Lower Urinary Tract Symptoms in Men

Lower urinary tract symptoms (LUTS) are storage, voiding and postmicturition symptoms affecting the lower urinary tract. LUTS can significantly reduce men's quality of life and may point to serious pathology of the urogenital tract.[1] Prevailing guidelines suggest that the pathogenesis of LUTS is multifactorial and can include one or several diagnoses, commonly benign prostatic obstruction, nocturnal polyuria and detrusor muscle instability.[2]

LUTS are common and not necessarily a reason for suspecting prostate cancer. Patients tend to fall into three categories:

- **Mild symptoms**: mainly require reassurance and exclusion of cancer or risk of future complications.
- **Those requiring surgical treatment**.

**Epidemiology**

- LUTS are a common problem, especially for older men. It has been reported that 30% of men aged 50 or older suffer from potentially troublesome LUTS. The prevalence of storage symptoms increases from 3% in men aged 40-44 years to about 40% in those aged 75 years or older.[3]
- One study found that the prevalence of nocturia in men aged over 85 was about 69% compared to 49% in women.[4]
- Around one third of men will develop urinary tract (outflow) symptoms, of which the principal underlying cause is benign prostatic hyperplasia (BPH).
- Once symptoms arise, their progress is variable and unpredictable with about one third of patients improving, one third remaining stable and one third deteriorating.

**Risk factors**[5]

Risk factors associated with LUTS include:

- Increased serum dihydrotestosterone levels.
- Obesity.
- Elevated fasting glucose.
- Diabetes.
- Fat and red meat intake.
- Inflammation, which increases the risk.

Vegetables, exercise and non-steroidal anti-inflammatory drugs (NSAIDs) appear to decrease the risk. Moderate alcohol intake appears to decrease the risk of BPH but increases the risk of developing LUTS.[6]

**Presentation**

See also separate Genitourinary History and Examination (Male) and International Prostate Symptom Score (I-PSS) articles.

- **Filling symptoms**: urinary frequency, urgency, dysuria, nocturia.
- **Voiding symptoms** (previously 'obstructive'): poor stream, hesitancy, terminal dribbling, incomplete voiding, overflow incontinence (occurs in chronic retention).
- Also enquire about: haematuria, fever, loin and pelvic pain, past history of renal calculi, past history of urinary tract infections (UTIs), sexual/erectile difficulties, constipation, medications and bone pain.
- **Signs**: palpable bladder, rectal examination (prostate: size, tenderness, nodules), check for loin pain and/or renal masses, perineal sensation.
- LUTS include frequency, urgency, hesitancy, dysuria, haematuria, reduced flow, dribbling, nocturia, incontinence and pelvic pain.
- Some patients develop acute retention.
- Others develop chronic retention with overflow incontinence and, on rare occasions, acute kidney injury.

Tumours localised to the prostate are unlikely to cause bladder outflow obstruction and any LUTS developing in early prostate cancer are usually due to coincidental BPH.[7]

**Assessment**[1, 2]

- General medical history to identify possible causes and comorbidities, including a review of all current medication (including herbal and over-the-counter medication).
- Examination of the abdomen, including external genitalia and a digital rectal examination.
- Examination should include blood pressure, signs of uraemia, enlargement of the bladder, kidneys and the prostate and palpable nodes.
- Urine dipstick test to detect blood, glucose, protein, leukocytes and nitrites.
• Men with bothersome LUTS should complete a urinary frequency volume chart and a validated symptom chart - eg, the International Prostate Symptom Score (I-PSS).
• Renal function tests (serum creatinine test, estimated glomerular filtration rate) should only be performed if renal impairment is suspected.

Referral for specialist assessment
Refer men for specialist assessment if they have:[1]

• Bothersome LUTS that have not responded to conservative management or drug treatment.
• LUTS complicated by recurrent or persistent UTIs.
• Urinary retention.
• Renal impairment thought to be due to lower urinary tract dysfunction.
• Suspected urological cancer.
• Stress urinary incontinence.

Other indications for referral include immediate referral for acute retention of urine and acute kidney injury and urgent referral (to be seen within two weeks) for visible haematuria and culture-negative dysuria.[8]

Specialist assessment[1]
• Flow-rate and post-void residual volume measurement.
• Urinary frequency volume chart.
• Cystoscopy and/or ultrasound imaging of the upper urinary tract only when clinically indicated - eg, history of: recurrent infection, sterile pyuria, haematuria, profound symptoms, pain or chronic retention.
• Multichannel cystometry if men are considering surgery.
• Offer pad tests only if the degree of urinary incontinence needs to be measured.
• Consider prostate specific antigen (PSA) testing if:
  • LUTS are suggestive of bladder outlet obstruction secondary to prostate enlargement.
  • The prostate feels abnormal on rectal examination.
  • The patient is concerned about prostate cancer.

Differential diagnosis[2]
• BPH with obstruction.
• Detrusor muscle weakness and/or instability.
• UTI.
• Chronic prostatitis.
• Urinary tract stones.
• Malignancy: prostate cancer or bladder cancer.
• Neurological disease - eg, multiple sclerosis, spinal cord injury, cauda equina syndrome.
• Polyuria (eg, secondary to diabetes mellitus, excessive fluid intake, diuretics, etc).

Management[2, 8]
For men whose LUTS are not bothersome or complicated, it is reasonable to offer 'watchful waiting' (WW). This involves giving reassurance and information and advice on lifestyle measures such as:

• Fluid intake (moderation of fluid intake is important but excessive reduction of fluid intake can cause a worsening of symptoms and increased risk of infection).
• Reduction in the intake of fluids containing alcohol, caffeine and artificial sweeteners together with avoidance of carbonated drinks is often advised.

Other helpful measures may include:

• Distraction techniques, such as breathing exercises, squeezing the penis and perineal pressure, which may all help to take the mind off the urge to micturate.
• Optimising medication to ensure that drugs promoting urinary frequency are kept to a minimum.

The patient should be reviewed if symptoms change or become worse.

• For men with mild or moderate bothersome LUTS, discuss active surveillance (reassurance and lifestyle advice without immediate treatment and with regular follow-up) or active intervention (conservative management, drug treatment or surgery).
• Offer men considering treatment for LUTS an assessment of their baseline symptoms with a validated symptom score - eg, I-PSS.
• Surgical treatment is generally reserved for men who have failed or are unable to tolerate drug treatment, or for those who have developed complications.

Conservative management[3]
Storage symptoms:
• Overactive bladder (OAB): supervised bladder training, advice on fluid intake, lifestyle advice and, if needed, containment products.
• Supervised pelvic floor muscle training for men with stress urinary incontinence caused by prostatectomy. Advise men to continue the exercises for at least three months before considering other options.
• Do not offer penile clamps.
• Containment products: for men with storage LUTS (particularly urinary incontinence):
  • Temporary containment products (eg, pads or collecting devices) to achieve social continence until a diagnosis and management plan have been discussed.
  • External collecting devices (sheath appliances, pubic pressure urinals) before considering indwelling catheterisation.

Voiding symptoms

• Consider intermittent bladder catheterisation before indwelling urethral or suprapubic catheterisation if LUTS cannot be corrected by less invasive measures.
• Bladder training is less effective than surgery.
• Men with postmicturition dribble should be shown how to perform urethral milking.

Drug treatment

[2, 3, 8]

• Offer drug treatment only to men with bothersome LUTS when conservative management options have been unsuccessful or are not appropriate. Do not offer homeopathy, phytotherapy or acupuncture.
• Moderate-to-severe LUTS: offer an alpha-blocker (alfuzosin, doxazosin, tamsulosin or terazosin).
• Overactive bladder: offer an anticholinergic.
• Mirabegron, a selective beta3 agonist, can be used second-line, for patients in whom anticholinergics are ineffective, cannot be tolerated or are contra-indicated.
• LUTS and a prostate estimated to be larger than 30 g or PSA greater than 1.4 ng/mL and high risk of progression: offer a 5-alpha reductase inhibitor (5-ARI).
• bothersome moderate-to-severe LUTS and a prostate estimated to be larger than 30 g or PSA greater than 1.4 ng/mL: consider an alpha-blocker plus a 5-ARI. Treatment should be continued for at least one year.
• Storage symptoms despite treatment with an alpha-blocker alone: consider adding an anticholinergic. Caution should be exerted in patients suspected of having bladder outlet obstruction.
• Consider offering a late afternoon loop diuretic for nocturnal polyuria.
• Consider offering oral desmopressin for nocturnal polyuria if other medical causes have been excluded and the man has not benefited from other treatments. Measure serum sodium three days after the first dose. If serum sodium is reduced to below the normal range, stop desmopressin treatment.
• If LUTS do not respond to drug treatment, discuss active surveillance (reassurance and lifestyle advice without immediate treatment and with regular follow-up) or active intervention (conservative management or surgery).
• Tadalafil, a phosphodiesterase-5 (PDE5) inhibitor is being evaluated as a treatment for LUTS but should only currently be used as part of a randomised controlled trial.

Management of retention

• Acute retention (see also separate Acute Urinary Retention article):
  • Immediately catheterise men with acute retention.
  • Offer an alpha-blocker to men before removing the catheter.

• Chronic retention (see also separate Chronic Urinary Retention article):
  • Chronic urinary retention is defined as residual volume greater than 1 litre or presence of a palpable/percussable bladder.
  • Serum creatinine (renal function tests) and imaging of upper urinary tract.
  • If there is impaired renal function or hydronephrosis:
    • Catheterise.
    • Consider offering catheterisation before offering surgery. Consider offering self-administered or carer-administered intermittent urethral catheterisation before offering indwelling catheterisation.
    • Surgery. If surgery is not suitable, continue or start long-term catheterisation. Consider offering intermittent self-administered or carer-administered catheterisation instead of surgery in men whom you suspect have markedly impaired bladder function.

  • Normal renal function and no hydronephrosis:
    • If there are no bothersome LUTS then treat as for impaired renal function or hydronephrosis.
    • If there are bothersome LUTS then consider offering surgery on the bladder outlet without prior catheterisation. If surgery is not suitable, continue or start long-term catheterisation. Consider offering intermittent self-administered or carer-administered catheterisation instead of surgery in men whom you suspect have markedly impaired bladder function.

Surgery[1]

Surgery for voiding symptoms

• Offer surgery only if voiding symptoms are severe or if drug treatment and conservative management options have been unsuccessful or are not appropriate.
Surgery for voiding LUTS presumed secondary to benign prostate enlargement:
- All: monopolar or bipolar transurethral resection of the prostate (TURP), monopolar transurethral vaporisation of the prostate (TUVP) or holmium laser enucleation of the prostate (HoLEP).
- Estimated prostate size smaller than 30 g: transurethral incision of the prostate (TUIP) or transurethral needle ablation (TUNA) as an alternative to TURP. Both treatments, however, have a higher recurrence rate than TURP.
- Estimated prostate size larger than 80 g: TURP, TUVP or HoLEP, or open prostatectomy as an alternative.

Surgery for storage symptoms
If offering surgery for storage symptoms, consider offering only to men whose storage symptoms have not responded to conservative management and drug treatment.

- Detrusor overactivity (do not offer myectomy to manage detrusor overactivity):
  - Cystoplasty; the man must be willing and able to self-catheterise. Serious complications include bowel disturbance, metabolic acidosis, mucus production and/or mucus retention in the bladder, UTI and urinary retention.
  - Bladder wall injection with botulinum toxin (botulinum toxin does not currently have UK marketing authorisation for this indication). The man needs to be willing and able to self-catheterise.
  - Implanted sacral nerve stimulation.

- Stress urinary incontinence:
  - Implantation of an artificial sphincter.

- Intractable urinary tract symptoms if cystoplasty or sacral nerve stimulation are not clinically appropriate or are unacceptable to the man: consider offering urinary diversion.

Long-term catheterisation and containment
- Consider offering long-term indwelling urethral catheterisation if medical management has failed and surgery is not appropriate and the man:
  - Is unable to manage intermittent self-catheterisation; or
  - Has skin wounds, pressure ulcers or irritation that are being contaminated by urine; or
  - Is distressed by bed and clothing changes.

- Indwelling catheters for urgency incontinence may not result in continence or the relief of recurrent infections.
- Prostatic stents may be considered as an alternative to indwelling catheters.
- Permanent use of containment products should only be considered after assessment and exclusion of other methods of management.

Experimental treatments
Ethanol injections and botulinum toxin injections are currently being explored as potential treatments for LUTS in patients with benign prostatic obstruction. [2]

Prognosis [2]

- Studies suggest that few patients in a WW programme will progress to acute urinary retention or complications such as renal insufficiency and stones. Some symptoms will improve spontaneously whilst others may remain stable. In one group, 64% of patients continued to do well without any active treatment. In other studies, 85% of men were stable on WW in one year, deteriorating to 65% in five years. Increasing bothersome symptoms and post-void residual urine seem to be the best predictors of requirement for active treatment but the reasons for deterioration in some men are unclear.
- Men with LUTS and small- or moderate-sized prostates will improve appreciably with lifestyle advice and alpha-blocker therapy.
- Men with LUTS and large prostates are at significant risk of disease progression particularly if they have additional risk factors such as age >70 years or significantly reduced flow rate. These men will benefit from treatment with lifestyle advice and 5-alpha reductase inhibitors (5-ARIs). [8]
  - 5-ARIs reduce the risk of acute urinary retention and the likelihood of prostatectomy by 50-60% compared with placebo.
  - The combination of 5-ARI and alpha-blocker is more effective in delaying the clinical progression of the disease and in improving LUTS and maximal urinary flow rate, than either drug alone.
- After six months of treatment with a 5-ARI, PSA levels will be reduced by 50%. Therefore, PSA values for patients on long-term therapy should be doubled to allow appropriate interpretation and avoid masking the early detection of localised prostate cancer.
Further reading & references

- Benign prostatic hyperplasia (BPH); Bandolier
- Prostate cancer risk management programme: overview; Public Health England

3. LUTS in men; NICE CKS, February 2015 (UK access only)

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