

Research Article

Morbi-Mortality and Risk Factors of Relaparotomies at the Hospital Charite Maternelle De Goma, Eastern of the Democratic Republic of Congo

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Abstract

Background: Relaparotomy refers to an abdominal operation performed within the first 60 days of the initial abdominal surgery. It is indicated to resolve the complications of the initial surgery. The aim of this study was to determine the morbidity and mortality and the risk factors of relaparotomy at the hospital charité maternelle de Goma in the East of the Democratic Republic of Congo.

Materials and methods: This was a descriptive retrospective study conducted in the general surgery department of Charité Maternelle Hospital, Goma town, North Kivu province, Democratic Republic of Congo during the period from September 1, 2017 to September 30, 2021. A sample of 51 patients who underwent relaparotomy out of a total of 2108 laparotomies performed.

Results: Of 2.4% of patients who underwent relaparotomy, women were affected in 64.4%. The age group between 16 and 30 years most affected. General practitioners made 73.3% of initial interventions. 73.3% of initial intervention was urgent. They were carried out before 10 days in 55.56%. The initial diagnosis was more the various indications for caesareans (acute fetal distress, placenta previa, DPPNI, DFP, Iterative, etc.) in 40% of cases followed by acute generalized peritonitis in 26.67%. 44.44% of cases were referrals from other structures.

The modifiable risk factor (Alcohol 33.33%, smoking 15.55, HTA: 6.67%, Diabetes: 8.89%, Obesity: 4.44%) before the intervention were found in 68.89% in the re-operated. The initial interventions were dirty in 55.56% of cases, and lasted less than an hour in 68.89%. Relaparotomy was indicated for postoperative peritonitis in 55.56%. Only one death, due to septic shock.

Conclusion: Relaparotomy is common in our hospitals and leads to severe complications, although our study showed low mortality. It is a public health problem, from the point of view of morbidity and mortality and the high financial cost they entail. Especially vigilance during the initial intervention. A good management of the initial intervention must do to prevent relaparotomy.

Keywords: Relaparotomy; Morbi-mortality; Risk factors; Charité maternelle

Introduction

Relaparotomy refers to an abdominal operation performed within the first 60 days of the initial abdominal surgery. It can be early or late, scheduled or urgent [1]. Re-operations correspond to the definition of a serious adverse event, the causes, circumstances of occurrence and results of which must be analysed [2].

The implications of unplanned surgical re-intervention are social, professional and financial, even legal [3]. Managing the quality and risk factors associated with surgical procedures is an important public health issue [1,3].

In Switzerland, the rate of reoperation is an indicator for the quality of care because a revision is inconvenient and sometimes

dangerous for the patient, unnecessarily expensive for the hospital [4]. Some authors consider re-intervention as a faulty admission that should be avoided [5].

Charlotte and her collaborators in 2009 describe that there is no precise decision tree to follow to decide whether or not to re-operate and this choice remains most often subjective, based on the experience of each team [5,6].

The results of a study carried out in several European hospitals in 2003 show that the use of unscheduled reoperation was observed in 3% of operated patients [7].

In Turkey, a study conducted from 2002 to 2006 by Haluk et al. [1] found a rate of 81 cases of abdominal re-operations out of 4410 cases of abdominal surgery, or 1.8% of cases of re-operation. Results found in a study conducted in Yaoundé in 2009 show a frequency of 3.6% of re-operated cases [3].

Congolese authors in their studies in Bukavu: Ahuka OL et al. found a frequency of 11 cases of re-operation, [8]; and Otshudiema OG et al. [9] found a 3.1% frequency of reoperation, while in Butembo, Valimungighe MM et al. [10] found a 12.44% frequency of abdominal re-operation.

In 2013, Benchekroun AS found disunity in 46.5% as an indication for relaparotomy [11], while several studies found postoperative acute peritonitis as an indication for relaparotomy [3,9,10].

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Postoperative morbidity occurs in 30% and causes mortality and postoperative sequelae [7], while the mortality rate in the event of reoperation was 40% in Morocco [11]. In Bukavu, Ahuka et al. [8] found a mortality of 27.3%, and Valimungighe MM found a mortality of 15.4% in Butembo [10].

The objective of this study was to describe the morbidity, mortality and the risk factors of relaparotomy at the hospital charité maternelle de Goma, in the eastern of the Democratic Republic of Congo.

Materials and Methods

This was a descriptive retrospective study conducted in the general surgery department of the hospital la Charité Maternelle de Goma, in the Goma city, North Kivu Province, DRC during the period from September 1, 2017 to September 30, 2021.

Were included in our all patients referred or not having benefited from a reoperation with the complete medical file during our study period. Were excluded from the study patients referred or not whose files were unusable, or reoperation beyond 60 days and outside the period of our study.

Our sample consisted of 51 records of patients who underwent laparotomies out of 2108 performed laparotomies, including 45 records included in our study and 6 excluded because they did not meet the inclusion criteria.

Data collection was manual using a pre-established data collection sheet containing the parameters for the initial intervention: sex and age, initial diagnosis, initial emergency or elective surgery, clean or dirty intervention, practitioner (specialist or GP) at the 1st intervention, complication observed at the 1st intervention, number of surgical repetitions after the 1st laparotomy, defect found, type of inclusion, time for reoperation, i.e. between the two interventions.

And for the re-laparotomy: indication of the re-laparotomy, length of stay after the re-operation, outcome of the patient after the re-laparotomy, type of anesthesia, practitioner (specialist or general practitioner) at the 2nd operation.

Text entry was done in Word and data analysis was done in Microsoft Excel 2007 then imported into SPSS version 2.0 and Epi info 3.5.4. The data was represented in the form of tables and graphs. The respect of the anonymity of our patients in the collection of data was strict.

Results

Morbidity of relaparotomy

The overall frequency of relaparotomies was 2.42% or 51 cases out of the 2108 laparotomies performed during our study period with an annual frequency of 12.75 patients, the peak being observed in 2018. The number of reoperations varied from 1 to 6, including successively 1 reoperation for 35 patients, 2 for 1 patient, 3 reoperations for patients and 4 to 6 reoperations for 2 patients each.

Mortality of relaparotomy

Only one patient had died who was between 16 and 30 years old, female, died of severe septic shock after relaparotomy.

Relaparotomy and socio-demographic variables

There was a predominance of abdominal reoperated in the age group between 16 and 30 years in 44.44%, with extremities extending from 28 days to 60 years, the female sex is the most affected with 64.44% and 22.22 % of our reoperated patients had co-morbidity before the initial operation (Table 1).

Table 1: Relaparotomy and socio-demographic variables.

Age (Year)	n= 45	Percentage
16-30	20	44.44
31-45	17	37.78
< 15	5	11.11
>45	3	6.67
Sex		
Female	29	64.44
Male	16	35.56
Origin		
Commune of Goma	20	44.44
Commune of Karisimbi	15	33.33
Out of town	10	22.22

Laparotomies and clinical data

Gyneco-obstetrical indications were the most frequent for initial laparotomies with 46.67% of cases. The surgical intervention was performed urgently in 73.33%. The majority of patients were initially operated locally (no notion of transfer from another hospital) (Table 2).

Table 2: Laparotomies and clinical data.

Mode of admission	n=45	Percentage
In loco	25	55.56
Transfert	20	44.44
Previous/initial Diagnostic		
Indications for caesareans section	18	40
Acute peritonitis	12	26.67
Intestinal occlusion	4	8.89
Hemoperitoneum	4	8.89
Uterine myoma	2	4.44
Acute appendicitis	2	4.44
Complicated adenomyosis	1	2.22
Prostate adenocarcinoma	1	2.22
Hepatic abscess	1	2.22
Circumstances of Management /Intervention		
Emergency	33	73.33
Programmed	12	26.67

Modifiable risk factor of laparotomy

In our research, 68.89% of the patients were with a modifiable risk factor before the first operation (Hypertension 6.67%, diabete 8.89%, Alcohol 33.33%, smoking 15.55%) and patient without modifiable risk factors was 31.11% (Table 3).

Surgical management of relaparotomy

The majority of patients were operated under spinal anesthesia in 51%. Reoperation was performed in less than 10 days in 55.5% of cases. Interventions were dirty in 55.56% of cases.

The intervention lasted less than an hour in 68.89%. The starting incision was midline in 68.89%. Relaparotomy was performed by a specialist (master) in 88.89% of cases. Re-operated patients stayed in hospital for less than 10 days in 44.44% (Table 4).

Complication at the initial intervention/ Indication for relaparotomy

Only one patient had died; he was between 16 and 30 years old, female, and died of severe septic shock.

This table shows three (3) main indications for relaparotomy were postoperative peritonitis (55.56%), intestinal obstruction (11.11%), evisceration (8.89%) and those 35 patients were reoperated once and 2 patients were reoperated 6 times during their stay in hospital. The number of reoperations varied from 1 to 6, including successively 1 reoperation for 35 patients, 2 for 1 patient, 3 reoperations for 3patients and 4 to 6 reoperations for 2 patients each (Table 5).

Table 3: Modifiable risk factors of Laparotomies (before the first intervention).

Modifiable risk factors	n=45	Percentage
Diabete	4	8.89
Hypertension	3	6.67
Alcohol	15	33.33
Smoking	7	15.55
Obesity	4	4.44
Without risk factor	14	31.33
Hypertension and alcohol	5	11.11
Smoking and alcohol	6	13.33

Table 4: Surgical Management of Relaparotomy.

Type of anesthesia	n=45	Percentage
Rachi anesthesia.	23	51.11
General anesthesia.	20	44.44
G.A. & R.A.	2	4.44
Time to do relaparotomy		
<10 days	25	55.56
11-20 days	12	26.67
>21 days	8	17.78
Classification of Altemeier		
Dirty	20	44.44
Clean	25	55.5
Types of incision		
Median	31	68.89
Pfannestiel	11	24.44
Mc Burney	2	4.44
Transversale above ombilic	1	2.22
Level of the practitioner		
Specialist	22	48.89
Generalist	23	51.11
Duration of the procedure		
<1H	12	26.67
1-2H	18	40
>2H	15	33.33
Length of stay in hospital		
<10 days	19	42.22
11-20 days	11	24.44
21-30 days	8	17.78
>31 days	7	15.55

Table 5: Complication at the initial intervention/Indication for relaparotomy.

Complication at the initial intervention/Indication for relaparotomy	n=45	Percentage
Post operative peritonitis	25	55.56
Intestinal occlusion	5	11.11
Gutting/Evisceration	4	8.89
Release of hysterectomy sutures (haemoperitoneum)	2	4.44
Stercoral fistula	2	4.44
Bilateral ureteral ligation + hemoperitoneum	1	2.22
Right hydronephrosis	1	2.22
Hematoma of hysterorrhaphy + leakage of threads	1	2.22
Iatrogenic splenic trauma	1	2.22
Jejuno-ileal and jejuno-parietal anastomosis fistula	1	2.22
Visceroparietal gangrene	1	2.22
Retrovesical hematoma	1	2.22
Outcome		
Cured	44	97.78
Death	1	2.22
Number of re-operations (same patient)		
1	35	
3	3	
4	2	
5	2	
6	2	
2	1	

Discussion

Among the 2108 abdominal re-operated cases, we found 51 relaparotomies that were performed (including the 6 cases excluded by our criteria), i.e. a hospital prevalence of 2.42%. Relaparotomy is a non-exceptional event in that we found an annual frequency of 12.75 cases of relaparotomy.

Halluk et al. [1] found a prevalence of 1.8% while Otshudiema et al. [9] in Bukavu found 3.1%, Chichom et al. [3] in Cameroon found 3.6%, Coulibaly in Koutiala in Mali 3.6% [12] and Hounsou in Cotonou 3.1% [13].

Abdominal reoperation is usually done when a detected problem could not be resolved initially due to the hemodynamic or ventilatory state of the patient or post-surgical complications due to intrinsic or extrinsic factors, such as: hemorrhage, infection, malnutrition or even deficiencies in the surgical technique itself [14,15].

In our results, we found only one case of death, or 2.22%.

Aiboud BS, reports a mortality of 35% in the event of early relaparotomy and 65% if late [11]. Otshudiema et al. [9] found 32.7% of death. Ahuka et al. [8] found 27.3%; Chichom in Yaoundé 18.1% of deaths after relaparotomy [3], Valimungighe MM et al. [10] found 15.4% mortality.

Reoperation for peritonitis, a major difficulty, especially beyond the first postoperative week. The risk of iatrogenic digestive lesions increases with each reoperation and with the time elapsed since the previous operation [11].

There was a predominance of abdominal reoperated in the age group between 16 and 30 years in 44.44%, with extremities extending from 28 days to 60 years, the female sex is the most affected with 64.44% and 22.22 % of our reoperated patients had co-morbidity before the initial operation.

Our results are almost similar to those found in Lubumbashi by Catherine et al whose most represented age group is between 26-65 years in 41.07% with a frequency of 46.43% of patients who had a co-morbidity (hypertension, diabetes, HIV/AIDS, cancer) [6].

Valimungighe M. found in Butembo an age group between 21-30 years in 59.7% [10], Otshudiema in Bukavu and Valimungighe M. in Butembo found a female predominance with respectively 55.2% [9] and 67.3 % [10]. A study carried out in Mexico reports 33.33% of reoperated patients with co-morbidity [16].

Aiboud in Rabat (65%) and Catherine in Lubumbashi (65.51%) found a male predominance [6,11]. A study conducted in Mexico found rather an age range between 60-70% in 23.8% and Guivarc H, found that 53% of reoperated patients were over 60 years old [16,17].

Our results could be explained by the predominance of gynecological interventions (18 caesareans and 2 myomectomies) in our study. The role of sex-associated morbid states, such as tropical anemia's with higher prevalence in young women during pregnancy, which had a negative influence on healing [6], is also underlined. And the age is explained by the youth of the population of the countries south of the Sahara in general [18]. The patient's field is mentioned in the literature as a factor favoring reoperation and, especially, the occurrence of postoperative sepsis [5,7].

In our research, 68.89% of the patients were with a modifiable risk factor before the first operation (Hypertension 6.67%, diabete 8.89%,

Alcohol 33.33%, smoking 15.55%) and patient without modifiable risk factors was 31.11%.

Charlotte B, explained that diabetes, immunocompromised, malnutrition are causes of promoting abdominal sepsis and related to the patient's field [5]. Catherine found that relaparotomies were related to diabetes in 23%, HTA 34.62% [6]. This outcome is high than ours.

Gyneco-obstetrical indications were the most frequent for initial laparotomies with 46.67% of cases. Valimungighe MM et al. [10] found the same result as ours with 38.5%. Ahuka OL, on the other hand found in his study in Bukavu, peritonitis in 43.9% (8). As many authors point out, pregnancy being a field of immunosuppression, surgery induces immunosuppression because a caesarean section is a major surgical procedure that makes the woman in labor weak [19].

The surgical intervention was performed urgently in 73.33%. Coulibaly found that the initial intervention was performed urgently in 86.4% of cases [12], Jorge Alberto with 61.91% [16] and Catherine 91.07% in Lubumbashi [6].

Urgent surgery most often required reoperation depending on speed, probably due to the technical difficulty of this surgery, driven by urgency [16]. Scheduled admission would reduce the risk of potentially avoidable reoperation [4].

The general practitioner performed more interventions than the specialist with 51.11%. At the university clinics of Lubumbashi, the initial laparotomy was carried out by an unqualified surgeon (general practitioner) in 60.71% [6]. On the other hand, Ahuka found a predominance of medical specialists in 60.6% (8).

Experience shows, however, that one of the main reasons for reoperation is not so much related to the skill of the surgeons, but more to the context of the intervention on which it is easier to act [20]. The reasons for which a general practitioner performs surgical procedures depend on the environment in which one finds oneself and on the legislation of the profession [24]. In our study we succeeded in many transfers from underprivileged areas where there are only general practitioners for all interventions.

Relaparotomy was performed before 10 days in 55.56% of cases. With a minimum of 1 day and a maximum of 45 days. The Bannura study reports an average of 7.1 days before reoperation [21].

There was an average of 8 days between the initial laparotomy and the relaparotomy, with a maximum of 2 days and a minimum of 1 day. Most patients were operated in less than 6 days [22]. Garcia et al reported that the majority of their patients underwent reoperation within the first few days [23]. The speed with which the diagnosis is made and the effectiveness of the treatment implemented condition the prognosis. A revision surgery for nothing is always better than an overdue sepsis, operated late [7]. The approach to the initial laparotomy was a midline incision in 68.89% of cases. Valimungighe M M et al. [10] in Butembo found 82.7% midline incisions.

It is a way of exposing the abdominal cavity and allows the surgeon easy work and a complete stand of the causative lesion [25].

The 3 main indications for relaparotomy were postoperative peritonitis (55.56%), intestinal obstruction (11.11%), and evisceration (8.89%).

Among the causes of this postoperative peritonitis, the localized

purulent collection predominates with 56% of cases. Hounsou NR et al. [13] in a study in Cotonou found as an indication for relaparotomy: postoperative peritonitis 48.7%, eventrations 15.4% and eviscerations 15.4%. The main lesion in case of peritonitis is a release of suture threads in 42.22% of cases. Catherine at the university clinics of Lubumbashi found peritonitis in 58% of cases [6]. Chichom Mefere A et al. [3] found in Yaoundé 50.8% peritonitis, 23.9% intestinal obstruction and 10.9% digestive fistula.

Re-interventions in digestive surgery aim to treat a diffuse or localized intraperitoneal infection. Other causes that may lead to a new surgical procedure are haemorrhages from the operating site or anastomosis, intestinal obstruction, evisceration or the release of sutures [5].

The majority of our abdominal reoperations stayed less than 10 days in the hospital, i.e. 42.22%, and 7 reoperated patients spent more than 31 days in the hospital (15.56%).

Valimungighe MM et al. [10] found in Butembo that abdominal reoperated patients spent between 7 to 14 days in hospital in 30.7% of cases and more than 30 days in 5.7%. In Panzi; Otchudiema et al found that 58.4% of abdominal reoperations stayed between 41 and 60 days [9]. The length of hospitalization depends on the patient's prognosis and clinic [7].

Conclusion

Abdominal reoperation is a public health problem because it has become a practice in industrialized countries or in developing nations, due to its risk factors and morbidity; mortality and the economic impact it entails. Gyneco-obstetric interventions and peritonitis are those that expose to relaparotomy.

Improving the condition of care could improve the results. The management of these interventions is multidisciplinary, and requires exploration and adequate asepsis.

Author Contributions

All authors contributed to the conduct of this work. All authors also declare that they have read and approved the final version of the manuscript.

Ethical approval and consent

Approval was granted by the Faculty of Medicine of the Catholic University La Sapiencia of Goma and the management of the General Reference Hospital Charité Maternelle of Goma.

All participants signed an informed consent form and respect for the anonymity of our patients in data collection was strict.

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