

Monopolar Transurethral resection of the big prostate, experience at Prince Hussein Bin Abdullah Urology Center

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Abstract

Objective: To evaluate and review our experience in management of patients with big size prostate using monopolar transurethral resection of the prostate (TURP).

Methods: Between January 2005 and March 2010, TURP was performed on 198 patients with prostate size between 80 and 120 grams.

The patients were subjected to standard urologic pre-operative evaluation and they were given 5 alpha reductase inhibitor for two weeks before surgery. TURP was performed using 27F continuous-flow resectoscope, Otis urethrotomy and suction cystostomy were done, and 500 ml normal saline with 20mg furosomide was given intra-operatively. Catheterization time, hospital stay, peri-operative and late complications were recorded.

All patients were seen at 6 weeks and 6 months post surgery in the outpatient clinic. Symptoms and complications were evaluated and histopathological diagnoses were recorded.

Results: The mean age was 67 ± 3.7 years (range 57-80 years). Of these, 102 patients presented with retention and obstructive uropathy, 36 with recurrent haematuria, 12 with urinary bladder stones, 11 with recurrent urinary tract infection and 37 patients with moderate to severe international prostate symptom score (IPSS) and not responding to medical treatment.

The mean prostate volume was 88 ± 8.22 grams (range 80-120grams) with an average residual urine of 160 ml (range 20-1500 ml). The mean Qmax was 6.8 ± 1.7 ml/sec (range 2.1-11.7ml/sec) and the mean IPSS score was 20.2 ± 6.2 (range 15-30).

The average operative time was 72 ± 6.2 minutes (range 58-92 minutes). The mean drop in haemoglobin was 3.2 ± 0.6 mg/dl (range 2.1-6.1mg/dl) and immediate post-operative mean sodium drop was 3 ± 1.36 mmol/l (range 0.9-13mmol/l).

Blood transfusion was needed in 17 patients (8.6%), two patients developed TURP syndrome (1%), and clot retention occurred in two patients (1%). The average time of hospital stay was 2.3 ± 0.25 days, catheterization time was 48-72 hours, and re-catheterization was needed in three patients (1.5%). The mean IPSS score six weeks after surgery was 9.9 ± 1.7 (range 6-21) and the mean Qmax was 18.1 ± 2.1 ml/sec (range 6-22). Urethral stricture and bladder neck contracture occurred in 12 and 3 patients respectively (6 and 1.5%). Completion TURP was needed in four patients (2%).

Conclusions: Standard monopolar TURP with some modification in resection technique in addition to peri-operative care will allow the urologist to treat benign prostate hyperplasia with prostate size between 80-120 grams successfully in centers where new laser technology is not available.

Keywords: Monopolar Transurethral Resection, Big Prostate, TURP (JPMA 61:628; 2011).

Introduction

Benign prostate hyperplasia (BPH)-related obstruction is associated with lower urinary tract symptoms (LUTS) that inevitably affect every aging male. The incidence of LUTS secondary to benign prostatic obstruction is high and increases linearly with age.^{1,2}

Transurethral resection of the prostate (TURP) remains the gold standard for treatment of LUTS due to BPH, but the true anatomical gold standard for management of big prostate is open prostatectomy in terms of complete relieve of obstruction and the degree of symptomatic improvement. However, the perfect alternatives to both do not exist yet.³⁻⁵

The aim of this study was to evaluate and to review the authors' experience in the management of patients with big size prostate (between 80 and 120 grams) using monopolar resectoscope.

Patients and Methods

The current study was held at Prince Hussein Urology Center Amman, Jordan between January 2005 and March 2010. A total of 1314 TURP procedures were performed for patients with BPH that warranted surgical indications. Out of these, 198 patients harboured prostates of size between 80 and 120 grams. Patients with urethral stricture, neurogenic voiding dysfunction and prostate adenocarcinoma were excluded from the study.

All patients were subjected to standard urologic pre-operative evaluation including history, physical examination, digital rectal examination, urine analysis and culture, kidney function test, coagulation profile, and prostate specific antigen (PSA). Ultrasound of the urinary tract was done to measure the residual urine and to evaluate the upper urinary tract in patients with obstructive uropathy, haematuria, previous upper urinary tract surgery or history of stone disease. Transrectal ultrasound (TRUS) was performed for the measurement of prostate size and for guided prostate biopsy in patients with elevated PSA (more than 4ng/ml) or suspicious lesion detected in the prostate. Urine flowmetry was performed to measure Qmax in all patients without urethral catheter.

All patients were given 5 alpha reductase inhibitor (finasteride 5mg once daily) for two weeks before admission to surgery. The patients were admitted one day before surgery and two units of cross matched blood were prepared, intravenous second generation cephalosporin was given 30 minutes before the operation. TURP was carried out in lithotomy position under spinal anaesthesia for all patients. The procedure was started by cystoscopy using 17F cystoscope for evaluation of the lower urinary tract and filling the urinary bladder to facilitate insertion of cystostomy suction tube for continuous bladder drainage. Otis

urethrotomy was done routinely for all patients. A 27 F continuous-flow resectoscope was used with a single wire loop for resection in a video-assisted endourological system and 1.5% isotonic glycine solution as an irrigant.

The technique of resection started from 5 and 7 o'clock first and the median lobe if present, then resection was continued to both lateral lobes; starting from 1 and 11 o'clock downward to the previously resected 5 and 7 o'clock area. The anterior part was resected at the end of the procedure with meticulous homeostasis; the electrocautery system setting was 120w for cutting and 50w for coagulation.

Intra-operatively, 500 ml normal saline with 20mg furosemide (diuretic) were given intravenously by the anaesthetist for all patients and a 24F three way indwelling catheter was introduced at the end of the procedure, filling its balloon with 30 ml D/W. Continuous irrigation was done using 0.9% normal saline that was reduced and stopped as soon as possible depending on the colour of the drainage. The catheter was removed 48-72 hours post-operatively. Patients were discharged after successful voiding on oral quinolones for one week. All patients were seen at 6 weeks and 6 months post surgery in the outpatient clinic. Symptoms and complications were evaluated and histopathological diagnoses were recorded.

Results

The mean age of the patients with big prostates was 67 ± 3.7 years (range 57-80 years). Of the 198 patients, 102 presented with chronic refractory urine retention and obstructive uropathy, 36 patients had recurrent haematuria, 12 patients presented with urinary bladder stones, 11 patients with recurrent documented urinary tract infection and 37 patients presented with moderate to severe international prostate symptom score (IPSS) and failed medical treatment.

In the 198 patients involved in the current study, the mean prostate volume was 88 ± 8.22 grams (range 80-120grams) measured by TRUS with an average residual urine of 160 ± 118 ml (range 20-1500 ml) measured by transabdominal ultrasound. The mean Qmax was 6.8 ± 1.7 ml/sec (range 2.1-11.7ml/sec) for patients without urine retention, and the mean IPSS was 20.2 ± 2.37 (range 15-30).

The mean operative time was 72 ± 6.2 minutes (range 58-92 minutes) excluding the time of cystolitholapaxy in cases accompanied by management of urinary bladder stones. The mean drop in haemoglobin was 3.2 ± 0.6 mg/dl (range 2.1-6.1mg/dl) and immediate postoperative mean sodium drop was 3 ± 1.36 mmol/l (range 0.9-13 mmol/l).

Blood transfusion was needed in 17 patients (8.6%) with an average of two units of previously cross matched prepared blood (range 1-4 units). Two patients (1%) developed signs and symptoms of TURP syndrome in the

first 30 minutes post-operatively and the lowest sodium serum value 121.4 and 122 mmol/l for both patients. Clot retention occurred during the early post-operative course in two patients (1%), both needed cystoscopy blood clot evacuation and cauterization of the bleeding points.

The average time of hospital stay was 2.3 ± 0.25 days (range 2-4 days) and the urethral catheter was kept for 48-72 hours. Re-catheterization was needed in only three patients (1.5%), two of them with chronic urine retention and found to have urinary bladder atony due to long standing diabetes diagnosed by urodynamic and urethral pressure profile study, the other patient required resection of residual obstructed adenoma one week post-operatively. At six weeks follow up after TURP, the IPSS score was evaluated for all patients and the mean value was 9.9 ± 1.7 (range 6-21). Regarding the Qmax value, the mean value was 18.1 ± 2.1 ml/sec range (6-22 ml/sec). The mean of residual urine was of 65 ± 11.7 ml (range 10-180 ml). True incontinence was not detected, but 29 patients (14.6%) experienced irritative urinary symptoms in the form of nocturia, urgency and urge incontinence. Anticholinergic drugs were successfully used to alleviate some of these symptoms in most of the patients.

Histopathological examination of the submitted TURP specimens showed BPH accompanied by chronic infection or prostatic infarction in 191 patients (96.5%). Adenocarcinoma of the prostate was detected in 7 patients (3.5%); four of them treated by watchful waiting, one patient by hormonal therapy using LHRH analogue, one patient referred to radiotherapy, and one patient underwent radical retropubic prostatectomy.

Regarding late complications, 12 patients (6%) developed urethral stricture within the first year follow up, all of them were treated by optical urethrotomy. Three patients (1.5%) developed bladder neck contracture due to fibrosis requiring bladder neck excision or incision. Re-do TURP was needed in four patients (2%) within the first year due to residual obstructed adenoma. Erectile dysfunction was not evaluated in the current study.

Discussion

The primary reason for intervention in patients with symptoms of bladder outlet obstruction and irritability is that the symptoms are moderate to severe; interfering with the patients' quality of life. On the other hand, there are absolute indications for prostate surgery, including acute urine retention, recurrent infection, recurrent haematuria, and azotaemia.⁶

The objective behind surgical treatment of BPH is to eliminate bladder outlet obstruction with the lowest morbidity and the highest possible durability of improvement in symptoms and urinary flow. Despite the development of effective medical therapy for BPH and decline in frequency

of TURP procedure in many countries over the past decade, TURP is still one of the most common interventions in elderly men.^{7,8} TURP is a difficult procedure with a steep learning curve, because its safety demands efficient tumour resection within a limited time.⁹

Regarding the technique of resection in TURP, Agrawal et al¹⁰ in a prospective randomized study compared the hemiresection (complete resection of one lateral lobe with resection of the median lobe of the prostate if present) to the standard TURP and they found that the two groups had comparable improvement in symptoms and flow rate. On the other hand, Chen et al¹¹ found that patients had better clinical results after standard TURP and the clinical results correlated significantly with completeness of the resection of the prostate adenoma. In the current study, the aim was to perform the standard technique of TURP with resection of both lateral lobes in addition to the median lobe if present.

To date, there is still no consensus regarding the amount of prostatic tissue that should be resected during TURP. In their series, Green et al¹² analyzed data of 452 patients who underwent TURP and they found that the volume of prostatic tissue resected was less than 50% of the estimated prostate volume and they conclude that the resection of more than 50% of the prostate volume affect quality of life.

One of the major complications of monopolar TURP is intra-operative or post-operative bleeding. This is of clinical significance in the post-operative period if it causes blood clot retention or necessitates blood transfusion. Although the transfusion rate has been significantly reduced over time, clot retention incidence ranges between 2-5% and bleeding remains a concern.¹³ Proper intra-operative haemostasis and systematic organized resection decreased the incidence of clot retention to 1% in the current study. This was aided by the routine use of 5 alpha reductase inhibitor for two weeks before surgery. Finasteride results in decrease in size of the prostate which requires up to six months but there is an interest in using finasteride for treating haematuria of prostate origin as it reduces bleeding experienced by some BPH patients.^{14,15} However, the rate of blood transfusion is high in monopolar TURP if compared to bipolar and laser TURP. On the other hand, there is no clinical relevant difference in short term efficacy between bipolar TURP and monopolar TURP regarding Qmax, IPSS score, and quality of life.¹⁶

There is significant decrease in TURP syndrome incidence during the past decades, but it still represents a serious peri-operative complication;¹³ the reported incidence is up to 2.1%.³ Lin et al¹⁷ routinely treated their patients with furosemide if resection time was more than 60 minutes. In the current study, the incidence of TURP syndrome was 1% as all patients involved received intra-operative normal saline and

furosomide routinely in addition to continuous drainage of the urinary bladder during resection by suction cystostomy with less than 90 minutes resection time and proper meticulous haemostasis.

Catheterization time ranged from 10.8 to 31.9 hours for small prostate size.^{18,19} In the current study, catheterization time ranged from 48-72 hours, and this extended time may be explained by the bigger size of the prostate.

Regarding the late complications, Rass et al¹³ reported in their study that urethral stricture and meatal stenosis occurred in 2.2- 9.8%, and the bladder neck contracture in 0.3- 9.2%. The incidence of the urethral stricture in the current study was 6% and only three patients (1.5%) developed bladder neck contracture. This is probably due to the routine use of otis urethrotomy before starting resection and avoidance of excessive cauterization at the area of urinary bladder neck.

The effect of monopolar TURP on erection is still controversial, one potential mechanism of this could be the thermal injury to the erectile nerves.²⁰ The significant risk associated with erectile dysfunction is capsular perforation and cardiovascular disease.²¹ In the current study, the evaluation of post-operative erectile dysfunction was limited and was therefore excluded from the post-operative evaluation.

Conclusion

Standard monopolar TURP with some modification in resection technique in addition to peri-operative certain helpful steps will allow the urologist to treat BPH with prostate size between 80-120 grams successfully in centers where new laser technology is not available.

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