ORIGINAL ARTICLE

Residual Storage Symptoms after Monopolar Transurethral Resection of Prostate for Benign Enlargement

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Abstract

Introduction: For benign prostatic enlargement transurethral resection is commonly performed surgery. The objective of this study is to evaluate international prostate symptom score (IPSS), storage symptoms (Frequency, Urgency, Nocturia) and quality of life (QoL) score among the patients underwent monopolar TURP.

Method: This prospective observational study was conducted at Kathmandu University School of Medical sciences from November 2022 to February 2024. The baseline IPSS score, storage and voiding sub score and quality of life score were calculated preoperatively. These variables were again calculated after 3 months of surgery and analysed.

Result: Total 70 patients with mean age 66.14±9.79 years with prostate volume of 53.52 ± 13.18cc were enrolled in this study. The preoperative IPSS: 25.64±3.54, voiding sub score: 15.99 ±2.94, storage sub score: 9.57±2.30 and QoL score: 5.06±0.70 decreased postoperatively to IPSS: 7.87 ± 3.75, voiding sub score: 3.31±2.35, storage sub score: 4.93 ±1.94 and QoL score: 2.27±1.14. Improvement in all of these parameters is statistically significant with p value< 0.001.

Preoperatively 75.5%, 71.4%, 65.7%, and 82.9% patients had storage, frequency, urgency and nocturia symptoms respectively. However, postoperatively 15.7%, 14.3%, 12.9% and 52.9% patients had persistence of storage, frequency, urgency and nocturia symptoms respectively. Postoperatively 5.7% patients had residual voiding symptoms.

Conclusion: This study showed significant improvement in International Prostate Symptom Score, Storage sub score, Voiding sub score and Quality of life score after monopolar TURP.

Keywords: Benign prostatic enlargement, international prostate symptom score, Quality of life score, Voiding and Storage sub score

Introduction

About eighty two percent men in 8th decade have histological evidence of Benign prostatic hyperplasia (BPH) unlike 8% individuals of 4th decade and in about 50 % in 5th decade of life.[1] The benign enlargement of prostate is one of the many cause for lower urinary tract symptoms among the elderly male.[2] Lower urinary tract symptoms (LUTS) related to BPE are bothersome to the patients.[3]

Lower urinary tract symptoms due to benign enlargement of prostate are classified as voiding, storage and post micturitional symptoms by the international continence society.[4] The voiding symptoms include hesitancy straining, weak stream, intermittency whereas frequency, nocturia, urgency with or without incontinence are included in storage symptoms and post micturitional symptom includes post micturitional dribble and sensation of incomplete emptying.[5]

The American urological association symptom index (AUASI) includes seven parameters intermittency, poor stream, straining, sensation of incomplete voiding, frequency, urgency, nocturia to assess severity of LUTS.[6]

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Later, bothersome disease specific quality of life score was added to create International Prostate Symptom Score (IPSS).

Transurethral resection of prostate (TURP) provides reliable and drastic improvement in symptoms.[7] The residual voiding and storage symptoms negatively impact overall quality of life.[8] After TURP about 20-25% of patients may have persistence of storage symptoms.[9]

Methods

This was prospective observational study conducted in Urology unit, KUSMS Dhulikhel from 1st November 2022 to 28th February 2024 among the seventy patients with BPE after monopolar TURP.

Moderate to severe symptomatic BPE refractory or not suitable for medical management and with age > 40 years with good performance status was included in this research.

Symptomatic benign enlargement of prostate patients with concomitant pathology with bladder mass, prostate carcinoma, neurogenic bladder, vesicle calculus, active UTI, urethral stricture, contraindication to lithotomy position, re TURP patients and patients unable to communicate and understand study questionnaire were excluded.

IPSS out of total score 35 calculated from patients on the basis of questionnaire. Total storage sub score is 15 and involves 3 parameters frequency, urgency, nocturia. Similarly total voiding sub score is 20 and involves 4 parameters (intermittency, poor stream, sensation of incomplete voiding, straining) of IPSS. The score for quality-of-life ranges from 0 to 6, maximal worse score is 6.

Score ≥ 2/5 is considered as presence of nocturia, score ≥ 3/5 (presence of symptoms half or more time or at least 50% of maximum possible score) is considered as presence of frequency and urgency for research purpose.

Score ≥ 8/15 and ≥10/20 (at least 50% of maximum possible score for research purpose) is used to define persistence of storage and voiding symptoms respectively and comparison is done according to it pre and postoperatively.

Data was collected using the working proforma and data analysis was done with Statistical Package for Social Science (SPSS) version 21.

Mean, standard deviation, proportion, and percentage were calculated. Baseline and post TURP mean score of variables were calculated and analyzed with paired t-test.

Results

Baseline variables

This study included total 70 patients with mean age: 66.14±9.79 years, prostate volume: 53.52± 13.18 ml, baseline IPSS: 25.64±3.54, voiding sub score: 15.99±2.94, storage sub score: 9.57±2.30 and quality of life score: 5.06±0.70. The demographics and baseline variables data are shown in Table 1.0.

Table 1.0: Baseline variables with mean and SD

Variable	Mean± SD
Age(years)	66.14±9.79
Prostate volume (ml)	53.52± 13.18
Total IPSS	25.64±3.54
Voiding sub score	15.99±2.94
Storage sub score	9.57±2.30
QoL score	5.06±0.70

Postoperatively at 3rd month of follow up mean IPSS: 7.87 ± 3.75, voiding sub score: 4.93 ±1.94, storage sub score: 3.31±2.35, quality of life score: 2.27±1.14, frequency: 1.47±0.75, urgency: 1.24 ±0.89 and nocturia: 1.63±0.66.

Table 1.1: Outcomes of variables preoperatively and postoperatively

Variables	Preoperative	Postoperative after 3 months	Mean change	P value*
Total IPSS	25.64±3.54	7.87 ± 3.75	17.84±3.57	<0.001
Storage Sub score	9.57±2.30	4.93 ±1.94	5.20± 2.82	<0.001
Voiding Sub score	15.99±2.94	3.31±2.35	12.90±2.24	<0.001
QoL score	5.06±0.70	2.27±1.14	2.27±1.02	<0.001
Frequency	3.14±0.93	1.47±0.75	1.67±1.12	<0.001
Urgency	2.97±0.90	1.24±0.89	1.72±1.30	<0.001
Nocturia	3.44±0.81	1.63±0.66	1.81±0.90	<0.001

*: Paired T test to compare mean score preoperatively and at 3rd Month.

Total 53 (75.5%) out of 70 patients had storage symptoms preoperatively. Preoperatively frequency, urgency and nocturia was present in 50 (71.4%), 46 (65.7%) and 58 (82.9%) patients respectively. Postoperatively 11 (15.7%) patients had persistence storage symptoms. The prevalence of frequency, urgency and nocturia were 10 (14.3%), 9 (12.9%) and 37 (52.9%) at postoperative 3rd month respectively. Total 4 (5.7%) patients had persistence voiding symptoms postoperatively; it was present in all patients preoperatively.

Table 1.2: The lower urinary tract symptoms pre and postoperatively.

Preoperative LUTS	Present (%)	Postoperative variable	Present (%)
Voiding score (≥10/20)	70 (100%)	Voiding score (≥10/20)	4(5.7%)
Storage score (≥8/15)	53(75.7%)	Storage score (≥8/15)	11(15.7%)
Frequency ((≥ 3/5)	50(71.4%)	Frequency ((≥ 3/5)	10(14.3%)
Urgency (≥ 3/5)	46(65.7%)	Urgency (≥ 3/5)	9(12.9%)
Nocturia (≥ 2/5)	58(82.9%)	Nocturia (≥ 2/5)	37(52.9%)

Discussion

In this study most of the patients were on 7th decade of life. The average age of patients was 66.14±9.79 years. It coincides with mean age of the patients of the most of the study as BPE is disease of elderly male.[10]

The mean age of TURP patient was 68.6± 6.7 years in study by Luitel et al.[11] The mean age of patients undergone TURP is similar to the finding of Gaucci et al of age of 68 years.[3] It was 69 years in study by Ueda et al.[12]

In our study the average size of prostate is 53.52± 13.18 gram. Similar study by Luitel et al. had average prostate size 48.6± 19.9 gram.[11] The prostate volume was 46.1 gram in study by Chalise et al.[13] The size of prostate of our study corresponds with European association of urology guidelines recommendation of size of 35-80 ml for TURP.

In this study the average IPSS score was 25.64±3.54. However the average IPSS was 25.18±1.45 in study by Hossain et al.[14] and 23 in Antues et al. study.[15] The average IPSS was 28.92 and in the study by KC et al.[16] and 24.6±6 in the study by Luitel et al.[11] The mean IPSS of this study is almost similar to most of the previous studies in our part of world.

The mean score for quality of life was 5.06±0.70 in this study. It was 4.1 in Antues et al.[15] The mean score for quality of life was 5.30± 0.46 in study by Hossain et al.[14] It was 5.2 in study by Chalise et al.[13] In the study by Luitel et al. it was 5.1±0.9.[11]

In this study all of the patients preoperatively had voiding symptoms. The cause of obstructive urinary symptoms in benign prostatic hyperplasia is due to dynamic obstruction at bladder neck, mechanical obstruction due to enlarged in size or structural distortion like enlarged median lobe. Later on, chronic obstruction detrusor muscle reaches to the stage of myogenic failure.

In this study 75.7% patients had storage symptoms preoperatively and frequency, nocturia and urgency were present preoperatively in 71.4%, 82.9% and 65.7% patients respectively.

The most common lower urinary tract symptom is nocturia in case of benign enlargement of prostate, >95 % of patients with BPH report nocturia with frequency ≥1 and >73 % with a frequency ≥2 times per night. In the study by Hamzah et al. nocturia, frequency and urgency was present among 95%, 86% and 53% patients respectively.17 Like in our study nocturia was common storage symptoms in BPH patients in the study by Hamzah et al.[17]

In this study the preoperative voiding and storage sub scores were 15.99±2.94 and 9.57±2.30 respectively. In study done by Luitel et al. voiding and storage sub score was 13.4±±4.3 and 11.1±3 respectively.[11] It was 14.25 and 8.24 in Kang et al.[18] and 14.3±2.69 and 9 in study by Weng et al.[19] In this study the baseline IPSS decreased to 5.33±2.63 from 25.64±3.54 with mean decrease 17.84±3.57 with p value <0.001 and it is significant. In the study by Luitel et al IPSS decreased to 5.4±2.9 from 24.6±6 during 3 month follow up after TURP.11 Mean pre and postoperative IPSS was 23.0 ±5.6 and 5.9 ± 4.6 respectively in study by Antunes et al.15 There is statistically significant improvement in IPPS score after TURP in this study.

In this study 15.7 % patients had persistent storage symptoms at 3rd month postoperatively. The study by Rahaman et al. found among total 60 patients 18 (30.0%) had persistent storage symptoms (≥8/15) which is higher than our study.[20]

In this study the storage score decreased to 4.39±1.94 from 9.57±2.30 with mean decrease of 5.20±2.82 with p value <0.001 and it is significant. Mean decrease in voiding sub score is more as compared to storage sub score, but decrement in both voiding and storage sub score is statistically significant in this study.

Baseline frequency score 3.14±0.93 decreased to 1.47±0. 756. Urgency score 2.97±0.90 decreased to 1.24±0.89. Nocturia score 3.44±0.81 decreased to 1.63±1.14. Decrease in all storage symptoms variables is statistically significant. Postoperatively frequency, urgency and nocturia were present in 14.3 %, 12.9% and 52.9% patients respectively.

The reason behind nocturia to be common symptom as compared to other storage symptoms; frequency and urgency in postoperative period is probably because in this study international continence society definition of waking up more than one time in night is used to define nocturia. The cause of nocturia in elderly and old male are multifactorial, medical comorbidities, aging, sleep disorders may contribute to it.[21]

There are many causes for persistence of storage symptoms like preexisting over active bladder, detrusor

overactivity, neurogenic bladder, urinary tract infections, epithelialization of raw area formed during transurethral resection. These symptoms often need medical and surgical interventions.

Proper case selection, preoperative urodynamics in suspected neurogenic or detrusor overactivity, avoiding excessive burning or coagulating prostatic fossa and control of infection may help to avoid decreasing persistence of these storage symptoms.

In a study by Koji Yoshimura et al. 71.1% patients of BPH had nocturia and after TURP prevalent reduction was by 32.2% only. These rates of improvement in nocturia was lowest among seven other symptom scores.[21] The prevalent reduction after TURP coincides with our study where reduction was from 82.9% to 52.9% of 30%. Nocturia was less improved symptoms among other storage symptoms in our study too.

The voiding sub score decreased to 3.31±2.35 from 15.99 ±2.94 with mean decrease 12.90±2.24 with p value <0.001 and it is significant.

Total four patients (5.7%) had persistent voiding symptoms after TURP. Among them one patient had inadequate resection with hanging apical tissue, one had bulbar urethral stricture, one with meatal stenosis and other had bladder underactivity.

The causes for voiding symptoms after TURP in general are inadequate resection, hanging apical tissue, retained tissue or clots, thermal injury, large sheath size of resectoscope causing tissue damage, scarring and fibrosis following overzealous coagulation, underlying neurogenic bladder or detrusor under activity.

Limitation

Short duration of follow up period of only 3 months, possible recall bias due telephone calls follow up, subjective response evaluation to assess improvement, not using uroflowmetry and urodynamics for objective evaluation are limitations of this study.

Recommendation

Patients after TURP may have residual storage and voiding symptoms which should be closely evaluated during follow up. These may need pharmacological or surgical interventions. These symptoms are reasons for patient dissatisfaction after TURP. The preexisting causes of overactive bladder should be evaluated prior subjecting individuals for TURP.

Conclusion

Monopolar transurethral resection of prostate resulted statistically significant decrement in total IPSS, storage sub score, voiding sub score and QoL score. Decrement in voiding sub score was more as compared to storage sub score but decrement in each score was statistically significant. Many patients had residual storage symptoms after TURP and nocturia was the most persistent symptom. The quality of life of patients was impaired by these symptoms.

Persistence of these postoperative storage symptoms are due to late presentation preoperatively where bladder is destroyed pathologically due to chronic obstruction or due to preexisting causes of overactive bladder along with BPE.

Although new minimally invasive techniques are available as options to treat BPE, monopolar TURP is still a gold standard as it results in reliable symptoms decrement and improvement in quality of life with acceptable adversity.

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