What should you know about Male Urinary incontinence: Aspects of the problem and the Total approach

W40, 16 October 2012 14:00 - 17:00

Start	End	Topic	Speakers
14:00	14:15	How to evaluate the male incontinent patient	• Ajay Singla
14:15	14:30	Patient Groups: their value and role in patient access to care	• Jacqueline Cahill
14:30	14:45	Physical therapy and behavioural modifications: expert opinion and evidence based medicine	• Heather Lynn Moky
14:45	15:00	what is the evidence for medical therapy	• Enrico Finazzi Agro
15:00	15:25	Alternative urinary sphincters	• Wilhelm Hubner
15:25	15:30	Discussion	All
15:30	16:00	Break	None
16:00	16:15	Non-adjustable slings	• Ajay Singla
16:15	16:30	Non-adjustable surgical options	• Ervin Kocjancic
16:30	16:50	Interactive roundtable with case presentation	All
16:50	16:55	Q. and A.	All
16:55	17:00	Take home message and conclusions	• Ervin Kocjancic

Aims of course/workshop

The aim of the workshop is to give a comprehensive overview of the current aspects of male urinary incontinence in a multidisciplinary fashion. All the relevant health care providers: the continence advisor, physical therapists and urologists will discuss the current possible options for an optimal counselling and treatment of male urinary incontinence. At the end of the session the participants will be able to organize Patient support groups; familiarize with the most frequently performed physical therapy and other rehabilitation options; achieve the basic knowledge of different surgical options, management of difficult cases and complications.

Educational Objectives

Urinary incontinence post radical prostatectomy has a negative impact on the Quality of Life. The treatment of urinary incontinence in men is a challenge. With the increase of diagnosis and surgical treatments of prostatic cancer, the number of patients with urinary incontinence will increase. Various treatments have been introduced for the treatment of post-prostatectomy incontinence, such as, physiotherapy, sling, urethral constrictor, ProACT, and artificial sphincter. The purpose of this workshop is to discuss the evaluation and management of patients with urinary incontinence, how to treat complications and fix failures Case discussions will give practical views of the problems. We will discuss the evaluation recommendation. The results and advantages of each surgical technique will be discussed. Q&A and cases are provided during the workshop.

Workshop

What should you know about Male Urinary incontinence: Aspects of the problem and the Total approach

What is the evidence for medical therapy

Enrico Finazzi Agrò

Urinary incontinence is less commonly observed in male than in female patients and can be neurogenic, iatrogenic or idiopathic. The most common forms are stress, urgency and mixed incontinence.

Several drugs have been proposed for the treatment of stress urinary incontinence; alfa and beta adrenoceptor agonists; beta III adrenoceptor antagonists; serotonin-noradrenaline reuptake inhibitors. Only sparse data of efficacy in male urinary stress incontinence are available for these drugs.

Urgency incontinence can be treated by antimuscarinic drugs, drugs acting on membrane channels (Calcium antagonists, K-Channel openers), drugs with mixed actions, antidepressants, alpha-adrenoceptor antagonists, Beta-adrenoceptor antagonists, Beta-adrenoceptor agonists, PDE-5 Inhibitors, COX-inhibitors, Toxins (botulinum toxin, capsaicin, resiniferatoxin). Only antimuscarinics, some drugs with mixed actions (such as oxybutynin and propiverine) and botulinum toxin have been recommended with a high level of recommendation (A) by the 4th International Consultation on Incontinence (ICI). Generally, data of efficacy of these drugs on male urinary incontinence are less common than data on female urinary incontinence.

The exact role of medical therapy in male patients has not been completely defined, except for some antimuscarinics and botulinum toxin in neurogenic patients. Further evidence is needed for all the remaining drugs and indications.

Post orpeative adjustable procedures for male stress urinary incontinence

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INTRODUCTION:

The incidence of urinary Incontinence after prostate surgery is a grossly under reported problem, with a significant variation between reports. Many men do not seek medical treatment, partially due to the relatively ineffective treatment options available. The Artificial Urinary Sphincter (American Medical Systems) is considered the gold standard of surgical intervention however its global adoption is limited somewhat by the cost, the invasiveness of the technique, and therefore the skill of the surgeon to perform the procedure and manage the complications, as well as the need for patient participation in its management.

Surgical therapy of male incontinence follows different strategies compared to female incontinence. The vast majorityof cases will need therapy for incontinence that was caused by surgical procedures, mainly radical prostatectomies. Due to that etiology clinical findings are also different than in the female. Most patients will be able to interrupt their stream even if they leak heavely. Additionally you will find the leakage to increase in the afternoon in the most cases. This is the clinical impact of an impaired striated muscle function (innervated by the pudendal nerve). However, the striated muscle is not capable of a long term contraction, which finally results in the clinical sign of incontinence due to fatigue.

It is well understood, that during radical prostatectomy the structures compromised usually include the autonomous innervation of the smooth muscle of the sphincter system. Therefore our goal must be to support this smooth muscle function.

Adjustable male slings (Argus, Remeex, Atoms)

Adjustable male slings are supposed to reestablish the baseline continence provided by the smooth musce system. It is the goal to support this function by a minimal increase of the urethral resistance (10-15cmH20). Adjustable male slings (Argus, Reemex) support the bulbar urethra thereby also using the bulbar venous tissue as a continence factor. Both systems (Argus, Reemex) are placed under the bulbar urethra and passed through the retropubic space up to the suprapubic region, where it is fixed. The argus-sling may as well be fixed using a transobturator approach. Anytime after placement of the sling the tension under the urethra maybe adjusted.

Surgical technique

For the „ Argus-classic" implantation a 10 cm longitudinale perineal incision is carried out after placement of a foley catheter. The subcutaneous tissue ist divided and the bulbo-spongiosus muscle is prepared. With the intact muscle covering the bulbar urethra the crura are freed on both sides of the bulbo-cavernosus muscle to show a triangular space between crus and muscle. Now a horizontal incision is made just above the symphysis and the rectus fascia is freed bilaterally approximately 3 cm off the midline. The implantation needle is placed in the triangle between crus and bulbo-spongiosus muscle, protecting the urethra with the tip of an index finger. The needle ist passed through the pelvic floor and in direct and gentle contact with the pubic bone and finally brought up to the suprapubic incision. The sling is then attached to the needle and finally pulled up to the suprapubic region. This procedures ist done bilaterally.

For the Argus „T" a helical needle is used, which is introduced in an outside-in fashion in the typical transobturator manner. The washers used fort he transobturator route are smaller, the excess ends of the columns are brought up to the suprabubic region subcutaneously.

Intraoperative adjustment

For the argus male sling we recommend intraoperative adjustment using a retrograde LPP. Therefore a rigid cystoscope with obturator or a foley catheter is placed in the mid urethra. An infusion bottle is connected to the cystoscope/catheter.

The assistant is asked to slowly move the infusion bottle downward from a level of 50cm until the infusion-flow stops. The upper fluid-level in the infusion bottle is measured against the level of the symphysis with a meterstick, it represents the retrograde leak point pressure (RLPP). This RLPP is taken before placement of the sling (usually 15 – 25 cmH2O) and after placement of the sling. The sling should be adjusted to a RLPP of 25-35cmH20 depending on the preoperative degree of incontinence, thus obtaining an increase of about 10cm which represents the support of the smooth muscle sphincter (baseline continenc). The sling is then fixed with the provided washers.

The Reemex system works in a slightely different way. The suture, that has been brought up to the suprapubic incision will be connected to a so called „varitensor". The varitensor consists of a mechanic system involving a cable winch, that can be adjusted using a little screw driver. This screw driver is left in place at the time of surgery sticking out of the wound. On day 1 after the operation the patient will be asked to void and cough. The sling ist adjusted using the screw driver until the patient bcomes dry, but still is able to void. Then the screw driver is removed and the wound is definitively closed.

Assessment

Sousa et al reported of 51 Remeex patients with the follow up of 32 month. 48 % were found to be dry, 26 % improved, 16 % not improved. Explantation had to be carried out in 6 % of cases.

Viktor Romano and co-workers published 48 patients using the Argus system with a follow up of up to 18 months and found 73 % to be dry, 10 % improved, 17% showed no improvement. In 10 % the sling had to be removed. The first serious of argus T was presented at the EAU meeting in Stockholm 2009 with similar results, however so far only with short follow up.

In our own series including 101 patients with moderate to severe incontinence between prostatectomy and Argus® sling placement, 74,3% had undergone a variety of procedures for SUI or bladder neck pathologies thereby representing a

negative selection. 22 patients had undergone secondary irradiation therapy following surgery . All patients were evaluated pre and postoperatively with a 20 min pad tests, I-QoL questionnaires, cystoscopy and uroflowmetry.The mean follow up was 2, 1 years (0, 1-4, 5).

Adjustment was done in 39 cases (38.6 at an average of 104.3 days (14-910 days) after the initial implantation. The sling had to be removed in 16/101 patients (15.8%) at an average of 371.1 days (range 20-1260) after surgery due to urethral erosion or infection. However 6 out of those 16 patients were within the first 22 patients representing the learning curve. 13 of these patients received later successful treatment (7 with an AUS, 5 with re-implantation of the sling). After a median follow up of 2.2 years, 80/101 (79.2%) patients were considered as dry (pad test 0-1g, 70/101: 0g, 10/101:1g). The I-QoL improved from an average of 28.8 (range 14.5 – 61.8) to a mean of 63.2 (range 16.4-115) postoperatively. Both the 20 minute pad weight tests and I-QoL responses improved significantly compared to presentation at baseline ($p<0.001$).

EBRT subgroup:
Patients in this subgroup where incontinent after RPE (n=20) or TURP (n=2) and only 2 of them had implanted another device before implantation of the Argus® sling (1 Pro ACT®, 1 Invance®). Median FU in this group was 1,5 years (mean: 1,8 years). Of these 22 patients who had received their irradiation therapy prior to implantation of the sling, only 2 erosions and 1 infection emerged. In two cases the sling had to be explanted and this occurred 22 or 430 days after implantation of the Argus sling. The remaining 20 irradiated patients all were dry at their last follow-up contact (dry rate 13%).

Index (standard) patients
As our cohort included a high number of pre-operated and / or irradiated patients which were implanted different other devices to treat the SUI prior to Argus® placement, we evaluated a subgroup of "index patients" (n=32), defined as I. >1y year FU, II. no EBRT, III. no previous surgery for SUI except UTI and IV. SUI only after RPE (n=25) or TURP (n=7).The median FU in this subgroup was 2.3 years

(mean 2.3). The 20 min pad test decreased from preoperative mean 31.5g (range: 5-117) to postoperative mean 0.9g (range: 0-10). 87,5% in this subgroup were considered as "dry" at the time of the last follow up. Within this group only 2 urethral erosions and 3 infections occurred. In 4 of these cases (12.5%) the sling had to be explanted. The I-QoL within this subgroup could be raised to a mean of 58.3 from a preoperative mean of 29.7 points.
In our series success the dry rates showed no correlation between preoperative pad rate or irradiation therapy, the dry rates were similar after short and intermediate follow up.

New developments
Lately the „Atoms" Sling was introduced. It consists of a silicone pad mounted with an adjustable balloon type reservoire, which is implanted via a perineal transobturator approach. The principle is similar to the other adjustable slings, adjustment is easily provided perctaneously through a subcutaneous port in the lower abdomen without the need for any incision. However, so far publications are missing, presentations at international meetings reported short term results similar to Argus and Remeex.

In conclusion it can be stated, that with ajustable slings the dry-rate remains stable over a longer follow up, about 10 - 15% of implants will have to be removed. The number of intermediate results is small.
The postoperative adjustability allows reaction on dynamic changes in the postoperative course, both on possibly changing livestyle of the patient or changing urodynamic parameters.

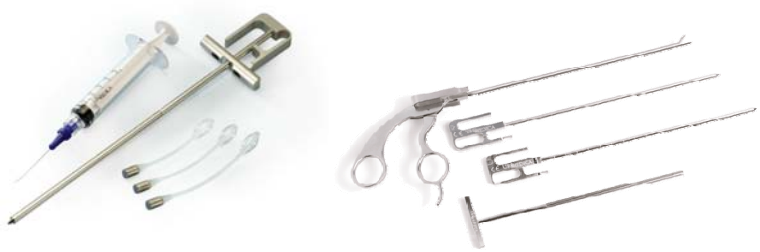
Adjustable artificial urinary sphincters (Flowsecure, Zephyr)

The Flowsecure system basically paralells the wellknown AMS 800 artficial sphincter (to be presented seperately). However, the Flowsecure comes with two additional features: a accessory „stressballoon" placed intraabdominally which is connected to the system between the cuff and the pump, as well as an adjustable pump allowing

to change the volume (thereby the pressure) of the system any time postoperatively. The stress balloon directly transmits any pressure changes within the abdomen to the cuff, thereby allowing to adjust the baseline pressure in the system to lower values. The idea was to reduce the incidence of subcuff atrophy. This innovative approach desibned by Prof. Michael Craggs significantly added to our understanding and knowledge about artificial sphincters.
In spite of these interesting features representing reasonable ideas, after years of development the system itself did not make it to widespread use, mainly due to technical difficulties. Publications in peer reviewed journals are not available.

The french Zephyr Z375 Sphincter has recently granted CE mark and is available on the Eropean market. Developed by Dr Christophe Llorens it comes in one part consisting of two components, a unisize cuff moulded in curve which is adjustable from 3,75 to 5 cm and a pressure regulating pump including one hydraulic and a second compensation circuit. This pump allows adjustment after implantation.
In a first series 36 ots were operated with two thirds of them leaking more than four pads per day. After two years FU 82% were socially dry, 6% improved and 12% failed due to infection. More experience will have to be accumulated to assess ist position in the armamentarium of male incontinence therapy.

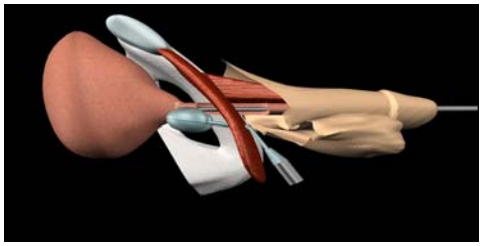
ProACT (Adjustable Balloons)



The ProACT device, developed by Uromedica Inc for the treatment of male stress urinary incontinence is a minimally invasive treatment for this condition, with the

unique feature that it is post operatively adjustable if required. It consists of two silicone elastomer balloons placed paraurethrally at the bladder neck in post radical prostatectomy patients or at the level of the membranous urethra in patients who have residual prostatic tissue following benign surgery. Each balloon is attached via a conduit to a titanium port buried in the anterior lateral aspect of the scrotum. Post operative adjustment of the balloon is facilitated by percutaneous injection of the port, a minimum of 4 weeks post operatively, with a 4 week interval between further adjustments. The implant is available in 12 and 14cm length and each balloon can be inflated up to 8cc over time if necessary. The ProACT device can be simply inserted using general, spinal or local anaesthesia as required.

The procedure was performed using similar technique to that reported by Huebner et al. With the patient in lithotomy position, the bladder is emptied and filled with 100 cc of contrast solution. The filling cystoscope is retained to maintain horizontal positioning of the urethra. Two small perineal stab incisions are made on each side of the urethra, to allow passage of the balloons via designated blunt and sharp trocars and outer cannula. The trocar is designed to perforate the pelvic floor and is gently rotated to advance it towards the bladder neck or membranous urethra as appropriate. Image intensification is used to identify the position of the trocar in relation to the urethra and final position. Once in position, the trocar is removed and a tissue expanding device (TED) inserted through the U shaped channel of the cannula. This device dilates only the area where the balloon will be inflated. The choice of device length is generally made based on the patient anatomical configuration. Prior to insertion, the device is primed to remove all air and is soaked briefly in antibiotic solution. The trocar is removed and the balloon inserted with the assistance of a push wire. Once in position, the balloon is inflated using an isotonic contrast and water mixture using a dedicated non coring 23G needle and syringe. The process is repeated on the contralateral side. A urethrogram should be performed to verify position and a 12 Fr Foley catheter inserted overnight. A superficial pocket is created in the sub dartos fascia of the anterior lateral aspect of the scrotum taking care to ensure that the ports are well separated and able to be accessed easily during post operative adjustments.



Results from different published series:

Author	# pts	% post RP	Avg f/u months	Avg # adjust	% pats impr.	0-1 pds /day %	Pre-op pds/d	Last f/u pds/p	Explan-ted %
Hűbner/ Schlarp	117	88	13	3	90	67	6	1	27
Gilling	33	81	24	3.3			2.8	0.7	9
Trigo-Rocha	23	100	22.4	4.6		65	4.6	1.8	17
Hűbner/ Schlarp	50	100	20	4	82	60	5	1.8	24
Crivellaro	44	100	19		84	68	5.1	2.5	14
Lebret	56	98	6		89	71	4.6	1.8	33.9
Kocjancic	64	100	12	3	80	68	5.2	1.5	17
Martens	29	100	41	3.7	56	31	4.8	3.1	44.8
Luyckx	60	93	8.9	2.7	85	64	2.5	1.2	20
Hidalgo	69	87	22	2-3	84	70			9
Gregori	62	100	25	3.6	92		3.7		4

Reference:

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Physical therapy and behavioral modifications: expert opinion and evidence based medicine

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Lecture Objectives

1. Identify areas of practice in pelvic floor physical therapy
2. Formulate special questions to be included in pelvic floor PT exams
3. Understand general proceedings for a pelvic floor examinations
4. Identify treatment options for incontinence
5. Identify behavioral modification for Incontinence.
6. Identify commonly used treatments in physical therapy.
7. Formulate exercise programs
8. Identify pelvic floor resources

I . Incontinence Statistics

- A. General
  1. World wide 200 Million people
  2. 25 million Americans
  3. Women vs Men 2 to 1
  4. 17 % of men over the age of 60
- B. Post radical retropubic prostatectomy- 8% to 56% of men have UI at 1 year after (Yamanishi et al)
- C. Cost
  1. Financial Cost : Over 19.5 Billion dollars a year in the U.S.
  2. Emotional and Psychosocial costs as well.

II. Area's of Practice of Pelvic Floor Physical Therapy

- A. Women
- B. Men
  1. Incontinence
  2. Pelvic Pain
  3. Erectile Dysfunction
  4. Over Active Bladder
  5. Benign Prostatic Hyperplasia- BPH
  6. Post Surgical
  7. Orthopedic Issues
  8. Other

III. Pelvic Floor Evaluation

- A. Patient History – Past medical and surgical history, present complaints
- B. Outcome tools
  1. International Prostate System Score
  2. PFDI-20 Pelvic Floor Distress Inventory – short form 20
  3. PISQ-12
  4. Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire
  5. PFIQ-7 Pelvic Floor Impact Questionnaire – short form 7
  6. UDI-6 Urogenital Distress Inventory – short form 6
  7. IIQ Incontinence Impact Questionnaire
- C. Symptom Questionnaire
  1. Urination
     a. How often per day? Night?

b. Urinary Leakage ?
    - How many times a day ?
    - How much?
    - Protection worn and how many needed a day
c. Urinary Stream
    - Trouble initiating urine steam
    - Slow/ weak stream
    - Ability to stop the stream
d. Ability to delay urination
    - How long?
    - Pain associated with holding urine?
e. Night time toileting- frequency
f. Triggers
    - Key in the door
    - Hearing water run

2. Bowel
    a. How often do you have a bowel movement?
    b. Consistency of bowel movement
    c. Bowel Leakage
        - How often
        - How much
        - Protection worn and how many needed a day
    d. Constipation and management techniques
    e. Ability to delay bowel movement
3. Sexual Function/ Dysfunction
    a. Frequency
    b. Pain
    c. Urinary or Bowel Leakage
    d. Ability to Climax
    e. History of Abuse

D. Education for the patient
1. Anatomy and Physiology
    a. Bony Pelvis/ Pelvic Girdle
        - Ilium, Ischium, Pubis. Sacrum, Coccyx
    b. Pelvic Floor Muscles
        - Pelvic floor muscles: muscular layer of the pelvic floor
        - Superficial- Urogenital Diaphragm/ Triangle
        - Bulbospongiosus, Ischiocavernousus, Superficial transverse perineal muscle
        - Deep- Levator Ani
        - **Pubococcygeus, Pubovaginalis, Puborectalis, Illiococcygeus**
    c. Sphincters
    d. Viscera
    e. Muscle attachments in and around the pelvis
2. Basics of Micturition
3. Basics of Defecation

E. Objective
1. Posture
2. Breathing
3. Gait
4. Lower Extremity Muscle Length and Strength
5. Range of Motion: Spine and Lower Extremities
6. Abdominal Strength, scars, and Diastasis Rectus Abdominis
7. Visceral Assessment

8. Special Tests
9. Other

F. External Pelvic Assessment
   1. Visual inspection
   2. Skin Integrity
   3. Scars
   4. Perineal Body
   5. Reflexes
   6. Contraction
   7. Valsalva
   8. Palpation

G. Internal Pelvic Assessment: Digital Rectal Exam
   1. Muscle Tone
   2. Muscle Strength
      a. Manual Muscle Test : Laycocks PERFect method
         - **P**ower: strength using mod Oxford
         - **E**ndurance: How long can pt hold contraction
         - **R**epetitions; How many times can pt perform
         - **F**licks: Quick flicks, contract and relax in 10 sec
         - Result 4 number representation of pelvic floor strength, endurance and coordination
         - Strength on a 0 to 5 scale
         - Example 3/10/10/10
   3. Exam Contraindications/Precautions
      a. Contraindications
         - Lack of patient consent
         - Active pelvic infection (vagina or bladder)
         - Active infectious lesions (genital herpes)
         - Absence of previous pelvic exam (pediatric)
         - Inadequate training on part of examiner
      b. Precautions
         - Post Op vaginal/rectal surgery (6-8 weeks)
           - ♦ Surgeon clearance
         - Severe pelvic pain
         - History of sexual abuse

H. Biofeedback
   1. Rectal/ Vaginal Intracavity EMG
   2. External Pelvic Muscle EMG
   3. Real Time Ultra Sound
      a. Pelvic floor Muscles
      b. Sphincter
      c. Abdominal Muscles
      d. Multifidus

I. Bowel and Bladder Diary – Diary of food, drink, leakage, pain, urge, and bathroom trips

IV. Physical Therapy Treatment

A. Behavioral
   1. Bowel and Bladder Diary
   2. Dietary Education
      a. Proper hydration- 8 glasses of water a day
      b. Proper Fiber intake and what foods have fiber in them
      c. Bladder Irritants
         - Caffeine
         - Alcohol
         - Citrus

- Spicy Foods
- Artificial Sweeteners

3. Delaying the Urge to Urinate
    a) Urge Protocol- Contract and Relax the Pelvic Floor Muscles 5-6 times quickly. Then distract yourself. (Count backwards by 100 by 3's or sing a song)
    b) Deep breathing
    c) Retraining: Instead of "Mind over Matter" it is "Brain over Bladder"
    d) Gradual exposure to triggers
4. Timed Toileting
5. Toileting posture/Voiding mechanics
    a. Avoid Valsalva
    b. Pulsed Lip exhalation
    c. Better mechanics to assist relaxation of pelvic floor muscles
6. Body Awareness- Taking note of what certain muscles are doing during different parts of the day- jaw clenched, butt tight, etc. Relax and Release
7. Relaxation techniques

B. Postural Modifications
    1. Teach patient proper posture
    2. Important to stay in balance
    3. Activate Muscles
C. Body Mechanics
    1. Demonstrating proper body mechanics
        a. Lifting, in and out of bed, etc.
        b. Decreasing stress on other parts of your body to help avoid leakage
    2. Pelvic Floor Muscle Activation – "The Knack"
        a. Coughing
        b. Laughing
        c. Lifting
        d. Sneezing – "Squeeze before you sneeze"
        e. Transitions
D. Neuromuscular Re-education
    1. Purpose
        a. Re-educate muscles to perform correctly
        b. Coordination
        c. Contract/ Relax Properly
        d. Down – training
        e. Submaximal Contraction
    2. Muscles
        a. Pelvic Floor Muscles and Transverse Abdominis (Primarily)
        b. Multifidus
    3. Biofeedback
        a. Real Time Ultra Sound (RTUS)
        b. Surface EMG
        c. Internal EMG with Rectal sensor
        d. Other - Mirror
E. Manual work
    1. Trigger point release
    2. Myofascial release
    3. Connective Tissue Work – adductors, abdominal, gluteals
    4. Scar tissue mobilization
    5. Visceral Mobilization
F. Stretching
    1. Always treat what you find
    2. Make sure to access both hamstrings and psoas
G. Strengthening-

1. Pelvic floor Strengthening
    a. Visualize Pelvic Floor in mirror- anus tightening, penile movement
    b. Improper contraction: compensation with adductors, gluteals or abdominal muscles
    c. Progression: supine, side lying, sitting, standing, with movement, inverted
    d. Long holds: working up to 10 second holds and Quick flicks
        - Allows for activation of both Type I and Type II muscle fibers
    e. Coordination: steps or longs holds with quick flicks
    f. Muscle facilitation
2. Core strengthening
3. Address other weak areas in and around pt.'s pelvis
    a. Gluteal muscles, Adductor muscles, Abductor muscles, and others that are found to be weak
    b. Start basic and progress

H. Mobilization- spine, hips, or other restrictions that are found

I. Home Exercise Program
1. Personal Responsibility
2. 30 minutes of cardiovascular exercise on most days of the week
3. Strengthening routine
    a. Pelvic Floor strengthening
    b. Core strengthening
    c. Add in what else patient needs
4. Stretching
5. Behavior Modifications
6. Home muscle strengthening- Use of tactile feedback
    a. Insertion of fingertip into vagina or rectum
    b. Sitting on rolled hand towel, or ball
    c. Vaginal/ Rectal weights
7. Basic Beginning Exercises
    a. Adductor squeezes
    b. Resisted Abduction with Theraband
    c. Abdominal Activation
    d. Sitting Piriformis Stretch
    e. Posture and Body Mechanics
    f. Pelvic Floor Muscle contractions if appropriate
    g. Progress as appropriate and as tolerated

J. Electrical Stimulation
1. Home Unit
2. Rectal sensor
    a. Urge: 12.5 HZ
    b. Stress: 50 HZ

K. Others
1. Supports
    a. Sacroiliac joint braces
    b. Abdominal Binders
    c. Pressure garments
    d. Others
2. Tens
3. Ultrasound
4. Dilators
5. Taping
6. Penile Clamps
    a. Talk with MD
    b. Examples: J Clamp, C3 incontinence clamp, Cunningham Clamp, Gyrx Squeezer Klip, Greenwald

L. Resources
1. ICS www.icsoffice.org/

2. Australian Government Department of Health and Aging
   http://www.bladderbowel.gov.au
   Has incontinence handouts in many different languages
3. International Organization of Physical Therapists in Women's Health
   www.ioptwh.org
4. Section on Women's Health of American Physical Therapy Association
   www.womenshealthapta.org
5. Many other

Questions

- Email: Hmoky @uic.edu

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1 **Pathophysiology and Evaluation of Stress Urinary Incontinence in Men**

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2 **Etiology of SUI in Men**

- Post surgical
  - Radical prostatectomy
  - TURP
  - Open prostatectomy
- Trauma
-
- Radiation
- Neurological Disease

3 **Sphincteric Continence Mechanism**

1

- Proximal urethral sphincter (PUS)
- Distal urethral sphincter (DUS)

4 **Continence**

- One sphincter must be intact
- Proximal sphincter lost with prostatectomy
- Distal sphincter injury
  - Preexisting
  - Resected / Injured
  - Denervated

5 **Proximal Urethral Sphincter**

- Bladder neck, prostate and prostatic urethra to the verumontanum
- Innervated by autonomic sympathetic fibers from the pelvic nerve
- ? Spontaneous activity
- Can maintain passive continence without a functioning distal sphincter

6 **Distal Urethral Sphincter**

- Verumontanum to proximal bulb
- Number of structures help maintain continence
  - Urethral mucosal foldings (seal)
  - Rhabdosphincter (smooth and striated muscle)
  - Extrinsic paraurethral skeletal muscle (levator contribution)
  - Supporting fascial investments
  -
  -

7 **Rhabdosphincter**

- Most important structure in maintenance of continence

- Concentric muscular structure
- Thicker in young males
- Longitudinal smooth muscle
- Slow-twitch (type I) skeletal muscles
  - Maintain resting tone and preserve continence

8 **Rhabdosphincter**
Burnett & Mostwin, J Urol, 160:1301, 1998

- Invested in a fascial framework:
- Inferiorly supported by a musculofacial plate
  - Dorsally fuses with Denonviller's fascia and origin of rectourethralis
  - Ventrally fuses with puboprostatic ligaments
  - Laterally fuses with levator fascia
  -

9 **Rhabdosphincter Support**
Burnett & Mostwin, J Urol, 160:1301, 1998

- Dorsal and ventral support suspends and stabilizes (scaffold)

- Likely contributes to continence

10 **Rhabdosphincter Innervation**

- Somatic via pudendal nerve

- Autonomic via pelvic nerve
-
- Narayan, et al , 1995
  - Somatic innervation from pudendal primarily sensory in origin (branched from dorsal nerve of the penis)
  - Facilitates reflex contraction

11 **Sensory Innervation**
Hubert et al, J Urology 163:1761, 2000

- Sensory threshold increases significantly after RRP
  - Higher current needed to perceive sensation at bladder neck/proximal urethra

- Threshold decreases with time (6 weeks to 6 months)

- Threshold significant higher in incontinent vs. continent men at 6 weeks and 6 months

12 **"Putative Continence Nerves"**

- Branches of pelvic nerve traveling under the endopelvic fascia which pick up intrapelvic branches of the pudendal nerve
  - (Hollabaugh, et al, Urology 51:960,1998)

13 **Levator Ani**

- Lateral support to the membranous and prostatic urethra
  - slow twitch fibers - tonic support

- Contribution to sudden cessation of voiding
  - fast twitch fibers - rapid forceful occlusion of the urethra

14 **Post Prostatectomy Sphincteric Continence: Summary**

- Dependent on integrity of:
  - Distal sphincter unit
  - Supporting structures
  - Neural innervation

  - Slow-twitch fibers of the rhabdosphincter most important
  - Skeletal muscle contractions of periurethral and paraurethral muscles likely assist
-

15 **Effect Of Surgery On Continence**

- Both functional urethral length and MUCP are affected by surgery
  - Effects may normalize over time
  - Controversy as to which is important in continence
- Difficult to identify preoperative UDS parameters that predict continence

16 **Incidence**
Post Radical Prostatectomy

- Reported incidence of post radical prostatectomy incontinence varies from 2.5-87% (Foote, et al, 1991)
  - Single institution studies
  - Variable definitions of incontinence
  - Rates determined at follow up visits by surgeon

- Validated questionnaires more recently developed to reduce bias, assess quality of life, and allow comparisons between institutions
  - Subjective loss may not correlate with degree of bother
  - Occasional or mild incontinence 40-65%
  - More severe 2-10%
  - Pad use 7-47% (most 20-33%)
-

17 **Incidence**
Post TURP

- AUA cooperative study of 3,885 patients from 13 teaching and private practices (Mebust, 1989)
  - 0.4% pad or collection
  - 1.2% mild stress incontinence (1992)

- AUA survey of all practicing urologists in the U.S. of which 2,716 responded (Holtgrewe, 1989)
  - 3.3% pad or collection device

18 **Etiology of Post Radical Prostatectomy Incontinence**

- Several studies have reported a high incidence of bladder dysfunction in men with post radical prostatectomy incontinence
  - Some as high as 90%

- Although bladder dysfunction is often seen on UDS, it is not always a significant contributor to incontinence
  - May occur as a result of filling to volumes that the patient is no longer used to holding because of ISD
  - Does incontinence occur with overactivity?

19 **Post Radical Prostatectomy Incontinence**

20 **Pathogenesis**

- Bladder dysfunction
  - Detrusor overactivity
  - Impaired compliance
- Sphincteric dysfunction
- Combined dysfunction
- Obstruction
  - Anastomotic or urethral stricture

21 **Timing of Evaluation After Prostatectomy**

- Traditional
  - 12 months after radical prostatectomy
  - Earlier after TURP
- Current - 6 - 12 months post op if no improvement for at least 3 months
- Often initiate conservative treatment prior to full evaluation

22 **Evaluation**

- History
  - Surgery, radiation, trauma, neurological disease, timing of onset, degree, effect on QoL
- Physical Exam
  - Cough test
  - PVR, Uroflow (select cases)
- Urodynamics
  - Videourodynamics (VCUG)
- Cystoscopy
  - Rule out BN contracture

23 **How Valuable Are Symptoms In Predicting Post RRP Incontinence?**

- The symptom of stress incontinence is highly correlated with the finding of ISD on urodynamics
  -
- In the vast majority of cases, ISD was the main cause of incontinence
  - Even in cases of combined dysfunction, the bladder dysfunction was never of a potentially harmful magnitude
-

24 **History- most important**

- Severity of Incontinence
- History of Radiation
- History of LUTS
- Voiding Dysfunction

25 **Utility of Urodynamics**

- When diagnosis is in doubt
- Failure to respond to appropriate therapy
- Pre-operative assessment before:
  - Bulking agent (required by FDA in US)
  - AUS / Sling (mostly to assess bladder function)

26 **Bladder Function / Dysfunction**

- Assessed by CMG
  - Detrusor overactivity
  - Impaired compliance
- Determine if incontinence is associated with rises in detrusor pressure
- May result from "overfilling" of a bladder use to being relatively empty

27 **Male Urethral Dysfunction (SUI)**

- Assessed by demonstrating incontinence with increases in abdominal pressure
  - ALPP
- UPP of little value in actual diagnosis
  - ? Prognostic value
- ALPP, MUCP, RUP correlate (Comiter et al, Urology, 2003)
  - No consistent correlation of these parameters with treatment outcomes
- Many patients have relatively normal voluntary external sphincter function

28 **Pad Test**

- 24 hour pad test is an accurate predictor of stress incontinence severity
  - Predictive for success of male sling
    - Huckabay et al AUA 2005
  - Correlates with ICIQ-SF score
    - Twiss et al AUA 2004
  - Does not correlate with ALPP
    - Twiss et al Neurourol Urodyn 2005; 24:207-210

29 **Success by Pre-op Pad Weight**

30 **Urodynamic Evaluation**

- Determine the presence of bladder and/or sphincter dysfunction
- Determine the contribution of each to the symptom of incontinence
- Determine the presence or absence of obstruction on voiding pressure-flow study

31 **PPI Urodynamic Evaluation**

- Very important to demonstrate incontinence during the study
  - *May need to remove urethral catheter*
    - Demonstrate incontinence, better assess its degree
    - Effects on pressure-flow parameters
- Videourodynamics can be useful in defining anatomy and assessing patients with minimal demonstrable leakage

<u>Bone Anchored Male Sling</u> (InVance, American Medical Systems): (Fig 1)

Technique: It utilizes six 5 mm. titanium screws which are drilled into the antero medial aspects of each descending pubic rami using the InVance bone drill (American Medical Systems). These screws are preloaded with a pair of number 1 polypropylene sutures. The proximal or the top most bone screws are placed just beneath the junction of descending ramus and pubic symphysis and the remaining suture are placed a centimeter apart on each side. A 4 x 7cm. polypropylene mesh alone or in combination with dermis as a composite graft are used as a sling material. The urethral dissection is not performed. The sutures are transferred through the one side of the graft. After, one side of sling is anchored to the pubic ramus, sling tension is adjusted, either by retro grade urethral pressure method or if the patient is awake, by simple cough method. Sling is then tied down to the opposite pubic ramus with adequate tension. If cough method is used the procedure should be done under spinal anesthesia.

Outcomes: Optimal cure rates have been reported with the bone anchored perineal sling and generally range from 70% to 90% depending on the method of evaluation and definition of success [1,2]

In a study of 46 men at a mean follow up of 18 months, the procedure was found to be successful in 76% and improved in another 35%. 24% of patients failed the procedure and all the failures were found to be due to absorbable graft material. The success rates were significantly greater in patients receiving synthetic mesh, either alone or as composite graft compared with the use of absorbable material alone (75% and 97% versus 0% respectively, p value < 0.05) [2]. It was also found that the patient with mild to moderate incontinence (less than five pads) had a significant better outcome compared with those with severe incontinence, (five or more pads). The sling failure correlated well with the type of material and severity of the incontinence. **Since the introduction of this procedure, it is now established that this procedure is suited for mild to moderate incontinence only.**

On comparing male sling with collagen injection, the authors have found male sling to be more effective than the collagen implant in the treatment of mild to moderate incontinence, 76% versus 30% respectively. Mean number of collagen injections were found to be 2.1 with a range of 1-5 with a mean of 8.8cc (2 to 34cc) collagen was injected in 34 patients and another 37 patients received the perineal bone anchored male sling. There was a statistical significant difference between the two groups, ($p < 0.05$) [4].

In another study, comparing the bone anchored male sling with artificial urinary sphincter, at a mean follow up of 22 months, male sling provided comparable efficacy in mild to moderate incontinence as compared to artificial urinary sphincter (90% versus 80% respectively). On the other hand, artificial urinary sphincter was much more superior in patients with severe incontinence, 72% versus 58% respectively [5]. It was concluded that patients with mild to moderate incontinence can be counseled to have equally effective outcomes undergoing male sling as well as artificial urinary sphincter.

The author believes that the partial compression on the ventral aspect of urethra by male sling is adequate for continence in patients with mild to moderate incontinence as they have an adequate sphincter function but in patients with severe incontinence, who have severe damage to their sphincter mechanism, it requires circumferential compression by artificial urinary sphincter (**Fig 2**).

Another advantage of male sling would be that it does not preclude artificial urinary sphincter implantation at a later date. This observation was obtained from another study looking at

feasibility of artificial urinary sphincter after the failure of male sling surgery. A total of 18 patients failed the procedure at a mean follow up of 13 months. Of these, 11 patients proceeded to undergo artificial urinary sphincter placement. No complication was encountered during urethral dissection in patients who had prior male sling procedures. A dry rate of 72.7% was found following AUS implantation. And another 9.1% improved in their incontinence. Mean follow up after salvage artificial urinary sphincter was 14.2 months with a range of 6 to 20 months. Patient satisfaction after artificial urinary sphincter placement was 74.5%. It was concluded that artificial urinary sphincter placement after a failed bone anchored male sling is technically feasible and does not affect the short term efficacy of artificial sphincter [6]. These results were found to be comparable with naïve AUS placement.

With regard to other outcomes, the infection and erosion for perineal sling is low (2.1%) and the need for revision caused by bone anchor dislodgement is 4.2% [3]. Transient urinary retention is seen in 2% of cases. Prolonged perineal pain or discomfort occurred in 15% which usually resolves within 3-6 months.

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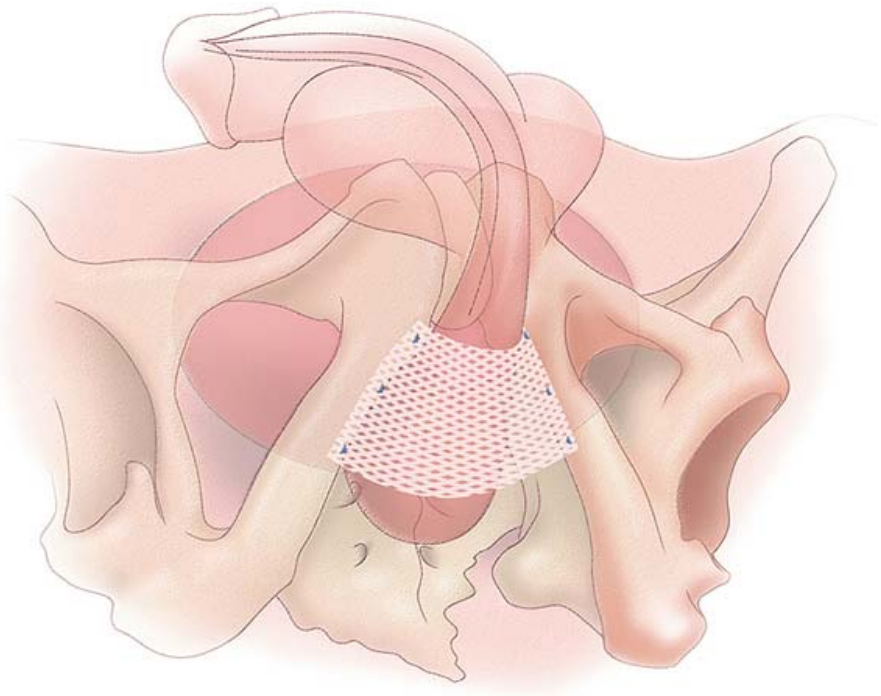

Fig 1

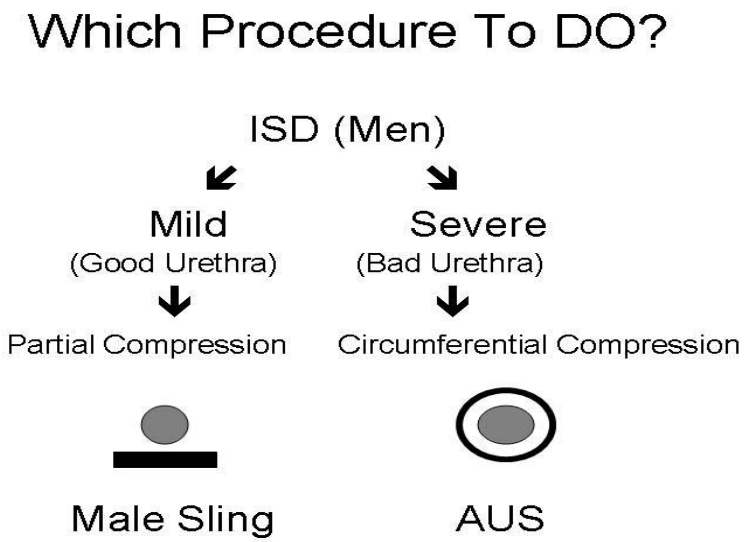
Which Procedure To DO?
ISD (Men)
Mild
(Good Urethra)
Severe
(Bad Urethra)
Partial Compression
Circumferential Compression
Male Sling
AUS

Fig 2

Is the Artificial Urinary Sphincter – AMS 800 the gold standard and alternative sphicnters

W. Hübner

Introduction

The AMS 800 artificial urinary sphincter prosthesis has been used for more than 30 years. physicians worldwide have implanted the device in about 100,000 men as a treatment for stress urinary incontinence due to prostatectomy, TUR P, trauma or neurogenic reasons. The success rates of the AUS are still the highest compared to all other treatment options for male SUI.

The AMS 800 artificial sphincter - function

The AMS 800 is a hydraulic system which consists of three components: the cuff around the urethra, the pump positioned in the scrotum, and the pressure regulating reservoir ballon. The implant is made up from solid silicone elastomer, the system is filled with isotonic fuid. The system mimics normal sphincter function by opening and closing the cuff around the urethra voluntarily by the patient by pressing the pump. Thereby the fluid is transferred from the cuff to the reservoir and the cuff opens, allowing urine to pass. Within a few minutes after urinating, the fluid automatically will flow from the balloon back to the cuff, closing the urethra and providing continence.

Patient selection

The few contraindications for implanting an AMS 800 include patients with inadequate dexterity and/or mental acuitiy to use the pump , poor motivation to use the device, skin dieases in the implantation field and UTI.

Careful consideration of pros and cons will be needed in the following situations:
Recurrent need for transurethral manipulations
Recurrent strictures
Urethral diverticulum
Detrusor insufficiency
Low capacity bladder (augmentation)
Obstruction (BN incision/sphincterotomy/stents)
Detrusor oveactivity (Botox)

Implantation technique

Implantation of the AMS 800 usually takes 45 to 90 minutes. Following is a brief summary of the surgical procedure.

There are a number of possible surgical approaches for implanting the AMS 800. In the

following steps we outline both the transverse scrotal approach and the perineal approach.

Classic Perineal Approach

Incision and Dissection
Place a Foley catheter into urethra to help identify it during dissection. Make a midline perineal incision and bluntly dissect bulbocavernous muscle from around the bulbous urethra. Some surgeons prefer to leave the bulbocavernous muscle on the urethra, particularly when it is atrophic. Completely dissect the urethra off the cavernous bodies for about 2 cm. Injury to the cavernous body can be tolerated, urethral injury leads to abortion of the operation. Place cuff sizer around urethra where the cuff is to be implanted. It should fit snugly without constricting urethra. Note: If catheter or sound is in urethra, remove it before measuring the urethra. Do not stretch cuff sizer before use. Surgeon should use his or her judgment in choosing an appropriate cuff size, the measuring tape only provides approximate measurement of bulbous urethra circumference. The inside circumference of cuff is somewhat smaller than the outside circumference of cuff.

Place the Cuff
Select cuff size that corresponds to measured length. Prepare cuff for implantation. Position cuff around the urethra with the "pillow" side toward urethra. If preparation of the cuff (unpacking, removal of air, rinsing) will take a few minutes, placement of the pressure regulating balloon may be commenced meanwhile.

Place the Pressure Regulating Balloon
Select appropriate size pressure regulating balloon. Make a suprapubic incision, divide rectus fascia transversely, and use a spreading motion to separate the linea alba to reach prevesical space. Use blunt dissection to create a space for balloon. Position the balloon in prevesical space. Many surgeons prefer a intraperitoneal position fort he balloon in order to ensure reliable constant pressure which may be influenced by extrperitoneal formation of pseudocapsules.

Place the Pump
Use blunt dissection to create a dependent subdartos pouch in the scrotum. Note: Control pump should be placed on same side as the pressure-regulating balloon. Place pump into scrotal pouch with deactivation button facing outward so that it is palpable. Route the tubing to abdominal incision. Note: The pump tubing should be above rectus muscle and fascia in abdominal incision.

Make Connections
AMS Suture-Tie Connectors or AMS Quick Connect Sutureless Window Connectors may be used to connect the tubing, today the latter are preferred in most institutions. Normally we use the straight connectors. Right angle connectors should always be used

when the tubing makes a sharp curve at the point of connection.

Deactivate and Close
To deactivate the device, squeeze and release the pump several times to empty the fluid from the cuff. When the pump is refilled so there is a slight dimple in it, push the button to lock the cuff open during the healing process. It is important to leave a slight indentation in the pump bulb to ensure that there is enough fluid in the pump to activate the device later. Close the incision.

Transverse Scrotal Approach[10]

Incision
Make an upper transverse scrotal incision through the subcutaneous tissue. Move the incision up the penis and stabilize with a surgical retractor and blunt stay hooks at 1, 3, 5, 7, 9 and 11 o'clock.

Expose the Tunica Albuginea
Sharply expose the tunica albuginea of both corpora cavernosa. Pass the Metzenbaum scissors proximally along the ventral surface of the tunica to the proximal corpora. When deep exposure of the proximal corpora is secured, place an intact Deaver retractor on the side of the urethra for caudal traction. Repeat on the contralateral side, exposing the scrotal septum.

Dissection
Sharply dissect the scrotal septum off the bulbar urethra. To mobilize the urethra, sharply dissect the webs of Buck's fascia binding the diverging corpora cavernosum to the corpora spongiosum.

Dissect and Measure Urethra- Place the Cuff
Because the patient is in the supine position, the urethra is mobile. Use a right angle clamp to conduct the posterior dissection of the urethra almost under direct vision. Spread the right angle clamp to create sufficient space for the placement of the occlusive cuff. Measure the urethra. Then place the proper size cuff around the circumference of the urethra.

Place the Pressure-Regulating Balloon
There are two ways to place the pressure-regulating balloon (PRB):

- With the bladder empty and the surgical retractor and stays removed, retract the tissue to the side of the penis. Place the PRB in the retropubic space by locating the inguinal ring and sharply piercing the transversalis fascia. After the PRB implantation, narrow the opening with an absorbable suture.

- Alternatively, displace the scrotal incision over the inguinal area and inguinal ring location. Finger dissection is used to develop a pouch beneath the rectus but anterior to the transversalis fascia (cephalad to the inguinal ring). This avoids the necessity of piercing the fascia in patients with scarred retroperitoneum after the PRB is implanted. Narrow the opening with an absorbable suture. Balloon tubing is rooted superficially to the control pump.

Place the Pump
Elevate the inferior aspect of the scrotal incision. Develop a space underneath the scrotal skin and dartos muscle to serve as a pouch for the pump. Begin the development of the tunnel about 2 cm from the skin edge in order to facilitate eventual tubing and connector concealment. Loosely tie purse string suture around the opening of the tunnel to secure the pump position.

Finally Trim Tubing and Make Connections and deactivate the system as described above, then close the incision.

Patient Groups and Their Value and Role in Patient Access to Care

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Background

Urinary incontinence post radical prostatectomy has a negative impact on the Quality of Life. With the increase of diagnosis and surgical treatment of prostatic cancer and the aging population, the number of men with urinary incontinence will increase, as will the need for new interventions, devices and treatments.

In a world of limited resources and constrained or reduced budgets, interventions that provide the greatest benefit to the largest group, and have been proven to offer the best value, should receive funding. However, clinical evidence alone without awareness of the condition and the impact on Quality of Life (QOL), the current best available treatments may not be accessible to patients.

Objective

To bring attention to an often over-looked yet vital component of access to care, improved outcomes and education of incontinent patients, namely Patient Groups. Highlighting key initiatives undertaken by The Canadian Continence Foundation as well as illustrating how such groups' benefit all stakeholders by increasing public awareness and thus improving access to treatment. Patient Groups also add value by lobbying policy makers to increase funding as well as providing an important patient and medical professional resource.

The participants will have greater insight into their role in Patient Advocacy and key principles and tactics in patient support for advocacy for access to new and better treatments.

Method

The presentation will focus on:

1. The value of Patient organizations to drive awareness of the facts, costs and needs associated with incontinence
2. The role of the Health Care Professional in Patient Advocacy
3. The fundamentals of Patient Advocacy 101
4. What works- examples from the TCCF
5. Getting started

Conclusion

Engagement of the Health Care Professional to help establish and support Patient Advocacy Groups is an important activity for anyone who has interest in seeing better patient outcomes and continued progress in the management of incontinence post prostatectomy. The Patient's voice must be heard if health care resources are to be used for the greatest benefit.

Notes

Record your notes from the workshop here