The Management of Male Incontinence

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Anatomy of the Prostate

Figure 5.4 Sagittal section of prostate to show anatomical subdivisions (redrawn from McNeal [2]). CZ, central zone; PZ, peripheral zone; TZ transitional zone; V, verumontanum; FS, fibromuscular stroma; D detrusor; P, pre-prostatic sphincter; ES, external sphincter; ST, superficial trigone; BL, bladder lumen; U, urethral lumen.
What does the prostate do?

- It is an organ of sexual reproduction
- Produces components of semen – at ejaculation releases 0.5-1ml of serous fluid
- 18-20% of total ejaculate
- Acid phosphatase, citrate and zinc
- Medium for sperm transport
- Effects sperm motility and viability
What does the bladder do?

- Store urine under low pressure
- Empty leaving nothing behind – no residual
- A change in the balance of these functions can cause incontinence
Worldwide Prevalence of Male Incontinence

Irwin et al, BJUI, 2011:108, 1132-1139

• Prevalence estimates
• Used EPIC data plus gender and age population statistics
• 2010, 97 million men have UI
• 2018, 121 million men will have UI due to increasing population and life expectancy
What causes lower urinary tract symptoms in Men?

Urological Causes:

• Urethral sphincter and pelvic floor muscle (PFM) weakness
• Detrusor overactivity (OAB) during filling
• Bladder outlet obstruction (BPO in men)
• Detrusor underactivity during voiding - incomplete emptying
• Post micturition dribble
What causes lower urinary tract symptoms in Men?

Non urological causes:

- Constipation, chronic cough, prolonged heavy lifting – over stretches PFM & supporting tissues
- Poor general fitness/obesity – poor muscle tone and excessive strain/stretching of PFM complex
Most Men have **BOTH Voiding** and **Storage** Symptoms

- N = 14,139 men ≥ 40 years old
- 71% reported LUTS

<table>
<thead>
<tr>
<th>Symptom Combination</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voiding symptoms only</td>
<td>12.1%</td>
</tr>
<tr>
<td>Storage symptoms only</td>
<td>10.3%</td>
</tr>
<tr>
<td>Voiding + storage symptoms</td>
<td>9.1%</td>
</tr>
<tr>
<td>Voiding + post micturition + storage symptoms</td>
<td>24.3%</td>
</tr>
<tr>
<td>Voiding + post micturition symptoms</td>
<td>10.4%</td>
</tr>
<tr>
<td>Post micturition symptoms only</td>
<td>2.0%</td>
</tr>
<tr>
<td>Post micturition + storage symptoms</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Adapted from Sexton CC et al. BJU Int 2009;103(Suppl3):12-23
Storage Symptoms Cause Most Bother

Adapted from Häkkinen JT et al. Eur Urol 2007;51:473-8
OAB Symptoms Are Prevalent in Both Men and Women and Increase with Age

Data from EPIC study (2005), conducted in Canada, Italy, Germany, Sweden and UK
N = 19,165; Overall OAB prevalence = 11.8%

In a separate UK study of the natural history of OAB and SUI in women over ≥40 with a 3 year follow-up, the severity of OAB increased progressively with age, accelerating after age 60.

OAB = overactive bladder.

Donaldson et al. Neurourol Urodyn, 2006
OAB

Medical/Conservative Therapy:

• Bladder retraining/urge suppression techniques
• Anticholinergics
• Neuromuscular stimulation
• Acupuncture
• PTNS
• Botox
• Sacral neuromodulation
• Surgery
Post-prostatectomy Incontinence

- Radical prostatectomy – open, laparoscopic, robotic
- HIFU
- TURP
- Brachytherapy
- External beam irradiation
Complications of Laparoscopic Prostatectomy

<table>
<thead>
<tr>
<th>Complications (total)</th>
<th>14.24% (N = 104)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major complications</strong></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>0.13% (N = 1)</td>
</tr>
<tr>
<td>Reoperations</td>
<td>0.27% (N = 2)</td>
</tr>
<tr>
<td>Conversion</td>
<td>1.36% (N = 10)</td>
</tr>
<tr>
<td>Rectal injury</td>
<td>0.54% (N = 4)</td>
</tr>
<tr>
<td>Ileocolonic injury</td>
<td>0.13% (N = 1)</td>
</tr>
<tr>
<td>Ureteral injury</td>
<td>0.54% (N = 4)</td>
</tr>
<tr>
<td><strong>Minor complications</strong></td>
<td></td>
</tr>
<tr>
<td>Deep vein thrombosis</td>
<td>0.68% (N = 5)</td>
</tr>
<tr>
<td>Urinary leakage</td>
<td>6.98% (N = 51)</td>
</tr>
<tr>
<td>Urethrovvesical stenosis</td>
<td>2.46% (N = 18)</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>1.09% (N = 8)</td>
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<tr>
<td>*Urinary incontinence</td>
<td>12.1% (N = 88)</td>
</tr>
<tr>
<td>*Erectile dysfunction</td>
<td>39.1% (N = 285)</td>
</tr>
</tbody>
</table>

*Not included in the overall analysis of complications.
Complications of prostate cancer interventions

- Urinary frequency/urgency
- Urinary incontinence – stress or urge
- Faecal urgency
- Faecal/flatus incontinence
- Erectile dysfunction
- Chronic pelvic pain
- Distress
Symptoms of postprostatectomy urinary incontinence

• Continuous leakage

• Leakage with movement/change of posture eg: sitting to standing, bending, walking, running, golf

• Rushing to the loo/’key in the door syndrome’

• Post void dribble
Symptoms of postprostatectomy bowel continence problems

• Urgency
• Inability to control wind
• Loose stool/faecal marking
• Passive leakage
• Incomplete bowel emptying
Are you wearing pads?

- If so how many?
- Type and size of the pad?
When is bladder or bowel leakage a problem?

- Affected by the individual response
- A few drops to some is a disaster to others; 100ml is tolerable
- Volumes can vary from a few mls to several hundred or more
- If containment product is effective
- Access to toilet facilities
Continence definition after RP

*Liss et al, J Urol 2010, 183, 1464-8*

- 500 men after RALP
- Asked about
  - daily pad usage (0, security, 1, >1)
  - urine leakage (daily, once week, <once week, none)
  - urinary control (none, frequent dribble, occ dribble, total control)
  - AUA SS
  - urinary QoL
- Results
  - no pad SS 5.8 QoL 1.6
  - security pad SS 7.6 QoL 2.8
  - 1 pad SS 9.2 QoL 3.4
- **Conclusion:** continence should be defined as no pads
The Physiotherapist has a Valuable Role

Over to Victoria
What is the pelvic floor?

• Sheet of muscle & connective tissue

• Fills the floor of the bony pelvis

• Pubic bone to coccyx/tailbone

• Side to side, attaches to the wall of the pelvis
Where are the pelvic floor muscles?
Why are the pelvic floor muscles important?

1. Continence:
   • Bladder
   • Bowel

2. Support:
   • Pelvic organs

3. Sexual Function

4. Posture and respiration

Exercising the PFM can help or prevent problems!
The pelvic floor

Two openings through the pelvic floor

1. Urethra or water pipe and 2 urethral sphincters – the bladder neck or internal sphincter and the external striated sphincter

2. Anal sphincter

Fibres from the pelvic floor muscles wrap around these openings to increase the closure pressure and maintain continence
Why do the pelvic floor muscles weaken?

- Many possible reasons:
  - Prostate surgery
  - Radiotherapy
  - Poor general fitness
  - Weight
  - Constipation
  - Neurological
  - Injury to the perineum
The Anatomy after RPP
Cystogram after Radical Prostatectomy

Bladder neck is pulled below the level of the pelvic floor
What is the impact of incontinence on life?

• 60% avoid going away from home
• 50% feel odd and different from others
• 45% avoid public transport
• 50% avoid sexual activity

Physiotherapy role

• Part of the MDT
• Conservative intervention
• Patient-centred/holistic approach
• Focus on muscle strengthening/rehabilitation
• Life style modifications
• Point of support
Symptoms

- Daytime Frequency
- Nocturia
- Urgency/Urge incontinence
- Post micturition dribble
- Faecal incontinence
- Flatus incontinence
- Erectile dysfunction
Initial Assessment

• Systematic Assessment:

1. Subjective
• Presenting symptoms
• Full medical history
• Frequency/Volume Chart
• Pre and post void scans
• Bowel diary
# FREQUENCY/VOLUME CHART

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Date</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>Tick when go to toilet</td>
<td>Volume of urine passed (if known)</td>
</tr>
<tr>
<td>12 mn</td>
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<tr>
<td>11 pm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 3/7 diary
- Fluid intake
- Frequency
- Urgency
- Wet episodes
- Aggravating factors
Initial Assessment

2. **Objective**

Document baseline findings

- Neurological
- Pelvic floor muscle function and strength
- Digital examination
- P.E.R.F.E.C.T. validated assessment tool – for men assessed from 0 - 6
Modified Oxford Scale

• P: Power
• E: Endurance
• R: Repetitions
• F: Quick contractions
• E: Every
• C: Contraction
• T: Timing
Aims of PFM strength training

• To counteract increases in abdominal pressure during activity
• To ensure complete emptying post void or defecation
• A strong pelvic floor contract together with urge suppression techniques has been shown to reduce urgency to pass urine or faeces
• Strong PFMs can improve erectile function
What causes bladder or bowel urgency?

• A slight bladder muscle (detrusor muscle) contraction or rectal spasm can produce the desire to pass urine or have a bowel movement

• Strong urgency can lead to leakage

• Fear of leakage causes anxiety, breath holding, descent of the diaphragm, abdominal guarding and result in untimely leakage
What is urge suppression?

- Strong pelvic floor and anal sphincter contraction
- Keeping calm!
- Standing or sitting still
- Perineal pressure
- Distraction
- Patience, confidence, support, reinforcement
Lift style modifications

- Under drinking – constipation/UTIs
- Over drinking or drinking late in the day or 2 hours before bed
- Avoid or reduce caffeine or alcohol that may increase the risk of urgency
- Avoid constipation
- General fitness
Pelvic Floor and Anal Sphincter Exercises

• Initial programme:

• Position: Sitting or lying

• Imagine you are trying to stop urine or wind

• Sensation of ‘squeeze and lift’ from front to back
Self Examination

- Fingers on the perineum: area between the anus and scrotum
- Feel a lift upwards
- Aim: to draw you penis towards your body or lift your testicles/scrotum - mirror
- DO NOT: Clench your bottom, hold your breath, tighten all your abdominal wall
- BE PATIENT – takes up 3 – 6 months to strengthen
Pelvic Floor Re-education

• 3 exercise sessions a day
• Find your starting block
• Endurance training and fast contractions
• Aim:
  • 12 long contractions of 12 seconds with 12 seconds rest period
• 12 quick contractions
Daily regime

• Sub – maximal contraction during upright activities eg: when walking, sport
• KNACK – tighten your muscles with any strenuous activity
• Post void do a strong contraction and press below your scrotum to help empty fully and reduce post micturition dribble
• Post defecation
Adjunct therapy to facilitate PFM strength training

• Biofeedback:
• A visual, audible or sensory cue as to the effectiveness of pelvic floor contractions
• Increases motivation and compliance
• Objective measurement of pelvic floor contraction
• Aids in identification of the correct muscles
The Role of Physio after RPP

- Teaches patient life skills
- Effective in reducing symptoms
- Doesn’t do harm
- Cost to NHS is cheap!
- All patients should be offered it!
- More scientific research needed
Effect of PFE on degree of incontinence after RRP

• Findings:

• In the treatment group: continent after 3/12 in 43 (88%) of 48 patients.

• In the control group: continence returned after 3 months in 29 (56%) of 52 patients.

• Interpretation: Pelvic-floor re-education should be considered as a first-line option in curing incontinence after radical prostatectomy.
Assessing Male Incontinence

• History
• Patient completed questionnaire
• Assessment of QoL impact
• Urodynamics before possible invasive therapies
• Cystoscopy to inspect the urethra and the bladder neck
“Overflow Incontinence”

- What could it mean?
  - “Incontinence occurs in an individual unable to empty the bladder”

- Occurs when the bladder is overfull

- The urine drains “off the top”

- Diagnosed by clinical examination and a scan
Late Onset Enuresis – Bed wetting

• Embarrassed elderly man starts to wet the bed: never ignore!
• Chronic retention may be a cause
• May be due to overactive bladder
• Occurs after radical prostatectomy
• Needs referral and investigation
Videourodymanics
“The Gold Standard”
What other non-surgical solutions are there?
Surgical Solutions

• Bulking agents

• Male Sling

• Artificial urinary sphincter – the “gold standard”
Bulking Agents
Male Sling
Male Sling Results
Papachristos et al, ANZ J Surg 2017

At a median 52-month follow-up
37 (51%) patients were pad free or used a security pad
18 (25%) used ≥50% fewer PPDs
17 (24%) patients were classified as 'failed'

The effects may decline after 4 years. Not effective in severe incontinence or after DXT
Artificial Urinary Sphincter – AMS800 and Zephyr
AMS 800 Results of treatment

• Patient satisfaction outcomes average greater than 80% in most series.
• Potential complications requiring reoperation include infection (0.5-10.6%)
• The 5-year reoperation ranges from 50 to 79%
• The 10-year freedom from mechanical failure is 64%.
Male Incontinence: Conclusions

• The causes are multiple and may coexist

• Male incontinence is highly prevalent and bothersome

• Quality of life is affected
Conclusions

• Diagnose the condition
• Apply most minimal potential long-term solution – PFE is essential
• Avoid long-term catheters
• Use obstruction relieving procedures first
• Consider a male sling and AUS800
• Reconstructive surgery and diversion are the last resort
Sexual Dysfunction After RPP

• Loss of erection

• Loss of ejaculation

• Loss of libido due to hormonal therapy/distress

• Reduced orgasm
Erectile Dysfunction

**Erectile Dysfunction Causes**

- **Diseases & Conditions**
  - Diabetes
  - Heart Disorders
  - Obesity
  - Peyronie’s Disease
  - Multiple Sclerosis
  - Hormonal Imbalance
  - Parkinson’s Disease
  - High Blood Pressure

- **Physical**
  - Injury
  - Surgeries & Medicines
  - Radiation Exposure
  - Wearing Tight Clothes

- **Unhealthy Lifestyle Habits**
  - Excessive Alcohol Intake
  - Inadequate Sleep
  - Tobacco Smoking
  - Excessive Intake of Fats & Carbohydrates
PDE5 Inhibitors
Vacuum Aid

- Elastic ring
- Pump
- Cylinder
# Effectiveness of Treatments

<table>
<thead>
<tr>
<th>Erectile Aid</th>
<th>No. of patients who tried the erectile aid n (%)</th>
<th>Ineffective n (%)</th>
<th>Effective n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDE-5 Inhibitors</td>
<td>326 (98)</td>
<td>140 (43)</td>
<td>186 (57)</td>
</tr>
<tr>
<td>Intraurethral Alprostadil</td>
<td>73 (22)</td>
<td>36 (49)</td>
<td>37 (51)</td>
</tr>
<tr>
<td>Penile Injections</td>
<td>72 (22)</td>
<td>20 (28)</td>
<td>52 (72)</td>
</tr>
<tr>
<td>Vacuum Erection Device</td>
<td>92 (28)</td>
<td>31 (34)</td>
<td>61 (66)</td>
</tr>
</tbody>
</table>

Table 1: Use and Effectiveness of Erectile Aids Among Men Who Sought Treatment for ED 2 Years After Radical Prostatectomy
Caverject for ED

Vasoactive substance is injected into the corpus cavernosum

Dorsolateral location of injection site
Penile Prosthesis
Incidence of Orgasmic Dysfunction after RPP

Capogrosso et al WJMH 2017

• Orgasm-associated incontinence (climacturia) has been reported to occur in between 20% and 93% of patients after RP.
• Up to 19% of patients complain of postoperative orgasm-associated pain, mainly referred pain at the level of the penis,
• Impairment in the sensation of orgasm or even complete anorgasmia has been reported in 33% to 77% of patients after surgery.
Sexual Dysfunction after RPP

- Is a major source of distress
- Often not discussed by clinician
- Not volunteered by the patient
- Much can be done to help
- The earlier the treatment starts the better