

Chapter 18

Female Urinary Incontinence

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Educational Objectives:

After completion of this chapter you should be able to:

1. Understand the pathophysiology of incontinence
2. Define and classify the different types of urinary incontinence
3. Know the symptoms associated with urinary incontinence
4. Know how to examine and name relevant test performed on patients
5. Assess and manage a patient with stress urinary incontinence
6. Assess and manage a patient with Overactive bladder
7. Assess and manage a patient with mixed urinary incontinence
8. What is a neurogenic detrusor overactivity bladder and a vesico-vaginal fistula

Introduction:

Urinary incontinence is a common problem especially in the elderly. Incontinence has been shown to have a negative impact on the psychological, physical and social well-being of affected individuals, carers and family who take care of women with incontinence. Urinary incontinence has significant impact on the cost of health care resources in terms of investigations as well as treatment options

Pathophysiology of Incontinence:

Continence is determined by an intact anatomical and physiological functioning of the urethra, vesical neck, bladder and supporting fascia as well as an intact neurological

system. Stress urinary incontinence and voiding problems is thought to occur as a result of disruption to the suburethral supporting tissue, as a consequence of childbirth (multiparity), ageing and menopause, or trauma to the urethra.

Definitions and Classification: (IUGA-ICS Joint Report on Terminology, 2010)

- Urinary incontinence (symptom): complaint of involuntary loss of urine.
- Contenance: is the ability to retain urine in the bladder during voluntary episodes of micturition
- Stress (urinary) incontinence: complaint of involuntary loss of urine on effort or physical exertion (e.g. sporting activities), or on sneezing or coughing. N.B. “activity-related incontinence” might be preferred in some languages to avoid confusion with psychological stress.
- Urgency (urinary) incontinence: complaint of involuntary loss of urine associated with urgency
- Postural (urinary) incontinence: complaint of involuntary loss of urine associated with change of body position, e.g. rising from a seated or lying position
- Nocturnal enuresis: complaint of involuntary urinary loss of urine which occurs during sleep
- Mixed (urinary) incontinence: complaint of involuntary loss of urine associated with urgency and also with effort or physical exertion or on sneezing or coughing.
- Continuous (urinary) incontinence: complaint of continuous involuntary loss of urine
- Insensible (urinary) incontinence: complaint of urinary incontinence where the woman has been unaware of how it occurred.
- Coital incontinence: complaint of involuntary loss of urine with coitus. This symptom might be further divided into that occurring with penetration and that occurring at orgasm.

Symptoms of Urinary incontinence:

- Urinary frequency: Increased daytime urinary frequency: complaint that micturition occurs more frequently during waking hours than previously deemed normal by the woman
- Nocturia: complaint of interruption of sleep one or more times because of the need to micturate. Each void is preceded and followed by sleep.
- Urgency: complaint of a sudden, compelling desire to pass urine which is difficult to defer.
- Overactive bladder (OAB, urgency) syndrome: urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology.
--> Rule out: UTI; DM

The history taking is one of the most important points in managing patients with incontinence. It should be taken carefully with special attention to:

- childhood history (e.g. enuresis, surgery of the urinary tract, recurrent urinary tract infections, etc),
- medical disorders such as asthma, spinal cord trauma, diabetes, heart disease when the incontinent episodes occur.
- Medications such as diuretics, antidepressants
- Surgical history- previous surgeries to uterus (e.g. hysterectomy), spinal cord, back or urinary tract surgery
- Obstetric and gynaecological history- menstrual status, sexual activity, childbirth history with specific attention to duration of labour, use of assisted delivery instrument, perineal tears.

After a detailed history you should be able to classify incontinence e.g. stress urinary incontinence (SUI), urge urinary incontinence (UUI) and mixed urinary incontinence (MUI) , overactive bladder , or possibility of fistula (patient will complain of continuous incontinence)

Examination and tests: N.B The bladder should not be emptied prior to examination!

- After a thorough and detailed history, a complete physical examination is performed. This entails a general examination followed by a neurological and abdominal examination (e.g abdominal and pelvic masses). Take note of previous surgical scars.
- A gynaecological examination is **performed in private with no disturbance!** The patient is positioned in the lithotomy position and a Sims or a Cusco speculum may be used. The perineum should be examined for any previous scars and the perineal body measured. If there is any prolapse it should be staged with a registrar present (Baden-Walker, POP-Q). Grade pelvic floor tone by asking the patient to contract the perineal muscles (Modified Oxford Scoring system: 0-5). Proceed to examine for incontinence by parting the labia and asking the patient to give a big forceful cough, and note if she leaks. If the bladder was previously emptied then SUI might not be observed due to an empty bladder. You might observe forward/downward movement of the anterior vaginal wall when the patient coughs. Repeat the cough instruction now with support to the anterior vaginal wall and note if she still leaks. If she does NOT leak with support than the diagnosis is most likely SUI, and she might benefit from insertion of a sling. This is called the Bonney test
- If there is continuous leakage with signs of chronic vulval irritation then a vesico-vaginal fistula must be on your differential diagnosis. The fistula may be a result of either injury to the bladder during surgery, radiotherapy, and use of other medications.
- A speculum examination is then done. First view the cervix and take a smear if indicated. After this, proceed to examine each compartment with a Sims speculum i.e. the anterior vaginal wall, posterior vaginal wall and middle compartment (i.e. cervix or vault of vagina), noting any prolapse.

- Also examine the anal sphincter by taking note of anal tone and perineal sensation.
- The patient is then asked to empty the bladder and the residual is then checked (how much is left behind). The urine specimen is tested with a dipstick to note any possibility of infections. => Ultrasound; BladderScan; Catheter

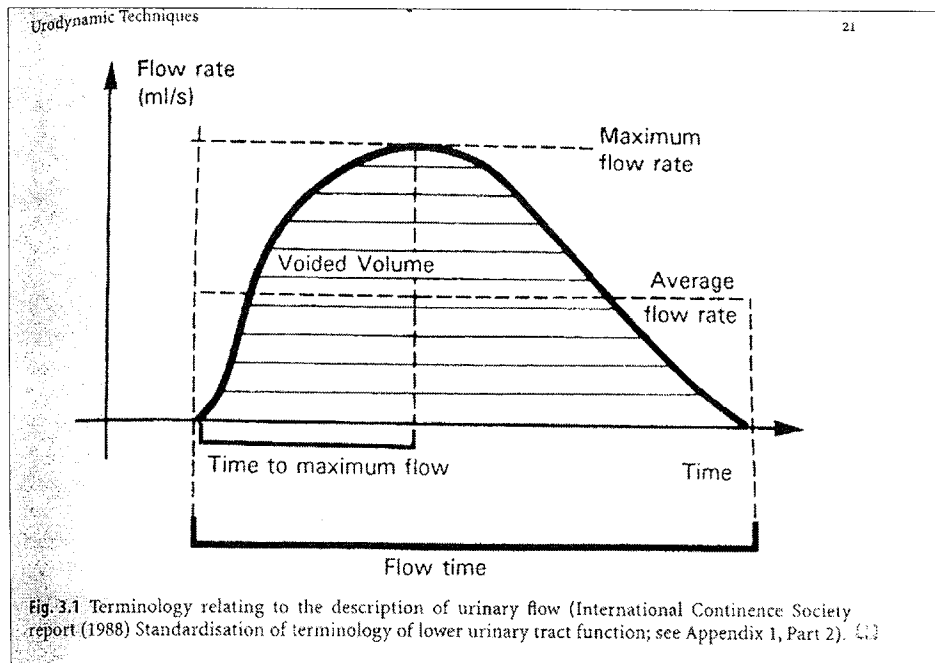
Relevant tests:

- Urine for MCS, and glucose testing e.g. random and HBA1C. => E.coli (recurrence)
- If a vesico-vaginal fistula is suspected then a cystogram must be requested.
- If there is voiding dysfunction, a uroflow study must be performed. If there is more complex symptoms a filling and voiding cystometry must be done.
- A 3 day bladder diary should be given to all patients. This will allow you to check her total intake and voiding amounts per day as well as the frequency of her intake, type of fluid (e.g coffee, tea, fizzy drinks, water etc), as well as when incontinent episodes that occur. This information will help guide bladder re-training.

Urodynamic studies: It is essential to rule out a urinary tract infection before performing a urodynamic study.

The aim of the study is to reproduce the patient's symptoms, e.g. in a patient complaining of SUI, you will note whether she leaks when you ask her to cough or jump; in a patient with overactive bladder, leakage might occur when the tap is turned on and the patient hears the running water. You need to ask the relevant urodynamic question in order to interpret the study.

What should a uroflow study look like?



The patient is asked to urinate on a commode and urine is collected in a flowmeter. The graph that is generated is normally a bell-shaped curve. The total voided volume and maximum/average flow rate is calculated. Normograms have been developed to aid interpretation e.g. Siroky normogram. Abnormal shapes may indicate obstructed voiding or underactive detrusor muscle.

When cystometry is performed a 8-Fr Double lumen catheter and a rectal catheter is inserted into the bladder and rectum respectively. These catheters are connected to the transducers. Once the catheters are zeroed to atmospheric pressure, the filling phase begins. The bladder is filled with room temperature normal saline at 50mls per minute. Various sensations are then recorded such as first desire, normal desire, strong desire, urgent desire. These sensations are correlated with the volumes at which they occur. Also depending on what the clinician wants to elucidate, certain manoeuvres will be requested such as coughing, jumping, opening the tap.

- In the case of SUI, leakage will be observed during the study either spontaneously, or when the patient is asked to cough
- In the case of OAB, involuntary detrusor contractions will be observed during the filling phase of urodynamic studies

Differentiate between WET (leaking) and DRY (not leaking)

Diagnosis and Management:

After a detailed history, and relevant tests, a diagnosis will be made. A urinary tract infection must be treated (prior to performing urodynamic studies). Based on the bladder diary, bladder re-training is commenced. The type and amount of fluids taken are addressed-i.e. caffeine containing drinks as well as fizzy drinks should be avoided. Intervals between voiding are also gradually increased. Women with a BMI > 30 should be advised to loose weight.

In the case of SUI:

- Management may be conservative in the case of mild SUI. Pelvic floor exercises with biofeedback are advocated.
- Some patients may be offered surgery- The Burch colposuspension either laparoscopically or via open surgery may be performed. In recent years the insertion of a sling beneath the bladder neck has been popular. There are many types on the market such as the TVT (retropubic sling), TVT-O, TOT (both are obturator slings- i.e inserted via the obturator foramina). More recently investigators in the field have explored other options that avoid the retropubic and obturator areas and introduced the mini-sling. This is also a vaginal insertion with an incision beneath the mid-urethra, but the tapes are inserted as far as the obturator membrane.
- When patients are older and have many co-morbidities and previously failed sling surgery, urethral bulking agents may be offered.
- In cases of concomitant prolapse, a repair will be performed at the same time that a sling is to be inserted.

In the case of OAB/ Urge incontinence:

- Bladder retaining with specific attention to voiding intervals is firstly recommended.

- Treatment with an anti-cholinergic drug such as solifenacin, oxybutynin etc is offered. These drugs have numerous side-effects (e.g dry mouth, constipation, blurred vision etc) which must be explained to the patient. These are prescribed for at least 6 weeks before the next review. If no response the dosage may be increased for a further 6 weeks and then re-evaluated. If still no response other modalities must be explored e.g. posterior tibial nerve stimulation, botox, sacral neuromodulation and surgery such as bladder augmentation. These are usually reserved for intractable OAB nonresponsive to medical management.
- Consider the addition of vaginal estrogen cream in postmenopausal patients

In the case of MUI:

- Treatment is tailored according to the dominant symptom. Re-evaluate patient after 6 weeks of beginning treatment.

What is a neurological bladder?

- This is overactivity of the detrusor muscle as a result of disturbances in the neural control mechanisms. It is common in patients with cerebrovascular accidents, diabetic patients, multiple sclerosis and in patients with spinal cord trauma. The cystometric trace is also highly variable in these patients. The management will depend on the cause and frequently, intermittent self-catheterization is taught to carers/patients. The patient is taught the technique – clean introitus and how to introduce the catheter. These patients should be managed in a specialized clinic.

What is a vesico-vaginal fistula?

- This is a connection between the bladder and vagina which occurs as a result of severe prolonged labour, or from any trauma sustained to the bladder and vagina e.g. total abdominal hysterectomy, any other pelvic surgery performed in that area, as a consequence of radiotherapy, and rarely as a result of foreign bodies placed in the vagina for a long time.

- Typically the patient will be wet all or most of the time and will always wear protective underwear e.g. pads/nappy.
- A large fistula can be demonstrated during the vaginal examination, but smaller ones may need to be confirmed with a cystogram.
- Treatment is by surgical repair of the vesico-vaginal fistula either via the abdominal or vaginal route.

What is true incontinence?

This means that the patient is continuously wet and has total loss of the continence mechanism. This is uncommon and in the younger age group may be as a result of congenital abnormalities of the urinary tract e.g. duplication of the ureters with abnormal ectopic ureteric orifices into the vagina, and bladder abnormalities. In the older age group the same causes of a vesicovaginal fistula apply.

What does it mean to have overflow incontinence?

This term is used when the intravesical pressure exceeds the urethral pressure in an overdistended bladder. There is thus an overflow of urine from an overdistended bladder and this happens in the absence of raised intra abdominal pressure. The most frequent complaint is involuntary intermittent leakage of urine that may occur anytime. The bladder capacity is increased far above the normal ranging from 450-1000mls. This means that there is a sensory problem with the Detrusor muscle. Since the bladder is not emptied timeously the patient will be prone to recurrent urinary tract infections.

On examination the distended bladder might be palpable as a pelvic mass, and after catheterisation the mass disappears and a large amount of urine will drain. Investigations include urine culture, cystoscopy and a proper neurological and gynaecological evaluation. The most effective management is intermittent self catheterisation.