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## Early post-operative complications in abdominal surgery at the university clinics of Lubumbashi: Frequency, diagnosis and prognosis

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### Abstract

**Introduction:** Postoperative complications in abdominal surgery have a high incidence in developing countries' hospitals, thus increasing the rate of their morbimortality. The aim of this work was to determine the frequency of early postoperative complications in abdominal surgery, their indications for operation, the types of postoperative complications, and their prognosis at University Clinics of Lubumbashi.

**Patients and Methods:** This is a descriptive cross-sectional observational study with retrospective data collection from January 1, 2018 to December 31, 2019 including all patients operated on in the abdominal surgery department of the University Clinics of Lubumbashi and having presented complications within 30 postoperative days.

**Results:** The frequency of early postoperative complications in abdominal surgery was 32.2%. The sex ratio M / F was 2.5 and the mean age was  $31.5 \pm 0.6$ . Emergency was the mode of admission in 80% of cases with a mean admission time of  $17.2 \pm 0.5$ . In this study, 71.42% of patients were classified ASA III. The mean time to surgical management was  $36.5 \pm 1.7$  hours. Asthenia (62.9%) and abdominal pain (80%) were the most dominant functional signs. Suppuration of the wound (30.5%), abdominal distension (26.6%) and flow of stercoral fluid through the wall (23.8%) were the most dominant physical signs. The antibiogram on wound secretion (19%), imaging combining the chest x-ray (20%), the abdomen without preparation (27.6%) and the abdominal ultrasound (65.7%) are additional examinations which were more practiced. The post-operative complications were grade III in 95.24% of cases (n = 100) according to the Clavien-Dindo classification. The initial indications for surgery were more dominated by acute peritonitis (60%), followed by mechanical intestinal obstruction (16%). The duration of surgery was > 2 hours in 81% of cases and in 58.09% of cases the initial intervention was performed by a specialist. The mean time to resumption of oral feeding was  $3.4 \pm 0.6$  days (Extreme: 12 hours and 192 hours). POC occurred within 5 days of surgery (59.04%).

Surgical complications were more dominant (80%), made up of postoperative peritonitis (33.33%), digestive fistulas (19.5%), surgical site infection (16.7%), post-operative intestinal obstruction (13.1%) and evisceration in 6% of cases. The majority of post-operative complications (52.4%) had undergone relaparotomy, and the outcome was good in 69.5% of cases (n = 73/105), with a mortality rate of 30.4% of cases (n = 32/105). The mean length of hospital stay was  $27.4 \pm 0.5$  days.

**Conclusion:** Postoperative complications are frequent at University Clinics of Lubumbashi and dominated by infection, postoperative peritonitis and digestive fistulas. The implementation of well-coded management algorithms could reduce this incidence.

**Keywords:** Postoperative complications, treatment, prognosis

### Introduction

Major abdominal laparotomy surgery is a daily practice around the world, in industrialized and developing nations. In the United States of America, the National Office of Health Statistics reported an annual rate of 14.414.000 cases of abdominal surgery. In different general surgery centers, abdominal surgery covers more than 70% of activities. In Africa, similar proportions are found. In the Republic of Zambia, according to morbidity-mortality audit data, for the month of September 2013, there were four hundred and eighteen major abdominal surgery procedures at the University Teaching Hospital of Lusaka according to HIMS in 2013 [1]. Postoperative complications are defined as the appearing of new phenomena (incidents or accidents) occurring in the postoperative period and generally leading to the worsening of the previous situation by their morbidity and even their mortality [2].

The Clavien-Dindo classification defines surgical complication as any deviation from the ideal postoperative course that is not inherent in the procedure and does not include a healing defect. The condition that remains unchanged after surgery is not a complication but rather a failure to cure<sup>[3]</sup>. Abdominal surgery can be accompanied by various complications. The frequency of these complications can reach 14.3%<sup>[4]</sup>. Surgical pathologies are very frequent and worrying because of the seriousness of their prognosis. The performance of diagnostic means, the evolution of therapeutic concepts, the training of qualified personnel and the improvement of anesthesia-resuscitation techniques will give new impetus to surgery. Consequently, post-operative morbidity and mortality will drop considerably in developed countries. This occurrence of postoperative complications after laparotomy is of variable frequency but poses everywhere, throughout the world, a real public health problem as stated by numerous authors<sup>[1, 5, 6]</sup> who have reported that the major abdominal surgery by laparotomy or laparoscopy should always be considered as an invasive, aggressive act capable of generating its own complications which, notwithstanding the actions of prevention of risk factors, remain the leading causes of morbidity and mortality in all industrialized countries and in development. In developing countries, the under-equipment of health facilities and the glaring lack of qualified personnel constitute a real handicap in the approach to surgery, especially digestive surgery. In these regions, the early postoperative evolution of surgical digestive pathologies has benefited from a case-by-case study and is generally poorly appreciated<sup>[7]</sup>. After surgery, postoperative complications are not uncommon; some are transient, others can be serious, but they are all important for patients. The probability of postoperative complications is influenced by the type of surgery, the pre-existing state of comorbidity and by the perioperative management of the patients<sup>[8, 9]</sup>. Postoperative complications can be systemic or specific to the operative procedures and can also be classified according to their time of onset: immediate, early or late<sup>[10]</sup>. In our country, the Democratic Republic of Congo, and precisely in our city of Lubumbashi, abdominal surgery is an interesting specialty and performed in suboptimal conditions. Given that in the literature at our disposal, many authors approach postoperative complications in isolation, we have initiated this study which deals, in a comprehensive manner, with early postoperative complications with the main objective of determining, from retrospective data, the frequency as well as the morbidity and mortality from abdominal surgery to the university clinic of Lubumbashi.

### Patients and methods

This is a cross-sectional descriptive observational study with retrospective data collection ranging from January 1, 2018 to December 31, 2019, including all patients admitted for surgical abdominal pathology, operated on in the surgical department of university clinic of Lubumbashi and having presented complications during the 30 postoperative days. The information was collected from the patients files and the resuscitation and operating theater registers, and collected on a sheet containing the following parameters: sex, age, history, method of admission, time admission, ASA score, time to preoperative management, indication for surgery, duration of the operation, surgeon's skill, time to onset of postoperative complications, type of complications, treatment, evolution and duration of postoperative hospitalization.

To classify the complications, we opted for the Clavien-Dindo classification which divides the grade I to grade V, according to the need for treatment: Grade I: any deviation from a normal postoperative course, without any need for surgical, endoscopic,

radiological or medical treatment, debridement of wall abscess at the bedside treatment authorized: antiemetics, antipyretics, analgesics, diuretics, electrolytes and physiotherapy. Grade II: need for pharmacological treatments other than those authorized above; Indication for transfusion or total parenteral nutrition. Grade III: Complication requiring surgical, endoscopic or radiological treatment. Grade IIIa: under local anesthesia. Grade IIIb: under general anesthesia. Grade IV: threatening complications, including central neurological; indication of ICU (intensive care unit). Grade IVa: organ failure (including dialysis). Grade IVb: multi-visceral failure; Grade V: Death. Grades I and II are considered as minor complications while grades III, IV and V are major complications. Despite the inaccessibility of some useful information and the retrospective nature of our study, we faced a lack of local data on post-operative complications in abdominal surgery.

We included all patients operated on for abdominal pathology, and excluded multiple trauma patients who died on the operating table, cases operated on elsewhere and transferred at the university clinic of Lubumbashi for management of postoperative complications as well as cases for whom the files lacked certain parameters essential for the operation completion of this study. The collected data was entered and analyzed on the software Epi Info Version 7.2.

### Results

During our study period, 326 files were collected, and early post-operative complications had a frequency of 32.2% of cases (n = 105). The sex ratio M / F was 2.5 and the mean age was  $31.5 \pm 0.6$  (Extreme: 3 days and 70 years old), with a large proportion in the age group 31 to 40 years (62%). The majority of patients (85.71%) had no specific history, urgency was the mode of admission in 80% of cases and the mean time to admission was  $17.2 \pm 0.5$  (Extremes: 5 days and 29 days). Our study showed that 71.42% of our patients were classified ASA III. (Table1)

**Table 1:** Distribution of patients according to age, morbid history, method of admission, and condition of patients before the operation.

Age of patients (year)	Effective(n)	Percentage (%)
0 - 10	7	6.7
11 - 20	5	4.8
21 - 30	19	18.1
31 - 40	43	40.1
41 - 50	20	19
51 - 60	6	5.7
61 - 70	5	4.8
Sex	Effective(n)	Percentage (%)
Male	75	71.4
Female	30	28.6
Co-morbidity	Effective(n)	Percentage (%)
Benign prostate hypertrophy	9	8.6
Diabetes mellitus	23	21.9
Cardiopathy	3	2.9
HIV	6	5.7
Tobacco	11	10.5
Alcohol	6	5.7
None	47	44.8
Mode of admission	Effective(n)	Percentage (%)
Emergency	84	80
Ambulatory	21	20
ASA PS classification	Effective(n)	Percentage (%)
ASA I	30	28.6
ASA II	29	27.6
ASA III	41	39
ASA IV	5	4.8
<b>Total</b>	<b>105</b>	<b>100</b>

Compared to the signs leading to the diagnosis of post-operative complications, asthenia (62.9%) and abdominal pain (80%) were the most dominant functional signs. Suppuration of the wound (30.5%), abdominal distension (26.6%), and flow of stercoral fluid through the wall (23.8%) were the most dominant physical signs.

All these signs had been supplemented by additional examinations including culture with antibiogram on wound secretion (19%), imaging combining the chest x-ray (20%), the abdomen without preparation (27.6%) and abdominal ultrasound (65.7%) were more performed. However, in 43% of cases (n = 41) no paraclinical examination was performed. In 80% of cases (n = 84), the post-operative complications were grade III; with 18.1% grade IIIa and 62% grade IIIb according to the Clavien-Dindo classification. (Table 2)

**Table 2:** Distribution of patients according to clinical and para-clinical signs and classification of complications at the time of identification of early POC.

Clinical signs	Effective(n)	Percentage (%)
<b>Functional signs</b>		
abdominal pain	84	80
Physical asthenia	66	62.9
Vomiting	27	25.7
hiccups	18	17.14
cough	21	20
Burning dysuria	9	8.57
inability to pass gas or stool	32	30.5
Diarrhea	13	12.4
<b>Physical sign</b>		
Rales in the lungs	18	17.14
Wall suppuration	32	30.5
Parietal dehiscence	15	14.28
Abdominal distension	28	26.6
Flow of digestive fluid through the wall	25	23.8
HOMANS Sign	7	6.7
Parietal hemorrhage	12	11.4
<b>Paraclinical examinations</b>		
Urine cytobacteriological examination	17	16.2
Complete blood count	57	54.3
Chest x-ray	21	20
X-ray of the abdomen without preparation	29	27.6
Abdominal ultrasound	69	65.7
Blood culture with antibiogram	6	5.7
Pyoculture with antibiogram	20	19
- No exam done	43	41
<b>Classification of Clavien-Dindo</b>		
Grade I	5	4.76
Grade II	2	1.9
Grade III	84	80
• Grade III <sub>a</sub>	19	18.1
• Grade III <sub>b</sub>	65	62
Grade IV	40	38.1
• Grade IV <sub>a</sub>	7	6.67
• Grade IV <sub>b</sub>	33	31.43
Grade V	32	30.4

The mean time to surgical management was 36.5 ± 1.7 hours (Extremes: 12 hours and 192 hours). The initial indications for surgery were more dominated by acute peritonitis (57.14%), followed by mechanical intestinal obstruction in 18.05% of

cases. (Table 3).

**Table 3:** Distribution of patients according to the time taken to take care and the initial indication for surgery

Treatment time (Hour)	Effective(n)	Percentage (%)
1 - 24h	30	28.57
25 - 48h	48	45.71
49 - 72h	6	5.71
73 - 96h	11	10.48
97 - 120h	2	1.90
121 - 144h	1	0.95
145 - 170h	3	2.86
171 - 194h	4	3.81
<b>Initial indication for surgery</b>		
Acute appendicitis	2	1.90
Post traumatic hemoperitoneum	5	4.76
Acute generalized peritonitis	60	57.14
Inguino scrotal hernia	4	3.81
Tropical splenomegaly	3	2.86
Gastric tumor	1	0.95
Colon tumor	6	5.71
Mechanical bowel obstruction	19	18.05
Dolichocolon	3	2.86
Mega sigmoïde	2	1.90
<b>Total</b>	<b>105</b>	<b>100</b>

The duration of the surgical intervention was more than 2 hours in 81% of cases (n = 85/105). In 58.09% of cases (n = 61/105), the initial intervention was performed by a specialist and the mean time to resumption of oral feeding was 3.4 ± 0.6 days (Extremes: 1 day and 7 days) (Table 4).

**Table 4:** Data related to the duration of the operation, the skill of the surgeon, and the time taken to resume oral feeding.

Duration of the intervention	Effective (n=105)	Percentage (%)
≤ 2h	20	19
>2h	85	81
<b>Surgeon skill</b>		
	Effective (n=105)	Percentage (%)
Junior assistant	10	9.52
Senior assistant	19	18.09
Spécialist	61	58.09
Professor	15	14.28
<b>Oral feeding resumption times</b>		
	Effective (n=105)	Percentage (%)
≤ 1 jour	9	8.57
[1- 3]	22	21
[4- 6]	53	50.47
[7- 9]	21	20

Post-operative complications occurred within five days of surgery in 59.04% of cases. The most common complications were more surgical in 80% of cases (n = 84/105); made from postoperative peritonitis (33.33%), digestive fistulas (19.5%), infection of the surgical site (16.7%), postoperative intestinal obstruction (13.1%) and evisceration in 6% of cases. Medical complications represented 20% of cases (n = 21/105), and after medical treatment, had progressed well in 90.5% of cases (n = 19). The majority of surgical complications (n = 44/84) or 52.4% had benefited from relaparotomy, and the outcome was good in 69.5% of cases (n = 73/105), with a mortality rate of 30.4% of cases (n = 32/105). The mean duration of hospitalization was 27.4 ± 0.5 (Extreme: 11 days and 63 days). (Table 5)

**Table 5:** Data relating to the types of complications, treatment and mode of evolution

Types of complications	Effective (n=21/105)	Treatment	Healed	Death
<b>Medical</b>				
- Urinary tract infection	4	Ciprofloxacin	2	0
- Pneumopathy	6	Ceftriaxone	3	0
- Sepsis	5	Cefotaxime +Gentamycin Corticosteriod therapy	3	2
- Renal failure	1	Dialysis	1	0
- State of shock	2	Resuscitation measures	1	0
- Metabolic acidosis	1	Correction of acidosis in intensive care	1	0
- Clinical gastritis	2	Omeprazole	1	0
Total	21(20%)		19	2
<b>Surgical</b>				
- Evisceration	5	Secondary suture	5	0
- Digestive fistula	16	Medical	6	10
- Postoperative intestinal obstruction	11	Relaparotomy	7	4
- Postoperative peritonitis	28	Relaparotomy	15	13
- Surgical site infection	14	Dressing, Antibiotic+ secondary suture	14	0
- Subphrenic abscess	5	Relaparotomy	2	3
- Parietal hemorrhage	5	Hemostatic suture	5	0
Total	84 (80%)		54/84	30/84
Global total	105(100%)		73(69.5%)	32(30.5%)

## Discussion

We carried out a cross-sectional descriptive study to collect retrospective data on the records of patients operated on for abdominal surgery in our department with the aim of determining the frequency of early post-operative complications, the operative indications causing complications, the types of post-operative complications, and their prognosis at the University Clinics of Lubumbashi. The frequency of early post-operative complications at the university clinics of Lubumbashi during the period of our study was 32.2% of cases. For Assouto *et al.* [11], the frequency of surgical digestive disorders operated on was 32% of admissions to the department and 25.8% of operated (n = 158) had a complicated course.

In our study the sex ratio M / F was 2.5 and the mean age was  $31.5 \pm 0.6$  (Extreme: 3 days and 65 years), with a predominance in the age group of 20 to 40 years (62%). Chichom *et al.* [8], in a study of abdominal surgery re-interventions in disadvantaged settings reported a sex ratio of: 0.83: 1, and a mean age of  $44.1 \pm 6.4$  years (16 to 70 years old). The mean age of the patients in our study ( $31.5 \pm 0.6$  years) is similar to those of the Cameroonian series [4, 11], which reported 31.5 years and 30 years respectively, which remains consistent with the set of data from African literature [12], but very low compared to data from developed countries, France and the United States, where it is located around 57 years [13]. The majority of our patients (85.71%) had no specific history and urgency was the mode of admission in 80% of cases. In the series by Tonye *et al.* [4], surgical emergencies accounted for 71% (n = 188) of operations and 91% of complicated cases were operated urgently. Assouto *et al.* [11], found in their study that postoperative digestive pathologies were responsible for 25.8% of morbidity, of which 89.2% for emergencies and 10.8% for planned surgery. These rates appear difficult to compare with the results obtained in the literature given the heterogeneity of the different studies [12]. These were made by pathology or group of pathologies or even involving all the activities of the operating room; some studies only take into account patients operated on urgently, others patients operated "cold". Thus, Zarski *et al.* [15], citing Sirinek *et al.* then Doberneck *et al.*, find that the morbidity is between 28% and 47%; Gillion only found 28% of patients operated on urgently [16]. However, in our work context, abdominal surgical emergencies pose a serious problem of management because of

the delay in consultation by patients who very often start their care in inappropriate structures, and when they arrive where they can be well cared, they no longer have sufficient financial means to face the demands imposed by their pathology.

For our series, the mean time to admission was  $17.2 \pm 0.5$  (Extreme: 5 days and 29 days). Our study showed that 71.42% of our patients were classified ASA III. The delay in admission is justified by the inadequate path taken by our patients, some preferring to resort to traditional treatment first, which means that at the time of admission the majority of patients find themselves in a very poor general condition. Compared to the functional and physical signs leading to the diagnosis of post-operative complications, asthenia (62.9%) and abdominal pain (80%) were the most revealing functional signs, while wound suppuration (30.5%), abdominal distension (26.6%) and flow of stercoral fluid through the wall (23.8%) were the most dominant physical signs. However, in 43% of cases (n = 41) no paraclinical examination was performed due to lack of financial resources and health insurance. This creates difficulties for clinicians to diagnose correctly and initiate an adequate treatment regimen in time.

In our series, 80% of the cases (n = 84) of post-operative complications were grade III; with 18.1% grade IIIa and 62% grade IIIb according to the Clavien-Dindo classification. In the series of Ahmedou M. [14], the rate of patients having undergone re-operation under general anesthesia (Grade IIIb) was 0.31%, much lower not only than ours, but also the rates reported by Indian studies: 6.3% and Swiss: 4.8%, cited by Ahmedou *et al.* [14]. The high proportion of surgical site infections in our study and the patient's general condition (ASA) on admission could be explained.

The rate of patients requiring admission to intensive care (Grade IV) in our series was 38.1% (n = 40), higher than those reported by the studies carried out in India by Mentula *et al.* [9], in Mauritania by Ahmedou *et al.* [14]; this could be explained by the number of major surgery, the age of the patients and the difference in sample size between these different series.

Our study found an average time to surgical management of  $36.5 \pm 1.7$  hours (Extreme: 12 hours and 192 hours). The initial operating indications being more dominated by acute peritonitis (57.14%), followed by mechanical intestinal obstruction in 18.05% of cases. In the study by Assouto *et al.* [11], the most

frequently encountered pathologies were peritonitis and acute intestinal obstruction. This shows that in our environment, abdominal surgery is dominated by emergencies. In the study by Tonye *et al.* [4], surgical emergencies accounted for 71% (188 cases) of operations and 91% of complicated cases were operated on urgently. Abdominal surgical emergencies that should benefit from an emergency procedure in their management are subject in our settings to long administrative procedures on poor patients with, as a corollary, an extension of the waiting period before the operation. The duration of surgery in our series was greater than 2 hours in 81% of cases (n = 85/105). In 58.09% of cases (n = 61/105), the initial intervention was performed by a specialist and the mean time to resumption of oral feeding was  $3.4 \pm 0.6$  days (Extremes: 1 day and 7 days). These parameters seemed to us difficult to compare with other series because of the heterogeneity of the patients, their conditions on admission, the surgical teams and the habits of each school. However, the delay in resuming oral feeding in our series seems long to us.

Postoperative complications are multiple and have several origins. They can relate to the pathology in question, to the surgical intervention but also to the perioperative nutritional state of the patient. The influence of the nutritional status of patients on postoperative morbidity and mortality is proven; undernourished patients have a significantly higher postoperative mortality [17, 18].

A study conducted by Arnaud *et al.* [19] on early Refeeding and Digestive Surgery concluded that currently available data show that early postoperative nutrition such as oral nutrition after elective colorectal surgery or enteral nutrition after upper bowel surgery was not associated with an increase mortality or morbidity rates. Thus, early postoperative nutrition should be offered to patients after elective digestive surgery. Still according to these authors, in supra-meso-colic surgery, a randomized study shows a benefit of early postoperative enteral nutrition in the prevention of postoperative complications. Fifteen studies further compared enteral nutrition (nasogastric tube or jejunostomy) with parenteral nutrition. Enteral nutrition, well tolerated in 80% of patients, did not increase postoperative mortality or morbidity compared to parenteral nutrition. There was no difference between the two attitudes in terms of the average length of hospitalization. In contrast, the cost of enteral nutrition was lower than that of parenteral nutrition.

In our series, the majority of post-operative complications occurred within five days of the surgery and the most common complications were more surgical in 80% of cases (n = 84/105); made of postoperative peritonitis (33.33%), digestive fistulas (19.5%), infection of the surgical site (16.7%), postoperative intestinal obstruction (13.1%) and evisceration in 6% of cases.

For Ahmedou M. [14], surgical site infections 115 (62.8%) are by far the most frequent in post-operative complications. In the study by Tonye *et al.* [4], 74.7% of complications occurred before the 4th postoperative day and were infrequent beyond the 6th postoperative day, and surgical post-operative complications were dominated by postoperative peritonitis, SSI, intestinal obstruction and evisceration. In France, Heloury *et al.* [20] found isolated surgical complications to be number one. For Chichom *et al.* [8] the three main complications that indicated a reoperation were postoperative peritonitis (50.8%), intestinal obstruction (23.9%) or digestive fistula (10.9%). SSIs pose a serious threat to the postoperative prognosis in African surgical settings, as demonstrated by several African series [21, 22, 23].

These complications seem to be favored by multiple factors related to both the patients and the hospital structure. Postoperative peritonitis must absolutely be evoked and diagnosed quickly because their prognosis is much more severe than that of secondary non-postoperative peritonitis, with a mortality which is between 30 and 50% depending on the series [24, 25, 26]. Unfortunately, postoperative peritonitis are often recognized late, since they are conventionally diagnosed between the 5th and the 7th postoperative day, or even after the 2nd week [27] when it is in fact clearly demonstrated that the speed of the diagnosis and an appropriate treatment from the outset are two major prognostic factors [28, 29].

Carlet and his team [29] reported a mortality of 6% when correct surgical treatment and appropriate antibiotic therapy were initiated from the start, whereas it could reach 71% if antibiotic therapy was not, despite correct surgical treatment, or even 90% in the reverse case.

Digestive fistulas in our study were ranked third in post-operative complications, which is corroborated by the study of Mbuya *et al.* [30] which states that they have been frequently observed following urgent septic procedures dominated by acute generalized peritonitis with typhoid perforation. And these authors stigmatize intestinal resection-anastomosis or any digestive suture in an infected abdominal cavity as a dangerous procedure that leads to fistulas with high mortality in their series (53.09%), this requires the codification of the management of fistulas in our environment. Medical complications accounted for 4.76% of cases, and after medical treatment, had progressed well in 60% of cases. The study of Tonye *et al.* report that 47.2% of cases (n = 77) were exclusively medical and believe that the predominance of medical complications in their series is not a coincidence effect as everywhere in sub-Saharan Africa and could be explained by the morbid state of patients on admission, the lack of diagnostic and therapeutic means, the frequent absence of adequate pre- and post-operative care and the often septic environment of the hospital rooms. We agree with these authors although for our series medical complications did not have a large proportion. The majority of surgical complications (n = 44/84), i.e. 52.4%, had undergone relaparotomy, secondary suture in 20% of cases (n = 20/105), and the outcome was good in 69.5% of cases (n = 73/105), with an overall mortality rate of 30.4% of cases (n = 32/105). The mean duration of hospitalization was  $27.4 \pm 0.5$  (Extreme: 11 days and 63 days).

Saleh *et al.* [1] in a study on early relaparotomies for postoperative peritonitis had shown that these were common in our environment (at the HAUT KATANGA university hospitals), and were marked by a heavy mortality which is often aggravated by the delay in placing the diagnostic.

In our study the mortality rate was 30.4% of cases (n = 32/105). The mean length of hospital stay was  $27.4 \pm 0.5$ . For Chichom *et al.* [8], the mortality was 18.1%. It increased significantly with the diagnosis of peritonitis at the first laparotomy and a reoperation performed for an infectious cause. Ahmedou M. and Coll. [14], found that the deaths in their series were linked to cancer in 70% of cases and in 30% of cases to multi-organ failure, which is comparable to the rate reported by the study by Mentula *et al.* in India [9]. Our mortality rate remains high according to these authors, and we believe that this would be linked to multiple factors, the main ones of which would be: the patient's condition on admission (ASA), the delay in treatment, of the intervention > 2 hours, and insufficient perioperative resuscitation.

## Conclusion

Early post-operative complications is common in university clinic of Lubumbashi and is dominated by post-operative infection and post-operative peritonitis, digestive fistulas and evisceration; increasing morbidity and mortality. The diagnosis is more clinical and the number of paraclinical examinations to be requested should be reduced to speed up a decision to be taken and fight against this morbidity and finally to promote the rapid rehabilitation of abdominal surgery. The prognosis of these POCs in our service remains clouded by high mortality. Measures must be taken to properly identify the determining factors of these post-operative complications by a prospective analytical study, in order to set up a simple algorithm that can codify the management of abdominal pathologies admitted in our service.

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