



General Surgery

A COMPARATIVE STUDY BETWEEN OPEN PROSTATECTOMY AND TRANSURETHRAL RESECTION OF GRADE III BENIGN PROSTATIC HYPERPLASIA WITH SEVERE LOWER URINARY TRACT SYMPTOMS

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ABSTRACT

AIM : To compare safety, efficacy, outcomes, peri and short term post operative complications between Open Prostatectomy and TURP. **OBJECTIVES:** 1) To compare the efficacy of open prostatectomy and TURP in grade III BPH with severe LUTS. 2) To compare IPSS, Q max , post void residual urine and quality of life postoperatively. 3) To compare perioperative and short term complications. **METHODS:** All grade III BPH patients with severe LUTS included in the study from August 2022 to February 2024 in Department of General Surgery HIMS hassan. Randomization of patients done into STVP and TURP group. Follow up will be done for 1st month, 3rd month , 6th month after treatment using IPSS, Qmax, PVR and QOL. Statistical analysis done with descriptive and inferential statistics using SPSS software version 2.0 and Microsoft Excel 2017. **RESULTS:** Post operative improvement of IPSS -QoL index, Qmax, PVR is significant in both group. Even though TURP had a shorter hospital stay, there was no statistically significant differences in peri and post operative complications in both group. **CONCLUSION:** Open Prostatectomy is safe and efficacious as that of TURP and better outcomes in IPSS-QOL, PVR, Qmax in grade III BPH with LUTS. Both group had minimal morbidity and no mortality.

KEYWORDS : Open Prostatectomy, TURP, IPSS -QoL index, Qmax, PVR**INTRODUCTION**

Benign prostatic hyperplasia occurs in men over 50 years of age; by the age of 60 years, 50% of men have histological evidence of BPH. BPH is a common cause of significant LUTS in men and is the most common cause of bladder outlet obstruction in men >70 years of age¹. In India 6.7 to 14 % prevalence of BPH was reported in hospital and community studies².

Among the surgical interventions TURP is the gold standard in the management of BPH also have considerable morbidities like bleeding, TURP syndrome, bladder neck contracture and stricture urethra etc., Long term follow up needed and reoperation rates are higher in TURP¹.

Open prostatectomy has good symptom relief and less chance of recurrence of the disease. Open prostatectomy is still the procedure of choice in patients with large prostate, large vesical calculi, diverticulae of bladder and inguinal hernia. TURP is the standard surgical procedure for small prostate with considerable co-morbidities and long term follow up and high recurrence rates.

AIM - of the study is to compare between open prostatectomy and transurethral resection of grade III benign prostatic hyperplasia with severe lower urinary tract symptoms.

OBJECTIVES-

- 1) To compare efficacy of open prostatectomy and TURP in grade III BPH with severe LUTS.
- 2) To compare IPSS, Qmax, post void residual urine and quality of life postoperatively.
- 3) To compare perioperative and short term complications.

MATERIALS AND METHODS-

SOURCE OF DATA - All patients with grade III BPH with severe LUTS admitted to Department of General Surgery , Hassan Institute of Medical Sciences, Hassan.

STUDY TYPE- Prospective Randomized study.

STUDY PERIOD- one and half year (2nd August 2022 to 1st March 2024)

INCLUSION CRITERIA:

- 1) Age : 50 - 80 years
- 2) Grade III BPH with severe LUTS
- 3) Grade III BPH associated with Complications like Acute retention

of urine, chronic bladder outlet obstruction, recurrent UTI , hematuria , renal insufficiency, bladder diverticulae , inguinal hernia etc., except vesical calculi .

EXCLUSION CRITERIA:

- 1) All Grade I and II BPH patients with mild, moderate and severe LUTS.
- 2) Carcinoma prostate
- 3) Patients unfit for anesthesia and surgery
- 4) With previous prostatectomy
- 5) Previous pelvic surgery preventing access to prostate gland
- 6) Patients with post CVA, neurogenic bladder.

ESTIMATION OF SAMPLE SIZE :

According to study by Mukesh Chandra Arya et al. 2019. The mean IPSS score at one month in group 1 was 13 ± 2.1 and in group 2 was 11.6 ± 1.9 .

$$n = 2 * Z^2 S^2 / d^2$$

n = minimum sample size

$$Z_{\alpha/2 + 1-\beta} = 2.76$$

s = Common standard deviation = 2, d = precision = 1.4

$$n = 2 * Z^2 S^2 / d^2$$

$$n = 2 * (2.76)^2 (2)^2 / (1.4)^2$$

$$n = 33 (\text{Approx } 40) \text{ per group} * 2 \text{ group}$$

sample size is 80

METHOD OF COLLECTION OF DATA: All grade III BPH patients with severe LUTS between 50 to 80 years were included in the present study conducted at Department of General Surgery HIMS, Hassan. Patients were admitted and detailed clinical history including IPSS-QoL index questionnaire and Abdominal, digital rectal examination and systemic examination done. IPSS - QoL index questionnaire was translated to regional language. Routine blood investigations including S.PSA and usg abdomen and pelvis, prevoid and post void residual urine with prostate size done. Patient with comorbidities like hypertension and diabetes mellitus etc., were optimized preoperatively. Randomization of patients done into Group A - open prostatectomy and Group B - TURP. Patients with even number in IPD underwent Open Prostatectomy and those with odd number in IPD underwent TURP.

STATISTICAL ANALYSIS: Statistical analysis was done using descriptive and inferential statistics. Descriptive include chi square test to compare mean, standard deviation, frequency and percentage. Inferential statistics include chi-square test to compare proportions between two groups and unpaired T test to compare means between the

group. The level of significance is kept at 0.05. Analysis was done by using SPSS software version 20 and Microsoft Excel 2017.

OPEN PROSTAECTOMY PROCEDURE-All patinets underwent cystoscopy before the procedure after SAB. Bladder filled using normal saline and clamped with Foleys. Pfannenstiel skin incision was made on abdomen. Rectus sheath opned and Rectus muscle retracted and peritoneum over the bladder swepted upwards. Stay sutures using 3-0 vicryl taken on either side of midline on the anterior wall of the bladder and opened vertically. Size of the prostatic, intravesical extension of the prostate, bladder mucosa and bilateral ureteric orifices were observed. Perurethral Foleys removed after puncturing the bulb. Circular incision from 2'0 to 10'0 clock position taken over the prostatic capsule below the trigone close to internal urethral meatus using NO.15 scalpel. Using metzenbaum scissors and finger dissection, prostate adenoma is removed completely. Hemostasis achieved by suturing bladder neck and prostatic capsule using 2-0 vicryl from 5'0 to 7'0 clock position. 3 way foleys 22 Fr inserted perurethrally and bulb inflated with 45ml of distilled water and bulb placed in the prostatic fossa with application of traction. Continuous bladder irrigation started. Suprapubic Foleys catheter 16 Fr placed into the bladder and bladder wall closure done. Retro pubic drain placed and secured with sutures. Abdominal wall closure done.

Patient is allowed oral liquids after recovering from the spinal anesthesia. Continuous bladder irrigation given using normal saline till the output was clear in both procedures. Perurethral catheter removal done on 4th post op day followed by spc removal and drain removal at last in STVP group.

TURP PROCEDURE - In our study we performed Monopolar TURP.Under SAB, patient in lithotomy position cystoscopy done using 22Fr sheath, 30o telescope. Cystoscopy findings - enlargement of prostate lobes, length of prostate, intravesical protrusion, trabeculations of bladder and ureteric orifices noted. 1.5% glycine used for continuous bladder irrigation. Using Monopolar loop and continuous flow rotating 24Fr resectoscope resection of prostate done using Nesbitt resection technique. After completion of procedure 22Fr 3 way foleys placed in the bladder and traction applied. Specimen sent for HPE. Traction removed after 6 to 8 hours post operatively. Foleys catheter removed on day 4.

Fig. 1- Intra op photo of prostate

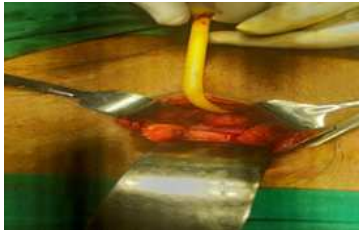


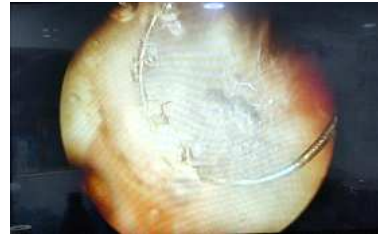
Fig. 2- Post enucleation of prostate



Fig. 3- TURP resectoscope



Fig.4- Intraop photo of TURP



RESULTS-

Table-1 - preop and post op variables

Unpaired t test					
	Group	N	Mean	Std. Deviation	p
Age	STVP	40	72.25	7.299	0.149
	TURP	40	69.80	7.720	
Prostate size	STVP	40	86.53	10.256	0.260
	TURP	40	84.48	5.018	
S.PSA	STVP	40	6.425	2.0987	<0.001
	TURP	40	4.235	2.4810	
PreAUR IPSS	STVP	40	24.00	1.725	0.210
	TURP	40	24.55	2.148	
IPSS 1 month	STVP	40	12.38	1.314	0.539
	TURP	40	12.55	1.218	
IPSS 3 month	STVP	40	9.75	1.032	0.001
	TURP	40	10.70	1.400	
IPSS 6 month	STVP	40	7.35	.893	0.040
	TURP	40	7.93	1.492	
PreAUR QOL	STVP	40	4.13	.335	0.462
	TURP	40	4.08	.267	
QoL 1 month	STVP	40	1.03	.577	0.318
	TURP	40	1.18	.747	
QoL 3 month	STVP	40	0.73	.506	0.073
	TURP	40	0.95	.597	
QoL 6 month	OPEN	40	0.65	.483	0.297
	TURP	40	0.78	.577	
PreAUR Qmax	STVP	6	7.33	1.366	0.484
	TURP	11	6.73	1.794	
Qmax 1 month	STVP	40	13.20	1.114	<0.001
	TURP	40	11.90	1.429	
Qmax 3 month	STVP	40	16.85	1.231	<0.001
	TURP	40	15.53	1.811	
Qmax 6 month	STVP	40	19.63	1.675	0.021
	TURP	40	18.48	2.582	

Table-2 - Comorbidities

Chi-Square Test					
			Group		p
			STVP	TURP	
Diabetes milletus	0	Count	37	31	0.060
		% within Group	92.5%	77.5%	
	1	Count	3	9	
		% within Group	7.5%	22.5%	
Hypertension	0	Count	33	29	0.284
		% wihin Group	82.5%	72.5%	
	1	Count	7	11	
		% within Group	17.5%	27.5%	
AUR	0	Count	6	11	0.172
		% within Group	15.0%	27.5%	
	1	Count	34	29	
		% within Group	85.0%	72.5%	

Unpaired t test					
	Group	N	Mean	Std. Deviation	p
PreAUR PVR	STVP	6	145.00	94.393	0.387
	TURP	11	100.18	101.358	

PVR 1 month	STVP	40	21.25	4.770	<0.001
	TURP	40	25.98	5.255	
PVR 3 month	STVP	40	15.30	4.998	0.011
	TURP	40	18.40	5.670	
PVR 6 month	STVP	40	7.18	4.483	0.038
	TURP	40	9.95	7.024	
Duration of surgery (minute)	STVP	40	75.750	7.4722	<0.001
	TURP	40	49.750	6.7889	
Irrigating fluid in litre(1.5%glycine)	Open	40	0.00	0.000	<0.001
	TURP	40	18.63	1.750	
Length of stay	STVP	40	6.63	0.586	<0.001
	TURP	40	4.58	0.594	

Table. 3 - complications

Chi-Square Test					
			Group		p
			STVP	TURP	
Epididymo orchitis	0	Count	37	40	0.241
		% within Group	92.5%	100.0%	
	1	Count	3	0	
		% within Group	7.5%	0.0%	
stricture	0	Count	40	37	0.241
		% within Group	100.0%	92.5%	
	1	Count	0	3	
		% within Group	0.0%	7.5%	
post op UTI	0	Count	37	38	0.643
		% within Group	92.5%	95.0%	
	1	Count	3	2	
		% within Group	7.5%	5.0%	
Blood transfusion	0	Count	39	40	1.000
		% within Group	97.5%	100.0%	
	1	Count	1	0	
		% within Group	2.5%	0.0%	
Hematuria	0	Count	40	39	1.000
		% within Group	100.0%	97.5%	
	1	Count	0	1	
		% within Group	0.0%	2.5%	
Clot retention	0	Count	40	39	1.000
		% within Group	100.0%	97.5%	
	1	Count	0	1	
		% within Group	0.0%	2.5%	

DISCUSSION

Benign prostatic hyperplasia common in elderly men. In our study we enrolled 80 patients with grade III benign prostatic hyperplasia with severe LUTS and after randomization underwent open suprapubic transvesical prostatectomy (STVP) and TURP.

In our study the mean age for patients who underwent STVP is 72.25 years and for TURP is 69.8 years. 7 patients in STVP group and 11 patients in TURP group had hypertension. 3 patients in STVP group and 9 patients in TURP group had Diabetes Mellitus. The mean prostate volume is 86.53cc and 84.48cc in STVP group and TURP group respectively in our study. The mean S. PSA is 6.425ng/ml and 4.235ng/ml in STVP and TURP group respectively.

The Pre AUR IPSS in Carneiro A et al⁶ STVP group (25.08) and Milonas D et al⁴ TURP group (22.38) is comparable with our study.

The pre AUR QoL for STVP group in C M Jeong et al⁹ study is 3.4 which is less when compared to our study. The pre-operative QoL in HN Joshi et al⁵ TURP group (4.26) is comparable to our study. The mean pre AUR qmax in our study in STVP group and Turp group is 7.6 and 6.7ml/sec respectively which is less compared to Kwon J S et al³ study (6ml/sec in STVP VS 5ml/sec in TURP group). The mean duration of hospital stay in both group is less than Beyene et al¹⁰ study (STVP VS TURP - 8.02days vs 6.67days). The 6th month IPSS (7.93) and Qmax (18.7ml/sec) in Milonas D et al⁴ TURP group is comparable to our study. The 6th month IPSS in C M Jeong et al⁹ STVP group is 4.7 better than our study. The 6th month QOL is improved better in our study compared to Milonas D et al⁴ TURP group (1.08) and C M Jeong et al⁹ STVP group (1.1).

The 6th month mean Qmax is less in C M Jeong et al⁹ STVP group (14.1ml/sec) than our study and decrease in post op PVR in both groups is better in our study compared to Milonas D et al⁴ Turp group (31.78ml) and C M Jeong et al⁹ STVP group (15ml).

The mean irrigating fluid 1.5% glycine used in our study is 18.62 litres which is comparable to 19.8 litres used in Singhania P et al² study.

Blood transfusion was done in one patient postoperatively in STVP group. Hematuria and Clot retention was seen in one patient postoperatively in TURP group none in STVP group. Acute Epididymo orchitis seen in 3 patients in STVP group none in TURP group. In our study 3 patients had stricture after TURP and none in STVP group. There is no statistically significant differences in post op complications in both group.

CONCLUSIONS

- STVP is safe and efficacious as that of TURP in grade III BPH with severe LUTS.
- STVP is having better outcomes compared to TURP in terms of decrease in IPSS-QoL index score, increase in Qmax, decrease in PVR postoperatively at 6th month.
- With the advancement of new techniques in Bipolar TURP, laser technology, the complication rates are decreasing but STVP may be preferred over TURP in grade III BPH patients as it offers better outcomes in terms of decrease in IPSS-QoL index score, increase in Qmax, decrease in PVR as inferred by this study.
- In our study both Open Prostatectomy and TURP had minimal perioperative and postoperative complications and no mortality.
- Open Prostatectomy is an acceptable option with equal safety and efficacy compared to TURP in areas lacking endourological equipments and trained urologists

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