

Article

Not peer-reviewed version

Bipolar TURIS Resection of Large Prostates: The Experience of Our Team

[Georgios Zervopoulos](#)^{*} and Filippas Venetsanos

Posted Date: 18 July 2025

doi: 10.20944/preprints2025071559.v1

Keywords: Prstate; Benign prostate hyperplasia,, large prostates; Turis; Bipolar Turis



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a Creative Commons CC BY 4.0 license, which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Bipolar TURIS Resection of Large Prostates: The Experience of Our Team

Georgios Zervopoulos and Filippos Venetsanos

Private Practice, Athens, Urologist, FEBU Greece

* Correspondence: georgezervopoulos2012@gmail.com

Abstract

Bi polar TURIS resection of the prostate is a well-established method, used over the past two decades for the surgical therapy of benign prostate hyperplasia. According to the EAU guidelines it is best to be applied to prostate volumes from 30 to 80 cc and it is second choice for prostate volumes over 80cc. A retrospective study was conducted on 114 patients that underwent B-TURIS in a period of 5 years, with a prostate gland volume from 80 to 170 cc, performed by our team. Our objective was to evaluate the efficacy and safety of bipolar TURis in patients with high-volume prostates. Herein, we present the results of our review. The procedure was successful as far as both the prostate volume reduction and the symptom score (IPSS) improvement as well. Besides, we have not marked any complications, apart from 1 patient that suffered from urinary tract infection after the operation.

Keywords: Prstate; Benign prostate hyperplasia;; large prostates; Turis; Bipolar Turis

Introduction

Benign prostatic hyperplasia (BPH) is a prevalent condition among aging males, often leading to lower urinary tract symptoms (LUTS). It is the leading cause of lower urinary tract symptoms (LUTS), even if these symptoms vary greatly from one individual to another. Large BPH is defined as having a volume ≥ 80 ml (1, 2).

Transurethral Resection of the Prostate (TURP) is a surgical procedure which consists of resecting the prostate in chips through urethra, using an endoscope and under visual control. Monopolar TURP (M-TURP) has long been considered as the reference technique for the surgical management of LUTS/BPO. However, in recent years various techniques have been developed with the aim of providing a safe and effective alternative to M-TURP. Bipolar TURP is the most widely investigated alternative to M-TURP. (3, 4). Bipolar TURP differs from traditional monopolar TURP by the use of a double electrode allowing electricity output to the generator and, therefore, the use of 0.9% physiological saline instead of glycocol. There is no risk of TURP syndrome (5). Through a wide range of metanalysis performed it was concluded that TURis was of equivalent efficacy to M-TURP (4).

A quite recent systematic review and meta-analysis by Omar et al. (2020) compared outcomes of monopolar versus bipolar TURP in moderate to large prostate volumes. The study found no significant difference in clinical efficacy between the two techniques at 3, 6, and 12 months postoperatively. However, bipolar TURP was associated with shorter hospital stays and catheterization durations, and a significantly lower incidence of TUR syndrome (6).

No cut off value about the prostate volume has been clearly proposed but the EAU guidelines consensus, suggested that the upper limit for M-B -TURP to be 80 mL (under the assumption that this limit depends on the surgeon's experience, choice of resectoscope size and resection speed) (4).

Our study aims to assess our team's experience with bipolar TURis in managing high-volume prostates, focusing on functional outcomes and complication rates.

Methods

A retrospective cohort study was conducted. The study included 114 male patients with prostate volumes exceeding 80 cc who underwent bipolar TURis between 2019 and 2024.

The pre operation and the post operation prostate volume was measured by ultrasound. IPSS questionnaire tool was filled in before and 6 months after the operation by the patients to express the improvement of the symptoms and the QoL. We also examined the need for blood transfusion and whether there was a post operation urinary tract infection or any other complication reported via the Clavien – Dindo complication referral score. Exclusion criteria were a prior prostate surgery, prostate cancer diagnosis and neurogenic bladder disorders. All procedures were performed using the bipolar TURis system under spinal or general anesthesia. Resection was carried out until an adequate prostatic cavity was achieved.

Paired t-tests assessed changes in Volume and IPSS. Chi-square tests evaluated associations between categorical variables. A p-value < 0.05 was considered statistically significant. The database of our study is noted in Table 1.

The aim of our study was to demonstrate the efficiency and safety of bipolar TURis resection of the prostate in large volume prostates, over 80cc.

Table 1.

A/A	PRO V	POST V	PRO IPSS	POST IPSS	AGE	C/D	TRANSE.
1	90	20	18	7	67	0	0
2	85	30	19	8	75	0	0
3	115	35	22	11	63	0	0
4	120	25	16	6	61	0	0
5	95	20	22	9	72	0	0
6	130	30	21	10	68	0	0
7	100	24	17	5	61	0	0
8	110	32	16	9	63	0	0
9	85	20	17	3	59	0	0
10	140	40	22	9	69	0	0
11	105	30	18	7	71	0	0
12	98	21	15	6	61	0	0
13	85	20	17	8	63	0	0
14	130	35	24	10	67	0	0
15	120	27	21	9	70	0	0
16	145	40	25	10	66	0	0
17	95	22	18	6	63	0	0
18	86	21	16	4	67	0	0
19	114	27	18	7	80	0	0
20	105	29	22	9	76	0	0
21	112	32	17	8	73	0	0
22	105	31	21	7	69	0	0
23	95	26	19	8	64	0	0
24	110	28	23	6	60	0	0
25	102	34	20	7	78	2	0
26	86	22	17	3	64	0	0
27	97	27	21	5	73	0	0
28	100	25	20	7	71	0	0
29	119	31	26	8	75	0	0
30	130	36	24	5	72	0	0

31	103	28	20	7	65	0	0
32	87	26	17	5	61	0	0
33	92	21	21	3	59	0	0
34	125	26	24	8	71	0	0
35	140	37	20	10	70	0	0
36	82	14	17	0	62	0	0
37	95	22	18	3	60	0	0
38	100	27	19	7	76	0	0
39	108	30	21	9	71	0	0
40	97	26	19	6	82	0	0
41	128	32	25	10	57	0	0
42	88	22	16	6	74	0	0
43	96	28	17	8	83	0	0
44	127	31	22	3	63	0	0
45	122	39	21	10	68	0	0
46	145	40	24	9	71	0	0
47	120	29	22	7	69	0	0
48	150	36	20	8	65	0	0
49	95	30	17	5	74	0	0
50	82	17	16	3	77	0	0
51	125	29	19	4	72	0	0
52	88	20	16	2	60	0	0
53	82	17	18	0	59	0	0
54	115	26	24	4	61	0	0
55	170	40	25	7	64	0	0
56	96	31	18	6	76	0	0
57	110	32	20	6	81	0	0
58	95	23	19	3	78	0	0
59	81	16	14	1	62	0	0
60	137	39	22	6	65	0	0
61	94	29	20	5	63	0	0
62	89	30	19	5	75	0	0
63	100	33	21	7	76	0	0
64	92	27	16	4	79	0	0
65	127	29	25	7	71	0	0
66	86	30	16	4	58	0	0
67	82	21	15	1	55	0	0
68	107	32	20	5	63	0	0
69	112	28	19	7	77	0	0
70	95	32	15	6	82	0	0
71	140	40	24	10	71	0	0
72	105	33	21	7	70	0	0
73	96	28	18	6	80	0	0
74	117	32	17	7	73	0	0
75	89	22	18	4	67	0	0
76	120	33	23	10	59	0	0
77	105	28	19	7	63	0	0
78	100	30	15	6	68	0	0
79	85	22	16	3	57	0	0
80	81	16	15	1	64	0	0
81	80	19	20	3	77	0	0

82	95	32	16	6	84	0	0
83	110	28	22	8	79	0	0
84	132	38	23	10	72	0	0
85	105	27	18	8	68	0	0
86	93	24	17	4	63	0	0
87	88	26	17	5	81	0	0
88	101	32	20	8	75	0	0
89	107	28	23	7	70	0	0
90	87	26	18	5	63	0	0
91	120	32	25	4	64	0	0
92	117	26	20	3	68	0	0
93	104	21	23	6	76	0	0
94	100	25	22	5	77	0	0
95	90	17	17	2	79	0	0
96	114	30	20	6	68	0	0
97	122	39	23	9	73	0	0
98	92	22	18	3	77	0	0
99	119	23	19	4	78	0	0
100	103	31	17	5	68	0	0
101	109	33	22	7	74	0	0
102	94	25	18	5	68	0	0
103	120	36	23	9	71	0	0
104	88	21	16	4	65	0	0
105	135	37	25	10	66	0	0
106	108	28	20	6	73	0	0
107	97	24	18	3	60	0	0
108	125	34	22	8	76	0	0
109	90	22	17	2	58	0	0
110	12	29	21	6	70	0	0
111	100	27	19	5	67	0	0
112	116	32	24	9	69	0	0
113	84	20	16	3	78	0	0
114	108	31	20	6	75	0	0

Results

About the patient demographics, the mean age was 69.28 ± 6.91 years. As far as the functional outcomes are concerned, the gland volume decreased from 105.06 ± 19.90 ml preoperatively to 28.02 ± 6.06 ml postoperatively (p < 0.001) and the IPSS score which was used to demonstrate the QoL of the patients was improved from 19.60 ± 2.90 to 6.04 ± 2.50 postoperatively (p < 0.001). No cases of TUR syndrome were reported. Minimal intraoperative bleeding observed; none required transfusion. 1 patient suffered from post operation urinary tract infection, requiring intravenous antibiotics, Clavien – Dindo 2 referral system score.

Discussion

Benign prostatic hypertrophy affects 50% of men aged over 50 years. Its prevalence increases gradually with age; 90% of men over 80 years old are affected. Benign prostatic hyperplasia (BPH) is a leading cause of bladder outlet obstruction (BOO) in men, with transurethral resection of the prostate (TURP) historically regarded as the gold standard for surgical management. While other minimally invasive surgical therapies have emerged and enucleation procedures have advanced, both demonstrating good functional outcomes and fewer complications, TURP remains widely

practiced due to its proven efficacy, easy availability, cost effectivity and important part of urological training. However, TURP has limitations, according to the EAU and AUA guidelines including its size dependency and unsuitability for patients treated with anti-platelet agents, mostly because of the reviews and metaanalysis samples that were obtained at the researches worldwide (8,9,10,11).

Bipolar transurethral resection has been developed in recent years to minimize current flow absorbed by the patient. This method is characterized by the placement of the neutral electrode in the right proximity of the conductive electrode. Since the irrigation solution (saline) produces extremely lower resistance than the one of tissues, a direct flow of current from the active electrode to the neutral electrode would occur when producing energy (5). The lack of Tur syndrome in the bipolar TURP is well studied and proved.

Although BTURP has proven to be efficient in prostate gland with volumes under 80cc, it is recommended in larger prostate volumes as second choice procedure. The lack of studies in greater volumes is one of the reasons that resulted in this recommendation. In the last 5 years there has been an interest in the use of the Turis technique in large prostates and new studies and are being conducted, confirming the realibility and safety of the procedure (6,7,11,12,13). Last but not least it should be mentioned that managing benign prostatic hyperplasia (BPH) in patients with prostate volumes exceeding 80 cc presents unique surgical challenges.

The purpose our study was to contribute with our experience and the results that arose to direct the use of this method with safety to greater gland volumes.

A study by Mamdoh et al. (2021) focused on prostates larger than 100 grams, reporting that bipolar TURP led to significant improvements in IPSS, Qmax, and post-void residual urine volumes at both 1 and 12 months postoperatively (7). Also, as abovementioned, Omar et al. (2020) conducted a systematic review and meta-analysis that compared outcomes of monopolar versus bipolar TURP in moderate to large prostate volumes. The study found no significant difference in clinical efficacy between the two techniques at 3, 6, and 12 months postoperatively. However, bipolar TURP was associated with shorter hospital stays and catheterization durations, and a significantly lower incidence of TUR syndrome.

In our study, between 114 patients with prostate volume over 80cc, significant improvements were observed postoperatively. The postoperative volume decreased from a mean 105.06cc to 28.02 cc. Also, the IPSS score decreased from a mean 19.06 to 6.02. No need of blood transfusion was observed, which is a significant note in large volume prostates being resected and only one postoperative infection was noted.

Our findings align with existing literature suggesting that bipolar TURis is a safe and effective modality for managing large prostate volumes. The significant improvements in urinary parameters and low complication rates underscore its utility in such cases.

Conclusions

Benign prostate hyperplasia is a leading cause of bladder outlet obstruction worldwide. While novel technology and methods gain role at the surgical treatment, bipolar Turis remains the cornerstone of the surgical therapy. It is more and more applied to larger prostate volumes and our study confirms the existing data and contributes to empowering the opinion that it is a safe and efficient procedure for resecting gland volume over 80cc, along with the surgeon's experience.

References

1. Coyne, K.S., Sexton, C.C., Thompson, C.L., Milsom, I., Irwin, D., Kopp, Z.S., et al. (2009) The Burden of Lower Urinary Tract Symptoms: Evaluating the Effect of LUTS on Health-Related Quality of Life, Anxiety and Depression: EpiLUTS. *BJU International*, 103, 4-11. <https://doi.org/10.1111/j.1464-410X.2009.08371.x>
2. Yee, C.H., Wong, J.H.M., Chiu, P.K.F., Teoh, J.Y.C., Chan, C.K., Chan, E.S.Y., Hou, S.M. and Ng, C.F. (2016) Secondary Hemorrhage after Bipolar Transurethral Resection and Vaporization of Prostate. *Urology Annals*, 8, 458-463. <https://doi.org/10.4103/0974-7796.192110>

3. Lin, Y.H., Hou, C.P., et al. (2018) 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 Geriatrics*, 18, Article No. 15. <https://doi.org/10.1186/s12877-018-0709-3>
4. EAU Guidelines on the Assessment of Non-Neurogenic Male Lower Urinary Tract Symptoms Including Benign Prostatic Obstruction. *European Urology*
5. Abdallah, M.M. and Badreldin, M.O. (2014) A Short-Term Evaluation of the Safety and the Efficacy of Bipolar Transurethral Resection of the Prostate in Patients with a Large Prostate (> 90 g). *Arab Journal of Urology*, 12, 251-255. <https://doi.org/10.1016/j.aju.2014.10.003>
6. Omar MI, Lam TB, Omar M, et al. Safety and Efficacy of Bipolar Transurethral Resection of the Prostate vs Monopolar Transurethral Resection of Prostate in the Treatment of Moderate-Large Volume Prostatic Hyperplasia: A Systematic Review and Meta-Analysis. *World J Urol*. 2020;38(4):847-856.
7. Mamdoh H, Elbendary M, Habib E, Hassan A. Bipolar transurethral resection of large prostate >100 gm: single center experience. *Int Surg J*. 2021;8(3):780-783
8. Strebel RT, Kaplan SA (2021) The state of TURP through a historical lens. *World J Urol* 39(7):2255–2262
9. Lee MS, Assmus M, Agarwal D, Large T, Krambeck A (2021) Contemporary practice patterns of transurethral therapies for benign prostate hypertrophy: results of a worldwide survey. *World J Urol* 39(11):4207–4213
10. Porto, J.G., Bhatia, A.M., Bhat, A. et al. Evaluating transurethral resection of the prostate over twenty years: a systematic review and meta-analysis of randomized clinical trials. *World J Urol* 42, 639 (2024). <https://doi.org/10.1007/s00345-024-05332-3>
11. Molamba, D. , Koseka, R. , Tsita, A. , Mukaz, P. , Konga, J. , Kemfuni, T. , Kpanya, T. , Mazango, P. , Pablo, D. , Nkumu, M. , Massamba, B. , Lolangwa, F. and Maole, A. (2023) Bipolar Transurethral Resection of the Prostate (B-TURP) Including Large Prostate Glands in Kinshasa, DR Congo. *Open Journal of Urology*, 13, 530-546. doi: [10.4236/oju.2023.1312059](https://doi.org/10.4236/oju.2023.1312059)
12. Coskuner ER, Ozkan TA, Koprulu S, Dillioglugil O, Cevik I. The role of the bipolar plasmakinetic TURP over 100 g prostate in the elderly patients. *Int Urol Nephrol*. 2014 Nov;46(11):2071-7. doi: 10.1007/s11255-014-0803-1. Epub 2014 Aug 19. PMID: 25134941.
13. Bruce A, Krishan A, Sadiq S, Ehsanullah SA, Khashaba S. Safety and Efficacy of Bipolar Transurethral Resection of the Prostate vs Monopolar Transurethral Resection of Prostate in the Treatment of Moderate-Large Volume Prostatic Hyperplasia: A Systematic Review and Meta-Analysis. *J Endourol*. 2021 May;35(5):663-673. doi: 10.1089/end.2020.0840. Epub 2020 Dec 28. PMID: 33198500.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.