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ORIGINAL RESEARCH ARTICLE

To Compare Uroflowmetric Parameters in Benign Prostatic Hyperplasia Pre and Post Trans Urethral Resection of Prostate

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ABSTRACT

Introduction: Men's lower urinary tract problems sometimes stem from benign prostatic hyperplasia (BPH), the non-cancerous growth of prostate tissue. Disease rates rise with age. The histological prevalence of BPH at autopsy is 50 to 60% in men in their 60s and 80 to 90% in those over 70.

Material and Methods: The Shri Ram Murti Smarak Institute of Medical Sciences' General Surgery Department conducted the prospective study with Ethics Committee approval. All lower urinary tract patients aged 40 to 80 who needed surgery (transurethral resection of the prostate). The 18-month research assessed 50 patients.

Results: IPSS patients were moderate in the post-treatment, 1, and 3 months period, however only 6% were moderate and 94% were severe in the pre-treatment period. In QMAX, all patients were under 10 before treatment, 36% were between 10 and 15 after treatment, 64% were above 15 one month after treatment, and 14% were between 10 and 15, 3 months later. QMAX scores averaged 6.62 ± 1.03, 15.9 ± 1.84, 16.64 ± 1.22, and 17 ± 1.24. In QAVG, all patients were under 10 before treatment, 74% were under 10, 26% were between 10 and 15, 58% were under 10, 42% were between 10 and 15, and 36% were under 10 and 64% were over 15 during the 3 month treatment. Q avg score mean was 3.22 ± 0.78, 8.74 ± 1.29, 9.3 ± 1.15, and 10.22 ± 1.06. In the post-treatment, 1 and 3 month follow-up periods, all Tmax patients were under 10, whereas in the pre-treatment period, 76% were between 10 to 15 and 24% were beyond 15. Tmax averaged 14.66 ± 1.47, 6.9 ± 0.64, 6.34 ± 0.62, and 5.68 ± 0.61.

Conclusion: After TURP, objective uroflowmetry measures improved and correlated with subjective IPSS scores. Thus, uroflowmetry can objectively assess bladder outlet obstruction symptoms after TURP.

Keywords: Trans urethral resection of prostate, Benign prostatic hyperplasia, Lower urinary tract.

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INTRODUCTION

Benign prostatic hyperplasia (BPH), which is the non-cancerous enlargement or hyperplasia of prostate tissue, is frequently the cause of men's lower urinary tract complaints. It has been shown that disease prevalence increases as people age. In reality, the prevalence of BPH on the histological level at autopsy can be as high as 50 to 60% in males in their 60s and as high as 80 to 90% in those over 70.[1]

In the literature, BPH is defined in a variety of ways. These include symptoms of the lower urinary tract, benign prostatic enlargement (BPE), and bladder outlet obstruction (BOO). BOO, BPE and BPH all refer to histological changes, while BOO denotes a limit to flow.[2,3] When BPE and BOO are present together, the condition is referred to as "benign prostatic obstruction."[4] Lower urinary tract symptoms (LUTS) are the collective term for symptoms of conditions affecting the bladder and prostate that affect the urinary system (when in reference to men). Symptoms of storage and voiding are subcategories of LUTS. These terms have virtually replaced those that were once connected to "prostatism".

The present study compared uroflowmetric parameters in benign prostatic hyperplasia pre and post-trans urethral resection of the prostate.

MATERIAL AND METHODS

After receiving approval from the institute's ethics committee, the study was carried out prospectively in the Department of General Surgery at the Shri Ram Murti Smarak Institute of Medical Sciences. All patients between the ages of 40 and 80 with symptoms of the lower urinary tract who required surgical intervention (transurethral resection of the prostate). In 50 patients in total were examined during the course of the 18-month study, which ran from 1 February 2021 to 31 July 2022. Only those individuals who were presented with lower urinary tract symptoms brought on by an enlarged prostate met the inclusion criteria for the study. Patients with urethral stricture, impacted stones in the urethra,

acute urine retention on an indwelling periurethral catheter, and neurogenic bladders were excluded from the study.

Statistical Analysis

The data were recorded compiled using Microsoft® Excel worksheet (version 2019) and subjected to statistical analysis using SPSS (SPSS 21.0, IBM, Armonk, NY, United States of America). Categorical data were expressed as frequency, percentages, and mean.

RESULTS

Baseline Characteristics

Table 1 reveals that 8% of patients were under the age of 40, 4% were between the ages of 41 and 50, 24% were between the ages of 51 and 60, 28% were between the ages of 61 and 70, and 36% were above the age of 70. The age was 64.96 to 12.43 on average. 70% of patients had resections that lasted less than 60 minutes, 28% had resections that lasted between 60 and 90 minutes, and 2% had resections that lasted longer than 90 minutes. Resection lasted an average of 64.04 ± 12.59 minutes. Patients weighing under 21 g, between 21 and 40 g, and over 40 g had their weight removed in 30, 32, and 38% of the patients, respectively. The average weight of the samples was 31.94 ± 11.94.

Table 1: Baseline characteristics

Baseline characteristics	*Frequency (n = 50)*	*Percentage (%)*
Age group (Years)		
≤40	4	8
41–50	2	4
51–60	12	24
61–70	14	28
>70	18	36
Age mean	64.96 ± 12.43	
Duration of resection		
<60	35	70
60–90	14	28
>90	1	2
Mean	64.04 ± 12.59	
Weight Resected (in grams)	Frequency (n = 50)	Percentage (%)
<21	15	30
21–40	16	32
>40	19	38
Mean	31.94 ± 11.94	

IPSS

All patients were moderate in the post-treatment and 1-month periods, all patients were moderate in the 3-month period, while only 6% of patients were moderate and 94% of patients were severe in the pre-treatment period (Table 2).

Q_{max}

All of the patients were under the age of 10 before therapy, 36% of patients were between the ages of 10 and 15 after treatment, 64% of patients were above the age of 15 one month after treatment, and 14% of patients were between the ages of 10 and 15, 3 months later. The mean Q_{max} score was 6.62 ± 1.03, 15.9 ± 1.83, 16.64 ± 1.22, and 17 ± 1.24 (Table 3).

Q_{avg}

All of the patients were under the age of 10 before treatment, 74% of patients were under the age of 10 and 26% were between the ages of 10 and 15, 58% of patients were under the age of 10 and 42% were between the ages of 10 and 15 and 36% were under the age of 10 and 64% were over 15 during the three-month course of treatment. The Qavg score mean was 3.22 ± 0.78, 8.74 ± 1.29, 9.3 ± 1.15, and 10.22 ± 1.06 (Table 4).

T_{max}

In the post-treatment, one-month, and three-month follow-up periods, every patient was under the age of 10, but in the pre-treatment period, 76% of patients were between the ages of 10 to 15 and 24% were above the age of 15. The mean score of Tmax was 14.66 ± 1.47, 6.9 ± 0.64, 6.34 ± 0.62, and 5.68 ± 0.61 (Table 5).

DISCUSSION

Age-related benign prostatic hyperplasia (BPH), which has been connected to urinary obstruction, is the most

Table 2: IPSS

IPSS	*Pre*	*Post*	*1-month*	*3-month*
Mild (0–8)	0	0	0	7 (14%)
Moderate (9–19)	3 (6%)	50 (100%)	50 (100%)	43 (86%)
Severe (>20)	47 (94%)	0	0	0

Table 3: Q_{max}

Q_{MAX}	*Pre*	*Post*	*1-month*	*3-month*
<10	50 (100%)	0	0	0
10–15	0	18 (36%)	8 (16%)	7 (14%)
>15	0	32 (64%)	42 (84%)	43 (86%)
Mean	6.62 ± 1.03	15.9 ± 1.83	16.64 ± 1.22	17 ± 1.24

Table 4: Q_{avg}

Q_{AVG}	Pre	Post	1-month	3-month
<10	50 (100%)	37 (74%)	29 (58%)	18 (36%)
10–15	0	13 (26%)	21 (42%)	32 (64%)
>15	0	0	0	0
Mean	3.22 ± 0.78	8.74 ± 1.29	9.3 ± 1.15	10.22 ± 1.06

common ailment affecting males. Patients with BPH who have enlarged prostates frequently experience BOO, which causes a multitude of bothersome symptoms in the LUTS.[5] It is more crucial to assess the severity of the symptoms when treating BPH than the amount the prostatic volume has increased.[6]

In 8% of patients were under 40, 4% were between 41 and 50, 24% were between 51 and 60, 28% were between 61 and 70, and 36% were beyond 70. The age was 64.96 ± 12.43 on average. Over 70% of patients had resections that lasted less than 60 minutes, 28% had resections that lasted between 60 and 90 minutes, and 2% had resections that lasted longer than 90 minutes. Resection lasted an average of 64.04 ± 12.59 minutes. Patients weighing under 21 g, between 21 and 40 g, and over 40 g had their weight removed in 30, 32, and 38% of the patients, respectively. The average weight of the samples was 31.94 ± 11.94. In a study by Mocha *et al*.,[7] age at presentation among 210 individuals ranged from 48 to 99 years, with a median age of 69 (IQR 63–75) years. The majority of the 111 participants (52.9%) were in the 55–70 age range. In a study by Gunda *et al*.,[8] This study included all 152 individuals who underwent TURP for what was assumed to be BPH. The participants in the study had an average age of 69 (SD 9.4) years, and 101 (66.44%) of them were between the ages of 60 and 80.

In IPSS, all patients were moderate in the post-treatment and 1-month periods in IPSS, all patients were moderate in the 3-month period, while only 6% of patients were moderate and 94% of patients were severe in the pre-treatment period. In Q_{max}, all of the patients were under the age of 10 before therapy, 36% of patients were between the ages of 10 and 15 after treatment, 64% of patients were above the age of 15 one month after treatment, and 14% of patients were between the ages of 10 and 15 three months later. The mean Q_{max} score was 6.62 ± 1.03, 15.9 ± 1.83, 16.64 ± 1.22, and 17 ± 1.24. In Q_{avg}, all of the patients were under the age of 10 before treatment, 74% of patients were under the age of 10 and 26% were between the ages of 10 and 15, 58% of patients were under the age of 10 and 42% were between the ages of 10 and 15, and 36% were under the age of 10 and 64% were over 15 during the three-month course of treatment. The Qavg score mean was 3.22 ± 0.78, 8.74 ± 1.29, 9.3 ± 1.15, and 10.22 ± 1.06. In the post-treatment, one-month, and three-month follow-up periods, every patient was under the age of 10 in T_{max}, but in the pre-treatment period, 76% of patients were between the ages of 10 to 15 and 24% were above the age of 15 in T_{max}. The mean score of T_{max} was 14.66 ± 1.47, 6.9 ± 0.64, 6.34 ± 0.62, and 5.68 ± 0.61. In a study by Kallenberg *et al*.,[9] this study discovered that IPSS had long-term improvements. The symptoms were reduced by 67%, or an average of 14 points on the IPSS. When followed up, the majority of men (IPSS scores of 7–9) thought their urinary symptoms were modest. This contrasts with the preoperative examination, where the majority of patients (IPSS 20–35) reported having significant symptoms. Similar to previous reports that give a score between 6 and 7.7 after a 3 to 7-year follow-up, the IPSS has improved. In a study by Narendra *et al*.,[10] uses paired sample statistics to compare IPSS and uroflowmetric parameters, and it found that all parameters significantly improved from pre- to postoperatively. Patients had an average IPSS score of 26.30 before surgery, which they improved to 9.03; they also saw improvements in their Q_{max} (6.90–16.77 mL/sec), Qavg (3.14–9.51 mL/sec), T_{max} (14.66–6.21 mL/sec), and F-tm (83.40–26.25 seconds). In a study by Chuang *et al*.,[11] The median quality of life score was 5 (range 2–6) and the mean preoperative IPSS was 26.9 (range 7–35). The mean IPSS was 5.7 to 5.3 (range 0–23) at follow-up six to 12 months after surgery, and the median quality of life score was 2 (range 0–5). For all items, there was a statistically significant mean decline (improvement) in IPSS of 16.3 (p 005 for all symptoms).

Table 5: T_{max}

T_{MAX}	Pre	Post	1-month	3-month
<10	0	50 (100%)	50 (100%)	50 (100%)
10–15	38 (76%)	0	0	0
>15	12 (24%)	0	0	0
Mean	14.66 ± 1.47	6.9 ± 0.64	6.34 ± 0.62	5.68 ± 0.61

CONCLUSION

Uroflowmetry measures that were evaluated objectively after TURP improved and correlated with the IPSS score that was evaluated subjectively. Therefore, uroflowmetry is a simple office-based assessment tool for determining objectively whether bladder outlet obstruction symptoms have improved following TURP. Hence, it was concluded that transurethral resection of the prostate (TURP) is still the gold standard in improving the obstructive symptoms of benign prostatic hyperplasia (BPH). Uroflowmetry parameters can be used to assess the symptoms as well as to predict the outcome of TURP and The IPSS is valuable in assessing the symptom complex of LUTS with BPH.

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