

Postoperative outcomes of transurethral resection of the prostate in patients with comorbidities

Komorbiditesi olan hastalarda transüretal prostat rezeksiyonunun postoperatif sonuçları

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ÖZET

Amaç: Çalışmanın amacı, BPH nedeniyle transüretal prostat rezeksiyonu yapılmış hipertansiyon (HT), koroner arter hastalığı (KAH), diabetes mellitusu (DM) ve kronik obstrüktif akciğer hastalığı (KOA) gibi komorbiditeleri olan hastalarda, postoperatif 12. ayda IPSS, Qmax, erektil durum ve üretra darlığı gibi klinik verileri değerlendirmektir.

Gereç ve yöntem: Eylül 2009'dan Aralık 2011'e kadar TURP yapılan 85 hasta değerlendirildi. Preoperatif parametrelere yaş, Uluslararası Prostat Semptom Skoru (IPSS), Uluslararası Eretil Fonksiyon İndeksi (IIEF), prostat hacmi, postvoiding rezidü, maksimum akım(Qmax) dahildi. Ameliyat sırasındaki veriler ve postop 12. Aydaki IPSS, IIEF, Qmax, üretra darlığı oranları değerlendirildi.

Bulgular: Seksen beş hastaya TURP yapıldı. Hastaların hepsinde bir veya daha fazla komorbidite vardı. Ortalama operasyon süresi 59.8 ± 17.8 dakikaydı. Preoperatif /postoperatif 12. Ayda IIEF ve IPSS skorları sırasıyla; $18.6 \pm 7.8 / 15.0 \pm 6.5$ ($p < 0.05$) ve, $18.6 \pm 7.8 / 10.0 \pm 7.3$ ($p < 0.05$) idi. Qmax: $8.5 \pm 2.7 / 20.0 \pm 4.9$ ($p < 0.05$) olarak bulundu. Üretra darlığı oranları $3/85$ (% 3) olarak bulundu.

Sonuçlar: BPH lı hastada TURP, IPSS, Qmax ve erektil fonksiyon da anlamlı oranda iyileşme sağlamaktadır. Üretra darlığı oranları kabul edilebilir düzeydedir.

Anahtar sözcükler: benin prostat hiperplazisi, transüretal prostat rezeksiyonu, erektil fonksiyon, üretra darlığı

ABSTRACT

Aim: The aim of this study is to evaluate the pre/perioperative data and 12 month postoperative clinical data including IPSS, Qmax, erectile function status and urethral stricture rate in patients with comorbidities such as hypertension (HT), coronary artery disease (CAD), diabetes mellitus (DM) and chronic obstructive pulmonary disease (COPD) undergoing transurethral resection of the prostate (TURP) for symptomatic benign prostatic hyperplasia (BPH).

Materials and methods: The data of 85 patients undergoing TURP from September 2009 to December 2011 were retrospectively evaluated. The preoperative parameters included age, prostate volume, International Prostate Symptom Score (IPSS), International Index of Erectile Function (IIEF) questionnaire, prostate volume, postvoiding residue, maximum flow (Qmax) and comorbidities. Perioperative data and 12 month postoperative IPSS, Qmax, urethral stricture incidence were evaluated and mean potency status of patients were evaluated with postoperative IIEF scores.

Results: Eighty-five patients underwent TURP. All patients had one or more comorbidities. The mean operative time was 59.8 ± 17.8 . The preoperative/ postoperative 12 month IIEF score and IPSS were $18.6 \pm 7.8 / 15.0 \pm 6.5$ ($p < 0.05$) and $18.6 \pm 7.8 / 10.0 \pm 7.3$ ($p < 0.05$). Qmax were $8.5 \pm 2.7 / 20.0 \pm 4.9$ ($p < 0.05$). Urethral stricture rate was $3/85$ (3%) at postoperative 12 month after TURP

Conclusion: TURP provided significant improvement in IPSS and Qmax and erectile function. The urethral stricture rates are acceptable.

Key words: benign prostatic hyperplasia, transurethral resection of the prostate (TURP), erectile function, urethral stricture

INTRODUCTION

The range of treatment modalities for benign prostatic hyperplasia (BPH) has been extended dramatically within the last decade, many of these novel techniques were considered minimally invasive therapies because of their favourable safety profile compared to conventional surgical therapy. Transurethral resection of the prostate (TURP) still represents the gold standard in the operative management of benign prostatic hyperplasia (1) TURP is associated with maximal

Table 1. Distribution of comorbidities in TURP patients

COMORBIDITY	#
HT	25
HT+CAD	14
COPD	7
DM	9
HT+COPD	2
HT+CAD+DM	12
HT+CAD+COPD	5
HT+DM	4
HT+DM+COPD	2
DM+COPD	5
TOTAL	85

TURP = Transurethral resection of prostate, HT: hypertension, CAD: Coronary artery disease, COPD; chronic obstructive pulmonary disease, DM; Diabetes mellitus

improvement in both symptoms and urinary flow rates. However, this ablative procedure has complications such as retrograde ejaculation, hemorrhage, or electrolyte disturbances (TUR syndrome) (2). The risk of TUR syndrome is characterized with hypervolemic state with dilutional

Table 2. Preoperative characteristics of patients

Operation modality	Age	Prostate Volume (ml)	IPSS	Qmax, ml/s	PVR volume, ml	IIEF	Number of patients with Comorbidities
TURP(n=85)	64.0±8.4	42.5±13.2	18.6±7.8	8.5±2.7	120,8±59	16.5±6.3	62/85 (73%)

TURP = Transurethral resection of prostate; IPSS = International Prostate Symptom Score, Qmax= Maximum flow, PVR= Post voiding residue
IIEF = International Index of Erectile Function

hyponatremia leading to cerebral edema and seizures(3). Although several studies compared the efficacy and safety of TURP, there are fewer systematic reviews focused on their impact on male erectile function(6). Significant risk of erectile dysfunction (ED) after TURP for BPH was noted in some trials with some reporting complete loss of erection(7). The urethral stricture complication also is worth studying. Urethral stricture rates varies from 2.2% to 9.8% in the literature and, there is no relationship to operative time periods. In spite of the similar outcomes of TURP in large series with respect to potency status, IPSS, Qmax and urethral stricture rates, the impact of TURP on these parameters has

not been thoroughly analysed in patients with comorbidities such as hypertension (HT), coronary artery disease (CAD), diabetes mellitus (DM) and chronic obstructive pulmonary disease (COPD). The aim of this study is to compare the preoperative data and 12 month postoperative clinical data including erectile function status in patients with comorbidities undergoing TURP for symptomatic BPH.

MATERIALS AND METHODS: STUDY DESIGN

The data of 85 patients undergoing TURP from September 2009 to December 2011 were retrospectively evaluated. After formal study approval by our Institutional Review Board, the data of preoperative International Prostate Symptom Score (IPSS), maximal flow rate (Qmax), residual urine volume, International Index of Erectile Function (IIEF) and comorbidities such as HT, CAD, DM and COPD were reviewed (Table I). Sodium levels before the procedure and at 2nd hour, hemoglobin levels before and at 24 th hour were recorded postoperatively. Treatment efficacy was evaluated at postoperative 12 month, and urinary flow rates, IPSS, IIEF scores and urethral stricture rates were recorded. Mean postoperative 12 month potency status of patients were evaluated with IIEF questionnaire and compared with preoperative IIEF scores. Inclusion criteria were age > 50 years, good performance status, acute urinary retention if catheter removal failed after therapy with alpha-blockers or chronic urinary retention unresponsive to medical treatment, IPSS \geq 8, and Qmax \leq 15 ml/s. Exclusion criteria were prostate volume <30 cm³, documented or suspected prostate cancer, neurogenic bladder, bladder stone or diverticula, urethral stricture, and maximal bladder capacity >500 ml.

EQUIPMENT

The monopolar loop with an active and return electrode on the same axis, separated by a ceramic insulator was used. A chip in the loop automatically adjusts the power setting of the generator for the best cutting and coagulating parameters. All the procedures were performed using a Storz 26F continuous flow resectoscope. All operations were performed using a similar technique under spinal or general anesthesia. A 22F three-way urinary catheter was left in place after the operation, and saline irrigation was continued until the effluent fluid was completely clear.

STATISTICAL ANALYSIS

The results were analyzed using descriptive statistics with paired t tests and the chi-square test to compare continuous variables and categorical data, respectively. Differences were considered significant at $P < 0.05$.

Table 3. Perioperative data of patients

TURP	Resection time	Variation in Hb level at 24-hr follow-up (g/dL)	Variation in serum Na ⁺ at 2-hr follow-up (mg/dL)
(n=85)	59,8±17.8	-1.9±1.1	-10.7

Hb= hemoglobin. TURP = Transurethral resection of prostate; PKEP = plasmakinetic enucleation of the prostate; IPSS = International Prostate Symptom Score, Qmax= Maximum flow, IIEF = International Index of Erectile Function

RESULTS

Eighty-five patients underwent TURP. All patients had one or more of the comorbidities including HT, DM, CAD and COPD ($p=0.01$) (Table 1). Mean age was 64 ± 8.4 . Mean preoperative IPSS was 18.6 ± 7.8 . Mean prostate volume was 42.5 ± 13.2 ml Mean operative time was 59.8 ± 17.8 (Table 2). Decrease in Hb level at 24-hr follow-up (g/dL) -1.9 ± 1.1 Variations in serum sodium at 2-hr follow-up (mg/dL) were -10.7 (Table 3). The preoperative/ postoperative 12 month IIEF score and IPSS were $18.6\pm 7.8/15.0 \pm 6.5$ ($p<0.05$) and $18.6\pm 7.8/10.0 \pm 7.3$ ($p<0.05$). Qmax were $8.5\pm 2.7/20.0 \pm 4.9$ ($p<0.05$). Urethral stricture rate was 3/62 (4%) at postoperative 12 month after TURP (Table 4).

Table 4. Postoperative 12 month data of all patients

TURP	IPSS	Qmax, ml/s	IIEF	Urethral stricture
(n=85)	10,0±7.34	20.0±4.9	15±6.5	3/85 (4%)

TURP = Transurethral resection of prostate; PKEP = plasmakinetic enucleation of the prostate; IPSS = International Prostate Symptom Score, Qmax= Maximum flow, IIEF = International Index of Erectile Function

COMMENT

The goals of the treatment modalities for BPH are to reduce symptoms, provide safety and minimize adverse effects(8). Since its introduction into the BPH treatment modalities, the perioperative and postoperative complications of TURP have been hemorrhage, hyponatremia and urinary retention, postoperative bleeding with clot retention, urinary tract infection, and urethral stricture erectile dysfunction respectively(9). Technical improvement of conventional TURP generators and advances in anesthesia assured already a significant decrease in bleeding rates(10). In order to reduce complications of TURP, various technologies have been introduced with varying success. Considering the

previous studies reporting the success rates and safety profile of TURP procedure, the patients having severe comorbidities such as HT, CAD, DM and COPD underwent TURP procedure in our institution. We compared the preoperative and postoperative IPSS and Qmax beside the IIEF scores. The difference between all these three preoperative and postoperative parameters were statistically significant. The impact of TURP on erectile function alone was reported so far in many series, the rate of impotence for TURP alone varies from 3.4 to 32% in the literature (11). However, there are also reports of improved erections after TURP in paralel to our results (12) To date, 12 randomized control trials (RCTs) involving a total of 1889 patients were identified, including 2 trials that compared TURP with watchful waiting, 6 that compared TURP with transurethral electrovaporization (TUEVP), 4 that compared TURP with HLT (Holmium Laser Treatment) where TURP was found to be associated with a lower incidence of ED compared to TUEVP ($P=0.04$) but not to HLT (13).

The two major late complications of TURP are urethral strictures (2.2–9.8%) and bladder neck contractures (0.3–9.2%)(9). The stricture rate was 3% in our series in paralel to the previous reports. Despite improvements in surgical techniques, lubricants, instruments, and electrical technology, the incidence of urethral strictures did not change significantly. The reason for this might not be only due to use of a larger resectoscope (27 F). There are multifactorial causes of urethral strictures, depending on technique (i.e. operating room time), technology, and the regimen of antibiotic treatment (9).

Our study had some limitations, besides being in retrospective nature, the sample size was limited.

In conclusion, TURP provided significant improvement in IPSS and Qmax and erectile function. Although the urethral stricture rates are acceptable, this latter issue deserves comprehensive investigation. Further technical improvement may also include the use of flexible instruments to improve the visibility and maneuverability of the resection loop to decrease the rate of this late complication.

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