

# The morbidity and mortality of surgically treated urological patients in a tertiary centre in western Kenya

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## Abstract

**Objective:** To determine the morbidity and mortality of surgically treated urological patients at Moi Teaching and Referral Hospital (MTRH) and compare them with those of other tertiary centres.

**Design:** A five year hospital based, retrospective study reviewing files of patients who underwent surgery for urological problems in MTRH for the period 1st January, 2005 to 31st December, 2009.

**Setting:** The records department of Moi Teaching and Referral Hospital, a 750 bed capacity hospital in the Western region of Kenya.

**Subjects:** Four hundred and twenty patients whose files were complete for the sought data.

**Main outcome measures:** The primary outcome measures were the morbidity and mortality rates. Morbidity was depicted by the postoperative complications and hospital length of stay. The secondary outcome

measures were patient demography, the type of surgery and the duration of surgery.

**Results:** The male to female ratio was 13.5:1 with 49% of all the patients being older than 50 years. Seventy-seven patients (18.3%) had co morbid diseases with hypertension (22.5%), diabetes mellitus (14.3%) and Human Immunodeficiency Virus (HIV) infection [7.8%] as the top three conditions. The top three procedures were prostate, urethral and bladder surgeries. The morbidity and mortality rates were 5.5% and 1.2% respectively.

**Conclusion:** While prostate disease remains the leading urological problem, urethral strictures are significantly higher than in the other reviewed regions. Co morbidities amenable to preoperative interventions and a relatively younger population make our morbidity and mortality rates acceptably low compared to other tertiary centres.

## Introduction

Surgical audit is a prerequisite in the care of patients in that it helps the surgical team to learn from its past and incorporate the experiences into the better care of patients (1).

The treatment of particular diseases using available options may be audited to bring out the outcomes of management (2-3) and cost-effectiveness of curative therapies (4).

Even with the knowledge that an audit of our surgical urological procedures can yield information of benefit to the hospital, country or the greater global village, there is a glaring deficit of this data.

The present study audits the morbidity and mortality of surgically treated urological patients at Moi Teaching and Referral Hospital, a tertiary 750 bed facility in the Western Kenya region that is the training ground for the School of Medicine, Moi University.

## Materials and Methods

Patients who underwent surgery for urological problems were identified from the theatre registry. Relevant files

were retrieved from the Health Records Department and complete files of these patients were examined for data extraction as per a pre-designed data sheet in line with the objectives for the study. The extracted data was assessed for completeness before coding, entry into a spread sheet and transfer into a computer for analysis using Statistical Package for Social Sciences (SPSS) version 17.0.

The primary outcome measures were the morbidity and mortality rates. Morbidity was depicted by the postoperative complications and hospital length of stay. The secondary outcome measures were the patient demography, the type of surgery and the duration of surgery.

Gathered data were analysed in line with the outcome measures for descriptive statistics for central tendencies, spread and correlation. Inferential statistics assumed a 95% confidence interval and a test significance value at  $\leq 0.05$ .

## Results

Five hundred and one relevant files were retrieved from the records department out of which 420 files found

complete for the sought data were analysed. There were 391 males and 29 females, giving a male to female ratio of 13.5:1. The age ranged from six months to 92 years giving a mean  $\pm$  Standard Deviation of 47.7 $\pm$ 24.5 years. The majority (49%) of the patients were older than 50 years (Table 1).

Seventy-seven patients (18.3%) had co morbid diseases with hypertension (22.5%), diabetes mellitus (14.3%) and Human Immunodeficiency Virus (HIV) infection [7.8%] as the top three conditions. Presence of co morbid diseases was positively correlated with hospital length of stay and outcome of treatment (both  $p < 0.001$ ) but was not significantly correlated with postoperative complications ( $p = 0.123$ ). Prostate surgery accounted for 26.9% of the surgeries with 81 Transurethral Resections of the Prostate (TURPs) and 32 open prostatectomies. There were 72 urethroplasties and 51 diagnostic endoscopic procedures. The rest are as shown in table 2.

Table 3 shows the significant variables when subjected to both univariate and multivariate analysis for predictive values.

The duration of surgery ranged from under one hour to over four hours with majority of the procedures (47.9%) being between one and two hours (table 4).

The type of surgery was predictive of time taken ( $p < 0.001$ ) with urethroplasties accounting for 51.9% of the procedures lasting longer than 3 hours.

Twenty three patients (5.5%) developed postoperative complications. Wound sepsis and dehiscence accounted for 52.2% of the complications while the rest included clot formations in the urinary bladder, urine retention and urine leak around catheters.

Hospital length of stay ranged from one to sixty-nine days. The majority (43.1%) stayed less than a week while 7.9% stayed longer than 4 weeks. The duration of stay was positively correlated with postoperative complications and presence of co morbidities (both  $p < 0.001$ ). When subjected to multivariate analysis, co morbidity had a greater predictive value than presence of postoperative complications for the length of hospital stay (0.003 vs. 0.008)

Five patients died, giving a mortality rate of 1.2%. The death rate among females was 10 times that of males and 80% of all deaths occurred in those with co morbidities. On multivariate analysis, co morbidity had a greater predictive value on outcome than gender ( $p$  value 0.001 vs. 0.008).

## Discussion

A surgical audit gives a glimpse into and provides hindsight based on past surgical experiences. It can help in the formulation of future practices aimed at better surgical care. Urological surgical audits are rare globally and most of the statistics address specific urological procedures.

This study found that 93.1% of our patients were males. It compares well with Eke and colleagues' 98.5% (1) and confirms a universal understanding that urology is predominantly a care for males. The majority of these patients fall in the sixth decade and above, suggesting an older population due to prostate disease as the leading urological problem.

As the study ascertained, co morbidities rise with an aging population and as such, it is understandable that up to 18.3% of the study group had co morbid factors. The co morbid disorders seem to vary with regions but are all largely lifestyle based (2-3). HIV was the third co morbidity after hypertension and diabetes mellitus and this may point to the significance of HIV in surgical practice in developing countries.

Prostate disease and its treatment remains the leading urological practice with TURP as the gold standard mode of intervention (4-6). The use of open prostatectomy may be dictated by the prostate size or institutional limitations (1, 2, 7). In the Kenyan setting, it is noted that the 71.7% TURP rate in this study is significantly higher than the only other tertiary institution's (Kenyatta National Hospital) 19% (2, 8) and could be an indicator of institutional peculiarities that may play a role in patient management. It would be interesting to explore the reasons behind such a major difference in mode of treatment even with institutional aspirations towards TURP as the treatment mode of choice.

Post operative complications were a determinant of length of hospital stay. Hampshire and others found the duration of surgery was a determinant of sepsis development (9) and this can be seen in line with the current finding that surgeries lasting longer than 2 hours led to more postoperative complications. In the study, pre-existing medical conditions were significant determinants of outcome. This is in keeping with studies done elsewhere (10-11) but our co morbidities that are amenable to preoperative control and a younger population compared to the other studies make our morbidity and mortality rates acceptably low.

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GENDER	AGE GROUP				Total
	0-25 years	26-50 years	51-75 years	76+ years	
male	103	82	155	51	391
female	6	12	10	1	29
	109	94	165	52	420

Table1 :Gender and age distribution of patients

	Frequency	Percent	Valid Percent	Cumulative Percent
TURP	81	19.3	19.3	19.3
Open prostatectomy	32	7.6	7.6	26.9
Urethroplasty	72	17.1	17.1	44.0
Hydrocelectomy	19	4.5	4.5	48.6
Stone removal	18	4.3	4.3	52.9
Endoscopic	51	12.1	12.1	65.0
Catheter surgery	26	6.2	6.2	71.2
Ureteric surgery	5	1.2	1.2	72.4
testicular surgery	33	7.9	7.9	80.2
Renal surgery	6	1.4	1.4	81.7
Hypospadias repair	6	1.4	1.4	83.1
emergencies	71	16.9	16.9	100.0
Total	420	100.0	100.0	

Table2: Surgeries done

Dependent Variable	Independent Variables	Univariate(PValue)	Multivariate(PValue)
Length of stay	Post-op complications	<0.001	0.008
	Co morbidity	<0.001	0.003
Operation done	Duration of surgery	0.038	0.110
	Co morbidity	0.044	0.885
Post-op complications	Operation done	0.123	0.022
	Duration of surgery	0.083	0.005
Treatment outcome	Operation done	0.420	0.014
	Co morbidity	<0.001	0.001
Gender	Operation done	0.884	0.001
	Duration of surgery	0.080	0.003
		0.003	0.008

Table 3: Significant predictive variables on univariate and multivariate analyses

Duration	Frequency	Percent	Valid Percent	Cumulative Percent
<1 hour	107	25.5	25.5	25.5
1-2 hours	201	47.9	47.9	73.3
2.1-3 hours	79	18.8	18.8	92.1
3.1-4 hours	27	6.4	6.4	98.6
> 4 hours	6	1.4	1.4	100.0
Total	420	100.0	100.0	

Table 4: Duration of surgery

Conclusion

In keeping with world trends, prostate disease remains the leading urological problem in our setup even though urethral strictures are significantly higher than in the other reviewed regions. Co morbidities amenable to pre-operative interventions and a relatively younger population make our morbidity and mortality rates acceptably low.

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References

1. Eke N,Sapira MK,Echem RC Spectrum of urological proce-

dures in University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria. Niger J Clin Pract 2007;10(1):74-8

2. Kiptoon DK, Magoha GA,Owillah FA Early postoperative outcomes of patients undergoing prostatectomy for benign prostatic hyperplasia at Kenyatta National Hospital, Nairobi. East Afr Med J 2007;84(9 Suppl):S40-44

3. Leung JM,Dzankic S Relative importance of preoperative health status versus intraoperative factors in predicting post-operative adverse outcomes in geriatric surgical patients. J Am Geriatr Soc 2001;49(8):1080-5

4. Manyahi JP,Musau P,Mteta AK Diagnostic value of digital Rectal Examination, Prostate Specific Atigen and Trans-Rectal Ultra sound in men with prostatism. East Afr Med J 2009;86(9):499-502.

5. Musau P, Mteta AK Urethral strictures in a tertiary care hospital in Tanzania East Afr Med. J 2009;86(1):3-6

6. Magoha GA, Ngumi ZW Cancer of the penis at Kenyatta Na-

- tional Hospital. *East Afr Med J* 2000; 77(10):526-30.
7. Persu C, Georgescu D, Arabagi I et al TURP for BPH. How large is too large? *J Med Life* 2010;3(4):376-80.
  8. Ngugi PM, Saula PW Open prostatectomy and blood transfusion in Nairobi. *East Afr Med J* 2007;84(9 Suppl):S 12-23.
  9. Hampshire P, Guba A, Strong A et al An evaluation of the Charlson Comorbidity Score for predicting sepsis after major surgery. *Indian J Crit Care Med* 2011; 15(1):30-6
  10. McNicol L, Story DA, Leslie K et al Postoperative complications and mortality in older patients having noncardiac surgery at three Melbourne teaching hospital. *Med J Aust* 2007;186(9):447-52.
  11. Gyomber D, Lawrentshick N, Rawson DL et al Analysis of deaths related to urological surgery reviewed by the State Coroner: a case for cardiac vigilance before transurethral prostatectomy. *BJU Int* 2006;97(4):758-61.