

# Incidence and Predictors of Ejaculatory Disorders Following Transurethral Resection of Prostate at Muhimbili National Hospital

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**Abstract:** ***Background:** Benign prostate hyperplasia (BPH) is defined as proliferation of prostatic stromal cells, which results in an enlarged prostate gland, which interfere with urine flow and cause uncomfortable symptoms such as frequency, urgency, nocturia, intermittence, decreased stream and hesitancy. Transurethral resection of the prostate has been considered the gold standard surgical therapy for lower urinary tract symptoms secondary to benign prostate hyperplasia. Despite Transurethral resection of the prostate being one of the commonest procedures done in department of Urology at Muhimbili National Hospital and being associated with various post-operative ejaculatory disorders, still there is no data about the magnitude of ejaculatory disorders at Muhimbili National Hospital. The study aims at providing data on the magnitude of ejaculatory disorders and associated risk factors. **Objectives:** To determine the incidence and predictors of ejaculatory disorder following transurethral resection of prostate at Muhimbili National Hospital **Methodology:** This was a cross-sectional prospective study. Conducted on 68 patients from June 2019 to February 2020 recruited consecutively, who underwent transurethral resection of the prostate during the study period. Inclusion criteria was all patients who underwent transurethral resection of the prostate and who had normal sexual function. Patients with neurological, psychotic, neuropathic disorder, patients who had prior surgery for benign prostate hyperplasia or pelvic trauma or with ejaculatory disorders prior to transurethral resection of the prostate were excluded. Data was collected using a standardized pre-tested English questionnaire. All recruited patients were assessed for ejaculatory disorders 3 months after transurethral resection of the prostate (After resumption of sexual activity). Data analyzed using SPSS program version 23. **Results:** The incidence of ejaculatory disorders after TURP was 79.4%: oligo ejaculation 42.6%, delayed ejaculation 1.8% and retrograde ejaculation 55.6%. Age, prostate size, percentage resected tissue and comorbidities (diabetic mellitus and hypertension) did not influence ejaculatory disorders (retrograde ejaculation). **Conclusion:** The results confirm that TURP has high incidence of ejaculatory disorders, the most common type of ejaculatory disorders being retrograde ejaculation and oligo ejaculation. The least common type was delayed ejaculation. Age, prostate size, percentage resected tissue and comorbidities (diabetic mellitus and hypertension) were not statistical associated with ejaculatory disorders (retrograde ejaculation).*

**Keywords:** Benign Prostate Hyperplasia (BPH), Transurethral Resection of Prostate (TURP), Ejaculatory Disorders (EjD), Muhimbili National Hospital

## 1. Introduction

Benign prostate hyperplasia (BPH) is a condition primarily of middle-aged and elderly men. BPH is defined as proliferation of prostatic stromal cells, which results in an enlarged prostate gland. As a result a prostatic urethra is compressed, which restricts the flow of urine from the bladder. This interference with urine flow may cause uncomfortable symptoms such as frequency, urgency, nocturia, intermittence, decreased stream and hesitancy (1). These symptoms affect the quality of life and sleeping patterns. Medical therapy is available for BPH but may provide inadequate relief for more severe cases.

Transurethral resection of the prostate (TURP) has been considered the gold standard surgical therapy for lower urinary tract symptoms secondary to benign prostate hyperplasia (BPH) (2) (3). TURP is an endoscopic procedure that uses a resectoscope outfitted with a wire-loop electrode to remove prostatic tissue impinging on the urethra, thereby relieving outlet obstruction (2). One of the common complications of TURP is ejaculatory disorders (EjD). Several studies have shown that TURP is associated with high incidence of ejaculatory disorders (2) (4)

Ejaculatory dysfunction (disorder) is the inability of a man to efficiently ejaculate semen from the penis at the moment of sexual climax. Ejaculatory disorder can consist of premature ejaculation, delayed ejaculation, retrograde ejaculation, anejaculation, decreased volume ejaculate and pain upon ejaculation which leads to subsequent decrease in sexual pleasure, desire for children, sexual life and poor post-operative quality of life (5). Ejaculatory disorders (retrograde ejaculation) following TURP occurs as a result of the removal of the internal urethral sphincter of the bladder neck (4).

Currently to our knowledge there is no available data about incidence and predictors of ejaculatory disorders following TURP in Africa. Despite TURP being one of the commonest procedures done in department of Urology at Muhimbili National Hospital (MNH) and being associated with various post-operative ejaculatory disorders, still there is no data about the magnitude of ejaculatory disorders at MNH. The study aims at providing data on the magnitude of ejaculatory disorders and associated risk factors.

## 2. Methodology

Hospital based cross - sectional prospective study. The study was conducted at Muhimbili National Hospital (MNH) from June 2019 to February 2020. It involved 68 obtained by convenient sampling, whereby all patients with BPH who underwent TURP were consecutively recruited until the sample size was reached. Inclusion criteria was all patients who underwent TURP during the study period who had normal sexual function before TURP. Patients with neurological, psychotic disorders and neuropathic features, patients who had prior TURP or other surgery for BPH or pelvic trauma or with ejaculatory disorders prior to TURP were excluded. Data was collected using a data collection tool, a standardized pre - tested English questionnaire that was filled by research assistants while collecting information from the patients. Some information was filled into the questionnaire from patients' files. Personal particulars, preoperative, intraoperative and post - operative clinical information of the study subject were entered into a data collection tool, which included subject's socio - demographic data, complains, duration of illness prior to transurethral resection of the prostate (TURP), co - morbidities, presence or absence of ejaculatory disorders 3 month after TURP, clinical data (prostate size, prostate configuration, indication for TURP, weight of resected tissue, PSA) and telephone number. All recruited patients were assessed for ejaculatory disorders before and 3 months after TURP (After resumption of sexual activity). Ejaculatory disorders were assessed using International Index of Erectile Dysfunction (IIEF) - 15 questionnaire using questions number 9 (question number 9: when you had sexual stimulation or intercourse, how often did you have premature or delayed or retrograde or painful ejaculation or oligoejaculation or anejaculation and the answer to this question was one of the following; 0 - no sexual stimulation or intercourse, 1 - almost never or never, 2 - a few times {less than half the time}, 3 - sometimes {about half the time}, 4 - most times {more than half the time}, 5 - almost always or always. In this study a score of 5 was considered positive. Data was managed and analyzed using SPSS program version 23 and association between variables was determined by using Chi - squared test, frequency tables. An association with p - value less than 0.05 was considered significant. Ethical clearance was obtained from the MUHAS Research and Publication Committee and MNH Research and Publication Committee.

## 3. Results

A total of 68 sexually active patients, who underwent TURP between June 2019 and February 2020 were included in the study. The mean patient age was 63.9 years (range 50 to 75 years).

Mean duration of illness before TURP was 15.7 months and prostate size by abdomino - pelvic ultrasound was 72.8 grams, while the PSA and resected weight of prostate were 10.6ng/ml and 19.4 grams respectively. The difference between mean prostate size (72.8 grams) and mean weight of resected prostatic tissue (19.4 grams) was high (53.4 grams) this indicate that there was considerable under resection. 38 of 68 patients (55.9%) were in the age group of 61 - 70 years and 1 patient had less than 50 years. Most of patients presented with both irritative and obstructive symptoms (63.2%) and one patient (1.5%) presented with hematuria. A greater number of patients had symptoms for more than six month (67.9%) before TURP, this shows that most of patients delay to seek medical attention. A large proportion of patients on admission were voiding per urethra (70.6%) and 29.4% of patients were voiding through suprapubic cystostomy catheter or urethral catheter.

Common indication for TURP among these patients was bothersome lower urinary tract symptoms (42.6%), followed by urine retention (29.4%). A half of patients had comorbidities (50%); hypertension (33.8%), diabetic mellitus (2.9%), heart disease (2.9%) and both hypertension and diabetic mellitus (10.3%). This is because majority of patients with BPH are elderly with comorbidities.

The vast majority of patients (95.6%) had prostate size of greater than 30 grams. Majority of patients (60.3%) had PSA of less than 6 ng/ml while 39.7% of patients had PSA greater than 6 ng/ml. Most of patients (64.7%) had weight of resected tissue less than 20 grams while 35.3% of patients had weight of resected tissue more than 20grams. Most patients (76.5%) underwent trilobular resection of the prostate while 16.2%, 7.4% of patients underwent bilobular and unilobular resection of the prostate respectively. Large prostate size with less weight resected tissue and majority trilobular resection indicate under resection (Table 1 below

**Table 1:** Baseline characteristics of patients who underwent TURP at MNH (N = 68)

Variables	Frequency	Percentage (%)
<b>Age Group (N=68)</b>		
≤ 50	1	1.5
51 - 60	19	27.9
61 - 70	38	55.9
71 - 80	10	14.7
Total	68	100
<b>Complaints of Patients (N=68)</b>		
Obstructive symptoms	17	25
Irritative symptoms	7	10.3
Obstructive + Irritative symptoms	43	63.2
Hematuria	1	1.5
Total	68	100
<b>Duration of illness in Month (N=68)</b>		
< 6	22	32.4
6 - 12	27	39.7

13 - 19	1	1.5
20 – 26	7	10.5
27 – 33	0	0
>34	11	16.2
Total	68	100
<b>Patient's voiding history prior TURP (N=68)</b>		
Per urethra	48	70.6
Per urethral catheter	17	25
Per SPC	3	4.4
Total	68	100
<b>Indication for TURP (N=68)</b>		
Failure of medication treatment	18	26.5
Urine Retention	20	29.4
Recurrent hematuria due to prostate enlargement	1	1.5
Bothersome LUTS	29	42.6
Total	68	100
<b>Co - morbidities of patients (N=68)</b>		
None	34	50
Hypertension	23	33.8
Diabetes Mellitus	2	2.9
Heart Diseases	2	2.9
Hypertension + Diabetes Mellitus	7	10.3
Total	68	100
<b>Prostate size by abdomino - pelvic ultrasound in gm (N=68)</b>		
<30	3	4.4
30 - 60	26	38.2
>60 – 90	24	35.3
>90 – 120	11	16.2
>120	4	5.9
Total	68	100
<b>PSA of patients prior to TURP in ng/ml (N=68)</b>		
0 – 2	17	25
>2 – 4	18	26.5
>4 – 6	6	8.8
>6	27	39.7
Total	68	100
<b>Resected weight of prostate (N=68)</b>		
<10	14	20.6
10 – 20	30	44.1
>20 – 30	11	16.2
>30	13	19.1
Total	68	100
<b>Resected Lobe of prostate (N=68)</b>		
Uni - lobe	5	7.4
Bi - lobe	11	16.2
Tri - lobe	52	76.5
Total	68	100

Among 68 patients ejaculatory disorders was reported in 54 patients (79.4%) and out of 54 patients 30 patients (55.6%), 23 patients (42.6%) and 1 patient (1.8%) had retrograde

ejaculation, oligoejaculation and delayed ejaculation respectively (as shown in the figure below).

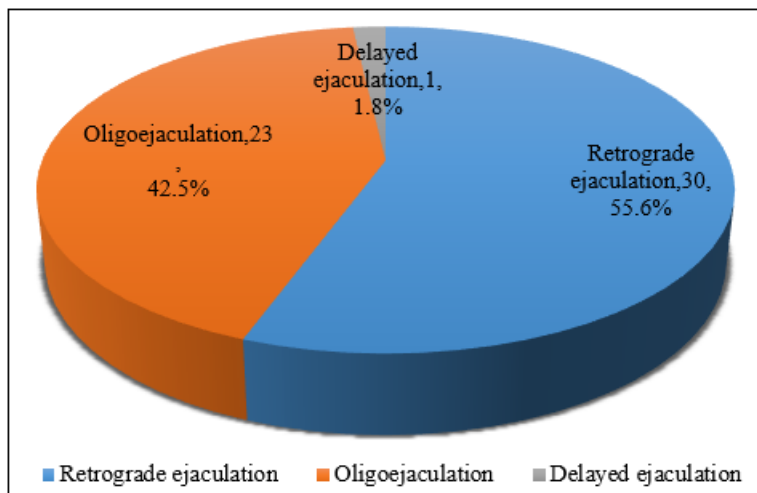


Figure 1: Incidence of each type of ejaculatory disorders

Patients aged more than 65 years associated with ejaculatory disorders than those aged less than 65 years, prostate size more than 35 grams was associated with ejaculatory disorders compared to prostate size less than 35 grams, percentage resected tissue more than 27 grams associated with ejaculatory disorders compared to percentage resected tissue

less than 27 grams, Patients with hypertension associated with ejaculatory disorders compared to non - hypertensive patients but the difference between these associations are not statistically significant with p value > 0.05 (as shown in table 2 below).

Table 2: Factors associated with ejaculatory disorders (N=68)

Variable	Ejaculatory disorders	Normal ejaculation	Total	P - value	RR (95% CI)
<b>Age of patient</b>					
> 65	28 (80.0%)	7 (20%)	35 (100%)		
≤ 65	26 (78.8%)	7 (21.2%)	33 (100%)	0.9	1.1 (0.33 - 3.5)
<b>Prostate size in gm</b>					
> 35	51 (79.7.0%)	13 (20.3%)	64 (100%)		
≤ 35	3 (75.0%)	1 (27.8%)	4 (100%)	0.82	1.31 (0.13 - 13.63)
<b>Percentage resected tissue</b>					
>27	30 (81.1%)	7 (18.9%)	37 (100%)		
≤27	24 (77.4%)	7 (22.6%)	31 (100%)	0.71	1.25 (0.39 - 4.06)
<b>Hypertension</b>					
Yes	24 (80%)	6 (20%)	30 (100%)		
No	30 (78.9%)	8 (21.1%)	38 (100%)	0.92	0.94 (0.29 - 3.07)
<b>Diabetes mellitus</b>					
Yes	7 (77.8%)	2 (22.2%)	9 (100%)		
No	47 (79.7%)	12 (20.3%)	59 (100%)	0.90	1.1 (0.21 - 6.09)

Patients aged more than 65 years associated with retrograde ejaculation than those aged less than 65 years, prostate size less than 35 grams was associated with retrograde ejaculation compared to prostate size more than 35 grams, percentage resected tissue more than 27 grams associated with retrograde ejaculation compared to percentage resected tissue less than 27 grams, Patients with hypertension associated more with retrograde ejaculation compared to non - hypertensive patients, Patients with diabetes mellitus were more associated

with retrograde ejaculation than non - diabetic patients but the difference between these associations are not statistically significant with p value > 0.05 (as shown in table 3 below).

Since there was no statistical significant on the above analyzed factor, there are other factors like prostate configuration, resection technique and preservation of bladder neck which have not been analyzed here could influence ejaculatory disorders.

Table 3: Factors associated with retrograde ejaculation (N=68)

Variable	Retrograde Ejaculation "YES"	Retrograde Ejaculation "NO"	Total	P - value	RR (95% CI)
<b>Age in years</b>					
>65	19 (54.3%)	16 (45.7%)	35 (100%)		
≤65	11 (33.3%)	22 (66.7%)	33 (100%)	0.08	0.42 (0.16 - 1.13)
<b>Prostate size in gm</b>					
>35	28 (43.8%)	36 (56.3%)	64 (100%)		
≤ 35	2 (50.0%)	2 (50.0%)	4 (100%)	0.81	1.29 (0.17 - 9.70)
<b>Percentage resected tissue</b>					

>27	19 (51.4%)	18 (48.6%)	37 (100%)		
≤27	10 (32.3%)	21 (67.7%)	31 (100%)	0.11	0.45 (0.17 - 1.22)
<b>Hypertension</b>					
<b>Yes</b>	16 (53.3%)	14 (46.7%)	30 (100%)		
<b>No</b>	14 (36.8%)	24 (63.2%)	38 (100%)	0.17	1.96 (0.74 - 5.19)
<b>Diabetic Mellitus</b>					
<b>Yes</b>	5 (55.6%)	4 (44.4%)	9 (100%)		
<b>No</b>	25 (42.4%)	34 (57.6%)	59 (100%)	0.46	1.7 (0.41 - 6.98)

#### 4. Discussion

The aim of the study was to determine the incidence and frequency of each ejaculatory disorders following TURP and its associated risk factors. In this study the incidence of ejaculatory disorders after TURP was higher (79.4%) compared to the previous research done by Voznesensky et al which showed that the incidence of ejaculatory disorders to be 70% and study done by DeLay et al which showed the incidence of ejaculatory disorders to be 62% (2) (5) . This mismatch exists because in this study TURP was done by different surgeons, each with different resection technique and level of resection (whether complete or partial resection) also additional the prostate lobes configuration, particularly median lobe, has influence of ejaculatory disorders however this factor was not analyzed in this study.

In this study the most frequent type of ejaculatory disorder was retrograde ejaculation which occurred in majority of patients (55.6%) which is comparable with previous research done by Rassweiler et al which showed that retrograde ejaculation occurred in 53 - 70% of patients and study done by Kassabian which showed that retrograde ejaculation occurred in more than 50% of patients after TURP (4) (6) . In this study the second most frequent type of ejaculatory disorders was oligo ejaculation which occurred in 42.6% of patients. Previous research has not reported on magnitude of oligo ejaculation because most of the previous research looked at retrograde ejaculation only. Among patients with ejaculatory disorders there was one patient who had delayed ejaculation (1.5%). Previous research has not reported on delayed ejaculation.

In this study the mean patient age for TURP was 63.9 years (range: 50 - 75 years). This is not consistent with previous research done by Kunelius et al whose mean patient age was 69 years (range: 49 - 86 years) (6).

The mean prostate weight of the patient before TURP was 72.8 grams (range: 19 - 248 grams). This is different from results reported by two previous studies done by Alloussi et al (whose mean prostate weight was 36.26 grams) and done by Kunelius et al (whose mean prostate weight was 50.4 grams) (6) (7) . This difference exists because in this study patients undergoing TURP had prostate weight ranging from 19 to 248 grams (but most literature recommend open prostatectomy for a prostate weight of more than 75grams and TURP for a prostate weight of less than 75 grams) and also it is known that African race have larger prostate compared to other race (8) .

The mean weight of resected prostate chips was 19.4 grams (range: 1 - 57 grams). This result does not match with previous study done by Kunelius et al in which the mean weight of resected prostate chips was 27.4 grams (range 3 -

96 grams) (6) . This mismatch can be due to type of TURP used which is monopolar in our case, having a limited time of 90min also inexperience of a surgeon hence small weight of resected prostate despite large prostate volume also larger residual prostate left has unknown impact on the ejaculation disorders.

In this study it was found that patients aged more than 65 years were more commonly associated with ejaculatory disorders (retrograde ejaculation) than those aged less than 65 years but the difference is not statistically significant. There is no association between age and ejaculatory disorders explained in the previous study. In this study many elderly patients were excluded due to erectile dysfunction and were not well represented. There are also confounding factors in elderly patients that may contribute to ejaculatory disorders.

In this study was found that prostate size less than 35 grams was associated with retrograde ejaculation compared to the prostate size more than 35 grams but the difference is not statistically significant. This result is consistent with one previous research done by Ronzoni et al (9) . But in contrast a study done by Marra et al which showed lower retrograde ejaculation rates in smaller prostate size < 30 grams (10) . The reason could be incomplete resection of prostatic tissue.

In this study it was found that percentage resected prostate chips more than 27 grams (51.4%) associated with retrograde ejaculation compared with percentage resected chips less than 27 grams (32.3%), however the difference is not statistically significant. The previous research didn't look at this association.

In this study it was found that patients with diabetes mellitus and hypertension associated with retrograde ejaculation compared to non - diabetic and hypertensive patients but the difference is not statistically significant. This relationship was not reported in previous research.

#### 5. Conclusion

The results confirm that TURP has high incidence of ejaculatory disorders, the most common type of ejaculatory disorders being retrograde ejaculation and oligo ejaculation. The least common type is delayed ejaculation. Age, prostate size, percentage resected tissue and comorbidities (diabetic mellitus and hypertension) were not statistically associated with ejaculatory disorders (retrograde ejaculation). There are other factors like prostate configuration, resection technique and preservation of bladder neck which have not been analyzed here could influence ejaculatory disorders. The study sample was not powerful enough to detect statistical association.

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