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original article

A COMPARATIVE STUDY BETWEEN OPEN PROSTATECTOMY VS TRANSURETHRAL RESECTION OF PROSTATE

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ABSTRACT

OBJECTIVE: To compare peri-operative and short-term complications of open trans-vesical prostatectomy (OP) as well as its functional outcomes with transurethral resection of the prostate (TURP) in management of benign prostatic hyperplasia with prostates sized 30 to 100g.

METHODOLOGY: This is a prospective study conducted in the department of general surgery, GCS Medical College, Hospital and Research Centre from December 2019 to December 2020. 24 patients who were candidates for the prostate surgery with prostates between 30 to 100 g, randomly underwent OP or TURP. Secondary endpoints included international prostate symptom score, residual urine volume, surgical complications, and patients' quality of life. Patients were followed up for 6 months after the operation.

RESULT

Out of 24, 12 underwent OP and TURP respectively. Mean of peak flow rate improvement was 11.2 and 8 in OP and TURP groups, respectively. International prostate symptom score improvement did not reveal statistically significant differences between the treatment groups. Re-operation due to residual prostate lobe, urethral stricture, and urinary retention was performed in 3 patients in TURP group versus no patient in OP group. Dysuria was more frequent in patients that underwent TURP. Hospitalization duration was slightly longer in patients that underwent OP.

CONCLUSION

TURP is a valuable non-invasive surgical method with respect to absence of incision, effective symptom improvement and short hospitalization in BPH. Open prostatectomy easy to learning and more effective in large prostate size

Keyword: PROSTATECTOMY, TRANSURETHRAL

INTRODUCTION

Open trans vesical prostatectomy (OP) and transurethral resection of the prostate (TURP) are two surgical procedures performed for patients with benign prostatic hyperplasia (BPH). Currently, TURP is considered as the reference or standard treatment for the prostate less than 70 to 80 g[1-3].Nevertheless, OP is still being performed for operations of the prostates that are candidate for TURP in many developing and even developed countries, as the percent of OP in the late 1990's and early 2000 in Sweden,(4) France,(5) Italy,(6) and the Mediterranean.

In the 21st century, with advances in surgical methods and anaesthesia , the complications of OP have decreased relative to the reports of the old times. Besides, patients are satisfied with OP regarding its functional outcome and durability. Open trans vesical prostatectomy is not currently recommended for moderate-sized prostates; as mentioned above, a large percent of such operations are performed through the open approach. We aimed to compare the peri-operative and short-term complications of OP as well as its functional outcomes with TURP which is considered as the standard treatment for 30 to 100 g prostates and base this comparison with objective measurements like peak flow rate (PFR).

MATERIALS AND METHODS:

This is a prospective study conducted at the department of general surgery, GCS Medical College, Hospital and Research Centre from December 2019 to December 2020 and with a sample size of 24 patients.Indications for the prostate surgery included lower urinary tract symptoms despite maximal medical therapy, frequent urinary tract infections, haematuria unresponsive to medical therapy, high serum creatinine that decreased with urethral catheter placement, and urinary retention despite medical therapy. History taking and physical examination, including digital rectal examination, were performed thoroughly by a urologist. Laboratory evaluations included serum level of creatinine, serum level of prostate-specific antigen (PSA), urine analysis, and urine culture. Ultrasonography of the kidneys, the bladder, and the prostate were also performed. Thereafter, patients were referred to the operating room for cystoscopy and transrectal ultrasonography of the prostate to assess the prostate size.Patients with high serum levels of PSA underwent transrectal ultrasound guided biopsy of the prostate (12 cores from each lobe). If the prostate size in transrectal USG is within 30 to 100g and posterior urethra revealed obstructive pattern in cystoscopy, patients were assigned to the treatment groups based on allocation protocol. The random allocation protocol was based on odd and even series.Patients with a bladder stone larger than 2 cm, large bladder diverticula, previous urethral surgery, suspicious mass in digital rectal examination, history of the prostate operation, the prostate size outside the range of 30 to 100 g in transrectal ultrasonography, and those with pathology report other than BPH in transrectal prostate biopsy were excluded from the study.Open transvesical prostatectomy was performed as described by Freyer [10]. Transurethral resection of the prostate was carried out with 25 F resectoscopes. Data were collected during the operation, postoperative hospitalization, and after 6 months, postoperatively. During postoperative visits, complications including dysuria, episodes of cystitis, epididymitis, retrograde ejaculation, and chance for re-operation, as well as international prostate symptom score (IPSS) and patients' quality of life were assessed and recorded, and their PFR was measured.Statistical analysis was done by SPSS software (Statistical Package for the Social Science, version 16.0). Two-sided P-values less than 0.05 were considered statistically significant.

International Prostate Symptom Score (I-PSS)							
In the past month:	**Not at All**	**Less than 1 in 5 times**	**Less than Half the Time**	**About Half the Time**	**More than Half the Time**	**Almost Always**	**Your Score**
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	0	1	2	3	4	5	
2. **Frequency** How often have you had to urinate less than every two hours?	0	1	2	3	4	5	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5	
4. Urgency How often have you found it difficult to postpone urination?	0	1	2	3	4	5	
5. Weak Stream How often have you had a weak urinary stream?	0	1	2	3	4	5	
6. Straining How often have you had to strain to start urination?	0	1	2	3	4	5	
	None	**1 time**	**2 times**	**3 times**	**4 times**	**5 times**	
7. Nocturia How many times did you typically get up at night to urinate?	0	1	2	3	4	5	
Total I-PSS Score							
Score:	1-7 Mild		8-19 Moderate		20-35 Severe		
		The first seven questions of the I-PSS are from the American Urological Association (AUA) Symptom Index					
Quality of Life Due to Urinary Symptoms							
	Delighted	**Pleased**	**Mostly Satisfied**	**Mixed**	**Mostly Dissatisfied**	**Unhappy**	**Terrible**
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	**0**	**1**	**2**	**3**	**4**	**5**	**6**

OBSERVATION AND RESULTS:

NUMBER OF PATIENTS: 24

Open trans vesical prostatectomy :12

Transurethral resection of the prostate: 12
F
OLLOW UP 6 MONTHS

Table 1: Patient Characteristics in Open Prostatectomy (OP) and TURP Group before operations

Mean Variable	OP(n=12)	TURP (n=12)
Age	71.2	61
Prostatic size in TRUS (gm)	47.9	44.4
IPSS	27.2	27.1
Peak flow rate (ml/s)	7	8
Urinary incontinence	19	17
Residual Urine volume (RUV)	62	47

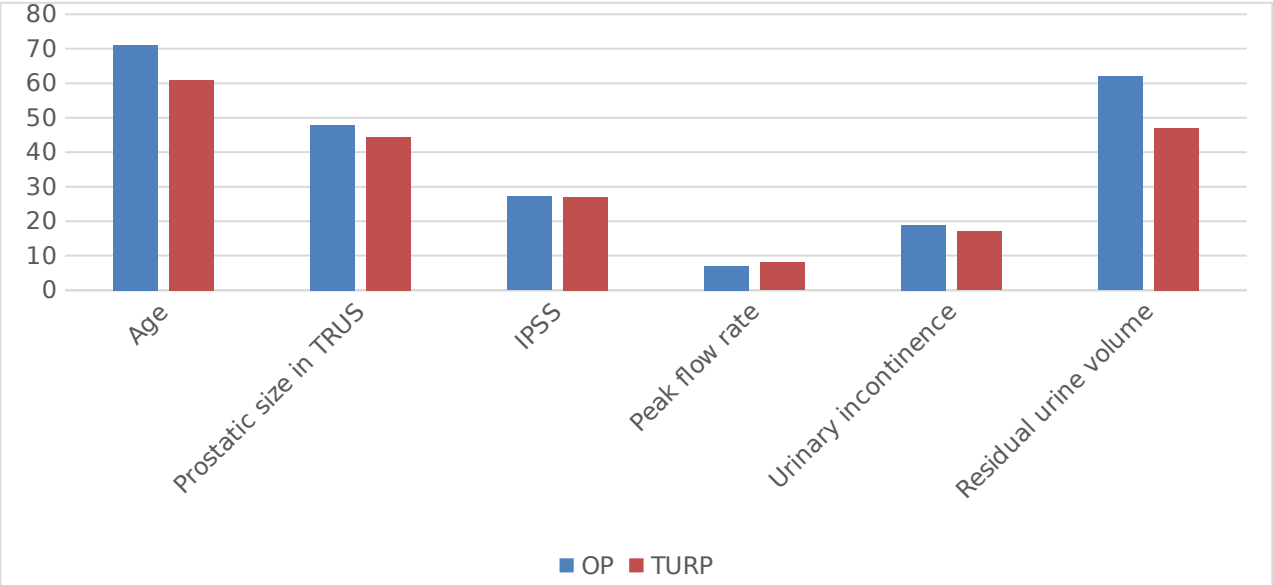
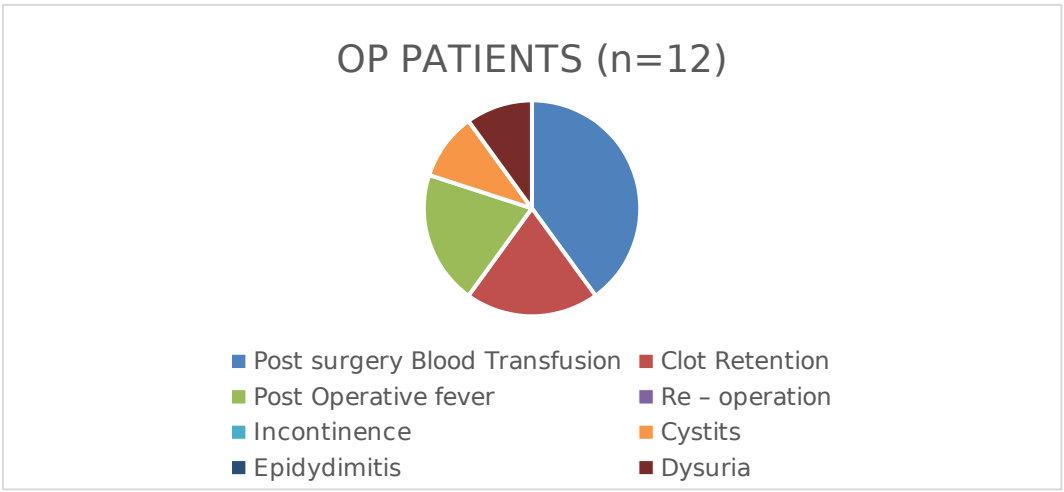


Table 2: Comparing Postoperative variables in Open Prostatectomy and TURP patients

Variable	OP PATIENTS (n=12)	TURP (n=12)	TOTAL
Post-surgery Blood Transfusion	4 (16.66%)	1 (4.16%)	5 (20.82%)
Clot Retention	2 (8.33%)	3 (12.5%)	5 (20.83%)
Post Operative fever	2 (8.33%)	1 (4.16%)	3(12.49%)
Re – operation	0 (0%)	3 (12.5%)	3 (12.5%)
Incontinence	0	2 (8.33%)	2 (8.33%)
Cystits	1 (4.16%)	1 (4.16%)	2 (8.32%)
Epidydimitis	0	0	0
Dysuria	1 (4.16%)	3 (12.5%)	4 (16.66%)



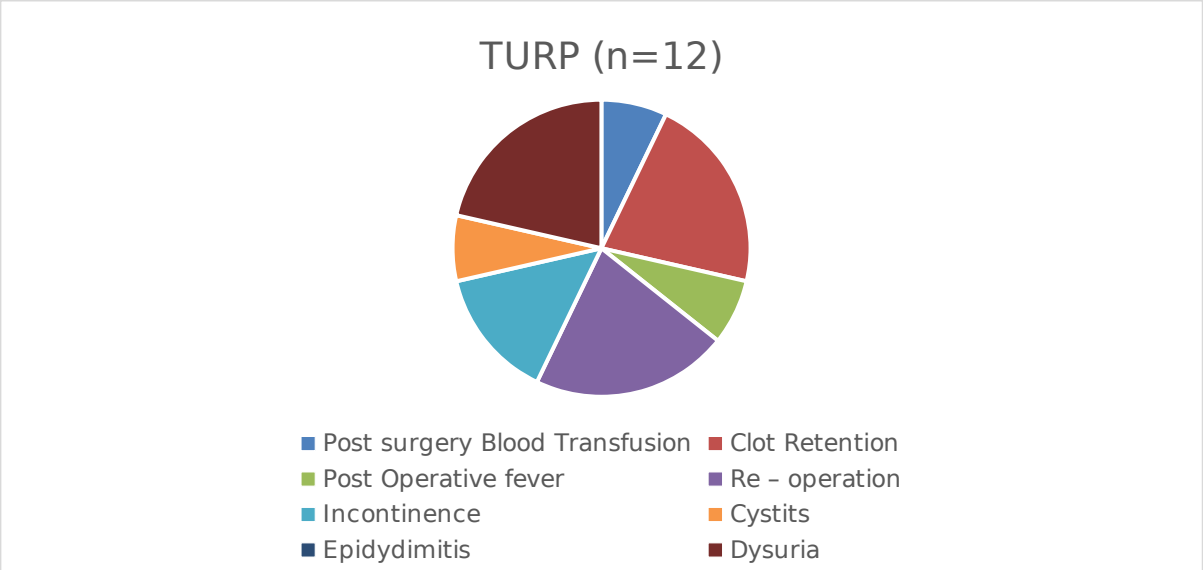
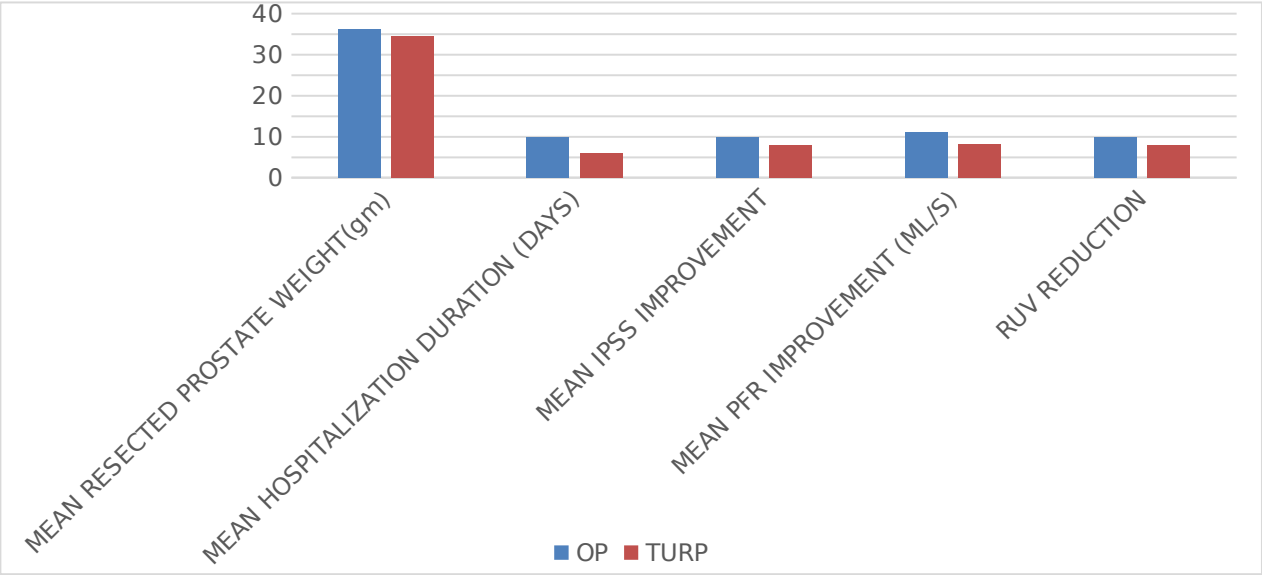


TABLE 3: COMPARING POSTOPERATIVE VARIABLES IN OPEN PROSTATECTOMY AND TURP PATIENTS

	OP	TURP	P VALUE
MEAN RESECTED PROSTATE WEIGHT (gm)	36.2	34.4	NS
MEAN HOSPITALIZATION DURATION (DAYS)	10	6	NS
MEAN IPSS IMPROVEMENT	10	8	NS
MEAN PFR IMPROVEMENT (ML/S)	11.2	8.1	0.02
RUV REDUCTION	10	8	NS



IPSS – INTERNATIONAL PROSTATE SYMPTOM SCORE
OP- OPEN PROSTATECTOMY
PFR – PEAK FLOW RATE
RUV – RESIDUAL URINE VOLUME
TURP – TRANS URETHRAL RESECTION OF PROSTATE

DISCUSSION:

Open trans vesical prostatectomy is currently regarded as the procedure that completely relieves prostatic obstruction [2,9,15]. It is usually used for large prostates or when another pathology necessitating open intervention such as multiple bladder stones coexist [16].

TURP was the most commonly used operation for obstruction relief and accounted for 60% to 97% of the prostate operations [4-7,17]. For the prostates less than 70 to 80 g;[1-3,22] however, it has been clearly stated that TURP has not passed the formal pathways of a new surgical method evaluation [23] and its comparison with OP has been Transurethral resection of the prostate has been declared as the reference or standard treatment based on retrospective, open, and single centre series [3,23]. Since the indications for TURP and OP are different, best comparisons are possible only through randomized controlled trials (RCT) [14]. To the best of our knowledge, only one RCT has compared OP with TURP, [9,12,13,24,25] which was done in the pre-PSA era and included the following limitations: 1) Almost 15% of patients in each group were proved to have malignant pathology. The rate of complications (both early and late) and poor outcomes were substantially higher in patients with a malignant histology. Today, the prostate cancer that is screened by PSA measurement is a contraindication for OP. A later report by Jenkins and colleagues considered any clinical trials comparing OP versus TURP unethical [8]. Their argument was based on the reported higher mortality rate of OP (around 10%) [28,29] versus TURP (less than 3%) in older patients, especially those over the age of 80 years. However, recent large series reported no difference in mortality or myocardial infarction between OP and TURP [26,30-32]. Mortality rate for OP in the most recent series is less than 1% [14,26].

We think that although OP is associated with more morbidity [9,14] regarding scar line and more hospitalization stay, but it results in better IPSS, PFR improvement, [2,9,15] less re-operation rate, [3,14,26,35] and less dysuria [9,12,24]. Postoperative dysuria is bothersome and refractory to treatment [12]. The average PFR improvement in patients that underwent OP was 3.1 m/s higher than the TURP group. Restricting Meyhoff and associates' study results to patients with benign histology, both PFR and mean urinary flow rates were also higher in OP group [13]. Other retrospective studies support the higher PFR improvement in patients who underwent OP [3].

We did not observe statistically significant improvement in IPSS or residual urine volume between the two study groups. Some reports support better IPSS improvement and less residual urine volume in OP operations [2-3,12,14,24]. We observed no statistically significant association between the prostate size and IPSS, or residual urine improvement in either group. Higher re-operation rate has been reported in patients who underwent TURP due to a higher stenosis/stricture rate in this group. Re-operation rates less than 5% have been reported in 6 MONTHS follow-up [3,26,30,35,36]. In this study, the re-operation rate during 6 MONTHS follow-up (12%) is higher than Western reports, but a recent Slovakian study reported an immediate (up to 4 weeks after operation) complication rate of 38% and 13% complication rate during one-year follow-up, (37) which is close to our findings. Another important finding in this study is the higher frequency and duration of dysuria in patients that underwent TURP. Dysuria duration was reported higher by Meyhoff and colleagues in patients who underwent TURP.

In the summary, open prostatectomy having more invasion and abdominal scar with higher rate of morbidity more hospital stay and higher required of blood transfusion compared with turp, but open trans vesical prostatectomy is associated with less re-operation, less clot retention and dysuria. other study also proves that if prostate size is large than its better to go with open prostatectomy to save operative time compare with TURP.

CONCLUSION:

Open trans vesical prostatectomy is an acceptable operation for the prostates sized 30 to 70 g. Higher peak flow rate improvement, less frequent dysuria, less need to re-operation, and its ease of learning make open prostatectomy a suitable option to be discussed in patients parallel to TURP.TURP is a valuable non-invasive surgical method with respect to absence of incision, effective symptom improvement and short hospitalization in bph.

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