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ASSESSMENT OF THE RESULTS OF TRANSURETHRAL RESECTION OF THE PROSTATE (TURP) FOR BENIGN PROSTATIC HYPERPLASIA AT HUE CENTRAL HOSPITAL

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Abstract

This study aims to evaluate the treatment outcomes for benign prostatic hyperplasia (BPH) using transurethral resection of the prostate (TURP) at Hue Cetral Hospital in 2024. A cross- sectional descriptive study was conducted on patients diagnosed with BPH who underwent TURP. Clinical characteristics, intraoperative findings, and postoperative outcomes were analyzed. Key parameters included preoperative International Prostate Symptom Score (IPSS), quality of life (QoL) scores, uroflowmetry, and surgical complications classified by the Clavien-Dindo system. Most patients showed significant improvement in urinary symptoms and quality of life postoperatively. The majority had reduced IPSS scores, increased maximum urinary flow rates (Qmax), and improved QoL scores. Postoperative complications were minimal, with no life-threatening events recorded.

Key words: Benign prostatic hyperplasia, transurethral resection of the prostate, TURP, treatment outcomes

I. INTRODUCTION

Benign prostatic hyperplasia (BPH) is a common condition in elderly men, with the incidence increasing with age. Specifically, about 50% of men aged 51-60 are affected, and this rate can reach 80-90% in those aged 80-90[1]. The disease reduces quality of life due to urinary disorders and can lead to serious complications such as kidney failure and urinary retention. Studies show that approximately 40,5% of men aged 50 and older experience lower urinary tract symptoms, of which 26,9% have prostatic hyperplasia[2].

Treatment depends on prostate size and the extent of influence on quality of life, with surgery being the definitive method when complications arise. Transurethral resection of the prostate (TURP) is the most common method, considered the "gold standard" [3] and widely used in Vietnam[4]. In Hue Central Hospital, Transurethral Resection of the Prostate (TURP) is the primary surgical approach used for benign prostatic hyperplasia patients who have developed complications or have not responded to conservative medical therapy.

The research aims to assess the clinical characteristics and surgical outcomes of benign prostatic hyperplasia patients at Hue Central Hospital.

II. MATERIALS AND METHODS

2.1. Study subjects

35 patients diagnosed with benign prostatic hyperplasia and treated with transurethral resection of the prostate at Hue Central Hospital from September 2024 to November 2024.

2.2. Methods: Cross-sectional descriptive study design.

2.3. Assessment methods

2.3.1. Preoperative Findings

Clinical features Age divided into 3 groups: $< 70; 70 - 80; > 80$

Reason for admission: subjective symptoms that led the patient to the hospital, divided into: urinary disorders, urinary retention, hematuria

The International Prostate Symptom Score (IPSS) is a tool used to assess the severity of prostate symptoms, consisting of 7 questions with responses rated from 0 to 5. The total score categorizes symptoms into three levels: 0-7 indicates mild symptoms, 8-19 indicates moderate symptoms, and 20-35 indicates severe symptoms. The questions address issues such as incomplete bladder emptying, frequency of urination, interrupted urine flow, urgency, urine strength, straining to urinate, and nighttime urination[5].

Quality of Life (QoL) evaluates how urinary symptoms affect a patient's daily life, using a single question with responses scored from 0 to 6, which can also be categorized into three levels of impact: mild (0-2), moderate (3-4), and severe (5-6)[5].

Paraclinical Features

Serum PSA Level: measured by ELISA immunoassay. Total PSA (tPSA), divided into 3 groups: ≤ 4 and 4-10 and >10 ng/ml[6].

Uroflowmetry: Preoperative uroflowmetry to determine maximum urinary flow rate (Qmax), assessing the degree of lower urinary tract obstruction: moderate obstruction 10-15ml/s, severe obstruction ¡10ml/s[7].

Transabdominal ultrasound: examination of prostate density, morphology, volume, and intravesical prostatic protrusion. Prostate volume is calculated using the formula:

$$V_{TTL} = \frac{L \times W \times H \times \pi}{6}$$

Where: V is volume, L is length, W is width, H is height of the prostate.

- Prostate volume is divided into 2 groups: 25 - 40ml and >40ml [8].

- Intravesical prostatic protrusion (IPP) divided into 3 grades: grade 1 < 5mm; grade 2 from 5 – 10mm and grade 3 > 10mm[9],[10].

2.3.2. Intraoperative Findings

Prostate morphology: enlarged middle lobe, enlarged two lateral lobes, enlarged all three lobes.

Condition of the bladder and urethra: trabeculated bladder, urethral stricture.

Surgical time (minutes): calculated from the start of instrument insertion to instrument removal.

Intraoperative complications: difficult-to-control bleeding, bladder perforation, prostate capsule perforation, verumontanum injury, external sphincter injury.

2.3.3. Postoperative Findings

Assessment of TURP surgical complications based on the Clavien-Dindo classification, referencing a similar study by Geremew L.M [10].

Postoperative length of stay (days): from the end of surgery to discharge.

Duration of urethral-bladder catheter placement: from the placement of the urethral-bladder catheter during surgery to its removal.

Uroflowmetry: assessment maximum urinary flow rate (Qmax) postoperative.

IPSS and QoL assessment before discharge. Compare the changes in the International Prostate Symptom Score (IPSS) and Quality of Life (QoL) scores before and after the surgery to evaluate the improvement of symptoms. *IPSS Improvement Rate* is caculated using the formula:

III. RESULT AND DISCUSSION

Age The age group ¡70 (60%) predominates in the study. The average age is

$$IPSS\ Improvement\ Rate = \frac{IPSS\ \text{Preoperative} - IPSS\ \text{Postoperative}}{IPSS\ \text{Preoperative}} x10$$

Table 1. Treatment Outcome Evaluation Criteria

Criteria	Good	Moderate	Poor
Postoperative Qmax	> 15 ml/s	10 – 15 ml/s	< 10 ml/s
Clavien-Dindo Classification of Complications	None or Grade I	Grade II	Grade III, IV, V
IPSS Improvement Rate	≥ 50%	25 – 50%	< 25%
Postoperative QoL Score	1 – 2	3 – 4	5 – 6

69,06± 9,27 years, with the youngest being 51 and the oldest being 87 years old.

This results are consistent with the study by Ahmad M. (2016)[11], which reported an average age of 69,10±11,72 years. Observational studies from Europe, the United States, and Asia have also demonstrated that older age in men is a risk factor for the onset and clinical progression of Lower Urinary Tract Symptoms/Benign Prostatic Hyperplasia[12].

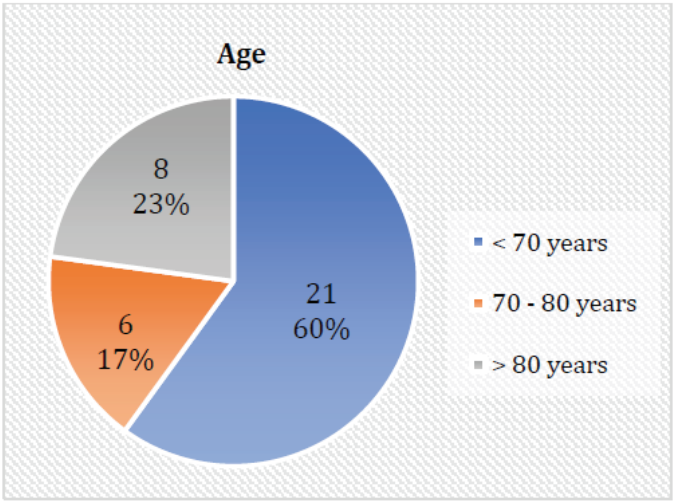

Figure 1. Distribution of patients by age group

Reasons for Admission The study found that acute urinary retention is a common complication of BPH, with 28 patients (accounting for 80%) admitted for this reason. Six patients were admitted for recurrent hematuria,

which is one of the indications for surgical intervention in BPH. One patient was admitted for severe urinary dysfunction, specifically difficulty urinating, frequent urination, and nocturia, requiring surgical intervention due to severe impact on quality of life.

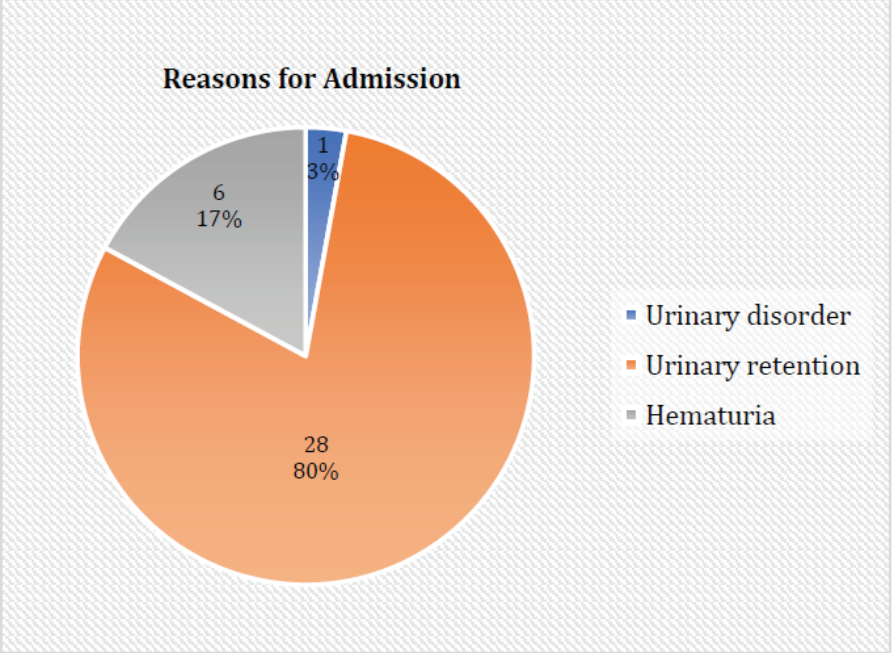

Figure 2. Reasons for Admission

IPSS and QoL preoperative In this study, the average IPSS score of patients within 1 month prior to admission was 24,86±2,83 points, with the lowest value being 18 and the highest being 33 points. This result is consistent with the studies by Hoang Van Cong (2022) (25,32±3,91 points) [13] and Huang L.K (2019) (25,02±4,93 points)[14]. The average pre-operative QoL score was 4,03±0,75 points, with the lowest value being 3 and the highest being 5 points. There was a very strong positive correlation between the IPSS and QoL scores, with a correlation coefficient r = 0,725 (p <0.001).

Using the IPSS scale to assess the severity of urinary dysfunction, 34/35 patients (97,1%) had severe dysfunction, 1 patient had moderate dysfunction, and no patient had mild dysfunction. For the QoL scale, 10 patients (28,6%) had a severe impact on their quality of life, while 71,4% had a moderate impact, and there were no cases of mild impact. This scoring system helps patients and healthcare providers understand the impact of urinary symptoms on their quality of life. Overall, the IPSS and QoL tools facilitate a comprehensive

Table 2. Prostate Symptoms based on pre-operative IPSS and QoL

Factors		$\bar{X} \pm SD$
Prostate Symptoms (n=35, 100%)	Incomplete Emptying	4,11 ± 0,76
	Frequency	3,91 ± 0,70
	Intermittency	3,17 ± 0,51
	Urgency	3,03 ± 0,38
	Weak Stream	4,31 ± 0,68
	Straining	3,11 ± 0,68
	Nocturia	3,2 ± 0,58
Pre-operative IPSS Score (n=35, 100%)		24,86 ± 2,83 (18-33)
Pre-operative QoL Score (n=35, 100%)		4,03 ± 0,75 (3-5)
Correlation between IPSS and QoL Scores		**r** = 0,725; **p** < 0,001

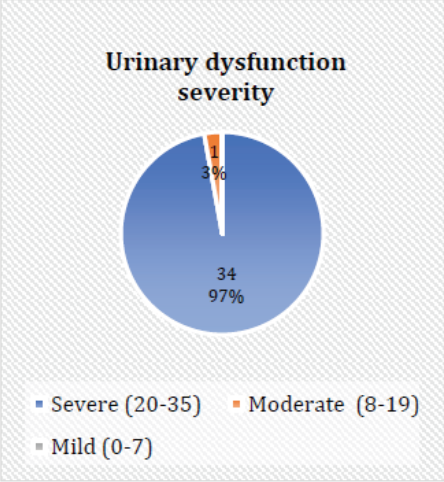

Figure 3. Urinary dysfunction severity

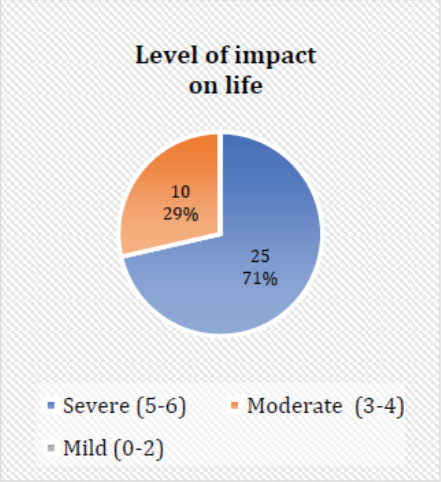

Figure 4. Degree of impact on life

evaluation of prostate-related issues.

Preoperative Paraclinical Findings The study found an average total PSA concentration of 10,62±17,86 ng/mL, significantly higher than previous studies by Cao Thi Van (2015) and Ida Bagus O. W Putra (2016), which reported averages of 4,3±3,4 ng/mL and 4,93± 2,62 ng/mL, respectively[15],[16]. This increase may be due to many patients presenting with acute urinary retention, which can double PSA levels for up to two weeks. The average prostate volume was 55,89±21,31 mL, consistent with findings from Tran Hoai Nam (2023) and Tran Le Linh Phuong (2016) [17],[18]. The American and European Urological Associations recommend endoscopic surgery for prostates under 80 mL, but this is not an absolute limit [19], explaining why some patients with larger prostates (up to 120 mL) still chose TURP. Additionally, 19 out of 35 patients underwent uroflowmetry, with a maximum urine flow rate of 9,67±3,66 mL/s, suggesting that intervention may be warranted for those with moderate to severe urinary disorders affecting their quality of life.

Table 3. Preoperative Paraclinical Findings

Factors	Level	Number (n)	Percentage (%)	$\bar{X} \pm SD$
tPSA (ng/ml) (n=35, 100%)	≤4	16	45,7	10,62 ±17,86 (0,181-100)
	4 – 10	8	22,9	
	>10	11	31,4	
Qmax (ml/s) (n=19, 54,3%)	<10	10	28,6	9,67±3,66 (3,9-16,9)
	10-15	7	20	
	>15	2	5,7	
Prostate volume (ml) (n=35, 100%)	< 40	11	31,4	55,89±21,31 (25-122)
	≥ 40	24	68,6	
Intravesical prostatic protrusion (mm) (n=35, 100%)	Grade 1 (<5)	14	40	11,23±11,03 (0-32)
	Grade 2 (5-10)	4	11,4	
	Grade 3 (>10)	17	48,6	

Intraoperative Findings A study on prostate morphology in surgery revealed that the three-lobed shape is the most common, accounting for 57,1%, while the middle lobe comprises 8.6%, and the two lateral lobes make up 34,3%. Prostate morphology can contribute to urinary disorders and complications such as acute urinary retention, even when the tumor is only 30ml, if the middle lobe obstructs the bladder neck. In this study, there were 13 cases (37,1%)

where the bladder faced resistance, and 8 cases (22,9%) of severe urethral stricture that required interventions such as dilation or cutting. These patients should have follow-up appointments for appropriate future treatment due to the risk of recurrence of stricture. The average duration of transurethral resection of the prostate surgery was 82±19,2 minutes. Studies indicate that keeping surgery under 90 minutes reduces complication rates, while durations exceeding 120 minutes significantly increase these rates [20].

Table 4. Intraoperative Findings

Factors	Findings	(n)	(%)
Prostate morphology	Enlarged middle lobe	3	8,6
	Enlarged two lateral lobes	12	34,3
	Enlarged all three lobes	20	57,1
Condition of the bladder and urethra	Trabeculated bladder	13	37,1
	Urethral stricture	8	22,9
Intraoperative complications		0	0
Average surgical time (minutes)		82±19,82 (50 – 120)	

Assessment of TURP surgical complications The study evaluates complications related to transurethral resection of the prostate (TURP) using the Clavien-Dindo classification system. According to the findings, level 1 complications occurred in 10 cases (28,5%), including one case of acute urinary retention treated with NSAIDs and alfuzosin, which resolved after three days, and 9 cases of hematuria that self-resolved within 1-2 days. Level 2 complications included 2 cases (5,7%) of urinary tract infections requiring antibiotics. Level 3 complications involved 3 significant cases, including postoperative bleeding that necessitated blood transfusions and endoscopic hemostasis, as well as two cases requiring additional TURP and bladder neck surgery after 15 days. No complications were reported at levels 4 and 5. Overall, 20 cases (57,1%) experienced no complications. The study concludes that most TURP complications are manageable and of low severity, with no intraoperative complications reported, indicating that TURP is a safe and effective procedure with minimal complications.

Postoperative and bladder catheterization time Urethral-bladder catheterization is a necessary procedure after TURP, but it carries the risk of urinary tract infection, so the duration of catheterization requires attention. In this study, the average catheterization time was 3,86±1,44 days, with the shortest being 2 days and the longest being 7 days due to patients experiencing acute

Table 5. TURP complications based on the Clavien-Dindo classification

Grade	Complications and Management	Number (n=35)	Percentage (100%)
0 (n=20, 57,1%)	No complications	20	57,1
1 (n=10, 28,5%)	Hematuria without intervention	9	25,7
	Acute urinary retention requiring re-catheterization	1	1
2 (n=2, 5,7%)	Urinary tract infection requiring treatment according to antibiogram	2	5,7
3 (n=3, 8,7%)	Bleeding requiring blood transfusion and post-operative endoscopic hemostasis	1	2,9
	Hematuria requiring second transurethral resection of the prostate (TURP)	1	2,9
	Bladder neck contracture, treated with endoscopic bladder neck incision	1	2,9
4 (n=0, 0%)	Life-threatening	0	0
5 (n=0, 0%)	Death	0	0

urinary retention. The average postoperative stay was 6,77±2,97 days, which is longer than reported by other authors due to patients awaiting pathology results.

Postoperative Qmax, IPSS Improvement Rate and Postoperative QoL Score An improvement of over 50% in the IPSS score was seen in 30 cases, indicating good symptom improvement. The QoL score increased by 1 to 2 points in 27 cases, making up 77,1%. Post-surgery, the average IPSS score decreased to 7.46 ± 4.07 from 24,86±2,83, resulting in a significant improvement of 17,4±5 (70%). This improvement is similar to Nguyen Minh An (2023) at 72,1% [4], but lower than Hoang Van Cong (2022) at 77,1%[13]. The post-surgery QoL score was 1,97±0,89, similar to Trinh Hoang Hoan (2023) at 1,87±0,76[21], with a significant improvement of 2,06±1,28 (51,11%). Satisfaction with surgery results was reported by 27 out of 35 patients (77,1%). The average maximum flow rate (Qmax) at discharge was 21,79±8,96 ml/s, showing significant improvement from heavy obstruction before surgery (9,67±3,66) with an improvement of 12,11±7,76. In total, 82. 9% of cases had non-obstructed Qmax values.

Table 6. Results of Postoperative Qmax, IPSS Improvement Rate and Postoperative QoL Score

Factors		Number (n)	Percentage (%)	$\bar{X} \pm SD$
Qmax (ml/s) (n=35, 100%)	> 15 ml/s	29	82,9	21,79±8,96 (3,10-39,10)
	10-15 ml/s	1	2,9	
	< 10 ml/s	5	14,3	
IPSS Improvement Rate (n=35, 100%)	> 50%	30	85,7	7,46±4,07
	25-50%	3	8,6	
	< 25%	2	5,7	
Postoperative QoL Score (n=35, 100%)	1-2 points	27	77,1	1,97±0,89
	3-4 points	7	20,0	
	5-6 poimts	1	2,9	

Results of TURP treatment

Based on the evaluation criteria in Table 1, the overall treatment results showed that 26/35 cases (74,3%) had good results, 3 cases (8,6%) had moderate results, and 6 cases (17,1%) had poor results. These results are lower than those

reported by Hoang Van Cong (2022), which were 80,5%, 16,9%, and 2,5% for good, moderate, and poor outcomes, respectively [13]; and lower than those reported by Trinh Hoang Hoan (2023), which were 87.6%, 12,4%, and 0% for good, moderate, and poor outcomes, respectively[21] . The lower results may be due to the fact that most patients were admitted with severe complications.

Table 7. Results of TURP treatment

Outcome	Number (n=35)	Percentage (100%)
Good	26	74,3
Moderate	3	8,6
Poor	6	17,1

V. CONCLUSION

TURP is an effective surgical treatment for BPH at Hue Central Hospital, leading to significant improvements in urinary symptoms and quality of life. The majority of complications were manageable and of low severity.

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