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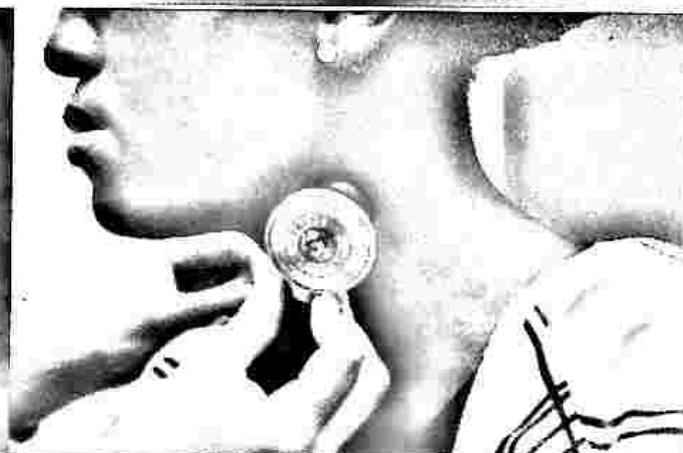
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## EXPERIENCE WITH OPEN PROSTATECTOMY IN BINGHAM UNIVERSITY TEACHING HOSPITAL, JOS: THE NEED FOR A MODERN SAFER AND COST EFFECTIVE SURGICAL TECHNIQUES

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Key words: Open prostatectomy, benign prostatic hyperplasia, Complications, Assisted robotic radical prostatectomy.

## ABSTRACT

**Background:** Benign prostatic hyperplasia is the most common cause of lower urinary tract symptoms in the elderly male and commonly treated by open prostatectomy in this environment despite newer safer options. The standard of care for benign prostatic hyperplasia is still the open prostatectomy procedure carried out by either the retro -pubic or transvesical route particularly in health institutions in developing countries where the resources for modern methods are not readily available. The authors' place of practice has practiced this method of managing BPH since the establishment of the institution over fifty years ago and has continued to do so despite becoming a University Teaching Hospital. Huge number of patients with BPH flock our Outpatient Clinics seeking for management of their BPH. The number of those embarking on medical tourism is also on the increase to have more modern techniques of treatment like TURP in view of its better outcome, thus further depleting our scarce foreign reserve. We therefore reviewed retrospectively the open prostatectomies (OP) carried out in the institution looking at the cost effectiveness, surgical complications and quality of life thereafter.

**Objective:** To assess the outcome of OP carried out in Bingham University Teaching Hospital (BHUTH), between January; 2011 to January; 2017 in order to recommend options for improved outcome in terms of quality of life, cost effectiveness and patient safety.

**Design:** A retrospective study of open prostatectomies done at Bingham University Teaching Hospital, formerly ECWA Evangel Hospital, Jos looking at the cost effectiveness, post-operative morbidity outcomes, length of hospitalization and quality of life thereafter.

**Setting:** Bingham University Teaching Hospital, Jos, Nigeria.

**Methods:** After obtaining ethical clearance from the BHUTH Health Research Ethics Committee for this study, we reviewed the medical records of 80 open prostatectomy patients from January 2011 to January; 2017 in order to document both medical and surgical complications arising from the surgeries. We also classified the complications documented using the modified Clavien method of classification for surgical operations.

**Results:** We found a total of 108 OP that were carried out over the review period. Of the number only 80 cases were analysed. Those excluded were either due to incomplete documentation or existing comorbidities. Of the 80 OP patients analysed, statistical analysis showed that the mean age of the patients was 62+10 years and a range of 53 – x years. In this study 8% of the subjects had one form of complication or the other. Most complications were found to have occurred in the immediate post-surgery period. Other complications of OP that occurred in the early postoperative period were re-operated within 2 and 5 years respectively. Length of hospital stay ranged between five and twenty days.

**Conclusion:** We conclude that OP procedure is still accompanied with substantial perioperative morbidity and mortality and this correlated well with the grade of the complication, particularly for high-grade complications. Open prostatectomy is still a valid operative procedure in a contemporary society, even where advanced techniques for transurethral approach to prostatectomy and laser and assisted robotic radical prostatectomy are available. However, where the human resources for modern techniques such as the transurethral Prostatectomy (TURP) are available, the armamentarium should be acquired to further reduce the occurrence of morbidity and even mortality recorded in this study. We also note that possible complications should be well explained to the patient at the preoperative encounter and documented.

## INTRODUCTION

Open prostatectomy (OP) via the transvesical route, is still the reference standard for managing complications of benign prostatic hyperplasia

(BPH) in most centres of the developing countries even though the transurethral route is becoming increasing available in our country, Nigeria.<sup>1,2</sup> However, in developed countries the gold standard

for OP is transurethral prostatectomy (TURP).<sup>2</sup> Complications resulting from the various types of prostatectomy methods is a source of significant debate among general surgeons/urologists because of conflicting results.<sup>1,2</sup>

Studies have shown that moderate to severe bleeding is the most common complication found in OP.<sup>1,3</sup> It is important that surgical procedures be assessed from time to time looking at complication rates and how this is being influenced by the specific surgical technique used. Biases in surgical audit can be overcome by use of a reliable and validated classification system when reporting complications of surgery. Clavien et al classification is an excellent one that can be used for such exercise when there is a need for quality assurance.<sup>4,5</sup> This was first published in 1992 and used initially to report complications in cholecystectomy.<sup>4</sup> For this study, the modified Clavien classification structure introduced by Dindo et al was used.<sup>4,5</sup> This will objectively assess the complications of OP via the transvesical route. Modified Clavien classification has been validated and can be applied globally by surgeons and other general practitioners.<sup>4,5</sup>

#### MATERIALS AND METHODS

We carried out a retrospective study of OP via the transvesical route at Bingham University Teaching Hospital, Jos, Nigeria that provides mostly secondary level of care for most of the study period before transforming into a tertiary training Centre for the training of medical students. The Centre also has postgraduate training programme in Family Medicine and is currently in the process of starting residency programs in Surgery, Paediatrics, Internal Medicine as well as Obstetrics and Gynaecology. The institution also hosts a Centre of excellence for holistic management of obstetric fistula. This Centre has been performing OP for more than 50.

Despite transformation into a University Teaching Hospital about six years ago the facility has continued to carry out OP. We therefore reviewed the medical records of all the patients who had OP between January; 2011 and January; 2017 with the aim of noting the surgical and medical complications that arose from the procedures and after the OP.

Data were collated, computed into data base and

analyzed by the same author so as to ensure strict compliance with inclusion criteria. All patients whose medical records could not be found or lost to follow up and those with inadequate data were excluded from the study.

Consent for this research work was obtained from BHUTH Health Research Ethics Committee prior to the study.

Complications were predetermined before the review process as follows immediate, early and late complications. Immediate complications were defined as complications occurring at the time of surgery. Early complications were those that occurred after surgery but within thirty days post-surgery and late complication when the complication occurred beyond thirty days post OP. In our study cystoscopy evaluated state of urethra, the mucosa of the bladder, the bladder uvula and the two lateral lobes of the prostate were carried out to ascertain inclusion or exclusion of study subjects.

Thru-cut<sup>®</sup> needle biopsies of prostates were taken for histopathology in cases of nodularity of the prostate and overtly high PSA values. PSA values and size of prostate gland did not influence acceptance or rejection of patients into the study. Patients with carcinoma of Prostate were excluded *ab initio* as well as patients above ASA IV-score. Others with incidental carcinoma of prostate at histopathology were left in the study group since they underwent the OP.

Spinal Anaesthesia consisting of hyperbaric xylocain was used in 98% of the cases, except in cases of damaged lumbar vertebrae patients who were intubated. Packed cell volume (PCV), creatinine, electrolytes, BUN, urinalysis and blood glucose values were determined. Demographics of patients were determined while diabetes and hypertension (HPT) were controlled.

The modified Clavien classification tool was then used to grade the complications resulting from the OPs carried out within the specified period.<sup>4,5</sup> All the patients with OP had structured regular follow up while those with complications had more frequent follow up. The details of the modified Clavien grading of complications are as in the table below.

Table of Modified Clavien Classification

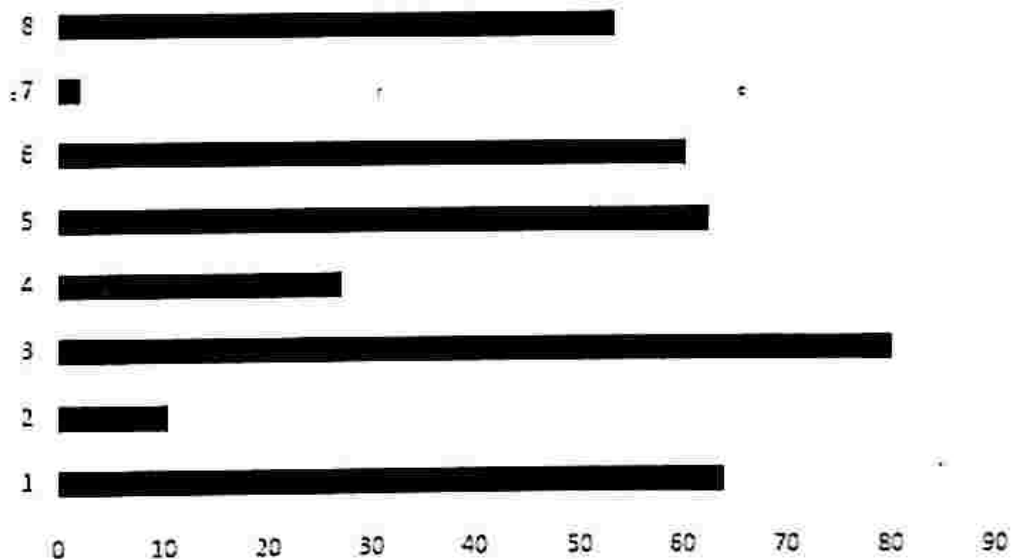
Grade	Definition
1	Any deviation from the normal course after surgery, with no need for pharmacological treatment or surgical, endoscopic and radiological interventions. Allowed therapeutic regimens are: drugs as anti-emetics, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside
2	Requiring pharmacological treatment with drugs other than such allowed for grade I. Blood transfusions and total parenteral nutrition are also included
3	Requiring surgical, endoscopic or radiological intervention.
3a	Intervention not under general anaesthesia.
3b	Intervention under general anaesthesia
4	Life-threatening complication (including CNS complications*) requiring IC/ICU management
4a	Single-organ dysfunction (including dialysis)
4b	Multi-organ dysfunction
5	Death of the patient

On discharge it is noted whether or not the patient has complication. The suffix'd' (disability) is added to the particular grade of complication to show the necessity for continuing full evaluation of complication at each physician – patient encounter.

EXCEL 2013 which returned a median of 64, standard deviation of 10, age maximum of 80 years, minimum of 27 years, with a range of 53, a mean of 62 a frequency of 60, and a confidence interval of 2. Cluster Chart of Age Distribution

**RESULTS AND ANALYSIS**

The age-distribution was statistically analyzed using



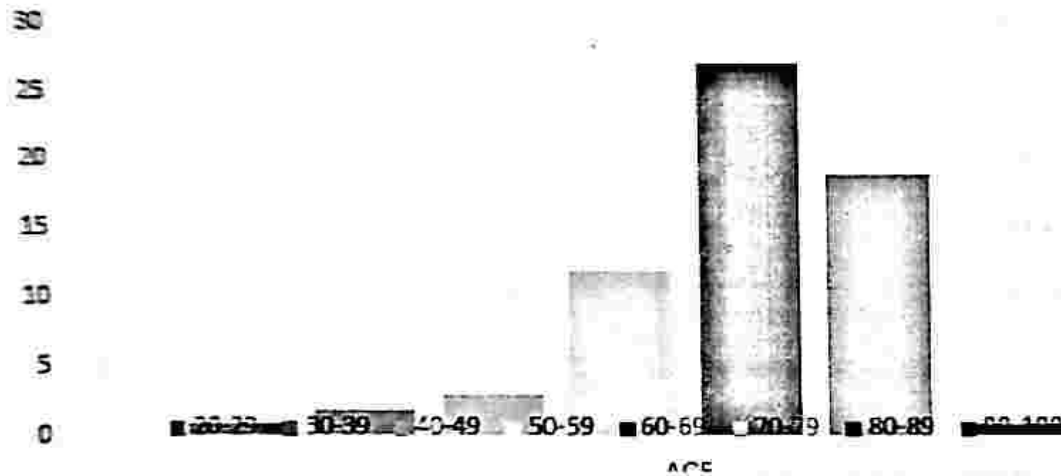
The age distribution is as depicted in the chart above.

The mortalities recorded were 2 (3%) of subjects; resulting from deep vein thrombosis (DVT), pulmonary embolism, or renal failure secondary to disseminated intra-vascular coagulopathy (DIC) despite sufficient anti-thrombotic prophylaxis. We note that intended post-mortem examinations were not permitted by the relatives of the dead; hence the actual cause of mortality could not be documented.

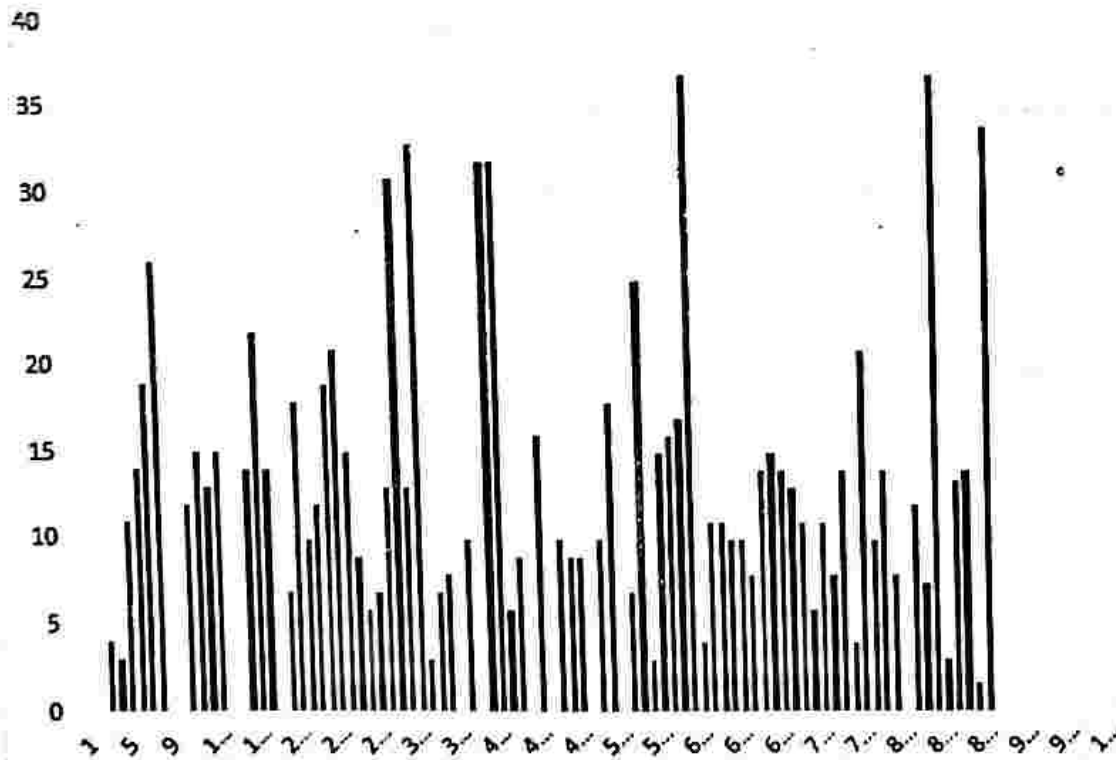
healed by allowing urethral catheters to remain in the bladder until healing by secondary intention occurred. Two Patients (3%), had epididymo-orchitis with no side prevalence. The Clavien classification of complications, revealed 5 patients falling into grade 1 while 2 of the patients were found to have grade five complications. The mean duration of the 3-way indwelling catheter after OP was 8 days (Standard Deviation (SD) of 2, range of 5–20).

We obtained an average of 96 % wound healing by primary intention. 5% had some urine leakage which

**Cluster Chart: Length of Hospital Stay**



**Chart of Length of Hospital Stay (LOS) for each Patient**



The mean LoS) was 13 days, with SD of 8 days, a median of 12 and a confidence interval of 2. The least LoS was one day in one subject and 2 days for two other subjects who however were sent home with their 3 way catheter because there was no more bleeding and hence could return for further follow up. This option was only used for younger patients in the group. 2 persons had stricture, 2 had urinary incontinence while 2 had epididymo-orchitis. We also found out that most of the surgeons who performed the OP ranged from Family Physicians secondarily trained to do OP under the tutelage of an Urologist while others were carried out by either general surgeons similarly trained like the Family Physicians or were urologists themselves.

#### DISCUSSION:

Every time a new surgical technique becomes available within the surgical field, surgeons are confronted and challenged by the existing, clearly defined straight – forward surgical techniques available and accessible to clients. The use of more modern surgical techniques in the management of BPH has been similarly challenged. The situation is made worse by the developing nature of our country. However it is important to carefully evaluate the procedural outcomes using standardized methods to grade the outcomes of the existing technique and possibly compare with the new techniques, looking at results from literatures from countries or centres where the new techniques have been well established and practiced for possible replication in one's own centre, may eventually help to define new standards of care. We therefore report the pre-operative and post-operative outcomes of OPs performed over a five year period in our centre.

Besides the physical outcome, the surgical technique is important in evaluating the rate of complications. To evaluate the outcome of surgical procedures there is need for a standardized, reliable and validated mode of evaluation that is reproducible and easy to use by both surgeons and researcher's globally.<sup>4</sup> Thus, an objective assessment and comparative analysis of different surgical techniques can be made, that way ambiguity in reporting can be minimised or completely eradicated. The use of the modified Clavien classification helped us to categorize the complications in this study into grades 1 to 5.<sup>5</sup>

The worst grade which is death was found in 2 (3%) of the study subjects. Healing by primary intention occurred in 76 (96%) of the subjects, while 5% (4) of the subjects had urine leakage which later healed by catheter prolongation leading to healing by secondary intention. The findings in this study is

similar to the findings from other OP outcome studies except that the complication rate in this study was much lower to what was obtained in other studies ranging up to 46%.<sup>6</sup> The mortality rate in this study was 3% while the mortality rates from other studies ranged from 0.9% to 3.9%.<sup>6\*</sup>

Both OP and transurethral resection of the prostate (TURP) are surgical procedures that relieve moderate to severe urinary symptoms caused by an enlarged prostate, a condition known as BPH. Open prostatectomy, TURP/other modern surgical techniques are usually indicated when symptoms of BPH have not improved with medication and "watchful waiting".<sup>3,9</sup> Doctors recommendation of surgical technique is dependent on the availability of the requisite surgical competency and facilities.

TURP has stood the test of time for the relief of bladder outlet obstruction (BOO) secondary to BPH.<sup>7</sup> It is recognized as the gold standard for management of lower urinary tract syndromes (LUTS).<sup>10</sup> It also improves both objective flow rates (Omax) and subjective measures such as the International Prostate Symptom Scores (IPSS) by as much as 90-175% and 53-81%.<sup>4</sup> respectively. Quality of life (QoL) objectively improves as well.<sup>10</sup>

Our mortality of 3% finding in this study is much discouraging when compared with the mortality rate of 0 to 0.01% for TURP revealed from systematic meta-analysis hence the need for us in this facility to immediately acquire the facilities for TURP, since the most important resource for such is available i.e. human resource.<sup>11-13</sup>

The complications of TURP, from 1979-1993 were known as "early" and "intermediate" for those from 1994 -1999 whereas the term "recent" or "late" for complications started from 2000-2005.<sup>15-66</sup> However, the modified Clavien classification was used in this study.

From various studies, it is obvious that, TURP has far better outcome looking at the LOS, QOL, Qmax and even ISPSS; despite being more expensive to procure. The morbidity for contemporary TURP is lower than previously reported based on continuous improvement of armamentarium and technique, but also due to a significant improvement in teaching modalities including video assistance, hands-on courses with phantoms, TURP courses with live demonstrations, and textbooks with CD-ROMs.<sup>67,68</sup>

Only about 5% of TURP cases have severe bleeding intra- and post-operatively. Consequently, blood transfusions are rare, unlike our review which

showed that 100% of our study subjects received blood transfusion intra-operatively.<sup>68,71</sup>

Literature reveals that only about 2% have another surgery after 3 years and another 8% need to have another TURP after 5 years.<sup>70</sup>

Improved TURP technology has made the difference with high frequency (HF) energy up to 160watts through bipolar loop-shaped electrode, and the introduction of the video-assisted resection.<sup>22, 38, 45, 47-49, 52, 54</sup>

Our aim was to show the need for progression to a newer next level method of prostatectomy out of the several possibilities for example Laser, but in particular TURP, which is easily learnable. TURP would lift the socioeconomic standard of BHUTH and still be at an acceptable cost to patients.

#### **The psychosocial well-being of the patients affected by OP or TURP complications:**

In a systematic review of 15 studies, the psychosocial impact of complications of OP was noted. There was significant relationship between surgical complications and lower scores on physical, emotional and social dimensions when various QoL measures were analysed and showed an adverse outcome.<sup>71-72</sup> A meta – analysis of three studies also revealed an adverse effects of complications both on the physical and the mental health components. The above discoveries in both the systematic review and the meta – analysis are in keeping with previous initial reports on the psychosomatic encumbrance that surgical adverse happenings frequently inflict on the patients.<sup>72</sup> Higher incidence of post-operative anxiety and depression have also be associated with post-operative complications especially when associated with prolonged LoS and other QoL measures.<sup>72</sup> This again makes TURP a better option than OP, with shorter LoS and better QoL indices.

We therefore believe that having TURP armamentarium installation in our facility would improve the psychosocial outcomes of OP.

Of the several methods now practiced in advanced countries, and some select few private Medical Centres in Nigeria, only OP seems to have settled in Nigeria because of the lower cost of procuring the operative tools and shorter learning curve of the procedure.

The real challenging alternative to TURP would be a procedure that allows immediate and complete removal of obstructing tissue in a reasonable operative time with low morbidity and good

symptomatic relief and OP is certainly not that alternative.<sup>13</sup>

Although short learning curve have been reported for OP, TURP also has a short learning curve in which the mentor and mentee use video assistance and both see what they are doing.<sup>2</sup> The Trainee Registrar becomes efficient after about, 50 TURP procedures.<sup>2</sup> Not worsening the already existing erection problems in men plus the low rate of reoperation of only 2% after an acceptable period of over 3 years make TURP an attractive method of prostatectomy.<sup>68,71</sup>

In our study of OP urethral catheters left in place at discharge home of patient were removed at first presentation 10 – 14 days post operatively in the outpatient clinic. We observed a case of 1 (1%) disturbing urine dribbling after catheter removal. These groups of patients did not like their QoL even if they were happy that they survived the surgery and had their prostates removed. The joy of successful operation took too long in coming in contradistinction to TURP. Epididymo-orchitis of (3%) in our study was another factor that worsened the QoL of the study subjects affected.

#### **Post OPLab checks:**

There was no significant change in the mean PCV (10 g, 33 %,) and a normal mean serum creatinine level (1 mg/dL,) immediately after OP, respectively. This was explained by the fact that patients regularly had transfusions of one to two pints of whole blood during OP operation.

Post-operative continuous bladder irrigation with Normal Saline for more than 24 hours was usual in our study (100%). All patients were able to void spontaneously within 2–4 weeks after OP. Most patients wanted the catheters removed earlier signifying a poor state of QoL.

Some of the complications were similar to what obtains in the developed world where OP still obtains even at top Urology Centres.<sup>3,43,70</sup>

#### **Management of complications:**

Pre-operatively, 2 to 3 days admission before surgery for bladder irrigation with requisite antibiotics, followed by systemic antibiotic treatment post OP was done to reduce epididymo-orchitis. All patients with long time catheterizations had pre-operative cystitis and received antibiotic treatment based on anti-biogram test results.

Urine leakage of 4%, due to bladder dehiscence was observed despite good principles of surgery at bladder closure with exact muscle bites and equidistant placement of stitches. Particular care was

taken during the continuous running horizontal sero-muscular mattress stitches for the closure of bladder. Mortality of 2 patients (3%) was recorded despite perioperative anti-thrombotic therapy and early postoperative physiotherapy. This finding from our study is in keeping with literature findings.

We therefore report a relatively high post-operative morbidity rate after OP and exceptionally long LoS of patients compared with 2 – 4 days in TURP.<sup>22</sup> OP remains however, the treatment of choice in the third world countries,<sup>23</sup> but change should come by now.

After the recent world economic crisis, healthcare resources became limited and National Health Systems (NHS) UK -in Nigeria NHIS- were forced to reconsider allocation of resources, with an inevitable trend towards reducing the number of inpatient beds, increasing number of day-case surgeries in order to lower treatment costs, thus indirectly calling for alternative surgical techniques, in this case TURP.

The Urologic Endoscopy Suites at some Medical Centres, just as in BHUTH, have functional cystoscopes and needs only be upgraded to include resectoscopes and accessories for TURP.

The authors of this work consider acquiring armamentarium for TURP as a goal that is possible even at this present despite cost of about \$85, 000. These tools are reusable and have long durability. We submit that TURP would pay for its purchase and increase the self-worth of the hospital.

It has been established that TURP is efficient, cost-effective and, most importantly durable with low long-term complications and re-treatment rates.<sup>27</sup>

All complications resulting from TURP are reportedly milder in severity, shorter and very easy to manage.<sup>27</sup> The intra-operative bleeding is less and requires minimal blood transfusion. Post-operative urethral catheterization is of short duration – a mere 2-3 days. Length of hospital stay is shorter; QoL is also good.<sup>40-43</sup>

WHO recognizes Quality of Life (QoL) as personal idea of life values culturally and systems-wise. CDC definition of Health-related quality of life (HRQOL) is an individual's or a group's perceived physical and mental health over time. Patients felt better in every respect.

Health status have become more relevant predictors of morbidity and mortality than simple health objective measures which is why HRQOL questions

have become more valid indicators of unmet needs and intervention outcomes.<sup>17,18</sup> The old paradigm of what is measurable by laboratory work-up alone is no more acceptable.<sup>17,18</sup>

TURP does not worsen the already present erection problems in men.<sup>40</sup> The low rate of reoperation of only 2% after an acceptably long time of over 3 years make TURP an attractive method of prostatectomy.<sup>40</sup>

We believe that a surgeon who has mastered the art of cystoscopy and the basic OP could master TURP after 10 – 15 continuous training periods.

Studies have shown mortality rate for TURP to be 0.10% while the cumulative short-term morbidity rate was 11.1%; both rates were below the average for OP by a skilled Urologist/Surgeon.<sup>64</sup> Mortality rate in our study was 3%.

Two important issues with introducing a new technology in Medicine are learning curve and cost effectiveness,<sup>3</sup> which we believe are easily surmountable challenges in TURP.

We submit several reasons why the Urologic Units in Nigeria should quickly upgrade to the level of minimum of TURP. The cardinal reason of which, is that it is relatively cost effective, safer with reduced morbidity and mortality.<sup>14</sup> QoL is restored more quickly to *status quo ante*. Los is shorter as already alluded to.

Mortality is the worst consequent of any surgery. We registered 2 (3%) mortalities in the OP review which could have been avoided if TURP was used. This makes it more imperative for the introduction of TURP since we now have urologists who have been trained in performing TURP and have successfully carried out 3 TURPs using equipment's borrowed from another facility. The mortality rate is expected to reduce appreciably soon after introduction of modern equipment and continuous work with the TURP.<sup>17,22</sup> Patients would not be kept prostrate for too long thereby preventing DVC. Learning curve is relatively shorter thereby reducing cost.

Some Private Medical Facilities have introduced TURP in Nigeria and patients are paying.

We found out that TURP could cost about N200, 000 (Two hundred thousand Naira) which cost is reasonable considering shorter Los and greatly improved QoL at shorter times.

In summary, TURP and its modifications offer well-documented long-term data of efficacy and safety in



surgical treatment for BPH.<sup>64</sup>

### LIMITATIONS

The paucity of electricity supply could directly hinder the fluidity of daily operations. The cost of TURP at N200, 000 (Two hundred thousand Naira) may be too high for some patients who perhaps are even languishing under the lower cost of OP at about N120, 000 (One hundred and twenty thousand Naira only).

### CONCLUSION

There is relatively high perioperative morbidity with OP made worse by the unacceptably long LoS. Although economic down turn favours OP, which is expectedly less expensive; however it is more cost effective to acquire the armamentarium for more modern techniques such as TURP. The TURP technique produces sustained improvement of objective and subjective parameters. Therefore our take home is the recommendation for immediate acquisition of the urethral resectoscopes and the accessories for TURP at BHUTH and in all General and University Teaching Hospitals with Urologic Centres. It is also important to convert the current manual health records into electronic health record, since this will help eradicate the challenge of missing health records.

Finally this study has shown the importance of outcome assessment and therefore the need for clinical practice improvement. It has also thrown up useful information that will guide policy makers in policy making as well as helping the health care practitioners at health protocol and health policy implementation.

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### REFERENCES

1. Tubaro, C. DE Nunzio. The current role of open surgery in BPH EAU-EBU Update Series, 4(2006), pp. 191–201
2. CK Oranusi, AME Nwofor, IO Oranusi. Complication rates of open transvesical prostatectomy according to the Clavien–Dindo classification system. Nigerian Journal of Clinical Practice March; 2012 Vol 15 Issue 1 pg 34–37
3. N.P. Gupta, A. Anand: Lasers are superfluous for the surgical management of benign prostatic hyperplasia in the developing world Indian J Urol, 25 (2009), pp. 413–414
4. Pierre A. Clavien, Jeffrey Barkun, f Michelle L. de Oliveira, Jean Nicolas Vauthey, Daniel Dindo, Richard D. Schulick et al. The Clavien-Dindo Classification of Surgical Complications: Five-Year Experience. *Annals Surgery*, 2009; 250: 187–196.
5. Charalampos Mamoulakis, Ioannis Eftimiou, Savas Kazoulis, Ioannis Christoulakis, Frank Sofras. The modified Clavien classification system: a standardized platform for reporting complications in transurethral resection of the prostate. *World J. Urol* (2011) 29:205–210.
6. Muhammad Shamim, Muhammad Idrees, Shumaila Bano. Outcome of Open Prostatectomy. *Journal of Surgery Pakistan (International)* 17 (3) July - September 2012, pg 87-92.
7. Tchilabalo M. Kpatcha, Boyodi Tchangai, Kodjo Tengue, Fousséni Alassani, Gnimdou Botcho, Tchou Darre et al. Experience with Open Prostatectomy in Lomé, Togo. *Open Journal of Urology*, 2016, 6, 73-79.
8. Constantinos A. Constantinides, Stavros Tyritzis, Andreas Skolarikos, Evangelos Liatsikos, Anastasios Zervas and Charalambos Deliveliotis. Short- and long-term complications of open radical prostatectomy according to the Clavien classification system. *BJU International*, June; 2008, pg. 337–340.
9. Wasson JH, Reda DJ, Bruskewitz RC, Elinson J, Keller AM, Henderson WG. A comparison of transurethral surgery with watchful waiting for moderate symptoms of benign prostatic hyperplasia. The Veterans Affairs Cooperative Study Group on Transurethral Resection of the Prostate. *N Engl J Med* 1995; 332: 75–79
10. Ibrahim AG, Aliyu S, Ali N (2013) Open Prostatectomy for Huge Prostates: Our Experience in a developing Country. *Trop Med Surg* 1: 132 doi: 10.4172/2329-9088.1000132
11. Assad El-Hakim. TURP in the new century: an analytical reappraisal in light of lasers *Can Urol Assoc J*. 2010 Oct; 4(5): 347–349.
12. Mathew A. Collins, Edward David K, Martha K. Terris, , Transurethral Resection of the Prostate. *Mescape*, Updated November; 2016
13. M. Elhilali and E.A. Elzayat Laser prostatic Surgery: An update. In *African Journal of Urology* Vol14, (1) 2008 Pp. 1-14
14. S. Madersbacher, G. Alivizatos, J. Nordling, C. Rijoja Sanz, M. Emberton, J.J.M.C.H. de la Rosette. EAU 2004 Guidelines on assessment, therapy and follow-up of men with lower urinary Tract symptoms suggestive of benign prostatic obstruction (BPH guidelines). *Eur Urol*. 2004; 46:547-554
15. AUA Practice Guidelines Committee (2010). AUA guideline on management Of benign prostatic hyperplasia. Chapter 1: Available

- online at: <http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines.cfm?sub=bph>.
16. Fitzpatrick JM (2012). Minimally invasive and endoscopic management of Benign prostatic hyperplasia. In AJ Wein et al., eds., *Campbell-Wals Urology*, 10<sup>th</sup> ed. vol. 3, pp. 2655-2694.
  17. Istre O, Bjoennes J, Naess R, et al. Postoperative cerebral oedema after transcervical Endometrial resection and uterine irrigation with 1.5% glycine. *Lancet* 1994; 344:1187-1189
  18. Te AE. The development of Laser prostatectomy. *BJU Int.* 2004; Feb93 (3):262-5.
  19. Gilling P.J., Cass C.B., Cresswell M.D., Fraundorfer M.R. Holmium laser resection of the prostate: preliminary result of a new method for the treatment of benign prostatic hyperplasia. *Urology*. 1996; Jan 47(1): 48-51
  20. Bachmann A, Ruszat R., Wyler S., et al. photovaporization of the prostate: The Basel experience after 108 procedures. *Eur. Urol.* 2005; June 47(6):798-804
  21. A. Patel, G.J. Fuchs, J. Gutiérrez-Aceves, T.P. Ryan. Prostate heating patterns comparing Electrosurgical transurethral resection and vaporization: A prospective randomized study. *J Urol.* 1997; 157:169-172
  22. W. Horninger, H. Unterlechner, H. Strasser, G. Bartsch. Transurethral prostatectomy: mortality and morbidity. *Prostate.* 1996; 28:195-198
  23. Gratzke C, Schlenker B, Seitz M, Karl A, Hermanek P, Lack N, Stief CG, Reich O. complications and early postoperative outcome after open prostatectomy in patients with benign prostatic enlargement: results of a prospective multicenter study. *J urol.* 2007 apr; 177(4):1419-22.
  24. Mebust W.K., Holtgreve HL, Cockett ATK, Peters PC. Writing Committee, the American Urological Association: Transurethral prostatectomy: immediate and postoperative Complications. Cooperative study of 13 participating institutions evaluating Patients. *J Urol* 1989; 141:243-247.
  25. H.A. Doll, N.A. Black, K. McPherson, A.B. Flood, G.B. Williams, J.C. Smith. Mortality, morbidity and complications following transurethral resection of the prostate for benign prostatic Hypertrophy. *J Urol.* 1992; 147:1566-1573
  26. G. Haupt, J. Pannek, S. Benkert, C. Heinrich, H. Schulze, T. Senge. Transurethral resection of the Prostate with microprocessor controlled electrosurgical unit. *JUrol.* 1997; 158:497
  27. U. Zwergel, B. Wullich, U. Lindenmeir, V. Rohde, T. Zwergel. Long-term results following Transurethral resection of the prostate. *Eur Urol.* 1998; 33:476-480 Crossref.
  28. M. Galluci, P. Puppo, M. Perachino, P. Fortunato, G. Muto, A. Mandressi, et al. Transurethral electrovaporization of the prostate vs. transurethral resection. *Eur Urol.* 1998; 33:359-364
  29. M.Y. Hammadeh, G.A. Fowlis, M. Singh, T. Philp. Transurethral electro vaporization of the prostate – a possible alternative to transurethral resection: a one-year follow-up of a Prospective randomized trial. *BJU Int.* 1998; 81:721-725.
  30. A. Vivien, T. Lazard, A. Rauss, M.-J. Laisne, F. Bonnet. Infection after transurethral resection of the prostate: variation among centers and correlation with long-lasting surgical Procedure. *Eur Urol.* 1998; 33:365-369 Crossref.
  31. P.G. Borboroglu, C.J. Kane, J.F. Ward, J.L. Roberts, J.P. Sands. Immediate and postoperative Complications of transurethral prostatectomy in the 1990s. *J Urol.* 1999; 162:1307-1310
  32. P.J. Gilling, M. Mackey, M. Cresswell, K. Kennett, J.N. Kabalin, M.R. Fraundorfer. Holmium laser versus transurethral resection of the prostate: a randomized prospective trial with 1-year Follow-up. *JUrol.* 1999; 162:1640-1644
  33. H. Heidler. Frequency and causes of fluid absorption: a comparison of three techniques for Resection of the prostate under continuous pressure monitoring. *BJU Int.* 1999; 83:619-622
  34. G. Schatzl, S. Madersbacher, B. Djavan, T. Lang, M. Marberger. Two-year results of transurethral Resection of the prostate versus four "less invasive" treatment options. *Eur Urol.* 2000; 37:695-701
  35. S. Küpeli, E. Yilmaz, T. Soygür, M. Budak. Randomized study of transurethral resection of the prostate and combined transurethral resection and vaporization of the prostate as a Therapeutic alternative in men with benign prostatic hyperplasia. *J Endourol.* 2001; 15:317-321
  36. A.H.H. Tan, P.J. Gilling, K.M. Kennet, C. Frampton, A.M. Westenberg, M.R. Fraundorfer. A randomized trial comparing Holmium laser enucleation of the prostate with transurethral resection of the prostate for the treatment of bladder outlet obstruction secondary to benign prostatic hyperplasia in large glands (40 to 200grams). *JUrol.* 2003; 17:1270-1274
  37. F. Bliem, M. Lamche, R. Janda, P. Schramek. Blood loss and absorption in TURP vs. TUVRP under Low pressure and high-pressure conditions. *Urologe A.* 2003; 42:1477-1488
  38. A.P. Berger, W. Wirtenberger, J. Bektic, H. Steiner, R. Spranger, G. Bartsch. Safer transurethral resection of the prostate:

- coagulating intermittent cutting reduces hemostatic Complications. *J Urol.* 2004; 171:289-291
39. A. Westenberg, P. Gilling, K. Kennett, C. Frampton, M. Fraundorfer. Holmium laser resection of the prostate versus transurethral resection of the prostate: results of a randomized trial with 4-year minimum long-term follow-up. *JUrol.* 2004; 172:616-619.
  40. R.M. Kuntz, S. Ahyai, K. Lehrich, A. Fayad. Transurethral holmium laser enucleation of the prostate versus transurethral electro cauter resection of the prostate: A randomized Prospective trial in 200 patients. *J. Urol.* 2004; 172:1012-1016.
  41. G. Muzzonigro, G. Milanese, D. Minardi, M. Yehia, A.B. Galosi, M. Dellabella. Safety and efficacy of transurethral resection of prostate glands up to 150ml: a prospective comparative study With 1 year of follow-up. *J Urol.* 2004; 172:611-615.
  42. H. Singh, M. Desai, P. Shrivastav, K. Vani. Bipolar versus monopolar transurethral resection of Prostate: randomized controlled study. *J Endourol.* 2005; 19:333A-338A
  43. R. Hoffmann. Transurethrale Resektion (TURP) und transurethrale Inzision (TUIP) der Prostata. R. Hoffmann (Ed.) *Endoskopische Urologie* (Springer, Heidelberg, 2005) 50-84
  44. Hatch PD. Surgical and anesthetic considerations in transurethral resection of the prostate. *Anaesth Intensive Care* 1987; 15:203-211.
  45. Reynolds RM, Padfield PL, Seckl JR. Disorders of sodium balance. *BMJ* 2006; 332:702-705.
  46. Ellis SJ. Severe hyponatraemia: Complications and treatment. *QJM* 1995; 88:905-909.
  47. S. Madersbacher, M. Marberger. Is transurethral resection of the prostate still justified? *BJU Int.* 1999; 83:227-237
  48. S. Madersbacher, J. Lackner, C. Brössner, M. Röhlich, I. Stancik, M. Willinger, G. Schatzl. Reoperation, myocardial infarction and mortality after transurethral and open Prostatectomy: a nation-wide, long-term analysis of 23,123 cases. *Eur Urol.* 2005; 47:499-504
  49. R.M. Nesbit. *Transurethral prostatectomy.* (Thomas Springfield, 1943)
  50. R.H. Flocks, D. Culp. *Surgical urology.* (Yearbook publishers, Chicago, 1954)
  51. P. Faul. Video-TUR: raising the gold standard. *Eur Urol.* 1993; 24:256-261
  52. Hai M.A., Malek R.S. Photoselective vaporization of the prostate: Initial experience with a new 80W KTP laser for the treatment of benign prostatic hyperplasia *J. endourol.* 2003; Mar; 17(2):93-96
  53. Shingleton WB, Terrell F, Kolski J, May W, Renfro D.L., Fowler J.E. prostate specific antigen measurements after minimally invasive surgery of the prostate in men with benign Prostatic hypertrophy. *Prostate cancer prostatic Dis.* 2003; 3(3):200
  54. Han D., Chung W., Kim J.Y., Jung B.J., Hong J.H., Lee S.W. Impact of 80 Watt KTP Photoselective Laser Vaporization prostatectomy versus transurethral resection of the prostate on Erectile function: 12-months results of a prospective trial.
  55. Rajbabu K., Chandrasekara S.K., Barba N.J., Walsh K., Muir G.H., Photo selective vaporization of The prostate with the potassium-titanyl-phosphate laser in men with prostate of >100mL. *BJU Int.* 2007; Sep; 100(3): 593-8: discussion 598
  56. Stovsky M.D Griffiths R.I., Duff S.B. A clinical outcome and most comparing photo selective vaporization of the prostate to alternative minimal invasive therapies and transurethral Prostate resection for the treatment of benign prostatic hyperplasia. *J. Urol.* 2006; Oct; 176 (4 Pt 1):1500-6
  57. Reich O., Bachmann A., Siebels M., Hofstetter A., Stief C.G., Sulser T. High power (80 W) Potassium -Titanyl-phosphate Laser vaporization of the phosphate in 66 high-risk patients. *J. Urol.* 2005; Jan; 173(10):158-60.
  58. Kuntz R.M., Lehrich K., Ahyai S. Does perioperative outcome of transurethral holmium laser Enucleation of the prostate depend on prostate size. *J. Endourol.* 2004; Mar; 18(2):183-8.
  59. Tinmouth W.W., Habib E., Kim S.C., Kuo R.L., Peterson R.F., Terry C.L., et al. Change in serum prostate specific antigen concentration after holmium laser enucleation of the prostate: A Marker for completeness of adenoma resection? *J. endourol.* 2005; Jun; 19(5):550-4.
  60. Shah H.N, Mahajan A.P., Hegde S.S., Bansal M.B. Perioperative complications of holmium laser Enucleation of the prostate: Experience in the first 280 patients and a review of literature. *BJU Int.* 2007; Jul; 100(1)94-101.
  61. Kuo R.L., Peterson R.F., Siqueira T.M Jr, Watkins S.L., Simmons G.R., Steele R.E., et al Holmium Laser enucleation of the prostate: morbidity in series of 206 patients. *Urology.* 2003; Jul; 62(1):59-63
  62. Wilson L.C., Gilling P.G., Williams A., Kennett K.M., Frampton C.M., Westenberg A.M., et al. A randomized trial comparing holmium laser enucleation versus transurethral resection in the Treatment of prostates larger than 40 grams: Results at 2 years. *Eur. Urol.* 2006; 50(3):569-73.
  63. Rigatti L., Naspro R., Salonia A., Centemero A.,

- Gihezzi M., Guazzoni G., et al. Urodynamics after TURP and HoLEP in Urodynamically obstructed patients: Are there any difference at 1 year Follow -up Urology .2006: Jun; 67(6):1193-8
64. Kuntz R.M. Current role of lasers in the treatment of benign prostatic hyperplasia (BPH). *Eur. Urol.* 2006 Jun; 49(6):961-9
65. Pedraza R., Samadi A., Eshghi M. Holmium Laser enucleation of the prostate in critically ill Patients with technique modification. *J.Endourol.*2004; Oct; 18(8):795-8
66. Elzayat E.A., Habib E.L., Elhilali M.M. Holmium laser enucleation of the prostate for patients in Urinary retention. *Urology.* 2005; Oct; 66(4)789-93
67. Kuntz R.M., Lehrich K., Ahyai S.A. Holmium laser enucleation of the prostate versus open prostatectomy for prostate greater than 100 grams: 5-years follow-up results of a Randomized clinical trial. *Eur. Urol.* 2007; Aug 28; (Epub ahead of print)
68. Kuntz R.M., Ahyai S., Lehrich K., Fayad A. Transurethral holmium enucleation of the prostate versus transurethral electrocautery resection of the prostate: A randomized prospective Trial in 200 patients. *J.Urol.*2004; Sep; 17(5):1773-81
69. Jens Rassweiler, Dogu Teber, Rainer Kuntz and Rainer Hofmann: Complication of Transurethral Resection of the prostate- Incidence, Management, and Prevention; In *European Urology*, Vol 50 Issue 5, November 2006 Pp 969-980.
70. Malek R.S., Nahen K. Photo selective vaporization of the prostate: KTP laser therapy of Obstructive benign prostatic hyperplasia. *AUA Update series*, 2004; 23:153-9.
71. Ho C, Tsakonas E, Tran K, Cimon K, Severn M, Mierzwinski-Urban M, Corcos J et al. Robot-Assisted Surgery Compared with Open Surgery and Laparoscopic Surgery: Clinical Effectiveness and Economic Analyses [Internet]. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2011, (Technology report no. 137). Accessed online on the 13<sup>th</sup> of May, 2017 at <http://www.cadth.ca/en/products/health-technology-assessment/publication/2682>
72. Anna Pinto, Omar Faiz, Rachel Davis, Alex Almouadaris, Charles Vincent, Surgical complications and their impact on patients' psychosocial well-being: a systematic review and meta-analysis. *BMJ Open.* BMJ Open 2016; 6:e007224. Doi: 10.1136/bmjopen-2014-007224.