

Transvesical open prostatectomy versus transurethral resection of the prostate for the treatment of benign prostatic hyperplasia, Iraq: A retrospective study

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Abstract

Background and Objective: Surgical treatment is an effective option for symptomatic benign prostatic hyperplasia (BPH), after failed conservative therapy. Transurethral resection of the prostate (TURP) is considered as a standard treatment method for the management of the small to medium prostate while transvesical open prostatectomy (OP) is a standard option for great prostate. The objective of this study is to evaluate the efficacy and safety of both (B-TURP) and (OP).

Methods: The present study included 73 patients underwent either transvesical open prostatectomy (31 patients) or bipolar transurethral resection of the prostate (42 patients) between May 2019 to May 2021, in Erbil-city. The baseline characteristics, intraoperative and postoperative characteristics plus early and late adverse effects were obtained from medical records for all patients in both groups, retrospectively. The data analyzed and compared statistically.

Results: The baseline characteristics in the studied groups showed no significant differences except for the prostate size which was more on the OP group. According to the results, operative time was significantly ($P < 0.001$) lower in the OP group. The means of the following variables in the OP group were significantly higher than those of the B-TURP group: Hospitalization days ($P < 0.001$), days of catheter removal, back to normal activity ($P < 0.001$), QoL score ($P = 0.027$), Qmax ($P < 0.001$), and PVR ($P = 0.046$), while no significant difference was detected regarding IPSS ($P = 0.404$).

Conclusion: B-TURP was superior to OP regarding the hospitalization days, recovery time back to normal day-activity, and quality of life. Otherwise, both mentioned approaches work well for the treating symptomatic BPH.

Keywords: Benign; Prostatic hyperplasia; Prostatectomy; Transurethral.

Introduction

Benign prostatic hyperplasia commonly abbreviate as (BPH), is a histologic term which defines proliferation of smooth muscle and epithelial cells in periurethral area and transition zone (TZ) according to the American Urological Association.^{1,2} This nonmalignant enlargement of prostate gland also known as benign prostate enlargement (BPE) or prostate gland enlargement.^{3,4} This enlargement can result in several symptoms including; obstruction, irritative symptoms, or even

combinations of symptoms that are commonly referred to as lower urinary tract symptoms (LUTS).^{1,4-6} Consequently, these symptoms may result in renal failure and lower quality of life.⁷ BPH is therefore a problem for worldwide public health, particularly in the elderly population (65 years or more).^{4,8} BPH's pathogenesis is not fully understood.^{2,9}

The treatment options include non-pharmacological (AUASI score of 0–7), pharmacological (AUASI score of 8 or higher), combination of both, or surgical

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therapies which is effective in cases with moderate to severe symptoms even after nonsurgical treatments.¹⁰⁻¹³ Transvesical open prostatectomy (OP), robot-assisted simple prostatectomy (RSP), photoselective vaporization (PVP), holmium laser resection (HoLRP), transurethral holmium laser enucleation (HoLEP), transurethral incision (TUIP), monopolar or bipolar transurethral resection of the prostate (M-TURP or B-TURP), and prostate artery embolization (PAE), are among the surgical procedures used to treat benign prostate hyperplasia.^{1,14-17} Currently, TURP is considered as a standard operation for men with prostates 30–80 ml (normal mean falls between 7–16 grams) and also it is suitable for healthy men with low surgical risk, whereas men with higher surgical risk or who are unable to endure general anesthesia can need less invasive surgical treatment (for instance, prostatic urethral).^{1,18,19} Several minimally invasive procedures have been abandoned mainly because of disappointing long-term data whereas transurethral resection not alternated by other techniques.^{20,21} Even in the age of endoscopic advancements, open prostatectomy remains the treatment of choice for patients with obstructive large prostate glands, maintaining its significance in urological practice.²²

Objectives: To determine intraoperative and postoperative complications among patients who underwent either transvesical open prostatectomy (OP) or bipolar transurethral resection of the prostate (B-TURP).

Methods

This study was performed in Erbil city, Iraqi Kurdistan (Rizgary teaching hospital, and a private hospital). Completed medical records of 73 patients who had underwent prostatectomy by the researcher (during May 2019 to May 2021), had been analyzed. This study included patients who were diagnosed with BPH, 31 patients underwent OP and 42 patients underwent

B-TURP. All enrolled patients have met the following inclusion criteria: patients with follow-up of 12 months after the operation, patients on medical treatment for BPH (pre-operatively), age range 49-88 years, prostate volume of 44-129 cm³, an international prostate symptom score (IPSS) of 9-30 and also patients with confirmed bladder outlet obstruction (BOO), while patients with the following criteria were excluded: confirmed prostate carcinoma, neurogenic bladder disorders, renal failure, bladder calculi and urethral stenosis.

The initial diagnosis was based on the history, physical examination, laboratory investigations and International prostate symptom score (IPSS). Thus, digital rectal exam (DRE) and transrectal ultrasound scan (TRUS) was performed and also prostate-specific antigen measured, this step performed for the excluding the patients with confirmed prostate carcinoma.

Medical records and case sheets were retrospectively reviewed and compared for baseline patient characteristics, intraoperative and postoperative characteristics in both studied groups (bipolar transurethral resection of the prostate considered as group 1 and transvesical open prostatectomy considered as groups 2). Preoperative characteristics included parameters such as; age, prostate size (ml), International prostate symptom score (IPSS), quality of life score (QoL score), maximal flow rate (Qmax), postvoid residual assessment (PVR) and prostate-specific antigen (PSA), intraoperative characteristics included; time of operation, needs of blood transfusion, and the development of transurethral resection syndrome (TUR). Postoperative characteristics included the following variables; international prostate symptom score (IPSS), quality of life score (QOL score), maximal flow rate (Qmax) and prostate-specific antigen (PSA).

In addition, this study also addressed adverse effects at the last follow-up

including early postoperative complications such as: requirement for blood transfusion and clot retention, and late postoperative complications such as: urethral stricture, bladder neck stenosis, epididymo-orchitis and needs of reoperation.

Statistical analysis

The Statistical Package for Social Sciences (SPSS, version 25) (IBM Corp., Armonk, NY, USA) was used to perform the statistical analysis throughout this study. The results of the study were presented as mean ± standard deviation. Chi-square was used for categorical data (Fisher's exact test was used when the expected value of more than 20% of the cells of the table was less than 5) while unpaired t test was

used to compare means. A *P*-values of <0.05 was considered to be statistically significant.

Results

The baseline characteristics of both groups are presented in Table 1 as mean ± standard deviation (SD). No significant differences were observed between the two groups in term of age (*P* = 0.115), IPSS (*P* = 0.444), QoLS (*P* = 0.730), Qmax (*P* = 0.082), PVR (*P* = 0.055), and PSA (*P* = 0.391), while the prostate volume of the OP (108.64 ml) was significantly (*P* <0.001) higher than that of the TURP (65.59 ml).

Table 1 Baseline characteristics of both groups at the time of diagnosis

Characteristics	B-TURP (n 42)	OP (n 31)	<i>P</i> -value
	Mean ± SD	Mean ± SD	
Age (years)	65.45 ± 10.04	69.54 ± 11.82 (52-88)	0.115
Prostate size (ml)	65.59 ± 14.87	108.64 ± 12.94	< 0.001
IPSS	18.6667 ± 6.05	19.7419 ± 5.68	0.444
QoLS	4.4762 ± 1.08	4.3871 ± 1.08	0.730
Qmax (mL/s)	6.7500 ± 2.61	7.7968 ± 2.35	0.082
PVR (ml)	132.5952 ± 44.39	113.0645 ± 39.55	0.055
PSA (ng/ml)	9.9333 ± 3.07	9.3226 ± 2.86	0.391

Independent t-test used for the statistical analysis. There were no significant differences between two groups. SD = Standard Deviation, IPSS = international prostate symptom score, QoLS = quality of life score, Qmax = maximal flow rate, PVR = postvoid residual assessment, and PSA = prostate-specific antigen.

It is evident in Table 2 that the mean operation time of B-TURP (93.47 minutes) was significantly ($P < 0.001$) higher than that of the OP (75.35 minutes). The table shows that 2.4% of patients of Group 1, and 9.7% of patients of Group 2 needed blood transfusion ($P = 0.305$). Only one patient (2.4%) developed TUR syndrome intra-operatively compared with 0% in the OP group ($P = 1.000$) (Table 2).

It is evident in Table 3 that the means of the following variables in the OP group were significantly higher than those of the B-TURP group: Hospitalization days ($P < 0.001$), days of catheter removal, back to normal activity ($P < 0.001$), QoLS ($P = 0.027$), Qmax ($P < 0.001$), and PVR ($P = 0.046$), while no significant difference was detected regarding IPSS ($P = 0.404$) (Table 3).

Table 2 Intraoperative parameters in B-TURP and OP groups

Parameters	B-TURP (n 42)	OP (n 31)	P-value
Operative time (minute) Mean \pm SD	93.47 \pm 18.00	75.35 \pm 10.86	< 0.001†
Blood transfusion No. (%)	1 (2.4%)	3 (9.7%)	0.305*
TUR syndrome No. (%)	1 (2.4%)	0 (0%)	1.000*

* By Fisher's exact test.† By unpaired student t-test, SD = Standard Deviation, and TUR = transurethral resection.

Table 3 Postoperative characteristics of Group 1 and Group 2

Characteristics	B-TURP (n 42)	OP (n 31)	P-value*
	Mean \pm SD	Mean \pm SD	
Hospitalization days	2.69 \pm 0.86	4.19 \pm 1.19	< 0.001
Days of catheter removal	5.50 \pm 0.67	7.83 \pm 0.82	< 0.001
Back to normal activity (days)	15.57 \pm 2.26	25.06 \pm 2.79	< 0.001
IPSS	7.61 \pm 1.83	7.258 \pm 1.78	0.404
QoLS	1.90 \pm 0.60	2.19 \pm 0.47	0.027
Qmax (mL/s)	10.061 \pm 2.78	12.80 \pm 3.07	< 0.001
PVR (MI)	30.42 \pm 10.78	36.22 \pm 13.55	0.046

* By independent t-test. IPSS = international prostate symptom score, QoLS = quality of life score, Qmax = maximal flow rate, and PVR = postvoid residual assessment.

The adverse effects categorized into early postoperative complications and late postoperative complications as shown in Table 4. The rate of blood transfusion (9.7%), clot retention (16.1%), urethral stricture (3.2%) and stenosis of bladder neck (6.5%) were higher in OP group (but all the differences were not significant) while the rate of epididymo-orchitis was higher in B-TURP group (4.8%). Only one patient in B-TURP group required reoperation. All these differences were not significant (Table 4).

Discussion

Benign prostatic hyperplasia (BPH) is considered as a world health related problem especially in aging population, meaning that its incidence increase with age (30–40% of men in their fourth decade of life) and (70–80% in men over the age of 80 years).^{1,23} BPH usually results in several symptoms.^{23,24} Consequently, BPH affects health related quality of life and needs to be controlled or managed especially in symptomatic cases.²⁵ Regardless to the non-surgical therapies, the most standard treatment for symptomatic BPH is transvesical open prostatectomy (OP).²⁶

This traditional method still has a role in several undeveloped and developing countries.²⁷ Currently, many minimally invasive methods or techniques are available for the management of BPH.^{14-17,28} Even though there are many different surgical alternatives currently accessible, TURP is still recognized as a successful surgical method with great outcomes.^{29,30} This study determined the efficacy, safety and adverse effects (early and late postoperative complications) of both OP and B-TURP among patients with symptomatic BPH in Erbil governorate – Kurdistan region of Iraq.

Regarding the baseline characteristics, there were no significant differences between the two study groups for all parameters (age, IPSS, QoLS, Qmax, PVR, and PSA) except for the prostate volume, which was higher in the OP group. The mean age was 65.45 years in B-TURP group and 69.54 year in OP group, this is relatively similar to mean age of earlier study.³¹ The mean of prostate volume was significantly higher in patients underwent OP than B-TURP. Previous study reported post-surgery prostate volume for TURP and ORP which was 72.3 cm³ and 150.2

Table 4 Early and late postoperative complications in both groups

Postoperative complications	B-TURP (n 42)	OP (n 31)	P-value
	No. (%)	No. (%)	
Number of patients with early complications			
Blood transfusion	1 (2.4%)	3 (9.7%)	0.305*
Clot retention	2 (4.8%)	5 (16.1%)	0.127*
Number of patients with delayed complications at 9 months of follow-up			
Urethral stricture	1 (2.4%)	1 (3.2%)	1.000*
Bladder neck stenosis	1 (2.4%)	2 (6.5%)	0.571*
Epididymo-orchitis	2 (4.8%)	1 (3.2%)	1.000*
Reoperation	2 (4.8%)	0 (0%)	0.505*

*By Fisher’s exact test.

cm³, respectively.³²

This study also addressed and focused on the intraoperative and postoperative characteristics. Generally, the operative time was significantly shorter in transvesical open prostatectomy (mean 75.35 min) than in bipolar transurethral resection of the prostate (mean 93.47 min). This finding does not coincide with the findings of the previous research, which reported non-significant differences of operative time with mean of 103.7 min and 109.5 min for B-TURP and OP, respectively.²⁹ Another study reported mean operating time according to prostate volume (51 gm- or greater) which was 90.9 min. and 92.5 min. for TURP and OP, respectively.³³ According to the results of this study other intraoperative parameters (needs of blood transfusion and development of TUR syndrome) showed no significant differences.

The analysis of postoperative data showed that patients in group 1 (B-TURP) required less hospital stay and need less time to go back to normal day-activity, these differences were significant when compared to patients in group 2 (OP). Previous study observed significant differences for postoperative characteristics between TURP and OP groups in regards to international prostate symptom score (IPSS), quality of life score (QOL score), maximal flow rate (Qmax), and postvoid residual assessment (PVR) at (3 and 12) months follow-up.²⁹ This study reported no significant differences for both early and late postoperative complications between studied groups. In addition, low incidence of adverse effects reported in this study, this is not in agreements with a conclusion of other study which concluded potential adverse effects in TURP group.³⁴

Conclusion

B-TURP is superior than OP, as patients in B-TURP group had lower mean of hospital stay and recovery time back to normal day-activity. No significant differences were identified between B-TURP and OP

regarding the proportions of other intraoperative and postoperative complications. B-TURP and OP are safe and effective option for the treating symptomatic BPH.

Funding

Not applicable.

Competing interests

The author declares that he has no competing interests.

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