Uroflowmetric Study Before and After Suprapubic Transvesical Prostatectomy in the Patients of Benign Prostatic Hyperplasia

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DOI: 10.29322/IJSRP.9.03.2019.p8768
http://dx.doi.org/10.29322/IJSRP.9.03.2019.p8768

Abstract-

Aims: To study uroflowmetric changes before and after Suprapubic Transvesical Prostatectomy in the patients of Benign Prostatic Hyperplasia.

Material and methods: This study was carried out at Department of Jarahat, Ajmal Khan Tibbiya College A.M.U Aligarh from year 2015-16. In our study out of 58 BPH patients, 10 patients underwent suprapubic transvesical prostatectomy and uroflowmetric changes were evaluated.

Results: Mean voided volume before prostatectomy was 46.1 ± 100.5 mL with a mean maximum flow rate of 2.5 ± 5.3 mL/s and mean average flow rate of 0.8 ± 1.7 mL/s. After suprapubic prostatectomy mean voided volume was 229.9 ± 43.4 mL, mean maximum flow rate was 24.0 ± 8.5 mL/s and mean average flow rate was 8.2 ± 3.5 mL/s.

Conclusion: It is concluded that post suprapubic prostatectomy, all uroflowmetry parameters return towards normal levels. There is an excellent improvement in both obstructive and irritative symptoms post operatively.

Index terms- Uroflowmetry, Benign Prostatic Hyperplasia and Suprapubic Transvesical Prostatectomy.

I. INTRODUCTION

Benign prostatic hyperplasia (BPH) has been known as a cause of urinary obstruction and the most common disease effecting the aging men. Almost 50% of the men aged 51-60 years and 90% of men over aged 80 years have histological evidence of BPH[1]. Clinical diagnosis of BPH is made by the assessment of the IPSS, prostate size or volume and reduced urinary flow rate. Patients with BPH have early clinical features of frequency, nocturia, urgency, terminal dribbling, polyuria, difficulty in micturition, weak urinary stream, pain, acute retention of urine, overflow incontinence, sometimes haematuria, and renal insufficiency [2]. Late clinical features will develop more serious sequelae of disease with urinary retention, recurrent urinary tract infection, bladder stone, bladder failure, and renal dysfunction [3]. These symptoms may be due to bladder outflow obstruction caused by BPH or due to detrusor hyper-reflexia.

In BPH patients, uroflowmetry is a basic investigation of urodynamic study. It is the most physiologic and non-invasive assessing method of lower urinary tract obstruction. It is a way of integrating the activity of the bladder and the outlet during the emptying phase of micturition. The flow rate and pattern represent the recorded variables; if these are both normal, it is unlikely that there is any significant disorder of emptying. Mean and peak flow rate, the actual pattern, and the relationship of each rate to the volume voided are all important. Uroflowmetry is a useful clinical tool in the diagnosis and follow-up of males with BPH. It is a method to evaluate prostatic obstruction by measuring the maximum distance reached by the urinary flow [4].

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Elective prostatectomy 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 prostatectomy is advised [2]. Prostatectomy is considered satisfactory in relieving symptoms and improving urodynamic measurements in most men having BPH [5].

II. MATERIAL AND METHODS

This study was carried out at Department of Jarahat, Ajmal Khan Tibbiya College A.M.U Aligarh. 58 patients with BPH from OPD and IPD of Jarahat, AKTC were included in the study from year 2015-1610 and 10 patients underwent suprapubic transvesical prostatectomy. All the patients were well informed about the study. Informed written consent was taken from patients who were willing to participate in this study. A careful history, especially about the symptoms was taken in all patients.

A thorough physical digital rectal examination of the prostate gland was done. All the necessary investigations including ultrasound KUB, X-ray KUB, blood CP and group, urine R, urine C/S, renal function tests, and blood sugar were carried out. Fitness for anaesthesia was assessed. Foley’s catheter removed on tenth day postoperatively and Patients were discharged with adequate urinary flow.

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

III. OBSERVATION AND RESULTS

Suprapubic prostatectomy was done in 10 patients in this study. The mean voided volume before prostatectomy was (46.1 ± 100.5) mL, mean maximum flow rate was (2.5 ± 5.3) mL/s, mean average flow rate was (0.8 ± 1.7) mL/s and mean voiding time was (11.6 ± 24.5) sec as shown in table 1 (a) and graph 1 (a), 1 (b), 1(c) and 1 (d).

<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>Uroflowmetric Parameters</th>
<th>Voided Volume (mL)</th>
<th>Maximum Flow Rate (mL/s)</th>
<th>Average Flow Rate (mL/s)</th>
<th>Voiding Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Mean</td>
<td>46.1</td>
<td>2.5</td>
<td>0.8</td>
<td>11.6</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>±100.5</td>
<td>±5.3</td>
<td>±1.7</td>
<td>±24.5</td>
</tr>
</tbody>
</table>

After suprapubic prostatectomy, mean voided volume was recorded to be (229.9 ± 43.4) mL, mean maximum flow rate was (24.0 ± 8.5) mL/s, mean average flow rate was (8.2 ± 3.5) mL/s and mean voiding time was (31.5 ± 12.1) sec as shown in table 1 (b) and graph 1(a), 1 (b), 1 (c), and 1(d).

<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>Uroflowmetric Parameters</th>
<th>Voided Volume (mL)</th>
<th>Maximum Flow Rate (mL/s)</th>
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<th>Voiding Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Mean</td>
<td>229.9</td>
<td>24.0</td>
<td>8.2</td>
<td>31.5</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>±43.4</td>
<td>±8.5</td>
<td>±3.5</td>
<td>±12.1</td>
</tr>
</tbody>
</table>

| t & p values | t=5.8 | p=0.0003 | t=8.4 | p<0.0001 | t=9.0 | p<0.0001 | t=2.0 | p=0.07|
Graph 1 (a)

Mean Voided Volume (mL)

Graph 1 (b)

Mean Maximum Flow Rate (mL/s)

Graph 1 (c)
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 58 BPH patients included in the study was found to be 62.0 ± 9.0 years (range 45 -90 years). Data suggest that the incidence of symptomatic BPH is 23% in men aged 50 years and 78% in men aged 60 - 70 years [6]. Akin et al., [7] on 48 BPH patients, reported mean age of 60.17 ± 1.18 years. Pethiyagoda et al., [8] 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 10 patients underwent suprapubic transvesical prostatectomy. Mean voided volume before prostatectomy was 46.1 ± 100.5 mL with a mean maximum flow rate of 2.5 ± 5.3 mL/s and mean average flow rate of 0.8 ± 1.7 mL/s. Among these patients who were catheterized and uroflowmetry could not be performed. So the preoperative uroflowmetric parameters were considered 0 in all these patients for statistical evaluation. After suprapubic prostatectomy mean voided volume was 229.9 ± 43.4 mL, mean maximum flow rate was 24.0 ± 8.5 mL/s and mean average flow rate was 8.2 ± 3.5 mL/s. Mean maximum flow rate and mean average flow rate after prostatectomy were similar to normal cases of our study in which the mean maximum flow rate was 23.8 ± 7.3 mL/s and mean average flow rate was 8.7 ± 2.9 mL/s. Abedinzadeh et al., [9] on 350 normal men showed maximum flow rate of 26ml/s and mean average flow rate 15ml/s. Amjadi et al., [10] on 31 male volunteers who were asymptomatic of urological disorder. They had the mean Q max of 23.4 mL/s and the mean average flow rate of 13.4 mL/s. Jalbani et al., [11] showed preoperatively mean maximum flow rate of 7.60 ± 2.41 ml/sec, average flow rate of 4.44 ± 1.28 ml/sec and voided volume of 165.54 ± 49.60 ml. Three months after TURP, mean maximum flow rate was 27.24 ± 5.11 ml/sec, average flow rate was 13.48 ± 2.08 ml/sec and voided volume was 240.32 ± 49.91 ml.

Rahman et al., [12] reported a significant improvement in terms of Qmax, voided volume and voiding time in all patients after TURP. It is concluded that post TURP or suprapubic prostatectomy, all uroflowmetry parameters return towards normal levels. There is an excellent improvement in both obstructive and irritative symptoms post operatively.

V. CONCLUSION

It is evident from this study that the effects of suprapubic transvesical prostatectomy on uroflowmetry parameters are significantly improved postoperatively. This study indicates that there is excellent improvement in the maximum flow rate, average flow rate in all postoperative follow up visits.

ACKNOWLEDGMENT

The authors thank to ethics committee of Ajmal Khan Tibbiya College, A.M.U. Aligarh (India) and co-operative patients.

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http://dx.doi.org/10.29322/IJSRP.9.03.2019.p8768 www.ijsrp.org

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