Audit

The changing practice of transurethral prostatectomy: a comparison of cases performed in 1990 and 2000

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Objectives: Transurethral resection of the prostate (TURP) is considered by many to be the 'gold standard' treatment for benign prostatic enlargement. However, with the relatively recent introduction of pharmacological and other surgical treatment modalities, the performance of TURP appears to be in decline.

Methods: A retrospective casenote analysis of 200 patients who underwent TURP in 1990 and the year 2000 with the aim of identifying changes in the incidence and practice of TURP.

Results: There was a decline in the number of TURPs performed of 31.6% over the 10-year period, with more being carried out because of urinary retention. In 2000, the patient was older and the operative procedure took statistically longer than 10-years earlier, but the weight of prostate tissue resected, patient satisfaction and complication rates were similar.

Conclusions: At present, TURP is in decline, with urinary retention being the commonest indication. The population at present is older but this does not carry additional co-morbidity. The weight of resection has not altered, although surgery currently takes longer to perform.

Key words: TURP – Practice – Indication – Decline

For many decades, transurethral resection of the prostate (TURP) has been considered the 'gold standard' surgical treatment¹ for lower urinary tract symptoms (LUTS) resulting from benign prostatic hyperplasia (BPH) or cancer and its complications. Mebust *et al.*,² in a review of 3885 patients, reported a risk of 2% of developing TUR syndrome, with 3.9% of patients requiring a postoperative blood transfusion, 6.5% failing to void (presumably as a result of initial detrusor failure), and secondary haemorrhage in 3.3%. This paper quoted an overall procedural mortality of 0.23%. Alternative methods of treatment have, therefore, been sought, and over the past 15 years there has been an increasing usage of pharmacological therapy (e.g. 5 α -reductase inhibitors, α_1 -receptor

antagonists)^{3,4} and attempts to devise minimally invasive surgical alternatives (e.g. transurethral microwave thermotherapy).^{5,6} Not surprisingly, therefore, the number of TURPs performed is in decline; a 43% decrease was observed in the US between 1987 and 1994⁶ and this decline has also been recorded in Europe.⁷

This study was undertaken to see if TURPs were being performed less frequently over a specific time period in a busy district hospital in the UK. It would also be possible to see whether the indications for TURP had changed and indeed whether TURP was now being performed on a different population than it had been. These data would also enable an assessment of the different rates of complications over the time periods analysed.

Table 1 Data obtained on patients undergoing TURP in 1990 and 2000

Age of patient when TURP performed
Indication for TURP
Previous drug treatment for LUTS
ASA grade (from anaesthetic charts)
Time in theatre
Weight of prostate tissue resected
Histology of prostate tissue resected
Postoperative blood transfusion requirements
30 day postoperative mortality rates
Longer term complications
Patient symptom satisfaction

Table 2 Indications for TURP in the time periods analysed

Clinical indication for TURP	Year of study	
	1990	2000
Urinary retention	33	58
Acute urinary retention	21	35
Low pressure chronic urinary retention	11	16
High pressure chronic urinary retention	1	7
Lower urinary tract symptoms (LUTS)	65	42
Miscellaneous (recurrent haematuria)	2	0
	100	100

It was hypothesised that because of the increasing usage of pharmacological therapy in the management of LUTS over the time period of the study, more patients would present later in the natural history of the disease process for TURP. This would imply that larger glands would be resected with longer resection times and potentially more complications.

Patients and Methods

A list of patients who underwent TURP in 1990 and 2000 was obtained from the theatre diaries at York District Hospital. A random sample of 100 sets of casenotes from each of these years was retrospectively analysed – information as shown in Table 1 being collected. Any statistical comparisons between data sets were performed using Student's *t*-test.

Patient assessment pre-operatively and listing for theatre was performed by the consultant urologist in 1990. In 2000, a nurse practitioner-led prostate assessment clinic was in existence following strict local guidelines. Definitive assessment and listing of patients for theatre was still, however, undertaken by the surgeon.

Time in theatre was recorded in the theatre diaries. This represents the period of time from the moment the patient entered the theatre from the anaesthetic room, until the time he left to go to the recovery area. Although this is not a truly

accurate measure of the actual operative time, for the purpose of this study it was constant and, therefore, deemed acceptable and reproducible between cases and decades.

All patients were followed up in the out-patient clinic approximately 3 months following their hospital discharge to assess the degree of patient satisfaction from surgery with regard to LUTS improvement.

Results

In 1990, two consultant urologists alone performed 326 TURPS. In 2000, this had fallen to 223 cases, performed now by four consultant urologists (3.5 whole-time equivalents, including 1.5 whole-time equivalent appointments over the intervening 10-year period) and a specialist registrar. This represents a 31.6% decline.

There were 50 urology beds available to the urologist in 1990 with no non-urological 'outliers' on the urology ward. In 2000, there were 31 urological beds available with approximately 5–10% 'outliers' overall at any one time. Despite this, however, it was only rarely that theatre cases were cancelled.

In 1990, the mean age of patients undergoing TURP was 70.6 years (range, 58–95 years). This had increased to 73.4 years by 2000 (range, 43–90 years), a statistically significant increase ($P < 0.01$). However, the mean ASA grade (as recorded by anaesthetists as an indication of patient comorbidity) was much the same for each year analysed, being 1.90 and 1.91 for 1990 and 2000, respectively ($P > 0.05$).

The clinical indications for TURP (and number of patients in each category) for these 2 years are shown in Table 2.

For the purpose of this study, acute urinary retention was defined as painful retention of urine where the bladder residual volume was 1000 ml or less upon bladder catheterisation. Low pressure chronic urinary retention was defined as a bladder residual of > 1000 ml where there was no evidence of upper tract dilatation on ultrasound or derangement of serum urea and creatinine. High pressure chronic urinary retention was defined as a bladder residual of > 1000 ml where there was evidence of upper tract dilatation on further investigation and deranged serum urea and creatinine which resolved upon bladder catheterisation.

Over the 10-year study period, those presenting in urinary retention requiring TURP increased from 33% to 58%, an increase of 75.8%, whereas LUTS as an indication for TURP fell from 65% to 42%, a decrease of 35.4%. An increasing usage of prostatic pharmacological therapy in those patients attending for TURP was demonstrated. In 1990, 2% of patients undergoing TURP had previously

Table 3 Other complications reported during postoperative period of TURPs performed in 1990 and 2000

Complication	Year of study	
	1990	2000
Required re-do TURP (1-year/10-year figures)	3/18	3/NA
Secondary haemorrhage within 4 postoperative weeks	3	1
Detrusor hypo-/acontractility (long-term failure to void)	2	3
Bladder neck stenosis	2	1
Long-term stress incontinence	2	0
Urethral stricture	1	5
Irritative LUTS	1	6
TUR syndrome	0	2

NA, not applicable.

been on prostatic medical therapy, rising to 17% in the year 2000, an increase of 850%.

Over the study period, similar mean weights of prostatic tissue were resected – 22.95 g in 1990 (range, 3–70 g) and 22.55 g in 2000 (range, 1.5–94 g). This difference was not statistically significant ($P > 0.05$). When broken down for grade of operating surgeon, the average weight of resection was 20.82 g for consultants and 27.74 g for specialist registrars ($P > 0.05$). In 1990, all TURPs were performed by consultant urologists. In 2000, 75% were performed by consultants and 25% by specialist registrars under supervision.

The mean 'in-theatre' time in 1990 was 26.2 min, rising to 32.1 min in 2000 ($P < 0.01$). When broken down for grade of operating surgeon in the year 2000, the average time was 31.4 min for consultants and 34.3 min for specialist registrars ($P > 0.05$).

Histologically, prostatic adenocarcinoma was detected in the TURP chippings of 11% of patients in 1990 – 2% where the diagnosis was known previously and 9% where it was *de novo*. In 2000, the proportion of TURP-detected prostatic adenocarcinomas had increased to 22% (5% previously known and 17% *de novo*).

Of patients undergoing TURP in 1990, 6% required a postoperative blood transfusion, each patient receiving on average 2.5 units. This had increased to 8% in the year 2000, each patient on this occasion receiving on average 3.6 units. No episodes of immediate postoperative sepsis or symptomatic UTI were encountered in either patient cohort. There was no postoperative mortality following TURP surgery in the 100 patients studied in the 1990 cohort, but 1 death was recorded from the year 2000 group. This was an 85-year-old man, ASA 2 with ischaemic heart disease and hypertension who suffered a myocardial infarction and subsequent fatal cardiac arrest on the 4th postoperative day.

Regarding postoperative satisfaction, 81% of patients stated that they were 'happy' with the results of their surgery in 1990, compared to 82% in 2000, and were discharged at their first hospital visit.

Other term complications encountered in the two patient cohorts are listed in Table 3.

Discussion

For many decades, TURP has been the mainstay of surgical treatment for BPH and its associated complications and has been demonstrably effective over the years.¹ However, the increasing use of other treatment modalities has led to a decline in numbers.^{6,7} Our study has confirmed this downward trend, albeit with smaller numbers. One possible explanation for this decrease in numbers over the 10-year period is a decrease in available hospital resources (*e.g.* reduced bed availability, fewer weekly operative sessions). However, the total number of weekly operative sessions available in this urology department has increased from 1990 to 2000 (data not shown), but bed availability has become an increasing problem. However, accurate data on this were not available for analysis.

Our results suggest that, currently, TURPs are being performed on a statistically older male population, but this population does not appear to carry with it an increased comorbidity.

Certainly, presumably because of the increased use of pharmacological therapy over the last 10 years, more patients are presenting for TURP as a result of complications arising from prostatic enlargement (*e.g.* urinary retention, obstructive renal failure) than they did 10 years ago, and conversely less are presenting for TURP with LUTS. In our patient cohorts, 11 of the 42 patients (26.2%) presenting for TURP because of LUTS in 2000 had failed previous pharmacological therapy. This is in line with documented increasing use of medication for symptomatic bladder outlet obstruction.^{3,4} One could argue that because of the later presentation in the disease process, larger amounts of prostatic tissue would need to be resected in order to achieve symptomatic improvement. This, however, does not appear to be the case with similar amounts of tissue being resected in 1990 and 2000. This is in keeping with data published in 1989, where the average resection weight was 22 g.² It has also been reported that the amount of tissue resected in relation to the overall size of the gland does not appear to influence the final outcome with regards to

patient satisfaction.⁹ Certainly, our results showed a high overall patient satisfaction over the study period.

However, our results suggest that surgery performed in 2000 took significantly longer to carry out than in 1990, but both average 'in-theatre' times being much less than the previously quoted average of 77 min.² This does not appear to be dependent upon the grade of operative surgeon, as there were statistically insignificant differences in both average 'in-theatre' times and weight of prostatic tissue resected between consultants and specialist registrars. However, despite this, the additional mean extra 'in-theatre' time of approximately 5.5 min did not appear to incur additional morbidity or mortality.

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