

*Research Article*

## A Comparative Study: Monopolar versus Bipolar Electrosurgical Resection of Benign Prostatic Hyperplasia

Mohammed A. Hassan, Mohammed S. M. El-Badry,  
Mostafa M. Abdelghani and Amr K. R. Tolba  
Department of Urology, El-Minia Faculty of Medicine

### Abstract

**Introduction:** Benign prostate hyperplasia is a prevalent condition associated with lower urinary tract symptoms, commonly typified by urinary frequency, urgency, nocturia, weakened and intermittent urinary stream, and sensation of incomplete bladder emptying. Its prevalence rate is reported to be >50% in 60-year-old men, and as high as 90% by 85 years of age. **Aim of the work:** Aim of the work is to compare short term outcomes of monopolar versus bipolar transurethral resection of the benign prostate hyperplasia. **Patient and Methods: Study design:** Our study is a prospective randomized controlled clinical study which was done at Minia Urology and Nephrology University Hospital, involving two groups;- Monopolar TURP and Bipolar TURP. **Results: Age distribution:** Age in our study ranged in monopolar group from 52 to 76 year with mean of  $59.97 \pm 5.09$  age and in bipolar group from 50 to 70 year with mean of  $60.09 \pm 4.43$  age, there was no statistically difference between two groups regarding age ( $P=0.921$ ). **Discussion:** Benign prostatic hyperplasia (BPH) is a disease that causes bladder outlet obstruction (BOO) resulting from functional obstruction and anatomical obstruction due to the increased size of the prostate gland. BPH is one of the main etiologic factors responsible for the occurrence of lower urinary tract symptoms (LUTS) in post-middle aged men. **Conclusion:** The bipolar TURP is as effective as the gold standard conventional monopolar TURP with the additional advantage of absence of electrolyte imbalance, early catheter removal, short hospital stay, and less postoperative morbidity.

**Keywords:** Benign prostate hyperplasia, nocturia, Bipolar Electrosurgical

### Introduction

Benign prostate hyperplasia is a prevalent condition associated with lower urinary tract symptoms, commonly typified by urinary frequency, urgency, nocturia, weakened and intermittent urinary stream, and sensation of incomplete bladder emptying. Its prevalence rate is reported to be >50% in 60-year-old men, and as high as 90% by 85 years of age.<sup>(1)</sup>

About 20% of patients with mild or severe symptoms are treated using several types of surgical procedures. Among these, transurethral resection of the prostate (TURP) is considered to be the gold standard.<sup>(2)</sup>

Conventional TURP uses monopolar technology (M-TURP) and is associated with several adverse effects, including morbidity related to blood loss and disturbances of serum fluid and mineral balance. In seeking to

improve these negative aspects, TURP using bipolar technology (B-TURP) has been developed. To date, several randomized controlled trials (RCTs) have been performed and have indicated some superiority of B-TURP over M-TURP.<sup>(3)</sup>

### Aim of the work

Aim of the work is to compare short term outcomes of monopolar versus bipolar transurethral resection of the benign prostate hyperplasia.

### Patient and Methods

#### Study design:

Our study is a prospective randomized controlled clinical study which was done at Minia Urology and Nephrology University Hospital, involving two groups;- Monopolar TURP and Bipolar TURP

**Patients:**

Patients diagnosed with LUTs-BPH disease and indicated for surgical intervention attending at Minia Urology and Nephrology University Hospital in the period from November 2017 to February 2019, by the end of the study we have only 70 patients completed the study, 35 patients in Monopolar group and 35 patients in Bipolar group and were fit for the study protocol according to inclusion and exclusion criteria listed below, these criteria fit with (AUA) criteria for investigating patients suffering from (BPH) (urology 2003), and approved by WHO, as a clinical protocol to assess and compare new therapeutic modalities for the disease all over the world. And the faculty ethical committee and written informed consents from the patients were obtained from all patients.

**Inclusion criteria:**

- a. Male patient with BPH indicated for surgical management

- Moderate to severe IPSS score with failed medical treatment.
- Recurrent attacks of Hematuria.
- Recurrent attacks of urinary retention.
- Secondary stones.
- b. Fit for surgery

**Exclusion criteria**

- a. Proved Cancer prostate patients
- b. Patient unfit for surgical procedure
- c. Patient with contraindication to TURP
  - Uncorrectable bleeding tendency & coagulopathy
  - Adenoma size > 80g
- d. Neurogenic bladder, including Parkinson’s disease, multiple sclerosis and cerebrovascular accidents.

Patients were divided into 2 groups each group as follows;

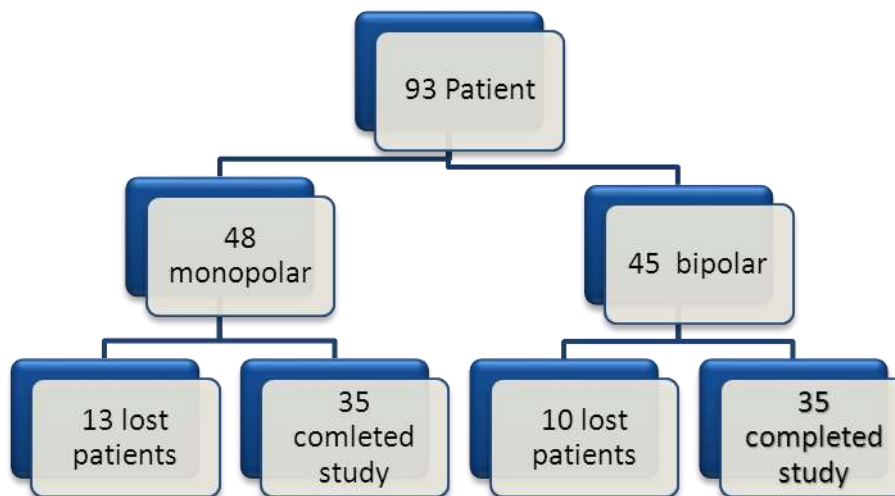
**Group A: (Monopolar group)**

Patients subjected to Monopolar TURP

**Group B: (bipolar group)**

Patients subjected to Bipolar TURP

**Flow chart:**



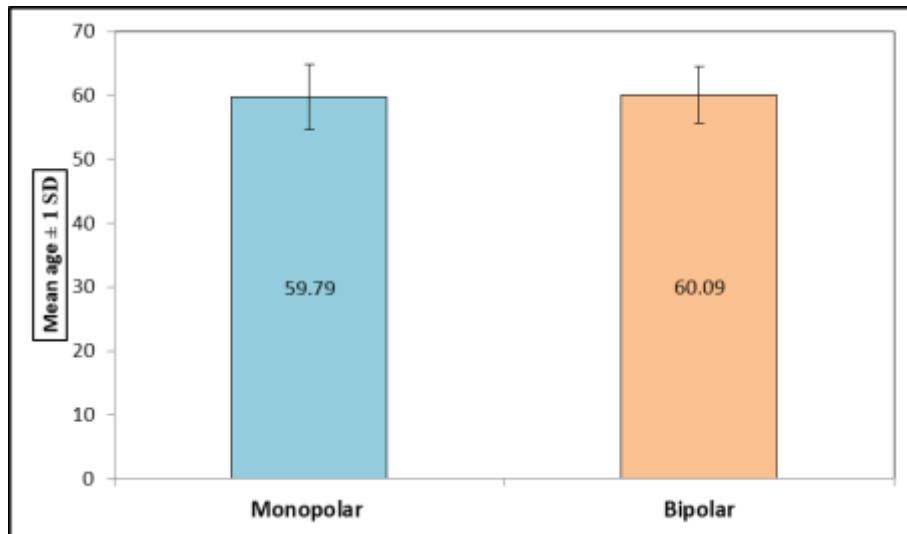
**Methodology:**

Patients attendant of the Urology outpatient clinic at Nephrology and urology university hospital, Patients presented with LUTs symptoms were subjected to the following evaluation then patients are randomly allocated at a ratio of 1: 1 to a monopolar group or bipolar group, both patients and investigators were blinded as to allocation schedule until all patients had completed the study.

**Results**

• **Age distribution**

Age in our study ranged in monopolar group from 52 to 76 year with mean of 59.97±5.09 age and in bipolar group from 50 to 70 year with mean of 60.09±4.43 age, there was no statistically difference between two groups regarding age (P=0.921). **fig. 1.**



**Fig. 1: Age distribution**

### Discussion

Benign prostatic hyperplasia (BPH) is a disease that causes bladder outlet obstruction (BOO) resulting from functional obstruction and anatomical obstruction due to the increased size of the prostate gland. BPH is one of the main etiologic factors responsible for the occurrence of lower urinary tract symptoms (LUTS) in post-middle aged men<sup>(4)</sup>

Over the past decades, monopolar TURP has evolved as an effective and safe treatment for BPH. Despite low mortality (0.25%), it has the risk of hemorrhage and TUR syndrome. The bipolar system was designed to avoid these complications. By incorporating both the active and return poles on the same electrode, a conductive fluid medium (saline) can be used for the resection instead of the conventional non-conductive irrigation fluid thereby eliminating TUR syndrome<sup>(5)</sup>.

A total of 70 patients with clinical of bladder outlet obstruction secondary to benign prostatic hyperplasia who met the before mentioned inclusion and exclusion criteria participated in this study to evaluate short term outcomes of monopolar versus bipolar TURP in the treatment of symptomatic benign prostatic hyperplasia, these criteria in this study were established to identify subjects with clinically

significant BPH and to suit evaluation of different therapeutic modalities.

### Conclusion

The bipolar TURP is as effective as the gold standard conventional monopolar TURP with the additional advantage of absence of electrolyte imbalance, early catheter removal, short hospital stay, and less postoperative morbidity.

The procedure can be performed for large adenomas without the fear of TUR syndrome. Thus, bipolar TURP is a promising new technique that may prove to be a good alternative to conventional TURP in the future.

### References

1. Abascal, J. J., et al., (2006). "Bipolar versus monopolar transurethral resection of the prostate: peroperative analysis of the results." 30(7): 661-666.
2. Caine, M., et al., (1987). "The "capsule" in benign prostatic hypertrophy." 221: 2881.
3. Halpern, E. J., et al., (2002). "Prostate: high-frequency Doppler US imaging for cancer detection." 225(1): 71-77.
4. Kirby, R., et al., (1996). Griffiths K: Molecular control of prostate growth (Eds), Textbook of Benign Prostatic Hyperplasia, Oxford, UK, Isis Medical Media Ltd.

5. Oelke, M., et al., (2013). "EAU guidelines on the treatment and follow-up of non-neurogenic male lower urinary tract symptoms including benign prostatic obstruction." 64(1): 118-140.
6. Resektion, T. J. E. u. (2005). "und transurethrale Inzision (TUIP) der Prostata." 49.
7. Singh, H., et al., (2005). "Bipolar versus monopolar transurethral resection of prostate: randomized controlled study." 19(3): 333-338.
8. Tucker, R. D., et al., (1989). "A comparison of urologic application of bipolar versus monopolar five French electro-surgical probes." 141(3): 662-665.
9. urology, A. P. G. C. J. T. J. O. (2003). "AUA guideline on management of benign prostatic hyperplasia (2003). Chapter 1: Diagnosis and treatment recommendations." 170(2): 530-547.