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Preliminary experience with Monopolar Transurethral Resection of Prostate (TURP)

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Abstract
Background: *TURP remain the gold standard for surgical management of benign prostatic hyperplasia (BPH). Although, relatively newer techniques with fewer complication rates and better outcomes like holmium laser enucleation of prostate (HoLEP) is increasingly been adopted as a better alternative, TURP is still the gold standard.Poor funding, lack of equipment, inadequate trained personnel has made practice of TURP in developing country challenging*
Objective: *to present our preliminary experience with Monopolar TURP and review the outcome of treatment in resource poor setting like ours*
Patients and methods: it is a retrospective study of patients who had Monopolar TURP done from 2012 to 2015 in our hospital. Variables analysed includes; age of patients, preoperative co-morbidity, preoperative prostate specific antigen, prostate volume ,type of anesthesia, duration of resection time, duration of hospital stay and post-operative complication.
Results: *twenty patients had Monopolar TURP during this period. The indication for TURP was symptomatic benign prostatic hyperplasia. The patient age range is 43-78 (mean 63.6years), 3 patients had co-morbidity. The volume of the prostate gland ranged from 18.12-60.94mls with average volume of 42.8mls. Preoperative prostate specific antigen (PSA) ranges from 0.6-7.9ng/dl (mean 3.6ng/dl). All patient had regional anaesthesia (subarachnoid block). The operation time ranged from 55-100mins with mean duration of 81minutes. Post-operative complication were clot retention (1 patient), urge incontinence (1 patient), two patients had epididymorchitis. Mean duration of hospital stay was 4.5days.*
Conclusion: *TURP is preferred to open prostatectomy due to shortened operation time, reduced hospital admission stay and lesser complication with satisfactory outcome.*

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I. Introduction

Benign prostatic hyperplasia is one of the common urologic diseases in ageing men(1).TURP is considered the gold standard surgical treatment modality for prostate size between 30 and 80mls (2)refractory to medical therapy while open prostatectomy is reserved for prostate size >80mls. However, the surgical aspect of management of BPH has undergone tremendous change in recent years from open to minimally invasive procedures. Some of the other procedures apart from TURP includes Transurethral incision of prostate(TIUP) usually for glands<30mls, (2) and more recently Holmium Laser enucleation of prostate (HoLEP). HoLEP has been considered to be an effective and better alternative to TURP, it provides shallow penetration, better haemostasis, and applicable for various prostate size(3) However despite the advances in minimally invasive therapy for BPH, TURP still remains the optimum treatment of choice for the ageing male of sub-Saharan Africa. It is however not available to the majority of patients in this region due to poor health allocation and inadequate facilities and training(1) We present our experience with TURP at LAUTECH Teaching Hospital, Osogbo.

Patients and Methods

The clinical notes of all patients who had TURP in the unit from 2011-2015 were retrieved and information regarding the age, indication for TURP, Volume of the prostate gland, Preoperative PSA, Preoperative medical therapy, type of irrigation fluid , duration of the procedure and the complications were extracted.

The Technique Of TURP

TURP was done under spinal and epidural anaesthesia. The patient is placed in dorsal lithotomy position and the external genitalia, perineum, lower abdomen just below the umbilicus, upper one third of thigh were cleaned with antiseptic (chlorhexidine) and draped to expose the external genitalia. Intravenous prophylactic antibiotics (ceftriaxone 1 g) was given. Pre TURP urethrocystoscopy was done to exclude bladder pathologies and enable the surgeon to obtain 3 dimensional mental images of patient's specific anatomical features and relationships.

A size 22F lubricated double channel resectoscope (active working element) which ensures continuous flow was used for resection. Landmark for resection were the ureteric orifices proximally and veromountanum distally. Routine irrigation fluid used was sterile distilled water and was placed 60cm above the pubic symphysis.

Resection of the obstructing median lobe was done first before the lateral lobes.

Haemostasis secured with coagulating intermittent cutting devices and roller ball electrode.

The resected prostatic tissue was evacuated using ellik's evacuator. After ensuring adequate haemostasis as evidenced by clear urine, a size 20F foley'surethra catheter was passed and urine bag attached for continuous bladder drainage. Post-operative antibioticsand analgesics was given for 24-48 hours and postoperative bladder irrigation with 0.9% Normal saline was discontinued within 24-48 hours. Urethral catheter was removed on 3rd day post operatively and patient was observed for another 24hours before discharge.

Outcome of Surgery was considered satisfactory by direct visualization of urine stream and urine dribbling while standing (check for injury to the external urethral sphincter).

II. Results

Twenty cases of TURP were performed during the 4 years period under review.Age range of the patients was 43 -78years with mean age of 63.6years (figure 1). All the patients presented with symptoms of bladder outlet obstruction from benign prostatic hyperplasia.Three patients had associated co-morbid disease;one had diabetic mellitus and two had hypertension (figure 2).The volume of the prostate ranged from 18.12 – 60.94mls with average volume of 43.8mls (table 1). Preoperative prostate specific antigen ranged from 0.6 -7.9ng/dl with average of 3.6ng/dl (figure 3). All patient had regional anaesthesia.The mean operation time was 81 minutes (figure 4). Distilled water was used as irrigation fluid for all patients.Post-operative complications were a case clot retention,a case of urge incontinence and two cases of epididymorchitis. There was no incidence of TUR syndrome.The duration of hospital stay was between 2-8days with mean duration of 4.5days (figure 5).None of the patients needed blood transfusion intra operatively and post operatively.There was no peri-operative mortality. All the patients were discharged with satisfactory urine stream on direct observation and post void residual volume <100mls.The post void residual volume was measured by passing urethral catheter after micturition and the volume of urine measured in measuring cylinder.The length of follow up ranged between 1months to 1year.

Figure 1

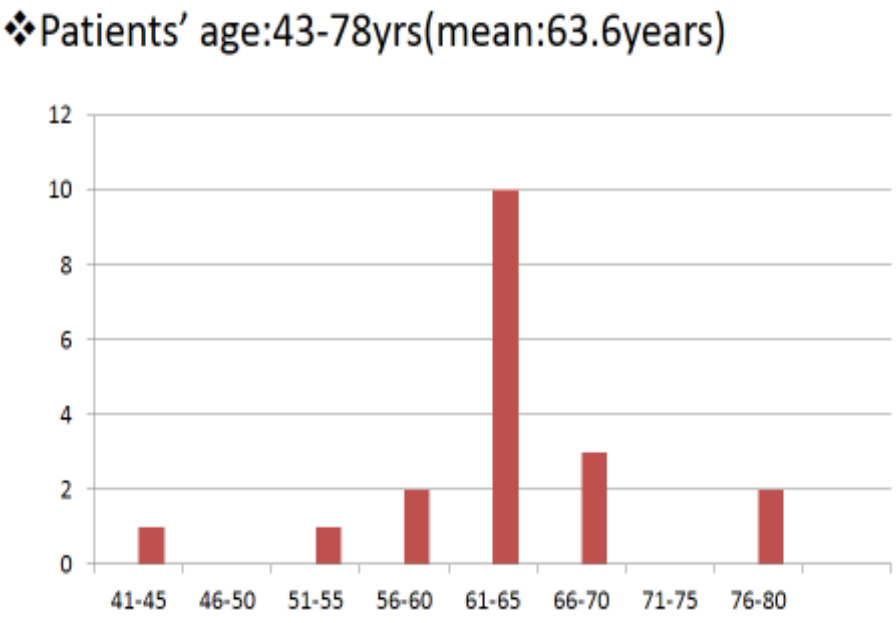


Figure 2

❖Associated co-morbidty:18.6%(hypertension-12.5%, DM-6.25%)

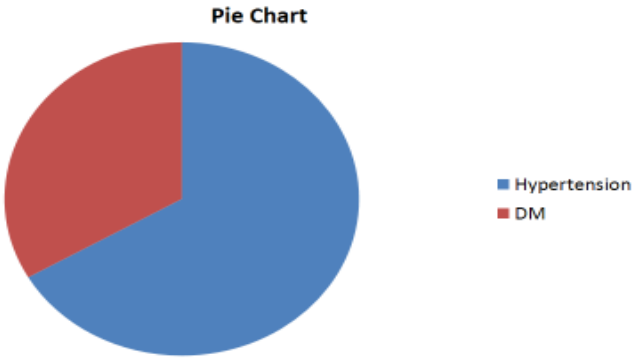


Figure 3- preoperative PSA level

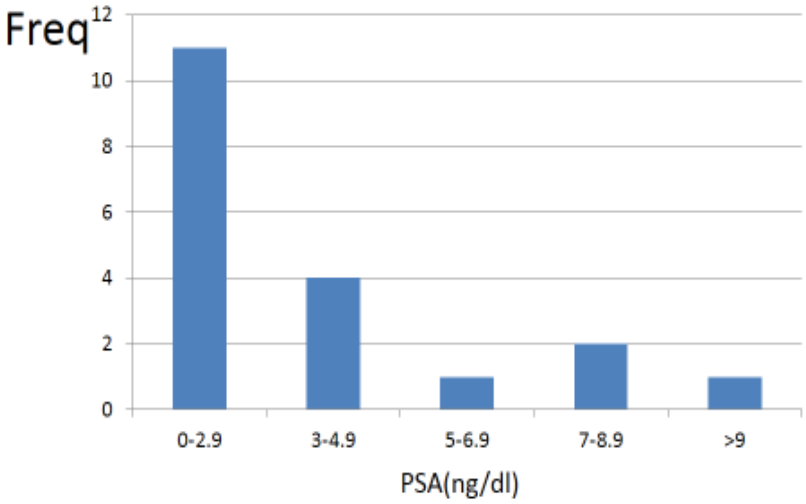


Table 1

Volume of prostate: 18.12-60.94mls (mean:42.8mls)

Prostate volume (mls)	Freq
10-19	3
20-29	2
30-39	4
40-49	2
50-59	5
60-69	1
70-79	0
80-89	0
90-99	1
100-109	0
110-119	1

Figure 4- duration of surgery in minutes

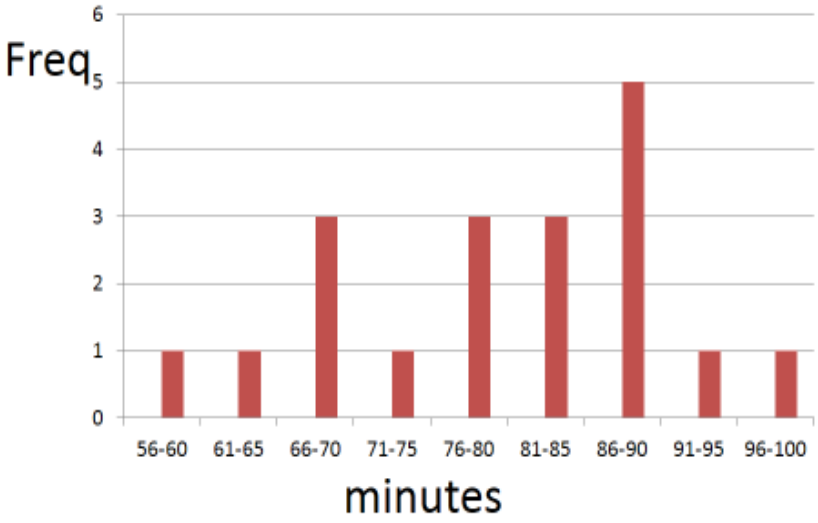
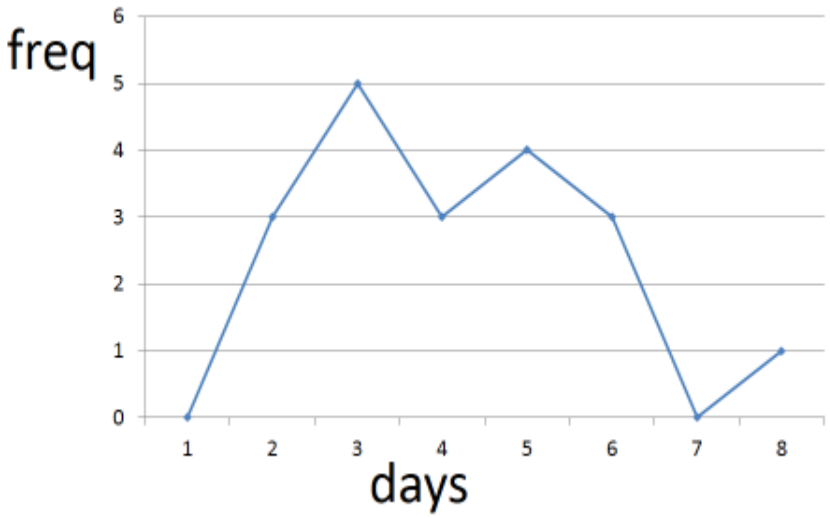


Figure 5- duration of admission in days



III. Discussion

Benign prostatic hyperplasia is one of the most common urologic disease of the ageing men. Prostate surgery for lower urinary tract symptoms secondary to BPH is usually indicated when there is failed medical therapy, recurrent or refractory urinary retention, recurrent urinary tract infection, recurrent haematuria bladder stones or diverticula, obstructive uropathy. It can also be based on patients' request (2)

The age distribution is consistent with the findings of other authors that benign prostatic hyperplasia is a disease of ageing male. The mean age from our study was 63.6 years, comparable to a mean age of 67.2 years and 75.9years from other studies in sub-Saharan Africa (1, 4).Studies in Asia and Europe reported similar findings (5, 6).

TURP is generally performed for prostate size <60g, though EAU guideline 2012 recommends TURP for prostate size 30 to 80mls (2) average volume from our study was 43.8mls which is <60g, similar to what has been reported in the literature (4, 6), however some have reported mean prostatic volume > 70g (5).Open prostatectomy may be done in patient with the prostate gland greater than 60grams but it actually depend on resection capability and experience of the endoscopic urological surgeon. We selected patients with prostate volume less than 60gms for TURP so as to reduce operation time and complication.

All our patients had regional anaesthesia(subarachnoid block), this helps to quickly detect any incidence of TUR syndrome compared to if patient had general anaesthesia. Okeke et al(7)reported the use of caudal block, using 2% xylocaine with 1 in 80,000 adrenaline and that this facilitates doing TURP as a day

case.Continuous flow resectoscope was used our series because it reduces the pain of bladder fullness and makes the use of local anaesthesia for TURP more tolerable and practicable.It is therefore preferred to single channel resectoscope.

The patients had urethral catheterization for about 48 hours before discontinuation, some studies have reported a shorter duration of catheterization, <24 hours (6) or no urethral catheterization at all(7) The mean operation time from our study is 81 minutes, this is a bit longer than what is reported from other studies (4, 5, 8). This may be due to the fewer number of patients we have had so far. The more the number of cases done, the better the expertise and the shorter the duration of operating time.

The irrigation fluid used is sterile distilled water and no incidence of TURP was reported, this similar to findings in some other studies (4, 7), however some have reported incidence of TUR syndrome (9, 10).Distilled water was used for the patient because it is transparent,not toxic and inexpensive. The irrigation fluid preferred by most urologist is 1.5% glycine solution is the irrigation.However, it is expensive and also causes TURP syndrome.Other irrigation fluid used for Monopolar TURP includes 3% glycine, 3.5% sorbitol, 5% mannitol, 1% urea and 5% dextrose water. Presently there is no ideal irrigation fluid. An ideal irrigation fluid for monopolar TUR should be isotonic, non-conducting, non-haemolyzing, non-metabolized and transparent.The mean duration of hospital stay was 4.5days, Alhassan et al(1)in their study reported a mean hospital stay of 7.9 days, however the trend is towards TURP as a day case (6, 7).The mean hospital stay is shorter than hospital stay following open prostatectomy at our centre.

The length of follow up ranged between 1 month and 1 year.We need a longer duration of follow up to be able to assess for long term complications like urethral stricture or recurrence of symptoms The complication rate from our study was low, the patient with hypertension had clot retention which was managed with clot evacuation using bladder syringe and continuous bladder irrigation, and we had a case of urge incontinence probably from detrusor instability as it later resolved without any intervention. The low incidence of complication in our study may be attributed to the low incidence of comorbidity amongst the patients selected for the procedure.All patients were discharged with satisfactory voiding as observed directly and post void residual volume <100mls

Two of our patients presented at follow up with epididymorchitis which resolved with use of antibiotics and nonsteroidal anti-inflammatory drugs. Alhassan et al(1)reported orchitis rate of 2.2%, urinary incontinence rate of 0.6%. Major long term complications like urethral strictures and bladder neck contracture were not seen. This is probably due to a shorter duration of follow up from our study which was on the average 12 months. Longer follow up period and larger number of patients are required to compare our findings with open prostatectomy

IV. Conclusion

TURP remains the gold standard due to natural preference for minimally invasive surgery, reduced cost, reduced complication and hospital stay. This has overall effect on the economy of the patient and the family at large considering the fact that health service in Nigeria is still majorly funded by patients and relatives. However the practice of TURP in Sub-Saharan Africa still remains a major challenge especially in public health institutions,this is due to low allocation of resources to health, inadequate facilities and training.

Recommendation

Effort must be made to adopt TURP as the gold standard in the management of bladder outlet obstruction especially in public health sector by training more personnel,procuring necessary equipment and providing necessary funding.

Authors' contribution

AK Eziyi, Olajide OA, AyomideOO : Protocol/ project development

OQ Asafa, OO Ojewuyi : Data collection/ or management

AsafaOQ : Data analysis

OO Ojewuyi, AK Eziyi, OQ Asafa, OO Ayomide, AG Oyeniyi : Manuscript writing/ editing

Conflicts of interest- there is no conflict of interest

The research is a retrospective study of cases of transurethral resection of prostate done at our hospital, the information was retrieved from the case notes. No human/animal participants is used.

Institution approval is from LAUTECH Teaching Hospital, Osogbo.

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