A ONE YEAR STUDY OF RELAPARATOMIES AT THE UNIVERSITY TEACHING HOSPITAL, LUSAKA

By

Dr. **Mzaza Andifine Matambo Nthele** MCS (ECSA), MBChB,

BSc (HBiol) (UNZA)

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SUPERVISOR:

Prof. BFK Odimba MD, M.Sc., MTD, EOI, MPH, SD, PhD

Consultant Surgeon and Professor of Surgery

School of Medicine

University of Zambia

Lusaka

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271255

CERTIFICATION

This is to certify that this dissertation, titled A One Year prospective study of relaparotomies at the university Teaching Hospital, Lusaka by Dr Mzaza Andfine Matambo Nthele is now ready for examination.

Signature of supervisor.

Date 29/06/07

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I hereby declare that the work presented in this study for the Degree of Master of Medicine (Surgery) represents my work and has not been presented either wholly or in part for any other degree and is not being currently submitted for any other degree at the University of Zambia or any other University.

Signature of candidate: ---------- Date: 28/6/07

Signature of supervisor: ---------- Date: 24/06/2007

APPROVAL

This dissertation of Dr. Mzaza A. M. Nthele is approved in partial fulfillment of the requirements for the award of the Master of Medicine in Surgery by the University of Zambia.

Signature: _____ Date: 5/7/07

HOD - Surgery

ABSTRACT

1. A Prospective Study Of Relaparotomies At The University Teaching Hospital (UTH), Lusaka was carried out over a period of one year (1st may 2005 to 30th April 2006). It was aimed to establish the profile of patients undergoing relaparotomy at UTH. The study also looked at the after monitoring and related assessment and preparations and the short term outcome of relaparotomies. The inclusion criteria were all Patients undergoing relaparotomy whose indication was a complication of the first laparotomy. These were all from the general surgical units only. Planned relaparatomy e.g. removal of haemostatic pack and patients where the first laparotomy was done more than six weeks earlier were excluded from the study. The details of each patient were collected and entered on an evaluation form designed for the study. The information collected included name, age of the patient, file number, evolution of disease, physical examination, results of investigations, indication of first laparotomy, procedure, operative findings, indication for relaparotomy and outcome of surgery. Each patient was followed up for at least six weeks after relaparotomy except for those who died in less than six weeks. There were 276 laparotomies during the period of the study and 9% (25) of these were relaparotomies. 60% of relaparotomies were due to anastomotic leaks. There was no anastomotic leak that had a relaparatomy earlier than 7 days. There was 40% mortality on relaparotomies, 67% of which were secondary to Anastomotic leaks. There was a lot of standardization in the approach to patients. This includes the making of the diagnosis, resuscitative measures and the rush to operate immediately. Patients undergoing relaparotomy must therefore be adequately prepared with full investigations done. Given limited investigative facilities, the decision to go back should be as soon as suspicions are raised of complications based on clinical findings.

Key words/ phrases

Relaparotomy, laparotomy, complication, evolution of disease, operative findings, outcome of surgery

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DEDICATION

This work is dedicated to my wife Naomy who was so supportive during the period of the study when I had to be away for long hours and my daughter Tapiwa who was denied quality time with the father in order to allow me to work on this study.

INTRODUCTION

The abdominal cavity contains several organs and systems. The developmental anatomy of the abdominal cavity and its viscera determines normal structure and influences the pathogenesis and clinical manifestations of most abdominal diseases. Peritoneal attachments and visceral sensory enervation are particularly important to the correct evaluation of abdominal diseases. Of particular importance are the developmental origin of the three parts of the gut namely, foregut, midgut and hindgut. It is this knowledge that helps make accurate clinical diagnosis and subsequent decision to do a laparotomy. The same knowledge is vital for arriving at the decision to do a relaparotomy.

Because of its size and contents, the abdominal cavity has a variety of pathologies that leads a surgeon to consider a laparotomy. The commonest the presentation of a surgical abdomen is pain. The pain can come from anywhere within the cavity, it's containing wall or neighboring cavities. This poses difficulties in decision making leading to delay in decision making and subsequent increased morbidity. Knowledge of common causes of pain and correct choice of available investigations is important.

Common causes of abdominal pain by region from epigastrium going anti clockwise include: perforated gastric ulcer, perforated duodenal ulcer, biliary colic, renal colic, appendicitis, torsion of ovarian cyst, ruptured ovarian cyst, acute salpingitis, ectopic pregnancy, acute diverticulitis, acute pancreatitis and acute intestinal obstruction. Any of these can lead to a laparotomy and subsequent relaparotomy.

Relaparotomies are not unusual in the surgical practice. These can either be planned or can be necessitated by poor results after the first laparotomy. The results of first laparotomy are influenced by several factors. These include pathology that led to first laparotomy, approach, incision, technique, competence of surgeon and co-morbidities.

In planned or second look laparotomies, the findings of the first laparotomy determine how soon a relaparotomy can be done. It is however noteworthy that patients' condition will always influence the timing of the relaparotomy.

To the contrary the Relaparotomies in question are not planned, but are due to problems resulting from the earlier laparotomy or abdominal cavity pathology occurring less than 6 weeks of the earlier laparotomy.

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AIMS AND OBJECTIVES OF THE STUDY

1. To establish the profile of patients undergoing re-laparotomy at UTH.
2. To establish the basis of decision making for re-laparotomy and common findings.
3. To determine the preoperative preparations and postoperative monitoring and related assessment.
4. To determine the short term outcome of re-laparotomies.

RATIONALE

The majority of the general surgical major cases are abdominal surgery. Of these most of the indications of emergence abdominal operations are either intestinal obstruction or peritonitis of various origin. The two indications have a higher likelihood of subsequent relaparotomy. It is against this background that a study was necessary to help come up with a protocol on timing of relaparotomy at the University Teaching Hospital. This will surely make it easier to make a decision to re-open the patient or not. To my knowledge such a study has not been carried out in Zambia and at UTH in particular.

LITERATURE REVIEW

The abdominal cavity is much more extensive than the impression gained from examination of the anterior abdominal wall.[3] Because of its size and number of sub systems, it has a higher likelihood of being opened for various reasons. Opening of the abdomen has its own consequences, among which are adhesions, injury to blood vessels and hollow organs, post operative infection, ileus, dehiscence of wound and malnutrition. Surgeons and researchers have taken interest in various complications and carried out experiments in an effort to appreciate their cause and subsequent intervention. Some of these have been done on animals, but many have been observation studies on human subjects. [14,15,17,20]

In one review of abdominal operations performed in one surgical department during a 10-year period[32], it revealed that 2.6 percent required relaparotomy because of surgical complications during the same hospitalization. Of these, 38 percent died, a mortality which is approximately 10-fold that for similar operations in which reintervention was not necessary. The mortality was greater in male patients and was very high (64 percent) in those over the age of 70 years[32]. The most common complication necessitating relaparotomy was peritonitis (0.9 percent of the total series), followed by intestinal obstruction (0.8 percent) and wound disruption (0.7 percent). The frequency of bleeding requiring reoperation was low (0.1 percent). Intestinal operations were associated with the highest incidence of complications (6.2 percent), followed by gastric operations (4 percent).

Assessment of the time interval between the development of the surgical complication and reoperation in each case indicated that there had been an unjustifiably long delay in reaching the correct diagnosis, in performing reoperation or both in 26 percent of this series (40 percent of the cases of peritonitis). This delay was usually greater with early than with relatively later complications. However, the findings failed to support a detrimental effect of this delay and even showed a tendency toward better results and a lower mortality when conservative treatment was prolonged before reoperation was performed.[32]

Studies have shown that timing and complication influence the outcome of a relaparatomy[4]. The results of other authors and with previous evaluations, demonstrate that, despite altered operative indications, increased age of patients and high-risk operations, the lethality has not increased.[6] In order to avoid lethality from the first laparotomy a number of surgeons have taken to an early relaparotomy. It however resulted into a number of negative Relaparotomies that subsequently led to post operative complications. In one study 22 percent of the negative Relaparotomies were for presumed early post-operative abdominal complications.[27] such Relaparotomies could be costly especially in children where the stress of repeated operations can lead to death. One study actually showed a lethality of up to 36.6 percent. [16]

Such outcomes put pressure on surgeons who tend to become over careful in their decision making. This leads to concerns on the part of patient and their next of keen that actually demand for relaparotomy. [24] Because of this increased pressure and probably lack of guidelines on criteria for Relaparotomies, surgeons turn to do a relaparotomy even where it is not indicated. One survey in two Croatian hospitals revealed that there are more complications if the relaparotomy is on demand as

opposed to one planned by the surgeon. The survey showed 59% mortality in the on-demand group as opposed to 29% mortality in the other group. The relative risk of dying was 2.5-fold higher for patients treated by on-demand operation in comparison with planned relaparatomy.[24, 30]

In 2003-2004 out of the 888 laparotomies done at the University Teaching Hospital, 9 percent ended in relaparotomies[21]. This contributed not only to morbidity, but also to mortalities. Among the contributing factors to morbidity and mortality were the timing of the relaparotomy and the initial laparotomy. A similar study was conducted in Zimbabwe and the findings showed that an early relaparotomy would have changed the outcome for the better[4]. Similar findings have been found in France [22].

Relaparotomy in itself regardless of its indication increases morbidity and subsequent mortality. A number of causes are responsible for this increase[2]. The stress of undergoing surgery increases morbidity considerably, then we have the handling of abdominal contents, which lead to post operative ileus. This can be so serious that in one study of 58,938 abdominal operations 37.8 percent patients developed early postoperative acute ileus, 7.2% patients required performance of a reoperation. The lethality was quite high (29.4%). [2]

Relaparotomy causes serious morbidity especially in children. Care should therefore be taken in children. Relaparotomy should be done in absolute indications, such as intestinal obstruction, serious peritonitis and recurrent subileus.[13] In obvious anastomotic leak there is however no room for just observing.[31] However early relaparotomy is important in children because of poor clinical signs.[25]

Another important cause of morbidity is adhesions that usually complicate relaparotomies. It occurs as early as twenty four hours of the initial operation. Not only does it complicate laparotomies but leads to post operative mechanical intestinal obstruction. This was documented in a study in Russia[28]. This study showed that relaparotomy for acute mechanical ileus is believed to be an important link in the complex of postoperative measures. In order to eliminate complications appearing after relaparotomies a more exact indication to early relaparotomy is necessary. One study recommends wider use of additional methods of diagnosis of postoperative complications that will result in less lethality after relaparotomies.[13]

Disruption of abdominal surgical wounds is one of the common causes of early relaparotomy. Because of high mortality, medical and surgical preventive measures are essential in primary peri-operative period. Good knowledge of risk factors is mandatory for prophylaxis. One study in Turkey[11] showed that inadequate knowledge of factors that raise intra abdominal pressure can be disastrous as shown by a lethality of 37 percent. This shows that the patient profile plays an important role in the outcome of relaparotomy. The after monitoring is very important especially when it comes to decision making. Studies elsewhere have shown that a simple enterostomy would produce better and acceptable results with improved quality of life for the patient than a meticulous primary anastomosis. [12]

Other authors argue that the mortality is increased with relaparotomy as a way of diagnosing postoperative complications.[9,10,29] In one study it was found that after abdominal surgery, there was a 1.3 percent incidence of early relaparatomy.[9] Peritonitis was the most frequent underlying disease, with a mortality rate of 58 percent, if treatment was attempted by

explorative surgery. Sonography and CT scanning proved to be most accurate in detecting postoperative inflammatory lesions despite the lack of specific criteria. Thus, both methods reduce the risks of relaparotomy by facilitating the surgical approach on the one hand, and on the other hand, they alternatively provide the possibility of percutaneous puncture or drainage.[10, 29].

The role of antibiotics in postoperative complications cannot be overemphasized. This is especially true in bowel surgery where use of broad spectrum antibiotics has been shown to improve the outcome[19]. This does not however take over the role of relaparatomies.[8] Studies have shown that chronic peritonitis increase proteolytic activity, therefore the wait and see stance can lead to prolonged complications with systemic spread.[1]

PATIENTS AND METHODS

Design and inclusion criteria

This was a prospective study carried out in the general surgical section of the Department of Surgery of the University Teaching Hospital in Lusaka. This hospital caters for the population of Lusaka and serves as the tertiary referral institution for the whole of Zambia. The study was carried out for a period of one year from 1st May 2005 to 30th April 2006 and involved patients managed by the five general surgical units.

Subjects were all patients who underwent a relaparotomy as a result of a complication or perceived complication of the first laparotomy. They were drawn from all over the country; a fact that made long term follow up difficult.

Patients were included in this study using the following criteria:

1. Undergoing second or third laparotomy.
2. Had previous laparotomy within the past six weeks
3. The indication for the current laparotomy is a complication or perceived complication of the previous laparotomy.
4. All ages included

Preoperative Evaluation

Emergence laparotomies were all admitted via casualty department who upon diagnosis of an acute abdomen were admitted to either female surgical or male surgical wards. On these wards the patients had detailed history of illness taken, a physical examination done including abdominal palpation. In most cases plain abdominal x-rays were done especially where intestinal obstruction was suspected.

The plain abdominal x-rays were especially helpful in revealing fluid levels and bowel distension for intestinal obstruction, free air under the diaphragm for perforated viscous and free fluid for peritonitis and haemoperitoneum.

All patients were assessed for fitness to undergo surgery and if not fit patients were resuscitated and had their blood cross-matched. Except for a few cases of peritonitis that had to be starved, the rest were either already starved or could not be starved due to the urgency of their condition. All the patients regardless of the indication of the first laparotomy were given intravenous fluids (crystalloids) before being taken to theatre for the operation.

Elective patients were first seen in the surgical outpatient department prior to their admission. In this clinic patients were fully assessed i.e. detailed history, full physical examination and necessary investigations. All the patients had haemoglobin estimates done. Some had full blood count done prior to admission. The patients were admitted at least two days before surgery.

The conditions were explained to the patients or to the guardian in case of minors and what was to be done to them. Informed consents were then obtained a day before surgery for elective cases and just before surgery for emergence cases.

Nearly all elective patients had their blood cross matched.

The Operations

All operations were preceded with preparation of the skin with antiseptics. The routine antiseptics used at the University Teaching Hospital are savlon, iodine tinge and methylated spirit. Though details of this preparation were not given in the operative notes, but the author has insight in that he was part of one of the five surgical teams. It was not always possible to prepare the skin in this way, as the antiseptics were not always available.

After skin preparation a laparotomy was done mostly via a midline vertical incision. Worthy noting was the fact that wherever there was bowel anastomosis, a two layer method using chromic cut gut 2-0 and silk 2-0. In one case a single layer method using chromic cut gut number 0 was used. In all cases of peritonitis, peritoneal lavage was done with warm saline. Mass closure was with nylon number 1, with either nylon 2-0 or silk 2-0 for the skin.

Post Operative Evaluation

Post operative progress was monitored on a daily basis on the ward and complications arising were recorded. At four weeks review the patients' symptoms were reassessed and quality of life evaluated. Unfortunately, further long term reviews proved difficult as most patients were lost to follow up as they were either feeling too well to come or were referred from distant parts of Zambia.

Ethical Considerations

Permission to carry out a study involving human beings was sought from the research ethics committee of the University of Zambia. This study methodology has been used before in other studies and is well acceptable.

There was no manipulation of humans during the study. Indication and operations were decided upon and operations done by the respective surgical units and their team of surgeons.

Permission was requested from relevant authorities i.e. from the UTH Managing director for data collection, from heads of concerned units and consent from the patients. Patients were also be given transport money for reviews.

The study subjects were treated with dignity and respect. Confidentiality was maintained i.e. Participants' names and their study were unlinked.

RESULTS

During the period of the study 276 laparotomies were done and the indications are shown in table 1 and figure 1. Of these twenty five were entered in the study. The age range was 18 - 76 with a mode of 41 and mean age of 42. The male to female ratio was 3:1. Table 2 shows the various indications for relaparotomies and their outcomes. Figure 2 illustrates the fatalities after second laparotomy. Table 3 and its figure are illustrating fatalities resulting from the first laparotomy. TABLE 4 and its figure illustrate the cause of mortalities after first laparotomy. Table 5 and its figure show the various indications for relaparotomy. Table 6 on the other hand is showing second relaparotomies and the indications. The seventh table (table 7) shows the level of competence of the surgeons who did the first, second and third operations. The charts following the tables are a graphical representation of the results in the tables.

Table 1. **INDICATIONS FOR ABDOMINAL SURGERIES**

INDICATION	FREQUENCY	PERCENTAGE
INTESTINAL OBSTRUCTION	87	31.5
PERITONITIS	49	17.8
TRAUMA	34	12.5
PERFORATED APPENDIX	33	12.3
ABD TUMOUR	30	10.9
PUD PERFORATED	13	4.7
ANASTOMOTIC LEAK	13	4.7
SMALL BOWEL PERFORATION	8	2.9
OTHE GYNAE PROBLEMS	8	2.9
RAPTURED ECTOPIC	7	2.5
CHOLECYSTECTOMY	5	1.8
OESOPHAGEAL BYPASS	1	0.4
COLOSTOMY CLOSURE	1	0.4
TOTAL	276	

Figure 1. **INDICATIONS FOR ABDOMINAL SURGERIES**

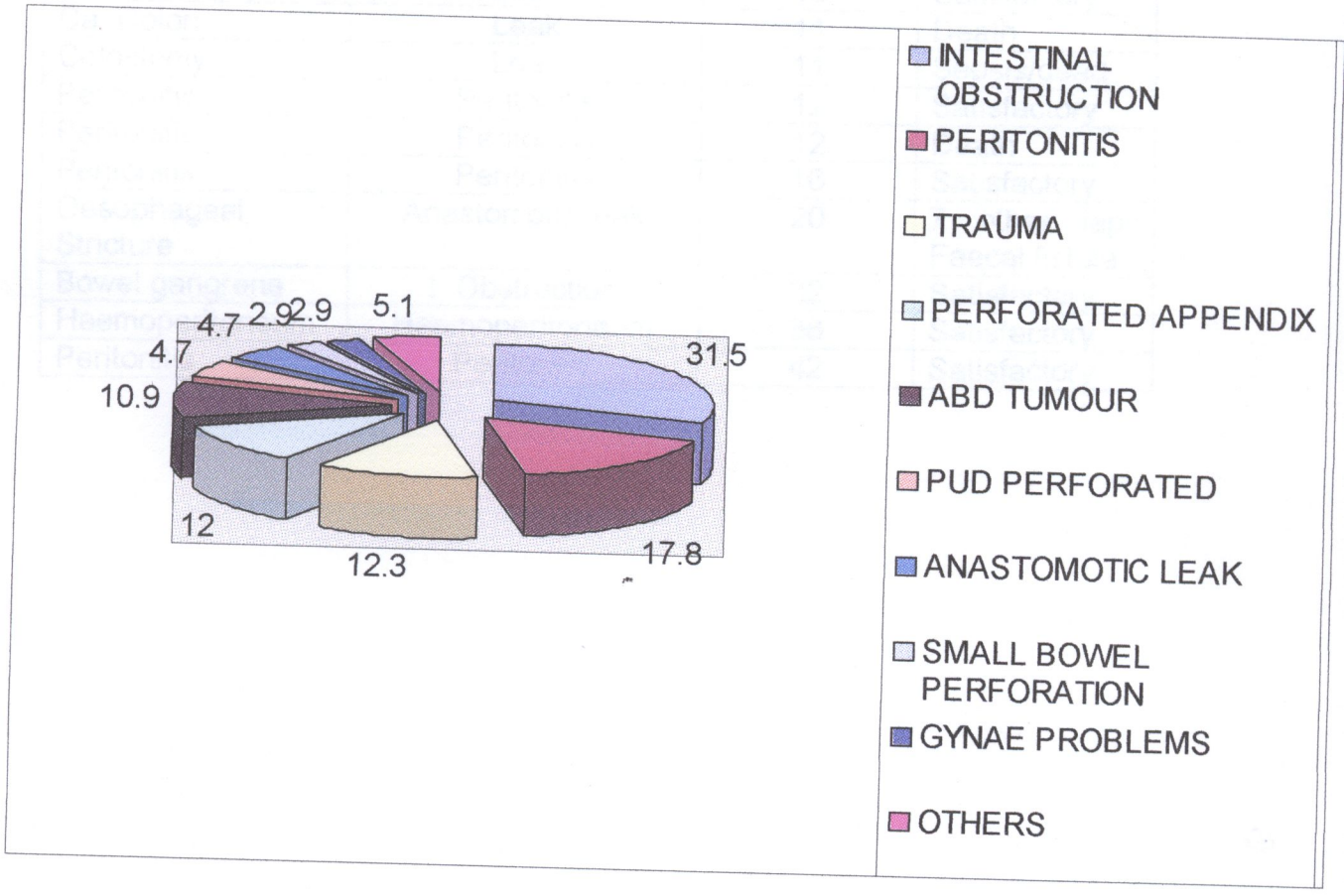


Figure 2. **MORTALITY AFTER SECOND LAPAROTOMY**

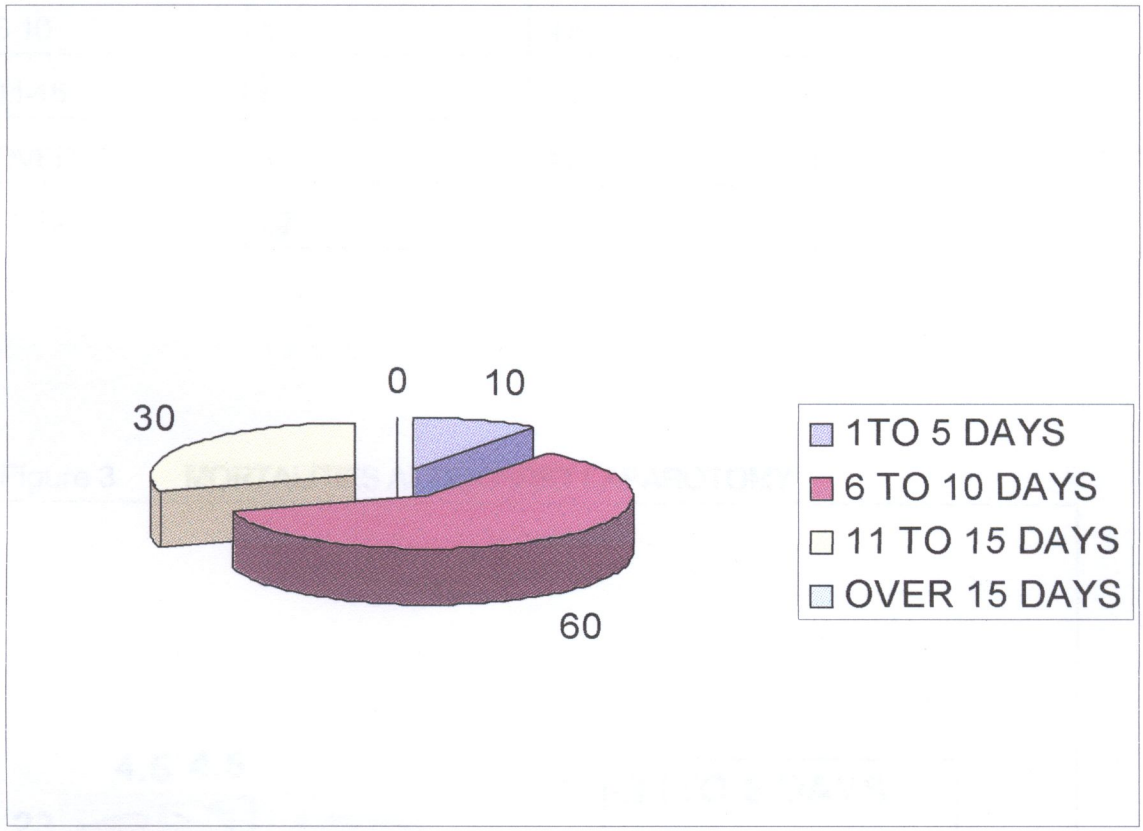


Table 3. **MORTALITIES AFTER FIRST LAPAROTOMY**

DAYS AFTER LAP	FREQUENCY	PERCENTAGE
1-5	15	68
6-10	1	4.5
11-15	5	23
OVER 15	1	4.5
TOTAL	22	100

Figure 3. **MORTALITIES AFTER FIRST LAPAROTOMY**

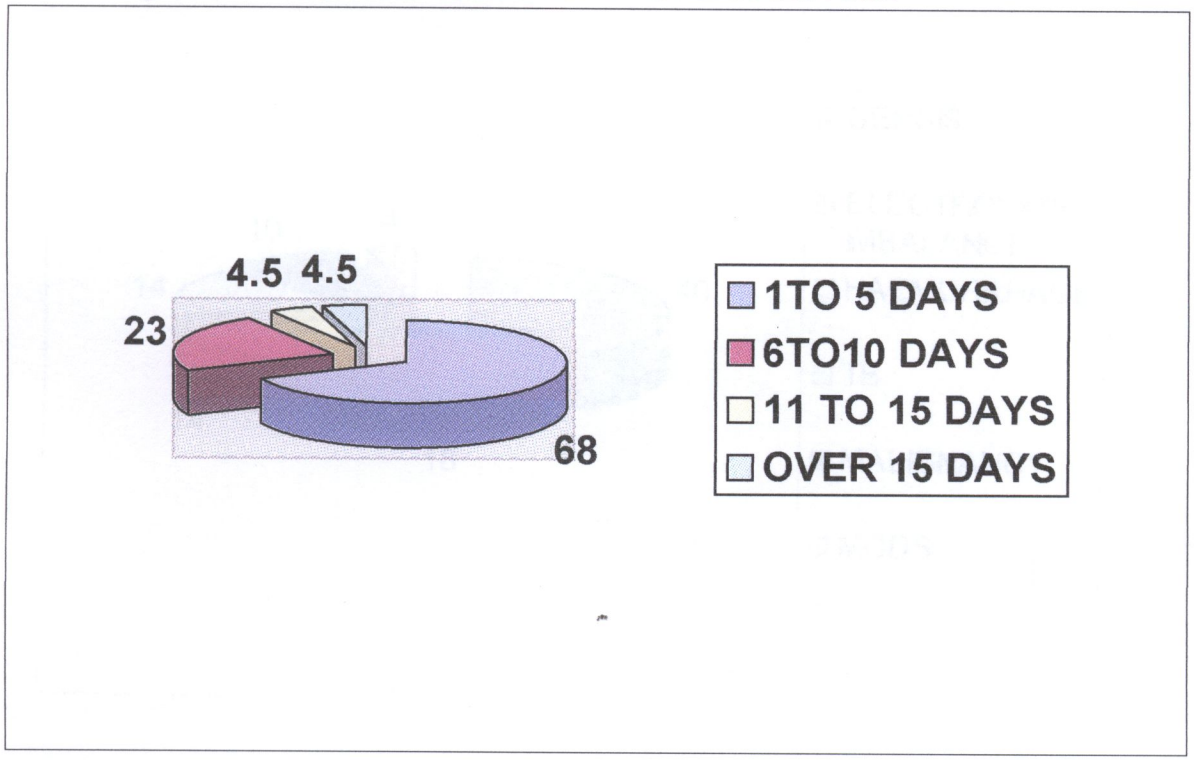


TABLE 4. **CAUSES OF MORTALITES AFTER FIRST LAPAROTOMY**

CAUSE OF DEATH	FREQUENCY	%
SEPSIS	9	40
ELECTROLYTE IMBALANCE	4	18
HAEMORHAGIC SHOCK	3	14
TB	3	14
ADVANCED MALIGNANCY	2	10
MODS	1	4
TOTAL	22	100

FIGURE 4. **CAUSES OF MORTALITES AFTER FIRST LAPAROTOMY**

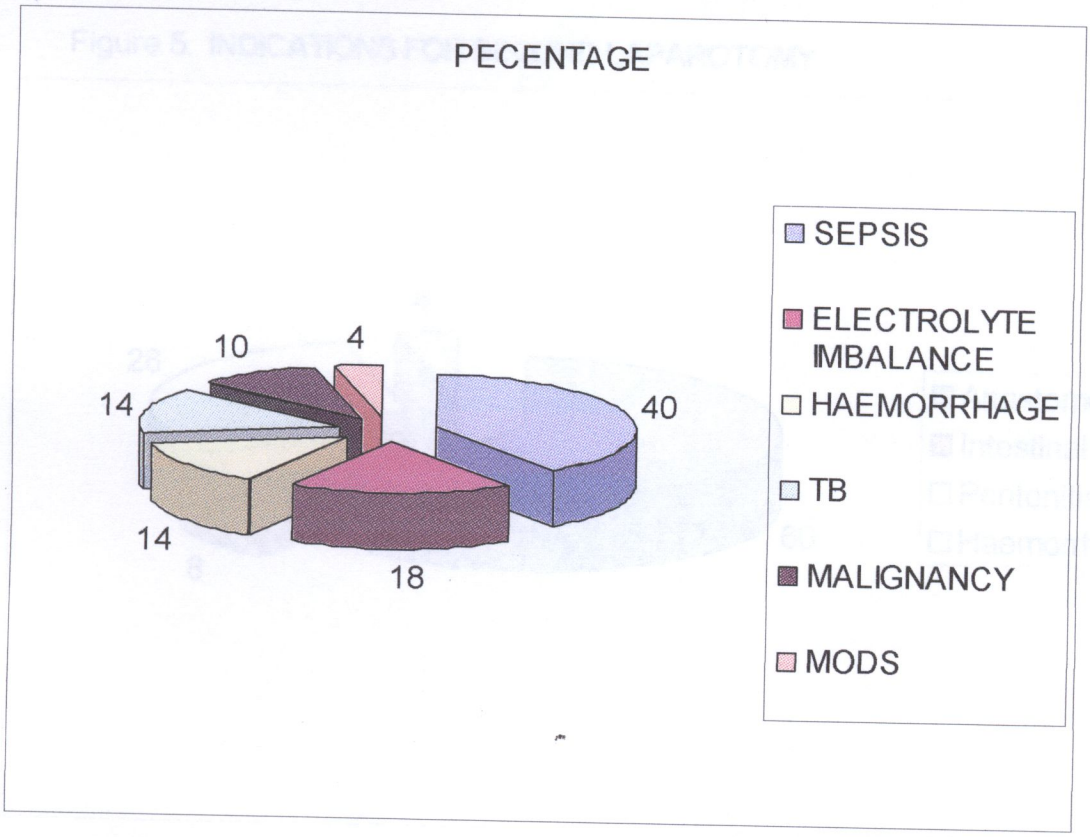


Table 5. **SECOND LAPAROTOMIES AND INDICATIONS**

INDICATION	FREQUENCY	PERCENTAGE
Anastomotic leak	15	60
Peritonitis	7	28
Intestinal obstruction	2	8
Haemorrhage	1	4
Total	25	100

Figure 5. **INDICATIONS FOR SECOND LAPAROTOMY**

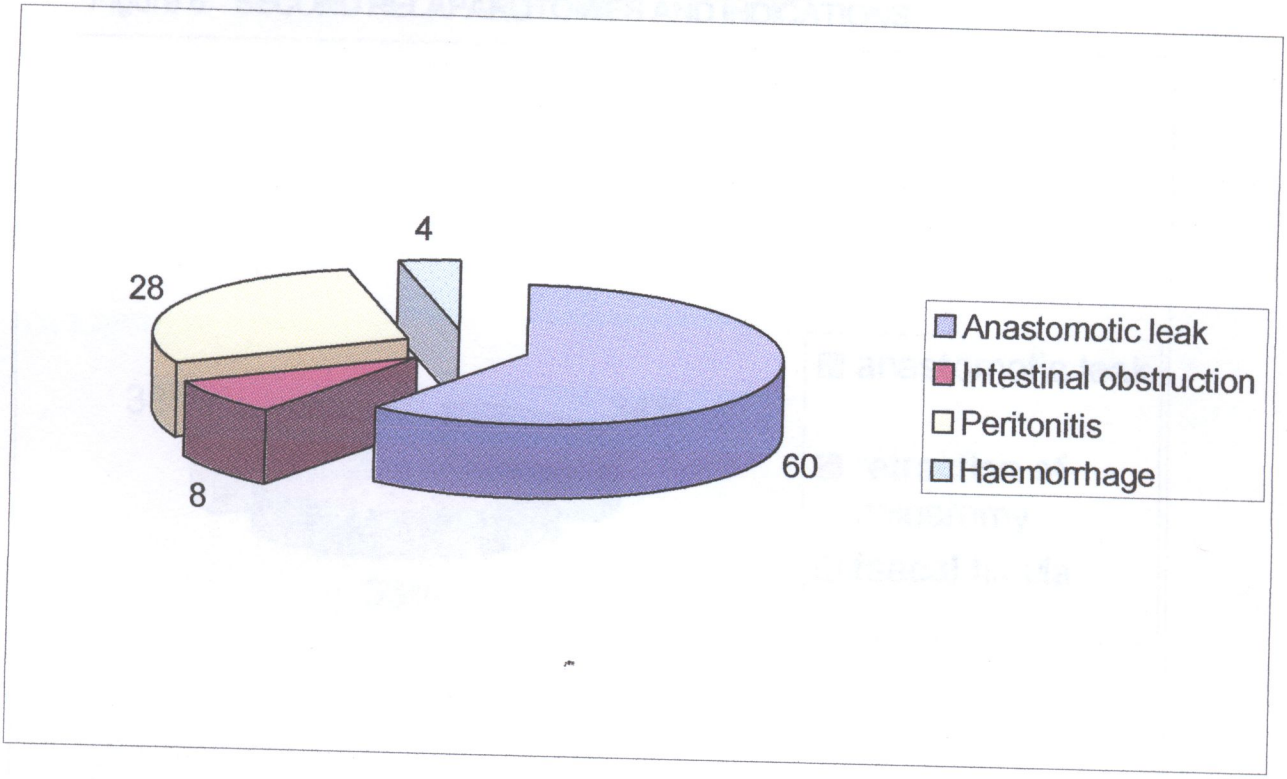


Table 6. **SECOND RELAPAROTOMIES AND INDICATIONS**

INDICATION OF 1ST	INDICATION FOR 2ND	FREQ	PERCENTAGE
Anastomotic leak	Anastomotic leak	1	33.3
Anastomotic leak	Colostomy retraction	1	33.3
Anastomotic leak	Faecal fistula	1	33.3

Figure 6. **SECOND RELAPAROTOMIES AND INDICATIONS**

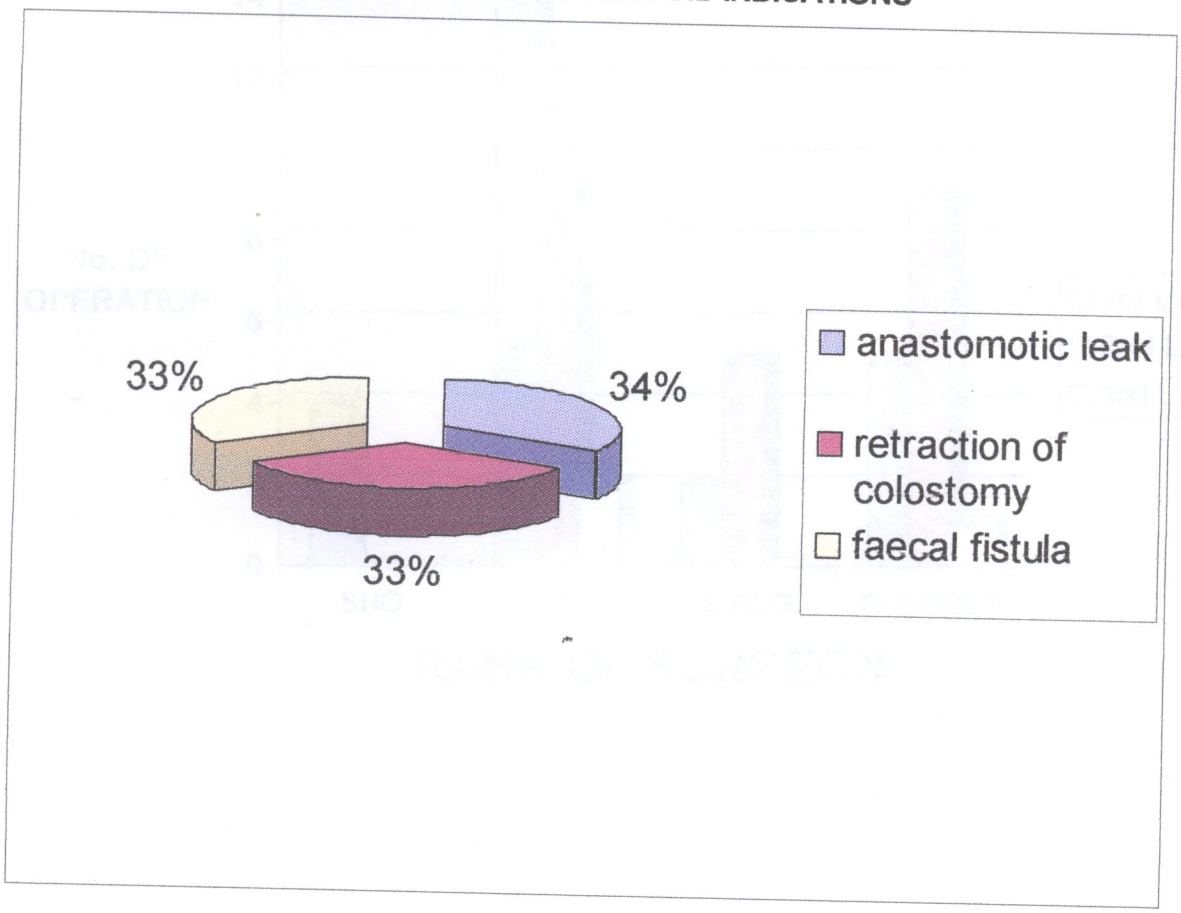
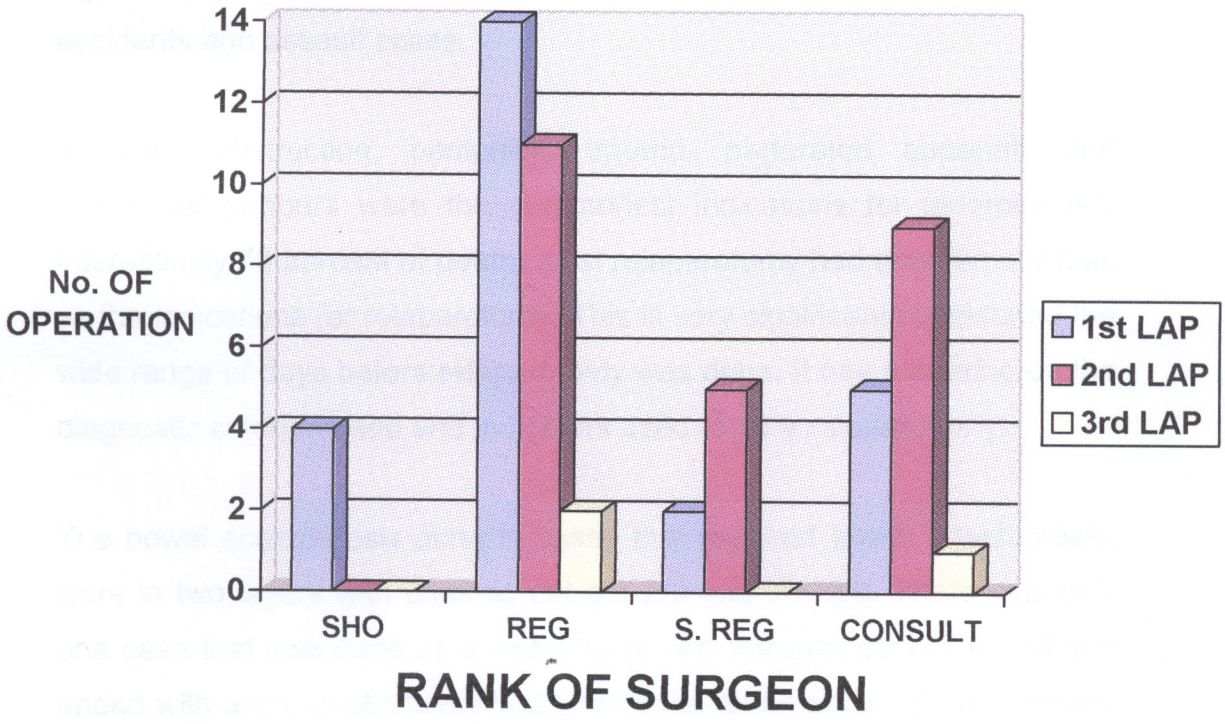


Table 7. **LEVEL OF COMPETENCE OF SURGEON**

OPERATION	LAP	1ST RELAP	2ND RELAP
SHO	4	0	0
REGISTRAR	14	11	2
S. REGISTRAR	2	5	0
CONSULTANT	5	9	1
TOTAL	25	25	3

Figure 7 **LEVEL OF COMPETENCE OF SURGEON**



DISCUSSION

Of the two hundred and seventy-six (276) laparotomies done in the various general surgical units, over 85 percent were done as emergency cases in the hospital's accident and emergence (phase V) theatre. The cases included intestinal obstruction, peritonitis, trauma, perforated appendix, perforated peptic ulcer disease, small bowel perforation, ruptured ectopic pregnancy and other gynecological problems.

The common findings in intestinal obstruction were sigmoid colon volvulus, adhesion bands and obstructed hernias. Small bowel perforation was mostly found on the terminal ileum probably due to typhoid perforation. In one case it was post herniorrhaphy for an incarcerated right inguinal hernia. The trauma cases were mostly due to road traffic accidents and assault cases.

Intestinal obstruction, peritonitis, trauma, perforated appendix and abdominal tumours were the commonest indications for laparotomies. Interestingly 78 percent of deaths post relaparotomy had anastomotic leak as the indications for relaparotomy. This is very significant considering the wide range of days before relaparotomy was done. It has a bearing on the diagnostic criterion used and indicators used to do a relaparotomy.

The bowel anastomosis done in cases that required bowel anastomosis, were in two layers with chromic cat gut 2/0 and silk 2/0. There was only one case that was done as a single layer with chromic cat gut 0. All that ended with anastomotic leaks had been done as emergence laparotomies with no time for bowel preparation.

Gynaecological cases here refer to only cases where waiting to consult the specialists would not be in the best interest of the patients. Such cases are/were operated on by the general surgeons and then inform the specialists with a live patient. Almost all were ruptured ectopic pregnancies with one degenerating fibroid and few tubo-ovarian abscesses.

More than 50 percent of the relaparotomies done were due to anastomotic leak. The primary surgery was either involving an anastomosis or repair of bowel. Incidentary, none of the relaparotomies was done earlier than the fifth day from the maiden laparotomy. Infact only one relaparotomy for anastomotic leak was done within five days of the maiden laparotomy. The rest of relaparotomies for anastomotic leaks were done after 7 days or more of the maiden operation (table 2). The outcome was not the best of outcomes. There was 67 percent mortality, 8 percent permanent colostomy, 8 percent temporary colostomy and 16% satisfactory.

It is well documented that all bowel anastomosis will invariably have micro-leaks that are sub clinical. It is also documented that leaks usually occur between days 4-6 after which the anastomoses are unlikely to leak. It is therefore expected that surgeons should look for symptoms and signs of anastomotic leak around that period. The after monitoring of a surgical patient is very important as more often than not, it influences the outcome of the operation than the actual operation itself.

Peritonitis post laparotomy was another cause for increased morbidity and mortality post operatively. It accounted for 26 percent of all relaparotomies. All these cases had peritonitis as the indication for the maiden laparotomy. There was one mortality post relaparotomy for peritonitis. The relaparotomy in this particular case was done 12 days from the maiden laparotomy. Various studies do not really agree as to when

you would do a relaparotomy in the case of peritonitis. Advocates for early relaparotomy even suggest a relaparotomy within 24hours of the maiden laparotomy. The wait and see groups suggest no action unless there is a measurable deterioration in patients general condition; otherwise they claim the outcome is not affected by the surgical intervention.

In this study, the duration from maiden lap to relaparotomy was from 5 days to 42 days, with a mean of 12.5 days and mode of 7 days. Interestingly those who had relaparotomies after 21 days of the maiden operation had satisfactory outcomes. It is however worthy noting that the outcome depended on individual cases. There was one particular case where the anastomotic leak was noted 20 days after initial laparotomy. A relaparotomy was done, but later developed a faecal fistula after over 90 days (after graduating from this study). He subsequently had 5 other relaparotomies in a space of 150 days.

There was 43 percent mortality with the majority of the dead being those whose relaparotomies were done more than 6 days of the initial laparotomy (90 percent of all fatalities after relaparotomy). Sepsis accounted for nearly all the deaths. The diagnosis of sepsis was clinical in all cases. None had a blood culture or full blood count done after the laparotomies.

There were two temporary colostomies. These were however not followed up to the closure of colostomy as this fell out of the study period. Both cases were secondary to anastomotic leak after sigmoid colectomy post sigmoid colon volvulus. None of these had gangrenous bowel on the initial laparotomy. The colostomies were both Hartman's colostomies. At the end of the study both cases had functional colostomies and were clinically well.

There was one permanent colostomy. This too was due to anastomotic leak. The leak was attributed to tension, as there was a very short stump on the anal end. The subject had however been warned about the possibility of a permanent colostomy. This was one of the expected outcomes that was acceptable to the subject. The question however is, was it necessary to attempt an anastomosis and later expose the patient to further surgery?

Another interesting outcome, which may need a study on its own, was a patient who had the initial laparotomy for Oesophageal stricture by pass. He had an anastomotic leak, which led to the first relaparotomy. The case developed another leak, reanastomosis was done but failed seven times. The third relaparotomy came after more than 90 days that excluded this particular and subsequent laparotomies from the study.

There were 22 fatalities from the other laparotomies that did not undergo relaparotomies. 68 percent of these died within five days of the laparotomy. The main concerns though, were those who died more than five days after the initial laparotomy. This is the group that could have benefited from an early relaparotomy.

Registrars performed more than half the initial operations that ended in relaparotomies. Senior registrars performing the least number of initial laparotomies that ended in relaparotomies. This is attributed to the ratio of staffing at institution where the study was done. Based on the procedures performed, it was not possible to attribute the leaks to the level of competence of surgeons. The actual procedures (techniques) were basically the same. This does not in anyway suggest that senior house officers (SHO) and registrars are as good as their senior colleagues. What came out here was the fact that the emergence theatres are manned by

the most junior two ranks.

Patients preparation in general was an area that was not really emphasized which made it difficulty to really assess the adequacy of pre-operative resuscitation. The situation was compounded by the fact that the subjects only entered the study after the second laparotomy. Therefore the initial pre-operative assessment and resuscitation were looked at retrospectively.

Complications demanding re-laparotomy can be divided up into four groups. These would include hemorrhage that can be in the lumen of the digestive canal or in the abdominal cavity. The next group would be postoperative peritonitis that includes perforative, circumscribed and diffuse peritonitis without perforations, and due to suture insufficiency, as well as to necrosis of the pancreas and biliary peritonitis. The other group would be postoperative ileus conditions that can either be mechanical or paralytic. The next would be operative wound dehiscence and lastly miscellaneous indications.[7, 26]

There are other complications that may not have been mentioned but require more urgent intervention. These are complications peculiar to the liver and the biliary tree. They include bile leak due trauma to the liver and biliary tree. Ruptured liver cyst is also a surgical emergency with lots of complications if poorly managed. Choledochoduodenostomy with T-Tube Drainage is the treatment of choice though not without complications.[23]

CONCLUSION

Having looked at all relaparotomies over a year, there is no doubt that there is a significant reduction in the number of relaparotomies compared to the retrospective study conducted two years earlier. This reflects on a number of factors, including correct or immediate diagnosis, urgent laparotomy and improved surgical skills.

Bowel surgery was responsible for most of the relaparotomies and subsequent fatalities. There was no anastomotic leak that had a relaparotomy earlier than 7 days. The delay in relaparotomy is reflected in the poor outcomes of the relaparotomies. The primary indication had no significant effect on the outcome.

Looking at individual cases on the other hand, there was a lot of standardization in the approach to patients. This includes the making of the diagnosis, resuscitative measures and the rush to operate immediately.

All sigmoid colon volvulus that ended up with anastomotic leak, were done urgently, without prior deflation and none had a defunctioning colostomy. These patients no doubt must have had a lot of oedema though not commented on by surgeons. None of these had any other investigations other than plain abdominal x-rays, both pre-operatively and post operatively.

All initial laparotomies had abdominal walls closed in layers including the skin. This was regardless of the operative findings including purulent peritonitis. The cases in question had a relaparotomy for peritonitis.

RECOMENDATIONS

1. All urgent cases that can wait should have adequate resuscitation before operation.
2. Correct all reversible metabolic derangements before taking patients to theatre.
3. Responsible decisions should be taken urgently though not at the expense of adequate pre-operative preparation.
4. a careful exploration must be done to avoid missing other pathologies in the abdomen.
5. Surgeons need to make careful decisions intraoperatively before carrying out an anastomosis.
6. Post operatively, laparotomy patients must be closely monitored. Surgeons must give complete and clear instructions on how a nurse should monitor and nurse these patients.
7. Surgeon must review patients at least 4-6 hours post operatively.
8. Given limited investigative facilities, the decision to go back should be as soon as suspicions are raised of complications based on clinical findings.
9. Patient undergoing relaparotomy must be adequately prepared with full investigations done.
10. A large study with a statistical analysis is strongly recommended.

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APPENDIX

EVALUATION FORM

Name.....

Age.....

Sex.....

File Number .....

Date.....

Address.....

Presenting complaints .....

Physical findings .....

Laboratory and radiological findings .....

Diagnosis.....

INAUGURAL LAPARATOMY

Indication.....

Emergence or elective .....

Procedure .....

Findings.....

FIRST RELAPARATOMY

Indication.....

Duration from first relaparatomy .....

Procedure .....

Findings.....

SECOND RELAPARATOMY

Indication.....

Duration from first relaparatomy .....

Procedure.....

Findings.....

OUTCOME .....

MORTALITY

Cause of death .....

Duration from the last operation .....

FIRST REVIEW

Complaints: .....

General condition: .....

Local Examination: .....

SECOND REVIEW

Complaints: .....

General condition: .....

Local Examination .....

THIRD REVIEW

Complaints: .....

General condition: .....

Local Examination .....

THE ABDOMEN