

# Urinary retention in women

*Urinary retention in women is often transient and of no known cause.*

**J Basson**, MB ChB; **C L E van der Walt**, MB ChB, DOM (Singapore), MMed (Urol), FC Urol SA; **C F Heyns**, MB ChB, MMed (Urol), PhD, FCSSA (Urol)

Department of Urology, Stellenbosch University and Tygerberg Hospital, Tygerberg, Cape Town, South Africa

Corresponding author: C F Heyns (cfh2@sun.ac.za)

Urinary retention in women is uncommon, with a much lower incidence than in men. It may be acute (with suprapubic pain) or chronic (typically painless). Urinary retention in females is frequently transient, with no apparent cause, which makes the management of these patients more challenging.<sup>[1-3]</sup>

## Aetiology

In the past, most studies focused on 'psychogenic' or 'hysterical' causes, but the list of possible causes is quite extensive, and all should be taken into consideration when treating these patients. The aetiology of urinary retention in women can be broadly classified into mechanical/anatomical, functional/neurological, and miscellaneous causes.<sup>[4-7]</sup>

### Mechanical/anatomical causes

Mechanical/anatomical causes include urethral stenosis, foreign objects, bladder stones, constipation, urethral cancer, uterine fibroids, bladder-neck obstruction, pelvic organ prolapse, cervical cancer and anti-incontinence surgery (Table 1).

Urethral stenosis is a common cause of retention in postmenopausal women, in whom hormonal insufficiency leads to urogenital atrophy. Other causes of urethral stenosis include scarring after surgery or

instrumentation, or fibrosis with chronic inflammation.<sup>[7]</sup>

Urinary retention is often the presenting symptom of urethral cancer.<sup>8</sup> Other symptoms include haematuria, pelvic pain, obstructive and irritative urinary symptoms, weight loss and malaise. On examination a hard mass is often felt in the urethra or anterior vaginal wall. Diagnosis is confirmed by biopsy.

Surgery for stress urinary incontinence may cause retention in 2.5 - 24% of cases.<sup>[7]</sup> Tension-free vaginal tape (TVT) sling procedures often cause 'hypercontinence'.

### Functional/neurological causes

Functional/neurological causes of urinary retention in women include cerebral and spinal cord diseases which can be congenital, neoplastic, degenerative, inflammatory, vascular or traumatic, e.g. spinal cord injury (suprasacral), multiple sclerosis, Parkinson's disease, cauda equina syndrome and Fowler's syndrome (Table 2).

Fowler *et al.* described a syndrome in young women, usually <30 years old, who typically presented with painless urinary retention associated with residual urine volumes of >1 000 ml.<sup>[9,10]</sup> Electromyography (EMG) revealed abnormal bursts of activity of the striated urethral sphincter, resulting

in a functional obstruction, the so-called Fowler's syndrome.<sup>[9,10]</sup>

Cauda equina syndrome is caused by lumbar disc protrusion, and 1 - 15% of patients present with abnormal bladder function secondary to impingement of sacral nerve roots.<sup>6</sup> Protrusion is most common in the L4 - 5 and L5 - S1 disc spaces. Patients are usually between 35 and 45 years of age. Urinary retention and straining are the most common urological symptoms, together with lower back pain, bilateral sciatica, saddle anaesthesia, lower limb weakness and bowel dysfunction.<sup>[6]</sup> EMG demonstrates bladder and sphincter denervation, and the diagnosis is usually made by computed tomography (CT), magnetic resonance imaging (MRI) or myelography.<sup>[6]</sup> Cauda equina syndrome should be diagnosed early and treated promptly, since failure to do so may result in permanent neurological damage.

### Miscellaneous/other causes

These include eosinophilic cystitis, herpes simplex virus (HSV) infection, epidural anaesthesia, anti-cholinergic or sympathomimetic agents, urinary tract infection (UTI), and postpartum, postoperative and psychogenic causes (Table 3).

Postpartum urinary retention has a prevalence of 0.45 - 14.1%.<sup>[5]</sup> The pathophysiology is poorly understood and various mechanisms have been proposed. Hormones and

**Table 1. Mechanical/anatomical causes of urinary retention in women**

Urethral stenosis
Foreign bodies (e.g. ring pessaries)
Constipation
Bladder stones
Urethral cancer
Uterine fibroids
Clot retention
Pelvic organ prolapse
Bladder neck obstruction
Anti-incontinence surgery
Pelvic masses

**Table 2. Functional/neurological causes of urinary retention in women**

Fowler's syndrome
Multiple sclerosis
Cerebral palsy
Spinal cord injury
Cerebrovascular accident
Detrusor-sphincter dyssynergia
Cauda equina syndrome
Parkinson's disease
Spina bifida occulta
Diabetes mellitus

**Table 3. Miscellaneous/other causes of urinary retention in women**

Eosinophilic cystitis
Postpartum
Herpes simplex virus infection
Epidural anaesthesia
Anticholinergic therapy
Psychogenic
Urinary tract infection
Postoperative

contractile responses of the bladder, together with injured bladder innervation, may play a role.<sup>[5]</sup>

HSV type 2 is a common sexually transmitted infection, causing painful vesicles on the labia and/or vulva. Urinary retention may be secondary to pain or the sacral radiculopathy caused by HSV infection.<sup>[6]</sup>

**Urinary retention in females is frequently transient, with no apparent cause, which makes the management of these patients more challenging.**

### Clinical assessment

Most patients present with obstructive as well as irritative lower urinary tract symptoms (LUTS), including weak stream, hesitancy, abdominal straining, infrequent voiding, dysuria, frequency and nocturia.<sup>4</sup> In some patients urinary retention may be the first symptom or sign.

The history should include characterisation of the patient's voiding symptoms, i.e. the onset and duration, aggravating and ameliorating factors, associated symptoms such as fever, abdominal or flank pain, history of trauma or surgery, and the presence of cutaneous lesions (rash, vesicles). The history should also include questioning about bowel habits, visual and/or gait abnormalities, muscle weakness and/or sensory disturbances of the lower extremities.<sup>[6]</sup>

The previous medical history is important, as well as previous surgical procedures, especially spinal, pelvic, anorectal and anti-incontinence surgery.<sup>6</sup> Prescription and non-prescription medication should be listed, as these include common causes for transient urinary retention (anticholinergics, antipsychotics and sympathomimetics).<sup>[7]</sup>

Physical examination should focus on inspection for cutaneous lesions, trauma, prior surgery and signs of spinal dysraphism.<sup>[6]</sup> The abdomen should be palpated for any masses. Bimanual pelvic examination as well as speculum examination to exclude

pelvic organ prolapse should be performed. Palpation of the urethra may reveal a urethral cancer. A thorough neurological examination is essential and should include assessment of perianal tone and perineal sensation.

UTI can be excluded or confirmed by urinalysis and culture. If indicated, a full blood count, urea, electrolytes and creatinine can be done.

Cystoscopy is done after transient causes are eliminated and can diagnose urethral stenosis, urethral cancer, eosinophilic cystitis and bladder stones. Biopsies are performed if clinically indicated. Cystoscopy is also indicated in women with previous anti-incontinence surgery to evaluate the urethra and bladder.

Further investigations include X-rays of the lumbar spine, abdomino-pelvic ultrasound and/or CT imaging. Urodynamic studies and EMG may be indicated in some patients. MRI of the brain and spine is indicated in any patient with neurological symptoms or signs, and if no other cause of the retention is found.<sup>[6]</sup>

### Treatment

Drainage of the bladder by transurethral catheterisation resolves the acute emergency. In some cases a suprapubic catheter may be necessary. In most idiopathic cases, including UTI, the urinary retention is transient, and will need no further treatment. For UTI, appropriate antibiotic treatment will resolve the retention.

Constipation causing urinary retention is treated with laxatives, increased fluid intake, diet modification and changes in bowel habits.

Anatomical causes of urinary retention are best treated surgically to remove the obstructive lesion and restore the normal outlet.

Treatment of urethral stenosis consists of hormonal replacement (systemic or topical) in postmenopausal women and urethral dilatation in some cases.

Women with urinary retention after anti-incontinence surgery are usually treated with clean intermittent self-catheterisation (CISC) for up to 6 weeks, or dilatation

of the urethra. If these interventions are unsuccessful, transection or removal of the sling may be necessary.

In women with cauda equina syndrome, prompt surgical intervention (laminectomy) restores normal bladder function in at least 25% of patients.

Women with postpartum urinary retention are usually treated with CISC, and the majority of patients will have no long-term impairment of bladder function.

In neurological cases continuous indwelling catheterisation may be necessary. If CISC is not feasible, suprapubic catheterisation or urinary diversion may be warranted.<sup>[7]</sup>

**Cauda equina syndrome is caused by lumbar disc protrusion, and 1 - 15% of patients present with abnormal bladder function secondary to impingement of sacral nerve roots.**

Women with urinary retention caused by HSV infection are usually treated by

transurethral or suprapubic catheterisation, together with acyclovir or valacyclovir. The retention usually clears up within 6 weeks. Attempts to relax the urethral sphincter include the use of alpha-blockers, injection of botulinum toxin or sacral nerve stimulation. There is little evidence that alpha-blockers are effective in women with urinary retention. Sacral nerve stimulation is successful in some patients, especially women with Fowler's syndrome.<sup>[4]</sup>

### Conclusion

Urinary retention in women is uncommon and may pose management difficulties. In most cases it will have a simple precipitating cause and, once treated, the majority will void spontaneously. Investigations should focus on detailed history, physical examination, urinalysis, pelvic ultrasound and cystoscopy. If no cause is found, urodynamic studies or MRI should be considered.

### References

1. Carley ME, Carley JM, Vasdev GV, et al. Factors that are associated with clinically overt postpartum urinary retention after vaginal delivery. *Am J Obstet Gynecol* 2002;187:430-433. [<http://dx.doi.org/10.1067/mob.2002.123609>]
2. Groutz A, Gordon D, Ecilman I, et al. Persistent postpartum urinary retention in contemporary obstetric practice: definitions, prevalence and clinical implications. *J Reprod Med* 2001;46:44-48.
3. Van der Linden EF, Venema PL. Acute urinary retention in women. *Ned Tijdschr Geneesk* 1998;142(28):1603-1606.
4. Kavia RBC, Datta SN, Dasgupta R, Elneil S, Fowler CJ. Urinary retention in women: its causes and management. *BJU Int* 2006; 97:281-287. [<http://dx.doi.org/10.1111/j.1464-410X.2006.06009.x>]
5. Yip S, Sahota D, Pang W, Chang A. Postpartum urinary retention. *Acta Obstet Gynecol Scand* 2004; 83:881-891. [<http://dx.doi.org/10.1080/j.0001-6349.2004.00460.x>]
6. Smith CP, Kraus SR, Boone TB. Urinary retention in the female. AUA update series, Lesson 19, Volume XVIII;146-151.
7. Ahmad I, Krishna NS, Small DR, Conn IA. Aetiology and management of acute female urinary retention. *Br J Med Surg Urol* 2009;2:27-33. [<http://dx.doi.org/10.1016/j.bjmsu.2008.10.004>]
8. Van der Walt CLE, van Vuuren SP, Heyns CF. Acute urinary retention in women: causes and management. *Afr J Urol* 2010;16(1):7-11. [<http://dx.doi.org/10.1007/s12301-010-0002-y>]
9. Fowler CJ, Kirby RS. Abnormal electromyographic activity (decelerating burst and complex repetitive discharges) in the striated muscle of the urethral sphincter in 5 women with persisting urinary retention. *Br J Urol* 1985;57:67-70. [<http://dx.doi.org/10.1111/j.1464-410X.1985.tb08988.x>]
10. Fowler CJ. Neurological disorders of micturition and their treatment. *Brain* 1999;122:1213-1231. [<http://dx.doi.org/10.1093/brain/122.7.1213>]

## IN A NUTSHELL

- Urinary retention in women is much less common than in men.
- It is very important to identify the cause of the retention.
- The aetiology can be classified into mechanical/anatomical, functional/neurological and miscellaneous causes.
- A careful and comprehensive history may identify the cause of the retention.
- Physical examination should include a thorough neurological, bimanual pelvic and speculum examination, and urinalysis is essential.
- Imaging may include X-rays of the lumbar spine, abdominopelvic ultrasound and computed tomography.
- Special investigations may include cystoscopy and urodynamic studies.
- Magnetic resonance imaging of the brain and spine is indicated in any patient with neurological symptoms or signs, and if no other cause of the retention is found.
- Transurethral or suprapubic catheterisation resolves the acute emergency.
- Specific treatment is determined by the cause of the retention.

## SINGLE SUTURE

### *Artificial ovary mimics real hormone levels*

An artificial ovary could make hormone replacement therapy (HRT) a thing of the past. Women with damaged ovaries or who are postmenopausal don't produce sex hormones, which can lead to osteoporosis. Daily HRT helps, but can have side-effects.

Emmanuel Opara at Wake Forest University, North Carolina, and colleagues placed two types of hormone-producing cells from rat ovaries inside an algal capsule, then exposed it to chemicals from the pituitary gland that stimulate hormone production. The cells made sex hormones in the same proportions as healthy ovaries (*Biomaterials*, doi.org/kxv). The hormone capsule would react more dynamically than HRT with fewer side-effects, the team say.

New Scientist, 6 April 2013 (online).