

CASE TWO

Short case number: 3_29_02

Category: Endocrine and Reproductive Systems

Discipline: Obstetrics & Gynaecology

Setting: General Practice-Urban

Topic: Urinary Urge Incontinence

Case

Suzanne Pawley is aged 35 years, she presents complaining of worsening problems with her bladder. She needs to go to the toilet to pass urine a lot and when she has to go, she has to rush. Lately she has experienced urine leakage on a few occasions, which she has found very embarrassing, especially if she is out and she cannot find a toilet fast enough.

Questions

1. What are the key features of this history that will support a diagnosis of urinary urge incontinence? What medical conditions and medications may contribute to her symptoms?
2. What are the key features of physical examination and why?
3. Giving consideration to the physiology of micturition what is the abnormality that occurs in urinary urge incontinence.
4. What investigations would you undertake and why?
5. You explain to Suzanne that you would like to assess her bladder function further by completing a fluid balance diary [frequency volume chart]. Explain what this is and how it is done. What findings would indicate normal bladder function?
6. Suzanne returns with her fluid balance diary shown here. How would you interpret this diary, what would you explain to Suzanne?
7. You advise Suzanne that she may benefit from 'bladder retraining'. Explain a behavioural bladder management programme to Suzanne.
8. Suzanne mentions that she has a friend who is using a medication that relaxes the bladder. What medications are available that do this? How do they work? What are the main contra-indications and side effects that need to be monitored?

Suggested reading:

1. Abbott, J., Bowyer, L., & Finn, M. (2014). *Obstetrics and Gynaecology: an evidence-based guide (2nd ed)*. Australia, Elsevier Chapter 12 Sexual Health & Chapter 13 Common problems.
2. Dewhurst's Textbook of Obstetrics & Gynaecology, Edmonds K [editor]. Blackwell Publishing. 2007. Chapter 49, pg 504-549.

ANSWERS

1. What are the key features of history that will support a diagnosis of urinary urge incontinence?

Key features of history in relation to urge incontinence → urgency associated with a compelling desire to void (if Suzanne is out she describes not being able to find a toilet fast enough) and typically patient can lose urine on the way to the toilet (Suzanne has experienced urine leakage on a few occasions), associated with a low level of urine loss. Symptoms of urinary tract infection or other bladder pathology (haematuria) should be enquired about. Need to exclude conditions that may contribute such as polydipsia or poorly controlled DM with polyuria. Medications such as diuretics may also contribute.

Type of incontinence ⁴	Pathophysiology	Symptoms
Common		
Stress incontinence	Lack of bladder neck support and/or poor urethral closure	Involuntary leakage on effort or exertion, coughing and or sneezing
Urge incontinence: detrusor overactivity/overactive bladder syndrome (previously called detrusor instability/unstable bladder)	Failure of cortical inhibition of sacral reflex arc Idiopathic – anxiety, coffee intake and cold weather are said to influence symptoms Neurogenic (upper motor neuron lesion, ie multiple sclerosis, spinal trauma and cerebral vascular accidents) ?urethral obstruction after surgery	Urgency: compelling desire to void, accompanied by fear of leakage and/or discomfort Day time frequency Urge incontinence: involuntary loss or urine associated with a strong desire to void Nocturia: awoken at night one or more times to void Nocturnal enuresis: bedwetting
Less common		
Retention with overflow	Over-distension of bladder following surgery or delivery Urethral obstruction from a pelvic mass or faecal impaction Drugs or neurological disease	Dribble incontinence, symptoms of the overactive bladder and of voiding difficulty
Fistula	Less developed countries; prolonged obstructed labour and pressure necrosis of bladder base and vagina. More developed countries: pelvic surgical complications, radiation, advanced pelvic surgery	Uncontrollable continuous leakage

2. What are the key features of physical examination and why?

Urge incontinence associated with detrusor overactivity/over active bladder syndrome.

It can be:

- 1) Idiopathic – anxiety, coffee intake, alcohol and cold weather are said to influence symptoms.

⁴ O'Connor V and Kovacs G. Obstetrics, Gynaecology and Women's Health. Cambridge press, Sydney, 2003. Pg 546

- 2) Neurogenic (upper motor neuron lesion, ie multiple sclerosis, spinal trauma and cerebral vascular accidents).
- 3) Bladder irritation after surgery with the presence of a mid-urethral sling or due to complication such as erosion of mesh materials in the bladder.
- 4) (Hormonal- hypo oestrogenic states (postmenopausal, post-delivery and breastfeeding)

Physical examination as in case one but particularly:

- **Neurological** → sensation sacral dermatomes (S2 – S4) → perineal sensation and anal tone. Lower limb neurological examination → assess if needed for other conditions eg multiple sclerosis, parkinsonism.

3. Giving consideration to the physiology of micturition explain the abnormality that occurs in urinary urge incontinence.

The main role of the bladder is to store urine and to act as an efficient low pressure, continent, reservoir. Urine from the kidneys enters the bladder via the ureters at a rate of 0.5-5 ml/min. Normally sensation of bladder filling is noted at between 15-250ml and there is a strong desire to void at approximately 400-600 mls.

To maintain continence urethral pressure must exceed bladder pressure at all times except during micturition. The intravesical pressure must remain low and the urethral lumen should seal completely. With voiding → cortical inhibition is released and there is a relaxation of the pelvic floor together with relaxation of the striated muscles surrounding the urethra. Parasympathetic impulses via pelvic nerve also cause the detrusor to contract. Extrinsic striated muscle of the pelvic floor contracts to stop the flow of urine. The smooth muscle of the detrusor is slower to relax.

An abnormally high detrusor pressure may occur in detrusor overactivity when there is an inability to inhibit these detrusor contractions.

4. What investigations would you undertake and why?

- **Mid-stream specimen of urine:** It is important to exclude UTI as a cause of symptoms.
- **Frequency/volume chart:** may indicate excessive drinking or bad habits as the cause of the symptoms. Self awareness and monitoring may modify the behaviour.
- **Another option to confirm the diagnosis is a pad test** (weighing a pad to determine loss after a women drinks 500mls of water and undertakes activities).
- **Urodynamics studies** particularly if a patient has failed conservative therapy. It is important to exclude voiding dysfunction as starting anti-cholinergic medication may potentially put patient into retention.

5. You explain to Suzanne that you would like to assess her bladder function further by

BLADDER DIARY – URINE FREQUENCY AND VOLUME

Patient: Suzanne Pawlek

Date: 3_29_02			
Time	Fluid Intake	Urine Volume	Comments [include volume of leakage]
7.00 am		100 ml	
7.30 am	200 ml coffee		
8.00 am		50 ml	
9.30 am	200 ml coffee		
10.30 am		65 ml	Slight leakage, pad moist
12.00 md		100 ml	
1.30 pm	500 ml water	60 ml	
3.00 pm		150 ml	Had to rush, small amount leakage
5.00 pm		70 ml	
6.30 pm	100 ml juice		
7.00 pm		80 ml	
9.00 pm		150 ml	
1.00 am		Did not measure	Slight leakage, wet pyjamas.
5.00 am		Did not measure	

completing a fluid balance diary [frequency volume chart]. Explain what this is and how it is done. What findings would indicate normal bladder function?

A bladder diary provides an objective measure of patient’s symptoms, and allows a comparison over time, and with treatment, as well as making the patient aware of her voiding habits. Time of voiding, volume voided, and whether incontinent or not is recorded. The amount of urinary loss with incontinence is not measured but the patient can

make a subjective estimate, such as ‘slight leakage’ or ‘soaked’. It is usually completed over three non-consecutive 24 hour periods.

Normal population values are difficult to establish and vary with age

Frequency/output ⁵	Definition	Values used in clinical practice
Number of day time voids	Including last void before bed and first void on waking	Aim for 3 – 5 hourly
Number of night time voids	Each void is preceded by and followed by sleep	Aim for 0-1
Total urine output/24 hrs		Aim for 1500-2000ml or less
Nocturnal urine volume	Total volume voided after patient goes to sleep Excludes last void before bed Includes first void on waking	Age dependent
Nocturnal polyuria	Increased proportion of urine output produced at night	Young adults>20% urine output at night >65 years >33% of urine produced at night
Max voided volume	Largest single volume voided	Aim for 300-600ml
Mean voided volume		Aim for 250-300ml

6. Suzanne returns with her fluid balance diary shown here. How would you interpret this diary, and what would you explain to Suzanne?

⁵ McKertich K. Urinary Incontinence: Assessment in women: stress, urge or both? Australian Family Physician, Vol 37 No 3 March 2008 pg112-117

Small frequent voids with leakage associated with urgency during day and at night. Minimal fluid intake with caffeinated beverages.

7. You advise Suzanne that she may benefit from 'bladder retraining'. Explain a behavioural bladder management programme to Suzanne.

The aim of bladder retraining is to increase the capacity of the bladder until it can hold the normal amount of urine (400- 500mls) enabling the patient to void every three to four hours. This requires learning to suppress bladder contractions using a number of techniques including:

- Maintain a bladder diary to keep track of progress
- Maintain fluid intake at 1.5-2L per day
- Easier to start this at home where there is some security
- Avoid going to the toilet just in case.
- When desire to void occurs, allow urge to pass and slowly increase the period of time the patient can defer voiding. Several strategies can be used to defer voiding including pelvic floor contraction, perineal pressure or mental distraction.
- This should be continued for 3 months to realise full benefits.

8. Suzanne mentions that she has a friend who is using a medication that relaxes the bladder. What medications are available that do this? How do they work? What are the main contraindications and side effects that need to be monitored? Anti-cholinergic medications such as *oxybutynin* (Ditropan), *tolteradine* (Detrusitol) and *solifenacin* (Vesicare) are muscarinic antagonists that decrease parasympathetic stimulus which is responsible for detrusor contraction. Specific contraindications include a history for acute narrow-angle closure glaucoma, risk of gastro-intestinal obstruction, urinary tract obstruction or voiding dysfunction, myasthenia gravis. The side-effects include dry mucous membranes (eyes, nose, mouth), constipation, heartburn, dry skin, drowsiness (particular an issue in the elderly). *Mirabegron* (Betmiga) is a new drug which is a beta 3 agonist antispasmodic agent. The side effects include nausea, dizziness, constipation, diarrhoea and headache.