



Monopolar Transurethral Resection of the Prostate; Experience in a Tertiary Centre in Nigeria

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Authors' contributions

This work was carried out in collaboration with all the authors. Author CGO conceived this research and constructed the preformed for obtaining data. Authors NKD, JA and NMS were involved in concept development, data retrieval, reviews and write-up. All authors read and approved the final manuscript.

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ABSTRACT

Aim and Objectives: To determine the perioperative, short-term success and complications of TURP.

Study Design: Retrospective study.

Place and Duration of Study: The study was carried out at the Division of Urology, Department of Surgery, Jos University Teaching Hospital, Jos, Nigeria, from January 2017 to December 2020.

Methodology: This was a retrospective study, where the records of men who had TURP and were followed up for a year were reviewed. The data included the patients' age, size of the prostate gland (grams), duration of surgery (mins), blood transfusion, clot retention, length of catheterisation (silicon catheter) in days, hospital stay (days), postoperative infection, postoperative incontinence, re-operation, bladder neck stenosis, urethral stricture and TURP syndrome.

Results: Forty-five patients who had TURP from January 2017 to December 2020 were studied. The patients mean age was 66.33±7.60. The mean prostate size was 60.76±20.26. The mean duration of surgery, catheter duration and hospital stay were 58.89±11.93, 3.56±1.44 and

4.38±2.10, respectively. The overall complication was 3.5%. Postoperative infection was the commonest complication (epididymo-orchitis 11.1% and urosepsis 2.2%). Other complications included clot retention 4.4%, TURP syndrome 2.2%, bladder neck stenosis 2.2% and urge incontinence 2.2%. There was no urethral stricture, re-operation or bladder rupture. No mortality was recorded.

Conclusion: This study showed that most TURP complications were minor and within acceptable rates. Its attraction includes short hospital stay and short duration of catheterisation. Overall, TURP performed within our institution were generally safe and well-tolerated.

Keywords: Transurethral resection; prostate; complications; catheterization; Nigeria.

1. INTRODUCTION

Monopolar transurethral resection of the prostate (M-TURP) is an electrosurgical resection of the prostate gland. It is the surgical treatment of choice to manage symptomatic benign prostatic hyperplasia in men with a prostatic volume of 80ml or less, though highly skilled Endoscopists are capable of resecting glands greater than 150ml safely in less than 90 minutes [1,2].

TURP is the main modality of treatment for enlarged prostate in advanced countries until recently, with the advent of other forms of minimally invasive therapy such as holmium laser enucleation of the prostate (HoLEP), photoselective vaporisation of the prostate (PVP) and more recently, enucleation of the prostate using bipolar circuitry [3,4].

Though patients with comparable prostate gland volumes are offered open prostatectomy in our environment, TURP is increasingly available. Indications include acute, recurrent, or chronic urinary retention due to BPH, recurrent urinary tract infection, failed medical management, impaired renal function due to prostatic obstruction or bothersome lower urinary tract symptoms [5-9].

This study reported our M-TURP experience and determined the perioperative and short-term success rate and TURP complications.

2. METHODOLOGY

This is a retrospective study, where the records of men who had transurethral resection of the prostate (performed by two Urologist) and were followed up for a year were reviewed. The data were recorded in a proforma. The preoperative evaluation included history, physical examination including digital rectal examination and investigations (serum level of creatinine, full blood count, clotting profile, prostate-specific

antigen (PSA) assay, urine analysis, and urine culture). Abdominal ultrasonography to assess the kidneys, ureters, urinary bladder and determine the prostate size. Men with abnormal digital rectal examination (DRE), elevated prostate-specific antigen (PSA), and presence of neurogenic bladder, urethral stricture, bladder stone and tumour were excluded.

Surgical Technique: Spinal or epidural anaesthesia is the preferred method of analgesia. A preoperative antibiotic is given routinely. The patient was placed in the Lithotomy position, and TURP was performed in the standard manner [10].

Postoperative care included analgesia, antibiotics, intravenous fluid and urinary bladder irrigation.

The patients' age, size of the prostate gland (grams), duration of surgery (mins), blood transfusion, clot retention, length of catheterisation (silicon catheter) in days, hospital stay (days), postoperative infection, postoperative incontinence, re-operation, bladder neck stenosis, urethral stricture and TURP syndrome were analysed.

Data were analysed using SPSS version 23. Measures of central tendencies, mean, median were done for the different variables.

3. RESULTS

Forty-five patients who had TURP from January 2017 to December 2020 were studied. The patients mean age was 66.33±7.60 with a range of 48-81 years, while the age group 61-70 had the highest frequency. Table 1 depicts the age distribution of the patients.

The commonest complication was epididymo-orchitis (11.1%), while one patient had TURP syndrome (2.2%). The distribution of the complications is shown in Table 2.

Table 1. Showing the age distributions of the patients

Variables	Frequency	Percentage
Age group		
<=60	10	22.2
61-70	23	51.1
>70	12	26.7
Total	45	100.0

Table 2. Distributions of complications

Complication	Frequency	Percentage
Clot Retention		
No	43	95.6
Yes	2	4.4
Total	45	100.0
Post op infection		
No	39	86.7
Epididymo-orchitis	5	11.1
Urosepsis	1	2.2
Total	45	100.0
Post op incontinence		
No	44	97.8
Urge Incontinence	1	2.2
Total	45	100.0
Bladder neck stenosis		
No	44	97.8
Yes	1	2.2
Total	45	100.0
Urethral stricture		
No	45	100.0
Yes	0	0.0
Total	45	100.0
Intraperitoneal rupture		
No	45	100.0
Yes	0	0.0
Total	45	100.0
TURP Syndrome		
No	44	97.8
Yes	1	2.2
Total	45	100.0

Table 3. Distributions of overall complications

Variables	Frequency	Percentage
Complications		
No	304	96.5
Yes	11	3.5
Total	315	100.0

Table 4. Showing the means, standard deviations and range of prostate size, duration of surgery, catheter duration and hospital stay

Variables	Number	(Mean±SD)	Minimum	Maximum
Size of Prostate (grams)	45	60.76±20.26	28	109
Duration of Surgery (Mins)	45	58.89±11.93	30	80
Catheter duration	45	3.56±1.44	1	7
Hospital stay (days)	45	4.38±2.10	1	11

The overall complication for M-TURP was 4.9%. This is depicted in Table 3.

The mean prostate size of the patients was 60.76±20.26, with a range of 28 to 109g. The mean and range for surgery duration, catheter duration and hospital stay are shown in Table 4.

4. DISCUSSION

In 1926 Maximilian Stern performed the first transurethral resection of the prostate (TURP). Over the years, it has evolved to become the gold standard in the surgical management of benign prostate hyperplasia due to its safety, long term efficacy and good outcome [11]. Complications have steadily declined, as reported by Lim et al. in a retrospective study, which showed a decline from 44% in the 70s to 4% in the 90s [12]. The overall complication rate in our study was 3.5%. Stroman et al., in an eighteen-month audit of TURP complications, had a complication rate of 9.1%, in keeping with current series [13]. The low complication rate can be attributed to technological advancement in available instruments coupled with better training and experience on the part of the Urologist.

Postoperative infection (13.3%) was the commonest complication recorded in this study (epididymo-orchitis 11.1% and urosepsis 2.2%). Chukwujema et al. similarly recorded a rate of 16% [14]. These appear to be higher than the infection rate recorded by other workers [15,16]. This underscores the need for proper perioperative assessment, especially in screening for UTI and judicious use of antibiotics.

TURP syndrome is a dreaded complication of TURP. It is complex that ranges from asymptomatic hyponatraemia to mental confusion, nausea, vomiting, hypertension, bradycardia, visual disturbances, convulsions and coma. Death might result if left untreated. One patient in the index study (2.2%) had TURP syndrome and was successfully managed without any deleterious effect. Other studies have recorded low incidence of TURP syndrome,

similar to the index study [13,17]. Of note is that similar studies in the region did not document TURP syndrome [7,18]. This can safely be attributed to adherence to sound surgical principles. The key to management of TURP syndrome is early recognition and prevention. Prevention entails correcting fluid and electrolyte before surgery, maintaining an ideal height of irrigation fluid (60cm) during resection and restricting resection time to sixty minutes. Other measures include preventing capsular perforation, bladder distension and quickly concluding the procedure if one notices early signs of TURP syndrome or capsular perforation [19].

Two patients (4.4%) had clot retention in the index study. However, none of the patients was transfused. This is similar to Kumar et al., who recorded clot retention in 4(8.5%) patients in a study that involved forty-seven patients [16]. In a Karachi hospital, out of a hundred patients who had TURP, eight patients developed haematuria in which two had clot retention necessitating clot evacuation [20]. Adequate intraoperative haemostasis and preoperative measures are necessary for preventing perioperative haemorrhage and subsequent clot retention.

Bladder neck stenosis following TURP is an unpleasant complication. In addition, the treatment is challenging as the rate of recurrence is high. However, it is a rare complication as it is documented in 0-4.9% of patients who had TURP [21,22]. One patient (2.2%) had bladder neck stenosis in our study, which is similar to the acceptable trend. However, Young et al. noted a rise in bladder neck stenosis following TURP from 2% to 11.5%. This he attributed to the decline in the number of TURPs being performed in his area, which limits training and exposure and the potential impact of alternative techniques such as holmium enucleation and GreenLight™ laser therapy [23].

Urge incontinence is a transient complication, usually results from damage to the sphincter. This occurs if there's damage to the proximal

sphincter, which is located beyond the verumontanum [19]. One patient (2.2%) had urge incontinence in our study. In a review of 9000 patients, Rasswailer et al. reported urge incontinence rate of 30-40%. His large cohort, which involved patients in the early years of TURP, might explain the high percentage of patients with urge incontinence. To prevent this complication, visualising the verumontanum and resection proximal to it is the key [24].

The accepted duration for TURP is 60-90minutes, as longer time is associated with increased morbidity. In a review of the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) from 2006 to 2016, Riedinger et al. showed that TURP lasting greater than 90mins was associated with more significant morbidity and complications [25]. Therefore, it is crucial to adhere to this time frame, especially where the expertise is not profound. The average resection time in our series was approximately fifty-nine minutes. Reports from our region showed similar duration for TURP [7,14,18]. This is understandable as TURP is still gaining a foothold.

The mean hospital stay in this study was 4.38 ± 2.10 days, while the mean duration of catheterisation was 3.56 ± 1.44 . This is in keeping with findings by other authors [14,20]. Short hospital stay and duration of catheterisation make TURP attractive to patients. However, prolonged catheterisation is associated with adverse effects such as catheter-associated urinary tract infection, encrustation, blockage etc. [26,27]. In addition, prolonged hospital stay increases the risk of nosocomial infections, causes bed shortages and disrupts patient flow [28].

The upper margin for M-TURP safety was suggested at 80gm, based on the Expert Panel's recommendation, under the assumption that the cut-off depends on choice of resectoscope, speed of resection and experience of the Surgeon [1]. While the mean size of prostate in our study was approximately 61gm, recently, there has been controversy about the upper limit for resection with larger prostate size associated with adverse outcomes [2,29]. However, in a contemporary series by Yulcel et al., low morbidity was recorded with prostate size greater than 80 gm. He opined that with technological improvements and experience, conventional M-TURP could be effectively performed in large prostate (≥ 80 gm) [30].

Benign prostate hyperplasia is a disease that afflicts elderly men mainly. This is reflected in this study with a mean age of 66.33 ± 7.60 years. Other workers have recorded similar age [7,14,16,20].

5. CONCLUSION

This study showed that most TURP complications were minor and within acceptable rates. Its attractions include short hospital stay and duration of catheterisation. Overall, TURP performed within our institution were generally safe and well-tolerated.

CONSENT

Informed and written consent was obtained from all the patients.

ETHICAL APPROVAL

IRB gave ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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