Are the days of transurethral resection of prostate for benign prostatic hyperplasia numbered?

Urologists must grasp the future

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This is the third in a series of articles examining some of the difficult decisions that arise in medicine

FIG 1—Probability of recurrent prostatectomy in patients with benign disease according to method of treatment (modified from Wennberg *et al* with permission)

FIG 2—Number of transurethral resections of prostate done under Medicare in the United States in men aged over 65, 1986-92. Data supplied by Dr Logan Holigrew

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Over the past 20 years transurethral resection of the prostate has become the dominant operation in urology. Last year around 40 000 of these operations were done in the United Kingdom, 62% more than in 1975. In the United States the number of operations done under Medicare increased steadily until 1986. Since then, however, the number of operations has fallen by almost a fifth (fig 1). This reduction has occurred despite an increase in the proportion of the population over 65. What could be the explanation for the recent decline of this well tried and tested operation?

Clouds first began to appear on the horizon for transurethral resection of prostate in the mid-1980s when Wennberg *et al* reported retrospective data suggesting that the 90 day mortality after transurethral resection was nearly 10%, much more than that recorded after open prostatectomy.¹ Moreover the same data showed a surprisingly high reoperation rate of 20% over eight years (fig 2). At the same time outcome studies in Britain showed that only three quarters of patients were completely satisfied with the results of their operation.² These data provoked considerable debate, not only in medical circles but also in the lay press.

Benign prostatic hyperplasia is a common disorder, the symptoms of which may affect quality of life but are seldom fatal. Although there have been few studies of its natural course, those reports that are available suggest that the symptoms of many patients do not deteriorate with time. A recent Veterans administration study randomising men with symptomatic benign prostatic hyperplasia to either transurethral resection or watchful waiting found a surprisingly good outcome in the observation group. Men aged 60 or over with moderate symptoms are often reluctant to have their lives even temporarily dislocated by a hospital admission and therefore tend to prefer not to have transurethral surgery on their prostate unless it is absolutely necessary.

Drug and interventional alternatives

All these factors have combined to stimulate the development of both pharmacological and interventional alternatives to transurethral resection of prostate for benign prostatic hyperplasia. Long term placebo controlled trials of α adrenergic blockers and 5- α reductase inhibitors have shown some efficacy in this condition with only minor toxicity. The original α blockers, phenoxybenzamine and prazosin, were effective but produced too many side effects to be clinically useful.³ The newer, longer acting agents such as terazosin and doxazosin significantly improve both symptoms and urinary flow and cause tiredness and nasal stuffiness in only about 10% of subjects.⁴ Efficacy has been reported to be maintained for up to 30 months.

The 5- α reductase inhibitor finasteride produces a three point improvement in symptom score in about half the patients treated, and 30% have a 3 ml/s or

greater improvement in urinary flow.⁵ Longer term studies suggest that these results last up to three years and are associated with reduced voiding pressures consistent with an improvement in bladder outflow obstruction.⁶ The only side effect of finasteride seems to be a 3-5% incidence of sexual dysfunction. The serum concentration of prostate specific antigen falls by about half with finasteride but current evidence does not suggest that this compromises the value of testing for prostate specific antigen to diagnose prostate cancer.⁷

Some of the new interventional devices recently developed for treating benign prostatic hyperplasia, such as balloon dilatation, have already been abandoned because they are no more effective than dilatation with cystoscopy alone.⁸ However, other technologies are currently emerging that are almost as effective as transurethral resection but have fewer side effects. Microwave thermotherapy to the prostate undoubtedly relieves symptoms, but it is associated with urinary retention.⁹ The current vogue is for laser induced prostatectomy, which gives impressive medium term results.¹⁰

With both these technologies the patient can be treated as a day case, with potential cost saving implications, although long term outcome data are needed. Other non-invasive treatments such as high intensity focused ultrasound are now being developed and may allow extracorporeal destruction of the obstructing adenoma without the need for urethral instrumentation.

Patients expect more

Increasingly well informed patients now expect their urologist to be at least conversant with these latest developments in pharmacology and technology. They also wish to know the relative risk-benefit ratios of transurethral resection and newer treatments. When it is explained to them that transurethral resection offers a 75% chance of a satisfactory outcome, but at a 70% risk of ejaculatory disturbance and 20% chance of other complications, many will opt for a treatment that may be less effective in improving symptoms and flow rates but carries a lower risk of complications.

More effective and safer drugs and minimally invasive technologies will be developed for treating established disease. Moreover the prospects of preventing benign prostatic hyperplasia by drugs is already being investigated in long term studies in the United States.

Some urologists may regret the passing of the era when the management of benign prostatic hyperplasia simply involved a choice between watchful waiting and prostatectomy; but increasingly patients are demanding a more sophisticated approach to their problems. As in other areas of modern life numerous opportunities exist for the urologist prepared to grasp the future. Those who prefer the past may find the new world leaving them behind.

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Alternatives are still unproved

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For many years transurethral resection of prostate has been established as the optimum treatment for benign prostatic hyperplasia. This viewpoint is now being challenged because of criticism of the operation itself and by the availability of a bewildering variety of alternative treatments (box). Most are recent innovations, and results of long term follow up studies are not yet available. Unfortunately, claims for their superiority have sometimes been exaggerated by their enthusiastic proponents.

Mortality and morbidity

Recent reports of an unexpectedly high incidence of complications after transurethral resection of prostate need to be taken seriously, but few would agree that the early and late mortality figures published by Roos *et al* are typical of modern practice.¹ Mortality is influenced by many factors that have not necessarily been evaluated or reported but could bias results. More obviously these include the skill and continuing experience of the surgeon, the size of the prostate resected (which in turn influences duration of resection and hence blood loss and irrigant absorption), and cardiovascular disease. Clearly, these factors should be quoted in trials of new treatments tested against placebo and transurethral resection. Nowadays, the short term operative mortality should be 0.3% or less for most groups of patients.²

The possibility that an operation could affect survival months and years later seems far fetched. However, there is some evidence for subclinical cardiac disturbance during transurethral resection which might limit the myocardial reserve to withstand subsequent ischaemia.³ This issue remains controversial, and a recent study showed 2.8% mortality during 12 months after transurethral resection of prostate,⁴ which is half the rate that would be expected in a group of age matched elderly men.

Strictures of the urethra and bladder neck occur in about 10% of patients after transurethral resection. This figure could be an underestimate since restriction of urethral calibre does not necessarily reduce flow if there is compensation by the detrusor. Strictures also complicate any procedure which requires urethral instrumentation, and they can therefore be expected to occur with any one of the new physical methods of destroying prostatic tissue.

Most of the 25% of patients who are dissatisfied with transurethral resection of prostate complain of persistent frequency, urgency, and perhaps incontinence.⁵ Most will have suffered these symptoms before surgery and will have severe secondary detrusor instability, perhaps with borderline obstruction. Symptoms of instability persist in 10% of patients, and arguably the operation was inappropriate for them.

Treatments for benign prostatic hyperplasia

Physical

Balloon dilatation
Intraurethral implants—Spirals, stents
Microwave thermotherapy—Transrectal, transurethral
Laser—"Side fire" ablation, contact incision, transurethral needle ablation
Ultrasonic tissue—External source
Disintegration—Transurethral probe
Cryosurgery
Transurethral resection or incision of prostate

Pharmacotherapy

α Adrenergic antagonists—for example, prazosin, indoramin, terazosin, doxazosin
Antiandrogen treatment—Surgical castration; medical castration (luteinising hormone releasing hormone analogues, cyproterone, flutamide)
Specific prostatic androgen inhibitor—5α reductase inhibitor (finasteride)

The dissatisfaction of a further 10% will be due to detrusor failure. Such patients may not have been obstructed before the operation. It is unlikely that either group would have fared better with other physical methods of treatment or drugs.

About 70% of patients who have transurethral resection of prostate will have retrograde ejaculation. Most are unconcerned provided that the symptoms are explained adequately beforehand and they are reassured that orgasm can be achieved. The risk of impotence is difficult to assess. In general studies on sexual dysfunction have been unsatisfactory because of a lack of objectivity and few prospective studies exist. Impotence is unlikely to occur as a new symptom in more than 10% of patients. This should be considered in the context of an aging population with naturally waning potency.

Other physical treatments

At present transurethral resection of prostate must remain the basis for comparison. There is no other feasible treatment which removes most of the obstructive tissue. This can be proved urodynamically by a large rise in flow rate and, provided that detrusor function is adequate, abolition of residual urine.⁶ Laser ablation and perhaps ultrasonic tissue disintegration show promise of relieving obstruction with minimal blood loss, anaesthetic risk, and length of hospital stay. The same could be achieved with hyperthermia but at the risk of damaging surrounding structures. More modest but acceptable temperature rises during micro-

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