A WOMAN'S UROLOGIST
RESTORING CONFIDENCE

Urinary Retention in Women

What is it?
When a woman is unable to pass urine, she is said to be in urinary retention. Urinary retention can be complete or incomplete (still able to pass urine but has a large amount of urine left in the bladder), acute or chronic, and symptomatic or asymptomatic. Unlike in men where an enlarged prostate can often obstruct the bladder, urinary retention in women is rare. The male to female ratio on urinary retention is 13:1, and the incidence is about 7 per 100 000 population per year.

What are the symptoms?
Patients who are in complete urinary retention are unable to pass urine. They feel uncomfortable with a sensation of bloating in the lower abdominal area (where the bladder is).

Patients who are in partial urinary retention can still pass a bit of urine but describe having to push and strain when voiding, together with a slow urinary flow that can be intermittent. They often have a sensation of incomplete emptying and the need to pass urine again soon after having done one. Some patients describe needing to pass urine frequently and some infrequently (if the bladder sensation has also been affected), as their awareness of bladder filling may be diminished. Some describe a continuous unaware leaking called overflow incontinence. Partial urinary retention can also predispose the patient to getting recurrent bladder infections.

What are the causes?

Urinary retention can be transient and the causes are:

1. Immobility (eg post operative)
2. Urinary tract infection
3. Constipation or faecal impaction
4. Delirium
5. Medications
6. Psychological problems
7. Endocrinological problems

Causes of more long term urinary retention can be multifactorial and include:

1. Idiopathic (unknown)
2. Anatomic obstruction
    a. Vaginal prolapse
    b. Tight sling
    c. Urethral stricture / mass eg diverticulum, caruncle
    d. Meatal stenosis (in post menopausal women)
    e. Other vaginal mass eg gynaecological tumour
    f. Ureterocele

3. Functional
    a. Bladder outlet dysfunction
        i. Primary bladder neck obstruction
        ii. Dysfunctional voiding eg Fowler's syndrome, learned voiding dysfunction

b. Bladder dysfunction (bladder is unable to contract fully to expel all the urine or hypocontractile bladder)

i. Neurological disease eg multiple sclerosis, spinal cord injury
ii. Old age
iii. Diabetes
iv. Medication related
v. Pain or inflammatory disease
vi. Pelvic surgery causing denervation of pelvic nerves
vii. Psychogenic eg conversion disorder

c. Failure of sphincter relaxation (usually due to a neurological disorder)

Who is at risk?

Women who have a history of surgery for incontinence, may have had a sling that is too tight, causing obstruction. A large vaginal prolapse or a narrowing (stricture) in the urethra can also cause obstruction.

Risk factors for having a bladder that does not generate a strong contraction (hypocontractile bladder), include old age (incidence of about 30% at age 80), neurological conditions (eg multiple sclerosis, lower back surgery, lower back disc prolapse), pelvic surgery (major gynaecological or bowel surgery), and diabetes (which can cause nerve damage). Certain medications can also weaken a bladder's contractility (eg anticholinergics, narcotics).

How will I be assessed?

A detailed medical history will be obtained including:

- Incontinence surgery or pelvic surgery
- Childhood voiding history
- Co-morbidities: neurological disorder, diabetes, hormonal status

- Medications that cause retention eg alpha agonist, psychotropic drugs, anticholinergic
- Gynaecological history: eg endometriosis

Examination includes:

- Abdominal and sacral examination
- Pelvic examination looking for vaginal prolapse or urethral abnormalities
- Focused neurological examination

What tests are needed?

The basic tests that are helpful are:

1. Renal tract ultrasound: Which will check for post void residual volume (PVR), which is the amount of urine that is left behind after a void. It can also screen for possible sequelae of urinary retention such as swelling of the kidneys or bladder stone
2 Urine test: A mid stream urine sample can be tested for infection
3. Blood test: Rule out kidney impairment

Other tests that may be useful are:

4. Urodynamics (bladder pressure test): This is the definitive test to diagnose and find out the cause of urinary retention. It is a safe test that is done under local anaesthesia. It allows the urologist to assess if the bladder is obstructed vs a bladder that does not generate a strong enough contraction. If there is an obstruction, the level of the obstruction and the cause can often be diagnosed during this test. The test is often combined with advanced techniques using Xray (fluoroscopy), ultrasound, urethral pressure profile or EMG (a pressure sensor that assesses urethral sphincter activity).

5. Cystoscopy: Check for urethral mass or stricture
Check bladder for diverticulum (pouch), trabeculation, bladder stone
6. Pelvic ultrasound: This is an internal ultrasound that is useful to assess for urethral structures (such as a tight sling), gynaecological tumours, and lower abdominal masses arising from the female reproductive organs (eg ovarian cyst, uterine fibroid)
7. MRI pelvis: Assess for urethral diverticulum (pouch in the urethra)
8. MRI brain and spine:Assess for neurological conditions causing retention eg multiple sclerosis, lower spine disc prolapse, nerve impingement, tumours

What can happen if urinary retention is left untreated?
If the cause of the retention is an obstruction, the patient will usually be very bothered with urinary symptoms like poor flow and needing to void again after having done one. The bladder may also develop secondary overactivity which causes symptoms like urinary frequency, urgency, urge leakage and waking up at night to pass urine (nocturia). If the obstruction does not get relieved after a long time, the bladder may undergo irreversible changes like forming diverticuli (pouches that don't drain properly), and hypocontractility (bladder wall is so stretched that it is unable to generate a strong contraction during voiding). Very rarely, pressure in the bladder may 'backflow' into the ureters and kidneys, causing kidney damage.

As the urine does not clear properly (stasis), this predisposes the patient to getting recurrent bladder infections. Patients can get multi-resistant bacteria if they have been treated with multiple courses of antibiotics over the long term. Infections can rarely ascend from the bladder to the kidneys, making the patient very unwell (pyelonephritis)

The sediments at the base of the bladder can also form bladder stones which can worsen bladder infections and bladder symptoms. Surgery will be needed to remove the stones.

Chronic conscious or subconscious abdominal straining to assist with voiding, can result in the formation of hernias, haemorrhoids or vaginal prolapses.

What are the treatments?
Medications are not effective and cannot restore bladder contractility. Antibiotics may be needed if there is an infection. Every individual is not the same, treatments are recommended according to the underlying cause of the obstruction and the patient herself. Other treatment options are:

Conservative management:
- Observation is suitable in certain patients. Patients can be instructed to do timed voiding or double voiding
- Pelvic floor physiotherapy and biofeedback

Catheterization:
- This is the mainstay of treatment if there is significant urinary retention. There are 2 forms of catheterization: intermittent self-catheterization (ISC) or indwelling catheterization (IDC). Indwelling catheters can be inserted through the urethra (opening where the bladder drains to the vagina) or through the lower abdomen (suprapubic catheter).
- ISC is always the preferred option over IDC, as long as the patient is able and willing to learn and perform the catheterizations. ISC is also useful in patients who have a urethral stricture (narrowing) as it allows intermittent dilatation of the passage.

Sacral neuromodulation (bladder pacemaker):
- Can potentially treat urinary retention due to functional obstruction (eg Fowler's syndrome) or bladder dysfunction (hypocontractile bladder)
- Safe and minimally invasive
- About 70% response rate seen in patients with Fowler's syndrome
- Has 5% – 50% response rate for patients with hypocontractile bladder, resulting in stronger bladder contractions and more effective bladder emptying
- Lower response rate seen in neurogenic patients

Botox injection:
- Into bladder neck or external urethral sphincter or pelvic floor can be used to treat particular causes of functional obstruction
- This is an off-label use

Surgery:
- Surgery is tailored to the particular cause of urinary retention.
- Tight sling: sling can be divided or loosened
- Urethrolysis: surgery to free up the urethra
- Vaginal prolapse surgery can be done if there is a significant prolapse causing bladder obstruction
- Bladder neck incision if the cause of retention is a tight bladder neck
- Urethral stricture repair
- Urinary diversion: often a last option when all else fails, and the urine is diverted from the kidneys into a stoma and a bag that is attached to the abdomen