PREDICTORS AND SHORT TERM OUTCOMES FORPATIENTS WHO UNDERWENT LAPAROTOMY ATMUHIMBILI NATIONAL HOSPITAL A CROSS SECTION STUDY

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By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of medicine (General Surgery) of the Muhimbili University of Health and Allied Sciences

October, 2020

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled,***Predictors and short term outcomes for patients who underwent Laparotomy at Muhimbili National Hospital a cross section study***in (partial) fulfilment of the requirements for the degree of Master of Medicine (General surgery) of Muhimbili University of Health and Allied Sciences.

_____

Dr Larry Akoko

Supervisor

_____

Date

DECLARATION AND COPYRIGHT

I, **DrDevotha J. Mbabala,** declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature…….……..

Date…….

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I am thankful to the Almighty GOD for his mercy and guidance during the whole period of my study.

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It has truly been an honor being supervised by Dr Larry Akoko. His outstandingencouragement and wisdom made this hard work possible.

I am indebted to the inspirational support of my lovely husband Nuru Felix Mlay for the sacrifice he made to ensure that I was able to complete this course successful. To my dearest son and daughter (Gabriel and Gabriella), my mom EmelineNdosi and to my brother in law DrNyika

In special way I would like to acknowledge the encouragement and moral support from my uncle Dr Edward Wayi.

DEDICATION

I dedicate this dissertation to my late father Julius Mbabala,

Mayhis soul rest in peace.

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ABSTRACT

Background: Globally, 10% of Disability Adjusted Life years (DALY) are attributable to surgical amenable conditions. In Tanzania, 19.3% of deaths and 17% of Disability Adjusted Life year (DALY) are attributed to the diseases amenable to surgery. The most common surgical procedure is that involving laparotomy as it can save life if done immediately, hence the most commonly done in lower health facilities in LMICs Tanzania included. This study therefore, aimed to determine the predictors and short-term outcomes for patients underwent who Laparotomy at Muhimbili National Hospital.

Methods: A cross-sectional hospital based study was carried out in the department of surgery of Muhimbili National Hospital for one year from March2018– March2019. All patients with indication of primary laparotomy were identified for inclusion into the study. Data were collected regarding patient's demography, clinical pattern of laparotomy, indication of laparotomy, procedure done during laparotomy, morbidity and mortality 30 days postoperative. Data were entered into SPSS version 23 for analysis where prevalence and p value. Ethical approval for the audit was obtained from the Muhimbili University of Health IRB.

Results: A total of 400 patients had undergone primary laparotomy, the mean age was 47 years where 65.8% were male. 223(55.7%) had emergency laparotomy and 145(36.3%) peritonitis was the leading indication. The laparotomy done during working days was 364(91%) and 340(85%) was done during daytime. The mean duration of laparotomy procedure was 140 minutes, 172 (43%) required ICU care after surgery, mean duration of ICU stay was 6 days and mean hospital stay was 10 days. The leading primary procedure had involved bowel resection and anastomosis 127(42.3%).within 30 days post-operative;re-laparotomy was done in 33(8.3%) patients, intra-abdominal collection of abscessesand surgical site infection were common complication had (7%).. Cleven-dindo classification scale showed that 71.8% of patient had deviation from normal post-operative course without need for intervention, 7% required surgical, radiological or endoscopic intervention and 17%

died within 30 days postoperative. ASA (P value 0.001) and indication of laparotomy (P value 0.016) had significant association with having postoperative complication.

Conclusion: The postoperative morbidity and mortality after laparotomy were high. Protocols for identifying and managing all emergency patients who might need an emergency laparotomy would perhaps streamline care for this group of high-risk patients and may improve decision making and overall outcomes.

LIST OF ABBREVIATIONS

DALYs	Disability Adjusted Life Years
EC	Enterecutaneous fistula
LMICs	Low Middle-Income Country
LOCoGS	Lancet Commission on Global Surgery
MNH	Muhimbili National Hospital
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
NSOAP	National Surgical, Obstetric and Anesthesia Plan
SSI	Surgical Site Infection
SPSS	Statistical package for social sciences
ASA	American Society of Anesthesiologists
ECOG	Eastern cooperative oncology group
HB	Hemoglobin
WBC	White Blood Cell
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit

DEFINITION OF TERMS

Laparotomy is a surgical procedure performed with the objective of obtaining information that is not available via clinical and diagnostic methods.

Clinical pattern of laparotomy-used to describe clinical presentation of laparotomy due to its causeShort term outcome here refers to treatment outcome within30 days after surgical.Mortality refers to occurrence of death within 30days following laparotomy.

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1.0 INTRODUCTION

1.1 Background

Measuring surgical outcomes is broad and might be beyond the scope of this work hence will focus on laparotomy procedures among general surgical patients. Laparotomy is a common surgical procedure with many indications with varied outcomes. But it is largely performed in very understaffed and under equipped facilities that might also impact on its outcome. Decision to scale out laparotomy to lower facilities was based on life saving nature and imminent danger faced by the patient and the difficulty with referrals. Few studies have reported on the general outcome of laparotomy with analysis of predictors (1).

In many lowmiddle LMICs, one common major procedure that can give an indication of surgical provision is laparotomy, which has been noted to carry a high mortality rate in many sub-Saharan African countries. Unpublished work by (Lotto) also had found high rates of unplanned readmissions following laparotomy in Tanzania with high mortality rate. This calls for development of follow up protocols and documentation of laparotomy outcomes as a step towards national surgical quality improvement and reporting system. It is one thing to expand surgical service provision, but this has to go along with good post-operative care (1).literature is scarce on laparotomy outcomes from LMICs and those from HICs are now procedure specific that might not suite our circumstances.

1.2 Literature review

Globally, 10% of DALYS are attributable to surgical amenable conditions. In low and middle income countries (LMICS) surgical services are at rudimentary stages with problems in availability safety and timeliness. It showed that offering basic and specialized surgical services in LMICS offers massive economic boost through improved health(2).The publication by the Lancet Commission on Global Surgery(LOCoGS) has since added vigor towards addressing provision of surgical services in LMICs at the global agenda (3)

Inspite of high burden of surgical conditions in LMICS; only 3.5% of 234 million major operative procedures performed annually in LMICS due to many challenges(4).Large numbers of DALYS due to low back, other muscoskeletal disorders, neck pain, and osteoarthritis, along with DALY due vision, hearing loss and anemia, highlight how metrics that capture all shorterm or long-term decreases in health functioning yield a distinctive perspective before surgery(5).

The study aimed to determine the demography, clinical characteristics and outcomes predictors of laparotomy as it follow up the patient pre-intra – and perioperative of the patient in which came up with data that helped toimprove outcome after laparotomy. In the study done in Ethiopia postoperative morbidity and mortality were 39.2% within 30 days of operation. preoperative optimization, early surgical intervention and consultant surgeon,anaesthesia lead perioperative care for these high risk surgical patients could improve postoperative outcome(6)

The clinical pattern of laparotomies is not known the pattern of the laparotomies done at our hospital will help us to determine the major pattern of clinical operation is the elective or most are emergency and which indication is the most the cause of the trend of laparotomy, as in its situational analysis Non communicable diseases (NCD) has been noted to contribute significantly to morbidity and mortality in Tanzania through the colonic tumor(3).

In the study done in Rwanda by Baison***et al*** it was found that lavages/ washouts were the most common procedures performed, since in many cases obvious pathology was not identified(4).In Tanzania there is no existing data that will identify type of procedures performed among laparotomy patient done at our tertiary hospital. This study will help to give the procedure most commonly done at MNH during laparotomy.

In Tanzania, 19.3% of deaths and 17% of Disability Adjusted life year (DALY) are attributable to the disease amenable to surgery (NSOAP) while currently surgical services are being provided from lower lever facilities, upwards, surgical outcome

data has not been routinely collected and analyzed centrally surgical outcomes assessment in LMICS is challenging mostly due to lack of coordinated data collection. Re laparotomy as one of the major complication as high rate about 40%, study**done by Swallowetal**It carries high morbidity to both patients and hospitals. It has been reported that these patients experience long hospital stays, long ICU, invasive management costs and distress to the families(7).

In this study being set in a public hospital the morbidity are expected to be even costly to the institution than the patient due to exemption and cost sharing policy(8). This means that services are not at their best with lack of ICU beds, lack of parenteral nutrition, not readily available dialysis services and blood shortages(9). The study will determine the gap in prepare the patient before enter the laparotomy so as to reduce the relaparotomy rate. And other complications related to the laparotomy.In burst abdomen complication old age, male sex, patents with intra-abdominal sepsis and anemia, systemic disease such as diabetes, emergency laparotomy compared toplanned laparotomy had low risk mortality was28%, early recognition of risk patients,early ambulation,better broad antibiotics, better postoperative management(10)(11) .

The pre-operative evaluation of the patient before laparotomy is the key in reduce the factors predicting occurrence of various complications among laparotomy patients include treatment of preoperative anemia and an optimal fluid strategy to avoiding fluid overload and intraoperative use of colloids correction of any co-morbid condition like diabetes hypertension, respiratory infection was done(12). Postoperative care is essential as the preoperative preparation for a successful outcome. Deficient care in either may produce unsatisfactory results irrespective of the standard of surgery. The aim of meticulous postoperative care is early detection and immediate treatment of postoperative complications.

1.3 Problem of the statement

Re-laparotomy rate was found to be high among our patients who underwent laparotomy at MNH. There was no clear evidence for predictors of such observation which are Age, sex comorbidities, ASA,HB, ECOG, WBC, HIV status,,EmergencyVS Elective, antibiotics used, amount of fluid used. From the study done by Swallow et al was not uniformly collected of all patients undergoing laparotomy so even the relaparotomy rate reported might not be very accurate. This made it difficult to come up with measures to address laparotomy outcomes which are burst abdomen, enterocutaneous fistula, surgicalsite infectionpostoperative mortality, on demand relaparotomy, when to return to oral feeding, hospitalization duration, factors lead to ICU admission. Furthermore, this was shocking that it occurred in a tertiary hospital where laparotomy ought to be safe compared to other facilities in the country.

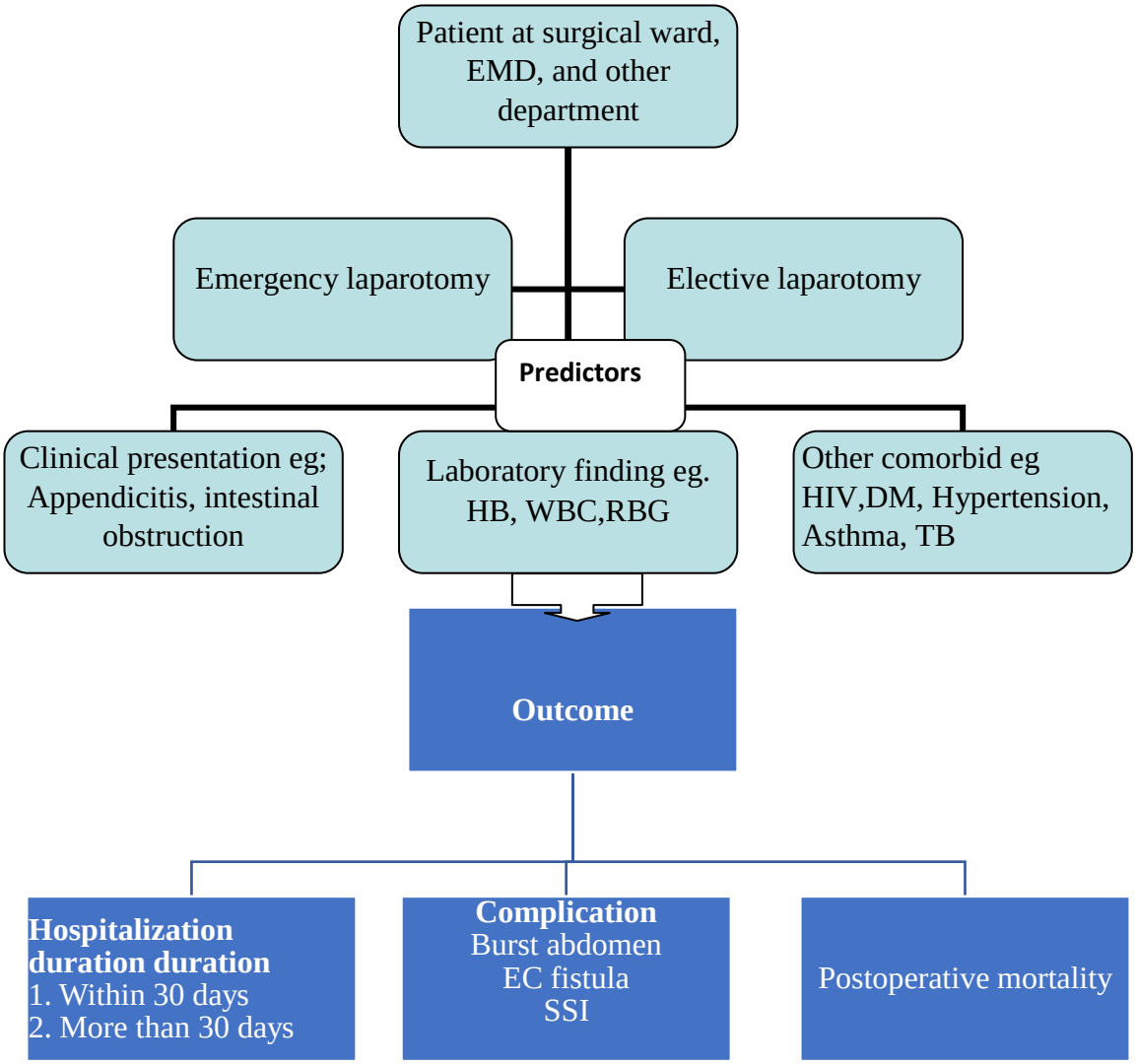
1.4 Rationale

Understanding laparotomy outcomes will help develop national indicators that are easy to report even from lower facilities and help improve outcomes among its patients by informing authorities of the safety by level of facilities and efforts needed to address them. Furthermore, the research is expected to provide data on postoperative complications following surgery so as to minimize readmission post-surgery and to reduce the incidence of relaparotomy

1.5 Research question

What is the clinical characteristics and predictors of outcome following laparotomy for various reasons among general surgical patients done at Muhimbili National Hospital in March 2018-March 2019

1.6 CONCEPTUAL FRAMEWORK



2. OBJECTIVES

2.1 Broad objective

To determine demography, clinical characteristics, and outcomes predictors of laparotomy done at Muhimbili national hospital inMarch2018- March 2019.

2.2 Specific objective.

2.2.1 To describe the clinical pattern of laparotomies conducted at MNH general surgery department

2.2.2 To identify the type of procedures performed among laparotomy patients at MNH general surgery department.

2.2.3 To document the complication rate among laparotomy patients admitted at MNH general surgery department.

2.2.4 **To determine** the association between surgical outcome and clinical characteristics of laparotomy patients.

3 METHODS

3.1 Study design

The descriptive prospective cross section hospital-based study was done in the department of surgery.

3.2 Study area

The study was conducted in the department of surgery MNH which is a public university teaching hospital and a national referral medical center located in Dar esSalaam city in the eastern part of Tanzania. The city has a population of approximately about 5 million people.General surgery department ward has 120beds capacity, the hospital contains 18 surgeons who operate 5days a week, on average, 3 operating room per day.According to monthly surgical mortality and morbidity, about 250-300 patients are admitted**.**

3.3 Study population

All patients who was admitted at MNH under the care of general surgery department presenting with intra-abdominal conditions there necessitate a laparotomy for the management.

3.4 Study sample

All patients who have undergone a non-obstetric related laparotomy during the study period and is available for 30 days follow up.

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criteria

i) Adult patients 18 years of age and above

ii) Consent to participate and be followed up

3.5.2 Exclusion criteria

i) Repeat laparotomy patients.

ii) Obstetrics laparotomies

iii) Lost to follow up before 30days postoperative

3.6 Sample size

Using a morbidity rate of 40% from Rwanda, with online formula for sample size calculator(13), we found a sample size of 386 which was able to detect morbidity rate, mortality and unplanned readmission associated with laparotomy at confidence interval of 95%, power of 80% and type 1 error of 5%. Accounting for loss to follow up, 10% of laparotomy wasadded; therefore 425 subjects was recruited.

3.7 Sampling procedure

Patients who met the inclusion criteria and were planned for laparotomy were consecutively recruited in the study.Due to financial constraints, timeobstetrics and gynecology laparotomy were not included.

3.8 Sampling design

Consecutive sample of consenting patients who attend MNH from March 2018-March 2019

3.9 Recruitment strategy

There was three research assistants informing principal researcher for the patient booked for laparotomy at main,emergency theatres.Theprincipal researcher collected data for patients who consented using a data collecting tool. Personal particulars, preoperative,intraoperative, and postoperative clinical information of the study subject entered into a data collection tool .This include patients bio data,duration of illness prior to laparotomy,indication for laparotomy, findings at surgery,surgical procedure done, days of hospitalization(ICU and hospital stay)postoperative complication, repeat laparotomy, postoperative mortality.Data extracted from the patient files/ operation notes and some information which was missing from case notes were obtained directly from the patient and/ or relativeor operating staffs.Complications was observed forpatients' altered general condition.Patients were followed for 30 day after surgery to establish preoperative morbidity and mortality.

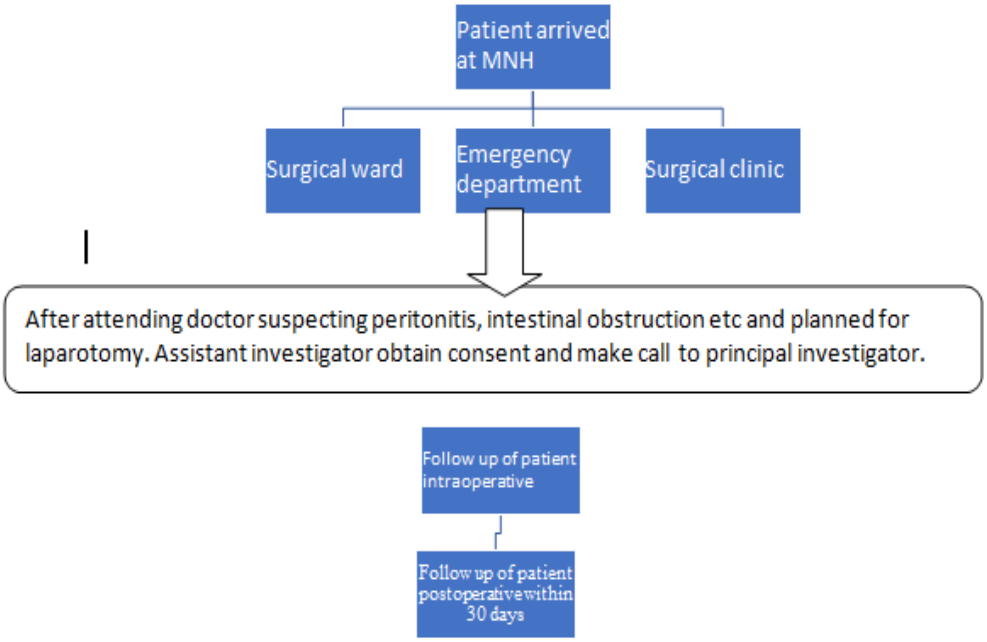
3.9.1 Pre-operative evaluation

Patients planned for laparotomy were attended at emergency department or in surgical ward. Preoperative evaluation was mainly done by clinical assessment and hematological investigations.patients history taking and physical examination was done by attending doctor.For patient who was suspected to have intestinal obstruction , plain x rays was done,abdominal ultrasound were done in a few patients suspected to have peritoneal collection,one patient suspected to have bowel leak were had CT scan .All patients were kept Nil Per Oral,resuscitated and blood prepared for operation and informed consents were obtained before surgery.

3.9.2 Postoperative evaluation

Postoperative progress were monitored on daily basis and complication arising will be recorded.Post-operative evaluation were mainly by clinical assessment and hematological investigations.

3.10 Data collection



3.11 Variables

3.11.1 Independent variable

- Amount and type of fluid used
- Antibiotics used and Duration
- Patient aged
- Sex
- Emergency vs. elective
- HIV Positive or negative

- Bowel repair done
- Timing (AM/PM, working Day Vs. Public Holiday/Weekend)
- Indication for laparotomy
- Procedure done
- Comorbidity DM, Hypertension

3.11.2 Dependent variable

- Burst abdomen
- Enterocutaneous fistula
- Surgical site infection
- Return to oral feeding rate
- Postoperative mortality
- Repeat laparotomy
- Hospitalization duration

3.12 Measurements

Following a laparotomy through a midline incision, the following variables shall be measured at thirty days from index surgery: Burst abdomen was considered when there is postoperative separation of abdominal musculoaponeurotic layers either fully or partially (14). Enterocuteous fistula was considered when there is an abnormal communication between stomach, small or large bowel and the skin allowing gastrointestinal contents to flow onto the skin (15). Surgical site infections were considered if there is discharge, pain or redness or when the managing physician say so(16). Returning to oral feeding rate were time taken from surgery to resuming oral feeding post-surgery in days (1). Postoperative mortality were considered when there is any death regardless of cause, occurring during the same hospitalization subsequent to the operation(16). Repeat laparotomy operation performed within the period of hospitalization related to initial surgery, planned and unplanned (17). Hospitalization duration; to the number of days that patients spend in hospital (1): consideration for time spent in ICU will also be considered.

3.13 Data analysis plan

Data were de-identified, coded, cleansed and entered into Microsoft excel spread sheet. This were later transferred to SPSS for analysis. Continuous variables were summarized using descriptive statistics while categorical variables were summarized as proportions. The association between dependent variables and independent variables were tested by using Chi-square test where a p-value of <0.05 were considered significant association.

3.14 Ethical consideration

The study were ethical approved from MUHAS IRB and separate permission from MNH research and consultancy bureau to use its patients. A written informed consent were obtained from each participant. Confidentiality were maintained during and after the study by safely keeping the study materials, hard copies to be reattached to patients case notes at completion of the study. De-identification at data entry will be done to minimize direct association of patients with the data. Only personnel directly involved with the research shall have access to the data. Information gathered shall be used only for purposes of research and resultant publication.

3.14.1 Study limitation and mitigation

Inadequacy of perioperative data not documented or reported from operating staff for study results accuracy.

3.15 Dissemination

Findings of the study was presented to the department of surgery MNH, and at local and international conferences. Similarly, publication in regional or international journal were done. Hard and soft copies were made available to both the department and university for deposit into the repository

4 RESULTS

Four hundred and twenty-five patients were eligible for inclusion in this study; 25(5.8%) patients were lost to follow-up within 30 days after index laparotomy. (chart 1).

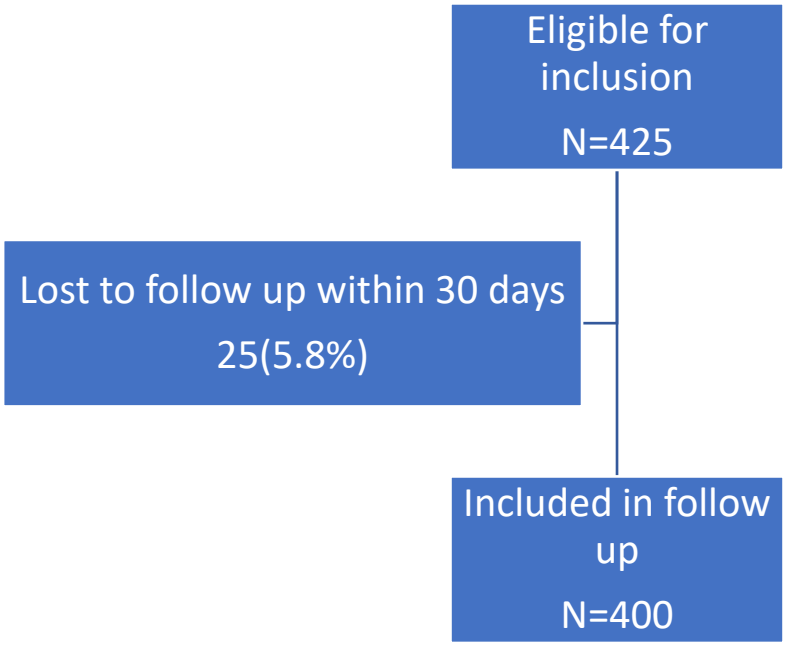


Figure 1: Recruitment of study of laparotomy patients who were followed for 30-days post-surgery.

Table 1below shows the demography andClinical characteristics of patient who underwent laparotomy at MNH from March2018 to March 2019. The mean age was 47±17 (18 – 98) years and male were the majority at 263(65.8%).Majority of patients had American Society of Anesthesiology physical status score of II in 198(49.3%).Majority of the laparotomies done on emergency basis as was the case in 223(55.7%). The leading indication for laparotomy at MNH was a peritonitis (secondary to ruptured appendix and perforated peptic ulcer) as seen among 145(36.3%) followed by bowel obstruction in 97 (24.3). Extended midline incision was predominant as seen in 395(98.7%)of the patients. Most of the laparotomy patients had clean wound as was the case with 212(53%).

Table 1: Demography and clinical characteristics of patient who underwent laparotomy at MNH 2019 N=400

Variable	Frequency (%)
Age	
<35	135 (33.8)
36 – 55	140 (35.0)
56 – 75	102 (25.5)
>76	23 (5.8)
Sex	
Male	263 (65.8)
Female	137 (34.2)
ASA	
I	123 (30.8)
II	198 (49.5)
III	77 (19.2)
Pre Op Hemoglobin level	
<8g/dl	15 (3.8)
8-10.4g/dl	174 (43.5)
10.5-12.9g/dl	175 (43.8)
>13 g/dl	36 (9.0)
Indication of laparotomy	
Peritonitis	145 (36)
Intestinal obstruction	97 (24.3)
Visceral injury	39 (9.8)
Gastric outlet obstruction	36 (9.0)
Choledocholithiasis	21 (5.3)
Tumor of head of pancreas	7 (1.8)
Other**	55 (13.8)
Incision type	
Extended midline incision	395 (98.7)
Other incision	5 (1.3)
Wound class	
Clean contaminated	212 (53)
Contaminated	143 (35.8)
Dirty	45 (11.2)
Laparotomy condition	
Elective	177(44.3)
Emergency	223(55.7)
Day of laparotomy	
Working day	364(91.0)
Weekend day	36(9.0)
Time of laparotomy	
Day	340(85.0)
Night	60(15.0)

**retroperitoneal tumor, renal tumor, mesenteric cyst, pancreatic pseudocyst, retracted colostomy, hepatic flexor tumor.

In table 2 below, Only 172(43%) of thepatients had ICU admission with the mean duration of 6+/-4(1-30) days. The majority of patients admitted to ICU had a stay less than 5 days at 119(69.2%). The mean hospital stay was 10+/- and most patients stayed for after less than 10 days 296(74.0%).

Table 2: Showing ICU and hospital stay among patients undergoing laparotomy at MNH.

N=172

Variable	**Frequency (%)**
ICU stay (days) N=172	
<5	119(69.2)
5 – 10	38 (19.2)
>10	15 (3.8)
Hospital stay (days)	
<10	296 (74)
10-20	83(20.8)
21-30	15(3.8)
>30	6(1.5)

Figure 1 below showsthe types of procedure done during laparotomy among patients at MNH. Bowel resection and primary anastomosis was the most common procedure performed as seen in 127 (42.3%) followed by appendectomy 31 (10.3%) and gastrectomy in (9.7%).

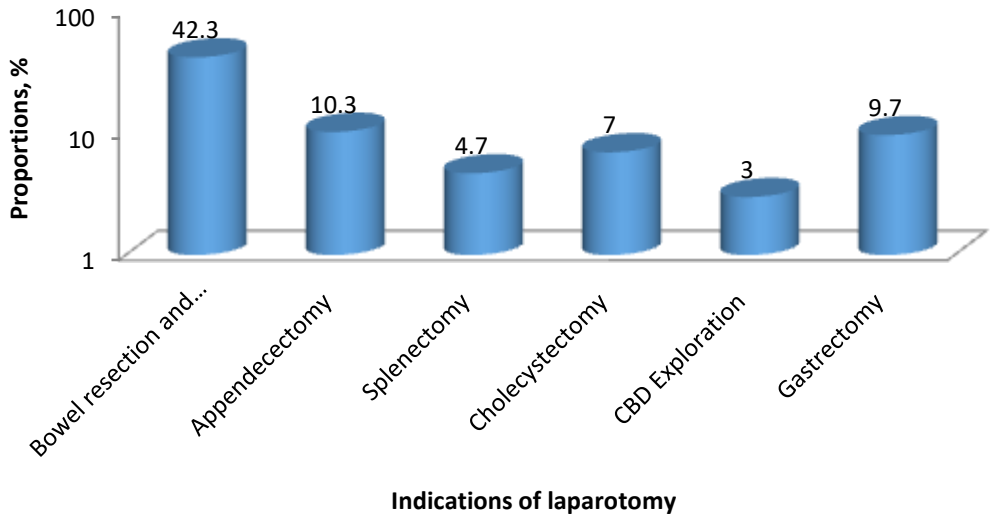


Figure 1: Shows the procedure done during laparotomy

As seen in **figure 3** below, Cleven-Dindo classification was used to document occurrence of complications among the studied patients. Most patients had class 1 Cleven-Dindo classification. Class 5 complications, death, was recorded in 68 (17%) of the patients.

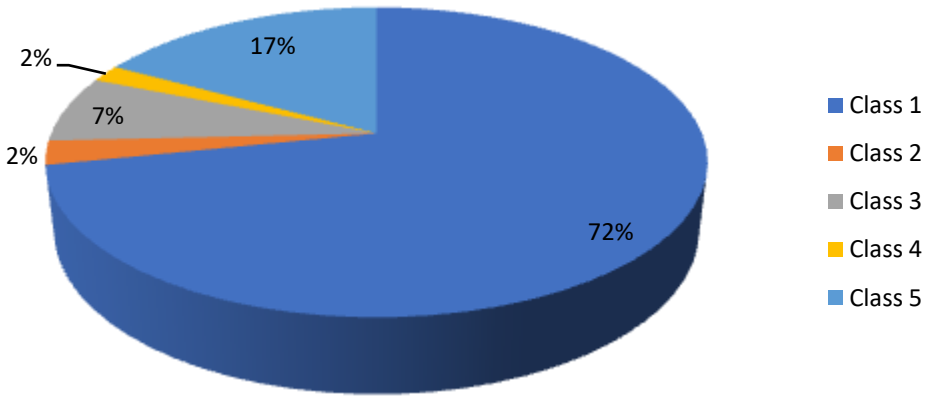


Figure 2: Cleven-Dindo classification of surgical complications following laparotomy at MNH in March 2018/2019.

Patients with poor ASA class (p=0.001), peritonitis (0.016), preoperative anemia (0.003), laparotomy on a working day (0.013), poor wound class (0.001) and

prolonged hospital stay (0.001) were all significantly common among patients with complications than in patients with no complications. The remaining variables such as sex, age group, laparotomy condition and time of laparotomy were similar among both patient groups. [**Table 3**]

Table 3: Shows the association of demography and clinical characteristics of laparotomy and having at least one surgical complication N=400

Predictor	Complication	No complication	P value
Sex			0.865
Male	77(66.4%)	186(65.5%)	
Female	39(33.6%)	98 (34.5%)	
Age group			
< 35	39(27.4%)	98(72.6%)	0.683
36 – 55	39(27.9%)	101(72.1%)	
56 – 75	31(30.4%)	71(69.6%)	
> 76	9(39.1%)	14(60.9)	
ASA			0.001
I	22(17.9%)	101(82.1%)	
II	48(24.2%)	150(75.8%)	
III	45(58.4%)	32(41.6%)	
Pre-OP HB level (g/dl)			0.013
< 8	16(53.3%)	14(46.7%)	
8-10.4	45(28.3%)	114(71.7%)	
10.5-12.9	51(29.1%)	124(70.9%)	
> 13	4(11.1%)	32(88.9%)	
Indication of laparotomy			0.013
Peritonitis	53(36.6%)	92(63.4%)	
Intestinal obstruction	27(27.8%)	70(72.2%)	
Choledocholithiasis	6(28.6%)	15(71.4%)	
Gastric obstruction	3(8.3%)	33(91.7%)	
Pancreatic mass	1(14.3%)	6(85.7%)	
Visceral injury	7(17.9%)	32(82.1%)	
Laparotomy condition			0.337
Elective	47(26.6%)	130(73.4%)	
Emergency	69(30.9%)	154(69.1%)	
Day of laparotomy			0.187
Working day	(13.2%)	316(86.8%)	
Weekend day	2(5.6%)	34(94.4%)	
Time of laparotomy			0.175
Day	103(30.3%)	237(69.7%)	
Night	13(21.7%)	47(78.3%)	
Wound class			0.001
Clean contaminated	46 (21.7%)	166 (78.3%)	
Contaminated	41 (28.7%)	102 (71.3%)	
Dirty	29 (64.4%)	16 (35.6%)	
Hospital stay (days)			
< 10	74(63.8%)	222(78.2%)	
10 – 20	27(23.3%)	56(19.7%)	
21 – 30	11(9.5%)	4(1.4%)	0.001
> 30	4(3.4%)	2(0.7%)	

5.0 DISCUSSION

The relative lack of data on predictors of outcome of the laparotomy is surprising given how often this procedure is undertaken in our setting.(18)The results of the present study assessing predictors for the outcome of the patients undergoing Laparotomy at MNH have allowed a reasonable assessment for the high mortality and morbidity following laparotomy.The overall 30-day mortality in our study is 17 % which is considerably higher than is shown in recent studies from both the USA and UK where their mortality figures ranged from 14 to 15 % for those undergoing laparotomy.(19)

Few patients were admitted to ICU immediately after surgery, this was due to shortage of ICU bed capacity, despite multiple complications requiring close monitoring patients were managed at general surgical ward. Managing patients with major electrolyte imbalances and metabolic derangements inthe general wards would result in this high mortality as we saw.

American Society of Anesthesiologists' (ASA) physical status classification system is a widely used preoperative scoring system that describes the overall health of the patient and burden of co morbidities such as diabetes and hypertension. In our study we found that ASA class was associated with having surgical complication following laparotomy, it was similar finding in previous studies done by Melissa *et al*who found that ASA is an independent risk factor for low mortality rate following laparotomy(21).

Indication of laparotomy i.e. peritonitis and intestinal obstruction when done as an emergency was associated with postoperative surgical complication and mortality. Why is the outcome of patients undergoing emergency laparotomy so poor? First, the come from a variety of sources which result in delay before the appropriate surgical teams become involved(19). Second, the patients came with significant systemic disturbance from the primary pathology including sepsis, dehydration, electrolyte imbalance and organ dysfunction or failure(21)

It is no coincidence that as people age, their mortality increases, presumably due to the development of medical co-morbidities and their inability to recover as well from insults such as surgery(21). Similar to our study, the 30 days morbidity rate was higher to patient morethan 75 years.

The surgeries done during working days/weekend at night or day time were not associated with having neither surgical complication nor mortality. The finding suggest the great achievement following the protocol implemented after the study done by Swallow et al which showed that most surgeries weredone by residents during night and weekend with little supervision if at all present.(24)More coaching and supervision of the surgeons in training were implemented and senior surgeons have been required to be present during all emergency surgeries.(24)

The presence of anemia in the preoperative period has been associated with having complication (12). In similar to our study pre-operative hemoglobin was independent risk factor of having complication, most of patient had optimum level of hemoglobin required for surgery.

The incidence of postoperative morbidity and mortality after emergency laparotomy were high since this study focused in a single busy Tanzania tertiary Centre which receives patients from referring hospitals, with late diagnosis and multiple complications. Evaluation of patient care at referring hospital will identify patient at high risk and timely decision for referral.(19)

6.CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Laparotomy carries a high morbidity and mortality at Muhimbili National Hospital. Complications following laparotomy resulted in prolonged hospital stay adding to the cost of care for such patients. The study grouped patients as having a complication or no complication. The complication reported were wound dehiscence, burst abdomen, anastomotic leak and intra-abdominal abscesses.

6.2 Recommendation

- Studies to address optimization of patients prior to surgery need to be addressed urgently at MNH.
- Factors contributing to anemia among surgical patients should be identified.
- Patients presenting with contaminated and dirty wounds should undergo clinical trial of leaving abdomen open for second look laparotomy.

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APPENDICES

APPENDIX I: Informed Consent

APPENDIXIII: Questionnaire (English version)

APPENDIX III: Questionnaire (Swahili version)

APPENDIX IV: ClevenDindoClassfication