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### Effects of TURP Surgery on BPH Patients

Basirun Basirun

Gombong Muhammadiyah University, Indonesia

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Corresponding Author: **Basirun Basirun**

#### Abstract

**Background:** Benign prostatic hyperplasia (BPH) is a common condition encountered in older men and a common cause of lower urinary tract symptoms. TURP is a procedure in which the prostate is resected from an endoscopic approach which is the gold standard for bladder outlet obstruction. Even though TURP treatment still has undesirable effects, this research article explains the various effects of TURP treatment.

**Objective:** To analyze the effects of TURP surgery.

**Research method:** Systematic review.

**Research result:** From 37 journals explained that Turp surgery has effects such as TURP syndrome, urethral stricture, hematuria and erectile dysfunction.

**Conclusion:** The conclusion of this study is that TURP is a tool that is widely used to solve BPH problems, but there are several adverse effects, namely the possibility of TURP syndrome, urethral stricture, hematuria and erectile dysfunction.

**Keywords:** TURP, Ereksi, Prostat, Efek, Sindrom

#### Introduction

Benign prostatic hyperplasia (BPH) is a common problem among older men that negatively impacts quality of life and results in medical interventions and substantial costs<sup>[1]</sup>. BPH is a histological diagnosis defined as an increase in the total number of stromal and glandular epithelial cells in the transition zone of the prostate gland. This hyperplasia causes the formation of large, discrete prostate nodules. Benign prostatic hyperplasia (BPH) is a common condition encountered in older men and a common cause of lower urinary tract symptoms<sup>[1]</sup>.

The prevalence of BPH increases after the age of 40 years, with a prevalence of 8%-60% at the age of 90 years<sup>[2]</sup>. The incidence of BPH increases linearly with increasing age and reaches a peak at age 79 years. BPH occurs due to nonmalignant growth or hyperplasia of prostate tissue and is a common cause of lower urinary tract symptoms in men<sup>[3]</sup>. Lifestyle changes including exercise and diet are important strategies in controlling this common disease.

Observational studies have shown that when left without treatment, clinical progression of BPH increases over a 48-month period with 5% developing acute retention<sup>[3]</sup>. Treatment for BPH is carried out using transurethral resection of the prostate (TURP) and conservative treatment.

Transurethral resection of the prostate is the best surgical procedure to treat urinary tract obstruction in BPH patients. TURP is a procedure in which the prostate is resected from an endoscopic approach which is the best choice for treating bladder outlet obstruction<sup>[4]</sup>, however, TURP still has side effects. This research explains what some of the side effects of TURP are.

In several studies, TURP has indeed produced good results for acute urinary retention, but developments in several countries must also be known regarding the side effects of using TURP, so that further steps can be taken. This study is very interesting because it collects the results of research from all over the world on the effects of TURP, and because good treatment should have minimal risks.

#### Research Methods

The research method used is a systematic review, namely conducting a literature search in international medical journals for 2014-2024, then summarizing the results.

#### Research Results

The results of the study show that the TURP procedure has several effects including urethral stricture, TURP syndrome, hematuria (Table 1).

**Tabel 1:** Effect TURP

Title	Efek TURP
Transurethral Resection of the Prostate	Risiko keseluruhan striktur uretra atau kontraktur leher kandung kemih setelah TURP adalah 3,7%. <sup>[12]</sup>
Does resectoscope size play a role in formation of urethral stricture following transurethral prostate resection?	Kerusakan mekanis pada mukosa uretra: penggunaan batang resektoskop berdiameter kecil dapat menyebabkan penurunan kejadian striktur uretra <sup>[14]</sup>
Transurethral resection of the prostate stricture management	striktur uretra setelah reseksi transuretra prostat adalah salah satu komplikasi utama <sup>[35]</sup>
Incidence of urethral stricture after bipolar transurethral resection of the prostate using TURis	insiden striktur uretra yang lebih tinggi pada pasien dengan; waktu operasi yang lama dan volume prostat yang lebih besar <sup>[15]</sup> .
Predictors of Urethral Stricture After Transurethral Resection of the Prostate Procedure	Kecepatan reseksi yang lebih lambat dan volume reseksi yang lebih kecil merupakan prediktor yang signifikan secara statistik terhadap peningkatan terjadinya striktur uretra ( $p < 0,05$ ). Tingkat reseksi yang lebih rendah juga merupakan prediktor striktur uretra setelah prosedur TURP <sup>[16]</sup> .
Successful treatment of pulmonary edema caused by transurethral resection of the prostate syndrome	Sindrom TURP adalah komplikasi reseksi transurethral pada prostat <sup>[13]</sup> .
TURP syndrome: A rare case report from Syria	Sindrom TURP dianggap sebagai komplikasi serius dalam bedah urologi. dan komplikasi TURP yang berkepanjangan
TURP syndrome and severe hyponatremia under general anaesthesia,”	Sindrom ditandai dengan perubahan gejala dari keadaan hiponatremia tanpa gejala menjadi kelelahan, muntah, kebingungan, kehilangan penglihatan perubahan EKG, kejang, koma, dan kematian akibat penyerapan cairan irigasi selama TURP <sup>[17]</sup> .
Incidence of complications in men undergoing transurethral resection of the prostate	Komplikasi pasca operasi yang paling banyak terjadi adalah hematuria yang terjadi pada 41/48 (85%) <sup>[21]</sup>
effect of transurethral resection of the prostate on erectile function in patients with benign prostatic hyperplasia,”	penurunan dalam disfungsi ereksi selama 3 bulan setelah TURP <sup>[30]</sup> .
the Incidence of Ed After Turp and Tvp on Bph Patients	Kejadian disfungsi ereksi setelah TURP adalah 36,67% <sup>[32]</sup> .
The impact of prostate-transurethral resection on erectile dysfunction in benign prostatic hyperplasia	Terdapat peningkatan disfungsi ereksi dengan pengobatan TURP <sup>[31]</sup>
Can surgical treatment for benign prostatic hyperplasia improve sexual function? A systematic review	Mayoritas penelitian melaporkan tidak ada perubahan disfungsi ereksi setelah intervensi bedah untuk BPH <sup>[37]</sup> .

## Discussion

Transurethral resection of the prostate

Definition, Transurethral resection of the prostate (TURP) is an operation used to treat urinary problems caused by an enlarged prostate and is the best option after medical therapy has not produced results<sup>[5, 6]</sup>. Transurethral resection of the prostate or TURP is a procedure in which the prostate is resected from an endoscopic approach.

Transurethral resection of the prostate (TURP) is the best surgical procedure to treat urinary tract obstruction in BPH patients. TURP is carried out using a thin tube-shaped instrument accompanied by a camera called a resectoscope. The tool will be inserted into the penis hole to the bladder. Through a resectoscope, the doctor can see the condition of the inside of the prostate more clearly. Transurethral resection surgery focuses on the prostate to create an adequate channel for draining urine<sup>[3]</sup>.

### The good side of TURP

The results of a retrospective study with 714 patients who received TURP surgery for BPH and acute urinary retention (AUR) significantly correlated with short-term drug-free and catheter-free status<sup>[7]</sup>. Compared with conservative treatment, TURP provides better clinical outcomes in patients with acute urinary retention (AUR) caused by BPH<sup>[8]</sup>. Ninety-seven patients suffered from TURP with a postoperative morbidity rate of 24.74%, and no mortality rate<sup>[9]</sup>.

### Indications for TURP

Indications: Indications for TURP are Lower Urinary Tract Symptoms (LUTS), obstructive nephropathy, bladder stone formation, urinary retention, prostate abscess, difficulty with

clean intermittent catheterization, and obstructive azoospermia<sup>[10]</sup>. TURP can also be used to open prostate abscesses, as well as open the ejaculatory ducts in obstructive azoospermia.

Research results from data from 162 BPH patients who underwent TURP were performed on patients aged 61-70 years (39.5%) with the indication being that recurrent urinary retention was the most common indication for this procedure (54.9%), followed by bladder stones (21%), failure of pharmacological therapy (10.5%), inguinal hernia (8%), severe Lower Urinary Tract Symptoms (LUTS) (3.7%)<sup>[11]</sup>.

### Risk of TURP

Risks of TURP may include: urethral stricture, bleeding, temporary difficulty urinating, urinary tract infection, dry orgasm or retrograde ejaculation, erectile dysfunction. Some risks can be seen in table.

### TURP syndrome

TURP syndrome is a complication of transurethral resection of the prostate<sup>[13]</sup>. Transurethral resection of the prostate syndrome (TURP-S) is the most common complication in the TURP procedure and can cause death, so prevention and early diagnosis are very important. Transurethral resection of the prostate (TURP) syndrome is a complication characterized by a change in symptoms from asymptomatic hyponatremia to fatigue, vomiting, confusion, loss of vision ECG changes, seizures, coma, and death due to absorption of irrigation fluid during TURP<sup>[17]</sup>. This syndrome is related to the amount of fluid entering the circulation through the blood vessels or excessive absorption in the resection area<sup>[18]</sup>. TURP syndrome is considered a serious complication in

urological surgery, urologists should suspect this complication in prolonged TURP surgery<sup>[19]</sup>.

Several steps taken to prevent and treat TURP syndrome are controlling bleeding and delaying surgery<sup>[17]</sup>. Early diagnosis is essential to save the patient's life<sup>[19]</sup>. The results of other studies indicate that the use of plasma substitutes and continuous irrigation through suprapubic cystostomy should be avoided during TURP procedures<sup>[20]</sup>. Watch for a gradual increase in blood pressure. In general, the management of TURP syndrome is divided into 2 stages, namely the initial stage and the end of the intraop phase.

Case, reported the case of a 66-year-old male patient who experienced symptoms of prostate enlargement. Ultrasound showed prostate weight was 90 g. He was scheduled for transurethral prostate resection. One hour after surgery, he experienced confusion, bradycardia, and high blood pressure. Labs showed hyponatremia and hyperkalemia. We infused the patient with 3% saline solution after diagnosis of TURP syndrome. The next day, he recovered completely and we sent him home<sup>[19]</sup>.

### Heavy bleeding

The most common postoperative complication is hematuria<sup>[4]</sup> which can reach 41/48 (85%). There is a relationship significant relationship between the number of drugs prescribed and postoperative TURP complications; for hematuria<sup>[21]</sup>. There is retention due to blood clots after TURP<sup>[22]</sup>.

Case reports of recurrent severe hematuria occurred post-TURP (transurethral resection of the prostate) due to a pseudoaneurysm of the right internal iliac artery protruding into the bladder lumen<sup>[23]</sup>.

Several important things in reducing bleeding are installing the resectoscope carefully, adequate lubrication, avoiding resectoscopes that are too large without dilating first<sup>[12]</sup>. The results of other studies are that venous thromboembolism prophylaxis is generally not recommended in TURP, except for early ambulation<sup>[24]</sup>.

Good and careful nursing practice in the preoperative and postoperative care of patients undergoing surgery is essential. Nurses must be especially vigilant in assessing patients at risk for increased bleeding from transurethral resection of the prostate.

### Quality of Life

Treatment with TURP reduces the quality of life in 74.2% of patients<sup>[25]</sup>. Meanwhile, another study showed that quality of life increased by 3.57 points after TURP treatment<sup>[25]</sup>. There is a difference in quality of life as a consequence of significantly increased urinary symptoms before and after treatment of BPH with the TURP method<sup>[26]</sup>.

### Erectile dysfunction in BPH patients

Research results show that BPH is a risk factor for the development of erectile dysfunction (ED)<sup>[27]</sup>. The research results also showed that there was a positive correlation between ED and prostate size<sup>[28]</sup>. Recent reports suggest a strong association between clinical BPH and erectile dysfunction, as well as a possible role of inflammation<sup>[2]</sup>.

### Erectile dysfunction after TURP procedure

The results of the study showed that there was no change in the severity of erectile dysfunction in patients who underwent TURP surgery<sup>[29]</sup>. Furthermore, a study of 50

patients with BPH showed that in the postoperative period TURP could improve erectile dysfunction, then there was a decrease in erectile dysfunction for 3 months after TURP, but no significant changes in erectile dysfunction were observed 6 months after TURP<sup>[30]</sup>.

There was a significant increase in erectile dysfunction in patients undergoing P-TURP who had previously experienced preoperative ED<sup>[31]</sup>. In a study of 60 patients undergoing TURP, the incidence of erectile dysfunction after TURP reached 36.67%<sup>[32]</sup>.

Of 103 patients without sexual dysfunction before TURP, 11 (10.7%) experienced erectile dysfunction (ED) after TURP and a longer TURP may lead to a higher incidence of ED<sup>[33]</sup>. Then the research results before and after the TURP procedure, there was no difference in sexual dysfunction before surgery and 6 months after TURP surgery<sup>[29]</sup>.

### Conclusion

The conclusion of this study is that TURP is a tool that is widely used to solve BPH problems, but there are several adverse effects, namely the possibility of TURP syndrome, urethral strictures, hematuria and erectile dysfunction.

### References

1. NGM Baradhi KM. Benign Prostatic Hyperplasia. *Handb. Model. Hum. Aging*, 2022, 641-649. Doi: 10.1016/B978-012369391-4/50053-9
2. Bin Lim K. Epidemiology of clinical benign prostatic hyperplasia. *Asian J. Urol.* 2017; 4(3):148-151. Doi: 10.1016/j.ajur.2017.06.004
3. McNicholas T, Mitchell S. Benign prostatic hyperplasia. *Surgery.* 2008; 26(5):218-222. Doi: 10.1016/j.mpsur.2008.04.007
4. Stormont G, Chargui S. *Transurethral Resection of the Prostate.* StatPearls Publishing LLC, 2021.
5. Bortnick E, Brown C, Simma-Chiang V, Kaplan SA. Modern best practice in the management of benign prostatic hyperplasia in the elderly. *Ther. Adv. Urol.* 2020; 12:1-11. Doi: 10.1177/1756287220929486
6. Patandung R, Warli SM. Outcome benefits to transurethral resection of the prostate in patients with benign prostatic hyperplasia at Medan regional hospital. *J. Kedokt. Dan Kesehat. Indones*, 2021, 137-143. Doi: 10.20885/jkki.vol12.iss2.art6
7. Huang LK, Chang YH, Shao IH, Lee TL, Hsieh ML. Clinical outcome of immediate transurethral surgery for benign prostate obstruction patients with acute urinary retention: More radical resection resulted in better voiding function. *J. Clin. Med.* 2019; 8(9):1-9. Doi: 10.3390/jcm8091278
8. Lin YH, *et al.* Transurethral resection of the prostate provides more favorable clinical outcomes compared with conservative medical treatment in patients with urinary retention caused by benign prostatic obstruction. *BMC Geriatr.* 2018; 18(1):1-7. Doi: 10.1186/s12877-018-0709-3
9. Timothy Uzoma Mbaeri JCO, Joseph Amauzo Abiahu, Emmanuel Ahuizechukwu Obiesie, Chinonso Odo, Kingsley Chidi Oranusi, Alexander Maduaburochukwu Ekwunife Nwofor. Assessment of Complications of Transurethral Resection of the Prostate Using Clavien-Dindo Classification in South Eastern Nigeria. *Niger. J. Surg.* 2020; 23(2):134-137. Doi: 10.4103/njs.NJS

10. Abdelmoteleb H, Rashed F, Hawary A. Management of prostate abscess in the absence of guidelines. *Int. Braz J Urol.* 2017; 43(5):835-840. Doi: 10.1590/S1677-5538.IBJU.2016.0472
11. Prasetyo ZA, Budaya TN, Daryanto B. Characteristics of Benign Prostatic Hyperplasia (BPH) Patients Undergoing Transurethral Resection of the Prostate (TURP). *J. Kedokt. Brawijaya.* 2021; 31(4):4. Doi: 10.21776/ub.jkb.2021.031.04.4
12. Hausman LM. Transurethral Resection of the Prostate. *Clin. Cases Anesth. Expert Consult - Online Print,* 2023, 205-210. Doi: 10.1016/B978-0-443-06624-5.50042-4
13. Xuan HT, Thu TDT, Van DN, Minh LN. Successful treatment of pulmonary edema caused by transurethral resection of the prostate syndrome. *Res. Reports Urol.* 2021; 13:297-301. Doi: 10.2147/RRU.S288614
14. Günes M, *et al.* Does resectoscope size play a role in formation of urethral stricture following transurethral prostate resection? *Int. Braz J Urol.* 2015; 41(4):744-749. Doi: 10.1590/S1677-5538.IBJU.2014.0093
15. Kazumasa Komura HH, Teruo Inamoto, Tomoaki Takai, Taizo Uchimoto, Kenkichi Saito, Naoki Tanda, *et al.* Incidence of Urethral Stricture after Bipolar Transurethral Resection of the Prostate Using TURis: Results from a Randomised Trial: Editorial Comment. *J. Urol.* 2014; 195(2):425-426. Doi: <https://doi.org/10.1111/bju.12831>
16. Saputra D, Agil A, MUSTAFA A. Predictors of Urethral Stricture after Transurethral Resection of the Prostate Procedure. *Maj. Kedokt. Bandung.* 2023; 55(2):106-110. Doi: 10.15395/mkb.v55n2.2763
17. Demirel I, Ozer AB, Bayar MK, Erhan OL. TURP syndrome and severe hyponatremia under general anaesthesia. *BMJ Case Rep,* 2012, 2-5. Doi: 10.1136/bcr-2012-006899
18. Kumar V, Vineet K, Deb A. TUR syndrome - A report. *Urol. Case Reports.* 2019; 26(July):100982. Doi: 10.1016/j.eucr.2019.100982
19. Al-Hajjaj M, Kanjo M, Tallaa M. TURP syndrome: A rare case report from Syria. *Int. J. Surg. Case Rep.* 2022; 93(January):107021. Doi: 10.1016/j.ijscr.2022.107021
20. Nakahira J, Sawai T, Fujiwara A, Minami T. Transurethral resection syndrome in elderly patients: A retrospective observational study. *BMC Anesthesiol.* 2014; 14:1-6. Doi: 10.1186/1471-2253-14-30
21. Kusljic S, Aneja J, Manias E. Incidence of complications in men undergoing transurethral resection of the prostate. *Collegian.* 2017; 24(1):3-9. Doi: 10.1016/j.colegn.2015.07.001
22. Limantara A. Comparison of Bleeding Complications between Turp and Open Prostatectomy in Patient with BPH. *Indones. J. Urol,* 2019. Doi: <https://doi.org/10.32421/juri.v26i2.462>
23. Arya M, Kumar L, Mittal R, Kumar R, Baid M. Posttransurethral Resection of Prostate Recurrent Life-Threatening Hematuria: A Rare Cause. *Case Rep. Urol.* 2016; 2016(4):1-3. Doi: 10.1155/2016/5895016
24. Michalski W, Grazyna Poniatowska P, Joanna Jonska-Gmyrek, Jakub Kucharz, S1, KN1, KO-S1. Venous thromboprophylaxis in urological cancer surgery *Wojciech. PUBMED PMID Med Oncol.* 2019; 37(11). Doi: 10.1007/s12032-019-1331-8
25. Milonas D, Verikaite J, Jievaltas M. The effect of complete transurethral resection of the prostate on symptoms, quality of life, and voiding function improvement. *Cent. Eur. J. Urol.* 2015; 68(2):169-174. Doi: 10.5173/cej.2015.507
26. Milicevic S. The Impact of Benign Prostatic Hyperplasia Surgical Treatment with Turp Method on the Quality of Life. *Acta Inform. Medica.* 2011; 19(3):142. Doi: 10.5455/aim.2011.19.142-145
27. Glina S, Glina FPA. Pathogenic mechanisms linking benign prostatic hyperplasia, lower urinary tract symptoms and erectile dysfunction. *Ther. Adv. Urol.* 2013; 5(4):211-218. Doi: 10.1177/1756287213488236
28. Qalawena MM, Al-Shatouri MA, Motawaa MA, El-Sakka AI. Association between Prostate Zonal Volume and Erectile Dysfunction in Patients with Benign Prostatic Hyperplasia. *Sex. Med.* 2020; 8(2):205-213. Doi: 10.1016/j.esxm.2020.01.008
29. Huseini MH, Sutarto WE. Erectile Dysfunction after Transurethral Prostate Resection (Turp) in Patients with Lower Urinary Tract Symptoms at Koja Hospital, Jakarta. *Indones. J. Urol.* 2021; 28(2):142-146. Doi: 10.32421/juri.v28i2.679
30. Choi SB, Zhao C, Park JK. The effect of transurethral resection of the prostate on erectile function in patients with benign prostatic hyperplasia. *Korean J. Urol.* 2010; 51(8):557-560. Doi: 10.4111/kju.2010.51.8.557
31. Oka AAG, Duarsa GWK, Novianti PA, Mahadewa TGB, Ryalino C. The impact of prostate-transurethral resection on erectile dysfunction in benign prostatic hyperplasia. *Res. Reports Urol.* 2019; 11:91-96. Doi: 10.2147/RRU.S189414
32. Alpendri A, Utomo TK, Utomo T, Singodimedjo P. The Incidence of Ed after Turp and Tvp on Bph Patients. *Indones. J. Urol.* 2012; 19(1):7-10. Doi: 10.32421/juri.v19i1.47
33. Chen LK, Lai YW, Chiu LP, Chen SSS. Significant relationship between parameters measured by transrectal color Doppler ultrasound and sexual dysfunction in patients with BPH 12 months after TURP. *BMC Urol.* 2021; 21(1):1-7. Doi: 10.1186/s12894-020-00776-2
34. Vasanwala FF, Wong MYC, Ho HSS, Foo KT. Benign prostatic hyperplasia and male lower urinary symptoms: A guide for family physicians. *Asian J. Urol.* 2017; 4(3):181-184. Doi: 10.1016/j.ajur.2017.05.003
35. Jian-Wei Wang, Li-Bo Man. Transurethral resection of the prostate stricture management. *Asian J. Androl.* 2019; 21(July):1-4. Doi: 10.4103/aja.aja\_126\_19
36. And SA, Saladin Helmut Alloussi, Christoph Lang, Robert Eichel. Ejaculation-Preserving Transurethral Resection of Prostate and Bladder Neck: Short- and Long-Term Results of a New Innovative Resection Technique. *Pubmed.* 2014; 80(1):26-30. Doi: <https://doi.org/10.1089/end.2013.0093>
37. Soans J, *et al.* Can surgical treatment for benign prostatic hyperplasia improve sexual function? A systematic review. *Aging Male.* 2021; 23(5):770-779. Doi: 10.1080/13685538.2019.1593356