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# OPEN PROSTATECTOMY EXPERIENCE IN MANAGEMENT OF BENIGN PROSTATIC HYPERPLASIA IN A KENYAN RURAL FACILITY

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## ABSTRACT

*Introduction:* **Open prostatectomy is the main management of Benign prostatic hyperplasia in developing countries and in poor resource setting health centres.**

*Objective:* **To audit pre-operative evaluation, surgical procedure and outcome of open prostatectomy in a Kenyan rural health facility.**

*Methodology:* **A surgical audit was carried out where records of patients who had undergone open prostatectomy over the period January 2012 to October 2015 were reviewed. Patient characteristics, co morbidities, preoperative evaluation, operation time, associated post operative complications, and incidental cancer of the prostate on histology were documented and analyzed.**

*Results:* **The average age at presentation was 72.82+/- 7.1 years with 60% of the patients having associated co-morbidities. The average PSA level was 15.11+/- 68.1 ng/ml while mean estimated prostatic size was 79.35g +/- 26.42g. The average duration of the procedure was 95.71 min +/- 24 min with a mean blood loss of 734 ml. Post-op complications include blocked catheter (18%), surgical site infection (5.3%), urinary tract infection (2.6%) and hemorrhage (2.6%). Duration of hospital stay ranged from 3 days to 46 days, with a median of 4 days. Five (13.9%) of patients developed incontinence, two (5.3%) had persistent pain at incision site, two (5.1 %) developed poor urinary flow/strictures. Incidental cancer of the prostate was 2.6%.**

*Conclusion*: **Open prostatectomy remains a safe and relevant procedure in the management of Benign prostatic Hyperplasia, especially in low income countries, and is associated with low morbidity and mortality.**

## INTRODUCTION

Benign prostatic hyperplasia (BPH) is an age dependent non-malignant enlargement of the prostate affecting >90% of men in their 70 – 80s (Tubaro & de Nunzio, 2006). It manifests clinically as obstructive (low urinary flow, straining, incomplete bladder emptying) and irritative symptoms (frequency, nocturia, dysuria) commonly referred to as lower urinary tract symptoms (LUTS). BPH compromises patient's quality of life and may precipitate renal insufficiency (Oelke, et al., 2013).

Management of BPH may be medical or surgical; surgery being more definitive and cost effective. Surgical techniques have evolved through the years from open prostatectomy to novel techniques such as transurethral electrovaporization (TVP), laser Transurethral resection of the Prostate (TURP), visual laser ablation of prostate (VLAP), ethanol injection, holmium laser ablation of the prostate (HoLEP) and prostatic stenting (Oelke, et al., 2013) (Oranusi, Nwofor, & Oranusi, 2012).

Open prostatectomy has been the gold standard in management of BPH for the past 50 years. Despite the high rate of complications (up to 40%), it remains the main stay management in developing countries and still maintains outstanding clinical outcome (Oranusi, Nwofor, & Oranusi, 2012). There is need for constant evaluation of surgical technique through evaluation of complication rates (Oranusi, Nwofor, & Oranusi, 2012). The aim of this audit was to determine pre-operative evaluation and care, outcome, duration of hospital stay, complication, morbidity, and mortality of open prostatectomy in a rural health facility in a developing country.

## MATERIAL AND METHODS

The surgical audit was carried out from August 2015 to November 2015. Records of patients who had undergone open prostatectomy over the period January 2012 to October 2015 were reviewed with the aim of documenting patient characteristics, co morbidities, preoperative evaluation, operation time, associated post operative complications, and incidental cancer of the prostate on histology. A total of 70 patient files were initially identified; files with incomplete records being excluded. Data analysis: Mean, mode and frequencies were obtained using SPSSv17. Complications were classified according to the Clavien-Dindo classification system as; immediate, early and late complications (Oranusi, Nwofor, & Oranusi, 2012). Patients were followed up in the surgical outpatient clinic for a minimum period of 6 months.

*Ethical approval:* Permission to conduct a surgical audit was sought from the hospital administration.

## RESULTS

Out of 70 patients who underwent open prostatectomy for benign prostatic hyperplasia between January 2012 and October 2015, only 38 patient records were complete, therefore included in the audit. Thirty-five (92%) underwent open transvesical prostatectomy while three (8%) underwent retropubic prostatectomy.

The average age for symptomatic patients who were scheduled for open prostatectomy was 72.82+/- 7.1 years, all of whom were married. Twenty-three patients (60%) had associated co-morbidities: Eleven patients (28.9 %) had hypertension only, one (2.6%) had hypertension and hypertensive heart disease and one (2.6%) had hypertension associated with stroke and diabetes. (Table 1)

**Table 1**
*Patient associated co-morbidities*

| Co-morbidity | Percentage |
|---|---|
| Hypertension | 44.7% |
| Hydronephrosis/hydroureters | 7% |
| Diabetes | 2.6% |
| Dementia/brain atrophy | 5.3% |
| Epilepsy | 2.6% |
| Hydrocele (unilateral/bilateral) | 5.3% |
| Stroke | 2.6% |
| Epididymorchitis | 2.6% |
| Cellulitis | 2.6% |
| Inguinal hernia | 2.6% |
| Heart disease | 2.6% |

All patients were evaluated for symptoms that affect quality of life, majority of whom had lower urinary tract symptoms with predominant obstructive symptoms or both.

Table 2: Symptoms at Presentation

| Symptom | Percentage (%) |
|---|---|
| LUTS (COMBINED) | 26.3 |
| LUTS (obstructive) | 68.4 |
| Backache | 2.6 |
| Constipation | 5.3 |
| Established renal failure | 2.6 |

Prior to the operation, 73% of the patients had PSA levels with average PSA levels of 15.11 +/- 68 ng/ml. All patients had prostatic ultrasounds, with an estimated average prostatic size of 79.35g +/- 26.42g, and a digital rectal examination performed. Ultrasound findings were as follows: 84% of patients had normal echogenicity, 10.5% had nodular prostates, and 5.3% of ultrasound results were not available. Only 42% of patients had a biopsy before the procedure; all biopsies done confirmed Benign Prostatic Hyperplasia without malignancy. Incidental cancer of the prostate on histology was 2.6%. None of the patients had a symptom severity score.

Nineteen patients (50%) had been hospitalized prior to the operation, twelve (31.6%) had been hospitalized only once, five (13.2 %) had been hospitalized twice and one (2.6%) had been hospitalized three times. The major cause of pre-hospitalization was: urine retention (39.4%), bleeding per urethra (2.6%), biopsy (7.9%) and orchitis (2.6%).

Table 3:Classification of open Prostatectomy according to the Clavien-Dindo classification

| | CLAVIEN DINDO CLASSIFICATION | RATE |
|---|---|---|
| Immediate complications | | |
| Intra op bleeding | ii | 5.3% |
| early complications | | |
| wound infection | ii | 5.3% |
| urinary tract infection | ii | 2.6% |
| clot retention | ii | 18.0% |
| death | v | 2.6% |
| Late complication | | |
| urethral stricture | iiib | 5.1% |
| incontinence | id | 13.9% |
| chronic pain | ii | 5.3% |

The average duration of the procedure was 95.71 min +/- 24 min, with a median of 90 min. Intra-operative blood loss ranged from 100 ml to 2 liters, with an average blood loss of 734 ml. Only two (5.2 %) patients had intra-op complications, due to severe hemorrhage and urethral injury.

Outcome evaluation included: death (2.6%), Surgical site Infection (5.3%), patient being taken back to theatre (2.6%). Immediate post-op complications included: blocked catheter (18%), surgical site

infection (5.3%), urinary tract infection (2.6%) and hemorrhage (2.6%). Duration of hospital stay ranged from 3 days to 46 days, with a mean of 6.94 days and a median of 4 days. Long term post surgical complications were as follows; Five (13.9%) patients developed incontinence, two (5.3%) had persistent pain at incision site, and two (5.3 %) developed poor urinary flow/strictures.

## DISCUSSION

Only 54.2% of patient records were available with complete records, majorly due to a poorly managed health information system. Some patients were found to have several files with incomplete records making traceability impossible, while other records were reported as lost.

All patients who presented to hospital were married; possibly because married men have social and financial support from their children and spouses. The average age of presentation with symptoms suggestive of Benign Prostatic Hyperplasia is 72.82 years +/- 7.1, range 63 – 90 years. These findings differ from other studies in Africa were mean age at presentation is 63.8 +/-9.9 (Berhanu, 2008) (Gadam, Nuhu, & Aliyu, 2012). Late presentation may be due to low social economic status, ignorance or delayed clinical manifestation (Cheatham, Barksdale, & Rodgers, 2008). With advancing age, people develop essential hypertension, which may also present with renal complication, hypertensive heart disease, stroke and heart failure; all which are directly related to adverse post operative surgical outcomes (Ngugi & Saula, 2007). This is reflected by the findings that 60% of patients presented with associated co-morbidities and late complications of Benign prostatic hyperplasia (Ibrahim, Hamid, Mohammed, Aliyu, & Ali, 2012).

Half of the patients scheduled for prostatectomy had been hospitalized prior to the operation, with some being admitted at least 3 times, majorly due to acute urinary retention. According to the Proscar Long-Term Efficacy and safety study (PLESS), the incidence of acute urinary retention (AUR) was 18/1000 person years, with men who develop (AUR) at higher risk of recurrence. To reduce this risk, many men opt for early surgical intervention (Muruganandham, Dubey, & Kapoor, 2007).

In the pre-op evaluation, assessment of symptoms severity, a digital rectal examination and prostatic ultrasound was performed. Recommended pre surgical evaluations for patients include IPSS score and PSA levels. Prostatic biopsy is not recommended for routine evaluation, but is necessary to rule out Prostate Cancer in patients with elevated PSA levels or abnormal DRE findings (Nickel, Mendez-Probst, Whelan, Paterson, & Razvi, 2010). In this centre, none of the patients had a severity score; only 73 % had PSA levels and 43% had a biopsy prior to surgery. The poor pre-op evaluation may be attributed to financial constraints, poor public health systems, patient ignorance, poor recordkeeping, and clinician lethargy.

Incidental carcinoma in this population was 2.6%; this is significantly lower than the incidence in a study by Gratzke et. al, where incidental carcinoma was at 17% (Gratzke, et al., 2007). All post surgical patients in our setting were given their prostate specimens and advised to take them for histology 130 km away as there is no pathologist in the institution. Only 10% of the patients had their specimens evaluated, therefore the incidence of prostate cancer may actually be much higher.

The mean operative time for the procedure was 95 min (60 – 155 min), which is significantly long and differs from other centers where the mean operation time was 80 min (Gratzke, et al., 2007). The wide range in operation time was due to skill and competence difference between operating surgeons, the hospital being a training

center. Mean Intra-operative blood loss was 734ml, with 21% of patients having blood loss > 1 Liter, and 5.2% with blood loss exceeding 2 Liters. Only 1 patient received a blood transfusion. This high incidence of intra-op hemorrhage is significantly higher when compared to other studies (Kiptoon, Magoha, & Owillah, 2007). This could be due to technique, whereby transvesical prostatectomy (92%) is preferred over retropubic prostatectomy (8%). Hypertension, advanced age and concomitant anticoagulant use are also known contributing factors (Ngugi & Saula, 2007). The blood transfusion rate, however, is low compared to other studies (Hill & Njoroge, 2002) . Despite significant intra-op hemorrhage in 21% of patients, the rate of blood transfusion is very low. This may be due to chronic shortage of blood and blood products in the center and overestimation of blood loss as all the patients remained stable post op.

Blocked catheter due to clot retention was the major early post op complication (18%), which is similar to other studies within Africa (Gadam, Nuhu, & Aliyu, 2012), but only 5.2 % patients were taken back to theatre post op due to this complication. The rate of surgical site infection and urinary tract infection was much lower than in other centers both within and outside the region (Kiptoon, Magoha, & Owillah, 2007).

The average duration of hospital stay was 6 days, similar to that of Hill and Njoroge (2002). There was however one patient who developed wound sepsis and stayed in the ward for 46 days. Majority of the patients (81%) were discharged home by day 4 post-operation. There was only one (2.6%) 30-day mortality; a 65-year-old man with no associated co morbidities or hemorrhage who succumbed on day 1 post op. This differs from other centers which reported zero mortality except for Hill and Njoroge (2002) who had a 30 day mortality of 0.9% (Hill & Njoroge, 2002).

On follow up 13.9% of patients developed transient incontinence, which is comparable to Gadam et al's 17% (Gadam, Nuhu, & Aliyu, 2012). Five percent developed poor urinary flow possibly secondary to urethral strictures, meatal stenosis or bladder neck contraction (Varkarakis, Kyriakakis, Delis, Protogerou, & Deliveliotis, 2004). Two patients (5.3%) developed chronic pain at surgical site, a known post surgical complication related to extent of tissue and neural injury (Neil & Macrae, 2009) (Lamacraft, 2012). No study has looked at the prevalence of chronic postsurgical pain following open simple prostatectomy.

## CONCLUSION

Open prostatectomy is a safe procedure associated with low morbidity and mortality and is still a relevant and effective method of managing benign prostatic hyperplasia especially in developing countries.

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