ORIGINAL RESEARCH PAPER

General Surgery

UROFLOWMETRY : AN OBJECTIVE ASSESSMENT TOOL IN BLADDER OUTLET OBSTRUCTION POST TRANSURETHERAL RESECTION OF PROSTATE.

KEY WORDS: Uroflowmetry, Turp, Bladder Outlet Obstruction

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ABSTRACT

AIMS: To Objectively Assess The Symptomatic Improvement In A Subgroup Of Patients With Bladder Outlet Obstruction Due to Benign Prostatic Hyperplasia; Following Transuretheral Resection of Prostate (TURP)Using Uroflowmetry(UFM).

MATERIAL AND METHODS: Our study of 50 patients with Bladder outlet obstruction due to Benign Prostatic Hypertrophy were subjected to uroflowmetry and IPSS Questionnaire ; pre and post Transuretheral resection of Prostate .

RESULTS: Mean voided volume before prostatectomy was 186.02±71.47 mL with a mean maximum flow rate of 10.44 ± 2.83 mL/s ,mean average flow rate of 4.37 ± 1.03 mL/s and mean voiding time was 63.42±24.25 sec and preoperative IPSS score of 21.4± 5.6. After transuretheral prostatectomy mean voided volume was 194.56 ±75.69 mL, mean maximum flow rate was 21.39 ± 3.39 mL/s , mean average flow rate was 13.65 ± 2.22 mL/s and mean voiding time was 20.68 ±8.5 sec and postoperative IPSS score of 6.8 ±4.2.

CONCLUSION: It is concluded that post TURP, the objectively assessed uroflowmetry parameters are correlating with subjectively assessed IPSS score. Hence , uroflowmetry is an easy and office based useful assessment tool for objectively assessing the symptopmatic improvement in BOO post TURP.

INDEXTERMS- Uroflowmetry, Benign Prostatic Hyperplasia and Transuretheral resection of Prostate.

I. INTRODUCTION

Benign Prostatic Hypertrophy (BPH) is the most common benign condition in men presenting with lower urinary tract symptoms(LUTS) & Bladder Outlet Obstruction (BOO) .The incidence of BPH is age related.[1]

At age 55, approximately 25% of men report obstructive voiding symptoms. At age 75, 50% of men complaint of a decrease in the force and caliber of their urinary stream. The etiology of BPH seems to be multifactorial and endocrine controlled. Genetic or environmental factors that influence 5 - alpha reductase appear to be important in the development of BPH as well.[2]

Patients with BPH will have early clinical features of frequency, nocturia, urgency, terminal dribbling, polyuria, difficulty in micturition, weak urinary stream, dysuria , acute retention of urine, overflow incontinence, sometimes haematuria, and renal insufficiency.[3] Late clinical features will develop more serious sequelae of disease with chronic urinary retention, recurrent urinary tract infection, bladder stone, bladder dysfunction , and renal dysfunction .[4]

A detailed history and physical examination ,including a focused neurological evaluation is necessary for initial assessment of men with bladder outlet obstruction. The validated and translated AUA Symptom Score Questionnaire commonly called the International Prostate Symptom Score (IPSS) is the single most important tool used in the evaluation of patients with BPH and is recommended for all patients before the initiation of therapy. This assessment focuses on seven items that ask patients to quantify the severity of their obstructive or irritative complaints on a scale of 0–5. Thus, the score can range from 0 to 35. An IPSS of 0–7 is considered mild, 8–19 is considered moderate, and 20–35 is considered severe.[1]

Aditionally, uroflowmetry may be used as simple ,non invasive and objective screening tool for diagnosis of bladder outlet obstruction.[5]

UFM represents the intergrity between the bladder activity and outlet during the emptying phase of micturition. The flow rate and pattern represent the quantifiable and recordable variables. Normal rate and pattern rules out any significant disorder of emptying. The significant variables include Mean and peak flow rate, the actual pattern, and the relationship of each rate to the volume voided .

BPH is defined by a maximum flow rate of **15** ml. per second or less and an International prostate symptom score (I-PSS) of 7 or more.[6,7]

Elective resection of prostate for severe symptoms like increasing difficulty in micturition, with considerable frequency day and night, delay in starting and a poor stream are the usual symptoms for which surgery is advised.[3]

TURP which is a widely practiced technique is considered satisfactory in relieving symptoms and improving urodyn amic measurements in most men having BPH .[8]

II. MATERIAL AND METHODS

This study was carried out in the Department of Urology ;Yenepoya Medical College and Hospital, during the period of June 2019 to November 2019.

50 patients with BOO due to Benign Prostatic Hypertrophy were included in the study after Ethical Committee approval

and written informed consent from each patient enrolled in the study.

In addition to the basic clinical evaluations (medical history, physical examination, urinalysis and renal function assessment) ,the patients were evaluated by using IPSS questionnaire and subjected to ultrasound scan of the pelvis to evaluate the prostate volume .Uroflowmetry studies were conducted after providing adequate privacy to the patients.

The exclusion criteria included patients with indwelling Foley's catheter;patients who had undergone prior urinary tract or pelvic surgeries, past history of prostatic surgery, prostatic carcinoma, urethral stricture, vesicle calculus or neurogenic bladder and patients on drugs such as anti-muscaranics.

After obtaining anaesthesia fitness and written surgery consent , patients were subjected to Transuretheral resection of Prostate by experienced team of surgeons. Postoperatively , the patients were subjected to Uroflowmetry after 3weeks and also IPSS questionnaire was filled again.

All the data were tabulated and evaluated statistically by using paired t-test.

III. OBSERVATION AND RESULTS

Transuretheral resection of Prostate was done in 50 patients with Benign Prostate Hypertrophy in this study.

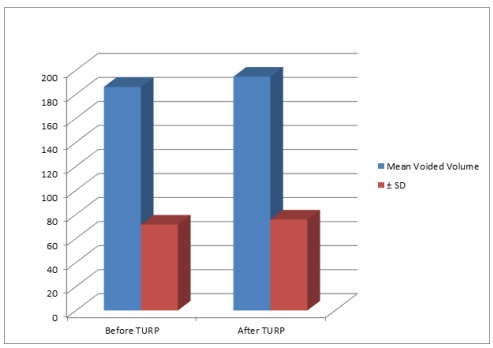
The preoperative and postoperative IPSS assessment in 50 patients were 21.4±5.6 and 6.8±4.2 respectively .

The mean voided volume before TURP was 186.02±71.47 mL with a mean maximum flow rate of 10.44 ± 2.83 mL/s ,mean average flow rate of 4.37 ± 1.03 mL/s and mean voiding time was 63.42±24.25 sec as shown in table 1 (a) and graph 1 (a), 1 (b), 1(c) and 1 (d).

Table 1 (a) Uroflowmetry in patients before TURP

No. of Cases	Uroflowmetric Parameters	Voided Volume (ml)	Maximum Flow Rate (ml/s)	Average Flow Rate (ml/s)	VoidingTime (sec)
50	Mean	186.02	10.44	4.37	63.42
	SD	±71.47	±2.83	±1.03	±24.25

Graph 1(a) Mean Voided Volume (ml)

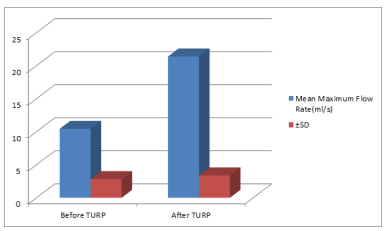


After transuretheral resection of prostate , mean voided volume was 194.56 ±75.69 mL, mean maximum flow rate was 21.39 ± 3.39 mL/s , mean average flow rate was 13.65 ± 2.22 mL/s and mean voiding time was 20.68±8.5 sec as shown in Table 1(b) and Graph 1(a), 1(b) , 1(c) and 1(d).

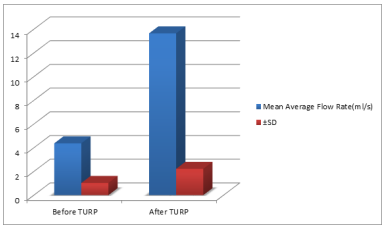
Table 1 (b) Uroflowmetry in Patients after TURP

No.of	Uroflowmetric Parameters	Voided Volume (ml)	Maximum Flow Rate (ml/s)	Average Flow Rate (ml/s)	Voiding Time (sec)
50	Mean	194.56	21.39	13.65	20.68
	SD	±75.69	±3.39	±2.22	±8.55
t&p values	t= 0.574 p=0.568	t= 17.5336 p <0.0001	t= 26.813 p<0.0001	t=11.7534 p<0.0001	

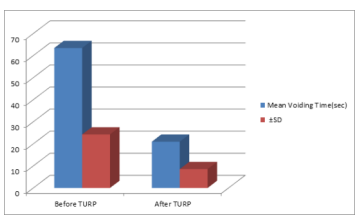
Graph 1(b) Mean Maximum Flow Rate(ml/s)



Graph 1 (c) Mean Average Flow Rate



Graph 1 (d) Mean Voiding Time (sec)



IV. DISCUSSION

Uroflowmetry is a frequently used and simple urodynamic test for both diagnosis and follow-up of obstructive lower urinary tract symptoms. The maximum flow rate, average flow rate, voided volume and voiding time are important parameters for interpretation.

The mean age of 50 BPH patients included in the study was found to be 65.0 ±10 .0 years (range 55-75 years).

Data suggest that the incidence of symptomatic BPH is 23% in

men aged 50years and 78% in men aged 60-70 years.[9]

Akin et al.[10], on 48 BPH patients, reported mean age of 60.17 ± 1.18 years. Pethiyagoda et al.[11], in their study on 185 patients showed mean age of 65.2 ± 11.46 years.

Thus, our findings appear to be in conformity with the findings of other researchers.

In our study, most of the patients (36.2%) were in the age group of 60-70 years.

In this study 50 patients underwent transuretheral resection of prostate.

The mean voided volume before TURP was 186.02±71.47 mL with a mean maximum flow rate of 10.44 ± 2.83 mL/s ,mean average flow rate of 4.37 ± 1.03 mL/s and mean voiding time was 63.42±24.25 sec and a preoperative IPSS of 21.4 ±5.6.

Post TURP at the end of three weeks , UFM showed a mean voided volume of 194.56 ±75.69 mL, mean maximum flow rate of 21.39 ± 3.39 mL/s , mean average flow rate of 13.65 ± 2.22 mL/s and mean voiding time of 20.68±8.5 sec .The IPSS was 6.8±4.2.

In the study conducted by Jalbani et al.[12], showed a preoperatively voided volume of 165.54 ± 49.60 ml , mean maximum flow rate of 7.60 ± 2.41 ml/sec and average flow rate of 4.44 ± 1.28 ml/sec. The three month follow up uroflowmetry values post TURP were voided volume of 240.32 ± 49.91 ml , mean maximum flow rate of 27.24 ± 5.11 ml/second the average flow rate was 13.48 ± 2.08 ml/sec Rahman et al.[13], reported a significant improvement in terms of Qmax, voided volume and voiding time in all patients after TURP.

It was found that post TURP, all uroflowmetry parameters showed improvement in both obstructive and irritative symptoms assessed by UFM and correlated with IPSS .The 3 month follow up of our study participants is being undertaken .

V. CONCLUSION

It is evident from this study that there is a significant improvement in postoperative uroflowmetry parameters as well as IPSS. There is an evident improvement in the maximum flow rate, average flow rate in all postoperative follow up visits.

The limitation of IPSS are poor comprehension ,recollection and expression of symptoms by the patients which makes uroflowmetry a better assessment tool.

VI. REFERENCES

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