PROFILE OF BPH PATIENTS UNDERGOING TURP AT JASA KARTINI HOSPITAL TASIKMALAYA FROM 2021 TO 2023

***Ilyasa Bani Mahendra, Aryo Teguh Abriansyah.**

Jasa Kartini Hospital, Tasikmalaya, Indonesia.

ABSTRACT

Introduction: *Transurethral Resection of Prostate (TURP) has become the most frequently recommended minimally invasive procedure for patients with LUTS caused by BPH. BPH being the most common cause of LUTS in men and TURP being the most commonly recommended procedure in its management.* ***Objective:*** *This studyaims to provide the profile of BPH patients undergoing TURP procedures at Jasa Kartini Hospital,Tasikmalaya, from January 2021 to September 2023.* ***Material & Methods:*** *This study is a descriptive cross-sectional conducted using consecutive sampling method.* ***Results:*** *During the period of January 2021 to September 2023, there were 214 BPH patients who underwent TURP procedures and this number had increasing trend each year. The prevalence of BPH patients undergoing TURP procedures was highest in the age group of 60-69 years (37.38%). 52.34% of patients resided in Tasikmalaya Regency. The most common comorbidities were hypertension (71.03%), vesicolithiasis (14.95%), and fatty liver (10.28%). Among BPH patients undergoing TURP procedures, 59.35% had prostate volumes ranging from 30 to 80ml. TURP procedures in this study lasted ≤ 60 minutes in 80.84% of casesand 73.83% had a hospital stay of 3 days. The majority of BPH patients undergoing TURP with prostate volumes of 30-80 ml were in the aged group of 60-69 years, while those with prostate volumes >80 ml were mostly aged 70-79 years.* ***Conclusion:*** *The prevalence of BPH patients undergoing TURP procedures from January 2021 to September 2023 at Jasa Kartini Hospital Tasikmalaya was 214 patients, with the highest prevalence observed in the age group of 60-69 years. The majority of BPH patients undergoing TURP procedures had prostate volumes ranging from 30 to 80 ml and underwent procedures lasting ≤ 60 minutes.*

Keywords: *TURP, BPH, LUTS.*

ABSTRAK

Pendahuluan: *Reseksi Transuretral Prostat (TURP) telah menjadi prosedur invasif minimal yang paling sering direkomendasikan untuk pasien dengan LUTS yang disebabkan oleh BPH. BPH merupakan penyebab LUTS yang paling umum pada pria dan TURP merupakan prosedur yang paling sering direkomendasikan dalam penanganannya.* ***Tujuan:*** *Penelitian ini bertujuan untuk memberikan gambaran profil pasien BPH yang menjalani tindakan TURP di RS Jasa Kartini Tasikmalaya periode Januari 2021 s.d. September 2023.* ***Bahan & Cara:*** *Penelitian ini merupakan penelitian deskriptif cross-sectional menggunakan metode consecutive sampling.* ***Hasil:*** *Selama periode Januari 2021 s.d. September 2023 terdapat 214 pasien BPH yang menjalani tindakan TURP dengan tren yang meningkat setiap tahunnya. Prevalensi pasien BPH yang menjalani tindakan TURP paling banyak dilakukan pada kelompok usia 60-69 tahun (37.38%). Sebanyak52.34% pasien berdomisili di Kabupaten Tasikmalaya. Penyakit penyerta terbanyak adalah hipertensi (71.03%), vesicolithiasis (14.95%), dan fatty liver (10.28%).Sebanyak5 9.35% pasien BPH yang menjalani tindakan TURP memiliki volume prostat 30 – 80ml. Sebanyak 80.84% prosedurTURP berdurasi ≤ 60 menit dan 73.83% memiliki lama rawat selama 3 hari. Sebagian besar pasien BPH yang menjalani TURP dengan volume prostat 30 – 80 ml berada pada kelompok usia 60 – 69 tahun dan >80 ml berada pada kelompok usia 70 – 79 tahun.* ***Simpulan:*** *Prevalensi pasien BPH yang menjalani tindakan TURP pada periode Januari 2021 – September 2023 di RS Jasa Kartini Tasikmalaya adalah 214 pasien dengan prevalensi terbanyak berusia 60 – 69 tahun. Sebagian besar pasien BPH yang menjalani TURP memiliki volume prostat 30 – 80 ml dan memiliki durasi tindakan ≤ 60 menit.*

Kata Kunci: *TURP, BPH, LUTS.*

Correspondence: Ilyasa Bani Mahendra; c/o: Jasa Kartini Hospital. Jalan Otto Iskandardinata No.15, Tasikmalaya, Jawa Barat 46131, Indonesia. Email: ilyasabm@gmail.com.

INTRODUCTION

Urinary retention is classified as one of the most common Lower Urinary Tract Symptoms (LUTS), particularly among adult and elderly males.[1,2] The estimated incidence of acute urinary retention is around 6.8 cases per 1000 individuals per year in the general male population. This incidence increases by 5 to 10 times in elderly males.[3] The prevalence of LUTS in Asia ranges from 19.8% to 24.4%, while in Indonesiais around 13%.[4] Acute urinary retention in elderly males is mostcommonly caused by obstructive factors, primarily benign prostatic hyperplasia (BPH).[2] BPH is prostatic hypertrophy diagnosed by histopathology. In 2019, approximately 94 million cases of BPH in males over 40 years old were reported worldwide. This prevalence increases by up to 173% in the male population over 80 years old.[5,6] The prevalence of BPH in Indonesia and West Java is still unknown, but according to data from the Social Security Agency on Health (BPJS Kesehatan) in West Java, there were 97,043 diagnosed BPH patients from 2016 to 2020.[6]

One of the diagnostic modalities for patients with LUTS symptoms of suspected BPH is prostate ultrasonography (transabdominal or transrectal) which is primarily used to assess the shape and size of the prostate that can predict symptoms, progression, risk of complications, and especially determine the choice of management.[1,6] Prostate volume is heavily influenced by hormones, the balance of which is disrupted with increasing age. Prostate volume increases 35 to 40 mililiters in men aged 70 years.[7]

Transurethral Resection of Prostate (TURP) has become the most frequently recommended minimally invasive procedure for patients with LUTS caused by BPH, especially in patients with prostate volumes of 30 – 80 ml. TURP has shown good long-term outcomes, including improvements in Qmax, reduction in IPSS, decreases in QoL scores, and reductions in PVR. Various guidelines strongly recommend TURP for patients with LUTS symptoms that are unresponsive to pharmacological treatment or accompanied by complications such as urinary retention.[6,8] Despite BPH being the most common cause of LUTS in men and TURP being the most commonly recommended procedure in its management, research on the profile of BPH patients undergoing TURP is still rarely conducted, especially in West Java.

OBJECTIVE

Therefore, this study aims to provide an overview of the profile of BPH patients undergoing TURP at Jasa Kartini Hospital in Tasikmalaya.

MATERIAL &METHODS

This study is a descriptive cross-sectional study involving patients diagnosed with BPH with gross hematuria, BPH with recurrent acute urinary retention, and BPH with failed TWOC who underwent TURP surgery at Jasa Kartini Hospital in Tasikmalaya from January 2021 to September 2023. This study uses consecutive sampling as its sampling method. The patient profile data collected include age, domicile, comorbidities, laboratory examination results, ultrasound examination results, duration of surgery, length of stay, and histopathology results. The data for this study were obtained from the patients' medical records, thus representing secondary data.

Comorbidities data are derived from diagnoses established by urology specialists on the day the patient is discharged. Laboratory and ultrasound examination data represent pre-operative results. The data are presented using descriptive statistics in terms of frequency and percentage. Data collection and processing were carried out using Microsoft Excel 2021.

RESULTS

Table 1 shows that there were 214 BPH patients undergoing TURP at Jasa Kartini Hospital during the study period. The highest number of patients occurred in 2023, with 121 patients. The age group with the highest number of BPH patients undergoing TURP was 60 – 69, (37.38%), followed by 70 – 79 (35.51%). The majority of patients were domiciled in Tasikmalaya Regency (52.34%).

Table 2 presents the comorbidities data. Five most common comorbidities in BPH patients are hypertension (71.03%), vesicolithiasis (14.95%), fatty liver (10.28%), renal cysts (8.41%), and hydronephrosis (7.84%).

In Table 3, it was found that 62.15% had normal hemoglobin levels, 71.50% had leukocyte levels between 4.000 and 9.999, and 87.85% had normal platelet levels. From the ultrasound results, 59.35% had 30 – 80mL prostate volumes.

In Table 4, it was found that 80.84% of TURP surgeries lasted ≤ 60 minutes, with only 3.27% lasting ≥ 90 minutes. The length of stay for patients undergoing TURP was 73.83% for 3 days. 179 of the histopathological result was found to be benign while 7 was malignant.

Table 1.Profile of BPH patients undergoing TURP.

Characteristics	N (%)
Year	
2021	39 (18.22)
2022	54 (25.23)
2023	121(56.54)
Total	**214 (100)**
Age	
<50 years	1 (0.47)
50 – 59 years	30 (14.02)
60 – 69 years	80 (37.38)
70 – 79 years	76 (35.51)
>= 80 years	27 (12.62)
Residences	
Kota Tasikmalaya	59 (27.57)
KabupatenTasikmalaya	112 (52.34)
Kota Ciamis	21 (9.81)
Kota Garut	19 (8.88)
Kota Banjar	1 (0.47)
Others	2 (0.93)

Table 2. Distribution of Comorbidities in BPH Patients.

Comorbidities	N (%)
Hypertension	152 (71.03)
Grade 1	113 (74.34)
Grade 2	39 (25.66)
Vesicolithiasis	32 (14.95)
Fatty Liver	22 (10.28)
Renal Cysts	18 (8.41)
Nefrolithiasis	17 (7.94)
Hydronephrosis	16 (7.84)
Unilateral	5 (31.25)
Bilateral	11 (68.75)
Cholelithiasis	9 (4.21)
Diabetes Mellitus	8 (3.74)
HIL	8 (3.74)
CKD	5 (2.34)
Cholecystitis	5 (2.34)
Bladder Cancer	4 (1.87)
Nephritis	4 (1.87)

Table 3. Profile of Ancillary Examination in BPH Patients.

Ancillary Examination Laboratory	N (%)
Haemoglobin[a]	
<8.0 gr/dL (Severe Anaemia)	2 (0.93)
8.0-10.9 gr/dL (Moderate Anaemia)	17 (7.94)
11.0 - 12.9 gr/dL (Mild Anaemia)	58 (27.10)
13.0 - 17.0 gr/dL (Normal)	133 (62.15)
>17.0 dr/dL	4 (1.87)
Leucocyte[b]	
4.000 - 9.999	153 (71.50)
> 10.000	61 (28.50)
Thrombocyte[c]	
100.00 - 149.999	6 (2.80)
150.000 - 399.999	188 (87.85)
≤400.000	20 (9.35)
Ureum[d]	
Normal (≤ 50)	189 (88.32)
High	25 (11.68)
Creatinine[e]	
Normal (≤1.3)	89 (41.59)
High	125 (58.41)
Randomized Blood Glucose[f]	
≥ 140	177 (82.71)
140 - 199	30 (14.02)
≤200	7 (3.27)
Transabdominal USG	
Prostate Volume	
<30 ml	80 (37,38)
30 – 80 ml	127 (59,35)
>80 ml	7 (3,27)

[a,b,c,d,e,f] categorized based on CDC Hematologic References Ranges.

Table 4. Data on duration of surgery, length of stay, and histopathological results.

Characteristics	N (%)
Duration of Surgery	
≤ 60 minutes	173 (80.84)
60 - 90 minutes	34 (15.89)
≥ 90 minutes	7 (3.27)
Length of Stay	
2 days	32 (14.95)
3 days	158 (73.83)
4 days	17 (7.94)
5 days	5 (2.34)
≥ 7 days	2 (0.93)
Histopathological Results	
No data	28 (13.08)
Benign	179 (83.64)
Malignant	7 (3.27)

DISCUSSION

In this study, 214 BPH patients underwent TURP from 2021 to 2023. A similar study by Zen Ary found 162 BPH patients undergoing TURP in 2015 - 2017.[7] In this study, the number of TURP procedures increased each year, more than doubling in 2023 compared to 2021. However, this increase may be attributed to the restriction of TURP surgeries from 2021 until mid-2022 due to the COVID-19 pandemic. According to the recommendations of the IAUI regarding urology services during COVID-19, TURP procedures for BPH can be postponed. Meanwhile, the obstruction can be temporarily managed by inserting a urethral or suprapubic catheter.[9]

In this study, the number of BPH patients undergoing TURP increased with age, with the highest prevalence in the age groups of 60 – 69 years and 70 – 79 years. These results are consistent with the study conducted by Zen Ary, which found that the most common age group undergoing TURP was the 61-70 years group.[7] As a man ages, the balance between cell proliferation and apoptosis influenced by hormones becomes disrupted, leading to prostate cell hyperplasia. Hormones that play a crucial role in this mechanism is dihydrotestosterone (DHT), which induces gene transcription and initiates protein production, and oestrogen, which regulates the balance of cell proliferation and apoptosis.[10,11]

In this study, hypertension is the most prevalent comorbidity among BPH patients undergoing TURP. According to Adrianus Gupta's research, hypertension is associated with the incidence of BPH. Hypertension poses a risk for BPH due to increased sympathetic tone and enhanced function of α1-adrenoceptors. Increased function of α1-adrenoceptors leads to increased smooth muscle tone in the prostate, resulting in obstruction.[12] The second most common comorbidity is vesicolithiasis. In a study by Jae Hung, it was found that larger prostate volumes in BPH patients are associated with a higher tendency for vesicolithiasis. Bladder Outlet Obstruction (BOO) resulting from BPH leads to urine stasis in the bladder, exacerbated by incomplete bladder emptying, which becomes a precipitating factor for urine sedimentation accompanied by urinary tract infections, thus causing lithogenesis in the bladder.[13,14]

Another comorbidity found quite commonly is hydronephrosis. There haven't been many studies proving correlation between hydronephrosis and BPH, but various theories suggest that hydronephrosis in BPH is caused by obstruction at the ureterovesical junction due to bladder muscle hypertrophy.[15] Obstruction occurs due to chronic urinary retention, causing prolonged pressure on the bladder, which increases and retrogrades to the kidneys, leading to hydronephrosis.[16]

Metabolic syndrome is one of the comorbidities closely associated with the incidence of BPH. The most common components of metabolic syndrome in this study are fatty liver and diabetes mellitus. Research by Goh Eun Chung found that individuals with fatty liver have a higher risk of developing BPH, and Adrianus Gupta's study demonstrated a correlation between the occurrence of type 2 diabetes mellitus and BPH.[12,17] Both have a similar pathogenesis towards the occurrence and development of BPH, through conditions of hyperinsulinemia and insulin resistance. Hyperinsulinemia directly and indirectly impacts prostatic hyperplasia by altering the balance of sex hormones, increasing sympathetic nerve activity, and stimulating the liver to produce insulin-like growth factor (IGF). Insulin will bind to IGF, thereby increasing prostatic cell proliferation activity. [12,17,18]

In the study, it was found that most BPH patients undergoing TURP experienced an increase in creatinine levels. Jialin Meng's research yielded similar results, with the analysis indicating a correlation between increased creatinine levels and BPH. This provides further understanding of the relationship between renal function disorders and enlarged prostate conditions, suggesting that an integrated approach is needed to monitor kidney function as part of BPH patient care.[19]

Transabdominal ultrasonography examination in patients with LUTS symptoms accompanied by suspected prostate enlargement reveals several characteristics, one of which is prostate volume. In this study, it was found that the majority of patients had a prostate volume of 30-80ml. This is consistent with Sella Nadilla's research, which found that the most common prostate volume is in the 30 - 50 ml range.[20] In another study conducted by Zen Ary, it was shown that BPH patients undergoing TURP mostly had a prostate volume >50ml, with an average prostate volume of 57.7 ±29.2 ml.[7]

In someone with a prostate volume ≤ 80 ml, accompanied by acute urinary retention, it indicates

the need for TURP. However, for a prostate volume >80ml, open prostatectomy becomes the recommended treatment option.[1,6] This explains the findings of this study that the incidence rate of BPH patients undergoing TURP with the lowest number is found in the group of patients with a prostate volume >80ml. This study also found that 37.38% of BPH patients undergoing TURP had a prostate volume <30ml. According to the EAU guideline, patients suspected of having BPH can undergo TURP even if the prostate volume is <30ml as a choice of minimally invasive surgical procedure, especially if the criteria for surgical indication are met, such as patients not responding to drug therapy.[1]

In the study, the most common duration of TURP was ≤ 60 minutes. In Pashupatinath's research, the average duration of TURP surgery in BPH patients was 52.91 ± 11.2 minutes. In another study by Erik Sagen, the median duration of TURP surgery was found to be 62 minutes.[21,22] TURP is safest when performed in less than 90 minutes because the complication rate significantly increases if it exceeds 90 minutes.[1]

In this study, the maximum length of stay for BPH patients undergoing TURP was up to 3 days. In 2021, Pashupatinath's research found that the median length of stay for BPH patients undergoing TURP was 3 days, with the shortest duration being 2 days and the longest duration being 7 days. Length of stay is associated with the weight of the resected prostate, operation time, and post-operative complications.[21] In this study, 83.64% of the anatomical pathology examinations of BPH patients undergoing TURP showed benign characteristics. Similar results were found in a study conducted by Hafishah at the Anatomical Pathology Laboratory of Cibinong Regional Hospital, indicating a higher prevalence of BPH compared to prostate adenocarcinoma. Another study also found similar results, indicating that only 5-13% of prostate adenocarcinomas were detected in anatomical pathology examinations of TURP.[23,24]

CONCLUSION

In this study, the prevalence of BPH patients undergoing TURP from January 2021 to September 2023 at Jasa Kartini Hospital,Tasikmalaya was 214 patients, with the highest prevalence among those aged 60 - 69 years. Age is related to BPH through mechanisms involving disrupted hormonal balance as one ages. The most common comorbidities among BPH patients undergoing TURP in this study were hypertension, vesicolithiasis, and fatty liver. Each of these conditions has different mechanisms but many of them have been demonstrated to be correlated significantly with the occurrence of BPH.

Transabdominal ultrasonography examination of BPH patients undergoing TURP mostly revealed prostate volumes ranging from 30 to 80 ml. This aligns with the EAU guideline recommendation that TURP is the primary minimally invasive treatment option for BPH patients with volumes ranging from 30 to 80 ml. The duration of TURP procedures is mostly ≤ 60 minutes. If TURP exceeds 90 minutes, the likelihood of complications increases. The length of stay for TURP procedures in this study mostly lasted for 3 days. This length of stay is associated with the weight of the resected prostate, operation time, and post-operative complications.

This study still has several limitations that may leads to bias, such as data collection period partly occurred during the pandemic and ultrasounds was performed by different radiologist. The researchers recommend further research to explore the correlation between research variables.

REFERENCES

1. Cornu JN, Gacci M, Hashim M, et al. EAU Guidelines on Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO). 2023.
2. Karavitakis M, Kyriazis I, Omar MI, et al. Management of Urinary Retention in Patients with Benign Prostatic Obstruction: A Systematic Review and Meta-analysis. Eur Urol. 2019 May 1;75:788–98.
3. Billet M, Windsor TA. Urinary Retention. Vol. 37, Emergency Medicine Clinics of North America. W.B. Saunders; 2019. p. 649–60.
4. Sari ERLN, Siswandi A, Anggunan. Hubungan Usia Dan Hipertensi Terhadap Kejadian BPH Di RSUD Dr. H. Abdul.Moeloek. Malahayati Health Student Journal. 2021;1(3):247–51.
5. Awedew AF, Han H, Abbasi B, et al. The Global, Regional, And National Burden Of Benign Prostatic Hyperplasia In 204 Countries And Territories From 2000 To 2019: A Systematic Analysis ForTheGlobal Burden of Disease Study 2019. Lancet Healthy Longev. 2022 Nov 1;3(11):e754–76.
6. Tjahjodjati, Soebadi DM, Umbas R, et al. Panduan Penatalaksanaan Klinis Pembesaran Prostat Jinak. 4th ed. Ikatan Ahli Urologi Indonesia (IAUI); 2021.
7. Prasetyo ZA, Budaya TN, Daryanto B. Characteristics of Benign Prostatic Hyperplasia (BPH) Patients Undergoing Transurethral Resection

of the Prostate (TURP). Jurnal Kedokteran Brawijaya. 2021 Aug 31;31(4):220–3.
8. Eredics K, Wachabauer D, Röthlin F, et al. Reoperation Rates and Mortality After Transurethral and Open Prostatectomy in a Long-term Nationwide Analysis: Have We Improved Over a Decade? Urology. 2018 Aug 1;118:152–7.
9. Daryanto B, Wahyudi I, Hamid ARAH. Rekomendasi Pelayanan Urologiterkait COVID-19. 1st ed. Ikatan Ahli Urologi Indonesia (IAUI); 2020.
10. Aboumarzouk OM. Blandy's Urology. Vol. 3. Oxford; 2019.
11. Partin AW, Kavoussi LR, Peters CA. Campbell-Walsh-Wein Handbook of Urology. 2022.
12. Gupta Wijaya A, Sadra Telussa A. Relationship Between Hypertension And Diabetes Mellitus Type 2 With Benign Prostate Hyperplasia In Mgr. Gabriel Manek Hospital ATAMBUA. Cendana Medical Journal, Edisi. 2021;22(2).
13. Jung JH, Park J, Kim WT, et al. The association of benign prostatic hyperplasia with lower urinary tract stones in adult men: A retrospective multicenter study. Asian J Urol. 2018 Apr 1;5(2):118–21.
14. Huang W, Cao JJ, Cao M, et al. Risk factors for bladder calculi in patients with benign prostatic hyperplasia. Medicine (United States). 2017 Aug 1;96(32).
15. Lu CH, Wu HHH, Lin TP, et al. Is intravesical prostatic protrusion a risk factor for hydronephrosis and renal insufficiency in benign prostate hyperplasia patients? Journal of the Chinese Medical Association. 2019 May 1;82:381–4.
16. Speakman MJ, Cheng X. Management of the complications of BPH/BOO. Indian Journal of Urology. 2014;30(2):208–13.
17. Chung GE, Yim JY, Kim D, et al. Nonalcoholic Fatty Liver Disease Is Associated with Benign Prostate Hyperplasia. J Korean Med Sci. 2020 Jun 8;35(22).
18. Kopp W. Diet-Induced Hyperinsulinemia as a Key Factor in the Etiology of Both Benign Prostatic Hyperplasia and Essential Hypertension? NutrMetab Insights. 2018 May 6;11:1–11.
19. Meng J, Liu Y, Guan SY, et al. Age, height, BMI and FBG predict prostate volume in ageing benign prostatic hyperplasia: Evidence from 5285 patients. Int J Clin Pract. 2019 Dec 1;73(12).
20. Nadilla S, Sangadji AASC. KarakteristikPasien Benign Prostatic Hyperplasia (BPH) Berdasarkan Transabdominal Ultrasonography (TAUS) di RSU Al-Fatah Ambon Periode 2019-2021. Jurnal Kesehatan Tambusai. 2023;4(4).
21. Bhatta P, Raya A, Yadav UK, et al. Median Duration Of Hospital Stay After Early Removal Of Foley's Catheter Among Patients Undergoing Transurethral Resection Of Prostate: A descriptive cross-sectional study. Journal of the Nepal Medical Association. 2021 Jul 1;59(239):688–91.
22. Sagen E, Javid R, Liivrand L, et al. Patient Related Factors Affecting In-Hospital Costs of a TURP Procedure. Scand J Urol. 2021;55(4):324–30.
23. Mulyadi HTS, Sugiarto. Prevalensi Hiperplasia Prostat dan Adenokarsinoma Prostat secara Histopatologi di Laboratorium Patologi Anatomi Rumah Sakit Umum Daerah Cibinong. Muhammadiyah Journal of Geriatric. 2020;1(1).
24. Sakamoto H, Matsumoto K, Hayakawa N, et al. Preoperative parameters to predict incidental (T1a and T1b) prostate cancer. Canadian Urological Association Journal. 2014 Nov 1;8(11–12):e815–20.