Abstract:
Objectives: To evaluate urinary symptoms and quality of life in patient with BPH before and after TURP. To determine the impact of TURP on the urinary symptoms (IPSS) and peak urinary flow rate.

Methods: This study is prospective study carried out between 2010 and 2011 in the department of Urology, National Institute of Kidney Diseases & Urology. Total 102 cases were selected purposively according to selection criteria. Each patient was observed and followed up at 8 weeks (1st visit), 16 weeks (2nd visit) 24 weeks (3rd visit) after transurethral resection of prostate (TURP). IPSS score, QOL score also recorded and uroflowmetry was done to see the peak urinary flow rate ($Q_{\text{max}}$) of urine and voiding time. USG was done to see post voidal residual urine volume and DRE also done in selected cases. Data was compiled and statistical analysis were done using computer based software, Statistical Package for Social Science (SPSS), using paired ‘t’ test. A P value <0.05 was taken as significance.

Results: Before TURP, IPSS range 17-25 and mean 21.61±2.43, after TURP, range 0-7 and mean 4.27±1.71. Hence a significant improvement of IPSS was found from 2 months to 6 months follow up after TURP. The change was tested using “paired student ‘t’ test”. Before TURP $Q_{\text{max}}$ range 7-12.2 and mean was 9.96±1.69, which became range 18-25 and mean was 22.61±2.28 after TURP and therefore change of mean $Q_{\text{max}}$ was 12.64±2.69. The change was tested using “paired student ‘t’ test”. The change was found significant (P<0.001).

Conclusion: Transurethral resection of prostate resolves obstructive symptoms, rapid improvement of urinary flow rate

Key words: Benign prostatic hyperplasia, IPSS, peak urinary flow rate, TURP.
dribbling) and irritative symptoms (like urgency, frequency, nocturia) which may be troublesome to an elderly men.

The self-administered questionnaire developed by the American Urological Association (AUA) is both valid and reliable in identifying the need to treat patients and in monitoring their response to therapy (Barry et. al 1992). The IPSS symptom score questionnaire is perhaps the single most important tool used in the evaluation of patients with BPH.

The International Prostate Symptoms Score (IPSS) initiated the guideline panel for diagnosis and management of benign prostatic hyperplasia. Patients with mild symptoms (having a score of 0 to 7) were assigned to watchful waiting, those with moderate (8 to 19) or sever (20 to 35) symptoms would undergo farther testing and/ or treatment. The IPSS-7 symptom index is not diseases specific.

Transurethral resection of prostate (TURP) aimed at reducing the symptoms experienced by patients and their effects on quality of life (QOL). Quality of life measures are important because the same symptoms are not equally bothersome for all patients: getting up three times a night patient may have a significant impact on quality of life, whereas another patient may not find this a problem. Hence patient- reported symptoms must be supplemented by measures of their perception on quality of life (Luckacs et al., 1993).

There are many options for treatment of symptomatic BPH like watchful waiting, medical therapy with a α-receptor blocker and 5a-reductase inhibitor, phytotherapy and surgical treatment including minimally invasive therapy. Symptoms are best assessed by IPSS and peak urine flow \( (Q_{max}) \) rate and quality of life Score (Chapple, 1995). Watchful waiting should be considered when a symptom in mild (0-7). Medical treatment is usually chosen, when there are moderate symptoms and no absolute indication for surgical intervention (Abrams et al., 1997). Medical treatment is cost effective, time consuming, sometimes patients forget to take medicine regularly, co-morbidity increased, unwanted adverse effect (like postural hypotension, headache, dizziness etc.), total symptoms free not possible, chance of progression of disease.

Indication for surgical intervention are: failed medical treatment of BPH and complications of an obstructing prostate- such as acute or chronic urinary retention, recurrent urinary tract infection, haematuria, bladder stone and postrenal azotemia. The most common reasons that intervention is recommended in a patient with symptoms of bladder outlet obstruction and irritability are that symptoms are moderate to sever, bothersome and interfere with the patients quality of life. 90% of patients under going a TURP had symptoms of prostatism, but 70% had another indication as well (eg. acute urinary retention) occurring in 27% (Mebust et al., 1989).

A surgical approach when indicated may reduce urinary symptoms, thus restoring a good quality of life (Sagnier at al., 1995).

As life expectancy increase in Bangladesh so, lower urinary tract symptoms due to benign prostatic hyperplasia also increasing. Treasurethral resection of prostate (TURP) is still considered as a gold standard treatment option for benign prostatic hyperplasia (BPH). So it is important to determine the impact of TURP on symptoms related to BPH.

Study Methods : This study is prospective study carried out between 2010 and 2011 in the department of Urology, National Institute of Kidney Diseases & Urology. Total 102 cases were selected purposively according to selection criteria with prostatic volume of >50 mL from the patients attending urology out patient department with lower urinary tract symptoms due to BPH. Each of the patient was followed up at 8 weeks (1st visit), 16 weeks (2nd visit) 24 weeks (3rd visit).

Before TURP for base line study of each patient was evaluated by history, physical examination, digital rectal examination (DRE), International Prostate Symptoms Scoring (IPSS), Quality of Life Scoring (QOL) Urinalysis, volume of the prostate and post voidal residual urine (PVR) were determined by ultrasongram.

Digital rectal examination was done to determine the prostate size and to exclude carcinoma prostate. Perinal sensation, anal tone and bulbocavernous reflex were observed to detect any neurological lesions. Urinalysis, if needed culture and sensitivity. Prostate specific antigen, serum creatinine were done in the same laboratory of NIKDU and out side reliable pathological laboratories to exclude urinary tract infection, carcinoma prostate and renal failure respective. Transabominal USG was done by the sonologist (Radiology Department, NIKDU and reliable out side Laboratories) to detect any hydronephrotic change, Post voidal residual urine, prostate size, echotexture, any hypoechoic lesion in


Impact of Transurethral Resection of Prostate on International Prostate Symptom Score
the prostate. Uroflowmetry was done with a voided volume of >200 mL. Plain x-ray KUB region was done to exclude urinary stone diseases cases, neuropathic bladder was excluded from the study.

All history and examination followed a similar protocol. Informed consent was taken from all patients. A detail data sheet was completed and this included particulars of the patient- history, results of physical examinations and relevant base line investigations. From the supplied sheet IPSS Symptoms Score and QOL score were determined (Salam, 1999).

Each patient was observed and followed up at 8 weeks (1st visit), 16 weeks (2nd visit) 24 weeks (3rd visit) after transurethral resection of prostate (TURP). On each follow up visit, each patient was evaluated by history to find out incontinence, retrograde ejaculation (Dry Coitus). IPSS score, QOL score also recorded and uroflowmetry was done to see the peak urinary flow rate (Q_max) of urine and voiding time. USG was done to see post voidal residual urine volume and DRE also done in selected cases. Improvement of lower urinary tract symptoms and quality of life was determined using IPSS score.

Improvement was based on the changes from base line in symptoms, urinary flow rate, amount of post voidal residual urine and quality of life. Urine flow rate was measured by uroflowmetry as peak urinary flow rate (Q_max), voiding time and voided volume and was considered valid only if the voided volume was >200 ml.

Symptoms were assessed urinary IPSS & consisting of seven symptoms (frequency, nocturia, urge incontinence, urgency, hesitency, terminal dribbling and sense of incomplete evacuation) that were graded from 0-5. An overall symptoms score was calculated.

Data was collected in a pre-designed and pre-tested data collection sheet. Data was compiled and statistical analysis were done using computer based software, Statistical Package for Social Science (SPSS), using paired 't' test. A P value <0.05 was taken as significance.

**Results**

A total 102 cases were selected consecutively according to selection and exclusion criteria from the patients attending urology out patient department of Dhaka Medical College Hospital, Dhaka with lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). 102 cases were evaluated by history, physical examination, digital rectal examination (DRE), international prostate symptom scoring (IPSS), quality of life (QOL) scoring, uroflowmetry, post voided residual urine (PVR) and volume of prostate by USG and serum prostate specific antigen (PSA).

None of the patients had a prostatic nodule or solid lesion suspicious for prostatic cancer on the DRE, USG shows no hypo-hypercohoic lesions of the prostate.

The mean size >50ml and all specimens showed benign adenomatus tissue. The mean operative duration was 50 (40±75) minutes.

Cases were selected between 60-75 years. In group-A, among 42 cases (41.2%) <65 years and group-B, 60 cases (58.80%) > 65 years. Age of the patients of each group was compared with IPSS, PVR and Q_max.

### Table-I

<table>
<thead>
<tr>
<th>Changes in IPSS from base line to end point after TURP (n=102)</th>
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</thead>
<tbody>
<tr>
<td>IPSS Baseline Endpoint t df P value</td>
<td></td>
</tr>
<tr>
<td>(before TURP) (after TURP)</td>
<td></td>
</tr>
<tr>
<td>Mean±SD 21.61±2.43 4.27±1.71</td>
<td>82.508 101 &lt;0.001</td>
</tr>
<tr>
<td>Range 17-25 0-7</td>
<td></td>
</tr>
<tr>
<td>Change -17.33±2.12</td>
<td></td>
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<tr>
<td>Mean±SD</td>
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</tbody>
</table>

Paired Student ‘t’ test.

Before TURP, IPSS range 17-25 and mean 21.61±2.43, after TURP, range 0-7 and mean 4.27±1.71). There was significant correlation between the IPSS obstructive scores and Qmax at base line (P=<0.001), while correlations at the 1st, 2nd and 3rd follow up significant. There was also a significant correlation between IPSS obstructive score and PVR, and quality of life.

After TURP, the IPSS Score showed significant improvements in urinary symptoms with the IPSS showing more significant change for obstructive symptoms.

Hence a significant improvement of IPSS was found from 2 months to 6 months follow up after TURP. The change was tested using “paired student ‘t’ test”.

### Table -II

<table>
<thead>
<tr>
<th>Change in peak urine flow (Q_max from base line to end point after TURP.</th>
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</thead>
<tbody>
<tr>
<td>Q_max Baseline Endpoint t df P value</td>
<td></td>
</tr>
<tr>
<td>(ml/sec) (before TURP) (after TURP)</td>
<td></td>
</tr>
<tr>
<td>Mean±SD 9.96±1.69 22.61±2.28</td>
<td>-47.512 101 &lt;0.001</td>
</tr>
<tr>
<td>Range 7 12.2</td>
<td></td>
</tr>
<tr>
<td>Change 12.64±2.69</td>
<td></td>
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<tr>
<td>Mean±SD</td>
<td></td>
</tr>
</tbody>
</table>

Paired Student ‘t’ test.
Before TURP $Q_{\text{max}}$ range 7-12.2 and mean was 9.96±1.69, which became range 18-25 and mean was 22.61±2.28 after TURP and therefore change of mean $Q_{\text{max}}$ was 12.64±2.69.

TURP caused a significant change in $Q_{\text{max}}$ the mean $Q_{\text{max}}$ being 12.64±2.69 ml/sec and mean PVR range >100 ml. The mean (SD) improvement in $Q_{\text{max}}$ was 12.64±2.69 ml/sec and reduction in PVR, 60 patients having no detectable PVR at the 6 months follow up.

The change was tested using "paired student ‘t’ test". The change was found significant (P<0.001).

**Table-III**

Changes in voiding time from base line to end point after TURP (n=102).

<table>
<thead>
<tr>
<th>Voiding time (Sec)</th>
<th>Baseline (before TURP)</th>
<th>Endpoint (after TURP)</th>
<th>t</th>
<th>df</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean±SD</td>
<td>54.65±7.09</td>
<td>21.08±1.86</td>
<td>45.030</td>
<td>101</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>40-45</td>
<td>20-25</td>
<td>-33.57±7.53</td>
<td></td>
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</tr>
</tbody>
</table>

Mean voiding time was 54.65±7.09 sec at base line, which became 21.08±1.86 sec at end point and therefore change of mean voiding time was -33.57±7.53 sec.

Hence a significant improvement of voiding time was found after transurethral resection of prostate (TURP). The changes was tested using ‘Paired student ‘t’ test’. The change was found significant (P<0.001).

**Table- IV**

Change in PVR from base line to end point after TURP (n=102).

<table>
<thead>
<tr>
<th>PVR (ml))</th>
<th>Baseline (before TURP)</th>
<th>Endpoint (after TURP)</th>
<th>t</th>
<th>df</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean±SD</td>
<td>205.27±14.76</td>
<td>4.07±8.92</td>
<td>147.075</td>
<td>101</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Range</td>
<td>180-220</td>
<td>0-5</td>
<td>-201.21±13.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean PVR was 205.27±14.76 ml at base line, which became 4.07±8.92 ml at end point and therefore change of mean PVR was -201.21±13.82 ml.

Hence a significant reduction of PVR was found after TURP. The change was test using ‘Paired Student ‘t’ test’. The change was found significant (P<0.001).

**Discussion**

Recently most of the urologist in our country has been using this surgical method, transurethral resection of prostate of BPH. This present study was done to determine the improvement of symptoms and peak urinary flow rate ($Q_{\text{max}}$) after transurethral resection of prostate. In this study 102 patients of benign prostatic hyperplasia (BPH) from out patient department of urology of NIKDU were selected for transurethral resection of prostate (TURP) and were followed up 2 monthly for 6 months to determine the improvement of IPSS, peak urine flow rate ($Q_{\text{max}}$).

In this study, all cases were purposively selected from out patient department of urology of Dhaka Medical College Hospital age ranging from 60 years to 75 years who has been suffering from lower urinary tract symptoms due to benign prostatic hyperplasia. The age ranges of the separate study done in 1999 and 2000, 60 men with mean age 68 years and had a diagnosis of lower urinary tract symptoms suggestive of BPH (Gacci et. al., 2003).

Another study was done to assess the necessity for routine out patient review following transurethral resection of prostate (TURP) for BPH. 102 patients with histologically proven benign prostatic hyperplasia were prospectively reviewed as out-patients. During a 6 months period from October 1992 to March 1993, 102 consecutive patients (mean age 71 years, range 54-92) attending the out patients department following TURP. 90% of patients expressed satisfied with the results of their operation, 4% were dissatisfied and 6% felt there had been little improvement. Of 8 patient given further out patients department appointment.

After transurethral resection of prostate IPSS scores was showed significant improvements in urinary symptoms.

Effect of TURP was again observed in a separate study by evaluating change of IPSS before TURP irritative mean 6.71; obstructive mean 9.69 and after TURP became irritative 3.06 and obstructive 3.38, showed significant improvement in urinary symptoms with the IPSS for obstructive symptoms than for irritative symptoms or quality of life (QOL) (Gacci et al., 2003). These results are similar with the results of present study.
A significant improvement of \( Q_{\text{max}} \) was found after transurethral resection of prostate (2 months, 4 months and 6 months follow up) in this study.

Prostatectomy caused a significant change in \( Q_{\text{max}} \) from the mean \( Q_{\text{max}} \) being 26.1 (14.5-41.2) ml/sec. The mean (SD) improvement in \( Q_{\text{max}} \) was 17.9 ml/sec at 6 month follow up (Gacci et al., 2003).

Another study included 108 men with symptoms of bladder outlet obstruction using a peak flow rate \( \leq 12 \) ml/sec as an index of obstruction, 65 patients were identified. A flow rate alone was accurate in 95% of cases with 62 patients being obstructed on urodynamic evaluation; 43/108 patients (40%) had flow rate \( > 12 \) ml/sec. Of 53 patients with outflow obstruction as defined by cystometry who agreed to undergo TURP, 37 (69%) returned 1 year later for a repeat free flow rate and symptomatic assessment. No patient with residual symptoms had a flow rate \( < 12 \) ml/sec at follow up. None of the patients with initially higher flow rates underwent TURP were noted to have residual symptoms at follow up. All patients in this study had improved flow rates compared with preoperative measurements (Loughlin et al., 1990).

Hence a significant improvement of voiding time was found after TURP. The change was found significant \((P=0.001)\). Similar reduction in voiding time also observed in a study on 108 patient with lower urinary tract symptoms due to BPH (Loughlin, Gill KP., et al., 1990). These results are also consistent with the present study.

A significant reduction of PVR was found after TURP in this study. The change was found significant \((P=0.001)\).

In a study it was observed 60 men with BPH; prostatectomy caused a significant change in \( Q_{\text{max}} \) being 26.1 (14.5-41.2) ml/sec and the mean PVR (0-50) ml. The mean (SD) improvement in \( Q_{\text{max}} \) was 17.9 ml/sec and reduction mean PVR 92 ml with 39 patient having no detection PVR at the 6 month follow up (Gacci et al., 2003). Results of this study are also similar with the present study.

Conclusion:
From the present study it can be concluded that transurethral resection of prostate resolves obstructive symptoms, rapid improvement of urinary flow rate and quality of life that is why it is gold standard treatment for moderate to severe symptomatic BPH patients.

Conflict of Interest : None Declared

References:

Abbreviations:
BPH: Benign Prostatic Hyperplasia
IPSS: International Prostate Symptoms Score
\( Q_{\text{max}} \): Peak Urinary flow rate
PVR: Post voidal residual Urine
TURP: Transurethral Resection of Prostate