontinence can be a debilitating complication of radical prostatectomy, transurethral prostatectomy and radiation therapy (RT). Male perineal sling is an effective option for stress urinary incontinence (SUI). Urodynamic studies (UDS) can be used to evaluate men with incontinence prior to surgical intervention. Identifying patients with overactive bladder symptoms and/or urge incontinence is integral to proper patient selection and counseling. The aim of the study was to determine predictive factors for involuntary detrusor contractions (IDC’s) on UDS.

Methods: Fifty-one men underwent a male perineal sling procedure for urodynamically proven SUI by a single surgeon (VN) between 4/02 and 6/05. Prior therapy included RRP (45), TURP (4) and RT (9). 12 patients had a history of bladder neck contracture (BNC). Preoperatively patients were evaluated with self-assessment questionnaires, AUA symptom score (AUA-SS), urogenital distress inventory-short form (UDI-6), international conference on incontinence questionnaire- short form (ICIQ) and a UDS.

Results Obtained: Patients were divided into two groups based on the presence (19) or absence (32) of IDC’s on urodynamics. Logistic regression analysis indicates there is no association between the AUA-SS (p=0.83), AUA voiding score (p=0.70), AUA storage score (p=0.64), UDI-6 (p=0.33), ICIQ (p=0.24) and the presence of IDC’s. There is a significant association between RT and BNC and the presence of IDC’s using the Fischer Exact Test (p=0.002 and p=0.038, respectively). The odds of having IDC’s with a history of RT or BNC is 10x and 5x greater, respectively, than if there was no history.

Conclusions: Standard preoperative questionnaires are not reliable tools for predicting the presence of IDC’s on preoperative UDS. Prior RT or BNC strongly correlate with the presence of IDC’s. Proper identification and evaluation of men at risk for IDC’s may improve preoperative counseling prior to male perineal sling.
OBJECTIVES: The Multicenter Assessment of Transdermal Therapy in Overactive Bladder with Oxybutynin (MATRIX) study evaluated long-term safety and patient outcomes in adults with overactive bladder (OAB) who were treated with transdermal oxybutynin. This analysis compares similarities and differences between men and women in nocturia and related symptoms during transdermal treatment for OAB.

METHODS: MATRIX, an open-label, multicenter, prospective cohort study, evaluated community-dwelling adults with OAB. Patients were treated with transdermal oxybutynin (Oxytrol®, Watson Pharma, Corona, Calif) 3.9 mg/d (new patch applied every 3–4 days) for up to 6 months. The impact of OAB on quality of life (QOL) was evaluated using validated assessment tools: the King’s Health Questionnaire® (KHQ), Work Productivity Questionnaire (WPQ), and Beck Depression Inventory®-II (BDI-II). A sufficiently large population was enrolled to allow for the detection of differences in QOL measured over time across predefined subgroups. P values were based on ANCOVA.

RESULTS: The MATRIX population included 2508 women (mean age 61.4±14.7 y; 41.1% working) and 369 men (mean age 69.6±13.1 y; 23.6% working). At baseline, 46.4% of patients had experienced OAB symptoms for ≥4 years, while 12.0% had experienced symptoms for ≤1 year. Fifty-seven percent of patients had received prior treatment for OAB. Symptoms possibly related to reductions in sleep were commonly reported at baseline. Nocturia was reported by 97.6% of patients (97.3% of women vs 99.1% of men), nocturnal enuresis by 32.9% of patients (32.3% of women vs 36.8% of men). Furthermore, among working patients, progressive severity of nocturia (“a little,” “moderately,” “a lot”) was associated with increased impairment on all WPQ scales. Baseline KHQ responses indicate that 89.9% of patients felt that bladder problems affect their sleep (90.5% of women vs 85.8% of men), and 91.3% of women and 79.9% of men felt ‘worn out’ or ‘tired’. Women showed more impairment overall than men in the sleep/energy domain (55.3 vs 46.6, P<.0001). Patients reported significant (P<.0001) improvement from baseline to end of study in nocturia (41% improved, 11.2% worsened). These changes occurred early during treatment, with the proportion of patients reporting nocturia “moderately” or “a lot” decreasing from 83.0% of men and 80.5% of women at baseline to 61.3% and 56.3%, respectively, among patients with data available at 3 months. At end of study, patients showed significant improvement in sleep/energy (-11.2, P<.0001), with no significant gender difference in magnitude of response. Both groups also reported improvement on the BDI-II in loss of energy, tiredness/fatigue, and difficulty concentrating. Women demonstrated improvement on all scales of the WPQ during the course of treatment.

CONCLUSIONS: Many OAB patients experience nocturia, and increased severity of nocturia is associated with decreased work productivity. Additional symptoms possibly associated with nocturia are frequently present in both genders. Transdermal oxybutynin may improve nocturia and associated aspects of QOL in all patients diagnosed with OAB.
ARTIFICIAL URINARY SPHINCTER IMPLANTATION FOR MALE INTRINSIC SPHINCTER DEFICIENCY: THIRTEEN-YEAR EXPERIENCE FROM BAYLOR
Elias I. Hsu, H. Henry Lai, Timothy B. Boone
Scott Department of Urology, Baylor College of Medicine, Houston, TX

Introduction: Artificial urinary sphincters (AUS) are used to treat incontinence secondary to intrinsic sphincter deficiency. We report on a single surgeon’s 13-year experience in the placement of AUS.

Materials and Methods: We reviewed the charts of 271 men (mean age 67.4, range 18.9-85.3) with intrinsic sphincter deficiency after therapy for prostate carcinoma (n=179), benign prostatic hyperplasia (n=20), and neurological injury (n=18) performed by a single surgeon at a single institution from 1992 to 2005. Complex referrals constituted 10.1% (n=21) of the patients, and were included in the analysis if a new AUS was implanted. Data were collected on pre-operative urinary symptoms, pad usage, urodynamic parameters, cystoscopic findings, exposure to radiotherapy, and intraoperative complications. Post-operative pad usage, need for anticholinergics for urgency, and distant complications with need for reoperation were also recorded.

Results: The mean length of follow up was 36.6 months (max. 151.4m). Follow up was available for 219 patients. Mean pad usage before and after artificial urinary sphincter placement was statistically decreased (5.3 pads vs. 1.1 pads, p=<0.0001). Pre-implantation urge symptoms were strong predictors of post-implantation urgency requiring anticholinergic therapy (RR 2.40). Furthermore, the presence of detrusor instability (p=0.017) and small cystometric capacity (p=0.035) on urodynamics were associated with need for anticholinergic therapy. Urodynamic parameters also demonstrated that 47.6% of post radical prostatectomy patients required valsalva to void (augmented or sole). Pre-AUS implantation cystoscopy revealed the presence of bladder neck contracture or stricture requiring transurethral resection in 37.0% of patients.

The complication rates were 5.5% for infections, 11.4% for urethral atrophy, 6.4% for cuff erosion, 5.9% for device malfunction, and 4.6% for iatrogenic causes. The average time from implantation to complication was 12.7m for infection, 42.6m for urethral atrophy, 27.5m for cuff erosion, and 59.1m for device malfunction. Although radiotherapy decreased cystometric bladder capacities (305mL vs. 374mL, p=0.001) and produced earlier first sensations (121mL vs. 156mL, p=0.02), it did not increase the rate of urethral stricture, AUS infection, urethral atrophy, or cuff erosion (p>0.05 respectively) compared to no pelvic radiotherapy. Overall, 26.9% of patients required eventual operative revision after AUS implantation.

Conclusions: Artificial urinary sphincter implantation is a safe, effective, and durable method of treating intrinsic sphincter deficiency. Preoperative voiding symptoms, history of radiotherapy, urodynamic parameters, and cystoscopy help predict the need for additional procedures (e.g. transurethral resection of bladder neck contracture) and anticholinergic therapy needed pre- and post-implantation (e.g. for small bladder capacity). Overall, complication rates are low and not increased by radiotherapy.
A COMPARISON OF TURP AND TRANSURETHRAL ETHANOL INJECTION FOR BLADDER OUTLET OBSTRUCTION
Evan Eisenberg, MD, Art Rastinehad, MD, Mahesh Desai, MD, Anant Kumar, MD and Gopal Badlani, MD (Presented By: Evan Eisenberg, MD)

INTRODUCTION AND OBJECTIVES: The ideal minimally invasive alternative to transurethral resection of prostate (TURP) has still yet to be determined. Transurethral ethanol ablation of the prostate (TEAP) has been shown to produce cellular lysis and prostatic tissue necrosis, resulting in significant reduction in symptoms of bladder outlet obstruction. In addition, TEAP is an inexpensive out-patient procedure that may offer a significant cost effective advantage to TURP. A randomized study was conducted in two centers to compare two methods of alcohol injection to TURP, the current gold standard treatment option for men with symptomatic BPH.

METHODS: A total of 60 men with significant LUTS were enrolled in a three-arm randomized study to compare the effects of superficial injection (0.5 cm) of ethanol, deep injection (1.0 – 2.0 cm) of ethanol, or TURP. Ethanol dose for both superficial and deep injection was determined by prostate size and urethral length (4-28ml). TURP procedures were performed in standard fashion. A Foley catheter was placed in all patients following treatment. Other post-operative care included prophylactic antibiotic therapy and analgesics/anti-inflammatories for discomfort as needed. Follow-up visits were scheduled at 1, 3, 6 and 12 months.

RESULTS: Significant reduction in IPSS was seen throughout follow-up in all three arms of the study. At 12-month follow-up, peak flow had increased by 35% following superficial injection, 33% following deep injection and 101% following TURP. Ultrasound measurements at 12-month follow-up demonstrated a reduction in prostate volume compared to baseline of 22% for superficial injection and deep injection. Patients undergoing TURP demonstrated an average reduction in prostate volume of 54%. Ultrasound measurements at 6-month follow-up demonstrated a significantly greater reduction in prostate volume following TURP compared to either superficial or deep injection. Average procedure duration is 62% shorter for TEAP (avg 18 ± 10.77 min) compared to TURP (avg 47 ± 16.91 min). No patients required hospital admission in the TEAP group.

Adverse events reported during the study were common to BPH and associated treatments. Events reported following deep injection were limited to bothersome voiding symptoms (15%), erectile dysfunction (10%) and recatheterization with conversion to TUR (10%). Events reported following superficial injection included: bothersome symptoms (25%, with 2 conversions to TUR), UTI (25%), recatheterization (15%, with 1 conversion to TUR), hematuria (5%), incontinence/urethral discharge (5%), urethral stricture (5%), and pain/discomfort (5%).

CONCLUSIONS: These initial results suggest that intraprostatic ethanol injection is a reasonable alternative for treatment of BPH. Long-term follow-up is needed to assess the clinical relevance of these preliminary results, and to verify its theoretical cost effective advantage.
ARTIFICIAL URINARY SPHINCTER VS BONE ANCHORED MALE SLING FOR POST-RADICAL PROSTATECTOMY URINARY INCONTINENCE

Ajay Singla, MD, FRCS,FACS, Neelesh Aggarwal, MD and Murat Samli, MD (Presented By: Ajay Singla, MD, FRCS,FACS)

Hypothesis / aims of study: Bone-anchored male sling (BAMS) has become one of the popular treatment option for post-prostatectomy incontinence in men in spite of artificial urinary sphincter (AUS), the gold standard. This study aims to compare the efficacy and functional durability of both treatment modalities in patients with post radical prostatectomy incontinence with an intermediate duration of follow-up.

Study design, materials and methods: Fifty-six men with post radical prostatectomy (RP) incontinence secondary to sphincteric insufficiency who underwent either BAMS (n=27) or AUS (n=29) were evaluated retrospectively. Urodynamic evaluation to determine valsalva leak point pressure (VLPP), maximal flow rate (Qmax), post voiding residual volumes (PVR) and the presence of detrusor overactivity (DO) was performed preoperatively. Both number of pad usage (mild to moderate if 0-3 pads and severe if >3 pads) and (UCLA)/RAND questionnaire scoring was used to evaluate the severity of incontinence and outcome of the surgery.

Results: The mean age of the patients was 69.9±8.5 (range 50-85) years. The mean follow-up period was 22.5±5.3 (range 13-32) months and 22.4±11.3 (range 11-56) months in BAMS and AUS groups, respectively (p=0.4). The duration between the radical prostatectomy and male sling surgery was 67.3±40.9 (range 8-144) months and 77.8±64.1 (range 9-285) months in BAMS and AUS groups, respectively (p=0.7). Preoperative VLPP, Qmax, PVR values and presence of DO were not different statistically between the groups (p=0.2, p=0.7, p=0.3 and p=0.4, respectively). Postoperative (UCLA)/RAND scores of the patients in BAMS group was not statistically significantly different from that of the patients in the AUS group (Mann-Whitney U test, 11.8±5.3 vs. 12.1±4.4, respectively; p=0.5). See Fig.1. Preoperative and postoperative pad usage for both groups is given in table 1 and 2.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BAMS</td>
</tr>
<tr>
<td>Mild - Moderate</td>
<td>21</td>
</tr>
<tr>
<td>Severe</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
</tr>
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</table>

*No data available for 1 patient.

Table 2

<table>
<thead>
<tr>
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<th>Postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BAMS</td>
</tr>
<tr>
<td>Mild - Moderate</td>
<td>Cured</td>
</tr>
<tr>
<td></td>
<td>Improved</td>
</tr>
<tr>
<td></td>
<td>Failed</td>
</tr>
<tr>
<td>Severe</td>
<td>Cured</td>
</tr>
<tr>
<td></td>
<td>Improved</td>
</tr>
<tr>
<td></td>
<td>Failed</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Fig. 1

Concluding message: Patients with mild/moderate post-RP incontinence receiving BAMS achieved better outcome than patients who received AUS. But AUS was more efficacious in patients with severe incontinence. No major complications such as erosion, infection or mechanical problems requiring reoperation with BAMS surgery may favour performing this surgery as a better alternative of AUS surgery.
INTRODUCTION: Botulinum toxin Type A (BTX-A) has been successfully used in the treatment of patients with overactive bladder (OAB) symptoms, with most studies performing trigone-sparing detrusor injection. Increasing basic research suggests that sensory nerve dysfunction contributes to the pathophysiology of OAB. Further, BTX-A injection shows efficacy in both patients with and without demonstrable detrusor overactivity on urodynamic evaluation, raising the possibility that analgesia may be additional benefit provided BTX-A application. Therefore, targeting the afferent innervation of the bladder trigone during injection may provide clinical benefit.

METHODS: We conducted a focused pilot study to assess for a potential difference in symptom improvement when comparing a trigone versus trigone-sparing injection distribution of BTX-A. A total of 40 patients with OAB refractory to anticholinergic treatment received trigone or trigone-sparing injection of BTX-A. Both groups of patients underwent intra-detrusor injection of 300 IU of BTX-A, placed in 30 evenly distributed injections (0.1ml per injection site). In patients undergoing trigonal inclusion, 2 injections were placed within the trigonal region. Patients were evaluated using a comprehensive questionnaire, including UDI-6 and IIQ-7 components, as well as additional questions assessing pad use, post-operative satisfaction, and treatment complications. The questionnaire was completed prior to BTX-A application, at three weeks and six months after treatment.

RESULTS OBTAINED: At three-week follow-up, 15/24 (63%) and 10/16 (63%) patients showed improvement of symptoms in the trigone versus trigone-sparing groups, respectively. Combined three-week UDI-6 and IIQ-7 scores improved from 37.3 prior to treatment to 27.4 (p<0.05) and 35.5 to 27.2 (p<0.05) in the trigone and trigone-sparing groups, respectively. Six-month follow-up demonstrated continued but diminished levels of symptom improvement when compared to pre-treatment and three-week symptom scores (trigone, 31.2, no trigone, 29.1). Improvement in symptom scores between the trigone and trigone-sparing groups was not significant. The incidence of post-operative hematuria and dysuria was similar in both cohorts. No episodes of urinary tract infection or urinary retention were seen.

CONCLUSIONS: No significant difference in symptom score or treatment response was noted between the trigone and trigone-sparing groups. Further study using pre- and post-operative urodynamic study is needed to evaluate possible benefit to trigonal injection in a select sensory urgency cohort, and to assess for urodynamic improvement following trigonal injection. In addition, a larger trigonal dose may be required to demonstrate symptom response.

FINANCIAL FUNDING: None
PODIUM #26

PREVALENCE OF SELF-REPORTED INTERSTITIAL CYSTITIS (IC) AND INTERSTITIAL CYSTITIS-LIKE SYMPTOMS IN THE COMMUNITY
Kenneth Peters, MD, Ibrahim Ibrahim, MD, Donna Carrico, RNC, MS, NP, Kim Killinger, RN, Alessandra Graziottin, MD, Maria Victoria Estanol, MD and Ananias Diokno, MD (Presented By: Kenneth Peters, MD), William Beaumont Hospital, Royal Oak, MI

Introduction and Objective: Estimating IC prevalence has lead to widely varied outcomes. Reliance on self-report of IC diagnosis (SRIC) with questionable validity is an issue. Since the hallmark of IC is pelvic pain with urgency and/or frequency, we designed a survey tool incorporating a urinary symptoms module, mailed it to 407 established IC and 5000 age-matched controls to compare different methods to determine the prevalence of IC among women in the community.

Methods: 823 (16%) control and 215 (53%) established IC women responded. Using a symptom algorithm, we reclassified the control group based on their symptoms. In addition to SRIC, we identified those with symptoms suggestive of IC (SSIC) using two definitions; one as pelvic pain with frequency and/or urgency (PF/U) and the other as pelvic pain only plus PF/U. Based on US census 2000, we estimated the number of women with possible IC using the different definitions and examined the effect of using other symptom qualifiers.

Results: The prevalence of SRIC and SSIC were 30/823 (3.6%) and 25/823 (3%), respectively. Adding pelvic pain only 101/823 (12.3%) with SSIC raises the prevalence to 126/823 (15.3%). Relying only on PF/U, the prevalence becomes 36/823 (4.4%). Using respondents with SRIC who reported symptoms suggestive of IC (only 11 out of 30), the prevalence becomes 11/823 (1.3%). Based on these estimates, the number of women in the US between the ages of 18-85, who possibly have interstitial cystitis, ranges from 1,385,066 to a high of 15,933,464.

<table>
<thead>
<tr>
<th>Symptom Combination</th>
<th>History IC DX</th>
<th>History Suggestive of IC</th>
<th>History Suggestive of OAB</th>
<th>Other Symptoms</th>
<th>Pure Control (no urinary symptoms)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>P+U+F</td>
<td>7 (23.3)</td>
<td>9 (7.1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16 (1.9)</td>
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<tr>
<td>P+F+ no U</td>
<td>2 (6.7)</td>
<td>10 (7.9)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12 (1.5)</td>
</tr>
<tr>
<td>P+U+ no F</td>
<td>2 (6.7)</td>
<td>6 (4.8)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8 (1)</td>
</tr>
<tr>
<td>P only</td>
<td>5 (16.7)</td>
<td>101 (80.2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>106 (12.9)</td>
</tr>
<tr>
<td>U+F+ no P</td>
<td>6 (20)</td>
<td>0</td>
<td>24 (53.3)</td>
<td>0</td>
<td>0</td>
<td>30 (3.7)</td>
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<tr>
<td>F +no P + no U</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>36 (22.8)</td>
<td>0</td>
<td>36 (4.4)</td>
</tr>
<tr>
<td>U + no P + no F</td>
<td>2 (6.7)</td>
<td>0</td>
<td>21 (46.7)</td>
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<td>0</td>
<td>23 (2.8)</td>
</tr>
<tr>
<td>no P + no U + no F</td>
<td>6 (20)</td>
<td>0</td>
<td>0</td>
<td>122 (77.2)</td>
<td>464 (100)</td>
<td>592 (71.9)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>126</td>
<td>45</td>
<td>158</td>
<td>464</td>
<td>823</td>
</tr>
</tbody>
</table>

P= Pelvic Pain, U=Urge, F=Frequency

Conclusions: There is a need to establish a set of rules to be used in estimating the community prevalence of IC. Simply using questions of ever been diagnosed with IC, may lead to over- or under-estimation of IC in the absence of additional questions to further validate the response. This was evident in that only 11/30 community control subjects who reported a history of IC had any symptoms suggestive of IC. Beyond survey questions, there is a need for clinical studies to verify and validate the diagnoses to enable accurate assessment of the sensitivity and specificity of such history questions.
INTRODUCTION AND OBJECTIVE: Interstitial Cystitis (IC) is a challenging disease. Patients experience many different treatment modalities and are the best indicator for therapeutic direction. Our questionnaire-based study focused on a large group of women with a diagnosis of IC who reported on perceived outcomes after undergoing invasive treatments for their disease.

METHODS: 381 patients with complaints of lower urinary tract symptoms and a diagnosis of IC completed a computerized survey. The survey queried each patient about their demographics, symptoms, number of physicians consulted, diagnoses, treatments, and the perceived treatment outcomes. The patients were surveyed on the different procedures used to treat IC and whether they perceived their condition to be improved, made worse, or not affected at a follow up of six months. Pearson chi-square test was used to analyze the data.

RESULTS: We identified 381 women with the diagnosis of IC. Mean age: 39 years (SD +/- 12 yrs). 94.2% were Caucasian, 3.0% Hispanic, 2.0% African-American, and 0.8% Asian-American. 30.9% of the patients had seen 3 physicians or less; 54% had seen 4-10; and 14% had seen 10 or more. The most common concomitant diagnoses were bladder infections, 68.5%; overactive bladder, 33.6%; and pelvic pain syndrome, 21.2%. The most commonly performed procedures were hydrodistention (67.7%), intravesical therapy (49.9%), and urethral dilatation (29%). Most patients felt hydrodistension and urethral dilatation had no effect on their condition (39% and 42% respectively). In contrast, most patients reported an improvement in symptoms after intravesical therapy (42%). Of the less commonly performed procedures neurostimulation provided the greatest perceived improvement (66.6%). See table 1.

CONCLUSION: In this cohort we found the traditional minimally invasive procedures for IC were perceived to be beneficial in 25-42% of patients. More strikingly, patients perceived these same treatments to be harmful 25-30% of the time. Interestingly, the majority of patients consulted at least four physicians for their condition. These findings provide patients and physicians insight regarding traditional treatment modalities for IC and the need for better treatment options.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number of Patients</th>
<th>Improved</th>
<th>Made Worse</th>
<th>No Effect</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrodistention</td>
<td>258 (67.7%)</td>
<td>70 (27.1%)</td>
<td>71 (27.5)</td>
<td>101 (39%)</td>
<td>0.020</td>
</tr>
<tr>
<td>Intravesical Therapy</td>
<td>190 (49.9%)</td>
<td>80 (42%)</td>
<td>52 (27.4%)</td>
<td>52 (27.4%)</td>
<td>0.010</td>
</tr>
<tr>
<td>Urethral Dilatation</td>
<td>111 (29%)</td>
<td>28 (25%)</td>
<td>32 (28.8%)</td>
<td>47 (42%)</td>
<td>0.060</td>
</tr>
<tr>
<td>Cauterization</td>
<td>23 (6%)</td>
<td>10 (43.4%)</td>
<td>7 (30.4%)</td>
<td>5 (21.7%)</td>
<td>0.390</td>
</tr>
<tr>
<td>Urethrotomy/Meatotomy</td>
<td>21 (5.5%)</td>
<td>7 (33%)</td>
<td>6 (28.6%)</td>
<td>8 (38%)</td>
<td>0.860</td>
</tr>
<tr>
<td>Neurostimulator</td>
<td>17 (4.7%)</td>
<td>12 (66.6%)</td>
<td>5 (27.7%)</td>
<td>1 (5%)</td>
<td>0.005</td>
</tr>
<tr>
<td>Cryotherapy</td>
<td>8 (2.1%)</td>
<td>3 (37.5%)</td>
<td>2 (25%)</td>
<td>3 (37.5%)</td>
<td>0.800</td>
</tr>
</tbody>
</table>
CAUDAL EPIDURAL S2-4 NEUROMODULATION FOR THE TREATMENT OF SEVERE AND REFRACTORY INTERSTITIAL CYSTITIS, PELVIC PAIN AND OVERACTIVE BLADDER
Nasim Zabihi, Arthur Mourtzinos, Mary Grey Maher, Shlomo Raz, Larissa V Rodriguez.
The Geffen School of Medicine at UCLA, Los Angeles, CA.

Introduction and objectives: Interstim has been used in treatment of overactive bladder (OAB); however there are a subset of patients who fail this mode of therapy. A few studies have reported good results in the use of Interstim neuromodulation for the treatment of interstitial cystitis (IC) while others have reported poor outcomes and durability. We report our experience using bilateral caudal epidural S2-S4 neuromodulation for the treatment of chronic pelvic pain/IC and OAB refractory to all other treatments including Interstim. We also report an unexpected beneficial response in female sexual function after this therapy.

Methods: Fifty-five consecutive patients who underwent caudal epidural neuromodulation for refractory OAB, chronic pelvic pain, and interstitial cystitis (IC) were studied. All patients had severe symptoms and had failed behavioral change, pharmacotherapy, intravesical treatments, and/or S3 Interstim. Pain and IC patients had exhausted options with pain management services. Patients were evaluated with validated questionnaires including the O’Leary IC symptom and problem index (ICSI, ICPI), Short form of Urogenital Distress Inventory (UDI-6), Female Sexual Function Index (FSFI) and the RAND 36-item short form health survey (SF-36) preoperatively and 6 months postoperatively. All patients underwent a trial stimulation. Patients with a minimum of 50% improvement were offered permanent implantation.

Results: Total of 55 patients (32 IC/Pain, 23 OAB) underwent this procedure. Overall 39 (71%) had a successful trial stimulation and were permanently implanted; 7 (13%) were considered failures after permanent implantation and their devices were explanted. Eight patients (15%) had revisions including 4 for infection. Patients who underwent the procedure for pain/IC were severe and refractory cases of disease; 53% were taking narcotics on a daily basis: 5 on Oxycontin, 9 on Codeine, 3 on Dilaudid, 5 on Fentanyl patches, and 1 on methadone. In this group, 32% were on more than one narcotic pain medication and 5 patients had a prior failed Interstim. In examining UDI-6 for patients with OAB, bother from frequency improved by 68% (p=0.02) and that of urge incontinence by 47%. In patients who underwent the procedure for indication of IC and/or pelvic pain ICSI improved by 37% (p=0.004) and ICPI 37% (p=0.007). The overall score on the FSFI questionnaire improved by 56% in all patients. The results were more dramatic in patients who had undergone the treatment for OAB and not for pain. In this group, the overall score improved by 164% (p=0.01), arousal 133% (p=0.05), Lubrication 225% (p=0.03), orgasm 277% (p=0.02), satisfaction 171% (p=0.01) and pain 226% (p=0.03).

Conclusions: In carefully selected otherwise refractory patients with disabling disease, bilateral caudal neuromodulation of S2-4 is another alternative mode of treatment, which appears to improve both pelvic pain and voiding symptoms. It also results in overall improvement of self-reported sexual satisfaction and function by validated questionnaires, especially in patients who underwent the procedure for OAB as opposed to pelvic pain. It is unclear if this is due to direct neuromodulation of the S2-S4 nerve fibers or as an indirect result from the overall improvement on urinary and pelvic symptoms and/or quality of life. This is a report of our initial experience with this approach and further refinement of surgical technique and programming is likely to result in better clinical results.
Podium #29

Randomized Trial of Sacral vs. Pudendal Nerve Stimulation for Interstitial Cystitis: Follow-Up Data
Kenneth M. Peters, Kevin Feber, Richard Bennett, William Beaumont Hospital, Royal Oak, MI

Introduction and Objective: A prospective, single-blinded, randomized trial was performed on 22 subjects with Interstitial Cystitis (IC). We previously reported that 17/22 had a permanent implant with 13/17 (76.5%) choosing pudendal nerve stimulation (PNS) and 4/17 (23.5%) choosing sacral nerve stimulation (SNS) based on overall improvement in symptoms. We now report the 6-month follow-up data.

Methods: Subjects responding to a staged test had an implantable generator placed and connected to either the sacral or pudendal lead based on response. Subjects were followed at 1 month, 3 months, and 6 months with validated IC questionnaires and voiding diaries.

Results: At 6 months, all subjects remained implanted and were using their device. Three of 17 subjects failed to complete any follow-up data. On a 7-point scale from markedly worse to markedly better, 67% SNS and 67% PNS reported a moderate or marked improvement in their overall symptoms. No one reported a worsening of symptoms. When asked if they would undergo the implant again: 100% SNS, 90% PNS responded yes. Diary data is presented on the table.

Voiding Diary and Symptom Scores

<table>
<thead>
<tr>
<th></th>
<th>Voids/24 hr</th>
<th>Mean voided volume (CC)</th>
<th>Incontinence Score (0-10)</th>
<th>Urgency Score (0-10)</th>
<th>Pain Score (0-10)</th>
<th>PUF*</th>
<th>ICSPI**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacral Baseline</td>
<td>26</td>
<td>89</td>
<td>2.4</td>
<td>3.7</td>
<td>7.9</td>
<td>25.9</td>
<td>29.6</td>
</tr>
<tr>
<td>Sacral 6 month</td>
<td>17.5</td>
<td>107</td>
<td>2.0</td>
<td>4.0</td>
<td>4.0</td>
<td>18.3</td>
<td>18.5</td>
</tr>
<tr>
<td>Pudendal Baseline</td>
<td>24</td>
<td>81</td>
<td>2.2</td>
<td>3.9</td>
<td>4.5</td>
<td>24.6</td>
<td>28.6</td>
</tr>
<tr>
<td>Pudendal 6 month</td>
<td>14</td>
<td>158</td>
<td>0.18</td>
<td>3.7</td>
<td>3.2</td>
<td>16.0</td>
<td>16.1</td>
</tr>
</tbody>
</table>

* Pain, Urgency, Frequency (Parson), **O’Leary/Sant IC symptom/Problem Index

50% of SNS and 38% of PNS required at least 1 programming event. No significant adverse events were identified. There were no revisions and no explants.

Conclusions: This is the first report of chronic pudendal nerve stimulation for the treatment of IC. Sustained improvements were seen with both SNS and PNS on voiding diaries and validated IC questionnaires. Most parameters improved more with PNS than SNS. Side effects were minimal. Due to the small number of subjects who had a SNS (n=4), caution should be taken not to over analyze the data. Additional studies on pudendal nerve stimulation should be undertaken and compared to sacral nerve stimulation with appropriate power to help clarify the role of PNS in treating voiding dysfunction.

Funding: Ministrelli Program for Urologic Research and Education (MPURE), Medtronic, Inc provided additional tined lead.
LONG-TERM SATISFACTION AFTER SACRAL NEUROMODULATION FOR REFRACTORY URGE INCONTINENCE
C.L. Amundsen, R.T. Foster, Sr., E. Anoia, and G.D. Webster
Duke University Medical Center, Durham, North Carolina

To evaluate long-term satisfaction of sacral neuromodulation with the Interstim Continence Control System for refractory urge incontinence and to correlate satisfaction with incontinence parameters. Subjects at least one year post implantation of a sacral nerve lead and implantable pulse generator (IPG) were mailed a questionnaire to evaluate satisfaction with the Interstim device, daily pad usage, frequency of IPG reprogramming, and whether additional therapy for urge incontinence had been sought after sacral neuromodulation therapy. The incontinence impact questionnaire (IIQ) was also included. Two sample t-tests were completed to detect statistically significant differences between groups. 48 women and 4 men qualified for the study. 49 questionnaires (94.2%) were completed and returned. The average interval between implantation and questionnaire completion was 27.2 (range 12-52) months. 79.6% were satisfied and would chose the same treatment if they could “do it all over again.” 83.7% described their urge incontinence as “somewhat better” or “much better.” None of the respondents had sought further therapy for urge incontinence. There were no differences between satisfied (n=41) and dissatisfied (n=8) subjects in preoperative daily incontinence episodes, daily pad usage, and 24 hour pad weight. The satisfied and dissatisfied groups were similar in age, duration of urge incontinence symptoms, method of sacral nerve test stimulation (percutaneous versus 2-stage technique), and frequency of reprogramming. When comparing post implantation parameters between the groups, the satisfied subjects reported a statistically significant decrease in daily pad usage (4.1 fewer pads per day versus 1.1, p=0.005), percentage change in 24 hour pad weight during the test stimulation period (84.5% versus 60.6%, p=0.002) and improvement in IIQ score (mean improvement 53 versus 10 points, p=0.0003). Two of the 8 dissatisfied noted pain while the device was turned on and the other six were disappointed with treatment efficacy.

In our study, 80% of subjects, at least one year after Interstim implantation, were satisfied. Incontinence parameters (daily pad usage, 24 pad weight, and IIQ) correlated with long term patient satisfaction. Besides the development of pain, dissatisfied subjects were noted to have had a modest improvement, 60.6%, during the test stimulation period. Although a ≥ 50% improvement is considered the threshold used to classify as a “responder”, it may be that long-term satisfaction with sacral neuromodulation may be predicted by improvements in objective incontinence parameters more dramatic than previously thought.
Two stage implantation for sacral neuromodulation has gained popularity in recent years in order to counteract the temporary nature of the percutaneous wire that may allow for lead migration during the test stimulation period. The purpose of this study was to compare the efficacy of percutaneous electrode placement (PNE) versus first stage lead placement (FSLP) for urge incontinent women ≥55 years of age. Thirty female subjects ≥55 years with refractory urge incontinence, in whom sacral neuromodulation (Interstim) was recommended, were randomized to either PNE or FSLP. Demographics and preoperative incontinence parameters were compared between groups (PNE vs. FSLP) using a two-sample (unpaired) t test. Other variables, including 24 hour pad weight, daily pad usage, average voided volume, incontinence impact questionnaire scores (IIQ), visual analog pain scale (assessing procedural pain), and patient report of subjective improvement, were also compared using a two sample (unpaired) t test. Response to test stimulation was considered a binomial outcome, which was compared between the two randomization groups using Fisher’s exact test. Statistical significance was achieved with a p value < 0.05. Thirty subjects were consecutively enrolled. Thirteen women were randomized to PNE placed under fluoroscopic guidance in an office setting using local anesthetics. Seventeen women were randomized to FSLP using fluoroscopic guidance in the operating room with intravenous sedation and local anesthetics. During the test stimulation period, subjects with a ≥50% improvement in their incontinence parameters qualified for implantation of the pulse generator (2nd stage) in the FSLP group or implantation of the permanent lead and pulse generator in the PNE group. Of the 30 subjects randomized, 21 responded to the test stimulation and underwent implantation of the Interstim device, 15 of 17 (88%) in the FSLP group and 6 of 13 (46%) in the PNE group. Those women who were randomized to the FSLP group were significantly more likely to qualify for implantation of the Interstim device (RR 1.91, [1.04-3.53], p = 0.02) than those in the PNE group. There was no statistically significant difference in pre test stimulation demographics (age, duration of symptoms, body mass index, and number of vaginal births) and preoperative incontinence parameters between the randomized groups. In addition, there were no demographic or incontinence parameter differences between test stimulation responders and non responders. Mean post-procedural pain scores were similar between those undergoing PNE and those undergoing FSLP (p=0.47). Among the subjects who responded to either test stimulation procedure, there was no significant difference in 24 hour pad weight (p=0.90) or daily pad usage (p=0.46). However, responders did differ in the number of daily incontinence episodes (4.0 PNE versus 2.3 FSLP, p=0.02). In conclusion, urge incontinent women ≥55 years who undergo FSLP for their test stimulation have a significantly higher chance of improving their incontinence, qualifying them for a permanent Interstim implant, than those undergoing PNE. This study suggests that sacral neuromodulation seems to be achieved more reliably if the first stage lead placement technique is employed in women 55 years of age or older.
Introduction and objectives: Caveolae, flask-shaped invaginations of the plasma membrane, may serve as microdomains for sequestering and regulating signalling proteins. Our previous studies in the bladder have shown that caveolae depletion results in an attenuation of contractile responses to certain agonists (angiotensin II, serotonin) while contractions elicited by other mediators (KCl, carbachol) were unaffected, suggesting that these organelles may modulate specific signalling events in bladder smooth muscle (SM). To further elucidate the role of caveolae in regulating bladder function, we examined the effect of these plasmalemmal structures on functional responses induced by physiologic stimulation and under challenged conditions.

Methods: Immunofluorescence with confocal microscopy was used to identify the presence and co-localization of constituent proteins of the caveolin family (cav-1, cav-2, cav-3). For in vitro studies, bladders were removed from male rats after sacrifice and placed in cold Kreb’s solution. Longitudinal strips of bladder tissue were suspended in an organ bath, placed under 1.5 grams of force and equilibrated for 45 minutes. Contractile responses to bradykinin (1µM) or phenylephrine (100µM) as well as the contractile response to electrical field stimulation (EFS 2-64 Hz) were determined. Tissue was exposed to methyl-ß-cyclodextrin (15 mM) to deplete membrane cholesterol and thus disrupt the integrity of caveolae. Contractile responses to agonists and EFS were elicited after cholesterol depletion as well as after replenishment of cholesterol. Electron microscopy was performed to determine the morphologic effect of cyclodextrin treatment and confirm the loss of caveolae. Changes in muscle tension in response to continuous EFS (20V, 0.1Hz) were determined after 1, 2, 4, and 8 hours. Caveolin gene expression was assessed in stimulated tissue at each time point using quantitative real-time PCR.

Results: Intense immunofluorescence was detected for cav-1 and cav-3 outlining smooth muscle cells throughout the bladder. Double labelling confirmed partial co-localization of cav-1 and cav-3 in bladder SM. Contractile responses to bradykinin and phenylephrine were significantly increased by caveolae disruption, but were restored towards baseline levels following replenishment of cholesterol. The initial phasic component EFS-induced contractions were significantly attenuated by caveolae disruption, particularly at low frequencies, suggesting a reduction in the purinergic contribution to the contractile response. The loss of structural caveolae following cyclodextrin treatment, characterized by the absence of plasma membrane invaginations, was confirmed by electron microscopy. Abundant flask-shaped invaginations comparable to untreated bladder tissue were clearly visible in tissue in which cholesterol was restored. Continuous EFS resulted in a time-dependent up-regulation cav-1, cav-2, and cav-3 gene expression with a maximum value at 8 hours, associated with a significant increase in the amplitude of EFS-induced contractions over the same time period.

Conclusions: Our findings suggest that SM caveolae may play an important role in modulating signal transduction events, serving as either a positive or negative regulator of bladder contractile function depending on the initiating mediator of SM cell activation. Further, upregulation of caveolin genes in response to continuous stimulation suggests that caveolae are reactive to the physiologic demands of the bladder. Consequently, pathologic changes in SM caveolae or perturbations in caveolin expression may significantly alter bladder contractility and lead to bladder dysfunction.

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INTRODUCTION AND OBJECTIVE: An analysis of long-term outcomes was performed on patients who underwent transvaginal repair of total pelvic organ prolapse with polypropylene mesh. We describe our experience of transvaginal total pelvic reconstruction using a single mesh piece and a 4-point fixation technique. In addition, evolution of our technique is discussed, specifically a shift from the use of bone anchors to a tension-free method.

METHODS: After proper vaginal dissection, a specially fashioned “H” shaped polypropylene mesh is positioned and fixed to 4-points: the anterior arms are passed retropubically while the posterior arms are attached to sacrospinous ligaments bilaterally with a suture-capturing device. While the anterior arms support the midurethra, the midportion of the mesh corrects anterior compartment defects. Vaginal vault suspension occurs with attachment to the sacrospinous ligament sutures. As a result, suspension of the midurethra, anterior compartment and vaginal vault is achieved with a single mesh piece. Bone anchors were initially utilized for anterior fixation, but currently we are using a tension-free method.

RESULTS: Of the 96 patients, 76 (79%) were available with a mean follow-up time of 30.7 ± 1.7 months. Among those with follow-up, 36 patients (47.4%) underwent concurrent hysterectomies. Recurrence of prolapse occurred in 4 patients (5.2%). Sixty-eight patients (89%) were completely dry or almost dry. For those with preoperative incontinence (n=36), average pad use per day decreased significantly (p<0.005) from 2.1 ± 0.4 to 0.8 ± 0.2 postoperatively. Twelve patients (15.7%) reported new onset urge incontinence. Long-term complications included 2 vaginal erosions (2.1%), 1 urethrolysis (1.1%), 1 excision of retained vaginal suture (1.1%), and re-operation in 2 patients (2.1%). Among the 21 patients who are sexually active, 19 denied any dyspareunia (90.4%). Patient satisfaction was high, as the mean value was 7.9 ± 0.3 on a scale of 1(least satisfied) to 10 (most satisfied). In a subset analysis of bone anchors compared to tension-free method, there were no statistically significant differences in postoperative pad usage (1.0 ± 0.4 versus 0.6 ± 0.3, respectively) or satisfaction between patients (7.6 ± 0.6 versus 8.1 ± 0.4, respectively).

CONCLUSIONS: Transvaginal repair of complete pelvic prolapse using polypropylene mesh is a safe and efficacious option, with minimal prolapse recurrence and high continence rates. While two patients were found to have vaginal erosions, no urethral or bladder erosions occurred. Patient satisfaction was overall favorable.
ASSESSMENT OF AFFERENT AUTONOMIC SENSORY FUNCTION IN RAT BLADDERS

Robert Abouassaly, M.D., Guiming Liu, M.D. Ph.D., Jefferson Katims, M.D., Firouz Daneshgari, M.D., Glickman Urological Institute, Cleveland Clinic Foundation, Cleveland, Ohio

**Introduction and Objectives:** Autonomic neuropathy is suspected in the pathogenesis of several diseases of the bladder. Currently, no reliable diagnostic test exists to assess the presence, severity or type of autonomic neuropathy affecting the bladder. Measurement of sine-wave current perception threshold (CPT) by Neurometer® has been extensively used in the neuroscience literature to assess the function of components of peripheral sensory nerves. Stimuli delivered at frequencies of 2000, 250, and 5 Hz have been shown to selectively stimulate large myelinated (Aβ), small myelinated (Aδ), and small unmyelinated (C) fibers, respectively. The aim of our study was to develop and validate a suprapubically inserted device with which CPT values of the afferent autonomic innervation of the bladder can be determined in the rat.

**Methods:** We developed a prototype implantable bladder electrode. After IACUC approval, the device was placed in the bladder under general anesthesia (Ketamine/Xylazine 100/10 mg/kg) in female Sprague-Dawley rats (n=8) 24 hours prior to testing. A skin patch dispersion electrode (SDE44; Neurotron, Inc.) was applied to the proximal tail and both electrodes were connected to the Neurometer®. Rats were kept awake in a metabolic cage during stimulation. Sine-wave pulses (at 2000, 250, and 5 Hz) were then applied to the bladder mucosa of each rat at increasing intensity until a light startle response was seen. The minimum intensity at which this response was seen was defined as the sensory perception threshold (SPT). Repeated SPT measurements were obtained once a day for 3 consecutive days. To establish the specificity of the SPT for afferent bladder sensation, 0.5 ml of either capsaicin (100µM solution in 10% ethanol), vehicle (10% ethanol) or placebo (normal saline) was instilled for 30 minutes into the bladders of a second group of rats (n=8). Repeated SPT measurements were obtained both prior to and 1 hour following instillation. Means and standard deviation of the repeated measurements were compared using student t-test. Funding was provided by NIH Grant: R41 DK074987, DK02631 and Animal Models of Diabetic Complications Consortium (www.amdcc.org), U01 DK61018.

**Results:** In the first group of rats (n=8), a stimulus frequency of 2000 Hz produced SPT values of 0.75 ± 0.18, 0.68 ± 0.18 and 0.67 ± 0.20 mA; 250 Hz produced SPT of 0.36 ± 0.12, 0.35 ± 0.14 and 0.28 ± 0.12 mA; and 5 Hz produced SPT of 0.29 ± 0.11, 0.24 ± 0.07 and 0.20 ± 0.10 mA on the first, second, and third day of testing, respectively. In the second group of rats (n=8), with a stimulus frequency of 5 Hz, the SPT values prior to and after instillation of capsaicin were 15.5 ± 4.7 and 19.5 ± 5.9 respectively. The increase in SPT values after instillation of capsaicin was statistically significant (p<0.05), supporting the selectivity of 5 Hz stimulation for bladder afferent C fibers.

**Conclusions:** Assessment of bladder afferent innervation with our newly developed device, in conjunction with the Neurometer®, is feasible, and provides sensory perception thresholds that are fiber-type selective for bladder afferent nerves in rats. This device will allow us to assess the function of bladder afferent autonomic innervation in various pathological conditions affecting the bladder, including overactive bladder, diabetes mellitus, and neurogenic bladders.
ALTERATIONS IN THE CONTRACTILE PROPERTIES, TOTAL MYOSIN CONTENT, AND A₁ ADRENERGIC RECEPTOR PROTEIN IN VAGINAL MUSCULARIS FROM WOMEN WITH PROLAPSE
G.M. Northington, M. Basha, L.A. Arya, M. Morgan, S. Chacko. University of Pennsylvania

Hypothesis / aims of study: It is estimated that over 40% of women aged 40 years or more have some degree of pelvic organ prolapse. To elucidate the pathogenesis of pelvic organ prolapse, it is important to investigate the mechanism of support in the pelvis on both a structural and molecular level. Changes in vaginal smooth muscle have been hypothesized as an important factor in pelvic organ prolapse [1-2]. Prior histologic studies confirm the presence of adrenergic and cholinergic nerves in vaginal tissue [3]. However, receptor function in the setting of pelvic organ prolapse has not been well established. The purpose of this study was to determine whether there are alterations in contractile properties of vaginal smooth muscle and to examine smooth muscle alpha-adrenergic receptor protein content within the vaginal muscularis of women with and without prolapse.

Study design, materials and methods: The study group consisted of eight women diagnosed with apical prolapse and scheduled to undergo hysterectomy and prolapse repair. The control group consisted of four women without prolapse undergoing hysterectomy for a benign condition. Patients with gynecological malignancy and/or known connective tissue disorders were excluded. Biopsy pairs (anterior and posterior) from these 12 women were included in this study. Each biopsy pair consisted of anterior and posterior vaginal biopsies (~1 X 2 cm) from the vaginal cuff. Biopsies were immersed and stored in Tyrodes buffer at 37°C and equilibrated with 95% oxygen 5% CO₂. Longitudinal strips of vaginal muscularis (~3 mm X 10 mm) were dissected from biopsy samples. One end of each muscle strip was attached to a force transducer and changes in muscle tension were measured on a Grass Model 7D Polygraph. At the end of each experiment, muscle strips were contracted by adding KCl (125 mM) to confirm a functional contractile apparatus. The smooth muscle content of the muscle strips used for force measurements was confirmed by histology and the force was expressed per gram of smooth muscle tissue. Protein concentration for each biopsy sample (anterior and posterior) was determined by protein assay (BioRad). Western blotting was performed to compare total vaginal muscularis smooth muscle myosin and α₁ receptor protein expression in patients with and without prolapse. The same amount of total protein was loaded for each sample. Total protein expression was determined by densitometric scans of western blot x-ray films of vaginal muscularis homogenates (BioRad GS-800 Calibrated Densitometer).

Results: All patients had apical prolapse at ≥ stage 3 (point C ≥ 0). No patient in the study used oral or vaginal estrogen preparations within 1 year of surgery (time of biopsy). Both anterior and posterior prolapsed vaginal muscle strips contracted in response to KCl (125 mM) – an agonist that bypasses membrane dependent pathways. However, the addition of neither the α₁ agonist, phenylephrine (250 μM) nor the cholinergic agonist, carbachol (100 μM), elicited a contractile response in strips obtained from prolapsed vagina while the anterior and posterior vaginal muscularis obtained from control tissue contracted in a dose-dependent manner to phenylephrine. Western blots confirm the presence of myosin and α₁ receptor proteins in the vaginal muscularis. In addition, there appears to be no difference in α₁ receptor protein content between women with and without pelvic organ prolapse.

Interpretation of results: These results would indicate that there is an alteration in the contractility of vaginal smooth muscle. However, there does not appear to be a corresponding alteration in myosin and α₁ receptor protein concentration. There is an apparent alteration in the function of smooth muscle that may be related to changes in alpha-adrenergic receptor isoform expression and/or receptor function.

Concluding message: Our data indirectly suggests differences in α-adrenergic receptor function in smooth muscle from prolapsed vaginal tissue compared with non-prolapsed vaginal tissue. Ongoing investigations are underway to further characterize molecular and physiological changes in vaginal smooth muscle that is associated with vaginal prolapse.


RHO KINASE IS REQUIRED FOR M2 RECEPTOR-MEDIATED BLADDER CONTRACTIONS WHEREAS M3 RECEPTORS ACTIVATE ALTERNATIVE, PARALLEL PATHWAYS: FINDINGS FROM MUSCARINIC RECEPTOR KNOCK OUT MICE

Michael R. Ruggieri, Sr. 1, Jurgen Wess 2 and Alan S. Braverman 1, Temple University School of Medicine 1, Philadelphia, PA and NIH-NIDDK 2, Bethesda, MD.

Introduction and objective: The aims of this study were to determine the contractile signal transduction cascades activated by the M2 and M3 muscarinic receptor subtypes using bladder smooth muscle strips from M2 and M3 receptor knockout (KO) mice.

Methods: Smooth muscle strips suspended under 1 gram tension were stimulated by exposure to isotonic Tyrode’s solution containing 120 mM KCl. After washing and 30 minute equilibration, the strips were exposed to either vehicle or one of the following enzyme inhibitors at 10X their reported Ki: Y27632 (Y), ET-18-OCH3 (ET), chelerytherine (CHEL), D609, and H89. After 30 minutes, a cumulative concentration response curve to carbachol was determined. Results expressed as a percentage of the initial KCl response are shown in the graph.

Results: Inhibition of rho kinase (ROCK) with Y reduced contractions in the wild-type strains but completely blocked contractions in M3 KO bladders and decreased maximal contraction by 40% in M2 KO bladders. Inhibition of phosphoinositide specific phospholipase C (PI-PLC) with ET or protein kinase C (PKC) with CHEL had no effect on the carbachol maximal responses in any strain, while inhibition of phosphatidyl choline specific phospholipase C (PC-PLC) with D609 attenuated maximal bladder contractions by approximately 90% and 100% in the M2 and M3 KO strains respectively. Inhibition of protein kinase A (PKA), ROCK and protein kinase G (PKG) with H89 suppresses contractions in all strains but completely blocks contractions in the M3 KO strain.

Conclusions: M2 muscarinic receptor mediated contraction requires activation of ROCK. ROCK is also involved in M1 mediated contractions along with other parallel pathways. PC-PLC is involved in both the M2 and M3 contractile signals. Contrary to previous assumptions, neither IP3 production by PI-PLC nor PKC activation are required for either M2 or M3 mediated contractions. Uncovering these signal transduction mechanisms of bladder contraction provides additional targets for development of agents for treatment of clinical conditions that involve bladder hypo- or hyper-contractility.

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POSTER #5

RAT BLADDER OUTLET OBSTRUCTION (BOO) PRODUCES ALTERED BLADDER SENSORY NEURON ACTION POTENTIALS
David G McKenna, Christopher L Langdale, Stuart D Portbury, China Chien, Karl B Thor, Matthew O Fraser, Venkateswarlu Karicheti, Edward C Burgard
Dynogen Pharmaceuticals, Durham, NC

Introduction and Objectives: Changes in functional expression of voltage-gated sodium and/or potassium channels in bladder sensory neurons have been previously described in models of cyclophosphamide-induced or spinal cord injury-induced bladder hyperactivity (Yoshimura and De Groat., J Neurosci 19, 1999). The present study evaluated the changes in bladder sensory neuron excitability induced in a rat model of chronic BOO.

Methods: BOO was created in female Sprague-Dawley rats (175-200 grams). A nylon ligature was tied around the proximal urethra limiting the bladder outlet opening to 1.0mm. Fast Blue (FB) was injected into the bladder wall to label bladder sensory neurons. At 7 weeks, acute cystometric measurements were taken under awake conditions, and L6/S1 DRG neurons were acutely dissociated. DRG neurons selected for recording were FB-positive, IB4-negative, and had soma diameters ≤30µm, indicating that they were bladder peptidergic C-fiber neurons. Current-clamp recordings were obtained using patch-clamp methods.

Results: BOO in 6 rats produced significant increases in bladder weight (562%) and bladder capacity (1290%) compared to untreated rats. DRG neurons (n=18) from these obstructed rats showed a higher sensitivity to TTX (78% vs 38%) and a reduced action potential threshold (-25mV vs -17mV) compared to normal bladder sensory neurons. Similar to control neurons, BOO neurons had a mean resting membrane potential of -57mV, input resistance of 170MOhm, and fired a single action potential in response to a depolarizing pulse.

Conclusions: As expected, BOO produced increased bladder size and capacity due to decreased voiding efficiency. The reduction in action potential threshold and switch from TTX-R to TTX-S sodium channels may underlie the changes observed in bladder activity in this model and offer novel therapeutic targets. It is interesting that BOO, cyclophosphamide treatment, and spinal cord injury all produce changes in bladder sensory neurons but that the changes in each model are distinct.
TREATMENT OF STRESS URINARY INCONTINENCE USING ADIPOSE DERIVED STEM CELL: RESTORATION OF URETHRAL FUNCTION

Xiaoyong Zeng, Gregory S. Jack, Rong Zhang, Ben Wu, Larissa V. Rodríguez
Departments of Urology and Biomedical Engineering, University of California, Los Angeles

Introduction and Objectives: Although the pathophysiology of stress urinary incontinence (SUI) is poorly understood, three main components appear to play a role in its development: dysfunction of the skeletal rhabdosphincter, the intrinsic urethral smooth musculature, and innervation. There are no current treatments of SUI which repair the urethral dysfunction present in this condition. In addition, there is a need to develop more effective minimally invasive treatments. In the present study, we evaluate the role of smooth muscle differentiated adipose derived stem cell in the treatment of SUI. In addition, we evaluated the role of these cells in restoring urethral function.

Methods: Nude rats were rendered incontinent by a validated animal model of decreased urethral resistance as previously described. In this model, animals undergo transabdominal urethrolysis achieving long term decreases in abdominal leak point pressure (ALPP) and retrograde urethral perfusion pressure (RUPP). These changes parallel changes in urethral smooth muscle content. Lipoaspirate was acquired from human subjects and processed to yield a pluripotent population of human adipose stem cells (hASCs). hASCs were expanded and differentiated into smooth muscle phenotype (SM-ASCs) using smooth muscle inductive culture media. A delivery carrier was designed consisting of 30 μm PLGA microspheres (85:15) in HBSS, mixed with the cells, and immediately injected in the mid-urethra of incontinent animals. Animals were divided into 5 groups: (1) Continent sham operated animals, (2) Incontinent animals injected with HBSS, (3) Incontinent animals injected with HBSS and SM-ASC, (4) Incontinent animals injected with PLGA microspheres only, and (5) Incontinent animals injected with microspheres and SM-ASCs. At baseline and 2 week post-operation, all of the animals underwent urodynamics to evaluate urethral resistance with ALPP and RUPP. Urethral tissue was harvested for organ bath isometric studies to test urethral function and for immunohistochemistry.

Results: SM-ASCs survived in the urethra and expressed specific smooth muscle contractile proteins such as actin and myosin heavy chain (MHC). Sham operated continent animals had a baseline ALPP of and RUPP of 19 and 20 cm of water respectively. This was maintained at the 2 week evaluation. Incontinent animals, and those injected with HBSS only had similar low urethral resistance 2 weeks after surgery with VLPP of 6 and RUPP of 8 cm of water (p<0.05 from normals and sham). PLGA microsphere and cell injection increased VLPP and RUPP towards normal values. Urethras of incontinent animals had significant decreased contractility and relaxation capacity when compared with normal controls. Only animals injected with SM-ASCs had restoration of urethral function on isometric studies.

Conclusions: Co-injection of PLGA microspheres localizes SM-ASCs to the urethral smooth muscle layer. The combination not only improves urethral resistance on UDS, it also restores urethral function by restoring smooth muscle contractility and relaxation.

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VOIDING DYSFUNCTION FOLLOWING EXPLANTATION OF SYNTHETIC MID-URETHRAL SLINGS DUE TO TAPE EROSION
Jonathan S. Starkman, Harriette M. Scarpero, and Roger R. Dmochowski
Vanderbilt University Medical Center, Nashville, TN
Alex Gomelsky, LSU-Shreveport, Shreveport, LA

Introduction: The synthetic mid-urethral sling has become a well accepted, minimally invasive treatment modality for women with stress urinary incontinence. Short and long term results have been comparable to conventional pubovaginal slings. Complications associated with synthetic mid-urethral slings occur rarely, but are well described in the literature. We sought to investigate the prevalence of voiding dysfunction following tape explantation due to vaginal, urethral, or intravesical erosion.

Materials and Methods: We retrospectively searched our urethrolysis database from April, 2001 until August, 2005 and identified 19 patients who underwent partial or complete tape explantation secondary to tape erosion. Clinical, surgical, urodynamic, and post-operative data was extracted. Persistent post-explant voiding dysfunction was defined as refractory symptoms (i.e. urgency/frequency/urge incontinence, pelvic pain…) and recurrent stress urinary incontinence.

Results: Following review of our database we identified the following erosion injuries in 19 patients: 10 vaginal, 6 intravesical, 5 urethral, and 1 vesicovaginal fistula. Mean patient age was 52 years (32-69). Patients presented with multiple symptoms in 14/19 cases (74%). Symptoms varied and included refractory pain, recurrent infections, and storage/emptying dysfunction. Mean time from sling to explantation was 10.1 months (6weeks-38months). Urodynamic studies were abnormal pre-op and post-op in 9/13 (69%) and 4/6 (67%). Urinary symptoms resolved completely in only 7/19 patients (37%). Recurrent stress incontinence occurred in 7/19 patients (37%). 7/19 patients required post-explant medical therapy with anticholinergics to manage refractory storage symptoms. 5 patients underwent simultaneous pubovaginal sling at the time of explant (2 Pelvicol, 3 fascia). None of the patients with recurrent stress incontinence underwent simultaneous pubovaginal sling. Only 50% of patients considered themselves dry (no pads) after tape explantation. 3 patients required further surgery for refractory voiding symptoms.

Conclusions: Patients who experience synthetic tape erosion present with a variety of symptoms, with multiple symptoms present in the majority (74%). Tape explantation produced complete symptom improvement in only 37% of patients, with 63% of patients having some element of voiding dysfunction. In terms of continence, only 50% were dry at last follow up. Patients should be counseled regarding the high likelihood of persistent voiding symptoms following surgical tape explantation. There appears to be some benefit in maintaining continence by simultaneous sling placement at time of explant, although this needs to be further substantiated.

Keywords: SUI-stress urinary incontinence; PVS-pubovaginal sling; UDS-urodynamics
Objectives: Aim of our study was to evaluate if there are any specific programming algorithms that are associated with successful and effective InterStim Therapy in patients suffering from urinary voiding dysfunction. There is much literature available on satisfactory results of Interstim therapy, but its optimal parameter settings have never been well understood or established.

Methods: From June 2002 to July 2003, 60 patients (49 female, 11 male, mean age 49± 15 years, range 22-78 years) underwent minimally invasive unilateral staged implant of permanent lead for sacral neuromodulation. The procedure was performed in local anesthesia. Indications for sacral neuromodulation were: non-obstructive urinary retention (12 pts), urge incontinence (43 pts) and interstitial cystitis (5 pts). 6 pts failed screening therefore didn’t undergo second stage (IPG implant). Stimulation parameters (amplitude, pulse width, frequency, electrode configuration) and the clinical improvement were prospectively collected during each follow up that was performed at 3, 6,12 months and then yearly. Voiding diary was required based on which the clinical improvement was measured. Continuous data were expressed as mean +/- SD, categoric variables as percentage. Statistical comparisons among groups were carried out by one-way analysis of variance (ANOVA), the statistical significance, defined as p-value < 0.05, was evaluated with the Bonferroni test. Univariate binary logistic regression analysis was utilized to evaluate the relationship between the success of therapy and covariates, the statistical significance was defined as p-value < 0.2 to perform the multivariate binary logistic regression analysis. Analyses were performed with SPSS 11.5 software for Windows.

Results: There is a significant inverse correlation between number of reprogramming and % of clinical improvement (p<0.01). The higher the number of reprogramming the lower the successful rate was observed. Within the interval from 1 to 4 reprogramming, the obtained results were significant (greater than 50%) while in the group of 5 or more reprogramming the % of success was reduced to less than 50%. He other interesting observation regards the polarity. The unipolar configuration showed a better correlation with a successful treatment in all the groups of patients.

Comments: Each programming is an individual action related to a specific patient and there are not algorithms defined yet that can help standardize this in patient’s follow up. However, certain parameters settings show high correlation with the clinical outcome and moreover, successfully treated patients have significantly lower number of reprogramming sessions. This also correlates to what was previously published that Interstim therapy failures would occur in the first 6 months and that reprogramming would not help in increasing the therapy efficacy.
OXYBUTYNNIN PRODUCES A CONCENTRATION- AND FREQUENCY-DEPENDENT BLOCK OF SODIUM CHANNELS IN BLADDER SENSORY NEURONS
David G McKenna, Angela L Bookout, Stuart D Portbury, Karl B Thor, Edward C Burgard
Dynogen Pharmaceuticals Inc., Durham, NC

Introduction and Objectives: The antimuscarinic agent oxybutynin is currently used for the treatment of overactive bladder (OAB). In addition to its antimuscarinic actions, blockade of voltage-gated calcium channels (Burgard et al., 2005 AUA Meeting Abstracts, 151) and local anesthetic effects on bladder C-fiber neurons have been reported. To further elucidate the action of oxybutynin on bladder C-fiber neuronal excitability, we examined the effects of oxybutynin on action potentials and isolated tetrodotoxin-resistant (TTX-R) sodium currents.

Methods: Sensory fibers innervating the bladders of female Sprague-Dawley rats were labeled by intramuscular bladder injections of Fast Blue (FB). Approximately ten days following injection, L6/S1 dorsal root ganglion (DRG) neurons were removed, dissociated, and maintained in culture. DRG neurons selected for patch-clamp recording were FB-positive, IB4-negative, and had soma diameters <30µm, indicating that they were bladder C-fiber neurons. TTX-R sodium currents were elicited in TTX using standard voltage-clamp methods.

Results: Oxybutynin produced a concentration-dependent (3-300 nM) depolarization neuronal input resistance in bladder neurons. Over the same concentration range, oxybutynin inhibited normal action potential firing, with complete block seen at 300 nM. Oxybutynin also blocked sodium currents under slow activation conditions (.03Hz), in a concentration-dependent manner (IC_{50}=17µM). However, when currents were activated at a rapid rate (50 pulses at 10Hz), oxybutynin (3-20µM) revealed an enhanced frequency-dependent block that primarily developed during the first 10 pulses. This effect was observed throughout a range of holding potentials spanning -90 mV to -60 mV. The enhanced block of TTX-R currents under rapid activation conditions translated into a reduction in IC_{50} for oxybutynin to low micromolar values.

Conclusions: In addition to its known inhibition of muscarinic receptors and calcium channels, we have demonstrated that oxybutynin can modulate bladder sensory neuron excitability through inhibition of voltage-gated sodium channels. Under normal conditions, oxybutynin can block action potential firing. Our results with TTX-R channels indicate that potency of channel block increases under conditions of rapid sodium channel activation. The effective concentration of sodium channel block occurs in the low micromolar range, and the possibility exists that under certain conditions inhibition of neuronal excitability by oxybutynin may occur at even lower concentrations. Inhibition of aberrant sensory neuron firing by oxybutynin may contribute to its efficacy in certain OAB states.
THE EFFECTS OF A COMBINED 5HT3 RECEPTOR ANTAGONIST AND NORADRENALINE REUPTAKE INHIBITOR ON LOWER URINARY TRACT ACTIVITY
Matthew O. Fraser, China Chien, Mary A. Katofiasc, Christopher L. Langdale, Jacqueline D. Brooks, Melissa C. Young, Kenneth J. Olejar, Venkateswarlu Karicheti, Karl B. Thor, Dynogen Pharmaceuticals, Durham, NC

Introduction and Objectives: While the involvement of serotonin in the central control of lower urinary tract function is well established, the role of the 5HT3 receptor in this regard has been historically controversial. This is in contrast to the well established role of 5HT3 receptors in other hollow viscera, such as the gut, where these receptors are undeniably involved both peripherally and centrally in both pain sensation and motility. Like serotonin, the involvement of noradrenaline in the regulation of lower urinary tract function is well established both centrally and peripherally. DDP225 (a.k.a. MCI-225) is a combined 5HT3 receptor antagonist and noradrenaline reuptake inhibitor (NARI) and has been demonstrated to work well in rodent models of irritable bowel syndrome. We hypothesized that this particular mix of properties would also make this compound useful for overactive bladder (OAB) with and without pain components.

Methods: For cystometric evaluation, urethane anesthetized female Sprague-Dawley rats (n=8) and chloralose anesthetized female cats (n=4) underwent continuous transvesical cystometry before and after irritation with dilute acetic acid infusion. Cumulative doses of DDP225 from 1-30 mg/kg at half log intervals were administered following vehicle controls. Bladder capacity (BC) was estimated at each treatment by single filling cystometry. In order to determine the effects of sub-chronic oral dosing on bladder function, normal cats (n=6) were fitted with indwelling catheter-pressure transducer telemetry units that allowed 24 hour measurement of bladder pressure and simultaneous urine collection in a metabolic cage-style setup. Following a control recording week, the cats were dosed with DDP225 on consecutive days b.i.d. with 0, 1, 3 and 10 mg/kg orally. Functional bladder capacity (FBC) and bladder contraction areas under the curve (AUC) were calculated. Data were analyzed by repeated measures ANOVA.

Results: Administration of DDP225 in anesthetized animals resulted in a significant dose-dependent reversal of the reduction in bladder capacity resulting from continuous acetic acid irritation in both the rat (35%, P<0.0001) and the cat (25%, P=0.0379). Moreover, DDP225 at 10 mg/kg orally resulted in a >150% increase in FBC (P=0.0188) with no change in AUC, with no obvious untoward side-effects.

Conclusions: These results with DDP225 suggest that the mix of 5HT3 antagonism and NARI activities provides preclinical efficacy in multiple species and widely variant models for the study of lower urinary tract function. Further, these results suggest that such an approach may be utilizable for the treatment of lower urinary tract disorders ranging from interstitial cystitis through idiopathic OAB.
Introduction and Objective: N-type calcium channels play a primary role in neurotransmission. Modulation of these channels may occur via interaction with one or more channel subunits. The ω-conotoxins GVIA and MVIIA reduce N-type calcium channel activity by interacting with the pore-forming Cav2.2 subunit. We tested the effect of these peptides on lower urinary tract function in both cultured bladder dorsal root ganglion (DRG) neurons and during the dilute acetic acid (AA) cystometry model of overactive bladder in the rat.

Methods: Bladders of female rats were injected with Fast Blue (FB) to label bladder sensory neurons. L6/S1 DRG neurons were acutely dissociated 10-14 days later. Selected FB neurons were IB4 (-) and ≤30µm in diameter, suggesting that they were bladder peptidergic C-fiber neurons. Peak HVA calcium currents were recorded using patch-clamp recording techniques. ω-conotoxin GVIA was applied at a concentration of 1 µM. For in vivo studies, urethane anesthetized female rats received PE10 intrathecal catheters with the delivery tip positioned at the sacral spinal cord (n=5). Cumulative doses of ω-conotoxin MVIIA (0.03, 0.1, 0.3, 1.0 and 3.0 µg/kg) were delivered in 5 µL of artificial cerebrospinal fluid during continuous transvesical cystometry with dilute AA (0.25%) to induce bladder irritation. External urethral sphincter (EUS) electromyography (EMG) was achieved via fine wire electrodes. Bladder capacity (BC) was estimated at each treatment by single filling cystometry. Data were analyzed by repeated measures ANOVA.

Results: GVIA (1 uM) reduced HVA calcium currents to 72.8 ± 1.6% of control (n=4). Similar results were observed with MVIIA. AA-induced reductions in intermicturition interval (IMI) and BC were reversed in a dose-dependent fashion by MVIIA, resulting in a return of IMI to 81% (P=0.0010) and of BC to 69% (P=0.0005) of pre-irritation control values. These effects were seen with no untoward effects on other micturition parameters, such as voiding efficiency and micturition-associated phasic EUS activity.

Conclusions: The current results demonstrate that blockade of N-type calcium channels at the level of the nociceptive afferent results in the reversal of the effects of acute bladder irritation. It is interesting in this regard that efferent functions, such as EUS-EMG activity were not adversely affected. It is suggested that the Cav2.2 subunit of the N-type calcium channel is an attractive therapeutic target for the treatment of lower urinary tract dysfunctions.
LEVATOR ANI TRIGGER POINT INJECTIONS: AN UNDERUTILIZED TREATMENT FOR CHRONIC PELVIC PAIN
*Carolyn Langford, DO, Szilvia Udvari Nagy, MD, Gamal Ghoniem MD
Cleveland Clinic Florida, Weston, Florida

KEYWORDS: chronic pelvic pain, levator ani, trigger point, visual analog scale

INTRODUCTION: In the United States more than 9 million women that have Chronic Pelvic Pain (CPP). There are multiple treatment options depending on the underlying pathology. Tender levator ani with trigger points can be missed during CPP evaluation, leading to unnecessary, ineffective treatment and prolonging morbidity.

AIM OF THE STUDY: The aim of this was study to examine the role and effect of trigger point injections in females with at least 6 months of CPP and specific levator ani trigger point tenderness.

PATIENTS AND METHODS: This prospective study included 17 consecutive female patients with CPP and specific palpable levator ani trigger point tenderness. A Visual Analog Scale (VAS), with a scale from 0-100%, was administered before and after trigger point injection rating Pain, Patient Global Impression of satisfaction (PGI-S) and cure rate (PGI-C). The trigger points were identified manually by intravaginal palpation of the levator ani and patient verbal confirmation. A mixture of 10cc each of 0.25% bupivacaine and 2% lidocaine with 1cc of triamcinolone was used for injections of 5cc per trigger point. A 5.5” Iowa trumpet pudendal needle guide by Sharp Surgical Repair Inc., Oyster Bay, N.Y. was used for injection. All cases, except for one, were performed in the office setting without sedation. Patients were taught how to do Pelvic Floor Muscle Exercises after injections

RESULTS: Sixteen women of the 17 returned the questionnaire with a mean follow up of 6 months. Fourteen out of 16 patients (88%), improved with the first trigger point injections. Six out of these 14 patients (43%) were completely pain free after their first injection with a VAS of 0%, PGI satisfaction of 95.8% and PGI cure of 97% (p<0.0001). The other 9 patients showed improvement from a mean pre VAS of 80% to a mean post VAS of 20%. Six out of 14 patients (43%) improved after a second injection with a mean pre VAS score of 95% to mean post VAS of 20%. We found 2 out 16 patients reported no improvement over baseline.

DISCUSSION: The exact mechanism of pain relief with injection of trigger points, the areas of hyperirritability to firm palpation, is unclear. It is possible that myofascial trigger points start after muscle strain, which. These injections may inactivate the trigger points through multiple mechanisms.

CONCLUSION: We conclude that a non-surgical office-based therapy, such as trigger point injection can be effective in selected patients with CPP and levator ani tenderness. Although this group of patients may represent a small portion of females with CPP, it is important to identify them since treatment with injections seems to be effective.
VARIATIONS IN STRESS INCONTINENCE MANAGEMENT BY SURGEON SPECIALTY
Jennifer T. Anger, Mark S. Litwin, Qin Wang, Christopher Pashos, and Larissa V. Rodriguez, UCLA, Los Angeles, CA

Introduction and Objective: Slings are an effective treatment for stress urinary incontinence (SUI), and are widely performed both by urologists and gynecologists. However, data on complication rates after sling surgery have been primarily derived from individual series of clinical subjects. In this study we analyzed Medicare claims data to compare outcomes after sling surgery between urologists and gynecologists.

Methods: We analyzed the 1999-2001 Medicare claims data of a 5% national random sample of Medicare beneficiaries. Women age 65 and over who underwent a sling procedure between January 1, 1999 and July 31, 2000 (the index period) were identified on the basis of CPT-4 codes and tracked for 12 months. Key complications were identified using CPT-4 and ICD-9 codes for relevant procedures and diagnoses. Outcomes were compared between urologists and gynecologists.

Results: A total of 1,356 sling procedures were performed during the index period. Of these, 1,063 (78.4%) were performed by urologists, while 246 (18.1%) were performed by gynecologists. Gynecologists were less likely to perform pre-operative cystoscopy compared to urologists (19.3% vs. 31.1%, p <0.001), but more likely to perform pre-operative urodynamics (41.0% vs. 30.0%, p < 0.002). Urologists performed concomitant prolapse repairs in 309 of 1,063 (29.1%) cases, and gynecologists performed prolapse repairs in 137 of 246 (55.7%) cases (p < 0.0001). There were no significant differences between surgeon specialty with regard to post-operative outlet obstruction, urologic complications, or non-urologic complications. In the 12 months following sling placement, urologists were more likely than gynecologists to perform a repeat incontinence procedure (9.3% vs. 4.9%, p=0.024), and were more likely to perform a prolapse repair (26.0% vs. 12.2%, p < 0.0001).

Conclusions: Urologists performed the majority of slings on Medicare beneficiaries during the index period. We identified differential practice patterns for cystoscopy and urodynamics between specialties, but it is unclear whether such variation had an impact on outcomes. Our finding that urologists were more likely than gynecologists to perform a repeat incontinence procedure needs to be evaluated further to determine whether differences are attributable to surgical technique, to more complicated case selection, or to some other factor. Early prolapse management on the part of gynecologists clearly corresponded to fewer prolapse repairs in the year following the sling. Although it is possible that slings performed in isolation resulted in a de novo occurrence of prolapse, our findings suggest that gynecologists are more likely to identify and manage prolapse at the time of the work-up of SUI, a strategy that avoids the morbidity and associated cost of repeat surgery.

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THE ANTERIOR VAGINAL WALL SUSPENSION FOR MODERATE-TO-LARGE CYSTOCELE
University of Texas Southwestern Medical Center. Dallas, TX.

Introduction and Objective: To report on the intermediate- and long-term results of the anterior vaginal wall suspension (AVWS) procedure for a moderate-to-large cystocele.

Methods: Following IRB approval, a retrospective database review was performed of all women who underwent an AVWS for symptomatic anterior compartment prolapse. Preoperative evaluation included detailed history, examination, questionnaires, urodynamics with pack reduction, and standing lateral voiding cystourethrogram (VCUG) with rest-strain views. Cystocele was graded on lateral straining VCUG as moderate (grade 2, 2-5 cm maximal descent of bladder base below pubis) or large (grade 3, >5 cm descent). Data on age, body mass index (BMI), parity, and prior prolapse repair or anti-incontinence surgery were recorded. Postoperative evaluation included examination and VCUG at 6 months, with interval examinations yearly thereafter. Patients were excluded if they did not have both a preoperative and postoperative VCUG available for review. Durability of the repair was analyzed by Kaplan-Meier analysis, with failure defined as recurrence of cystocele requiring reoperation, and risk of failure by odds ratio.

Results: Between 1996 and early 2005, 132 women (82 grade 3, 50 grade 2) met all inclusion criteria. The mean ± S.D. were — age: 67 ± 10 years (40-85); BMI: 26 ± 5 kg/m² (18-40); parity: 3 (0-8); follow up: 27 ± 23 months (6-111). Prior surgeries included bladder neck suspension (38), sling (9), and anterior colporrhaphy (21). There was no difference between grade 2 and grade 3 in regard to concomitant hysterectomy or vault/posterior repairs. Overall, 26 patients failed (7 grade 2, 19 grade 3) with Kaplan-Meier analysis indicating a cumulative failure rate of 14.9% at 1 year; 19.7% at 2 years and 27.4% at 4 years, with higher failure for grade 3 (Figure). The failure odds ratio for grade 3 versus 2 is 1.85 (95%CI: 0.72-4.8).

Conclusions: The AVWS is a simple and effective vaginal procedure for moderate-to-large cystocele, with durable intermediate- and long-term outcome. The likelihood of requiring reoperation for recurrent cystocele is nearly twice as high for pre-operative grade 3 cystocele on VCUG versus grade 2, and occurs mostly in the first year post-operatively.
POSTER #15

PREDICTIVE VALUE OF URODYNAMIC FINDINGS DURING VAGINAL PACK REDUCTION OF MODERATE-TO-LARGE CYSTOCELE IN STRESS INCONTINENCE OUTCOME AFTER SUCCESSFUL REPAIR OF CYSTOCELE

Jason P Gilleran, Philippe Zimmern. University of Texas Southwestern Medical Center, Dallas, TX.

Introduction and Objectives: To determine whether urodynamic study (UDS) finding of “unmasked” stress urinary incontinence (SUI) with pack reduction of a cystocele will predict incontinence outcome after a satisfactory cystocele repair.

Methods: Following IRB approval, a database review of consecutive, non-neurogenic women with symptomatic grade 2-3 cystocele who underwent pack reduction UDS was performed. All studies used the same protocol (fill-and-void study with a gauze pack in the vagina, then repeat study without the pack) and equipment (Laborie Aquarius XLT). Presence of SUI on the “pack” UDS was documented as visible evidence of leakage during cough or Valsalva with pack in place. Irrespective of the UDS findings, all patients underwent a cystocele repair including a bladder neck support procedure (no sling). A satisfactory cystocele repair was defined as ≤ grade 1 (<2 cm lateral height of cystocele below symphysis pubis with straining) on postoperative standing voiding cystourethrogram (VCUG) at 6 months. Patients were excluded if they had radiographic evidence of failed repair, or had prior anti-incontinence surgery with an already well-supported urethra (WSU) on VCUG. The main outcome measure was need for secondary anti-incontinence surgery – pubovaginal sling [PVS] or periurethral collagen injection [PCI]. The positive and negative predictive values of preoperative pack UDS on continence outcome were analyzed.

Results: Of 133 women with pack reduction UDS for grade 2-3 cystocele between 1996 and 2004, 114 met inclusion criteria, underwent vaginal corrective surgery, and had a 6-month follow-up VCUG, with serial examinations at one year and yearly thereafter. Excluded were 45 women with WSU from prior surgery, and 8 women with cystocele recurrence on VCUG, leaving 61 women – 39 with grade 3, 22 grade 2 cystocele – for analysis. Anterior vaginal wall suspension was performed in 50 and goalpost suspension with anterior colporrhaphy in 11. The mean ± S.D. values were – age: 64±10 years (40-82); weight: 69±16 kg (46-123); and parity: 3±1.4 (0-8). Forty-four women were post-hysterectomy, 59 post-menopausal, and 57 Caucasian. Mean follow-up was 29 months (range 6-93). SUI was demonstrated on pack UDS in 8 women (13%), of whom 1 ultimately underwent PVS. In the 53 who did not leak on UDS, 4 (8%) underwent secondary anti-incontinence procedures at 3, 4, 6, and 24 months postoperatively. Overall, the UDS findings correctly predicted the clinical outcome in 50 women (82%). The positive and negative predictive values for SUI on pack UDS were 13% and 92%, respectively.

Conclusions: Vaginal pack UDS revealed a low incidence of unmasked SUI as a result of anterior vaginal wall stabilization during the test. Although the presence of SUI on pack UDS did not accurately predict clinical SUI outcome, the absence of SUI on pack UDS was a valid predictor of continence after radiographic confirmation of a satisfactory anatomical repair by standing VCUG. Overall, the pack served as a valuable preoperative test to mimic the surgical repair and predicted continence status when bladder neck support was provided as part of the transcervical anterior compartment repair procedure.
THE SPIRAL SLING SALVAGE ANTI-INCONTINENCE SURGERY FOR THE FEMALE PATIENT WITH REFRACTORY STRESS URINARY INCONTINENCE: SURGICAL OUTCOME AND SATISFACTION DETERMINED BY PATIENT DRIVEN QUESTIONNAIRES
Arthur Mourtzinos, Mary Grey Maher, Mathew P. Rutman, Nasim Zabihi, U. Zehra Laiwalla, Shlomo Raz and Larissa V. Rodriguez. Pelvic Reconstruction and Female Urology, Department of Urology, Geffen School of Medicine at UCLA, Los Angeles, CA

**Introduction:** Female patients with refractory stress urinary incontinence (SUI) are a unique surgical challenge. The majority of these patients eventually are left with urethral closure and continent diversion as their final option. We previously presented a technique that provides circumferential coaptation of the urethra as a salvage procedure for total urethral incompetence. This study reports on the perioperative complications and quality of life following spiral sling in this severe subset of patients.

**Materials and Methods:** We prospectively evaluated 47 patients with refractory SUI who had a spiral sling. A 1x15 cm piece of soft prolene mesh is prepared with a 0-polyglactin suture applied at each end. A clamp is used to pass the mesh between the urethra and pubis. The ends of the mesh are crossed at the ventral aspect of the urethra creating a complete circle around the urethra. The sutures are transferred to the suprapubic area and tied without tension. Surgical outcome was determined by patient self-assessment and included validated symptom, bother, and quality of life questionnaires. All patients were asked to complete the short version of the Urogenital Distress Inventory (UDI-6) and Incontinence Symptom Score (ISS-8) before and after the procedure during subsequent follow-up visits.

**Results:** The mean age was 59.9 years. Mean follow-up was 10.5 months. At presentation, patients had undergone a mean of 2.8 incontinence procedures and wore a mean of 6.4 pads per day. Mean pad use decreased to 1.5 pads per day (P<0.01). Pre-operatively the mean severity and bother score from SUI symptoms was 2.9 and 2.8, respectively (0=none, 3=severe). Post-operatively these numbers decreased to 0.9 and 0.7 (P<0.01). There was a mean overall improvement in symptoms of 84.4%. There were no perioperative complications. One patient failed the procedure and underwent urethral closure with creation of a continent diversion. One patient underwent a repeat proximal spiral sling. One patient developed urinary retention and underwent permanent placement of a suprapubic catheter.

**Conclusions:** The spiral sling is an effective salvage transvaginal procedure that may be considered for a small subset of female patients with refractory SUI as a last resort prior to urethral closure procedures.

**Financial Funding:** None
THE DISTAL URETHRAL POLYPROPYLENE SLING AND ITS EFFECT ON URGE INCONTINENCE DETERMINED BY PATIENT DRIVEN QUESTIONNAIRES

Arthur Mourtzinos, Mary Grey Maher, Nasim Zabihi, U. Zehra Laiwalla, Shlomo Raz and Larissa V. Rodriguez. Pelvic Reconstruction and Female Urology, Department of Urology, Geffen School of Medicine at UCLA, Los Angeles, CA

Introduction and objective: The surgeon should be wary of performing outlet surgery when the patient has stress urinary incontinence (SUI) and coexistent complaints of urgency, frequency, and urge incontinence. Bladder instability may coexist with sphincteric incontinence, either as a result of the sphincteric incompetence or as a separate entity. This study reports on the subjective resolution of urge incontinence (UI) with placement of our distal urethral polypropylene sling (DUPS).

Methods: We performed a prospective analysis of all consecutive patients (pts) who underwent a DUPS between January 2001 and June 2002. There were 111 pts who required treatment for SUI during this period. 89 pts (80.2%) with subjective complaints of UI were included in the study. Patients were divided into three age groups: pts < 50 y.o. age, pts 50-70 y.o. age, and pts > 70 y.o. age. Surgical outcome was determined by symptom, bother, and validated quality of life questionnaires completed by the pts. Physicians were blinded to patient responses.

Results: The mean age was 59.0 years. Mean follow-up was 12.1 months. 42 pts (47%) had symptoms of mild to moderate UI, whereas 47 (53%) had severe UI. All pts had similar preoperative symptoms regardless of age. Postoperatively, all age groups showed improvement of symptoms (p<0.05). Although there was a trend towards younger pts showing a higher percentage of resolution of symptoms, this was not statistically significant (65% in pts < 50 y.o. age vs. 39% in pts 50-70 y.o. age vs. 24% in pts > 70 y.o. age, p>0.05). With regard to symptom severity, pts with both mild to moderate and severe UI had improvement of symptoms (p<0.05). Pts with mild to moderate UI were more likely to have resolution of symptoms, however this was not statistically significant (43% in pts with mild to moderate UI vs. 34% in pts with severe UI, p>0.05). Seven pts (8%) had worse symptoms of UI following the procedure.

Conclusions: Overall 67.4% of pts with mixed urinary incontinence had improvement of their symptoms of UI with the DUPS. Although all age groups showed improvement of symptoms, younger pts were more likely to be cured of UI. In addition, pts with mild to moderate UI were more likely to have resolution of symptoms. Pts undergoing procedures for SUI need to be counseled appropriately regarding the resolution of preoperative symptoms of urge incontinence. Patient self-assessment of symptoms, bother and quality of life should remain an integral part of the outcome of SUI surgery.
SYMPTOMS AND ANATOMY ARE POORLY CORRELATED IN WOMEN WITH ADVANCED PROLAPSE
Y. Dooley, K. West, K. Kenton, M. Fitzgerald and L. Brubaker
Loyola University Medical Center, Maywood, IL

Introduction: Pelvic organ prolapse (POP) and bowel symptoms frequently coexist. Pelvic surgeons have traditionally assumed that bowel symptoms associated with pelvic organ support defects are due to the presence of POP. However, the relationship between symptoms and anatomy is poorly defined in this area.

Objective: The aim of this study was to determine if bowel symptoms are related to the stage of POP in women.

Methods: After obtaining IRB approval, we reviewed consecutive chart of new patients presenting to our tertiary care referral practice from January 2003 - December 2004. Demographic information, stage of prolapse and responses to the Colorectal-Anal Distress Inventory (CRADI) of the Pelvic Floor Distress Inventory were recorded. CRADI is scored from 0 to 100. Data analysis was done using SPSS Version 13 (Chicago, IL). Spearman's correlations were used to compare CRADI scores to POP-Q stage.

Results: Five hundred charts were reviewed. One hundred forty women with POP-Q stages II-IV were included in the final analysis. Study women had a mean age of 61±13 years and a median vaginal parity of 3±2 children. Almost all were Caucasian (87%) with 6% African American and 6% Hispanic. Eighty percent were postmenopausal. Fifty percent of participants had stage II POP, 40% stage III, and 10% stage IV.

Most women had reported some bowel symptoms as the median summary score for the CRADI was 62.5 (IQR 50-80). There was no significant difference in CRADI scores by POP stage (p=.929). No statistically significant Spearman correlation was found between POP-Q stage and the CRADI summary score, or CRADI item scores for straining, incomplete evacuation, stool loss (formed or loose), gas loss, pain with evacuation, or bowel urgency (p>0.14). POP-Q stage and rectal prolapse were weakly correlated (ρ=.45, p=.042.). The median number of bowel symptoms reported by the cohort was 3 (range 1-8). Twenty-five percent of women had 1 bowel symptom, 19% had 2, 15% had 3, 20% had 4, 11% had 5, and 12% had 5 or greater. The number of bowel symptoms was not significantly different by prolapse stage (p=.083).

We then compared the women with stage II-IV POP to 189 women with stage 0 or I POP, who presented to our clinic during the same time period. Median CRADI scores of the women with stage 0 or I POP (62.5 IQR 50-75) were not significantly different from women with stage II-IV POP.

Conclusion: While bowel symptoms are common in women with presenting for urogynecologic care, there is no correlation between bowel symptoms and prolapse stage, suggesting that surgery to correct POP may not improve most bowel symptoms.
POSTER #19

VAGINAL EXTRUSION RATES FOR DIFFERENT TECHNIQUES OF SYNTHETIC SLING PLACEMENT
Brian S. Yamada, Fred E. Govier, Kathleen C. Kobashi. Virginia Mason Medical Center
Seattle, Washington

Introduction and Objectives: The use of synthetic slings in the surgical treatment of stress urinary incontinence is common today. A major concern with synthetic slings is the risk of vaginal extrusion. A variety of surgical techniques are employed for the placement of urinary slings. We report our experience with vaginal extrusion with the SPARC™ sling, the ObTape™, the Monarc™, and the J&J soft polypropylene sling placed with bone anchors.

Materials and Methods: Patients with documented stress urinary incontinence were entered into a prospective IRB approved database at our institution. Patients underwent detailed genitourinary history and physical examination and preoperative videourodynamics. All surgeries were performed by one of two surgeons (FG or KK). Patients underwent the SPARC™, ObTape™, Monarc™, or J&J mesh placement based on surgeon preference. Each patient was given preoperative intravenous antibiotics with gram-positive and gram-negative coverage. Patients were admitted to the hospital overnight and the foley catheter and vaginal packing were removed on postoperative day #1. Patients were then discharged on oral antibiotics for one week and seen in the clinic for pelvic examination at 6 weeks postoperatively. Patients were asked to complete a quality of life questionnaire at 6 months and annually thereafter.


<table>
<thead>
<tr>
<th>Procedure Performed</th>
<th># of procedures</th>
<th># of extrusions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARC™</td>
<td>302</td>
<td>6 (2.0%)</td>
</tr>
<tr>
<td>J&amp;J mesh with bone anchors</td>
<td>207</td>
<td>5 (2.4%)</td>
</tr>
<tr>
<td>ObTape™</td>
<td>67</td>
<td>9 (13.4%)</td>
</tr>
<tr>
<td>Monarc™</td>
<td>57</td>
<td>0 (0.0%)</td>
</tr>
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</table>

Conclusions: The SPARC™ sling and J&J mesh with bone anchors have long term follow up with large numbers and appear to carry a comparable and competitive extrusion rate between 2 and 3%. No erosions have been seen in the Monarc™ group, but greater numbers and longer follow-up are necessary. The ObTape™ carried a high extrusion rate even with a relatively small number of patients. Because we have not had long term follow up on all patients, the actual incidence of extrusions may be higher.

All polypropylene slings may have a risk of extrusion, but certain factors may contribute to this risk, such as the pattern of weave and pore size, or the patient’s tissue integrity. Studies are pending to further elucidate these risk factors.

Disclosure: Drs. Kobashi and Govier are both consultants for the Mentor Corporation and American Medical Systems. Both Mentor and American Medical Systems contributed to an educational grant to help fund an unrestricted study which randomized patient’s to the ObTape™, Monarc™, or SPARC™. A small number of patients from this trial were included in the data in the abstract above.
ROLE OF THE PROSTACYCLIN (IP) RECEPTOR ANTAGONIST RO3244019 IN TREATING DETRUSOR HYPERREFLEXIA IN RATS WITH SPINAL CORD INJURY
Mohit Khera¹, Nilson Salas¹, George T. Somogyi¹, Mary-Frances Jett², Anthony Ford², Philip Nunn², Christopher P. Smith¹, Susanna Kiss¹, Timothy B. Boone¹
¹Scott Department of Urology Baylor College of Medicine, Houston TX 77030, USA
²Roche Palo Alto, LLC, Palo Alto, CA 94304, USA

Objective: To determine the effects of the prostacyclin receptor (IP) antagonist RO3244019 on detrusor hyperreflexia in spinal cord injured (SCI) neurogenic bladders of the rat.

Materials and Methods: Female rats with spinal cord injury (SCI) were instrumented for cystometry and allowed to recover from anesthesia. Open cystometry was then performed on the conscious, unanesthetized rats. Baseline was established and the rats were administered intravenously: vehicle (200 mM Tris Base), indomethacin (3 mg/kg) or RO3244019 (1 and 5 mg/kg). Seven voiding parameters were calculated before and after the administration of each compound.

Results: RO3244019 (1 and 5 mg/kg) significantly (p<0.05 and p<0.01, respectively) increased voiding intracontractile intervals (ICI) and voided volumes (Figure 1). At the higher dose, the time to first void was also significantly (p<0.05) increased. RO3244019 did not significantly affect the contraction amplitude or the ICI. Indomethacin (3mg/kg) significantly improved all voiding parameters, including voiding ICI (Figure 1).

Conclusion: The IP antagonist, RO3244019 (1 and 5 mg/kg, i.v.), was effective in treating detrusor hyperreflexia in rats with SCI. The RO compound (5 mg/kg) reduced the hyperreflexia to an extent that was comparable to that produced by prostaglandin (PG) biosynthesis inhibitor, indomethacin. These results suggest that detrusor hyperreflexia in rats with SCI is, in part, mediated by PGs and that the urinary bladder IP receptors are key mediators of PG action.

Figure 1 RO3244019 (5 mg/kg) significantly and dose-dependently increased the voiding ICI almost to the same extent as indomethacin (3 mg/kg).

*Project funded by Roche Palo Alto, LLC, Palo Alto, CA.*
POSTER #21

DETRUSOR OVERACTIVITY AND VALSALVA INDUCED LEAKAGE ON URODYNAMICS IN WOMEN WITH MIXED, PURE STRESS AND PURE URGE URINARY INCONTINENCE IS THERE A DIFFERENCE?
Paholo G. Barbo Gö MD, Rolando Rivera MD, David Meinbach MD, Angelo E. Gousse MD
Urology Department; Miller school of Medicine, University of Miami, Fl.

**Introduction:** Urinary incontinence is the involuntary loss of urine and can affect both men and women throughout their lives. Women are more likely to develop incontinence as a result of pregnancy and childbirth. There are approximately 11 million cases of incontinence in the US contributing to several different types of incontinence. Urge affects 30%; Stress affects 30% and 85% of them are women; Mixed urinary incontinence which is a combination of urge and stress is represented by the 40%.

**Objectives:** The aim of the study is to determine whether the urodynamic detection of Detrusor Overactivity (DO), as defined by the International Continence Society, and the presence or absence of valsalva induced leakage at UDS (Stress +/-) correlate with the clinical diagnosis made at the time of the initial interview by history and the physical examination.

**Materials and Methods:** From 1999 to 20002, we retrospectively evaluated the records of 416 well characterized patients. All women were fully evaluated, with history, urinary symptoms questionnaire and complete pelvic examination. Women with symptoms consistent with urinary incontinence (UIC), genuine stress, pure urge, and mix incontinence were selected. Finally Detrusor Overactivity (DO) and Stress Test on urodynamic studies were obtained.

**Results:** A total of 264 women with a mean age of 59.87 of our original database demonstrated UIC.

<table>
<thead>
<tr>
<th></th>
<th>Mix</th>
<th>Stress</th>
<th>Urge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>147</td>
<td>60</td>
<td>57</td>
</tr>
<tr>
<td>Age / Mean</td>
<td>61.48</td>
<td>54.8</td>
<td>61.07</td>
</tr>
<tr>
<td>Only DO +</td>
<td>35.37%</td>
<td>20%</td>
<td>45.61%</td>
</tr>
<tr>
<td>Only DO -</td>
<td>64.63%</td>
<td>80%</td>
<td>54.39%</td>
</tr>
<tr>
<td>Only Stress +</td>
<td>20.41%</td>
<td>28.33%</td>
<td>7.02%</td>
</tr>
<tr>
<td>Only Stress -</td>
<td>79.59%</td>
<td>71.67%</td>
<td>92.98%</td>
</tr>
<tr>
<td>DO+/Stress+</td>
<td>8.84%</td>
<td>8.33%</td>
<td>1.75%</td>
</tr>
<tr>
<td>DO-/Stress+</td>
<td>11.56%</td>
<td>20%</td>
<td>5.26%</td>
</tr>
<tr>
<td>DO+/Stress-</td>
<td>26.53%</td>
<td>11.67%</td>
<td>43.86%</td>
</tr>
<tr>
<td>DO-/Stress-</td>
<td>53.06%</td>
<td>60%</td>
<td>49.12%</td>
</tr>
</tbody>
</table>

**Conclusions:** DO is more commonly seen in patients with pure urge incontinence as compared to those with mixed or urge incontinence. Valsalva induced leakage is only seen in 28% of patients with pure SUI documented on physical examination. This observation questions the value of valsalva induced leakage during UDS. Pure urge incontinent patients rarely demonstrate valsalva induced leakage at UDS.
**POSTER #22**

**M₂ MEDIATED CONTRACTIONS OF HUMAN BLADDER FROM ORGAN TRANSPLANT DONORS IS ASSOCIATED WITH AN UP REGULATION OF UROTHELIAL MUSCARINIC RECEPTORS**

Brett Lebed, Alan S. Braverman, Mitchell Linder, Michael R. Ruggieri, Sr. Temple University School of Medicine, Philadelphia, PA

**Introduction and objective:** While normal detrusor contraction is mediated by the M₃ muscarinic receptor subtype, the M₂ subtype is responsible for contraction in human patients with neurogenic bladder dysfunction as well as certain organ transplant donors. There has recently been increasing interest in the possible role of the urothelium on detrusor function. Radioligand binding studies have found similar muscarinic receptor densities in detrusor compared to urothelium of human bladders with a ratio of M₂ to M₃ receptors within the urothelium of 3:1. The aim of this study was to identify muscarinic receptor subtypes within human bladder urothelium, and the relationship of these subtypes to muscarinic M₂ or M₃ mediated bladder contraction.

**Methods:** Human bladders were obtained from organ transplant donors. The darifenacin affinity was determined by displacement of cumulative carbachol concentration response curves for each muscle specimen. Radioligand binding was used to quantify total muscarinic receptors and immunoprecipitation was used to quantify M₂ and M₃ subtypes in isolated muscle and mucosa from the bladders with high and low darifenacin affinity. In addition, muscle and mucosa receptors were quantified in 3 pig bladders for comparison.

**Results obtained:** Similar to previous findings, the affinity of darifenacin was high, consistent with M₃ mediated contraction for 4 bladders; low, consistent with M₂ mediated contractions for 4 bladders and intermediate for 4 bladders. The results in fmol/mg solubilized protein are summarized in the table below. Total, M₂ and M₃ mucosal muscarinic receptor density is statistically significantly greater in bladders with M₂ mediated contractions than those with M₃ mediated contractions (p<0.01). Total and M₂ muscarinic receptor density is approximately 2 fold higher and M₃ density is 4 fold higher in the muscle than the mucosa in human bladder. In contrast, total muscarinic receptor density is 2 fold higher in the mucosa than the muscle in the pig bladders.

<table>
<thead>
<tr>
<th></th>
<th>MUSCLE</th>
<th>MUCOSA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M₁</td>
<td>M₂</td>
</tr>
<tr>
<td>HUMAN, Low darifenacin affinity (M₂ mediated)</td>
<td>42.8 ± 4.1</td>
<td>25.0 ± 2.8</td>
</tr>
<tr>
<td>HUMAN, High darifenacin affinity (M₃ mediated)</td>
<td>50.44 ± 9.3</td>
<td>27.6 ± 6.7</td>
</tr>
<tr>
<td>PIG</td>
<td>82.8 ± 15.3</td>
<td>52.2 ± 8.8</td>
</tr>
</tbody>
</table>

**Conclusions:** In comparison between human and pig bladders, the distribution of muscarinic receptor subtypes in the muscle and mucosa are quite different. The upregulation of urothelial muscarinic receptors in human bladders with M₂ mediated contractions with no change in the muscle receptors points towards a possible role of the urothelium in this abnormal contraction.

Funded by PHS grant RO1DK43333 to MRR.
BLADDER DYSFUNCTION IN EXPERIMENTAL AUTOIMMUNE ENCEPHALITIS: A MOUSE MODEL FOR STUDYING BLADDER DYSFUNCTION IN DEMYELINATING DISEASE
Michael Aleman, Tara L. Frenkl, Guiming Liu, Lateef Saffore, Justin Johnson, Vincent Tuohy, Firouz Daneshgari, Cleveland Clinic Foundation, Cleveland, Ohio

Introduction and Objectives: Experimental autoimmune encephalitis (EAE) is a murine model of demyelinating disease, in which mice that are injected with myelin-specific proteins develop an autoimmune reaction to their own central nervous system myelin. The mice then develop gait and limb dysfunction in a relapsing and remitting pattern, mimicking multiple sclerosis (MS) in the human. EAE mice have been extensively studied in the field of neurology; to date, no studies have reported whether these mice develop bladder dysfunction in a manner similar to humans with MS. As EAE disease severity in mice can be measured using a 0 to 5 scale, with 5 being most severe, we also examined whether mice with more severe EAE disease develop distinct functional bladder pathology when compared to mice with moderate disease.

Methods: Mice were injected with myelin-specific proteins and an immune catalyst (inactivated B. pertussis), while controls were injected with vehicle and the immune catalyst. Mice were then followed for 3 months with disease scores recorded daily. Mice with moderate EAE symptoms during relapse (mean peak score 2.5) and mice with severe EAE symptoms (mean peak 4), as well as age-matched controls, underwent suprapubic tube implantation followed two days later with cystometric studies at a filling rate of 3ml per hour. Mean intercontraction interval (ICI), baseline bladder pressure (BBP), and contraction magnitude (CM) were measured and compared.

Results: The control mice (n=3) had a mean ICI of 6.6s (SD 2.2), BBP of 39cmH2O (SD 7.8), and CM of 4.2cmH2O (SD 1.2). The mice with moderate disease (n=2) had a mean ICI of 1.85s (SD 0.75), BBP of 82.5cmH2O (SD 3.5), and CM 9.3cmH2O (SD 4.3) (p < 0.05 for all three measures). All contractions correlated with voids in the control mice, whereas those in the moderate disease group did not. Contractions in the control group were peaked and of brief duration, while contractions in the disease group had a plateau-like appearance, suggestive of outlet obstruction. In the severe disease group (n=2), no contractions were observed, and the mean BBP was 12.5cmH2O (SD 3.5).

Conclusion: Mice with EAE disease do develop bladder dysfunction which appears to be correlated with the severity of disease. These data imply that mice with EAE develop bladder dysfunction that in some cases mimics detrusor overactivity with outlet obstruction or detrusor-sphincter dyssynergia, while others develop bladder hypotonicity. The EAE mouse model should prove useful as an animal model to study bladder dysfunction in MS and its response to novel therapies.

Supported by NIH Grant K08-DK02631 and the Research projects Committee of the Cleveland Clinic Foundation
**A STATISTICAL COMPARISON OF PAD NUMBERS VERSUS PAD WEIGHTS IN THE QUANTIFICATION OF URINARY INCONTINENCE**

Drew A. Dylewski,* Margaret G. Jamison,* Kristy M. Borawski,* Neil D. Sherman,** Cindy L. Amundsen* and George D. Webster*

*Duke University Medical Center, Durham, NC, **University of Medicine and Dentistry of New Jersey, Newark, NJ

**Introduction and objectives:** Pad per day (PPD) usage is a frequently relied upon measure of urinary incontinence. The 24-hour pad weight test (24PWT) is a reproducible test for quantifying incontinence volumes. We investigated whether PPD is a valid measure of urinary incontinence volumes.

**Methods:** This was a retrospective review of patients undergoing stress incontinence surgery from March 2002 to March 2004. Criteria for the study included a documented 24PWT and patient reported PPD usage. Grams of urine loss per pad (GPP) was calculated, providing a third measure of incontinence. Descriptive statistics for each of the three measures and age were computed, and correlations between all variables and significance were noted. Exploratory factor analysis was performed on the three measures of leakage and age for all patients over age 50.

**Results:** 145 male and 116 female patients met inclusion criteria. For men the mean PPD was 5.7 and mean 24PWT was 593g. For women mean PPD was 4.2 and mean 24PWT was 198g. Correlating 24PWT with PPD and GPP as a measure of volume of incontinence, GPP is the best measure of incontinence volume with a correlation of .80 for males and .88 for females (p < .01). PPD has a lower correlation of .64 for males and .61 for females (p < .01, R² = 38% overall). Factor analysis identified two components best associated with incontinence. A “leakage” component correlated best with 24PWT and GPP. Additionally we identified an “age” factor indicating that older patients do not increase overall 24PWT but do increase GPP while PPD decreases. The leakage factor accounts for 56% and age 26% of the variance measured by these four latent variables. For women within a representative 3–5 PPD incontinence range the 24PWT varied significantly by age: for women age 50–59 the mean 24PWT was 89g; for age > 70 it was 241g. GPP also varied significantly: for women age 50–59 the mean GPP was 25g; for age > 70 it was 65g (p < .05). Evaluation of patients at categorized PPD levels also demonstrated wide variability in 24PWT:

<table>
<thead>
<tr>
<th>PPD</th>
<th>1</th>
<th>3</th>
<th>5</th>
<th>7</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>8</td>
<td>47</td>
<td>38</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Mean 24PWT (g)</td>
<td>44.0</td>
<td>168.6</td>
<td>354.8</td>
<td>667.7</td>
<td>798.3</td>
</tr>
<tr>
<td>95% CI Lower Limit (g)</td>
<td>14.7</td>
<td>119.8</td>
<td>256.5</td>
<td>470.0</td>
<td>475.3</td>
</tr>
<tr>
<td>95% CI Upper Limit (g)</td>
<td>73.2</td>
<td>217.3</td>
<td>453.1</td>
<td>868.3</td>
<td>1121.2</td>
</tr>
</tbody>
</table>

**Conclusion:** PPD is not a valid measure of incontinence as this variable only measures 38% of the variation of urinary incontinence volume. Patients at a given PPD level present with a wide range of 24PWT values. Furthermore, PPD is biased by age; PPD decreases and GPP increases with advancing age. This suggests that future incontinence studies should report 24PWT to ensure the most reliable and uniform data.

Funding source: none
PATIENT RELATED RISK FACTORS FOR RECURRENT STRESS URINARY INCONTINENCE IN WOMEN UNDERGOING REPEAT ANTI-INCONTINENCE SURGERY

Firouz Daneshgari 1, Courtenay Moore, Hassan Frintjari, Denise Babineau 2
1 Glickman Urological Institute & Lerner Research Institute and the 2Department of Quantitative Health Sciences at the Cleveland Clinic Foundation, Cleveland, OH

Introduction & Objectives: It is estimated that stress urinary incontinence (SUI) affects between 4 and 35% of American women with over 165,000 anti-incontinence surgical procedures performed annually in the United States alone. Of these 165,000 procedures, at least one third are done for recurrent SUI. Surgeons have traditionally attributed recurrent SUI to a technical failure resulting from surgeon inexperience, faulty surgical technique or incorrect diagnosis of genuine SUI. Recurrent SUI is reported at rates of 10-60% after anterior colporrhaphy, 5-28% after Burch procedures, 5-60% after bladder neck needle suspensions and 3-12% after pubovaginal sling procedures. However, not all the causes of recurrent SUI are related to surgical techniques or the type of material used. It is plausible that some forms of SUI (intrinsic sphincteric deficiency versus hypermobility) make women more vulnerable to recurrent SUI and that certain disease processes (chronic obstructive pulmonary disease) or habits (tobacco use) place women at an increased risk for recurrent SUI.

In this study we hypothesized that the risk of recurrent SUI in patients who failed a previous anti-incontinence procedure was related to differences in the clinical presentation of their SUI. To test this hypothesis, we designed a retrospective case-control study to identify patient-related risk factors among women who had undergone surgical treatment of SUI at our institution between 1990 and 2002.

Methods: A case-control study of women 18-75 years of age with signs and symptoms of SUI (genuine or mixed) who underwent an open anti-incontinence procedure between 1990 and 2002 at the Cleveland Clinic Foundation was conducted. Cases were defined as patients who underwent more than one anti-incontinence surgery, and controls were defined as patients who underwent only one anti-incontinence procedure with follow-up during that time period. Cases and controls were matched for type of surgery, surgeon and date of surgery within one year. A total of 47 variables were examined including: age, parity, type of incontinence, urodynamic findings, medical history (presence of peripheral vascular, pulmonary and cardiac disease), past and concomitant pelvic surgery, social history (alcohol and tobacco use), and body mass index. A univariate conditional logistic regression was first done to determine which variables were potential protective or risk factors. A multivariate conditional logistic regression analysis was then used to determine which variables were independently significant.

Results: The records of 2550 women with stress or mixed urinary incontinence who underwent an open surgical procedure between 1990 and 2002 were reviewed. Fifty-three cases and 145 controls were identified. Each case was matched with 1-4 controls. The data from cases and controls was collected using a standardized form. Using a significance level of p≤ 0.05, the possible risk factors for recurrent SUI based on a univariate analysis were: diabetes mellitus (OR 3.579; p-value 0.026), presence of pelvic organ prolapse (OR 5.635; p-value 0.03) and concomitant rectocele repair (OR 5.353; p-value 0.04). Smoking (OR 0.497; p-value 0.068) was marginally significant protective. After applying multivariate conditional logistic regression analysis diabetes mellitus (adjusted OR 3.413; p-value 0.045), presence of POP (adjusted OR 8.195; p-value 0.021), and concomitant rectocele repair (adjusted OR 17.079; p-value 0.012) remained as significant risk factors, while smoking (adjusted OR 0.264; p-value 0.012) remained a significant protective factor. Body mass index, age, race, parity and estrogen status were not identified as risk factors for recurrent SUI requiring a second anti-incontinence procedure.

Conclusion: In a cohort of women with stress or mixed urinary incontinence treated at the Cleveland Clinic Foundation between 1990 and 2002, women with diabetes mellitus, pelvic organ prolapse, or concomitant rectocele repair were at increased risk of undergoing a repeat anti-incontinence surgery while women who smoked were at a slightly decreased risk.
HOW SAFE IS SACRAL NERVE STIMULATION FOR PELVIC FLOOR DISORDERS- MAYO CLINIC EXPERIENCE
Paul Pettit MD, Anita Chen MD, Karen Bryant PA-C, Mayo Clinic Jacksonville Florida

Introduction: Sacral nerve stimulation has become an integral part of therapy for pelvic floor disorders. It is a minimally invasive procedure, reversible and has enduring effect for patients (male and female) that have failed physical therapy, pharmacologic efforts and surgery. It is FDA approved for urinary urge, frequency, urge incontinence and non-obstructed urinary retention. It has also been of great benefit in patients with fecal incontinence and neuropathic pelvic pain disorders.

Objective: To highlight the minimal risk of complications or adverse events with the staged technique of sacral nerve stimulation.

Methods: We reviewed the last 105 cases of sacral nerve stimulation at the Mayo Clinic. All cases were carried out with C-arm guidance, sensory feedback (conscious sedation) and staged implant approach. The complications are described, highlighting the indications, failures and length of first stage (test phase)

Results: We reviewed 105 patients. There were 98 women and 7 men, average age of 61.5 years. Indications included 39 patients with urge, frequency and urge incontinence; 32 patients for non-obstructed urinary retention; 25 patients for neuropathic pain (pelvic floor, rectal and bladder); 7 patients for fecal incontinence; 2 patients for obstructed defecation.

23 of 105 first stages failed to achieve adequate improvement. The indications for the 23 failed first stages were 10 patients with retention, 6 patients with urge frequency urge incontinence, 4 patients with neuropathic pain, 1 patient with fecal incontinence and 2 for obstructive defecation.

There were no occurrences of lead migration, undesirable change in voiding or bowel function, pain at the lead implant or technical problems during implant.

We identified four infections at 44 days, 22 days and 12 days of first stage implant. One infection was found 3 months post implant of the IPG. The average first stage was 19.5 days (range 2-70 days). The organism identified was staphylococcus aureus in three cases and MRSA in one (22 days). Other adverse events included fractured quadrapolar lead in four patients (all grip lock anchors), three fractured percutaneous extension leads during the first stage, and four painful IPG sites required revision.

Conclusion: The risk of surgical revision was 10.4% (11 of 105). Most reports are close to 40% revision rate. Since the switch to the tined lead there have been no fractures of the quadrapolar leads. The only significant complication that we discuss with our patients is a low risk of infection. From our experience this needs to be managed by explanting and tincture of time until the infection has resolved. We feel our revision rates are low because of use of special skin prep and shield, silicone paste at the IPG and extension connection, use of a pressure wash and antibiotic at second stage and good skin antibiotic coverage.

There are no conflicts of interest, or financial funding.
POSTER #27

SURGICAL INTERVENTIONS FOLLOWING INTERSTIM® SACRAL NERVE MODULATION IMPLANT – 11 YEARS EXPERIENCE
Jerzy B Gajewski, Dalhousie University, Halifax, N.S.

Objectives: Sacral Nerve Stimulation (SNS) is currently gaining popularity in the treatment of Overactive Bladder (OAB), Painful Bladder Syndrome (PBS) and Voiding Dysfunction (VD). Re-operation rate remains however a concern. There are very few reports addressing the issue of re-operation after SNS implant. We are reporting an 11 years experience with SNS from our centre.

Methods: Retrospective review of the patient data base was performed to assess incidence and timing of surgical re-intervention after SNS implant. Seventy consecutive patient implanted between 1994 and 2005 were included in the study. One patient died of Ischemic Heart Disease 9 years after implant and one patient was lost to follow-up 4 years after implant. Indications for implant were; OAB 40%, PBS 43% and VD 17% after successful temporary stimulation test. There were 66 women and 4 men in the study. Mean age at implantation was 47 years. Mean follow-up was 4 years.

Results: Overall 40% of patients had surgical reintervention including explantations. Thirty-seven procedures were performed in 28 patients. Explanation rate was 13%, and specifically for OAB 11%, PBS 16% and for VD 8%. Eight out of nine explantations were done within first two years. All but one, were removed from women. Overall revision rate was 30%. This includes surgery to revise lead, IPG, extension cord or combination. Twenty-eight patient had one intervention, 8 two intervention and one patient three. Surgery related to lead reposition were done on average within 20 months and revision of the IPG on average within 36 months of the initial implantation. Surgical interventions, including explantation, were more frequent in the first 5 years (57% of patients) in compare to the last 5 years (29% of patients).

Conclusions: SNS procedure is an important minimally invasive treatment option for patients with OAB, PBS and VD who failed conservative treatment. Our results showed acceptable re-operation rate. It is rather simple procedure which requires however very careful patient selection and meticulous surgical techniques. Learning curve of the surgical technique might not be very long; however gaining experience in patient evaluation and managing complications is a more lengthy process. Initially, 2/3 of our patients required further surgery. At present, by gaining more experience and by perfecting the equipment only 1/3 of patients need surgical reintervention. Formal teaching process and hands-on workshops are excellent and necessary educational tools for physicians planning to perform this procedure.

Funding: none
Neurophysiological evaluation (NPE) in patients addressed to Sacral Neuromodulation (SNM) revealed an undisclosed neurogenic alteration as a possible cause of imbalance in afferent input to cortical area.

Moreover SNM seems to act on the afferent pathway with a specific modulating effect related to parameters of stimulation: an increase from 21 to 40Hz leads to a decrease in Pudendal Somatosensory Evoked Potentials (PSEPs) P40 latency resulting in a sort of facilitation on afferent impulse transmission suggesting a reset of the processing mechanism.

We hypothesized that the imbalance in afferent input can be modified by SNM leading to a neuroplastic effect on neurocontrol.

From Nov 2001 to Sept 2005 215 pts underwent NPE (T0): in 111 pts (51.62%) implanted with SNM PSEPs after 1 (T1) and 24 months (T2) were confronted.

In 4 pts (3.6%) implanted for idiopathic detrusor overactivity, clinical efficacy never was fully achieved and with a slow decline in time, a return to PSEPs T0 P40 was found in T2: SNM can modify the plasticity of neurocontrol mechanism, but need to be reinforced, perhaps in correlation with the underline pathophysiology of symptom.

In 5 pts (4.5%) implanted for dysfunctional voiding in whom SNM was switched off with a persistent clinical efficacy no difference in PSEPs at T1 and T2 was seen: if a physiological restoration is achieved with SNM, the effect on neurocontrol mechanism persists in a normal fashion.

NPE sheds light to the mechanism by which central nervous system modify its organization under SNM.
**COMPARISON BETWEEN CHANGE IN 24-HOUR PAD WEIGHT, AUA SYMPTOM SCORE, ICIQ-SF SCORE, AND PGI-I SCORE IN PATIENT EVALUATION AFTER MALE PERINEAL SLING**

Christian Twiss, Melissa Fischer, Victor W. Nitti  
New York University, New York, NY

**Introduction and Objectives:** The optimal method of patient evaluation after anti-incontinence surgery is controversial. We assessed the utility of 3 patient self-assessment instruments, namely, the AUA symptom score (AUASS), the ICIQ-SF score (ICIQ), and the PGI-I score (PGI-I) by correlating them with an objective outcome, the change in 24-hour pad weight, after a male perineal sling.

**Methods:** Twenty-two men with urodynamically confirmed stress incontinence underwent a male perineal sling. Patients were evaluated preoperatively and postoperatively with a 24-hour pad test, the AUASS and the ICIQ. AUASS was divided into voiding and storage subscores (VS, SS). Patients also completed the PGI-I postoperatively. Postoperative changes in study parameters were compared to the preoperative values via the paired t-test. Pearson’s rho was used to assess correlations among the study parameters.

**Results:** The mean age and months of follow-up for the study population was 67.7y (SE ± 1.8y) and 11.6 mo (SE ± 1.5 mo), respectively. There were significant reductions in 24-hour pad weight, ICIQ score, and the 3 ICIQ subscores composing the total ICIQ score (see table). There was no significant change in AUASS, SS, or VS. Both PGI-I score and the change in total ICIQ score correlated strongly with percent change in 24-hour pad weight and each other. In addition, the change in all 3 ICIQ subscores correlated with percent change in 24-hour pad weight and with PGI-I score. The change in total AUASS, SS, and VS did not correlate significantly with any study parameter. (see table)

**Conclusions:** The percent change in 24-hour pad weight after the male sling strongly correlates with both patients’ perception of improvement as assessed by the PGI-I and with change in incontinence symptoms as assessed by the ICIQ. All 3 ICIQ domains (subscores) contribute to patients’ perception of improvement after a male sling as shown by their strong correlation with change in 24-hour pad weight and PGI-I. Total AUASS, SS and VS do not reflect objective or subjective incontinence improvement after the male sling. The PGI-I and ICIQ-SF are brief, simple questionnaires that reflect the subjective and objective change in degree of incontinence after male stress incontinence treatment.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean Preop ± SE</th>
<th>Mean Postop ± SE</th>
<th>Mean Change ± SE</th>
<th>Correlations between % Pad Weight Change, PGI-I and AUA scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-H Pad Weight (g)</td>
<td>401 ± 86</td>
<td>117 ± 49</td>
<td>-284 ± 68 †</td>
<td>-0.83 †</td>
</tr>
<tr>
<td>%Pad Weight Change</td>
<td>--</td>
<td>--</td>
<td>47.0% ± 22.9%</td>
<td>-0.73 †</td>
</tr>
<tr>
<td>PGI-I Score</td>
<td>--</td>
<td>2.1 ± 0.3</td>
<td>--</td>
<td>-0.73 †</td>
</tr>
<tr>
<td>Total ICIQ Score</td>
<td>16 ± 0.7</td>
<td>9.6 ± 1.3</td>
<td>-6.4 ± 1.3 †</td>
<td>-0.60**</td>
</tr>
<tr>
<td>ICIQ Question 3</td>
<td>4.4 ± 0.2</td>
<td>3.2 ± 0.3</td>
<td>-1.2 ± 0.3 †</td>
<td>-0.60**</td>
</tr>
<tr>
<td>ICIQ Question 4</td>
<td>4.3 ± 0.3</td>
<td>2.5 ± 0.3</td>
<td>-1.9 ± 0.4 †</td>
<td>-0.51*</td>
</tr>
<tr>
<td>ICIQ Question 5</td>
<td>7.3 ± 0.6</td>
<td>3.9 ± 0.9</td>
<td>-3.4 ± 0.8 †</td>
<td>-0.65**</td>
</tr>
<tr>
<td>Total AUA Score</td>
<td>11.8 ± 1.9</td>
<td>12.32 ± 2.2</td>
<td>0.54 ± 1.6</td>
<td>-0.09</td>
</tr>
<tr>
<td>AUA Storage Score</td>
<td>7.1 ± 1.0</td>
<td>6.1 ± 0.9</td>
<td>-1.0 ± 0.7</td>
<td>0.25</td>
</tr>
<tr>
<td>AUA Voiding Score</td>
<td>4.7 ± 0.9</td>
<td>6.2 ± 1.4</td>
<td>1.5 ± 1.2</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; †p<0.001
DETERMINING THE COURSE VARIATION OF THE DORSAL NERVE OF THE CLITORIS: IMPLICATIONS FOR PELVIC ORGAN INTERVENTIONS

Ashwin Vaze, Howard Goldman, Sandip Vasavada, Raymond Rackley, Joseph Abdelmalak, J Stephen Jones, Kenneth Gustafson. The Cleveland Clinic Foundation, Case Western Reserve University, Cleveland, Ohio

Introduction and Objectives: Knowledge of the course and variation of the distal part dorsal nerve of the clitoris (DNC) is important to avoid any iatrogenic injury to the DNC in the space anterior to the symphysis pubis. This information may be applicable for neuromodulation and construction of a computer-teaching model.

Methods: 6 human female cadavers of variable body weights were sectioned. Measurements of the distal course to fixed structures were recorded. The anatomy of the nerve was noted bilaterally, measurements tabulated.

Results obtained: The DNC distally, pierced the perineal membrane 2.7cm (mean), (range 2.4- 3cm), lateral to the external urethral orifice. It traversed 1.9cm (mean), (range 1.8- 2.2cm), along the Bulbospongiosus Muscle before heading posterior to the crura. The DNC reappeared hooking over the crura to lay 2.3cm (mean), (range 2-2.5 cm) on the anterolateral surface of the body of the clitoris. Then it divided into two cords 0.5cm (mean), (range 0.5-1cm) long and terminating 1cm (mean), (range 1-1.5 cm) short of the tip of the glans clitoris.

Conclusions: This study is the first in adult humans to demonstrate that the visible bundles of the dorsal nerve of the clitoris divide but does not reach the tip of the glans clitoris. This unique anatomy was consistent over all the cadavers. This study provides a road map for future neuromodulation interventions.
TELEMETRY BASED METHOD TO SCREEN NEW DRUG CANDIDATES IN FEMALE RATS WITH URETHRAL OBSTRUCTION

V. Karicheti, E.A. Stone, C.L. Langdale, M. O. Fraser, C. Chien, and K.B. Thor, Dynogen Pharmaceuticals, Inc PO Box 12501 Durham, NC 27709

INTRODUCTION: Partial bladder outlet obstruction (BOO) causes overactive bladder and symptoms of frequency, urgency and nocturia. Previous studies of bladder pathophysiology in BOO animal models have relied on external catheters and non-physiological filling rates. The aim of the present study was to measure outlet obstruction-induced changes in bladder function with natural urine production and bladder filling at multiple time points in the same animal using telemetric pressure recording.

METHODS: Partial BOO was created in 10 female sprague-dawley rats (175-200 grams). A nylon ligature was tied around the proximal urethra limiting the bladder outlet opening to 1.0 mm. Telemetry (TTY) transmitter (model TL11M2-C50-PXT; DSI, MN, USA) body was surgically secured in the peritoneal cavity and the tip of the pressure transducer catheter inserted into the bladder dome and secured. The TTY unit’s biopotential leads were placed subcutaneously to record ECG. Animals were placed in metabolism cages to record micturition frequency and volumes during TTY recording. Seven control animals (non-BOO) were similarly implanted with TTY devices.

RESULTS: Baseline bladder pressure was about 5 mmHg in the first week post-implantation and increased to 10-15 mm Hg at week 2-3, where it remained for the rest of the study. Baseline pressure in non-BOO rats remained constant at 5 mmHg throughout the 7 week study period. After week 2 and throughout the remainder of the study, brief (10 sec), highly rhythmic (2-3 per minute), low amplitude (5-10 mmHg above baseline) contractions were continuously recorded throughout the filling stage in all 10 BOO rats. These rhythmic contractions were not associated with voiding. Large amplitude (30–60 mmHg above baseline), long duration (1-3 minutes) contractions up to 6 per hour were also observed. Some of the large contractions were associated with voiding. Rhythmic contractions were reversibly abolished by cromakalim (0.3 mg/kg p.o.), a KATP channel opener, without affecting large voiding contractions. Cromakalim also reversibly increased heart rate due to vasodilatation, a known effect. Mecamylamine, a ganglion blocking agent, inhibited the large contractions without affecting the small rhythmic contractions. These rhythmic contractions and non-voiding large contractions were never seen in 7 control TTY rats.

CONCLUSIONS: In vitro contractility studies show that myogenic contractions in BOO bladder strips are larger and more sustained than contractions in control bladder strips, and gap junctions have been proposed as an explanation for coordination of the myogenic activity. In vivo TTY recording of bladder function following BOO has demonstrated prominent rhythmic contractions that are myogenic in origin. These in vivo contractions may correlate to the enhanced in vitro contractility. Non-voiding contractions and uninhibited contractions have been reported in rats and humans, respectively, using conventional cystometry, but the origin is not well understood. Using TTY we have demonstrated the pharmacological separation of myogenic and neurogenic contractions in bladder following outlet obstruction.
HIGH VOLUME PROVIDERS PERFORM MORE PROLAPSE REPAIRS AT THE TIME OF SLING SURGERY
Jennifer T. Anger, Mark S. Litwin, Qin Wang, Christopher Pashos, and Larissa V. Rodriguez, UCLA, Los Angeles, CA

Introduction and Objective: Numerous studies have documented a relationship between provider volume and outcomes for a variety of surgical procedures, suggesting, if not demonstrating, that providers who perform a high volume of procedures deliver better quality of care and therefore better outcomes. In this study we sought to determine the impact of surgeon volume related to sling surgery in subjects with urinary incontinence.

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. We analyzed the impact of surgeon volume on the number of concomitant prolapse procedures performed at the time of, and in the year after, sling placement. Women undergoing pubovaginal sling procedures between January 1, 1999 and July 31, 2000 (the index period) were identified by CPT codes and tracked for 12 months. CPT procedure codes identified specific types of prolapse repair. New prolapse diagnoses occurring after the index sling procedure were identified with ICD-9 codes. The number of prolapse repairs performed both at the time of the sling and within one year after the sling procedure were stratified empirically by cumulative surgeon volume.

Results: In these data representing the claims of a random 5% of Medicare beneficiaries, 1,356 sling procedures were performed during the index period. This extrapolates to about 27,120 slings performed on the Medicare population during the study period. Concomitant prolapse repairs were performed in 34.4% of sling cases. High-volume providers (upper 25th percentile) performed significantly more prolapse repairs at the time of sling surgery than did low-volume providers (40.8% vs. 32.4%, p <0.006). Consequently, low-volume providers performed nearly twice the number of prolapse repairs during the first postoperative year following the index sling procedure (p<.0001). Subjects who underwent sling surgery by a low-volume provider were also more likely to be newly diagnosed with prolapse after their sling procedure.

Conclusions: High-volume surgeons were more likely to perform concomitant prolapse surgery at the time of sling surgery, whereas low-volume providers had higher reoperation rates to correct prolapse during the first postoperative year. This suggests that high-volume providers are more likely to diagnose and manage prolapse at the time of anti-incontinence surgery. The higher rate of new prolapse diagnoses and repairs in patients undergoing a sling surgery alone may be due to a failed diagnosis at the time of the original sling surgery. Alternatively, it may indicate that performing a sling alone may, in fact, exacerbate prolapse symptoms.

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Introduction and Objective: Transurethral ethanol injection, with the ProstaJect™ Ethanol Injection System (AMS) was initially evaluated in Europe in 1999 in a large multi-center study. Since then, three additional multi-center studies (Global Evaluation Study, Randomized India Study and US Clinical Trial) have been carried out. This evaluation reports on the global outcome and safety of TEAP.

Methods: 279 symptomatic men from 37 worldwide institutions underwent a TEAP procedure. Ethanol injection was performed with the ProstaJect™ injection system. Alcohol dose was determined by prostate size based on TRUS measurements. Urinary catheter was left in place for 96 hours and follow-up visits occurred at 1, 3, 6, 12 and 24-months. Injection technique was modified and implemented in the US Clinical Trial. Subjects were evaluated for IPSS, QoL and Qmax. Adverse events were prospectively reported.

Results: The European experience, Global Evaluation Study and Randomized India Study have followed 157 subjects through the 1-year evaluation period and 20 subjects through to 2-years in an on-going study. By the 6-month evaluation, IPSS and QoL scores indicated a 52%-55% improvement and Qmax demonstrated a 45% improvement, which was sustained to 2-year visit. Similarly, the US Clinical Trial reports on 59 subjects completing 6-month follow-up, indicating consistent findings with other trials. Safety events reported in the US Clinical Trial demonstrated over 15% decreased incidence among irritative voiding, hematuria, urinary retention and UTI compared to other trials. The severe adverse events occurring in the European study have not been reported in following studies (Global Evaluation, Randomized India and the US Clinical Trial). All other safety events are consistent with BPH and/or treatment of BPH.

Conclusions: These results demonstrate that TEAP provides clinical relief in men with symptomatic BPH, which are sustained through to 2-years. The results have been reproduced in different multi-center studies. The safety and adverse event profile has improved with each successive trial.
**Objective:** Sacral neuromodulation has been an approved form of treatment for voiding dysfunction since the late 1990’s. Although the mechanism of action is not fully understood, voiding dysfunction at both extremes of frequency and urinary retention may respond to the treatment. The purpose of this study is to review one institution’s experience with this form of treatment.

**Methods:** A retrospective review was performed of patients undergoing neuromodulatory treatment in our practice from 12/1997 to 12/2004. After Institutional Review Board approval, consents were obtained from 104 patients, representing 56% of our neuromodulatory patient population. Paired t-tests were performed where applicable.

**Results:** Of our population, 87% were female and 13% were male. Average age at implant was 50 years +/- 13.4 years. Duration of symptoms before implantation was 116 months (range 9 - 600 months). 80% were implanted for a predominant complaint of urgency and frequency (U/F). Overall, 22% had U/F only, 38% had concomitant urge incontinence, and 20% had concomitant mixed incontinence. 20% were treated for non-obstructive urinary retention. Additionally, 46.2% had pelvic pain, 58.6% had bowel complaints, 51% reported sexual dysfunction, and 8.6% had diagnosed neurological pathology. Mean voiding parameters as described by pre-implant voiding diaries revealed the following: 11.6 (+/- 5.3) voids per 24 hours; 2.2 (+/- 1.8) voids per night; 4.5 (+/- 4.6) leaks per 24 hours; and 2.0 (+/- 2.5) pads per 24 hours. Statistically significant improvements post-implantation were noted with mean decreases in the following: 4.1 voids per 24 hours; 1.0 void per night; 3.7 leaks per 24 hours; and 2.2 pads per 24 hours (all p<0.05). Final voiding parameters were: 8.5 (+/- 4.8) voids per 24 hours; 1.5 (+/- 2.0) voids per night; 1.3 (+/- 2.6) leaks per 24 hours; 0.3 (+/- 0.7) pads per 24 hours. Sustained subjective improvement was >50%, >80%, and >90% in 69%, 50%, and 35% of patients, respectively. By quality of life survey, 60.5% of patients were satisfied and 16.3% were dissatisfied with current urinary symptoms. Only 8.6% of patients had abandoned therapy, making up a significant portion of those dissatisfied with current urinary symptoms. Overall, 53% of patients experienced at least one reportable event (RE) attributable to either lead or IPG. RE’s include lack of efficacy, loss of efficacy, hematoma/seroma, infection, migration, pain, undesirable change in sensation, and device malfunction. In this population, 47% of leads were tined while 53% were fascial. Tined leads had an overall lower RE rate as compared to fascial leads: 35% and 70%, respectively. With respect to the leads, 21 patients (13.5%) experienced a lack of efficacy during Stage I trial; 22 (14%) experienced a loss of efficacy at a mean of 350 +/- 384 days (range 7 – 1449 days).

**Conclusions:** Sacral neuromodulatory therapy is an effective method for treating voiding dysfunction. Although 53% of patients experienced at least one RE, most were not severe and did not appear to affect the continued use of this therapy, revealed by the low 8.6% discontinuation rate. With advanced technology, such as tined leads, the RE rate is decreasing. Further analyses of subsets of this population are currently underway.
The Impact of Sacral Nerve Stimulation on Patients Reporting Nocturnal Enuresis

Tamra E. Lewis MD, Ann Lavers MD, Suzette E. Sutherland MD, Jyothi Kesha MD, Steven W. Siegel MD
Metro Urology, Minneapolis/St. Paul, MN. Funding provided, in part, by Medtronic, Fridley, MN

Introduction/objective: Sacral nerve stimulation (SNS) has been approved to treat urinary urgency/frequency, urge incontinence and non-obstructive urinary retention. Its impact on patients with nocturnal enuresis (NE) has not been well studied. We reviewed our experience of the use of SNS in patients reporting NE.

Methods: A retrospective chart review was performed of patients undergoing SNS at our center from 12/1997 to 12/2004. After Institutional Review Board approval, consents were obtained from 104 patients, representing 56% of our SNS patient population. Paired t-tests and chi-square were performed where applicable.

Results: NE was a complaint of 27/104 patients on initial presentation (25.9%). Mean age at implant was 49.8 (+/-12.4) (range 21 to 80). Three patients (11%) were male and 24 were female (89%). Primary indications for the therapy were urgency/frequency in 24 (89%) and non-obstructive urinary retention in 3 (11%). Of the patients with urgency/frequency, 3 had urgency/frequency alone (11%), while 18 had associated urge incontinence (78%). Mean voiding parameters as described by pre-implant voiding diaries revealed 8.9 (+/- 4.5 voids) per 24 hours, 1.9 (+/- 1.4) voids per night, and 6.7 (+/- 5) leaks per 24 hours. The follow-up after permanent implantation was 22.7 months (range 5-64). Improvements post-implantation were noted in the following: mean decrease of 2.4 voids/24 hours (p=0.24), 0.1 voids/night (p=0.26) and 7.3 leaks/day (p<0.005). 9 patients (33%) reported 90% or greater improvement in their urinary symptoms, and 19 patients (70%) reported greater than 50% improvement in their symptoms. When compared to the non-NE patients in the database there was no difference in improvement between NE and non-NE patients treated with SNS (χ2=0.16).

Conclusion: Nocturnal enuresis is a common symptom present among patients undergoing SNS at our institution. Patients reporting NE are as likely to experience significant improvement in their urinary symptoms as patients without NE. A more detailed analysis of this subset of patients is underway.
FISTULA AND FETAL OUTCOMES IN PATIENTS ACHIEVING PREGNANCY AFTER VESICOVAGINAL FISTULA REPAIR IN NIGERIA
Kristin Chrouser, MD, Deborah Lightner, MD, and Carolyn Kirschner, MD
Mayo Clinic College of Medicine Rochester, MN and Evangel VVF Center, Jos, Nigeria

Background and Objectives: Women with a history of vesico-vaginal fistula from obstructed labor often have difficulty achieving and maintaining subsequent pregnancies, likely due to cervical and uterine damage. In those that are able to conceive, elective delivery by cesarean section (C-S) is recommended. Little is known about fetal outcomes and fistula recurrence in patients with a history of VVF repair who present for C-S.

Materials and Methods: The available medical records of Nigerian women who presented for C-S after VVF repair were evaluated from 2/2001-1/2004 to determine VVF history, maternal and fetal outcomes, and whether they had VVF recurrence post-operatively. An additional cohort of patients who presented for C-S from 8/2003-1/2004 without a history of VVF were also analyzed in order to provide a baseline for expected fetal outcomes in this population.

Results: 79 women were evaluated and 46 of these had a history of successful prior VVF repair. Of the patients with no history of VVF (n=33), 100% of infants were alive at birth and at dismissal. Of VVF patients (n=46) fetal outcomes included: 2% stillborn, 4% died prior to dismissal, while the remaining 94% were alive at the time of dismissal. Of non-VVF patients, 60% presented in labor (prior to C-S). Of VVF patients, 33% presented in labor (prior to C-S), including all the mothers (n=3) whose infants died (either stillborn or in the first several days of life). Two of these women developed recurrent VVFs and subsequently underwent successful repair.

Conclusions: Some women with a history of VVF repair can successfully conceive and carry pregnancies to term. Poor fetal outcomes were associated with C-S performed after the onset of labor, although overall fetal viability rates were high. Fistula recurrence and poor fetal outcome were correlated, although the number of recurrences was small.
ANGIOTENSIN II PLAYS A ROLE IN INTERSTITIAL CYSTITIS – A MURINE MODEL
Christina Escobar, Hardeep Phull, Todd Purves, Mohamad Salkini, Joel Funk, Duan Copeland, Craig V. Comiter, University of Arizona, Tucson, AZ

Introduction and Objective: Interstitial cystitis (IC) likely occurs via a variety of etiologic factors acting through multiple pathogenic mechanisms. One such mechanism may be auto-immune. Angiotensin II (AII) has been implicated as a key mediator in numerous autoimmune disorders and can also mediate vascular congestion, ischemia, scarring, edema, and tissue damage. AII has recently been identified throughout the genito-urinary tract. The potential role of angiotensin antagonism has not previously been explored in IC.

Methods: Three groups of 8 Female Balb/cAN mice (18-22 grams) were immunized with a bladder homogenate from syngeneic mice with complete Freund’s adjuvant (CFA) at 2-week intervals for 6 weeks. Group 1 received a daily dose of AT-1 receptor blocker (losartan), group 2 received a daily dose of AT-2 receptor blocker (PD 123319), group 3 remained untreated (IC). A control (non-immunized) group and a sham (CFA- injected) group were also studied. Single animals from the control, sham, and IC groups were placed in cages lined with chromatography filter paper 7 weeks after the initial immunization for 6 hours during the day to sample their urinary frequency in order to confirm the symptomatic validity of the autoimmune cystitis model. The papers were then removed and spot counts were performed under UV light. Mice were sacrificed at 10 weeks. Excised bladders were fixed, sectioned and stained with hematoxylin and eosin (H&E) and Masson’s Trichrome (TRI) to assess for inflammatory infiltrates, edema, tissue structure, and fibrosis.

Results Obtained: IC mice demonstrated 104 ± 28 urinations per 6 hours, which was significantly more than sham (45 ± 22 voids, p=0.01) and control mice (62 ± 16, p=0.05, Figure 1). Pathologically, all control and sham bladders appeared grossly normal, without fibrosis, thickening or adhesions. In 5 of 7 (71%) surviving IC mice, dense peritoneal adhesions were observed, and the bladder wall appeared grossly thickened. In 2 of 7 (29%) of the surviving AT-1 mice, and in all of the AT-2 mice, adhesions and bladder thickening were observed, although to a lesser extent than in the IC mice. Sham and control mice demonstrated no inflammation or edema on H&E. IC bladders demonstrated severe bladder-wall inflammation, with predominantly polymorphonuclear neutrophils confined to the submucosa and lymphocytes in perivascular areas. Submucosal edema was observed, with multiple areas of urothelial detachment from the lamina propria. The AT-1 mice maintained the structural integrity of their bladder walls with no appreciable inflammation, edema or lymphocytic infiltrates, similar to the sham and control groups. By contrast, all of the AT-2 treated mice demonstrated moderate inflammation of the bladder wall and minor urothelial detachment. There was no abnormal collagen deposition or fibrosis observed on TRI in any of the mouse bladders.

Conclusions: AT-1 receptor blockade ameliorated the submucosal fibrosis, edema, urothelial detachment, and lymphocytic infiltration seen in IC mice. This was also achieved by AT-2 receptor blockade, but to a lesser extent. There were no changes in the levels of collagen deposition in the experimental groups. These findings have potentially important clinical implications for a possible novel pharmacological treatment for IC.
Introduction and Objectives: One of the key symptoms of overactive bladder (OAB) is urge urinary incontinence (UUI). However, many OAB patients present with both urge and non-urge incontinence episodes. Recent clinical data support the use of an anticholinergic agent in treating the urge component in these patients. The purpose of this study was to investigate differential effects of treatment with extended-release (ER) oxybutynin 10 mg daily on urge and non-urge incontinence episodes in a large group of women with OAB.

Methods: Data were pooled from 2 12-week, multicenter, randomized, double-blind trials comparing ER oxybutynin 10 mg daily with either immediate-release tolterodine 2 mg bid or ER tolterodine 4 mg daily in patients with OAB and UUI or mixed incontinence with a predominant urge component. Only outcomes for patients treated with ER oxybutynin were considered in this post hoc analysis. Reduction from baseline in incontinence episodes for patients with UUI only (Group 1) was compared with that for patients with both UUI and non-urge incontinence episodes (Group 2). In addition, the effect of treatment on non-urge incontinence episodes in Group 2 was examined.

Results: Approximately 94% of the evaluable population was female. Final on-therapy assessments were available for 559 of 576 patients treated with ER oxybutynin in the 2 studies. Of these, 265 (47.4%) reported only UUI at baseline and 294 (52.6%) reported a mix of UUI and non-urge incontinence episodes. Overall, the mean weekly number of incontinence episodes at baseline was significantly greater in Group 2 than Group 1 (44.9 vs 31.5, P<.001). Group 2 also reported more weekly UUI episodes at baseline than Group 1 (35.1 vs 31.5, P=.008). In Group 1, the weekly mean number of UUI episodes decreased by 72%, from 31.5 (±15.92) at baseline to 8.9 (±5.31) at last observation. In Group 2, UUI episodes also decreased by 72%, from 35.1 (±5.81) to 9.9 (±13.67). A similar decrease (76%) in non-urge incontinence episodes was observed, from 9.8 (±9.63) to 2.4 (±5.21) at last observation (last observation carried forward, LOCF). At LOCF 27% of Group 1 patients and 21% of Group 2 patients had achieved total dryness (P=.093). However, in Group 2, 64% of patients were completely free of non-urge incontinence episodes, compared with 27% who reported freedom from UUI episodes.

Conclusions: In this pooled analysis, treatment with ER oxybutynin resulted in similar reductions in UUI episodes in both groups, as well as an unexpected reduction in non-urge incontinence episodes. Nearly two-thirds of patients reported no non-urge incontinence episodes following treatment. The non-urge episodes experienced by many OAB patients are often assumed to represent stress incontinence; however, there is considerable variability across trials with respect to the criteria used to establish a diagnosis of stress incontinence. The present analysis further challenges this assumption by demonstrating a plausible class of non-urge incontinence that responds well to anticholinergic therapy. These findings suggest that the absence of urge sensation per se may be an inadequate basis for categorizing patients or predicting response to treatment; they also have implications for a taxonomy of incontinence subtypes.
CORRELATION OF MESA AND VLPP WITH OTHER MEASURES OF URINARY INCONTINENCE SEVERITY
Michael Albo, Toby Chai, Ananias Diokono, Jan Baker, Linda Brubaker, Kim Dandreo, Patricia Goode, Stephen Kraus, John Kusek, Jerry Lowder, William Steers, Lisa Wruck for the Urinary Incontinence Treatment Network. (Supported by NIDDK and NICHD grant)

OBJECTIVE: To correlate the Medical, Epidemiology and Social Aspects of Aging (MESA) Project questionnaire and valsalva leak point pressure (VLPP) with other measures of urinary incontinence severity at baseline in women enrolled in a randomized clinical trial comparing two surgical techniques (Burch vs. pubovaginal sling) for stress urinary incontinence (SUI).

STUDY DESIGN: A total of 650 women were enrolled in the trial. They were required to have stress predominant symptoms by MESA questionnaire and urethral hypermobility defined as > 30 degrees at rest or with strain determined by a Q-tip test. In addition to the MESA questionnaire, two condition-specific quality-of-life scales, the Urogenital Distress Inventory (UDI) and the Incontinence Impact Questionnaire (IIQ) were administered. Incontinence severity was assessed by incontinence episodes recorded on a 3 day voiding diary (IEF), a 24-hour pad test (PW), and leakage during a supine empty bladder stress test (EBST). VLPP was calculated as the total vesical pressure recorded at the time leakage was visualized at the urethral meatus. Correlations were estimated and 95% confidence intervals (CI) calculated using the Spearman correlation coefficient. A t-test was used to test at α=0.05 the null hypothesis that mean VLPP did not differ by EBST result.

RESULTS: Baseline mean values for MESA, UDI and IIQ were 25.8 (sd = 7.4), 151 (sd = 48.6) and 171 (sd = 101) respectively. Mean IEF and PW were 3.2/day (sd = 2.9) and 43.7 grams (sd = 79.6) respectively. EBST was positive in 387 (63%) patients. In 424 patients who had valid VLPP measurements, the mean VLPP was 117 (sd = 37.6) cm H20. Correlation coefficients and CI’s are listed in the table. Results indicate a negative correlation between MESA and VLPP that is quite small, with a CI that is close to containing zero. Stronger correlations were observed between MESA and IEF, PW, IIQ and UDI, with all CI’s well above zero. VLPP, on the other hand, correlates poorly with all variables measured, with all CI’s either containing or very nearly containing zero. The mean VLPP for patients with a positive vs. a negative EBST was 120.3 (sd = 38.5) vs. 111.8 (sd = 36.6) respectively. (p-value = 0.025).

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<tr>
<th>MESA</th>
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<th>IIQ</th>
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CONCLUSIONS: Among women with urethral hypermobility and predominant SUI scheduled for surgical therapy, the MESA and VLPP correlated weakly. While MESA demonstrated stronger correlations with the other measures of severity and QOL, VLPP did not. Finally the correlation of VLPP with EBST, although significant, was in the opposite direction one would predict. These findings suggest that VLPP is either a poor measure of severity or that it relates to severity differently than the other measures.
COMPARING STRESS URINARY INCONTINENCE OUTCOMES OF TENSION-FREE VAGINAL TAPE WITH TRANS-OBTURATOR TAPE SLING: A RETROSPECTIVE COHORT STUDY

J. R. Miller*, S. M. Botros*, M. N. Akl†, J. L. Beaumont*, R. P. Goldberg*, Y. Abramov*, and PK Sand*
*Evanston Continence Center, Northwestern University, Feinberg School of Medicine, Evanston, IL
†Department of Obstetrics and Gynecology, Michigan State University, Hurley Medical Center, Flint, MI

Introduction and Objectives: To date there is only one published study comparing the tension-free vaginal tape procedure to the trans-obturator tape procedure (1). This study compares the subjective and objective stress urinary incontinence outcomes of patients who underwent either a tension-free vaginal tape (TVT) procedure or trans-obturator tape (TOT) procedure.

Methods: All patients (N=198) underwent either a TVT or TOT procedure within our Division between June, 2003 and October, 2004. Indication for surgery was urodynamic stress incontinence without low-pressure urethra (max Urethral Closure Pressure > 20 cm H2O). Patients were seen in an ambulatory setting at two, six, twelve and fourteen weeks postoperatively. The fourteen-week postoperative visit included multichannel urodynamics. Both preoperative and postoperative multichannel urodynamics were performed in a consistent manner and consisted of cystometrography, static and dynamic (cough andValsalva) urethral closure pressure profiles, and micturition studies. Stress urinary incontinence (SI) was compared subjectively and objectively using a retrospective cohort study design. Subjective outcome variables included patient reported stress incontinence at the 14 weeks post-operative urodynamics visit or, if unavailable, at the 12 weeks post-operative follow-up visit. Objective outcome variables included presence of stress incontinence on post-operative multichannel urodynamics, and post-operative urinary retention (post void residual (PVR) ≥ 50cc or urethrolysis). Statistical chi-square analysis compared subjective and objective outcomes of the two different procedures. No outside sources provided funding for this study.

Results Obtained: At baseline, the cohorts were similar with respect to age, parity, body-mass index, menopausal status, prior incontinence surgery, and any prior pelvic surgery. Also similar were preoperative subjective stress urinary incontinence (85/91 [93%] TVT vs. 98/107 [92%], p 0.73) and preoperative urinary retention (10/91 [11%] vs. 12/107 [11%], p 0.74). One hundred thirty-one patients (66%) have completed fourteen-week postoperative urodynamics. Follow-up was similar between cohorts and subjective responses were similar between patients with and patients without postoperative objective data. Among patients completing fourteen-week postoperative urodynamics, there was not a significant difference in the percent cured of stress urinary incontinence (60/62 [97%] TVT vs. 62/69 [90%] TOT, p 0.12). Cure rates for patients completing twelve-week postoperative subjective assessment were similar between the cohorts for stress urinary incontinence (59/68 [87%] vs. 71/77 [89%], p 0.71). Concomitant surgery was similar in the cohorts with the exception of concomitant anterior colporrhaphy which was more common in the TOT cohort (63/91 [69%] vs. 91/107 [85%], p 0.008). There was no difference in either median estimated blood loss (150cc vs. 200cc, p 0.40) or major complication. However, there was significantly more post-operative retention (PVR ≥ 50cc) in the TVT cohort (16/62 [29%] vs. 10/69 [14%], p 0.047).

Conclusions: The trans-obturator tape procedure is equivalent to the tension-free vaginal tape procedure fourteen-weeks post-operatively in subjective and objective cure of stress urinary incontinence. Also similar were post-operative complications and estimated blood loss. The study was limited by the difference in concomitant anterior colporrhaphy. This difference could possibly mask a potentially lower cure rate in the TOT cohort. However, the difference in concomitant anterior colporrhaphy would be expected to dilute the significantly lower retention in the TOT cohort. Continued follow-up with the cohorts will reduce migration bias. Future work will include comparing concurrent detrusor overactivity as well as long-term follow-up of the cohorts at one year.

POSTER #41

IMMORTALIZATION OF BLADDER UROTHELIAL CELLS USING TELOMERASE TRANSFECTION: NOVEL INNOVATION OF RESEARCH TOOLS FOR MOLECULAR BIOLOGY STUDIES

Humphrey Atiemo, Raymond Rackley, Mei Kuang, Joseph Abdelmalak, Ashwin Vaze, Stephen Jones, Sandip Vasavada, and Joseph DiDonato. Section of Female Urology, Glickman Institute, Cleveland, OH

Objective: The genitourinary (GU) tract is composed of heterogeneous organs consisting of a large variety of cell types that interact in physiological and cellular processes responsible for maintaining health and preventing disease. Obtaining an abundant supply of individual somatic cell types of the GU system such as the bladder urothelium is a key issue and a rate limiting step for accelerating research studies, biotechnology applications, and translational therapeutics. The use of somatic cells has been restricted by their limited proliferative potential as these cells lose telomeric DNA that is present at the ends of chromosomes each time they divide before entering a nondividing state called replicative senescence. Using a promising retroviral system for telomerase (hTERT) transfection as a novel way to bypass replicative senescence, we hope to impart immortality to urothelial cells grown in culture without causing neoplastic transformation, karyotype instability, or phenotypic changes when compared to their parental cells.

Methods: The Virus Core at the CCF has successfully developed and standardized a third generation lentivirus vector that uses only a fraction of HIV genes namely HIV-gag-pol and HIV-rev. Using this innovative system, we have achieved optimal yields of vector of high transducing efficiency (10E6-10E7 transducing units (TU)/ml and close to 10E4 TU/ng of p24 core protein) and have cloned the catalytic domain of hTERT, a functional transgene, into a lentivirus backbone. Urothelial cells established in primary culture from donors have been transfected with our unique hTERT lentivirus vector.

Results: Of normal urothelial cells established in primary cell culture from 5 different donors, only 2 have been successfully transduced with this concentrated lentivirus and immortalized beyond 50 passages (4-5 times the normal passage number for normal urothelium) that have apparently incorporated the functional hTERT transgene with stable morphology and similar growth rate to their parental cells. Recently performed karyotyping at passage 20 of the only 2 successful cell lines established to date are abnormal as follows: 47,XY,+5,del(9)(p13)[17] and 48,XY,+7,del(9)(p13),+20[2]; both of these normal male donors did not have evidence of bladder cancer, but were known to be smokers.

Conclusions: To date, our work represents a possible innovative translation of proven somatic cell culture immortalization techniques for GU applications, yet the selection process appears to be dependent on 9p deletions in the parental cells for successful immortalization. The karyotypes provide information on additional quantitative studies that could be done in interphase nuclei using FISH probes for 9p, 5 centromere and 7 centromere to gain greater insight into the population of these lines in non-dividing cells. The future impact of this work will be seen in the acceleration of molecular studies on the GU tract that require unlimited somatic cell-types needed for cellular comparisons of unique differences in gene and protein expression, as well as, the cellular function of individual cell types within GU organs.
PATHOPHYSIOLOGY OF LOWER URINARY TRACT SYMPTOMS (LUTS) AFTER BRACHYTHERAPY FOR PROSTATE CANCER
Jerry G. Blaivas¹, Jeffrey P. Weiss¹, Mark Jones²
¹ Weill Medical College of Cornell University, New York, NY
² Delta Medex, Scranton, PA

Introduction and Objective: The aim of this study is to determine the spectrum of pathophysiology underlying LUTS that persist at least 6 months after brachytherapy for localized prostate cancer.

Methods: A database of men from two practice settings was searched for men who developed LUTS persistent at least 6 months after completion of brachytherapy for localized prostate cancer. Patients completed an evaluation consisting of a structured history and physical examination, International Prostate Symptom Score (IPSS), 24-hour bladder diary, noninvasive free-flow uroflowmetry (Q), post-void residual urine volume (PVR), cystoscopy and videourodynamicsy study (VUDS). In the community practice, 16 (10%) of 160 consecutive men who underwent brachytherapy qualified for the study. Inclusion criterion was persistent LUTS requiring therapy. An additional 31 consecutive men with prolonged bothersome LUTS in a referral practice were retrospectively analyzed for a total of 47 men. Data included duration since brachytherapy, Gleason score, symptoms, IPSS, total voids/24 hours, maximum voided volume (MVV), cystoscopic findings, and urodynamics findings (PVR, Qmax, Schäfer obstruction grade, Watts factor, incidence of detrusor overactivity, urethral obstruction and low bladder compliance). These data were compared to a previously published cohort of men with LUTS who did not have prostate cancer. Statistical methods utilized Student’s t-test.

Results: The 47 men ranged in age from 54 - 88 (mean = 74 years). Gleason score ranged from 4 - 7. 79% complained of OAB symptoms and 71% incontinence. 41% had obstructive symptoms and 30% persistent dysuria. The incidence of urethral obstruction was (66 - 69%) and detrusor overactivity (88 - 95%) depending on the criteria for diagnosis. Low bladder compliance was present in at least 24%. At cystoscopy 47 % had prostatic and / or urethral strictures, and 19% had radiation prostatitis and 11% had stones adherent to the prostatic urethra.

Conclusions: The pathophysiology and severity of persistent LUTS in men who undergo brachytherapy is different than that of men with LUTS in the general population who have not undergone brachytherapy. Men after brachytherapy have a much higher incidence of detrusor overactivity, dysuria, prostatic and urethral structures and prostatic stones.

Funding Source: Institute for Bladder and Prostate Research
POSTER #43

IS THE REGIONAL DIFFERENCE IN VAGINAL WALL CONTRACTION DUE TO A DIFFERENCE IN THE SMOOTH MUSCLE MYOSIN ISOFORM?

Maureen Basha1, Shaohua Chang1, Elaine Smolock2, Robert S. Moreland2, Alan Wein1, Samuel Chacko1.
1University of Pennsylvania, 2Drexel University College of Medicine

Despite the important role of vaginal wall smooth muscle in the female sexual response and as a component of pelvic support, little is known about the molecular motor for smooth muscle contraction, myosin, and the isoforms of myosin present in the vaginal muscularis. Smooth muscle myosin heavy chain (MHC) isoforms with difference in the N-terminal region are known to regulate phasic and tonic contractile characteristics in smooth muscle from different sources. The SM-B isoform is formed by alternative splicing at the 5’ end of the pre-mRNA and contains a 7 amino acid insert near the ATP binding site at the N-terminal region. This isoform is correlated with high actin-activated ATPase activity and maximum shortening velocity ($V_{\text{max}}$) compared to SM-A, which is devoid of the insert. The goal of this study was to test the hypothesis that a regional variation in MHC isoforms exists in the vaginal muscularis.

Adult female Sprague-Dawley rats were sacrificed on the day of oestrus and the harvested vagina was dissected into a proximal and distal segment. RNA from each segment (n=5) was reverse transcribed and semi quantitative RT-PCR was performed using primer pairs to amplify SM-A/SM-B and the SM-1/SM-2 isoforms of MHC. Isolated protein from the proximal and distal vagina (n=4) was subjected to Western blotting for total smooth muscle myosin and SM-B isoform. Measurements of $V_{\text{max}}$ of the proximal and distal vagina (n=5) were performed as described in (1). Paired t-tests were used to compare differences between the proximal and distal vagina. Significantly more total smooth muscle myosin was detected in the proximal vagina compared to the distal vagina ($P < .05$). RT-PCR results demonstrate a greater SM-B/SM-A ratio in the proximal vagina than in the distal vagina. This result was confirmed at the protein level using Western blotting. No regional differences were observed in SM1/SM2 isoforms. The $V_{\text{max}}$ following KCl stimulation was significantly greater for the proximal strips as compared to the distal strips ($P < 0.01$). The results of this study are the first demonstration of a regional heterogeneity in the $V_{\text{max}}$ and myosin isoform expression in the vaginal muscularis. The significantly faster $V_{\text{max}}$ of the proximal vagina reflects the functional significance of higher levels of SM-B in the proximal vagina compared to the distal vagina. The significantly faster $V_{\text{max}}$ of the proximal vagina reflects the physiological significance of higher levels of SM-B compared to the distal vagina and provides strong evidence for a dichotomy of roles and regulatory pathways of smooth muscle in different regions of the vagina. The differences in the molecular motor for contraction and contractility in the proximal and distal regions of the vaginal wall might have a functional significance in sexual arousal and vaginal prolapse.

INJECTION TECHNIQUE TO OPTIMIZE THE SUCCESS OF MUSCLE DERIVED CELL INJECTION TO TREAT STRESS URINARY INCONTINENCE

INTRODUCTION AND OBJECTIVE: Prior studies have demonstrated that injection of muscle-derived cells (MDC) into periurethral muscle resulted in increased leak point pressures (LPP) in an animal model of stress urinary incontinence (SUI). We now report the initial clinical results of human MDC for the treatment of SUI in women. The technique to achieve optimal efficacy is evolving but the procedure can be performed similar to collagen injections in a simple outpatient facility without the need for anesthesia, ultrasound or guidance instrumentation.

METHODS: Six women at Sunnybrook and Women’s Health Science Centre, Department of Urology at the University of Toronto, entered this trial. In the first North American trial of this kind, the injection technique evolved during the initial set of patients. A dosage of 18-22 x 10^6 autologous MDC was used for all injections. The first three women received a transurethral injection with a Williams Cystoscopic 8 mm Injection Needle. The next two women received a transurethral injection with a Williams Cystoscopic 10 mm Injection Needle. The last received the injection periurethrally using a spinal needle. Additionally, one of the initial three patients received a re-injection using the periurethral approach. The first three women were injected at approximately the 3 and 9 o’clock positions, while all subsequent patients were injected approximately at the 3, 6, 9, and 12 o’clock positions.

RESULTS: There were no serious short or long-term adverse events reported for any patient. No measurable improvement was observed following the first three transurethral injections (8 mm needle). The subsequent two transurethral injections using the longer needle (10 mm) as well as the two periurethral injections resulted in improvements as observed through measurable parameters and bladder diaries. All four of these women reported an improvement in quality of life.

CONCLUSION: Pure cellular therapy with MDC can lead to objective and subjective improvement of SUI. After a lack of success in our first three patients, modifications were made to the injection approach. We felt that the initial approach was not able to deliver the MDC deep enough into the tissue to reach the striated sphincter so we modified and lengthened the needle. Secondly, two additional injections per patient were added to more equally distribute the cellular suspension within the injected tissue. Finally, since the desired target of MDC therapy is the external sphincter, a simple periurethral spinal needle approach was employed and now appears to be the preferred method. Although preliminary, a simple injection of MDC appears to improve SUI. A multi-center study designed to investigate a dose response is currently pending Canadian regulatory approval.

Funding: Cook MyoSite, Inc.
COMPLICATIONS OF SLING SURGERY AMONG FEMALE MEDICARE BENEFICIARIES
Jennifer T. Anger, Mark S. Litwin, Qin Wang, Chris L. Pashos, and Larissa V. Rodriguez, UCLA, Los Angeles, CA

Introduction and Objective: Slings are an effective treatment for stress urinary incontinence (SUI) with minimal morbidity. However, data on complication rates after sling surgery have been primarily derived from studies of clinical subjects, providing information of limited generalizability. In this study we analyze Medicare claims data to determine short-term complications after sling surgery among female beneficiaries age 65 and over.

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 (the index period) were identified by CPT code and tracked for 12 months. CPT procedure codes were also used to identify specific prolapse repairs. New prolapse diagnoses occurring after the index sling procedure were identified with ICD-9 codes. The number of prolapse repairs performed both at the time of the sling and within one year after the sling procedure were stratified empirically by cumulative surgeon volume.

Results: A total of 1,356 sling procedures were performed during the index period. In the three months following the procedure, 12.8% of subjects developed surgical complications and 33.6% were diagnosed with urinary tract infections. Within one year of the procedure, 8.3% of subjects had a new diagnosis of outlet obstruction, and another 8.3% underwent treatments to manage outlet obstruction, including urethral dilations and suprapubic tube placements. There was a high incidence of new diagnoses of urge incontinence (16.5%) and pelvic prolapse (19.5%). Both cystoscopy and urodynamic testing, which serve as intermediate indicators of voiding dysfunction, were performed frequently during the first year after surgery (32.8 and 30.5%, respectively).

Conclusions: Although major complications are uncommon after sling surgery, complication rates within one year post-operatively among Medicare beneficiaries were higher than those reported in the clinical literature. Although complications may be higher due to the older age of sling recipients in the Medicare population, the high rates of post-operative urinary tract infections, prolapse repairs, and outlet obstruction suggest the need for quality improvement measures in incontinence and prolapse management.

Funded in part by an American Urological Association Foundation, Inc. Health Policy Award and in part by a National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Individual National Research Service Award 1 F32 DK072874-01
THE PREVALENCE OF URINARY INCONTINENCE AMONG COMMUNITY-DWELLING ADULT MEN: RESULTS FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY
Jennifer T. Anger, Mark S. Litwin, Christopher S. Saigal, Lynn Stothers, David Thom, and Larissa V. Rodriguez, UCLA, Los Angeles, CA

Introduction and Objective: International surveys have previously estimated the lifetime prevalence of incontinence among older men to range from 11 to 34%. In order to measure the prevalence of urinary incontinence in community-dwelling men in the US, we analyzed data from those responding to the National Health and Nutrition Examination Survey (NHANES).

Methods: From 1999-2000, NHANES asked a national sample of community-dwelling men, “In the past 12 months, have you had difficulty controlling your bladder, including leaking small amounts of urine when you cough or sneeze?” Questionnaire results were recorded and analyzed with respect to demographic data including age, race, socioeconomic status, and level of education. We compared findings in men with NHANES data in women from the same time period.

Results: The overall prevalence of urinary incontinence in men was 17%. The prevalence of incontinence increased with age, from 11% in men 60 to 64 years old to 31% in men 85 and over. Of the men reporting any incontinence, 42% reported daily incontinence, and an additional 24% reported it weekly. Although the total prevalence among African American men was nearly the same as that in African American women (21% and 20%, respectively), the relative prevalence among African American men was the highest among all racial-gender groups and among African American women was the lowest (Table 1). The prevalence of incontinence in Caucasian and Mexican American women was at least 2.5 times that of men of the same ethnicity. Men of lower socioeconomic status and those with less than a high school education were more likely to report incontinence, a finding that also contrasts the findings in women.

Conclusions: The NHANES survey draws a nationally-representative sample of subjects from the community, and thus provides prevalence data for urinary incontinence for all men in the United States. Ethnicity appears to be a contributing risk factor for incontinence, though racial patterns differ between men and women. Nonetheless, prevalence is high and warrants population-based awareness strategies to improve prevention, diagnosis, and treatment.

Table 1. Comparison of Prevalence of Difficulty Controlling Bladder, NHANES 1999-2000

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% with Incontinence</td>
</tr>
<tr>
<td>All</td>
<td>18,231,934</td>
<td>3,131,814 (17%)</td>
</tr>
<tr>
<td>Age at screening</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60–64</td>
<td>5,037,678</td>
<td>546,559 (11%)</td>
</tr>
<tr>
<td>65–69</td>
<td>4,731,187</td>
<td>518,157 (11%)</td>
</tr>
<tr>
<td>70–74</td>
<td>3,320,840</td>
<td>630,898 (19%)</td>
</tr>
<tr>
<td>75–79</td>
<td>2,748,398</td>
<td>750,478 (27%)</td>
</tr>
<tr>
<td>80–84</td>
<td>1,478,414</td>
<td>399,774 (27%)</td>
</tr>
<tr>
<td>85+</td>
<td>915,419</td>
<td>285,948 (31%)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>14,790,935</td>
<td>2,395,212 (16%)</td>
</tr>
<tr>
<td>Non-Hispanic black</td>
<td>1,436,582</td>
<td>296,022 (21%)</td>
</tr>
<tr>
<td>Mexican American</td>
<td>559,880</td>
<td>81,134 (14%)</td>
</tr>
<tr>
<td>Other race</td>
<td>429,299</td>
<td>142,015 (33%)</td>
</tr>
<tr>
<td>Other Hispanic</td>
<td>1,015,438</td>
<td>217,431 (21%)</td>
</tr>
</tbody>
</table>

Supported by a grant from the National Institute of Diabetes and Digestive and Kidney Diseases (N-01-DK-1-2460)
LONG-TERM PREDICTORS OF SUCCESS FOR THE MALE BULBOURETHRAL SLING

Neil H. Grafstein, Jaspreet S. Sandhu, Karyn S. Eilber, SUNY-Downstate Medical Center, Brooklyn, NY and Memorial Sloan Kettering Cancer Center, New York, NY

Introduction and Objectives: Stress urinary incontinence is an undesirable complication of prostatectomy. Traditionally, men who seek surgical correction of post-prostatectomy incontinence (PPI) have been offered urethral bulking agents and the artificial urinary sphincter (AUS). In recent years, the male bulbourethral sling has gained widespread acceptance as a minimally invasive alternative and even first line therapy, in the treatment of PPI. While the initial results are promising, there is a paucity of data on the long term durability of the procedure. Furthermore, clinical criteria to properly select those patients who will derive a lasting benefit have yet to be defined. We sought to characterize preoperative predictors of sustained continence after bulbourethral sling placement.

Methods: A retrospective review of our first 30 bulbourethral sling patients was performed. Pre-operative parameters analyzed included age, number of pads/day, urodynamic measurements and cystoscopic findings. In all cases, the InVance drill (American Medical Systems, Inc.) [AMS] was used to insert 3 titanium bone anchors in each ischiopubic ramus via a perineal incision. An Intemesh [AMS] was then firmly secured on the ventral surface of the bulbospongiosus muscle overlying the bulbar urethra. Postoperative pads/day and patient satisfaction were determined.

Results Obtained: Average age at the time of sling placement was 65 years. At a mean follow-up of 10 months, 19 patients (63%) required no pads, 9 (30%) were significantly improved (>50% pads/day), and 2 (7%) unchanged. At 21 months (range 17-30), 12 patients (40%) required no pads and 3 (10%) improved from baseline. The table below shows evaluable patients with a sustained 0 pad requirement (group A) compared to patients who were short term successes at 10 months (no pads or improved by >50%) but ultimately failed at 21 months (Group B).

<table>
<thead>
<tr>
<th></th>
<th>Group A (n=11)</th>
<th>Group B (n=13)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative pads/day</td>
<td>2.0</td>
<td>4.1</td>
<td>0.01</td>
</tr>
<tr>
<td>Preoperative VLPP(cm H2O)</td>
<td>51</td>
<td>71</td>
<td>0.07</td>
</tr>
<tr>
<td>Bladder Neck Contracture</td>
<td>1 (9%)</td>
<td>7 (54%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Radiation Therapy</td>
<td>0 (0%)</td>
<td>3 (23%)</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Conclusions: In the properly selected patient, the male bulbourethral sling is a durable treatment option in the management of post-prostatectomy incontinence. Based on our series with long term follow-up, clinical predictors of sustained continence are low initial pad usage and absence of preoperative bladder neck contracture.
POOR TISSUE RESPONSE TO PELVICOL™ IN INCONTINENCE AND PROLAPSE SURGERY: INCIDENCE AND MANAGEMENT
Walter J. Simoneaux, MD, Rashel M. Haverkorn, MD, Diane Young, MS, William S. Kubricht III, MD and Alex Gomelsky, MD (Presented By: Rashel M. Haverkorn, MD)

Introduction and Objective: While xenografts may theoretically offer greater biocompatibility over synthetic materials, their lack of antigenicity has recently been challenged. We report our experience with delayed vaginal healing and infectious complications with Pelvicol™ acellular porcine dermis in pelvic reconstructive surgery.

Methods: During a 5-year period, 250 patients underwent a Pelvicol™ pubovaginal sling (PVS) or prolapse repair augmented with an interposition graft. We conducted a retrospective chart review of patients with a 6 month minimum follow-up for evidence of delayed tissue healing, subsequent management, and outcomes. Chi-square analysis was conducted to evaluate the association of poor tissue integration with perioperative variables.

Results: Twenty patients (8%) had evidence of impaired tissue healing. Twelve of 13 women presented with a persistent vaginal discharge and wound separation within 2 weeks of a Pelvicol™ PVS. Ten healed by re-epithelialization and remained continent. One woman required sling debridement and stress incontinence recurred. Another developed a urethrovaginal fistula after diverticulectomy and PVS. She healed and is continent after repair with a Martius graft. One woman is currently treated with estrogen cream for a delayed vaginal wound separation after 6 months. Six patients had a vaginal wall separation after Pelvicol™ interposition graft for prolapse (5 cystoceles, 1 rectocele). Four patients with small separations healed without prolapse recurrence. One woman underwent graft excision for infection and another underwent secondary closure of a persistent wound separation. Both prolapses recurred. The last patient developed a suprapubic abscess associated with a midurethral porcine dermis (Pelvilace™) sling. She has healed and remains continent after operative drainage with partial sling removal. Histological evaluation of all excised Pelvicol™ segments revealed graft preservation without neovascularity or host fibroblast proliferation. There was no statistical association between wound separation and operative time, intraoperative blood loss, or vaginal estrogen status.

Conclusion: We observed an 8% rate of delayed vaginal healing and infection with Pelvicol™ in a variety of pelvic floor reconstructions. While small incisional separations frequently heal by re-epithelialization and cause no symptom recurrence, larger dehiscences may require operative debridement and contribute to accelerated recurrence of incontinence or prolapse. These findings raise further questions about potential antigenicity and sufficient integration of Pelvicol™ in the human body.
ARTIFICIAL URINARY SPHINCTER AND IN-VANCE MALE SLING IN THE TREATMENT OF POST-PROSTATECTOMY INCONTINENCE: A COMPARISON STUDY

Madalena I-P Liu, Sender Herschorn and Richard Baverstock
Division of Urology, Sunnybrook and Women’s College Health Sciences Centre, Toronto, Ontario Canada

Introduction and Objectives: Urinary incontinence is a troublesome complication in a minority of men following radical prostatectomy. The artificial urinary sphincter (AUS) remains the gold standard for post-prostatectomy incontinence (PPI); however, other treatment options are available, including various sling procedures. We compare the preoperative characteristics and postoperative outcomes of patients who underwent either insertion of AUS or In-Vance male slings.

Methods: A retrospective, double-cohort study was undertaken of patients who underwent AUS or sling insertions between February 2002 and September 2004. Patient records were reviewed to determine preoperative characteristics including age, previous radiation, bladder neck contractures, previous transurethral injections, urodynamic parameters and number of pads used. Postoperative outcomes were measured by determining the quantification of pad usage and administering the International Consultation on Incontinence Questionnaire: Short Form (ICIQ-SF). In addition, the “Quality of Life Due to Urinary Symptoms” question of the International Prostate Symptom Score (IPPS QOL) were recorded pre- and postoperatively.

Results: Fifty-six patients with an average age of 67 (48 – 83) were followed up. Twenty-six underwent insertion of AUS and 30 had sling procedures using the bone anchor system. No difference in preoperative demographics or urodynamics existed except for bladder neck contracture (46% in AUS vs. 17% in sling groups; p<0.05). Severity of incontinence as defined by average number of pads/day was more severe in the AUS group (6.5 in AUS vs. 4.5 in sling groups; p = 0.02). Both groups of patients were “unhappy” pre-operatively in response to the IPSS QOL question.

Mean follow-up was 30.4 (12.9 – 44.4) months for the AUS and 25.8 (12.7 – 42.2) months for the sling patients. Postoperatively, the average number of daily pad usage was 1.38 for the AUS group and 1.57 for the sling group with a concomitant significant reduction of 5.2 and 2.9 pads, respectively. Out of a total score of 21, the AUS and the sling groups scored similarly with regard to the ICIQ-SF questionnaire, 7.42 and 5.93 respectively. Overall, both groups were equally “mostly satisfied” in response to the IPPS QOL question, postoperatively.

Three sling patients (10%) required a tightening procedure and the slings were removed in four (13%) due to infection and erosion. In comparison, 2 patients (8%) had to have the AUS removed due to erosion and a further 2 (8%) required revision.

Conclusions: The overall postoperative outcomes were similar in both groups despite the more severe incontinence in the AUS patients pre-operatively. Patients with moderate PPI can be counseled to have equally efficacious outcomes undergoing sling insertions as AUS. The complications and revision rates in both the AUS and the sling groups are comparable.
TRANSPARENT TAPE: TWO YEARS FOLLOW UP
Saad Juma, Incontinence Research Institute, Encinitas, Ca, and Gilberto C. Brito, Urology Associates, Scottsdale, AZ

Introduction: Transobturator vaginal tape (TOT) is a new technique for the treatment of stress urinary incontinence (SUI). The technique has gained popularity because of its simplicity and the low risk of morbidity. The aim of this study is to assess the safety and efficacy of the TOT in the treatment of patients with SUI.

Methods: One hundred and thirty consecutive patients from 2 centers were the subjects of this study. All patients had complete evaluation with history including pads use/day (PPD), physical examination, urinalysis, Incontinence Impact Questionnaire (IIQ), Urogenital Distress Inventory (UDI), analog global satisfaction scale (GSS), and urodynamic studies. Postoperatively all patients were evaluated with history including PPD, physical examination, IIQ, UDI, and GSS.

Results: One hundred and thirty patients with a mean age 58.25 years (27-87) were included in this study. One hundred and seventeen patients (90%) had history of stress incontinence, and 78 patients (60%) had history of urge incontinence (UI). The mean number of PPD used was 2.48 (0-10). Ninety-one patients had cystocele, 23 had uterine prolapse, 7 had enterocele, and 43 had rectocele. All patients demonstrated SUI during Urodynamic studies, and thirty-five patients (28.68%) had detrusor overactivity. The mean abdominal leak point pressure was 54.94 (2-120) cm H2O. The mean score on the IIQ was 16.13 (0-28), UDI was 10.95 (0-18), and GSS was 1.41 (0-10). All patients underwent TOT using the ObTape™ (Mentor Corporation, Santa Barbara, CA). Pelvic prolapse repair was done as indicated by the preoperative findings. The mean hospital stay was 0.84 days (0-3) in the total population and 0.30 days (0-1) in those patients who did not have hysterectomy. The mean duration of catheterization was 1.42 (0-14) days, and 87 patients (66.92%) did not require a catheter postoperatively. At a mean follow up of 16.85 (12-24) months, 13 (10%) patients reported recurrent stress incontinence, 21 (16.15%) reported persistent urge incontinence, and 1 (0.76%) patient has de novo UI. The mean PPD use is 0.15 (0-3). The mean score on the IIQ is 1.47 (0-23), UDI is 3.28 (0-14), and the GSS is 8.29 (0-10). The overall improvement rate for SUI is 88.88%, UI 73.60%, PPD is 93.95%, IIQ is 90.88%, UDI 70.04%, and GSS is 82.99%. Five patients (3.84%) had vaginal extrusion of the tape which required partial tape excision, and 2 patients (1.52%) developed urethral obstruction requiring tape removal. Two patients (1.52%) had intra-operative bladder perforation which resolved with catheter drainage.

Conclusions: These results demonstrate the safety and efficacy of the TOT. The short period of hospitalization and catheterization, and the low incidence of de novo urge incontinence offer a distinct advantage over existing techniques. Longer follow up is necessary to validate the long-term efficacy of this technique.

No financial support was received by the authors for this study.
FIBROBLASTS FROM WOMEN WITH AND WITHOUT SUI ARE DIFFERENTIALLY RESPONSIVE TO ESTROGEN
Leslie Kushner, Mahesh Mathubuthram, Pui Yan Chiu, Gopal H. Badlani, North Shore – Long Island Jewish Health System, New Hyde Park, NY

Introduction and Objective: Estrogen deficiency has been implicated in the development of stress urinary incontinence (SUI) in post-menopausal women, although the role of estrogen in maintenance of the continence mechanism has not been elucidated. Our previous data demonstrate that collagenolytic and elastolytic activity are elevated in the endopelvic fascia, skin, and plasma of SUI women. As estrogen is involved in the regulation of expression of several proteolytic enzymes, we hypothesized that a reduction in plasma estrogen would be associated with elevated proteolytic activity and that endopelvic fascia fibroblasts secreting proteolytic enzymes would be more sensitive to changes in estrogen in women with SUI compared to continent women.

Methods: Plasma was analyzed for 17-β-estradiol (the major estrogenic hormone) by ELISA (DRG Diagnostics). Correlations of plasma concentration of 17-β-estradiol, age, collagenolytic and elastolytic activity were determined by Pearson Product Moment Correlation. Cell lysates were prepared from cultured skin and endopelvic fascia fibroblasts derived from biopsies from women with (n=8) and without (n=8) SUI. Western analysis using polyclonal antibodies specific for estrogen receptors (ER) α and β were used to detect receptor proteins. Normalization was to β-actin.

Results: Plasma 17-β-estradiol in women with (52.43 ± 5.59 pg/ml) and without (49.91 ± 6.38 pg/ml) SUI was not significantly different, but demonstrated a similar significant (p<0.001) degree of negative correlation with age in both groups. There was no correlation between plasma proteolytic activity and age or 17-β-estradiol in either group. Endopelvic fascia fibroblasts from women with SUI had elevated expression of ERα (p<0.02) and decreased expression of ER β (p<0.05), compared to those from continent women. There was no difference in the expression of ERs in skin fibroblasts from both groups. Exposure of endopelvic fascia fibroblasts to 10 nM 17β estradiol for 1-3 days resulted in an increase in ERα in fibroblasts from women with SUI (n=3), but not in fibroblasts from women without SUI(n=3). Elastolytic activity was unchanged in the CM of endopelvic fascia fibroblasts from women with SUI (n=8), but was greater than five fold elevated in the CM of endopelvic fascia fibroblasts from women without SUI (n=6) after a one day of exposure to 17β estradiol and remained elevated over the 3d of treatment.

Conclusions: This is consistent with the observation that menopausal hormone replacement therapy increases the risk of UI in continent women. Differences in the expression of ERs and elastolytic activity in endopelvic fascia fibroblasts from women with and without SUI suggest that local tissue may have differential sensitivity and/or responsiveness to estrogen, despite the fact that the level of circulating estrogen is not different between these two groups.

Funding: This work was funded, in part, by an AFUD fellowship (to MM) and an LIJMC Faculty Research Award (to GB).
Introduction: Clinical history is the most valuable tool in the evaluation of the incontinent female and the Urogenital Distress Inventory (UDI-6), a validated questionnaire to assess patient complaints, being increasingly used as part of the evaluation.

Objective: In our study, evaluated the correlation between UDI-6 and the clinical history obtained by the evaluating clinician.

Materials and methods: We retrospectively evaluated the records of 416 well characterized patients, which compose our database, and selected those who prospectively completed the UDI-6. These 113 patients were evaluated with a complete history and physical, multichannel videourodynamic, and patient completed UDI-6 questionnaire. Concordance and discordance was determined for each domain of the UDI-6 and the clinical correlates of frequency, urge incontinence, stress incontinence, and difficulty emptying (lower tract obstructive symptoms). Positive answers on the UDI-6 were considered as a response of 2 or 3, whereas negative answers were considered as 0 or 1.

Results: These tables reflect the concordance (+/+), (-/-) between the clinical history and the UDI-6 as well as the discordance (+/-, -/+).

<table>
<thead>
<tr>
<th>Frequency VS Q-1 UDI-6</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx+/UDI-6+</td>
<td>85</td>
</tr>
<tr>
<td>Hx-/UDI-6-</td>
<td>5</td>
</tr>
<tr>
<td>Hx+/UDI-6-</td>
<td>9</td>
</tr>
<tr>
<td>Hx-/UDI-6+</td>
<td>11</td>
</tr>
<tr>
<td>CONCORDANCE</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urge VS Q-2 UDI-6</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx+/UDI-6+</td>
<td>50</td>
</tr>
<tr>
<td>Hx-/UDI-6-</td>
<td>23</td>
</tr>
<tr>
<td>Hx+/UDI-6-</td>
<td>8</td>
</tr>
<tr>
<td>Hx-/UDI-6+</td>
<td>29</td>
</tr>
<tr>
<td>CONCORDANCE</td>
<td>73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUI VS Q-3 UDI-6</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx+/UDI-6+</td>
<td>55</td>
</tr>
<tr>
<td>Hx-/UDI-6-</td>
<td>29</td>
</tr>
<tr>
<td>Hx+/UDI-6-</td>
<td>10</td>
</tr>
<tr>
<td>Hx-/UDI-6+</td>
<td>16</td>
</tr>
<tr>
<td>CONCORDANCE</td>
<td>84</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LTOS VS Q-4 UDI-6</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx+/UDI-6+</td>
<td>29</td>
</tr>
<tr>
<td>Hx-/UDI-6-</td>
<td>41</td>
</tr>
<tr>
<td>Hx+/UDI-6-</td>
<td>8</td>
</tr>
<tr>
<td>Hx-/UDI-6+</td>
<td>32</td>
</tr>
<tr>
<td>CONCORDANCE</td>
<td>70</td>
</tr>
</tbody>
</table>

Conclusions: The concordance between UDI-6 itemized questions and clinical history obtained in a clinical practice is relatively low. Concordance is highest for urinary frequency related items and lowest for lower urinary tract obstructive symptoms related domains. Our observation highlights the limitations of the UDI-6 questionnaire, a research instrument, in a “true clinical situation”.
INTRODUCTION and OBJECTIVES: Favorable early experience with high-power 80 Watt KTP photoscietive laser vaporization prostatectomy (PVP) for bladder outlet obstruction from benign prostatic hyperplasia (BPH) has been described in a multi-center series. This study documents two-year followup to our institution’s experience with the first 265 patients.

METHODS: 265 consecutive men with symptomatic BPH underwent PVP during a period from May 2002 through January 2005 at our center. Preoperative evaluation included urodynamic studies, including maximum flow rate (Qmax), post void residual (PVR), ultrasound prostate volume (PV), serum sodium, hematocrit, and International Prostate Symptoms Score (IPSS). PVP was performed with an 80W KTP side firing laser (Laserscope Greenlight PV) system through a 23F continuous-flow cystoscope with normal saline as the irrigant. Operative time, anesthesia, length of stay, post-op serum sodium, and hematocrit were recorded. IPSS, Qmax, and PVR were measured at the 1, 3, 6, 12, 18 and 24 months postoperative visit.

RESULTS: Mean preoperative PV was 90.9 ± 49.6 mL (range 22 – 288) and mean age at the time of the procedure was 68.8 +/- 9.7 (range 44 – 103). 55 were in retention. Mean ASA class was 2.2 +/-. No transfusions were required. 96% were discharged within 23 hours without significant complications. Serum sodium did not change significantly. Mean IPSS decreased from 18.6 preoperatively to 10.5, 8.6, 6.8, 6.7, 8.5, and 9.3; mean Qmax increased from 8.5 mL/s preoperatively to 18.9, 18.4, 19.6, 16.9, 15.3, and 15.7 mL/s; mean PVR decreased from 192 mL preoperatively to 73.8, 70.6, 69.9, 73.8, 57.3, and 105.5 mL at 1, 3, 6,12, 18, and 24 months respectively. Complications included retrograde ejaculation in 21 patients, LUTS beyond 3 months in 4 patients, culture-confirmed urinary tract infections in 7 patients, clot retention in 4 patients, and bladder neck contracture in 3 patients which occurred in patients with urodynamically proven bladder dysfunction. Re-operation was required for symptoms in 3 patients at a mean of 12 months ± 2.

CONCLUSION: These results show PVP is a safe, efficacious and durable treatment for symptomatic BPH in men with urinary retention, lower urinary tract symptoms, large prostates, or high surgical risk as demonstrated by the results of our first 265 patients.

Funding was provided by the James Buchanan Brady Foundation.
POSTER #54

SACRAL NEUROMODULATION FOLLOWING UROGYNECOLOGIC SURGERY: ASSESSMENT OF OUTCOMES
Jonathan S. Starkman, Harriette M. Scarpero, Douglas F. Milam, and Roger R. Dmochowski
Vanderbilt University Medical Center-Nashville, TN

Introduction: Sacral neuromodulation is currently indicated for urinary urge incontinence, urinary urgency-frequency, and nonobstructive urinary retention. Although the mechanism of action remains unknown, neuromodulation has been effective in treating patients who would otherwise be deemed incurable or candidates for radical reconstructive/extirpative surgery. We evaluated the use of the Interstim neuromodulation device in patients who had refractory urgency, frequency, and urgency incontinence following major urogynecologic surgical procedures.

Materials and Methods: We retrospectively reviewed our database from February 2003 until June 2005 and identified 25 patients who underwent a first stage implant with a permanent lead electrode. 19 patients had previous pubovaginal sling, 3 patients previous Burch, and 3 patients Vesicovaginal fistula repair. All patients underwent assessment with clinical history, physical examination, video urodynamics, and cystoscopy. Clinical data was extracted in all patients to determine outcomes, complications, and parameters which predicted ultimate success and failure of neuromodulation. Outcomes were determined by subjective patient reporting as follows: no improvement in symptoms, minimal improvement (<50% response), moderate improvement (>50% and <80% response), and significant improvement (>80% response).

Results: In terms of outcomes, 15 (75%) patients achieved a greater than 80% improvement in their symptoms. 2 patients achieved moderate benefit, 3 patients minimal benefit, and 5 patients absolutely no benefit. There were no differences in outcomes based on type of previous procedure, age, and duration of symptoms.

Conclusion: Sacral neuromodulation is an effective therapy in patients with refractory storage symptoms following urogynecologic procedures. Larger studies with longer follow-up are needed to assess the durability of this therapeutic modality.
VIDEOS

The following videos will be available to be viewed in the Speaker Ready Room, Samana Cay, from 8:00 a.m. – 1:00 p.m. on Saturday, February 25, 2006.

VIDEO #1  THE NYU EXPERIENCE WITH ROBOTIC SACRHYSTEROPEXY
Melissa Fischer, MD, Nirit Rosenblum, MD, Christian Twiss, MD, Michael Stifelman, MD, (Presented By: Melissa Fischer, MD)

VIDEO #2  ROBOTIC-ASSISTED LAPAROSCOPIC SACROCOLPOPEXY: THE UNIVERSITY OF CHICAGO EXPERIENCE
Alvaro Lucioni, MD, David Rapp, MD, Brett Laven, MD, Marcelo Orvieto, MD, Marc Chuang, MD, Albert Mikhail, MD, Arieh Shalhav, MD, Gregory Bales, (Presented By: Alvaro Lucioni, MD)

VIDEO #3  TRANSVAGINAL REPAIR OF VAGINAL VAULT PROLAPSE: GYNECARE PROLIFT SYSTEM
Alvaro Lucioni, MD, David Rapp, MD, Marc Chuang, MD, Edward Gong, MD, Marcelo Orvieto, MD, Gregory Bales, MD, (Presented By: Alvaro Lucioni, MD)

VIDEO #4  THE LAPAROSCOPIC-ASSISTED PERCUTANEOUS VAGINAL TAPE VAULT SUSPENSION: A MINIMALLY INVASIVE PROLAPSE REPAIR WITH POST-HYSTERECTOMY AND UTERINE-SPARING OPTIONS
Michael Aleman, MD, Courtenay Moore, MD, Humphrey Atiemo, MD, Sandip Vasavada, MD, Joseph Abdelmalak, MD, Howard Goldman, MD, Raymond Rackley, MD, (Presented By: Michael Aleman, MD)

VIDEO #5  ANATOMY OF THE OBTURATOR REGION DURING TRANSOBTURATOR SLING PROCEDURES: STRUCTURES AT RISK
Michael Aleman, MD, Courtenay Moore, MD, Firouz Daneshgari, MD (Presented By: Michael Aleman, MD)

VIDEO #6  THE CONTINENT EXTRAPERITONEAL VESICOCUTANEOUS ACCESS TUNNEL (CEVCAT)
Ryan Hedgepeth, MD, Michael Aleman, MD, Humphrey Atiemo, MD, Joseph Abdelmalak, MD, Kubilay Inci, MD, Sandip Vasavada, MD, Raymond Rackley, MD, (Presented By: Ryan Hedgepeth, MD)

VIDEO #7  THE ANTERIOR VAGINAL WALL SUSPENSION PROCEDURE FOR REPAIR OF MODERATE CYSTOCELE
Jason Gilleran, MD, Darren Chapman, MD, Philippe Zimmern, MD (Presented By: Jason Gilleran, MD)

VIDEO #8  SURGICAL TECHNIQUE OF LARGE URETHRAL DIVERTICULUM
Jerry Blaivas, MD (Presented By: Jerry Blaivas, MD)
Mark Your Calendars!

**SUFU-at-the-AUA 2006 Annual Meeting**
May 20, 2006
Omni International Ballroom EF
Atlanta, Georgia

**SUFU/ISPiN 2007 Annual Meeting**
February 21 – 25, 2007
Manchester Grand Hyatt
San Diego, California