Current Management of Urinary Incontinence

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CASE

- A 57 year old woman with a BMI of 40 complains of longstanding daily symptoms of urinary incontinence severe enough to soak her outerwear and requiring incontinence pad use.
- These episodes are provoked by coughing, sneezing and running.
- On clinical examination she had stress incontinence on coughing and Valsalva.
- Bladder diary showed normal fluid volume intake with no caffeine or fizzy drinks and no evidence of frequency or nocturia.
- Urodynamic investigations confirmed urodynamic stress incontinence and no detrusor overactivity.
- She attended pelvic floor physiotherapy sessions with minimal improvement.
CASE

- A 70 year old woman complains of long standing symptoms of urinary incontinence.
- Urodynamic investigations confirmed the diagnosis of overactive bladder.
- Clinical examination showed mild atrophy and no other abnormalities.
- She has tried fluid modification, bladder retraining and three different anticholinergics as well as topical oestrogens with limited efficacy.
- Her medical history is unremarkable.
CASE

- A 48 year old para 3 complains of a five year history of stress incontinence.
- She has daily episodes provoked by coughing, sneezing and running.
- She tried pelvic floor exercises in the past, which resulted in a temporary improvement of her symptoms.
- She has no urgency or frequency.
- Clinical examination showed stress incontinence and no other abnormalities.
CASE

- A 45 year old woman presents with symptoms of urinary urgency, frequency and incontinence associated with urgency, running water and “key in the door”.
- She also complains of 2-3 episodes of nocturia per night on average.
- She has an active life style with regular exercise and admits to high volumes fluid intake of more than 3 litres and no caffeine.
A 33 year old para 1 complains of stress incontinence symptoms dating from her first childbirth 2 years ago. Her symptoms had subsided after 9 months postnatally, but she still presents with 3-4 episodes of stress incontinence per week. These are provoked by strong coughing and dancing and consist of a few drops. Her symptoms affect her quality of life, 8 out of 10 on a visual analogue scale. She wishes to have more children. Clinical examination was unremarkable. Urodynamic investigations confirmed a mild degree of stress incontinence. She tried pelvic floor exercises but they were ineffective.
CASE

- A 65 year old woman complains of chronic bothersome symptoms of night time urinary frequency.
- On review of her bladder diary she appears to have 5-7 daytime voids, with voided volumes ranging from 300-400mls, an average fluid intake at daytime of 1.5-21ts and an additional fluid intake of 400-500 mls in the evenings.
- Her average nocturia episodes are 2-3 with average nighttime voided volumes of 250mls.
- She has no medical history of note and is not on any medication.
‘A ribbon tied to my bladder ended my embarrassing leaks’
(Lucy Shakeshaft, April 2011)

‘It was a simple implant to cure an embarrassing problem... The incontinence operation that's ruining women's lives’
(Lois Rogers, August 2011)
URINARY INCONTINENCE

**Urgency**
Leakage occurs with a strong, sudden, & uncontrollable urge to urinate as a result of involuntary bladder contractions.\(^1\)

\[\text{Urgency Urinary Incontinence} \quad 22\%\]

**Stress**
Leakage occurs with common physical activities such as sneezing, coughing, laughing, lifting, or exercising as a result of insufficient urethral closure pressure.\(^1,2\)

\[\begin{align*}
\text{Stress Urinary Incontinence} & \quad 49\% \\
\text{Mixed Urinary Incontinence} & \quad 29\%
\end{align*}\]

Epidemiology of Incontinence

1. Prevalence of urinary incontinence by type of incontinence.

Sung, 2009
Prevalence
Same Cause?

Different Cause?
Three subsystems:

1. Sphincteric System: Vesical neck & Urethra

2. Support: Fascial

3. Support: Levator Muscles
Adapted from Nichols DH, Randall CL Vaginal Surgery Fourth Edition.
Urogenital consequences in ageing women

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Eleftheria L. Chrysanthropoulou, MSc, Clinical Fellow\textsuperscript{b}
RELATIVE PROPORTIONS OF INCONTINENCE BY AGE

INITAL ASSESSMENT - NICE

1. Woman with urinary incontinence

2. History-taking and urine testing

3. Urgent referral and specialist intervention

4. Treating nocturia, vaginal atrophy and urinary retention

5. Symptom scoring, quality-of-life assessment and bladder diaries

6. Tests that should not be used in initial assessment

7. Categorise urinary incontinence and direct treatment towards the predominant symptom

8. Stress urinary incontinence

9. Overactive bladder
Causes of Urinary Frequency & Urgency

- Excessive fluid intake
- Maladaptive learned behaviour (bad habits)
- UTI/RUTI
- Urethritis
- Bladder calculus
- Bladder tumour
- Diabetes mellitus
- Diabetes insipidus
- Pregnancy
- Pelvic mass
- Small capacity bladder
- Chronic urinary residual
- Cystocele
- Oestrogen deficiency
- Irradiation
- Diuretic therapy
- Congestive cardiac failure
- Renal impairment
- Urethral diverticulum
- Urethral syndrome
- Bladder Pain Syndrome
- Sensory urgency
- OAB
OVERACTIVE BLADDER (OAB)

Symptom syndrome

Symptoms of urgency, with or without urge incontinence, usually with frequency & nocturia

Frequency
Nocturia
Urinary urgency
Urgency incontinence
Epidemiology of OAB

- 3-43% depending on population and definition, 11.8% EPIC /ICS
- Urgency / frequency more common in men (13.4 vs 7.6%)
- Urgency incontinence more common in women (9.3 vs 2.6%).
  
  Stewart et al, 2003

- Age
- Neurological, musculoskeletal and degenerative disease
- Chronic medication
- Diabetes
- Congestive heart failure
- CVA
Pathophysiology of OAB/DO

**Decreased capacity to handle the afferent signals in the brain**

**Increased afferent signals from the bladder and/or urethra**

*Figure 1. Two possible origins of OAB symptoms; 1) decreased capacity to handle the afferent signals in the brain, and 2) abnormally increased afferent signals from the bladder and/or urethra.*
INTEGRATIVE HYPOTHESIS
HOW DO YOU APPROACH A PATIENT ABOUT URINARY SYMPTOMS?

1. I ask direct questions like, “Do you have urinary problems?”
2. I let the patient bring it up
3. I use a questionnaire
4. I do not routinely ask
HOW TO OPTIMALLY OBTAIN A PATIENT HISTORY:
FIRST LINE QUESTIONS

- Do you have urinary problems?\(^1,\)\(^2\)
- How much do the symptoms bother you?
- Do you need treatment for your problems?

## How to Optimally Obtain a Patient History:

### Second Line Questions

| How are you handling your urinary symptoms? | What is your most distressing symptom?  
| What long have you experienced these symptoms?  
| What is your fluid intake?  
<table>
<thead>
<tr>
<th>What have you tried to solve your problems?</th>
</tr>
</thead>
</table>
| Urgency | • Do you have to rush to go to the toilet?  
| • Do you have to urinate IMMEDIATELY? |
| Frequency | • Do you feel that you urinate too often during the day? |
| Nocturia | • Do you have to get up during the night to urinate?  
| • Is it the urge to urinate that wakes you? |
| UUI | • When you feel the urge to urinate, do you have leaks or wetting accidents? |

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How to Optimally Assess a Patient: Elements of the Examination

- Now that the urinary problem is identified, inquire about:
  - Lower urinary tract symptoms (LUTS)
  - Medical and surgical history
  - Medications

- Focused physical examination
- Investigations
INVESTIGATIONS

- MSU - microscopy, culture, cytology
- Frequency volume diary
- Pad test
- Subtracted voiding cystometry
- Urethral pressure profilometry (UPP)
- Videocystourethography (VCU)
- Bladder neck or renal tract ultrasound
- Diagnostic cystoscopy +/- biopsy
# Urinary Diary

**Intake:**
- Type of fluid
- Volume

**Output:**
- Frequency
- Volume
- Leakage
- Severity

## 24 Hour Bladder Diary

<table>
<thead>
<tr>
<th>Time</th>
<th>Drinks</th>
<th>Urine</th>
<th>Pads</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount (ml)</td>
<td>Amount (ml)</td>
<td>Bladder Sensation</td>
</tr>
<tr>
<td>6am</td>
<td>WOKE</td>
<td>500</td>
<td>2</td>
</tr>
<tr>
<td>7 am</td>
<td>300 Water</td>
<td>✔</td>
<td>2</td>
</tr>
<tr>
<td>8 am</td>
<td>Cup Tea</td>
<td>LEAK</td>
<td>3</td>
</tr>
<tr>
<td>11 am</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midday</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Input ml</th>
<th>Output ml</th>
<th>Wet +++++</th>
<th>Urgency/activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</table>

**Date:** 12/03/14
Urodynamics
Symptoms vs Urodynamic Diagnosis
Urodyanamics

<table>
<thead>
<tr>
<th>Fill Volume</th>
<th>Flow Rate</th>
<th>Pdet</th>
<th>Pves</th>
<th>Pabd</th>
<th>Pclos</th>
<th>Pura</th>
<th>EMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Vol</td>
<td>22</td>
<td>2</td>
<td>0</td>
<td>-2</td>
<td>-1</td>
<td>-1</td>
<td>61</td>
</tr>
<tr>
<td>First Desire</td>
<td>195</td>
<td>8</td>
<td>0</td>
<td>-8</td>
<td>2</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Cough</td>
<td>237</td>
<td>11</td>
<td>8</td>
<td>-3</td>
<td>-5</td>
<td>3</td>
<td>35</td>
</tr>
<tr>
<td>Taps</td>
<td>246</td>
<td>14</td>
<td>0</td>
<td>-14</td>
<td>0</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Strong Desire</td>
<td>370</td>
<td>14</td>
<td>-2</td>
<td>-16</td>
<td>5</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>Cough</td>
<td>415</td>
<td>19</td>
<td>23</td>
<td>4</td>
<td>-23</td>
<td>0</td>
<td>21</td>
</tr>
</tbody>
</table>
VIDEOURODYNAMICS

- Detects:
  - vesico-ureteric reflux
  - trabeculation
  - diverticulae
  - fistulae
  - calculi
Urethral Pressure Profilometry

- Voiding difficulties
- Urethral stricture
- Failed continence surgery
- Urethral diverticulae
- Prognosis following continence surgery

Not diagnostic of Urodynamic Stress Incontinence
Urethral Pressure Profilometry

- Supine position
- 250 mls bladder volume
- Transducers orientated at 3 or 9 o’clock
- Both transducers inserted into the bladder
- Withdrawal rate 2.5 mm/s

Hilton and Stanton 1983
Cystoscopy

Indications

• Intractable bladder oversensitivity
• Recurrent UTI’s
• Suspected fistula
• Suspected painful bladder syndrome (interstitial cystitis)
• Haematuria
• Neoplasm?
IMAGING
IMAGING

- KUB
- IVU
- MAG 3
- Renal USS

- TVS
- Transperineal / translabial
  - 2D / 4D
- MRI
TREATMENT
TREATMENT GOALS FOR OAB

- Eliminate or improve UUI
- Reduce urgency - frequency - incontinence - nocturia
- Improvement in warning time
- Ensure treatment compliance for multiple long-term benefits:
  - Consider appropriate dose, comorbidities, cost, and improved QOL
- Consensus with the patient’s treatment expectations

MANAGEMENT OF OAB

- Minimal investigations
- Review +/- change medications eg. diuretics
- Bladder diary
- Fluid intake
- Avoid caffeine and alcohol
- Bladder re-training & pelvic floor exercises
- OAB medication
- 4 week follow-up
- Three month rule
LIFESTYLE MODIFICATIONS IN OAB

- Caffeine reduction dose dependent\(^1\):
  - Affects patients consuming $\geq 400$ mg caffeine or 2.5 cups of coffee

- Weight loss\(^1\):
  - Significant reduction in UUI reported:
    - No data in men or in OAB dry or moderately overweight patients

- Adjusting fluid intake\(^1,2\):
  - Greater impact than caffeine restriction
  - For significant improvement in urgency, frequency, and nocturia episodes, modify fluid input by 25% (goal: 1500-2400 mL/day)

- Few data for smoking cessation and regulation of bowel function\(^2\)

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NICE - Pelvic Floor Muscle Training

- Trial of supervised PFMT of $\geq 3/12$ $1^{st}$ line Rx for SUI or MUI. [2006]
- PFMT programmes should comprise $\geq 8$ contractions TDS. [2006]
- Continue an exercise programme if PFMT is beneficial. [2006]
A period of supervised PFMT resulted in significant improvement in symptoms SUI, UUI, urgency, frequency, and nocturia irrespective of menopausal status.”
ANTIMUSCARINICS

**Contraindications**
- Myasthenia gravis
- Glaucoma
- Ulcerative colitis
- GI obstruction

**Cautions**
- Arrhythmia
- CAD
- CHF
- Hypothyroid
- GERD
- Renal impairment
ANTIMUSCARINICS

Side effects

- Dry mouth
- Constipation
- Drowsiness
- Blurred vision
- Headaches
- Restlessness
- Nausea
- Vomiting
- Palpitations
- Arrhythmia
- Tachycardia
- Dry skin
- Hot flushes
COMMONLY USED DRUGS

- **Oxybutynin HCL IR**: 2.5 mg BD - 5 mg QDS & ER (*Lyrinel*)
- **Tolterodine**: 4mg ER OD
- **Solifenacin (Vesicare)**: 5 mg - 10 mg
- **Fesoterodine (Toviaz)**: 4mg and 8mg
- **Darifenacin**: 7.5mg XLS and 15mg XLS OD
- **Oxybutynin patches (Kentera)**: 3.6ug twice weekly
- **Imipramine**: 25 - 50 mg nocte
- **Trospium Chloride (Regurin XL)**: 60mg OD
NICE 2013
GENERAL PRINCIPLES WHEN USING OAB DRUGS

- When offering antimuscarinics take account of:
  - coexisting conditions (ie poor bladder emptying)
  - other medication affecting the total anticholinergic load
  - risk of AE [new 2013]

- Before OAB drug treatment starts, discuss:
  - the likelihood of success and associated common AE, and
  - the frequency and route of administration, and
  - that some AE (dry mouth, constipation) > Rx is starting to have an effect, and
  - that they may not see full benefits until on Rx for 4 wks. [new 2013]

- Prescribe lowest recommended dose when starting a new OAB Rx [new 2013]
- If OAB Rx is effective & well-tolerated, do not change dose or drug [new 2013]
**CHOOSING OAB DRUGS (NICE 2013)**

- Do not use flavoxate, propantheline & imipramine for UI/OAB [2006]
- Do not offer oxybutynin (IR) to frail older women [new 2013]
- Offer one of the following choices first to women with OAB or MUI:
  - oxybutynin (IR), or
  - tolterodine (IR), or
  - darifenacin (OD) [new 2013]
- If the first Rx is not effective or well-tolerated, offer another drug with the lowest acquisition cost [new 2013]
- Offer a T/D OAB drug to women unable to tolerate oral Rx [new 2013]
CHEMICAL STRUCTURE OF THE ANTICHOLINERGICS

**Quarternary amine:**

Trospium chloride

**Tertiary amines:**

Tolterodine
Oxybutynin
Propiverine
Darifenacin
Solifenacin
Fesoterodine

Zinner NR. Expert Opin Pharmacol 2005;6(8):1409–20
<table>
<thead>
<tr>
<th>Drug; annual cost*</th>
<th>Dose</th>
<th>Frequency</th>
<th>Half life (hours)</th>
<th>Time to peak (days)</th>
<th>Side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxybutynin chloride gel 10% (M₃ and M₁ selective); £244</td>
<td>1 g of 100 mg/g or 1.14 mL</td>
<td>Once daily</td>
<td>64 at steady state</td>
<td>Steady state by 7 days</td>
<td>Dry mouth 7.5%, constipation 1.3%, application site reaction 5.4%</td>
</tr>
<tr>
<td>Fesoterodine (non-selective); £336 (4 mg), £418 (8 mg)</td>
<td>4 mg or 8 mg</td>
<td>Once daily</td>
<td>7-8</td>
<td>5</td>
<td>Dry mouth 18.8% and 34.6%, constipation 4.2% and 6.0%, insomnia 1.3% and 0.4%</td>
</tr>
<tr>
<td>Trospium chloride XR (non-selective); £302</td>
<td>60 mg</td>
<td>Once daily, 1 hour before breakfast</td>
<td>36</td>
<td>5</td>
<td>Dry mouth 10.7%, constipation 8.5%, dry eyes 1.6%</td>
</tr>
<tr>
<td>Darifenacin (M₃ selective); £366 (7.5 mg), £451 (15 mg)</td>
<td>7.5 or 15 mg</td>
<td>Once daily</td>
<td>7-20</td>
<td>5-8</td>
<td>Dry mouth 20.2% and 35.3%, constipation 14.8% and 21.3% dizziness 0.9% and 2.1%</td>
</tr>
<tr>
<td>Solifenacin (M₃ and M₁ selective); £357 (5 mg), £458 (10 mg)</td>
<td>5 mg or 10 mg</td>
<td>Once daily</td>
<td>45-68</td>
<td>3-8</td>
<td>Dry mouth 10.9% and 27.6%, constipation 5.4% and 13.4%, blurred vision 3.8% and 4.8%, dizziness 1.9% and 1.8%</td>
</tr>
<tr>
<td>Trospium chloride immediate release (non-selective); £337</td>
<td>20 mg</td>
<td>Twice daily, 1 hour before meals</td>
<td>18</td>
<td>5-6</td>
<td>Dry mouth 10.7%, constipation 9.6%, headache 4.2%</td>
</tr>
<tr>
<td>Transdermal oxybutynin (M₃ and M₁ selective); £376</td>
<td>36 mg patch delivers 3.9 mg/day</td>
<td>Change patch twice weekly</td>
<td>7-8</td>
<td>10-48</td>
<td>Dry mouth 9.6%, constipation 3.3%, pruritis 16.8%, erythema 5.6%</td>
</tr>
<tr>
<td>Tolterodine tartrate long acting (non-selective); £399</td>
<td>4 mg</td>
<td>Once daily</td>
<td>7-18</td>
<td>2-6</td>
<td>Dry mouth 23%, constipation 6%, headache 6%, dizziness 2%, blurred vision 1%</td>
</tr>
<tr>
<td>Oxybutynin extended release (M₃ and M₁ selective); £321 (10 mg)</td>
<td>5-30 mg</td>
<td>Once daily</td>
<td>12-13</td>
<td>3-6</td>
<td>Dry mouth 34%, constipation 16.8%</td>
</tr>
</tbody>
</table>

Marincovic, BMJ, 2012
MIRABEGRON

- Betmiga®
- B3 Adrenoreceptor agonist
- 50mg OD
- Indication
  - OAB Syndrome

Contraindications
- Uncontrolled hypertension ≥180, ≥110
- Liver impairment
- ESRD
- Pregnancy
- Breastfeeding

Side Effects
- UTI (2.9%)
- Tachycardia (1.2%)
- Hypertension
Mirabegron works differently to antimuscarinics\textsuperscript{1,2}

Mode of action of OAB treatments\textsuperscript{1,3}

Adapted from Betmiga Summary of Product Characteristics, December 2012\textsuperscript{1} and Chu et al., 2006.\textsuperscript{3}


Date of preparation: February 2013. BET13018UK
# SCORPIO: MOST COMMON AEs

## Incidence of most common (≥2%) TEAEs

<table>
<thead>
<tr>
<th>Adverse events</th>
<th>Placebo (n=494)</th>
<th>Mirabegron 50mg (n=493)</th>
<th>Tolterodine ER 4mg active control (n=495)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry mouth</td>
<td>2.6%</td>
<td>2.8%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Constipation</td>
<td>1.4%</td>
<td>1.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>7.7%</td>
<td>5.9%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Nasopharyngitis</td>
<td>1.6%</td>
<td>2.8%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Headache</td>
<td>2.8%</td>
<td>3.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>1.4%</td>
<td>1.4%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
URGENT REFERRAL (NICE)

- Microscopic haematuria in women $\geq$ 50 years
- Visible haematuria
- Recurrent or persisting UTI associated with haematuria in women aged $\geq$ 40 years
- Suspected malignant mass arising from the urinary tract. [2006]
IN WOMEN WITH UI, FURTHER INDICATIONS FOR REFERRAL TO A SPECIALIST SERVICE:

- persisting bladder or urethral pain
- clinically benign pelvic masses
- associated faecal incontinence
- suspected neurological disease
- symptoms of voiding difficulty
- suspected urogenital fistulae
- previous continence surgery
- previous pelvic cancer surgery
- previous pelvic radiation therapy [2006]
REVIEWING OAB DRUG TREATMENT NICE 2013

- Face-to-face or phone R/V 4 wks after new OAB drug Rx.
- Ask the woman if she is satisfied:
  - If improvement is optimal, continue Rx
  - If no or suboptimal improvement or intolerable AE:
    - change dose
    - try an alternative OAB drug and R/V 4 wks later [new 2013]
  - Offer R/V <4 wks if AE intolerable [new 2013]
**Reviewing OAB Drug Treatment NICE 2013**

- Offer referral to SC if the woman does not want another drug, but would like to consider further treatment. [new 2013]
- Offer R/V if stops responding after an initial successful R/V [new 2013]
- R/V women on long-term Rx annually in PC (or 6/12 for >75). [new 2013]
- Offer referral to SC if OAB drug treatment is not successful. [new 2013]
- If the woman wishes to discuss further Mx refer to MDT & UDS:
  - If DO present and responsible for OAB Sx offer invasive therapy.
  - If DO present but the woman does not wish invasive therapy, ➔ advice.
  - If DO is not present refer back to the MDT [new 2013]
ALTERNATIVE OAB TREATMENT
SURGICAL TREATMENT

**Indications**
- Significant symptoms
- Failed conservative & drug therapy
- Realistic expectations

**Procedures**
- Cystodistension
- Intravesical injections
- Botulinum toxin injections
- Sacral Neuromodulation
- PTNS
- Bladder augmentation – Clam Cystoplasty
BOTULIUM TOXIN A

- Flexible/rigid cystoscope
- Bladder distended with 200ml water
- Botox or Dysport
- Success 60-80%, lasts 6-9 mths,
- Few side effects – voiding difficulty
**POSTERIOR TIBIAL NERVE STIMULATION - PTNS**

- 5cm cephalad to medial malleolus
- Connect to stimulator & adjust current
- 12 twice weekly sessions of 30 mins
- Success expected after 6-8 sessions
Do not offer PTNS for OAB unless:

- MDT review
- conservative Mx including OAB drug Rx has not worked adequately
- the woman does not want botulinum toxin or percutaneous SNS.

NICE 2013
CLAM CYSTOPLASTY
**History...**

- 1961 - Burch colposuspension
- 1995 - Ulmsten & Petros TVT
- 2001 - Delorme TOT out-in
- 2003 - De Leval TVT-O in-out
- 2006 - Single incision slings

*Figure 12. Retropubic pyramidalis muscle-fascia sling according to Walter Stoeckel (1917) [57]*
JOHN C. BURCH, MD (1900-1977)
MANAGEMENT OPTIONS....

Ridgeway et al 2012
AN AMBULATORY SURGICAL PROCEDURE UNDER LOCAL ANESTHESIA FOR TREATMENT OF FEMALE URINARY INCONTINENCE

- Ulmsten et al Int Urogynecol J 1996; 7, 81-86
- 75 pts
- 2 yrs FUP
- 84% cured
- 8% significantly improved
“11000 Mid Urethral Slings were inserted in 2009-2010 in the UK”

A Prospective Multicenter Randomized Trial of Tension-Free Vaginal Tape and Colposuspension for Primary Urodynamic Stress Incontinence: Two-Year Follow-up

Ward & Hilton, AJOG, 190, 2, 2004, 324-331

<table>
<thead>
<tr>
<th>Cure rates</th>
<th>TVT</th>
<th>Burch</th>
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<tbody>
<tr>
<td>Subjective</td>
<td>79%</td>
<td>78%</td>
</tr>
<tr>
<td>Objective (pad test)</td>
<td>81%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Seventeen years’ follow-up of the tension-free vaginal tape procedure for female stress urinary incontinence

C. G. Nilsson · K. Palva · R. Aarnio · E. Morcos · C. Falconer
LONG TERM DATA

Fig. 2 Cough stress test results during 17 years of follow-up after a trans-vaginal tape (TVT) operation. *number of performed stress tests per available women
**LONG TERM DATA**

*Table 2* Patients’ global impression of improvement at 5, 7, 11, and 17 years of follow-up

<table>
<thead>
<tr>
<th></th>
<th>5 years</th>
<th>7 years</th>
<th>11 years</th>
<th>17 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage cured or improved</td>
<td>95.3</td>
<td>97.6</td>
<td>97.0</td>
<td>87.2</td>
</tr>
<tr>
<td>Number available for evaluation</td>
<td>85/90</td>
<td>78/80</td>
<td>67/69</td>
<td>48/55</td>
</tr>
</tbody>
</table>
PERIURETHRAL BULKING

Indications:
- Primary
- Secondary
- Adjuvant

Increased interest results from:
- Trend towards minimally invasive techniques
- Can be performed as an ambulatory, outpatient procedure
- Cost and lower efficacy compared to MUT may be offset by increased NHS capacity
- Development of less inflammatory & more durable agents
INDICATIONS:

- Intrinsic sphincter deficiency
- Patient choice
- Failed previous therapy
- High surgical risk
- Multiple previous pelvic surgery or radiotherapy
- Family not complete
HOW DOES IT WORK?

1. Augments urethral mucosa – increased functional urethral length

2. Improves mucosal coaptation

3. Improves intrinsic sphincter function

4. Improves pressure transmission – increased urethral closure pressure at proximal urethra

5. Promotes urethral obstruction – increased $P_{\text{det max}}$, decreased $Q_{\text{max}}$

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2Monga A K et al. BJU 1995;76:156
3Radley et al. 2000 BJU Int.
COMPLICATIONS:

PERI-OPERATIVE

1  Dysuria
2  Frequency
3  Hematuria
4  Pain
5  Urinary retention  ~10%  PTFE 20-25%.  
                                  GAX-collagen 15%
6  Infection           ~5%  
7  De novo overactivity  
8  UTI                 
9  Fever (?allergenic)  
10  ~10%  PTFE 20-25%.  
         GAX-collagen 15%
11  ~5%  
12  PTFE 2%.  GAX-collagen 5%
13  PTFE 25%
**AN OPEN MULTICENTER STUDY OF POLYACRYLAMIDEHYDROGEL (BULKAMID®) FOR FEMALE STRESS AND MIXED URINARY INCONTINENCE IntUROGYNECOL Lose et al. 2010 J Pelvic Floor Dysfunct.**

<table>
<thead>
<tr>
<th>Adverse events</th>
<th>No. of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>10</td>
</tr>
<tr>
<td>Injection site pain</td>
<td>5</td>
</tr>
<tr>
<td>Urinary retention</td>
<td>2&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Voiding difficulties</td>
<td>2&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Past void residual &gt;100 ml</td>
<td>2&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Haematuria</td>
<td>2</td>
</tr>
<tr>
<td>Urine incontinence aggravated</td>
<td>2</td>
</tr>
<tr>
<td>De novo urge incontinence</td>
<td>2</td>
</tr>
<tr>
<td>Injection site laceration</td>
<td>1</td>
</tr>
<tr>
<td>Headache</td>
<td>4</td>
</tr>
</tbody>
</table>

<sup>a</sup>Classified as serious due to hospitalization, recovered within 6 and 9 days, respectively

<sup>b</sup>Not catheterized

<sup>c</sup>Catheterized 2 and 4 times within 3 days, respectively
UK GUIDANCE - PROCEDURES FOR STRESS UI

- **Retropubic mid-urethral tape** procedures using a ‘bottom-up’ approach with macroporous (type 1) polypropylene meshes are recommended as treatment options for stress UI if conservative management has failed.

- **Open colposuspension** and **autologous rectus fascial sling** are the recommended alternatives when clinically appropriate.

- **Intramural bulking agents** (glutaraldehyde cross-linked collagen, silicone, carbon-coated zirconium beads, or hyaluronic acid/dextran co-polymer) should be considered for the management of stress UI if conservative management has failed.
  - repeat injections may be required to achieve efficacy
  - efficacy diminishes with time
  - efficacy is inferior to that of retropubic suspension or sling.

- **Laparoscopic colposuspension** is not recommended as a routine procedure for the treatment of stress UI in women.

- **Anterior colporrhaphy, needle suspensions, paravaginal defect repair and the Marshall–Marchetti–Krantz procedure** are not recommended for the treatment of stress UI.
Patient with urinary incontinence (UI) or overactive bladder syndrome (OAB)

Initial assessment

History, examination, dipstick, voiding diary, Pad test/questionnaire (optional)

Lifestyle modifications: fluid intake, lose weight for BMI >30, reduce caffeine intake

Categorise UI: stress UI, urge UI/OAB, mixed UI

Dipstick results: Positive for Leucocyte and Nitrates (UTI symptoms: MSU + antibiotic pending results; No UTI symptoms: Antibiotic only if culture positive) / Negative for Leucocytes and Nitrates (UTI symptoms: MSU + consider antibiotic pending results; No UTI symptoms: UTI unlikely: no MSU needed)

Stress UI

First line: supervised PFMT min 3/12, +/- biofeedback, +/- bladder training

Mixed UI – treat according to dominant symptoms

OAB +/- urge UI

First line – bladder training >6/52; if ineffective, anticholinergics (oxybutynin first, then darifenacin, solifenacin, tolterodine, fesoterodine, trospium)

Mirabegron

Postmenopausal with vaginal atrophy – oestrogens

Postvoid residual if Voiding Dysfunction/ RUTI's

Dipstick results: Negative for Leucocyte and Nitrates (UTI symptoms: MSU + consider antibiotic pending results; No UTI symptoms: UTI unlikely: no MSU needed)

Other treatments

Desmopressin for nocturia – Propiverine for frequency in OAB

Referral to the specialist

Haematuria, Pain, RUTI, Grade 3 or symptomatic prolapse, Previous pelvic radiotherapy, Previous surgery for UI, Pelvic mass, Suspicion of fistula
Further assessment

Consider urodynamics

Multichannel cystometry/videourodynamics before surgery for stress UI if:
- Clinical symptoms of detrusor overactivity or voiding dysfunction
- Previous surgery for stress UI or anterior prolapse

Stress UI – conservative failed
- Mid-urethral tape, retropubic or transobturator, with macroporous polypropylene
  - Consider peri-urethral injections for temporary
- Open colposuspension
- Autologous rectus fascial sling
- Bulking agents (effect decreases over time and the technique is less effective than retropubic suspension or sling)
- Artificial urinary sphincter (previous failed surgery)

OAB +/- urge UI – conservative/anticholinergics failed
- Botulinum toxin A – explain the risk of self-catheterize and repeated procedure
- Sacral nerve stimulation and posterior tibial nerve stimulation
- Failure
- Augmentation cystoplasty
- Urinary diversion if failed/inappropriate sacral nerve stimulation or augmentation
THANK YOU