

Benign prostatic hypertrophy

Clinically the prevalence of significant lower urinary tract symptoms and/or poor flow rises from around 13% in the 5th decade of life to between 28–43% by the 7th and 8th decades of life.^{1,2} Histologically, benign prostatic hypertrophy is seen on autopsy from the age of 30 years with 88% of those beyond 80 years old affected.³ The risk of urinary retention in the 8th decade of life is between 0.9–3.4% per year for symptomatic men.¹

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Benign Prostatic Hypertrophy (BPH) and its associated lower urinary tract symptoms (LUTS) secondary to bladder outflow obstruction is the most common urological complaint in older men.

Symptomatology and presentation

Men typically present with a range of urinary symptoms which are neatly summarised in the The International Prostate Symptom Score (IPSS) chart which should easily be completed by all presenting men. This characterises symptoms into storage (frequency, urgency, nocturia) and voiding symptoms (incomplete emptying, intermittency, weak stream and straining) as well as providing a score for quality of life. Incontinence, particularly nocturnal, should be viewed with suspicion as it may be masking an overflow incontinence situation. Similarly, deteriorating renal function may represent a high pressure urinary retention due to reflux of urine from the bladder. The presence of haematuria should prompt urgent specialist referral for flexible cystoscopy and upper tract imaging.

Investigation and initial management

NICE⁴ and the European Association of Urology (EAU⁵) have both published internet available free guidelines on the management of male LUTS.

A digital rectal examination should be carried out in all men presenting with LUTS. Urine dipstick and culture should also be carried out. A frequency volume chart completed over three days is a useful tool. PSA should only be taken after the patient is counselled on the implications of PSA testing.

Uroflowmetry and post void residual scanning are carried out as an initial investigation at specialist level. Renal ultrasound, serum creatinine, and flexible cystoscopy are not routinely carried out unless there is a specific clinical indication.

Conservative measures

Conservative treatment of LUTS has gained more attention in recent years. The natural history of LUTS is interesting. Studies have

shown that around 40% of patients with moderate symptoms do not change the severity of symptoms, around 30% improve and 30% deteriorate.⁷ Historically around 25% of patients undergo surgery, though this figure is now lower due to the use of medical therapy. The Olmstead County study¹ on the natural progression of BPH has shown that the mean prostate volume increases by 2% per year and that flow decreases by an average of 2% per year equating a mean change in IPSS score of only 0.34 patients per year. It should therefore be emphasised to patients that on average 70% of patients will not experience a worsening of symptoms. Certain risk factors have been associated with disease progression as detailed below.

Both NICE and EAU guidelines also advise on giving patient information regarding double micturition and milking of the urethra. Containment devices (pads/conveen sheaths) should be given as appropriate.

Medical therapy

The medical treatment of BPH centres around two classes of

Box 1: Risk Factors for symptom progression^{1,6}

Risk Factor	Increased risk (multiples)
Age	3x
Peak Flow <12ml/s	4x
Prostate vol >30cc	3x
Moderate/severe symptom score	3x
PSA >1.4ng/dl	8x

drugs: alpha adrenergic blockers and 5 alpha reductase inhibitors.

Alpha blockers block adrenergic receptors located around the bladder neck and prostatic stroma resulting in a decrease in bladder outlet resistance. This results in an improvement in IPSS symptom score of 30–40% and flow by 20–25%. They are given on a once daily basis and are generally well tolerated. Adverse events occur in approximately 10% of patients and include dizziness, orthostatic hypotension, muscle weakness and relative anejaculation. The onset of action is rapid (from the first dose) and prostate volume is not affected.

5 alpha reductase inhibitors block the conversion of testosterone to dihydrotestosterone. Dihydrotestosterone binds to the androgen receptor with an affinity 2–3 times higher than testosterone and is implicated in prostatic enlargement through the induction of various growth factors including EGF, FGF, VEGF and IGF. Two drugs are available: finasteride which blocks only the 5AR2 isoform, and the newer dutasteride (Avodart) which blocks both 5AR1 and two isoforms. Both

drugs reduce prostate volume by between 18–28% (largest volume reductions shown for dutasteride), and improve symptoms and flow to a similar degree to alpha blockers. The drugs are given on a once daily basis and the onset of action is slow, taking about six months. The medication is only effective in larger prostates of greater than 30–40ml.

The main advantage of 5 alpha reductase inhibitors relates to a reduction in the incidence of urinary retention, which has been demonstrated in several randomised controlled studies. This has been quantified as a 4% absolute reduction over four years (PLESS and COMBAT studies)^{8,9} or a relative reduction over placebo or alpha blocker of 77–81% (MTOPS and COMBAT).^{9,10} The combination of an alpha blocker and a 5 alpha reductase inhibitor appears to have a synergistic effect in reducing symptom scores and urinary retention rates. The relative risk of surgery for BPH with the use of 5 alpha reductase inhibitors versus placebo or other medical therapy is about 0.5 over a four year period of follow up.

Patients with moderate to severe symptoms, or with bothersome symptoms should be started on an alpha blocker as first line therapy as recommended by NICE. The use of 5 alpha reductase inhibitors should be considered in patients with prostate volumes of greater than 30ml or with a PSA of greater than 1.4ng/dl. Follow up is recommended 4–6 weeks after starting an alpha blocker and thereafter on a 6–12 monthly basis.

Surgical therapy

The incidence of surgical intervention for BPH has declined by at least 50–60% over the past couple of decades due to the use of medical treatment.¹¹

The mainstay and standard of surgical treatment for BPH remains transurethral resection of the prostate (TURP). In this procedure, the prostate is cored out endoscopically by taking multiple chips of prostatic tissue using a monopolar diathermy loop. Anticoagulants and antiplatelets must be stopped prior to surgery. The procedure usually takes less than an hour, is done under spinal or general anaesthesia and is associated with a hospital stay of two nights. A symptomatic benefit is seen in around 80% of patients. Typically, the urinary flow rate is improved by around 100% and post void residual reduced by 60%.¹² Excessive fluid absorption occurs in approximately 0.8% of patients (TUR syndrome) and is due to the use of hypotonic 1.5% glycine as a non electro-conductive irrigant. The peri-operative mortality is 0.2–0.8%¹³ with a higher risk in those who have an indwelling catheter prior to surgery. The main side effect of the procedure is retrograde ejaculation which occurs in 80–90% of men. Sexual function is adversely affected by the procedure but it appears that erectile dysfunction rates are not higher in a TURP treated population versus an age matched one with BPH treated conservatively.⁷ Incontinence occurs in 1% and the reoperation rate is 1–2% per year.

Laser treatment of BPH

has gained public recognition over recent years. The two commonest procedures are holmium laser enucleation of the prostate (HoLEP) and Green light laser vaporisation which uses a frequency doubled KTP NdYAG laser. Both have been shown to be effective treatments over follow up periods of over five years.¹⁴ Which is better is the matter of some controversy and beyond the scope of this article. However, HoLEP will yield tissue for the diagnosis of occult prostate cancer whereas green light laser prostatectomy is a vaporisation technique with no tissue retained for analysis. The laser technology for green light is still evolving as there has been a progressive rise in KTP laser power from 80W to the latest generation of 180W lasers. However, it is an easier technique to learn which may account for its recent popularity.

Both techniques are better suited to higher risk patients than TURP, due to reduced fluid absorption into the bloodstream, reduced blood loss, and the possibility of carrying out the procedure without stopping anticoagulation. Hospital stay is shorter than with TURP. Sexual side effects are probably similar to conventional TURP. Currently, HoLEP is the only laser treatment approved by NICE.

Bipolar electrodiathermy resection is occasionally used over monopolar TURP as this allows resection in normal saline and a reduction in the risk of TUR syndrome. Open prostatectomy is sometimes used in patients with very large prostates, typically over 100g.

Conclusion

BPH remains a significant urological health issue in the older male. However, surgery is not required in the majority of men. Doubtless, the use of medical therapy has reduced the need for surgery in many men but TURP remains the standard treatment for those who fail medical therapy. Laser TURP technology is progressing and becoming more widely available even within the NHS, and is an attractive proposition for the frailer patient.

Conflict of interest: none declared

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