W22: Genitourinary Cancer Survivorship: A Practical Master-class
Workshop Chair: Matthew Rutman, United States
29 August 2018 14:05 - 15:35

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Topic</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:05</td>
<td>14:25</td>
<td>How to Develop a GU Cancer Survivorship Hospital Based Programme</td>
<td>Andrew Peterson</td>
</tr>
<tr>
<td>14:25</td>
<td>14:50</td>
<td>Managing Complex Urinary Fistulas in the Cancer Survivor</td>
<td>Steven Brandes</td>
</tr>
<tr>
<td>14:50</td>
<td>15:15</td>
<td>The Devastated Urinary Outlet in the Cancer Survivor</td>
<td>Shyam Sukumar</td>
</tr>
<tr>
<td>15:15</td>
<td>15:35</td>
<td>Managing Stress Incontinence in the Cancer Survivor</td>
<td>Matthew Rutman</td>
</tr>
</tbody>
</table>

Aims of Workshop
The aim of this workshop is to discuss the impact of a Genitourinary Cancer Survivorship Programme and to discuss conditions and problems unique to the cancer survivor and decision making and managing complex urologic and quality of life issues in this patient population.

Learning Objectives
1. Introduce the concept and discuss the establishment of a Genitourinary Survivorship Programme
2. Discuss the evaluation and complex management of urinary fistula in the cancer survivor
3. Discuss the evaluation of the devastated urinary outlet related to cancer treatment, the role of reconstruction of the outlet and when to abandon the outlet and proceed with supravesical diversion
4. Describe the evaluation and management of stress incontinence in the cancer survivor

Target Audience
Physician, Nurse Practitioner, Physician Assistants, Nurses, Social Work, Patient Advocates

Advanced/Basisc
Advanced

Suggested Learning before Workshop Attendance
None- interest in Genitourinary cancer survivorship, urology residency and advanced fellowship training

Suggested Reading

How to develop a GU Cancer Survivorship Hospital Based Program
Dr. Andrew C Peterson, Duke University Department of Urology, USA

Cancer survivorship, when it comes to Urologic issues is an under-recognized and an under-treated problem. To the cancer center, cancer survivorship often means a patient who has no evidence of disease (NED) and the continuing treatment plan is typically to transition care back to his internist, and out of the cancer center. This is an antiquated, narrow and overly focused view of the cancer survivor. Sadly, the focus of the Cancer Center is overly focused on survival statistics and quantity of life, and oft-times blind to quality of life (QOL). Too commonly, QOL is not properly addressed in the pre-cancer treatment, or in the informed consent, or in the patient care plan.

Dr. Peterson will discuss his experience in establishing a viable GU cancer survivorship program. GU cancer survivorship requires a collaborative and multidisciplinary approach to management. This population includes survivors of non-GU malignancies as well, where the sequela of cancer treatments have impacted urinary and/or sexual function and thus overall QOL. It’s important to identify like-minded physicians interested in caring for this complex group of patients to help establish a survivorship program. A network of multiple specialties and ancillary support is critical; this includes colorectal surgery, gynecologic oncology, female-pelvic reconstructive surgery, as well as psychological and nutrition support. The practical aspects of developing and maintaining such a program will be detailed by Dr. Peterson. The goal of this course is increase awareness and understanding the sequela of cancer treatments and to help improve the QOL of our patients.
Managing Complex Urinary Fistulas in the Cancer Survivor  
Dr. Steven B Brandes, Columbia University Department of Urology, USA

The development of urinary fistulae is a potentially devastating outcome related to the treatment of pelvic malignancies. Dr. Brandes will discuss the management of urinary fistulae following surgery, chemotherapy, and radiation or combination thereof, for pelvic malignancies. Certainly, it is paramount to first understand that status of the patients’ disease process, is there evidence of persistent or recurrent cancer? This must be addressed prior to proceeding with further evaluation and definitive management of urinary fistulae. Secondly, it is important to understand the patients’ goals and the impact on their quality of life. 

Urinary fistula may be of several varieties, including but not limited to vesico-vaginal, uretero-vaginal, rectourethral, prostato-symphysial, and urethro-perineal fistulae. It is important to take into consideration the factors associated with the fistulae, including associated radiation treatments, prior attempts at repair, health of surrounding tissues, and overall functional and nutritional status of the patient. An anatomic and functional evaluation of the bladder and urethra as well as determining the presence and degree of urinary incontinence is critical prior to any reconstructive efforts. If the fistula is involving the gastrointestinal (GI) tract, anatomic and functional evaluation is also important. Dr. Brandes will discuss a variety of reconstructive techniques for management of these fistulae, which often includes tissue transfer techniques, as well as the pitfalls of such reconstructive efforts. Additionally, we will address advances in the field of genitourinary reconstruction and the increasing utilization of minimally invasive surgical approaches in an effort to reduce morbidity and hasten recovery.

The Devastated Urinary Outlet in the Cancer Survivor
Shyam Sukumar

Germane to the all urologists is the management of bladder neck contractures/urethral strictures, which are most often related to prostate cancer management. However, this group of patients also includes those with refractory incontinence, incompetent outlets and fistulae. Not infrequently, these patients are teetering on the edge of retention and incontinence and after managing obstruction, it is necessary to then manage their incontinence, which will be discussed more in detail by Dr. Rutman. It is important to take into account the overall health of the patient and their goals in management and expectations prior to proceeding with any major reconstructive surgery. Furthermore, it is even more important to know when reconstructing the bladder outlet will not be successful and choosing alternatives for management: in the case of the devastated outlet.

Dr. Sukumar will detail the evaluation and management of the devastated outlet and when a urinary tract may be deemed devastated, either by multiple failed prior attempts at reconstruction or in patients with poor performance status who are unfit for major surgery. The management paradigm for patients with a devastated outlet include a spectrum of management approaches depending on the goals, expectations and performance status of the patient. This may include, suprapubic tube placement, bilateral nephrostomy tubes +/- ureteral embolization, bladder neck closure/urethral ligation and supravesical diversion, continent or incontinent urinary diversions.

Managing Stress Incontinence in the Cancer Survivor  
Dr. Matthew Rutman, Columbia University Department of Urology

Male and female urinary incontinence in this complex population due to prior pelvic surgery and history of prior chemotherapy and/or radiation therapy. Consistent among the cancer survivorship population is the need to address cancer status, performance status and keeping in mind QOL goals and expectations of the potential treatment options. The management of female voiding dysfunction after pelvic surgery and/or radiation is complicated by abnormal tissue planes and impaired bladder function and thus modification of surgical techniques is required. Similarly, the timing and selection of management of male stress incontinence in the GU cancer survivor will be discussed, as well as revision techniques for male urethral slings and artificial urinary sphincters.
Establishing a Hospital Based Cancer Survivorship Program

Andrew C. Peterson, MD, FACS
Professor of Surgery
Genitourinary Cancer Survivorship Fellowship
and Urology Residency Program Director
Duke University
Durham, North Carolina

In accordance with the ACCME policy on relevant financial disclosure, all speakers/planners were asked to reveal relevant financial relationships. Andrew Peterson, MD has disclosed following commercial interests:

Boston Scientific: Unrestricted Educational Grant, Investigator, consultant
Movember Foundation; Research Grant

Who is a ‘survivor?’
Anyone who has been diagnosed with cancer is a survivor— from the time of diagnosis to the end of life

Caregivers and family members are also cancer survivors
(Source: NCCS, 1986)

Three distinct phases:
1. The time from diagnosis to the end of initial treatment
2. The transition from treatment to extended survival
3. Long-term survival

People living with Cancer
(N = 14.5M survivors)
(>19 M by 2024)
Late Effects of Cancer Treatment

- Physical/Medical (second cancers, cardiac dysfunction, pain, lymphedema, sexual impairment, incontinence)
- Psychological (depression, anxiety, uncertainty, isolation, altered body image)
- Practical/Social (changes in interpersonal relationships, concerns regarding health or life insurance, job lock/loss, return to school, financial burden)
- Existential and Spiritual Issues (sense of purpose or meaning, appreciation of life)

Enhance quality of life for cancer survivors
- Physical
- Psychological
- Practical
- Existential

Interventions that promote health and well-being
- Exercise
- Pain management
- Coping

What Cancer Survivors Fear?
- Fear of recurrence – 75%
- School issues – 73%
- Sadness and depression – 65%
- Grief and identity – 64%
- Energy – 53%
- Concentration – 53%
- Sexual function – 48%
- Neuropathy – 39%
- Pain – 30%

What does the research say?
- 3 factors important to cancer survivors’ health-related outcomes (both QOL and survival) are:
  - Having access to state of the art care
  - Being active in one’s care
  - Having or perceiving adequate social support

Key to all of the above, is access to appropriate, accurate and timely information and education.
The Survivorship Program

• Comprehensive Care Available
  – At time of diagnosis
  – During Treatment
  – Post Treatment
  – Recurrence/Progression
  – End of life

• Services Provided to
  – Patients
  – Survivors
  – Family/Caregivers

The Successful Survivorship Program

• Awareness and education

• Evidence to identify what is being done well & what needs to improve

• Innovation
  – Multi-D clinics
  – Algorithms

• Sensitivity to current economic climate

• Patient outcomes

The Survivorship Program

Requirement from the COC

All accredited cancer institutes

Most have been giving this care albeit disjointed

Survivorship

• Physical/Medical
  • Practical/Social

• Psychological
  • Existential and Spiritual issues

Psychosocial Support

• Patient and family support groups
• Chaplaincy
• Genetic counseling
• Financial support counseling
• Psychological support including family therapy and stress management
• Integrative medicine: yoga, massage
• Exercise
• Nutrition
• Lymphedema management
• Recreation therapy
• Art therapy

Pet therapy
  • Self-image boutique
  • Duke Fertility Center
  • HomeCare and Hospice (and Bereavement Center)
GU Cancer Survivorship
The Practical Application

Cancer Survivorship
• How does this apply to practice?
  – Most likely seeing patients everyday that are “cancer survivors”
  – Coordinating care among specialists
  – PCP/PA/NP are often first point of contact for many patients who have issues

Our Clinic Model
• Established GU Survivorship Clinic in cancer center (DCI) so patient care is centralized
• Referrals from anyone: oncologists (GU, Colorectal, Breast, Gyn), nurses
• Evaluation prior to, during or after cancer treatment
• Multidisciplinary approach

Center for Cancer Survivorship
“We believe that individuals become cancer survivors at the moment of diagnosis and are survivors for the balance of life.”

— Tina Piccirilli, Director, Duke Center for Cancer Survivorship

GU Issues
• Urinary incontinence
• Sexual and reproductive health
• Rectourethral fistula
• Radiation cystitis
• End stage lower tract

GU Issues
• Urinary incontinence
• Sexual and reproductive health
• Rectourethral fistula
• Radiation cystitis
• End stage lower tract
Urinary Incontinence

• CC: “leaking urine and this gets worse with activity”
• HPI: 68 yo male treated for prostate cancer with prostatectomy and radiation
• Wears 4-5 pads/day

What is out there?

Flow Secure (GB)
ZSI 375 (Swiss)
Peri-Urethral Constrictor (Brazil)

Urinary Incontinence

• Not just in men after treatment for prostate cancer
• Colorectal cancer treatments can also cause incontinence
• 60% of women report urinary incontinence issues after colorectal cancer treatment

GU Issues

• Urinary incontinence
• Sexual and reproductive health
• Rectourethral fistula
• Radiation cystitis
• End stage lower tract

Infertility

• CC: “can I still have kids after cancer treatment”
• HPI: 24 yo male diagnosed with testicular mass.
• Orchietomy specimen shows characteristics that are high risk for recurrence, may need chemotherapy or retroperitoneal lymph node dissection

Infertility

• What should be discussed with this patient?
• Options for sperm banking
• Risk of infertility with chemotherapy and surgery
Infertility

- **JCO**
  - Survey of young men between 14-40 who underwent cancer therapy that could affect fertility
  - Only 61% said fertility was even discussed
  - Only 51% said sperm banking was offered
  - Only 25% banked sperm


Onco-fertility

- Two urologists who treat erectile dysfunction and testicular dysfunction
- PA sees erectile dysfunction clinic
- Added faculty for Onco-Fertility
- Offer sperm banking and counseling

GU Issues

- Urinary incontinence
- Sexual and reproductive health
- Rectourethral fistula
- Radiation cystitis
- End stage lower tract

Fistula

- **CC:** “I’m passing air through my penis and urine out my rectum”
- **HPI:** 57 yo male who underwent robotic prostatectomy 6 weeks ago. The catheter was removed but he was leaking urine out his rectum
- Cystogram confirmed rectourethral fistula

Frustrating
Multidisciplinary Approach

- Colo-Rectal Surgery
- Plastic Surgery
- Nutrition
- Wound Care/Stoma nurse

- Clinic appointments scheduled on the same day for patient convenience

GU Issues

- Urinary incontinence
- Sexual and reproductive health
- Rectourethral fistula
- Radiation cystitis
- End stage lower tract

Extirpative Surgery:

Sometimes necessary

Beware progressive disease with radiation

Select for continent and non-continent diversion options

Can use small bowel – cautiously

GU Cancer Survivorship:

Establishing a New Fellowship

Changing the Culture

The PATIENT is as important as the CANCER
Aims and Awareness

- Evaluation and Management of all morbidities
- Incontinence
- Bladder dysfunction
- Infertility issues
- Sexual dysfunction
- Fistula and Stricture disease
- Diversions and their revisions

Necessary Resources

- Mentors
- Multidisciplinary Team
- Case exposure
- Support

Cost of a Fellow

- Faculty privileges
  - Independent clinic
  - Independent OR time
  - Assistant on all complex cases
- 65,280 salary + 32,000
  - taxes/building funds/overhead/malpractice
- 92,280 total expense
- 38,000 revenue
- 54,280 expenditure

Effect on Training

- Intra and interdepartmental Education
- Intra and interdepartmental Collaboration

GU Cancer Survivorship

- Goals
  - Multidisciplinary approach
  - Acknowledge patient as cancer survivor
  - Address issues before, during and after cancer treatment that affect quality of life and outcomes
  - Communication between members of healthcare team
Goals of Cancer Survivorship

Adding *years* to life
&
Adding *life* to years
Urinary-Rectal Fistulas and the Cancer Survivor

STEVEN B BRANDES, MD, FACS

Affiliations to disclose*: None

Funding for speaker to attend:
- Self-funded
- Institution (non-industry) funded
- Sponsored by:

Etiology/ Incidence

- Prostate RT (mean time till RUF – 2 yrs.)
  - Brachy; (0.4-0.8%)
  - EBRT + Brachy; (up to 2.9%)
  - RT rectal ulcer biopsy – mean time till RUF- 4mo.
- RRP or RALP (1.0 -3.6%)
- Prostate Cryo (esp. salvage)
- Prostate HIFU (esp. salvage)
- APR surgery

Signs / Symptoms

- Watery stools (90%)
- Urinary incontinence
- Irritative voiding
- Pneumaturia/ fecaluria (60%)
- Dysuria
- Fevers
- Recurrent UTIs (poly microbial)
- Severe rectal pain
  - RT/HIFU/ Cryo rectal ulcer

Examination under Anesthesia

- DRE/ Pelvic exam
  - Mobile or Fixed?
- PE (abdomen, inner thigh, perineum)
  - Assess quality of local tissues and skin
  - RT changes? Loss of hair?
Examination under Anesthesia

- RUG/VCUG/Cystogram
- Cystoscopy
- Flex Sig or Rigid Proctoscopy
  - Enlist colorectal colleague
- RPG or Ureteroscopy
  - Fistula proximity to UO or trigonal ridge
  - R/O ureteral stricture/fistula

Assess Fistula Size and Location

- Fistula biopsy - strongly consider fistula tract biopsy if prior resection margins (+), advanced tumor stage, or not definitively NED

Assess Fistula Size and Location

- Cystoscopy
- Proctoscopy

Typical Sites of RUF

Pelvic RT – Assess Bladder for Collateral Damage

- Assess bladder capacity
  - Hard to do if BN or bladder fistula is large
  - Voiding diary, UroD
  - Obstruct fistula under anesthesia to assess
    Anesthetic capacity > Awake
- Assess bladder for RT changes
  - Telangiectasias?
  - Radiation cystitis?
  - Gross hematuria?
Assess Physiologic Reserve

- Functional assessment
- ADL (Barthel Index, Katz Index)
- Physical Performance Test (PPT)
- Sarcopenia (Psoas muscle on CT imaging)
- Surgical Risk Calculator (ACS/NSQIP)
  - “riskcalculator.facs.org”
- Frailty Index (predicts surgical outcomes as to complications, LOS, DC to a facility, death)
  - Hopkins Frailty Score
  - Canadian Study of Health and Aging

Physiologic Reserve Interventions

- Nutrition supplements
  - Protein shakes
  - G tube
  - TPN
- Appetite Stimulants
  - Remeron, Megace, Marinol
- Physical Therapy
- Smoking cessation program and meds

Shared Decision Making

- What is the patient’s #1 goal?
  - Void normally out of native urethra?
  - Good quality of life?
  - How important is body image?
    - Stoma acceptable? Cath Stoma Acceptable?
    - Consultation with pt. advocate – very helpful
- What bothers him/her the most?
  - Incontinence? (Day time? Night time?)
  - Pelvic Pain?
- Set realistic expectations
  - Long process till RUF "cured" - 6mo- 1 yr.

Do All Patients Need Fecal Diversion?

- Fecal Diversion Indications
  - RUF from RT, HIFU, Cryo
  - Recurrent UTI, Symptomatic Fecaluria – (Dysuria, severe OAB from feces, Foley obstruction, severe penile/genital pain),
  - Severe painful rectal ulcer/rectal pain
  - Overwhelming urinary/fecal incontinence
  - Colostomy Vs Loop Ileostomy
    - Take down complex
    - Distal diversion
    - Ostomy easy to care for
    - Take down easy
    - Proximal diversion
    - Ostomy – leaks often and pt. often gets dehydrated

Can a small post RRP/RALP RUF heal with only diversion?

- Small surgical injury
- Prolonged bladder rest with Foley catheter
- +/- Fecal diversion
- +/- Suppressive antibiotics
- No pelvic RT or HIFU or Cryo
- Up to 25% of such injuries will heal without major reconstruction

Approaches to Fistula Repair

- Transabdominal (a)
- Kraske laterosacral (b)
- Posterior trans-sphincteric (c)
- Trans-anal (d)
- Perineal (e)
### RUF Etiologies/ Incidence

<table>
<thead>
<tr>
<th>Procedure</th>
<th>N</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical prostatectomy without RT</td>
<td>12</td>
<td>23.6%</td>
</tr>
<tr>
<td>Prostate brachytherapy</td>
<td>10</td>
<td>23.8%</td>
</tr>
<tr>
<td>Rectal cancer s/p APR and RT</td>
<td>6</td>
<td>14.3%</td>
</tr>
<tr>
<td>Prostate cryoablation</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>Prostate cryoablation after radiation for rectal cancer</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>High Intensity Focused Ultrasound</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>Sigmoid colectomy for diverticulitis</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>Intersphincteric anal abscess</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>Radical prostatectomy and RT</td>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>XRT and salvage prostatectomy</td>
<td>2</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

N= 42

Ferguson, Brandes J Urol 2008

---

### Transanal endoscopic microsurgery (TEMS)

- **No history of pelvic RT or HIFU or Cryo**
  - Pinpoint fistula
  - Fibrin glue
  - Visible fistula
  - < 1 cm
    - Trans-anal rectal advancement flap or TEMS
    - Gracilis flap, +/- BMG or York Mason
  - >1 cm
    - If large defect (>1-2cm)
      - Gracilis flap or York Mason
    - If small defect, (<1 cm)
      - Repeat trans anal SAF

---

### York Mason

- Symptomatic BNC
- Urological and functional bladder dysfunction
- Persistent fistula
- Consider suprapubic diversion
- Consider TUR and SPT
- Consider AUS

---

### Gracilis Muscle

- Secondary pedicle
- Secondary pedicle
- Gracilis muscle
- Branch to gracilis
- Femoral artery
- Profunda femoral artery
- Superior epigastric artery
- Lateral femoral cutaneous nerve
- Pubic symphysis
- Nerve branch to gracilis
- Pubic symphysis
Adductor Muscles

Gracilis Muscle

<table>
<thead>
<tr>
<th>Function</th>
<th>Adductor thigh and flex knee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Origin</td>
<td>Ilium and inferior pubic ramus</td>
</tr>
<tr>
<td>Insertion</td>
<td>Medial tibial condyle</td>
</tr>
<tr>
<td>Innervation</td>
<td>Branch of obturator nerve (L2, L3, L4)</td>
</tr>
<tr>
<td>Blood supply</td>
<td>Perforating artery of femoral a.</td>
</tr>
<tr>
<td>Length</td>
<td>Length of patient's inner thigh approx. (24-30 cm)</td>
</tr>
<tr>
<td>Width</td>
<td>4 cm proximally, 4 cm distally</td>
</tr>
</tbody>
</table>

Gracilis Anatomy

Gracilis mobilization
Prostato-Cutaneous Fistula

Prostato-perineal fistula

Gracilis mobilization prone

Gracilis Flap

- Free BMG
- Gracilis Muscle Interposition
- Fibrin Sealent

Outcome:
No leakage and good urine control at 6 mo.
Vesico-Cutaneous Fistula

Outcomes following Turnbull–Cutait abdominoperineal pull-through compared with coloanal anastomosis

F. H. Remzi, G. El Gazzar, R. P. Krim, H. T. Kiez, and V. V. Faatio

ABD Department of Colorectal Surgery, Cleveland Clinic Foundation, Cleveland, Ohio 44195, USA.

Correspondence to: F. H. Remzi (e-mail: remzi@med.ccf.org).

- N=67; FU = 5.6 yrs.
- 75% success
- 16% stricture, 7% prolapse

Turnball–Cutait

Pelvic Radiation Is Associated With Urinary Fistula Repair Failure and Need for Permanent Urinary Diversion

Valery T. Raap*, John RE. Osterman, Julio Gutierrez*, Kerry Madison*, Avery N. Ho, and Steven B. Brandes

N= 27; RT vs. No RT: 45% v 14% SUI, 45% vs 0% BNC; p=0.0006

Gracilis muscle interposition flap repair of urinary fistulas: pelvic radiation is associated with persistent urinary incontinence and decreased quality of life

Valery T. Raap*, John RE. Osterman, Julio Gutierrez*, Avery N. Ho, and Steven B. Brandes

N= 86; 44 RT, 42 non-RT; Urinary Diversion 72% v. 7%, p<0.001, Repair failure 50% v. 0%, p<0.002; SUI 36% v. 2.4%, p<0.001

Ureteric embolization with stainless-steel coils for managing refractory lower urinary tract fistula: a 12-year experience

Alan W. Sindei, Hui Zhu, David M. Hopson*, and Steven B. Brandes

Department of Surgery, School of Medicine, and Methodist Southwest Hospital, Dallas, Texas, USA.

- N=29; Refractory urinary fistulas
- 23 F, 6 M; mean age 59y; CA in all
- ECOG performance – moderate to poor
- 23 - VVF; 6-prostato, vesical+ urethrorectal fistulas
Ureteral Embolization

- 52 ureters embolized
- 100% success!
- Mean delay to dryness (< 1 pad pd) = 3 days
- 10% (3/29) - Staged urinary diversion
  - 2 transverse colo-conduits, 1 ileal conduit
- 79% (23/29) - Dead @ mean of 8.1 mo.
- 17% (5/29) - Alive @ mean of 44 mo.

Best Candidates:
- Poor performance status
- Limited life expectancy
  - Definitive management
- Staged method to control urine leakage for poor performance status pts.
  - Planned delayed supra-vesical reconstruction

Take Home Messages

- Shared decision making
- Set realistic expectations
- Reconstruction is complex and requires the whole surgical armamentarium
- Long process -- min 6 mo. to 1 yr.
- Consider supra-vesical diversion

Thank you.
THE DEVASTATED URINARY OUTLET IN THE CANCER SURVIVOR

SHYAM SUKUMAR, MD

Columbia University Medical Center

Affiliations to disclose†:

NO CONFLICTS OF INTEREST

Funding for speaker to attend:

☐ Self-funded
☐ Institution (non-industry) funded
☐ Sponsored by:

THE DEVASTATED URINARY OUTLET IN THE CANCER SURVIVOR

BULBOMEMBRANOUS STRICTURE FROM XRT

• BULBOMEMBRANOUS STRICTURE FROM XRT
• INTRAPROSTATIC OBSTRUCTION
• BLADDER NECK CONTRACTURE

BULBOMEMBRANOUS STRICTURE FROM XRT

Outcomes after Urethroplasty for Radiotherapy Induced Bulbomembranous Urethral Stricture Disease

Matthew D. Hofer,* Lee C. Zhao,* Allen F. Morey,* J. Francis Scott,* Andrew J. Chang,* Steven B. Brandes and Chris M. Gontakowicz,*

From the Department of Urology, Northwestern University, Feinberg School of Medicine, Chicago, Illinois, Mayo Clinic, Rochester, Minnesota, Cooley Dickinson Medical Center, Northampton, Massachusetts, and Massachusetts General Hospital, Boston, Massachusetts.

Published online April 8, 2021. Address correspondence to Matthew D. Hofer, MD, Department of Urology, Northwestern University, 303 East Chicago Ave, 9th floor, Chicago, IL 60611-2718. E-mail: Matthew.Hofer@northwestern.edu. Reprints (https://onlinelibrary.wiley.com/reprints) available at https://onlinelibrary.wiley.com/reprints.

© 2021 American Urological Association, Inc. Published by Wolters Kluwer Health, Inc. All rights reserved.

DOI: 10.1097/SCS.0000000000002534

Long-Term Functional Outcomes after Treatment for Localized Prostate Cancer

Matthew J. Reardon, M.D., Tatsuki Kayama, Ph.D., Kang-Hai Pan, M.D., Peter C. Albertsen, M.D., Michael Goodstein, M.D., M.P.H.

One or more of the authors of this article has disclosed potential or pertinent conflicts of interest, which may include receipt of research support, travel support, testimonials, and paid expert testimony. The International Society of Urology requires authors to disclose relevant financial relationships to assist with the full disclosure of potential conflicts of interest.

Table 1. Survey Responses on Selected Items Regarding Urinary, Sexual, and Sexual Function†

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Prostatectomy</th>
<th>Radiotherapy</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary incontinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No control or frequent urinary leakage</td>
<td>2.9</td>
<td>3.2</td>
<td>6.25 (1.00-38.04)</td>
</tr>
<tr>
<td>1 y</td>
<td>1.4</td>
<td>1.6</td>
<td>1.0 (0.58-1.83)</td>
</tr>
<tr>
<td>3 y</td>
<td>1.2</td>
<td>1.4</td>
<td>1.14 (0.68-2.02)</td>
</tr>
<tr>
<td>Follow-up time</td>
<td>10.4</td>
<td>10.4</td>
<td>1.0 (0.1-17.64)</td>
</tr>
<tr>
<td>1 y</td>
<td>12.9</td>
<td>12.9</td>
<td>7.36 (2.27-13.59)</td>
</tr>
<tr>
<td>3 y</td>
<td>17.1</td>
<td>17.1</td>
<td>9.41 (4.51-1.84)</td>
</tr>
</tbody>
</table>

SHYAM SUKUMAR

Funding for speaker to attend:

☐ Self-funded
☐ Institution (non-industry) funded
☒ Sponsored by:

THE DEVASTATED URINARY OUTLET IN THE CANCER SURVIVOR

Affiliations to disclose†:

NO CONFLICTS OF INTEREST

Funding for speaker to attend:

☐ Self-funded
☐ Institution (non-industry) funded
☒ Sponsored by:

THE DEVASTATED URINARY OUTLET IN THE CANCER SURVIVOR

Affiliations to disclose†:

NO CONFLICTS OF INTEREST

Funding for speaker to attend:

☐ Self-funded
☐ Institution (non-industry) funded
☒ Sponsored by:
INTRAPROSTATIC OBSTRUCTION

RADIONECROSIS & INTRAPROSTATIC OBSTRUCTION

BLADDER NECK CONTRACTURE

<table>
<thead>
<tr>
<th>Rate of BNC</th>
<th>Follow up</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5%</td>
<td>44mo</td>
<td>Erickson et al</td>
</tr>
<tr>
<td>11.1%</td>
<td>4.5 years</td>
<td>Borboroglu et al</td>
</tr>
<tr>
<td>25.7%</td>
<td>N/A</td>
<td>Hu et al</td>
</tr>
<tr>
<td>19%</td>
<td>10 years propensity weighted incidence</td>
<td>Jarosek et al</td>
</tr>
</tbody>
</table>

Comparative Effectiveness of Minimally Invasive vs Open Radical Prostatectomy

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>MPH vs RRP, Ratio 95% Confidence Interval</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay (days)</td>
<td>3.1 (2.3-4.1) vs 3.2 (2.4-4.0)</td>
<td>0.6</td>
</tr>
<tr>
<td>Mortality rate</td>
<td>0.4 (0.2-0.6) vs 0.5 (0.3-0.7)</td>
<td>0.21</td>
</tr>
<tr>
<td>Morbidity rate</td>
<td>4.3 (3.5-5.2) vs 4.5 (3.7-5.3)</td>
<td>0.4</td>
</tr>
<tr>
<td>Incontinence per 100 person-years*</td>
<td>26.9 (21.4-32.9) vs 29.3 (23.6-35.0)</td>
<td>0.06</td>
</tr>
<tr>
<td>Prostatectomy</td>
<td>7.8 vs 7.9</td>
<td>0.87 (0.8-1.1)</td>
</tr>
<tr>
<td>Erectile dysfunction per 100 person-years*</td>
<td>23.6 (19.0-28.2) vs 25.0 (20.3-30.7)</td>
<td>0.28</td>
</tr>
</tbody>
</table>

* Denotes significant difference.
LOW RALP: 0.2%-1.4%
- Running Suture (Rocco, Van Velthoven)
- Magnified Visualization
- Lower EBL
- Mucosal Eversion
- Improved Instrument Maneuverability

OTHER RISK FACTORS FOR BNC
- Prolonged Urinary Leak
- Postop Pelvic Bleed/ Hematoma
- Cigarette Smoking
- CAD
- Infra-OP EBL
- Surgical Clip Migration (LAPRA-TY, Weck)
- Excessive Luminal Narrowing (BN RECON)
- Local Tissue Ischemia
- Failed Mucosal Apposition
- Anastomotic Tension

BNC STENOSIS CHARACTERISTICS
- Not a Urthral Stricture
- Akin to a PFUI
- Distraction of Urthral-Vesico Anastomosis
- Length
- Location
- Etiology
  - RALP v RRP
  - Post of BLEED
  - Urinary Leak
  - Adjuvant EBRT

RISK FACTORS FOR POST CAP TX BNC

MAJOR LITERATURE WEAKNESSES:
- All Retrospective and Oxford LOE 4 series
- Stenosis Length or Lumen Size — No Details
- Flow-Rate, IPSS, or PVR: No Details
- No Uniform Accepted Grading Scale
- No Uniform Definition of Success

594 papers identified; 22 met criteria for review
**DILATION**

<table>
<thead>
<tr>
<th>Study</th>
<th>Follow-up (mo)</th>
<th>Initial Success Rate (%)</th>
<th>Eventual Success Rate (%)</th>
<th>De Novo Incontinence Rate (%)</th>
<th>OC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buxton, 2000</td>
<td>54</td>
<td>58</td>
<td>NR</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Park, 2001</td>
<td>12</td>
<td>NR</td>
<td>92.3</td>
<td>NR</td>
<td>3mo</td>
</tr>
<tr>
<td>Besaratos, 2004</td>
<td>30</td>
<td>81</td>
<td>100</td>
<td>S</td>
<td>Yes</td>
</tr>
<tr>
<td>Thien, 2006</td>
<td>51</td>
<td>77</td>
<td>100</td>
<td>NR</td>
<td>No</td>
</tr>
<tr>
<td>Kumar, 2007</td>
<td>33</td>
<td>89</td>
<td>89</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Giannarini, 2008</td>
<td>69</td>
<td>6.5</td>
<td>NR</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Kraitchik, 2013</td>
<td>56.4</td>
<td>10.3</td>
<td>NR</td>
<td>NR</td>
<td>No</td>
</tr>
<tr>
<td>Kraitchik, 2013</td>
<td>62.5</td>
<td>78.6</td>
<td>93</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>Total</td>
<td>47.9 (Avg)</td>
<td>53</td>
<td>97</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

**TUINN**

**DEEP TUINN**

<table>
<thead>
<tr>
<th>Study</th>
<th>No. of Prior AS Treatments</th>
<th>Follow-up (mo)</th>
<th>Initial Success Rate (%)</th>
<th>Eventual Success Rate (%)</th>
<th>De Novo Incontinence Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yurkin, 2001</td>
<td>0</td>
<td>31</td>
<td>87</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>Anger, 2005</td>
<td>0</td>
<td>7.4</td>
<td>74</td>
<td>100</td>
<td>NR</td>
</tr>
<tr>
<td>Giannarini, 2008</td>
<td>0</td>
<td>69</td>
<td>74</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Etanay, 2008</td>
<td>0-1</td>
<td>24</td>
<td>83</td>
<td>96</td>
<td>NR</td>
</tr>
<tr>
<td>Vani, 2011</td>
<td>Multiple</td>
<td>12</td>
<td>72</td>
<td>94</td>
<td>5.6</td>
</tr>
<tr>
<td>Kraitchik, 2013</td>
<td>6</td>
<td>49.9</td>
<td>50</td>
<td>88</td>
<td>12.5</td>
</tr>
<tr>
<td>Total</td>
<td>37.2 (Avg)</td>
<td>74.1</td>
<td>97.1</td>
<td>4.6</td>
<td></td>
</tr>
</tbody>
</table>

De novo incontinence = 100%

**TUINN + BIOLOGIC MODIFIERS**

- MMC
  - PROMISING RESULTS
  - JURY STILL OUT
- STEROIDS
  - LONGER TIME TO RECURRENCE
  - RESTENOSIS RATES UNCHANGED
- AMNIOFILX
  - AMNION- CHORION = RICH IN GF
  - (?)

**TUR-BN**

<table>
<thead>
<tr>
<th>Study</th>
<th>Follow-up (mo)</th>
<th>Initial Success Rate (%)</th>
<th>Eventual Success Rate (%)</th>
<th>De Novo Incontinence Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagerveld, 2005</td>
<td>18</td>
<td>100</td>
<td>100</td>
<td>0/10</td>
</tr>
<tr>
<td>Rabb, 2007</td>
<td>12</td>
<td>86</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Kraitchik, 2013</td>
<td>47.3</td>
<td>100</td>
<td>100</td>
<td>71</td>
</tr>
<tr>
<td>Total</td>
<td>21.9 (Avg)</td>
<td>93.4</td>
<td>100</td>
<td>15</td>
</tr>
</tbody>
</table>
**BN STENT (WALL STENT)**

<table>
<thead>
<tr>
<th>Study</th>
<th>Follow-up (mo)</th>
<th>Initial Success Rate (%)</th>
<th>Eventual Success Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elliott, 2001</td>
<td>17.5</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
<td>Anger, 2005</td>
<td>7.4</td>
<td>78</td>
<td>N/A</td>
</tr>
<tr>
<td>Elliott, 2006</td>
<td>24</td>
<td>80</td>
<td>N/A</td>
</tr>
<tr>
<td>Magiera, 2009</td>
<td>34.8</td>
<td>52</td>
<td>76</td>
</tr>
<tr>
<td>Borrer, 2011</td>
<td>37</td>
<td>76</td>
<td>NR</td>
</tr>
<tr>
<td>Erickson, 2014</td>
<td>27.6</td>
<td>50</td>
<td>86</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>30.2 (Avg)</strong></td>
<td><strong>65.2</strong></td>
<td><strong>86.1</strong></td>
</tr>
</tbody>
</table>

De novo incontinence = 100%

---

**URETHRAL STENTS FOR REFRACTORY BNC MANAGEMENT?**

- Permanent
- Retrievable
- Bio-absorbable
- Drug eluting

---

**Vesicourethral Anastomotic Stenosis**

- Continent at baseline
- Resistant at baseline
- Obstructive stenosis
- Transurethral electrothermal incision
- Repeat electrothermal incision
- Open surgical reconstruction
- Male incontinence procedure
- Urinary diversion

Sukumar and Elliott, 2016

---

**OPEN BN RECONSTRUCTION**

<table>
<thead>
<tr>
<th>Study</th>
<th>Follow-up (mo)</th>
<th>Initial Success Rate (%)</th>
<th>Eventual Success Rate (%)</th>
<th>De Novo Incontinence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theodoreos, 2009</td>
<td>24.4</td>
<td>83</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Elliott, 2006</td>
<td>24</td>
<td>76</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Simonato, 2007</td>
<td>38</td>
<td>500</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Plessigris, 2011</td>
<td>60</td>
<td>60</td>
<td>95</td>
<td>36</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>41.9 (Avg)</strong></td>
<td><strong>74.0</strong></td>
<td><strong>96.1</strong></td>
<td><strong>58.4</strong></td>
</tr>
</tbody>
</table>
**OPEN REPAIR**

- Potentially morbid
- Needs a highly motivated and well-informed patient
- Challenging surgery — requires being facile with multiple reconstructive techniques
- Requires a staged AUS
- Less then ideal overall success
- Supravesical diversion may ultimately be needed

**OPEN VESICO-URETHROPLASTY**

**Surgical Approaches**

1. **Perineal Approach**
   - May require inferior pubectomy

2. **Abdomino-perineal approach**
   - Superior pubectomy vs total pubectomy and omental flap
   - 2 team approach preferred

**OPEN VESICO-URETHROPLASTY**

Post Reconstruction Incontinence

Planned AUS at 6-12 m.o. — if BN open
- Consider trans-corporal cuff

**PERINEAL APPROACH**

Mundy and Andrich, 2012
BIPEDAL BLOOD SUPPLY

**URETHRAL-VESICAL EPA**
- "URETHRAL ADVANCEMENT FLAP SURGERY"
- RELIES ON BIPEDAL CORPUS Spongiosal CIRCULATION
- DETACHED FROM ITS PROXIMAL VASCULAR SUPPLY THE URETHRA IS DEPENDENT ON DISTAL RETROGRADE BLOOD FLOW
- PERFORATORS
- CIRCULATE FEMORAL ARTERIES

SURGICAL GOALS
- TENSION-FREE ANASTOMOSIS
- SPATULATED URETHRA
- MUCOSA TO MUCOSA APPOSITION
  - URETHRA TO BLADDER
  - LIBERAL EXCISION OF "SCAR"

METHODS TO BRIDGE THE GAP IN ANASTOMOTIC URETHROPLASTY
- NATURAL ELASTICITY OF THE MOBILIZED CORPUS Spongiosum
- SHORTEN THE DISTANCE BETWEEN THE DISTAL AND PROXIMAL ENDS OF THE URETHRA

DEVASTATED OUTLET
- BLADDER NECK STENOSIS BEYOND REPAIR
- FAILED MULTIPLE ENDOSCOPIC METHODS
- OBLITERATIVE STENOSIS
OPTIONS FOR SUPRAVESICAL DIVERSION

- INCONTINENT
  - SP tube
  - ileal conduit
  - transverse colon conduit
  - cutaneous ureterostomy

- CONTINENT
  - catheterizable stoma
  - catherizable stoma + augmentation cystoplasty
  - continent cath urinary diversion (i.e., Indiana)

CATHETERIZABLE STOMAS FOR THE DEVASTATED OUTLET

- SURGICAL DECISION MAKING:
  - bladder capacity
  - performance status
  - manual dexterity
  - pt. desire

- OPTIONS:
  - mitrofanoff (appendix)
  - monti
  - ileal crural valve (Indiana, Florida etc.)
  - ileal intussucception (Mains, Koch etc.)

MITROFANOFF PRINCIPLE

MONTI CATHETERIZABLE CHANNEL

Spiral Monti and bladder augment

SPIRAL MONTI
STOMA COMPlications

- **Stomal Stenosis**
  - 30 - 55%
  - U with V-flap and VQZ-flap
  - Pain + difficult cath
- **Confinence**
  - 95-99% (Peds)
  - 75-95% (Adults)
  - Durables Results

- Gowda et al: BJU 2008
- Van der Aa et al: Neuro UroD 2009

BNC TREATMENT CONCLUSIONS

1. A graded approach
   - Each successive intervention is more invasive
2. The more invasive the treatment
   - Expect more de novo SUI
   - May need an interval series of AUSs
3. Deep TUBIN or Open BN reconstruction
   - Assumes severe post-ED
   - Staged AUS for (ED) > 6 to 12 mo.

TAKE HOME MESSAGE

- Bulbosphenian strictures, bladder neck contractures, and intraprostatic obstruction are major manifestations of the devasted outlet after prostate cancer therapy
- Open BN reconstructions can be technically difficult and have moderate success
- For obliterative BNC & high risk urethral stricture disease → Consider Supra-vesical diversion

Procedures Needed to Maintain Functionality of Adult Continent Catheterizable Channel: A Comparison of Continent-Colostomy/Colo-ileoileal Neobladder with Tunneled Catheterizable Channels

- N=61: mean age 41 (22-73), median follow-up 1.6 mo.
- 31 continent ileal diversion, 30 cecocystoplasty
  - 13% of morbidity
  - Stomal Confuence 70%, cecocystoplasty 57%
  - Postop complications: tunneled channel 45%, cecocystoplasty 40%
- Secondary procedures for leakage, stomal stenosis, or cath issues
  - Tunneled Channel 50% (15/30)
  - Cecocystoplasty 40% (12/30)
Genitourinary Cancer Survivorship: A Practical Master-Class

WORKSHOP FACULTY:
• ANDREW PETERSON
• STEVEN BRANDES
• SHYAM SUKUMAR
• MATTHEW P RUTMAN

WORKSHOP SCHEDULE:
14:05 HOW TO DEVELOP A GU CANCER SURVIVORSHIP HOSPITAL BASED PROGRAMME
• ANDREW PETERSON
14:25 MANAGING COMPLEX URINARY FISTULAS IN THE CANCER SURVIVOR
• STEVEN BRANDES
14:50 THE DEVASTATED URINARY OUTLET IN THE CANCER SURVIVOR
• SHYAM SUKUMAR
15:15 MANAGING STRESS INCONTINENCE IN THE CANCER SURVIVOR
• MATTHEW P RUTMAN

**WIN $150 AMAZON VOUCHERS**
Please complete the in-app evaluation in the workshop before leaving.

Step 1: open app and select programme by day
Step 2: locate workshop
Step 3: scroll to find evaluation button
Step 4: complete survey – enter email at end to enter prize drawer

A shortened version of the handout has been provided on entrance to the hall
A full handout for all workshops is available via the ICS website.
Please silence all mobile phones
PDF versions of the slides (where approved) will be made available after the meeting via the ICS website so please keep taking photos and video to a minimum.

Management of Stress Incontinence in the Cancer Survivor
Matthew Rutman, MD
Associate Professor
Columbia University
Managing Stress Incontinence in the Cancer Survivor

- Objectives from syllabus:
  - The cancer survivor is a unique population that is complicated by prior pelvic surgery, concomitant chemo and radiotherapy, performance status and patient expectation
  - Method as to properly selecting the best quality of life operation with patient performance status, manual dexterity and expectation will be detailed
  - Specifics as to how to modify surgical techniques, selection and timing as to urethral slings and artificial urinary sphincters for the cancer survivor (post radiation, post chemotherapy) will be detailed

Causes of Male Stress Urinary Incontinence (SUI)

- Radical Prostatectomy (2-9%) - 2012 meta-analysis 4-31% at 12 months
- Radiation +/- other treatments for prostate cancer
- Surgery for benign prostatic hypertrophy (BPH)
- Neurological lesions and Trauma
- Breaking down XRT:
  - SUI uncommon after primary brachytherapy or radiation therapy (XRT)
  - Up to 22% incidence significant SUI if XRT following prior radical prostatectomy
  - Up to 10% incidence SUI if XRT after transurethral resection of prostate (TURP)

Post-prostatectomy Incontinence

- Reported rates vary according to definitions of PPI
- Included: no use of pads, 1 pad per day, drops of urine, etc.
- Various tools used to evaluate incontinence
  - Validated questionnaires, interviews from a data manager, or direct patient response
  - Several recent series use definitions that include “total control”, “occasional leakage but no pad”, and “less than one pad”
- Quality of life (QoL) strongly correlates with level of incontinence
- Wearing one pad more significantly affects QoL than wearing no pad

Recovery of Continence After Prostatectomy

- Most studies report progressive return of incontinence up to one year after surgery
- A few studies report that incontinence may continue to improve up to 24 months
- Objective assessment of the natural history of post radical prostatectomy incontinence using a standardized 1 hour pad test
  - 18 week marker appears to be the time point after which the majority of patients have achieved control

Pathogenesis

- Sphincter dysfunction
- Bladder dysfunction
  - Overactive bladder
  - Decreased capacity
- Combined dysfunction
- Obstruction
  - Stricture
  - Bladder neck obstruction
**Patient Evaluation**

- **History**
  - Pre-op continence, defecation
  - H/o XRT, bladder neck contractures, TURP
  - Assess physical & mental capacity to work AUS if being considered

- **Physical exam**
  - GU tract, neuro-urological
  - S2-S4 segments – perineal sensation, digital rectal exam
  - Urinalysis, Urine culture, post-void residual
  - Rules out UTI and overflow

**Evaluation of PPI**

- No universally agreed upon method to quantify degree and severity of PPI
- Simplest: ask about pad use over a period of time, but...
  - Some change due to odor, convenience, wetness, etc.
  - 24 hour pad test and 1 hour pad test have been used

**Cystourethroscopy – Mandatory**

- Must rule anastomotic or urethral stricture pre-op
  - If contracture, treat and ensure recurrence free for 3 months prior to anti-incontinence surgery
- Hx of bladder pathology (bladder cancer, recurrent stones)
  - May need future transurethral access
- ?? Assess residual sphincter function
  - I don't find that to be helpful or reproducible

**Urodynamics in Eval of PPI**

- Rule out detrusor overactivity
  - Particularly in cases with MUI, significant UUI component
- Hx of XRT & concerns about compliance
- ? Assess Valsalva leak point pressure
  - Does not correlate well with degree of UI on 24 hour pad test
- I don't find UDS to be helpful in straightforward cases

**Is Bladder Contractility Important (BCI)?**

- Paucity of evidence re: impaired contractility
- AUS outcomes same with normal vs. weak detrusor
- Potentially obstructive sling with detrusor underactivity may pose risk of retention
  - Sling is designed to prevent leakage with straining

**Medical Therapy for Male SUI**

- Pharmacologic Treatment of Male Stress Urinary Incontinence: Systematic Review of the Literature and Levels of Evidence

  Peter Tsiodras*, Jean J. de la Rosette*, Martin C. Michel*, Matthias Oelke**

  *Department of Urology, Academic Medical Center, University of Amsterdam, The Netherlands
  **Department of Pharmacy and Pharmacology, Academic Medical Center, University of Amsterdam, The Netherlands

  (August 2018)
Medical Therapy for Male SUI

**Medical Therapy for Male SUI**

**Duloxetine for the treatment of post-prostatectomy stress urinary incontinence**

Donald Nofi, MD; Amy Guise, MD; Michael I. Gurovich, MD; Peter Langenstroer, MD; William A. Soo, MD; Kenneth M. Jacobowitz, MD; R. Gray Jordon, MD

Department of Urology, Medical College of Wisconsin, Milwaukee, WI

**Surgical Treatments of Male SUI**

- Injection of urethral bulking agents
- AdvRance Sling
- Artificial Urinary Sphincter (AUS)
  - When given the choice between AUS and a male sling, 92% choose sling
    - Additionally, in a group of 46 pts, 89% agreed to sling when rec'd by MD
      - Out of 63 pts rec'd to have AUS, 75% proceeded, other 25% opted for sling

**My Bottom Line for Male SUI**

**SPHINCTERIC INCONTINENCE**

SLING
AUS

- I do not use bulking agents

---

**Medical Therapy for Male SUI**

**Duloxetine for the treatment of post-prostatectomy stress urinary incontinence**

Donald Nofi, MD; Amy Guise, MD; Michael I. Gurovich, MD; Peter Langenstroer, MD; William A. Soo, MD; Kenneth M. Jacobowitz, MD; R. Gray Jordon, MD

Department of Urology, Medical College of Wisconsin, Milwaukee, WI

**Surgical Treatments of Male SUI**

- Injection of urethral bulking agents
- AdvRance Sling
- Artificial Urinary Sphincter (AUS)
  - When given the choice between AUS and a male sling, 92% choose sling
    - Additionally, in a group of 46 pts, 89% agreed to sling when rec'd by MD
      - Out of 63 pts rec'd to have AUS, 75% proceeded, other 25% opted for sling

**My Bottom Line for Male SUI**

**SPHINCTERIC INCONTINENCE**

SLING
AUS

- I do not use bulking agents

---

**Medical Therapy for Male SUI**

**Duloxetine for the treatment of post-prostatectomy stress urinary incontinence**

Donald Nofi, MD; Amy Guise, MD; Michael I. Gurovich, MD; Peter Langenstroer, MD; William A. Soo, MD; Kenneth M. Jacobowitz, MD; R. Gray Jordon, MD

Department of Urology, Medical College of Wisconsin, Milwaukee, WI

**Surgical Treatments of Male SUI**

- Injection of urethral bulking agents
- AdvRance Sling
- Artificial Urinary Sphincter (AUS)
  - When given the choice between AUS and a male sling, 92% choose sling
    - Additionally, in a group of 46 pts, 89% agreed to sling when rec'd by MD
      - Out of 63 pts rec'd to have AUS, 75% proceeded, other 25% opted for sling

**My Bottom Line for Male SUI**

**SPHINCTERIC INCONTINENCE**

SLING
AUS

- I do not use bulking agents
Male Slings

- With > 85% patient satisfaction rates with AUS why offer a sling?
- Patients who do not want a mechanical device
- Patients who cannot use a mechanical device
- Patients with lesser degrees of incontinence who feel an AUS is not warranted

Male Slings

- Increasing use in men with mild to moderate PPI (1-3 pads/d)
- Bone-anchored sling (BAS): InVance Sling, AMS
  - Provided direct compression of distal bulbar urethra against the GU diaphragm
  - Permanent synthetic sling fixed to inf. pubic ramus using bony screws and polypropylene sutures
  - Several large studies with 3 to 5 year f/u: pad free rate around 50-65% and success rate (<1 pad daily) of 65-80%
  - BUT...risk of bony pain/perineal pain and dislodgement of screws

Male Slings

- 2006, AdVance sling (Boston Scientific) introduced
  - Most frequently used sling worldwide
  - Self anchored bilateral polypropylene mesh arms placed transobturator
  - Sling is secured at proximal bulb urethra
  - Hypothesized MOA (Rehder et al, Adv Urol, 2016):
    - The AdVance Sling relocates the posterior urethra and EUS region to it’s native position, has venous sealing effect and increases functional urethral length
- 2010, AdVance XP introduced in Europe
  - Anchors and increased length of sling arms and improved needle shape

Male Slings

- First retroluminal transobturator sling FDA approved in October 2007
- Mechanism based on relocation of proximal urethra
- Sling exerts dorsal sphincter support and NOT primarily compression

AdVance Sling

- Complications
  - Bleeding
    - Typically minimal
    - Can be resolved with pressure
  - Retention
    - Not uncommon immediately post-op
    - All incidences have been resolved Most-48 hours
  - Infection
    - Have not seen
  - Pain
    - Minimal to no pain issues
    - Stress importance of patient adherence to post-op instructions
Postoperative Plan for Perineal Slings

- Foley catheter for 0-3 days (some leave without)
- No sexual relations for 6-8 weeks
- Refrain from strenuous activity for 6 weeks (lifting > 1 gallon milk)
- No hot tubs, jacuzzi, or bathing for 6 weeks

Most frequent complication: transient retention and short term pain

Male Slings

- Most frequent complication: transient retention and short term pain
- Early data: poor results in patients s/p XRT
- Therefore most recommend avoiding in severe incontinence and prior XRT

Virtue Male Sling (Coloplast)

- Introduced in 2009, quadratic retro-urethral TO male sling
- 4 sling arms: 2 TO and 2 pre-rectal
- Recent prospective 2 center trial with 23 pts with mild to mod PPI
  - Significant improvement in daily urine loss (p<0.001) with up to 36 mo. f/u
  - BUT... overall complication rate of 56.6%
- McCall et al. reported on 32 patients with median f/u of 55 months
  - 22% sling explant due to continence failure of chronic pain
  - Failure rate of 68%
- Authors concluded Virtue male sling should not be recommended for Tx of PPI

Perineal Sling: Potential Advantages vs AUS

- Compresses only the ventral aspect of the bulbar urethra
  - dorsal and lateral blood flow intact
  - minimizes urethral atrophy
  - cushions urethra, minimizes risk of erosion, atrophy
- No mechanical components to malfunction
  - No connections, no fluid

Adjustable Retropubic Slings (ARS)

- Inserted suburethrally on top of BS muscle
- Place pressure on bulbar urethra to improve continence
- Postoperatively, tension is adjusted to achieve continence
- Argus and Argus T (Promedon, Argentina), ATOMS (Austria) and Remex (Neomedic, Barcelona, Spain)
- EAU guidelines state there is no evidence that adjustability of a sling offers a benefit for the patient
Artificial Urinary Sphincter

- First AUS implanted in 1972
- Multiple revisions perfecting the device
- Culminated into AMS 800
  - 1983 First commercially available
  - 1987 Narrow-backed cuff modification
  - 1988 Kink resistant and color coded tubing
- Evolved into Gold Standard for Male SUI

AMS 800 Artificial Urinary Sphincter

- Satisfaction rates approximately 85-90%
- Social continence rates 69-88% at 3-11 years
- Pad free/no leakage rates up to 75%
- Durability 72 to 79% at 5 years (no second surgery)
- Recent long term studies: success rates of 55 to 77%
- Counsel patients pre-op that AUS has a median lifespan of 5 - 7 years

AUS Complications

- Risks (pooled analysis by Van der Aa)
  - Malfunction: 6.2 % (range 2.0 to 13.8%)
  - Erosion: 4.7%
  - Infection: 1.0-5.6%
  - Atrophy: 7.9% (range 1.9 to 28.6%)
  - Reoperation rate: 26% (range of 14.8 to 44.8%)
- Limitations
  - Different definitions & outcome parameters
  - Variations in technique, surgeon
  - Length of follow-up

How to Manage AUS Complications

- Device infection: remove entire device followed by re-implant at least 3 months later (AUS Consensus Group, 2015)
- Urethral cuff erosion: device removal but if within 6 weeks, can remove cuff only
  - Replacement should be done at different urethral location or trans-corporal
- Urethral atrophy causing recurrent incontinence
  - Reposition cuff proximally
  - Decrease cuff size
  - Place second tandem cuff
  - Transcorporal placement
  - Mechanical failure: replace whole system
- Urinary retention in AUS patient: Deactivate AUS, if greater 48 hours, SP tube

AUS and XRT

- Higher revision rate for the AUS following XRT compared to lower risk patients
  - 38% versus 22%
- Higher incidence of erosion and infection as well as urethral atrophy
  - Secondary to radiation induced urethral fibrosis
- Good results are obtainable
  - May need to go transcorporal or use smaller 3.5 cm cuff

AUS 800

- Good Candidates:
  - SUI w/o radiation
  - SUI w/ radiation
  - After Salvage prostatectomy
  - TURP
- Full range (mild to severe)
- Previous AUS failures
- Poor Candidates
  - Poor bladder storage
  - Impaired compliance
  - Poor dexterity
  - Poor mental aptitude
  - Non-stable bladder neck contracture
What should you offer?

**AUS Preferred**
- 1. ISD / weak bladder
- 2. Severe incontinence
  - unlikely to have predictable success w/ sling
  - Quadratic sling under investigation
- 3. XRT
- 4. Revision surgery

**Consider a sling**
- 1. Mild leakage
- 2. Moderate incontinence
  - Lengthy discussion

Novel AUS Devices

- None currently approved for use in the US
- Flow Secure AUS (Barloworld Scientific Limited, Stone, UK)
  - 2 separate PRB’s where second PRB allows the cuff to remain at lower pressure
  - Increases intermittency with increase in intra-abdominal pressure
  - High rates of mechanical failure, infection and pump perforation, explant in 28% of pts
- Zephyr ZSI 375 (Geneva, Switzerland)
  - Hydraulic based single unit system
  - Able to adjust pressure of device
  - Small series of 34 pts: 94.2% socially continent, 5.8% explant rate for infection
- Other new devices under devt.

Continence Balloon Implants

- Pro-ACT (adjustable continence therapy): Uromedia Inc, MN, USA
  - Approved for use in US
  - 2 silicone balloons placed in perirectal position
  - Adjustable via titanium port placed in scrotum
  - Gregori et al. reported on 73 patients with PPI
    - 66.1% dry, 25.8% improved, 8% failure at 25 months
    - 2.5% bladder perforation, 1.2% urine retention, 3.8% migration
  - Advantages over AUS: easy insert, low cost, easy adjust

Recurrent PPI After Initial Therapy

- Rule out bladder dysfunction (consider UDS testing)
- Cystourethroscopy (rule out sling or AUS erosion)
- If failed prior sling, can consider repeat sling procedure
  - Martinez et al. found patient failing late (2 years post-op sling), improved with salvage AdVance sling
  - Consider AUS (most experts agree)
  - Registry of 16,348 men with PPI: 13% of men who undergo sling eventually require AUS
  - Leave mesh in situ if it was Advance, but not Virtue
    - Prior sling does not make AUS more difficult or decrease efficacy

Summary

- AUS is still the gold standard
- Sling procedures have emerged as viable options for the treatment of mild-moderate stress incontinence
- Managing patient expectations is the key to successful treatment

Thank you