



## Research Article

JMR 2019; 5(1): 40-45

January- February

ISSN: 2395-7565

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www.medicinarticle.com

Received: 11-01-2019

Published: 04-03-2019

## Abdominal re-interventions in Butembo City, Eastern part of the Democratic Republic of the Congo (DRC)

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### Abstract

**Introduction:** The abdominal re-intervention is an abdominal operation performed in the first 60 days of the initial abdominal surgery. It is badly consider because of its heavy morbidity and mortality and there is no clear indication of abdominal re-intervention. This study aims to determine the epidemiological, clinical and therapeutic characteristics of inpatient undergoing abdominal re-interventions in Butembo town. **Methodology:** This was a cross-sectional study that was carried out in Butembo City especially at Cliniques Universitaires du Graben, the Katwa General Reference Hospital (HGR), the Kitatumba HGR and the Matanda Hospital from June 1<sup>st</sup> to December 31<sup>st</sup>, 2016 and involved 418 inpatients in the abdominal surgery department, of whom 52 undergoing re-intervention. **Results:** Overall 12.44% of patients underwent the abdominal re-intervention; women were affected in 67.3% against men in 32.7% of cases. The age group between 20 and 30 years old was the most affected. Gynecological and obstetric interventions represent 38.46% of initial intervention. Postoperative abdominal pain alone accounts for 48.1% of complaints. Postoperative peritonitis is the etiology of re-interventions in 57.7%; 8 patients (15.4%) died and 75% of deaths are due to septic shock. **Conclusion:** The abdominal re-interventions are more frequent in Butembo city. This remains a public health problem because of their heavy morbidity and mortality. Multi-visceral failure is the most common cause of death.

**Keywords:** Abdominal, Re-intervention, Butembo, DRC.

### INTRODUCTION

The term re-laparotomy refers to an abdominal operation performed within the first 60 days of the initial abdominal surgery; it can be early or late; urgent or selective <sup>[1]</sup>. The management of the quality and risks associated with surgical procedures is a major public health issue <sup>[1: 2]</sup>. The implications of unplanned surgical re-intervention are social, professional, and financial, see legal <sup>[2]</sup>. Unscheduled surgical re-interventions are adverse events resulting from true complications <sup>[3]</sup>.

The frequency of re-intervention is 1 to 4.4% in patients who have undergone abdominal surgery. A study conducted in hospitals of Turkey from 2002 to 2006, by Haluk and his collaborators reported 81 cases of abdominal re-interventions in 4410 of cases of abdominals surgery a rate of 1.8% <sup>[4]</sup>. In India, the frequency of abdominal re-intervention after gynecological and obstetrical surgery is 0.603% <sup>[1: 4]</sup>. According to a study carried out in Cameroon from 1998 to 2004 on abdominal surgery interventions in underprivileged communities, in total, 2714 patients undergoing surgery. Two hundred seventy seven of them or 3.6% were re-operated <sup>[5]</sup>. In the Democratic Republic of the Congo, especially in the South Kivu Province, Otshudiema and his collaborators found a frequency of 3.1% of abdominal re-intervention at Panzi Hospital <sup>[6]</sup>. In India, the mortality rate due to abdominal re-intervention is between 10.71% and 15.78% after gynecological and obstetric surgery <sup>[4]</sup>. Bohnen and his collaborators report a mortality of 35% in case of early intervention within 24 hours following the diagnosis against 65% in case of later

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intervention [3]. In Cameroon, the mortality was 18.1% after abdominal surgery in a disadvantaged area [7]. The most common cause of death is multi-visceral impairment [1-6; 8]. In India after gynecological and obstetrical surgery, the most incriminated causes of abdominal re-interventions are intra-peritoneal hemorrhages in 48.93% of cases, hematomas of right abdomen muscle sheath in 21.28% of cases; sepsis in 12.76% of cases and the others [4].

In Cameroon the 3 mains indications of the re interventions were a postoperative peritonitis in 50, 8% of cases, intestinal obstruction in 29, 9% of cases and a digestive fistula in 10, 9% of cases [7]. In the Democratic Republic of the Congo, Otshudiema and his collaborators at Panzi Hospital found that, the main indication of abdominal re-interventions was postoperative peritonitis [6]. The post-operative complications of abdominal surgery are marked by postoperative peritonitis; postoperative bleeding; the disembowelings or eviscerations; ileus resistant to medical treatment; mechanical causes and others that indicate a re-laparotomy [3; 9]. The release of the gastrointestinal anastomosis is probably the most serious complication of abdominal visceral surgery [3; 10]. Postoperative peritonitis complicates is between 1.5% and 3.5% of abdominal surgery. The usual criteria for diagnosis of peritonitis are less reliable because of the postoperative context [11; 12]. Postoperative acute evisceration remains at present a formidable complication of abdominal surgery in 14% [13]. Several elements are taken into consideration in order to know if it is necessary or not to re-intervene. The two elements that dominate in discussion are the existence or absence of one or more visceral failures and the localized or generalized nature of peritonitis [14; 15]. The decision further surgery should be considered and consensus with all the medical and surgical team [3]. The indications for reoperation should they be large, early and late. This approach may lead in some cases to white laparotomies which are therefore in no way to blame. Clinicians use the epidemiological, clinical, biological, microbiological and radiological criteria to support their re-intervention decision [3; 9]. The abdominal re-intervention has badly considered because of the difficulty of their indications, their management, their morbidity and heavy mortality, and the fact that it is considered a burden of initial intervention [15].

This study aims to determine the epidemiological, clinical and therapeutic characteristics of patients undergoing abdominal re-interventions in Butembo town and to present the criteria of the diagnosis and those which should lead to abdominal re-intervention.

## MATERIAL AND METHODS

This was the cross-sectional study that was carried out in Butembo City, which is in North Kivu Province; the Eastern part of DRC, especially at Cliniques Universitaires du Graben, the Katwa General Reference Hospital (HGR), the Kitumba HGR and the Matanda Hospital from June 1<sup>st</sup> to December 31<sup>st</sup>, 2016 and involved 418 inpatients in the abdominal surgery department, of whom 52 undergoing re-intervention.

Were included in our study all patients who underwent abdominal re-intervention within 60 days of the initial surviving or deceased abdominal procedure. Were excluded in our study, any patient who was re-intervened within 60 days of the initial abdominal procedure, any patient who had re-intervened for a non-abdominal pathology and any patient whose laparotomy did not require re-intervention abdominal intervention.

The information concerning each patient was collected on individual survey sheets previously established and he registers of the operating protocols were consulted.

The following parameters have been studied: age, gender, address, reason of consultation, type of initial intervention, duration of initial

intervention and reopening of the abdomen, clinical examination, investigations, preoperative diagnosis, preoperative treatment, type of anaesthesia, surgical approach, intraoperative diagnosis, surgical procedure, postoperative issue, duration of hospitalization, discharge modality.

Any patient presenting with clinical signs of acute surgical abdomen, evisceration, fetal fistula, disembowelment, anuria, signs of shock, after abdominal surgery within the first 60 days was considered to be subject to re-intervention until proven opposite.

We considered three outcomes for the patient in our study:

- The cured patients are those who left the hospital without any complaint with a wound healing or even healed,
- The improved patients are those whose exit has been signed, who nevertheless had to come back for the dressing in ambulatory or for the restoration of the digestive tract,
- Deceased patients are those who came out dead and whose attending physician confirmed the death.

Data entry and analysis was performed using the EPI INFO software version 3.5.4. Data were presented as tables.

The standards of ethics have been respected in carrying out this work: the patient's agreement was obtained after informed consent. The latter was verbal. And for those who were unable to give a point of view, a close relative had to consent. All the patients eligible for our study were interested without any discrimination. The chances of participating in the study were identical in accordance with the principle of justice. In addition, the respect of anonymity in the collection of patient information and the overall presentation of our results has made our study unscathed from any ethical problem.

## RESULTS

During our study period, 418 patients underwent abdominal surgery, of which 52 were re-interventions, i.e. 12.44%.

### Re-interventions and socio-demographic characteristics

The table below represents the distribution of re-interventions according to socio-demographic characteristics of the inpatients.

**Table 1:** Distribution of re-interventions by socio-demographic characteristics

Socio-demographic characteristics	n = 52	Percentage
<b>Age range in years</b>		
0 - 10	4	7.7
11 - 20	10	19.2
21 - 30	14	26.9
31 - 40	13	25
41 - 50	8	15.5
51 - 60	1	1.9
61 - 70	2	3.8
<b>Gender</b>		
Female	35	67.3
Male	17	32.7
<b>Origin</b>		
Out of the City	31	59.62
City	15	28.85
Out of the North Kivu Province	6	11.53

## Re-interventions and clinic characteristics of inpatients

The table below represents the distribution of re-interventions according to clinical characteristics of the inpatients.

**Table 2:** Distribution of re-interventions according to clinical parameters of inpatients

Clinical parameters	n = 52	Percentage
<b>Reasons of consultation</b>		
Abdominal pain	25	48.1
Other reasons (vomiting, postoperative anuria, stained surgical wounds, evisceration ; ...)	15	28.8
Pain, material stop, other signs	10	19.2
Bowel blockage	2	3.8
<b>Type of initial intervention</b>		
Gynecological and obstetric intervention	20	38.5
Bowel resection	11	21.2
Peritonitis	7	13.5
Appendectomy	7	13.5
Intestinal obstruction on adhesion	6	11.5
Plasty of the cecum	1	1.9
<b>General state</b>		
Thirsty	43	82.7
Preserve	9	17.3
<b>Temperature in ° c</b>		
36-37	32	61.5
37.5-42	19	36.5
< 36	1	2
<b>Arterial Pressure</b>		
Normal (120/80)	43	82.6
Hypotension (???)	8	15.4
Hypertension (> 14 / r 90)	1	2
<b>Heart Rate</b>		
Tachycardia (> 100)	26	50
Normal (50-100)	23	44.2
Bradycardia (≤50)	3	5.8
<b>Respiratory Rate</b>		
Polypnea	21	40.4
Normal	31	59.6
<b>Abdominal clinical signs</b>		
Defense, contracture	30	57.7
Contracture	8	15.4
Tympanism, umbilical cry plus signs of peritoneal irritation	6	11.5
Matite plus peritoneal irritation	5	9.6
Contracture plus peritoneal irritation	3	5.8

## Re-interventions and clinic investigations

The table below shows the distribution of re-interventions and clinical investigations.

**Table 3:** Re-interventions and clinic investigations

Re-interventions and clinic investigations	n=52	%
<b>Count of white blood cells in elements per mm<sup>3</sup></b>		
White blood cells greater than 10.000	32	61.5
White blood cells between 4500-10000	20	38.5
<b>Determination of hemoglobin (Hb) in g%</b>		
Patients with Hb between 9 to 13 g%	34	65.4
Patients with Hb between 4 to 8 g%	18	34.6
<b>Abdomen without preparation</b>		
Not done	49	94.2
Done	3	5.8
<b>Abdominal ultrasound</b>		
Not done	45	86.5
Done	7	13.5

## Re-interventions and preoperative diagnosis

The table below determines the frequency of re-interventions according to the preoperative diagnosis

**Table 4:** Re-interventions and preoperative diagnosis

Re-interventions and preoperative diagnosis	n = 52	Percentage
<b>Preoperative diagnosis</b>		
Postoperative peritonitis	15	28.8
Fecal fistula	13	25
Postoperative anuria	5	9.6
Adhesion syndrome	5	9.6
Postoperative evisceration	5	9.6
Postoperative hemoperitoneum	4	7.7
Postoperative bowel obstruction	4	7.7
Postoperative ileus	1	2
<b>Preparation time in hours</b>		
> 6h	30	57.7
5h	7	13.5
2 hours	5	9.6
4h	4	7.7
1 hour	3	5.8
3h	3	5.8

## Etiological, surgical management and issue of re-intervention

The table below determines the frequency of the etiologies of the interventions, their surgical management and the exit modality of the re-intervened patients.

**Table 5:** Etiological, surgical management and issue of re-intervention

Etiological, surgical management and issue of re-intervention	n = 52	Percentage
<b>First operative ways</b>		
Median sus and under umbilical	43	82.7
Umbilical median	9	17.3
<b>Intraoperative diagnosis</b>		
Peritonitis	30	57.7
Other diagnoses (ligation of the ureters, retrovesical mass, hemoperitoneum, uterine atony, ...)	17	32.7
Bowel obstruction	15	9.6
<b>Surgical gesture</b>		
Washing more drainage and other	22	42.3
Other gestures (hysterectomy, ureters deligation ...), washing more drainage, intestinal resection plus stoma.	18	34.6
Simple washing and other	8	15.4
Simple wash	4	7.7
<b>Resumption of laparotomy</b>		
Patient not intervened	40	77
Patient intervened	12	23
<b>Hospital stay to date</b>		
15-20	19	36.5
7-14	16	30.7
21-30	12	23.1
> 30	3	5.7
2	1	2
3-6	1	2
<b>Exit modalities</b>		
Healed	36	69.2
Improved	8	15.4
Died	8	15.4
<b>Causes of death</b>		
Septic shock (multi-visceral failure)	6	75
Post operative sepsis	2	25

## DISCUSSION

The frequency of abdominal re-interventions in our study was 12.44% or 52 out of 418 patients. This result does not corroborate with the one conducted in Cameroon by Beauchemin G. who reported a frequency of 3.6% of abdominal re-interventions. Halluk and his collaborators found a frequency of 1.8% in their study conducted in 4 years i.e. between 2002 and 2006 [1]. This difference is due to the lack of experience of surgeons in our environment and under-equipment, underdevelopment and poverty of our population. Otshudiema OG. and colleagues found a frequency of 3.1% in their study conduct from 2012 to 2015 in the Democratic Republic of the Congo at the PANZI Hospital in Bukavu [6].

The abdominal re-interventions predominate in the female sex with 67.3% against 32.7% of men. The most affected age group was between 21 and 30 years old. 59.7% consisted of out-of-town patients, 28.8% were from the city and 11.5% came from outside the North Kivu Province. Otshudiema OG. and colleagues found a female predominance of 55.2% compared to 44.8%, the 21-30 age group was the most predominant in 29.9% [6].

Postoperative abdominal pain alone accounts for 48.1%. The other signs occupy 28%; the bowel obstruction 3.8%. Any unusual abdominal manifestation must be considered with care [4]. Functional digestive signs are difficult to interpret because of postoperative ileus and habitual abdominal pain in recent surgery. The persistence of ileus may result in vomiting or early diarrhea. The occurrence of evisceration is another circumstance suggestive of the diagnosis, especially in case of delay in resumption of transit or persistent fever. It reflects a parietal incompetence, an intra abdominal hyper-pressure and defective cicatrization [16].

Gynecological and obstetric interventions account for 38.46% followed by intestinal resections with 21.15%, peritonitis and appendectomies each represent 13.46%. Shyamal D. et al. reported a frequency of 0.603% of abdominal re-interventions after gynecological and obstetric intervention [4]. The increase in complication rates of gynecological and obstetric interventions may be due to the illegal provision of non-medical personnel, the non-mastery of the caesarean section technique, or unseen accidents during cesarean section.

The disunion of intestinal anastomosis is the most common complication after intestinal resection [11].

Forty three out of 52 patients (82.7%) presented an impaired general condition, 19 patients out of 52 (36.5%) had a temperature between 37.5 and 42 ° C, 43 patients (82.6%) had a normal blood pressure, 26 patients had tachycardia and 30 patients presented a abdominal defense; an abdominal contracture.

The occurrence of fever is the most frequent, most faithful and early sign in the third and tenth postoperative day [16]. It translates three times out of three intra peritoneal sepsis.

The intensity of the fever (higher than 38.5°C) could be an orientation element [17]. Abdominal contracture, fluid effusion, or slender, distended loops contribute to the intra-abdominal [3]. M. Ben in his study on postoperative peritonitis reports 24% of patients with fever, 54% of patients who presented with abdominal pain and 35% of patients who presented with abnormal fluid from the drain and 26% patients who have come forward for bowel and gas stoppage. It showed in 39% of patients, the signs of multi visceral failure and 4 patients or 8.7% were anuria [11].

Thirty two patients or 61.5% had leukocytosis, 18 patients were anemic, 3 patients performed the abdomen without preparation and 7 patients received ultrasound. The usual biological tests are generally disappointing. Hyper-leukocytosis (greater than 12000 elements per mm<sup>3</sup>) is observed in 60% of cases of postoperative peritonitis [16].

This common sign (hyper-leucocytosis) in the postoperative period should attract attention when it persists from the third postoperative day or when it has high concentrations (greater than 15-20000 elements per mm<sup>3</sup>) [17].

Intra-peritoneal hemorrhages are the causes of abdominal re-intervention after gynecological and / or obstetric intervention in 48.9% and source of postoperative anemia [4].

The shots of the abdomen without preparation are difficult interpretation postoperatively. It may show indirect signs of intra-peritoneal effusion (persistence or secondary reappearance of pneumo-peritoneum, distension of the digestive tract, etc.) [18]. Ultrasonography has limited efficacy by the presence of digestive huts, but it remains effective in the search for pelvic and subphrenic collections [18].

The diagnosis of presumption is dominated by postoperative peritonitis in 28.8% followed by fecal fistula in 25%; anuria, evisceration, adherent

syndrome each take 9.6% and hemo-peritoneum and bowel obstruction each 7.7%, postoperative ileus 2%. Peritonitis complicates 2 to 3% of laparotomy [13]. Despite their theoretically low incidence, these conditions pose a double problem of their recognition and treatment [11]. This diagnosis should be discussed in any patient who does not have a regular postoperative course following abdominal surgery [3].

Digestive fistulas are the most common complications after intestinal resection and intestinal anastomosis. They can also occur after surgery of the intestinal obstruction, peritonitis, colorectal, gastro duodenal, and gynecological surgery [14]. The main indications of an abdominal re-intervention are represented by the postoperative peritonitis in 50,8% cases, intestinal obstruction in 29.9% of cases, digestive fistula in 10.9% of cases and its dehiscence of the abdominal wall in 13.4% of cases [15].

Fifty seven point seven percent of our patients were prepared for more than six hours; this is due to a low economic level of our patients, lack of health insurance either in order to raise the general condition of the patient.

In Nigeria, Adamu and his associates in 2010 had found financial difficulties in 50% of patients who affect their care [19].

The median supra and under umbilical pathway was addressed in 82.7% in our patients. It is a way to expose the abdominal cavity; it allows easy work of the surgeon and a complete stand of causal lesions [11].

Peritonitis accounted for 57.7%, followed by another diagnosis 32% and intestinal obstruction 9.6%. Beauchemin G. et al. reported a frequency of 50.8% of postoperative peritonitis, and postoperative occlusions accounted for 29.9% in underprivileged environments [2].

The drainage, stoma and intestinal resection accounted for 34.6%, the wash plus drainage accounted for 42.3%, the single wash plus other gesture 15.4% and the simple wash 7.7%. Surgical gestures depend on the etiology of the peri-operative diagnosis. Close multiple intestinal perforations are treated by excision of the pathological area and the realization of a double stoma [20]. If the lesions are distant, a double economic excision and staged stoma make it possible to isolate one or two segments of intermediate hial that can be later used for the reinstallation of the chyme. A dropping of small bowel anastomosis is treated by a double ileostomy [11].

Twenty three percent of patients were re-operated more than once. The unfavorable evolution in the operating room as in intensive care (evisceration, stercoral fistula, hemodynamic disturbance,) motivated the surgical recovery.

Thirty six point five percent of patients were hospitalized during 15 to 20 days, 30.7% during 7 to 14 days; 23.1% during 20 to 30 days and more than 30 days for 5.7% of hospitalization. The duration of hospitalization depends on clinical course and prognosis. Sixty nine point two percent of patients were declared cured, 15,4% improved and 15,4% died. The output modality is a factor in the clinical presentation of the preparation time of the intra-operative diagnosis and the clinical course [3]. In those 8 patients who died, 6 died in septic shock and 2 in postoperative sepsis. Otshudiema O. and his colleagues found 32.7% of deaths; septic shock was the leading cause of death with 58.8; monitoring multi-visceral failure with a frequency of 41.2%; 58.4% of patients were hospitalized between 41 to 60 days [6].

## CONCLUSION

The abdominal re-interventions remain a major public health problem due to its morbidity, mortality, socio economic impact, legal, professional and emotional patient knew. The management of the re-

interventions was multidisciplinary, the preoperative resuscitation being the most important stage.

## Authors' Contributions

This work was carried out in collaboration between all authors.

## Competing Interests

Authors have declared that no competing interests exist.

## Funding

The author Joel KAMBALE KETHA is funded by the **Safe Anaesthesia Worldwide** scholarship ([www.safe4all.org.uk](http://www.safe4all.org.uk)) and the **World Federation of Societies of Anaesthesiologists (WFSA-United Kingdom)**.

## Acknowledgment

We thank **Dr Bienvenue MUHINDO LUSASA** for enabling this study to be completed by working together for helping during data collection.

We also thank the Bringmann Scholarship Program for Congolese Universities (BEBUC, [www.foerdderverein-unikinshasa.de](http://www.foerdderverein-unikinshasa.de)) for the support in the undergraduate of General Medicine by the author **Mathieu KATEMBO MANZEKELE** at the Faculty of medicine, Université Catholique du Graben, Butembo, DRC.

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