COMPARISON OF PRE AND POST-TURP EVALUATION IN BPH PATIENTS USING IPSS AND UROFLOWMETRY IN TERTIARY HOSPITAL

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ABSTRACT

Objective: *To present the data about LUTS using International Prostatic Symptoms Score (IPSS) and uroflowmetry on BPH patients following TURP.* ***Material &Methods:****This retrospective study reviewed patients diagnosed as BPH with LUTS undergone TURP from Dr. Saiful Anwar General Hospital medical records from January 2021 to January 2023. The basic clinical characteristics, IPSS, and uroflowmetry results were collected. Furthermore, the comparison of IPSS score and uroflowmetry prior and 7 days after surgery were analyzed.* ***Results:*** *From a total of 286 patients, 94 patients met the inclusion criteria. Improvement of LUTS and quality of life (QoL) obtained from IPSS were observed before and after TURP (19.13 vs 2.78, p<0.001; 4.38 vs 0.33, p<0.001). Similar improvement was also showed for maximum flow rate (QMax) and post-void residual (PVR) volume obtained from uroflowmetry result (7.90 vs 17.85, p<0.001; 66.25 vs 27.05, p<0.001) with 90.43% patients had Qmax>15 ml/sec after the procedure.* ***Conclusion:*** *This study showed the evidence of early improvement of IPSS and uroflowmetry results in BPH patients after TURP. The indicators were sufficient to evaluate the satisfaction result of patient complaining LUTS.*

Keywords:*BPH, IPSS, uroflowmetry, TURP.*

ABSTRAK

Tujuan: *Untuk menyajikan data mengenai LUTS dengan menggunakan International Prostatic Symptoms Score (IPSS) dan uroflowmetri pada pasien BPH yang mengikuti TURP.* ***Bahan& Cara:*** *Penelitian retrospektif ini meninjau pasien yang didiagnosis sebagai BPH dengan LUTS yang menjalani TURP dari rekam medis Rumah Sakit Umum Pusat Dr. Saiful Anwar dari Januari 2021 hingga Januari 2023. Karakteristik klinis dasar, IPSS, dan hasil uroflowmetri dikumpulkan. Selanjutnya, perbandingan skor IPSS dan uroflowmetri sebelum dan 7 hari setelah operasi dianalisis.****Hasil:****Dari total 286 pasien, 94 pasien memenuhi kriteria inklusi. Peningkatan LUTS dan kualitas hidup (QoL) yang diperoleh dari IPSS diamati sebelum dan sesudah TURP (19.13 vs 2.78, p<0.001; 4.38 vs 0.33, p<0.001). Peningkatan serupa juga ditunjukkan untuk laju aliran maksimum (QMax) dan volume post-void residual (PVR) yang diperoleh dari hasil uroflowmetri (7.90 vs 17.85, p<0.001; 66.25 vs 27.05, p<0.001) dengan 90.43% pasien memiliki Qmax>15 ml/detik setelah prosedur.****Simpulan:*** *Penelitian ini menunjukkan bukti perbaikana wal IPSS dan hasil uroflowmetri pada pasien BPH setelah TURP. Indikator-indikator tersebut cukup untuk mengevaluasi hasil kepuasan pasien yang mengeluhkan LUTS.*

Kata kunci:BPH, IPSS, uroflowmetri, TURP.

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INTRODUCTION

Transurethral resection of prostate (TURP) procedure still be favored for managing lower urinary tract symptoms (LUTS) on patients with benign prostate hyperplasia (BPH) especially with a prostate volume of 30-80 ml. Improvement of LUTS and quality of life after TURP is found up to 94.7% of all cases.[1-2]

Postoperative evaluations of TURP utilize symptom-scoring tools evaluation using The International Prostate Symptom Score (IPSS) and quality of life (QoL) in short-term and long-term follow up, as well as uroflowmetry assessment. A combination of the different method of the evaluation after TURP may provide useful information for the urologist and the patients hence several studies were conducted to support this recommendation around the world. [3-5]

OBJECTIVE

Studies discussed and data collected regarding short-term improvement of LUTS after TURP in Indonesian population was surprisingly limited, therefore we wanted to figure out the value of IPSS score, QoL and uroflowmetry parameters consisting of Qmax and PVR in BPH patients with LUTS before TURP and seven days after the procedure.[6]

MATERIAL&METHODS

This study retrospectively evaluated BPH patients undergone TURP at Saiful Anwar General Hospital from January 2021 to January 2023. Inclusion criteria were BPH patient with LUTS undergone TURP and had IPSS and uroflowmetry prior and 7 days after TURP, while exclusion criteria was acute urinary retention. This study was approved by the Institutional Ethical Boards of Dr. Saiful Anwar General Hospital with approval number 400/079/K.3/102.7/2024.

Clinical characteristics of the patients including age, prostate volume, indication of surgery, IPSS and uroflowmetry results, were presented as categorical data and reported as frequency and percentages. The primary outcomes of our study, IPSS, QoL, Qmax, and PVR were presented as continuous variable and reported as mean and standard deviation (SD). Shapiro–Wilk test and Kolmogorov–Smirnov tests were used to assess the distribution of variables. Paired Student's t-test or Wilcoxon signed-rank test was used to compare pre- and post-operative variables. For the secondary outcome, the correlations between the study characteristic (Age and prostate volume) and pre-operative variables (IPSS, Qmax, and PVR) were calculated using Pearson's or Spearman's test were. P value of < 0.05 was considered significant. All analyses were performed by using SPSS version 25.0 (IBM, Chicago, IL, USA).

RESULTS

From a total of 286 patients, 94 patients met the inclusion criteria. The study population's age ranged from 56 to 84 years with the mean age of 67.26 years +/- 7.22 years. The age range between 61 and 70 years had the highest incidence of BPH, with 44,68% of patients, followed by 27.66% of patients older than 70 years. The mean prostatic volume was 58.14 cc, with a range of 28 - 139cc. The most frequent obtained prostate volume were > 50 cc in 52.13 % patients (Table 1).

Table 1. Clinical characteristics of the study.

Characteristic	N (%) (N total= 94)
Age (years old)	
51-60	21 (22.34)
61-70	42 (44.68)
71-80	26 (27.66)
81-90	5 (5.32)
Prostate Volume (cc)	
<30	1 (1.06)
31-40	20 (21.28)
41-50 cc	24 (25.53)
>50	49 (52.13)
Indication of Surgery	
Urinary Tract Stone	9 (9.67)
Upper Tract Stone	2 (2.13)
Lower Tract Stone	7 (7.44)
Renal insufficiency	12 (12.76)
CKD stage III	2 (2.13)
CKD stage IV	6 (6.38
CKD stage V	4 (4.25)
Non-Urinary Tract	28 (29.79)
Inguinal Hernia	22 (23.41)
Hemorrhoid	6 (6.38)
Medical Therapy Failure	45 (47.87)
α1-blockers	38 (40.42)
≤ 1 month	9 (9.57)
> 1 month	29 (30.85)
Combination (α1-	7 (7.45)
blockers + 5-ARI)	1 (1.07)
≤ 1 month	6 (6.38)
> 1 month	

Note: IPSS. International prostatic symptoms score; Qmax. Peak urine flow; PVR. Post voiding residual; CKD. Chronic kidney disease.

The IPSS were evaluated in all the patients at the time of initial evaluation prior to and a week after TURP. Out of 94 patients, 62.77% had severe LUTS, whereas 25.53% had moderate LUTS and 6.38% with mild LUTS. Preoperative mean of IPSS was 19.13 +/- 5.57, while postoperative mean IPSS was 3.96 +/- 4.24. Post TURP IPSS score showed mean improvement in IPSS score of 85.47% and significant improvement was recorded in the IPSS with 67% patients without LUTS ($p<0.001$). The QoL mean showed as 4.38 +/- 1.82 before surgery

Table 2. Comparation pre- and post-operative value.

	Pre-Op		Post-Op		Improvement (%)	p-value
	N	Mean± SD	N	Mean±SD		
IPSS*		19.13 ± 5.57		2.78 ±4.24	85.47	p<0.001
No LUTS	0 (0)		63 (67.02)			
Mild	6 (6.38)		25 (26.60)			
Moderate	29 (30.85		6 (6.38)			
Severe	59(62.77)		0 (0.00)			
QoL*		4.38 ± 1.82		0.33 ±0.61	93.46	p<0.001
Qmax(ml/s)*		7.90 ± 2.92		17.85 ±3.14	125.95	p<0.05
<10	78(82.98)		1 (1.06)			
10-15	16(17.02)		8 (8.51)			
>15	0 (0.00)		85 (90.43)			
PVR (cc)*		66.25 ± 21.59		27.05 ±11.41	59.17	p<0.001
<50	29 (30.85)		89 (94.68)			
50-100	59 (62.77)		5 (5.32)			
>100	6 (6.38)		0 (0.00)			

*with bold p<0,001
Note: IPSS. International prostatic symptoms score; QoL. Quality of life; Qmax. Peak urine flow; PVR. Post voiding residual.

Table 3. Preoperative indicator before TURP procedure.

Variable		Correlation coefficient	p
Age	IPSS	0.199	0.055
	Qmax	0.191	0.065
	prostate volume	0.243	0.018*
	PVR	0.164	0.133
Prostate volume	IPSS	0.204	0.049*
	Qmax	-0.221	0.032*
	PVR	0.822	0.000*
IPSS	Qmax	-0.183	0.078

*with bold p<0,05
Note: IPSS. International prostatic symptoms score; QoL. Quality of life; Qmax. Peak urine flow; PVR. Post voiding residual.

and significantly improved with 93.46% improvement (p<0.001) (Table 2).

Preoperatively, 82.98% patients had Qmax less than 10 ml/sec. The preoperative mean value of Qmax was 7.9ml/sec and postoperative 17.85ml/sec with 125.95% improvement from pre-operative. Qmax values showed post-operatively significant improvement, with the majority of patients (90.4%) having maximum flows of more than 15 ml/sec and no patients below 10 ml/min (p<0.001) (Table 2).

Post-operatively, PVR values showed significant improvement about 59.17% from preoperative, with the majority of patients (94.7%) having residual urine bellow 50cc and no patients with PVR >100cc (p<0.001) (Table 2).

Age, preop IPSS, Qmax and PVR had significant correlation with Prostate volume (p<0.05). However, pre op IPSS, Qmax and PVR had no correlation with Age. And also, Qmax had no correlation with pre op IPSS (Table 3).

DISCUSSION

The results of our study showed improvement of BPH patient symptoms on early follow up using IPSS and uroflowmetry examination

seven days after TURP. Similar result from study by Narendra et al and Harvey et al also show reduced IPSS score and improvement of QoL from all of the BPH patient after undergone TURP, and the alleviation of the lower urinary lower urinary tract symptoms consisting of incomplete emptying, intermittency, weak stream, and straining symptoms benefits the patients for the upmost.[7] Study by Amu et al also observed that IPSS score may improve 70% from initial value, slightly lower than our result that shows 85.47% reduction of IPSS score after the procedure.[8] Furthermore, Ugraiah et al study discussed the satisfaction of the patient according to Qmax (103% vs 125.95% value improvement in our study) and QoL (80% vs 92.95% value improvement in our study).[9] In Indonesia, our study complements previous study conducted by Patandung et al that only evaluate postoperative result using IPSS questionnaire and encourage to report uroflowmetry result in daily basis and further study.[10]

Other results of our study show the correlation between prostate volume and several useful clinical feature of BPH patients consisting of age, IPSS, Qmax, and PVR that still shown contradicted evidence in several previous studies. Studies conducted by Vesely et al and Bosch et al that also found the correlation between age, IPSS, and Qmax with prostate volume.[11-12] However, study by Ugraiah et al showed no correlation between prostatic volume and IPSS.8 Our results also found that pre-operative IPSS and Qmax had no significant correlation and contradicted with the results of studies conducted by Bosch et al, Barry et al, and Din et al that showed correlations between IPSS and Qmax. We believe various results of each parameter were affected by different clinical settings based on the characteristic of each study and sample size.[12-14]

The evaluation methods of TURP result were well-established although the clinician may encounter several difficulties applying the recommendation in the limited clinical setting. The European Association of Urology recommends using IPSS questionnaire, PVR, and uroflowmetry to follow up BPH patients 6 weeks after the surgery. IPSS questionnaire provides simplicity to evaluate lower urinary tract symptoms on a patient undergone TURP.[15] However, the subjectivity of the questionnaire model may heavily depend on the patient ability to understand each question, so PVR and uroflowmetry may provide objective judgement although we still found several urology clinics that do not have access to the examination in Indonesia. Moreover, our study may encourage early evaluation to became standard of care to evaluate BPH management after undergone TURP to increase patient's satisfaction and improve standard of care for managing BPH patients.

Several limitations still encountered in this study. First, several cofounding factors as well as average flow rate and intravesical prostatic protrusion did not include that was established on the previous study. Second, the data collection method for IPSS score in this study was collected by several investigators in a different patient's educational background subjectively. At last, this study on a small sample size comparing with other previous study. The quality of this research can be improved with a larger sample size and consideration of cofounding factors for the next future study.

CONCLUSION

This study revealed the evidence of improvement of IPSS and uroflowmetry results in BPH patients following TURP procedure. The indicators were sufficient to assess the beneficial outcome of BPH patients with LUTS.

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