MANAGEMENT OF LOWER URINARY TRACT SYMPTOMS IN MEN

This Update discusses lower urinary tract symptoms in men, outlines the appropriate investigations and describes the management options.

Conflicts: nothing to declare

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PROSTATIC bladder neck obstruction (BNO) or benign prostatic hyperplasia (BPH) rarely causes symptoms before the age of 40 years. However, symptoms occur due to bladder neck obstruction in more than half of men in their 60s and up to 90% of men in their 70s.

Management of this condition includes issues relating to exclusion of prostate cancer, timing of intervention and type of intervention most suitable for the individual patient and the severity of his symptoms.

SYMPTOMS AND COMPLICATIONS OF AN OBSTRUCTED LOWER URINARY TRACT

Symptoms of bladder neck obstruction are best considered as either obstructive or irritative. Obstructive symptoms include a poor pressure flow, hesitancy and a sense of incomplete emptying. Irritative symptoms include frequency, urgency, urge incontinence and nocturia. In fact, nocturia is a very early symptom of developing prostatic obstruction.

Nocturia, however, has a multiplicity of causes including poorly controlled diabetes, sleep apnoea and nocturnal polyuria of the elderly. It is frequently the irritative symptoms that adversely affect the quality of life for affected men. For example, the need to urinate four to five times per night causes chronic tiredness and lethargy.

Men with bladder neck obstruction are at increased risk of urinary tract infection. All men who have suffered urinary tract infection should be urodynamically investigated for underlying obstructive bladder disorder; lower urinary tract infections in men over the age of 50 are usually associated with significant outflow obstruction due to benign prostatic hyperplasia or urethral stricture disease.

Unlike female cystitis, appropriate antibiotics should be provided for a full three weeks as bacterial infection of the prostate is deep-seated and significant parenchymal antibiotic penetration is necessary. Short-course antibiotics often cause aseptic rebound. End-stage bladder neck obstruction results in acute urinary retention which is very painful. Slow onset chronic urinary retention is in fact bladder muscle failure. Chronic large residual volumes exist within the bladder resulting in urinary tract infection, and ultimately in upper tract dilatation resulting in hydroureronephrosis. The obstructive uropathy must be managed promptly in order to prevent long-term renal impairment. Chronic outflow obstruction may also result in the formation of bladder stones, sometimes of a considerable size.

Key Points

- Prostatic bladder neck obstruction (BNO) or benign prostatic hyperplasia (BPH) rarely causes symptoms before the age of 40 years.
- All men who have suffered urinary tract infection should be urodynamically investigated for underlying obstructive bladder disorder.
- Surgical intervention is for the management of bladder neck obstruction.

Diagnosis of lower urinary tract symptoms

Accurate diagnosis is critical prior to a management strategy being implemented. Scored cross culturally validated patient questionnaires such as the International Prostate Symptom Score (I-PSS) are useful. Video urodynamics is a very useful clinical tool for objectively determining the degree of outflow obstruction and whether or not irritating urinary symptoms are due to primary overactive bladder activity or secondary to outflow obstruction. It is also a useful way of assessing the lower urinary tract for neurogenic bladder dysfunction which may be due to spinal cord disease or autonomic neuropathy, as may occur with poorly controlled chronic diabetes.

A urodynamic study is a half-hour computerised study that involves the passage of a small pressure sensitive device through the urethra into the bladder. In order to allow the calculation of subcontracted cystometry a pressure sensitive device is also placed per rectum. Both filling and voiding profiles are studied with vouched urinary flow correlated to bladder pressure as measured in centimetres of water pressure units.

Bladder neck obstruction is best assessed by a dynamic assessment means such as urodynamic testing. As the degree of obstruction does not correlate to prostate size, the decision to treat therefore should not be based on the size of the prostate as determined by digital rectal examination, it should be based on the urodynamic findings of outflow obstruction. Similarly, cystoscopy should not be used as the determinant of the need for prostate surgery in the majority of men. The relevance of prostatic size is to determine whether a patient is suitable for transurethral resection of the prostate or alternatively if an open or suprapubic prostatectomy approach needs to be used for the management of his benign disease. The need for open prostatectomy in the modern age is low due to modern bipolar diathermy and holmium laser surgical techniques.

EXCLUDING PROSTATE CANCER

Many men present clinically concerned that their symptoms of benign prostatic obstruction may be indicative of early prostate cancer. They should be reassured that early prostate cancer does not cause symptoms of bladder dysfunction. The decision to investigate and treat should be based on the inconvenience of symptoms or bother rather than the fear that prostate cancer may be present.
Each man who presents with symptoms of bladder neck obstruction should be evaluated individually for prostate cancer by means of a digital rectal examination and PSA determination. Total PSA measurements with free to total ratio specifications should be ordered, a free to total ratio of over 20% is suggestive that the total PSA elevation is due to benign prostatic hyperplasia rather than to prostate cancer. The free to total ratio has only been validated for total PSA levels greater than 4.0ng/ml.

Multiparametric MRI scanning of the prostate gland is an innovative diagnostic technology in this field and should significantly decrease the need for a prostate biopsy in men with PSA elevation.

WHEN TO REFER
Men with bothersome symptoms of bladder neck obstruction should be referred. A trial of alpha blocker medication is appropriate in the first instance. Referral is recommended when conservative means of management fail or where complications such as urinary tract infection, bladder stone formation or upper tract dilatation occur. All men with an elevated PSA or abnormal digital rectal examination should be referred for urological evaluation.

Watchful waiting and medical management

WATCHFUL WAITING
Men with non-bothersome early symptoms of bladder neck obstruction may be managed expectantly. Mild symptoms do not need intervention and occasionally improve or at least fluctuate over time. However, many men live with disruptive urinary symptoms as they are fearful of treatments they do not completely understand. It is necessary to strike a balance between over and under treating lower urinary tract symptoms in men.

MEDICAL MANAGEMENT OF LOWER URINARY TRACT SYMPTOMS
Non-selective alpha blockers such as prazosin were used for many years for the management of mild obstructive urinary symptoms. Selective alpha blockade using medications such as tamsulosin are preferable. Selective alpha blockers partially relieve symptoms in over 50% of men; the symptom relief is often not durable as the pathological process progresses over time.

Side effects of even selective alpha blockades include postural hypotension, nasal congestion and retrograde ejaculation due to relaxation of the bladder neck sphincter. Alpha blockers should be ceased well before cataract surgery as they can cause ‘floppy lens syndrome’. The ophthalmologist should always be informed that the patient is taking an alpha blocker. Many men are not accepting of long-term alpha blockade as management for their symptoms. Men are frequently forgetful or generally poorly compliant with such medication and frequently request a more definitive and durable approach to their symptom complex relief.

Finasteride is a 5-alpha-reductase inhibitor introduced many years ago in the belief that decreasing benign prostatic hyperplasia volume would relieve lower urinary tract symptoms. It works by inhibiting the production of the male hormone dihydrotestosterone, the hormone implicated at least partially in prostatic enlargement. It was found to be of limited therapeutic benefit in prostate glands less than 60g, however, in glands over 60g it did seem to decrease the incidence of acute urinary retention in the long term.

The use of 5-alpha-reductase medication has been associated with controversy; a large clinical trial suggested that these agents decrease the incidence of low-grade prostate cancer while possibly increasing the incidence of potentially significant high-grade prostate cancer. Argument continues with respect to whether this finding was an artefact of the trial or a valid conclusion. Those arguing in favour of 5-alpha-reductase medication not increasing the risk of high-grade prostate cancer interpret the results to signify that the decrease in volume of benign prostate hyperplasia increases the diagnostic accuracy of prostate cancer investigations.

PSA levels increasing in men taking 5-alpha-reductase medication is an absolute indication for urological referral as the likelihood of prostate cancer being present is significant. Over a six-month period on 5-alpha-reductase medication PSA levels may halve due to the reduction of benign prostatic hyperplasia volume. An increase is therefore suspicious for the development of prostate cancer.

Duodart – a trademark medication – is a combination medication containing an alpha blocker, tamsulosin and a 5-alpha-reductase inhibitor, dutasteride. The aim of the combination pill is to allow the 5-alpha-reductase medication to relieve lower urinary tract symptoms in the short-term while relying on the benign prostate hyperplasia volume reduction in the long-term to be effective in symptom relief.

While the improvement in the International Prostate Symptom Score questionnaire and the flow rate in particular is statistically significant in clinical trials, the absolute increase in flow rate – that is relief of obstruction – is actually quite modest. Flow rates may increase for example from 7ml per second to 9ml per second, whereas with definitive surgery flow rates may increase from 7ml per second to 25ml per second.

Approximately 10% of men report suppressed libido while taking 5-alpha-reductase medication. In Australia, tamsulosin (Flomaxtra) is not funded by the Pharmaceutical Benefits Scheme whereas Duodart is funded by the scheme after the initial prescription has been arranged by a urologist.

Alternative management

COMPLEMENTARY OR ALTERNATIVE THERAPIES
Alternative therapies for bladder neck obstruction have been widely marketed, and as a consequence of this marketing widely utilised within the population of the Western world. Chief among these products is saw palmetto. In the urological community, saw palmetto is not accepted as an agent that performs any better than placebo in multiple randomised controlled trials. Furthermore, there is a marked variability dosage of saw palmetto between manufacturers and even between individual lots from the same manufacturer.

Patients often report symptomatic relief in the initial early stage of taking complementary products; this represents a placebo response to the product and also the natural history of bladder neck obstruction where symptoms will fluctuate over time.

ALTERNATIVE TECHNOLOGIES
Many alternative technologies have been developed and marketed during the last 25 years for benign prostatic hyperplasia. These include transurethral needle ablation of the prostate, prostatic alcohol injection, prostatic thermotherapy and a multitude of ablative laser therapies. With the exception of certain laser therapies, the alternative technologies have not gained wide spread acceptance due to a lack of efficacy.
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Urodynamic evaluation

THE INDEPENDENT FLOW STUDY

An independent flow study involves a man voiding freely into a computerised flow meter which records the urinary flow measured in millilitres per second and the volume voided. These results are plotted on nomogram graphs to indicate whether or not the flow rate is in the obstructed or non-obstructed range.

The independent flow study may be used as a screening test for assessment of lower urinary tract function, however it does not correlate flow rates with voiding pressures and this limits its diagnostic utility.

URODYNAMIC EVALUATION

A urodynamic study involves a small pressure sensitive device being inserted per urethra into the bladder and also per anum. This allows for subcontracted pressure evaluation; the ambient intra-abdominal pressure is subtracted from the total bladder pressure to give the true detrusor pressure responsible for voiding. During the filling phase the bladder is distended with fluid, sensation to filling is recorded along with an assessment of bladder compliance and filling pressures at total bladder capacity. According to the International Continence Society definition, an adult bladder should comfortably accommodate at pressures of less than 10cm of water 500ml volume. When the pressure exceeds 10cm of water the patient is diagnosed as having detrusor overactivity. The overactivity may reflect overactivity secondary to outflow obstruction, it may indicate primary overactive bladder disorder or it may indicate, depending on the filling profile, neurogenic bladder dysfunction which may occur in conditions such as spinal cord injury, Parkinson’s disease and MS.

During the voiding phase the patient is tilted to the upright position, often on a fluoroptycope table. The voided stream in millilitres per second is correlated with the subtracted cystometry that is the true voiding detrusor pressure. Once again nomograms give an indication as to whether or not a patient is obstructed.

Surgical intervention for the management of bladder neck obstruction

BLADDER NECK INCISION

Small tight prostates and men with bladder neck dysynergia (a condition of failure of bladder neck relaxation during voiding) are often well managed with bladder neck incisional surgery. The prostate is incised rather than resect or ablated.

Under a general anaesthetic, cystoscopy is performed and thereafter — utilising a Collins knife diathermy cutting device — the trigone, bladder neck and prostate gland is incised deeply in the midline to the level of the verumontanum. This relieves the obstructive effect of the small tight prostate and dysynergic bladder neck. It is a minimally invasive procedure with good long-term relief of symptoms for well selected patients. It is not suitable in men with large prostate glands or in men with prominent sub trigone or middle lobes.

Younger men with bladder neck dysynergia may elect to watchfully wait or utilise a trial of alpha blockade medication. This procedure involves the placement of sets of intraprostatic sutures anchored into Australia and is approved by the Therapeutic Goods Administration.

This procedure involves the placement of sets of intraprostatic sutures anchored from within and from without by titanium bolsters. This pulling apart of the prostatic urethra results in the formation of an anterior channel and the relief of obstructive urinary symptoms.

It is not suitable for men with significant middle lobe enlargement. It does not preclude definitive transurethral resection surgery at a later date should that become necessary.

The UroLift device is a suitable replacement for men who do not wish to take long-term drug therapy and certainly avoids the side effects of chronic drug therapy. Its significant advantage is that retrograde ejaculation has not been reported in treated men which is preferable for certain men who wish to maintain anti-grade ejaculation.

GREENLIGHT LASER ABLATION

GreenLight laser ablation of the prostate has been widely marketed in recent years. It is a tissue ablation technique that operates by absorption of light in the green light spectrum. The procedure is done under general anaesthesia utilising a modified cystoscope. Anaesthetic times are generally longer during the operation with physiological stability secondary to outflow obstruction, it is diagnosed as having detrusor overactivity. The overactivity may reflect overactivity secondary to outflow obstruction, it may indicate primary overactive bladder dysfunction which may occur in conditions such as spinal cord injury, Parkinson’s disease and MS. Therefore necessary to carefully screen men prior to laser ablation for the possibility of prostate cancer in the transition zone of the prostate. Retrograde ejaculation occurs with green light laser ablation as it does with transurethral prostatectomy.

HOLMIUM LASER ENucleATION OF THE PROSTATE (HOLEP)

Holmium laser enucleation of the prostate is a well-established form of transition zone enucleation. Unlike GreenLight laser ablation significant prostatectomy does not represent a major challenge. The difficulty of laser enucleation is that the tissue is delivered into the bladder and needs to be removed by a process of morcellation which can at times be technically difficult. The removed tissue can be pathologically analysed. This technique also causes retrograde ejaculation.

TRANSURETHRAL RESECTION OF THE PROSTATE

Transurethral resection of the prostate gland has long been considered the gold standard therapy for symptomatic benign prostatic hyperplasia. The term, contemporary transurethral resection of the prostate, refers to the operation being performed by well-trained specialist urological surgeons using continuous flow resect scopes and three chip digital cameras. In earlier years the procedure was plagued by poor visualisation due to substandard optics. Significant bleeding was also caused by poor diathermy technology and non-specialist urologists performing the technique. The modern transurethral resection of the prostate procedure is a highly effective operation with minimal morbidity.

The patient is admitted for a 24—48 hour period and the procedure performed under general spinal anaesthesia. Return to sedentary work within five days is feasible.

The traditional resection technology was monopolar diathermy. This requires irrigation with an isotonic fluid such as glycine. Glycine and/or water intoxication syndromes can occur where excessive irritating fluid is systemically absorbed. With the significant technological improvement in the surgery and the much improved training of endoscopic surgeons this occurrence is now very uncommon.

Bipolar diathermy technology has now been introduced, allowing for irrigation during the operation with physiological normal saline. Absorption of the normal saline does not cause the so-called TURP syndrome. The bipolar technology has facilitated excellent haemostasis, and the ability to resect very large glands in a timely manner.
Suprapubic or open prostatectomy

Very large benign prostates causing significant symptoms may need to be enucleated via an open supra-pubic approach. An assessment is made cystoscopically with respect to the size of the transition zone. When it is estimated that an endoscopic resection would involve the removal of 80–100g or more of tissue and open procedure is best considered. Open or supra-pubic prostatectomy is the enucleation of the transition zone via a lower abdominal transection skin incision. Current bladder stones can be conveniently removed. Patients are usually discharged on day three postoperatively with an indwelling catheter for a further seven days.

 supra-pubic prostatectomy should not be confused with radical resection of the prostate which is total removal of the prostate and not enucleation of the transition zone. Whereas radical prostatectomy can damage the neurovascular bundles bilaterally responsible for erectile function and it therefore may not be appropriate in somebody who has been to Asia within the last six months. Following resolution of the acute toxicity four weeks of oral trimethoprim is recommended in order to sterilise the prostatic parenchyma.

Suprapubic or open prostatectomy does not carry this risk. Retrograde ejaculation will occur after supra-pubic prostatectomy.

Clariﬁcation of the term ‘prostatitis’

Many men with symptoms referable to the lower urinary tract are labelled as having ‘prostatitis’. This generally precipitates protonic treatment with multiple courses of antibiotic therapy which may have a short-term placebo effect prior to symptoms returning.

Managing men with lower urinary tract symptoms that are atypical and are associated with perineal discomfort requires that bacterial infection be excluded, bladder neck obstruction be excluded and that the patient is asked sensitively yet frankly about stressors in his life and an assessment is made with respect to depression and anxiety.

BACTERIAL PROSTATITIS

Bacterial prostatitis is an acute and potentially serious gram negative infection of the prostate gland that if untreated may lead to gram negative septicemia.

It is generally an infection of the older male and may be associated with significant bladder neck obstruction with incomplete bladder emptying. The patient typically presents very unwell with generalised symptoms of fever, rigors and chills. Local symptoms include frequency urgency and dysuria. The man looks ill, there may be retention of urine, the prostate may feel boggy to digital rectal examination and is generally swollen and tender. Occasionally a fluctuant mass indicating a prostatic abscess may be present especially in the immunosuppressed man.

Men with acute toxic bacterial prostatitis are best managed in hospital with parenteral antibiotics. Catheterisation may be necessary if there is incomplete bladder emptying. Blood and urine cultures need to be obtained preferably prior to initiating antibiotic therapy and thereafter empirical initial treatment with intravenous gentamicin and ampicillin initiated. The pathogenic is usually a gram negative organism such as E. coli or Klebsiella. The routine use of gentamicin is now being questioned due to the realisation that chronic vertigo may result from even short-term use. Parenteral quinolone antibiotic therapy may be substituted though there is significant resistance to this class of antibiotics in Asia beyond 12 months, and be resistant to anticholinergic medication, consideration could be given to the use of intravesical Botox injection therapy or alternatively sacral-neuro modulation by means of the implanted sacral nerve electrodes.

Non-bacterial prostatitis or chronic pelvic pain syndrome (CPPS)

It is preferable not to use the term prostatitis in men without evidence of lower urinary tract infection. It tends to lead to the prolonged use of inappropriate oral antibiotic therapy.

This symptom complex is generally associated with men who are stressed, introspective and who may have a significant over-performance mentality. It can also be a manifestation of an anxiety/depressive illness.

These symptoms typically involve a feeling that the man is ‘sitting on a golf ball’; there may be spasm of the pelvic floor muscles or rectal tenesmus. The latter is associated with a whirring discomfort centred round the anus and perineum. A typically associated symptom may include pain at the tip of the penis and other difficult to explain symptoms referable to the genital area. Reassurance for these men is very important.

Prostate cancer, prostate infection and bladder neck obstruction should all be actively excluded and the patient reassured with respect to the results. If significant anxiety depression is suspected the patient should be referred for appropriate professional help. While there are a number of somewhat novel treatment propositions for chronic pelvic pain syndrome including Botox injection and neuromodulation therapy, the initial approach should be reassurance and regular daily exercise which seems to have a positive physical and psychological benefit for these men.
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