



## Research Article

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# Epidemiological profile of post-laparotomy external digestive fistulas in two university hospital units in Lubumbashi

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## Abstract

**Introduction:** Digestive fistulas are one of the most embarrassing and demanding emergencies of abdominal pathology resulting in a three-pronged resuscitation emergency, general, locoregional, and nutritional. The purpose of our study on post-laparotomy external digestive fistulas was to determine the frequency, the etiologies and to assess the management as well as the evolution of digestive fistulas.

**Patients and Methods:** This was a cross-sectional descriptive study carried out in two university hospital units, namely, the University Clinics of Lubumbashi and the Janson SENDWE Provincial Referral Hospital over a period from January 2013 to May 2019. It had involved 81 patients with fistula. Statistical analyzes were performed using Excel 2007 and Epi info 7.2.2.6 software.

**Results:** We collected 81 patients with post-laparotomy external digestive fistula whose frequency was 7.07%. The majority of patients were young with a median age of 31 years. The sex ratio was 1.13 in favor of female patients. More than 2/3 of the patients were admitted and operated in emergency. The diagnosis was mainly based on clinical examination (based on the exteriorization of digestive secretions). Half of the cases of fistulas were early, appearing in the first 5 days post laparotomy. The small bowel was the most frequent site (60.49%), the output was low in 58 patients (71.61%). Generalized acute peritonitis provided digestive fistulas with 56.79% of cases, including 63.04% of ileal typhic perforation. The causes were partial dehiscence of the anastomosis and / or the release of the digestive suture performed in a septic cavity. Fifty patients (61.73%) had received exclusive medical treatment. It was made of an antibiotic (100.00%), rehydration (100.00%), an antisecretory / anticholinergic (91.36%) and an enteral nutritional intake (72.84%). The Operative treatment consisted essentially of a stomy (enteral or colic) with 54.84%. The general and local complications observed were dominated by anemia, malnutrition, sepsis, evisceration and skin corrosion lesions. The evolution was unfavorable with a crude mortality rate of 53.09%. The median hospital stay was 21 days.

**Conclusion:** External digestive fistulas remain a relatively frequent pathology which complicates any laparotomy. They are marred by high mortality in our environment. Prophylaxis must remain the concern of any practitioner of surgery, especially since the management remains complex.

**Keywords:** Digestive fistula, Laparotomy, Frequency.

## INTRODUCTION

The digestive fistula is an abnormal communication between the digestive tract and another organ and / or the skin. It is said to be external when there is an abnormal communication between the digestive tract and the skin [1, 2]. Exceptionally spontaneous or traumatic, it occurs in the majority of cases in the post-operative period, from a surgical act (75 to 85%) having involved a suture or an excision with restoration of continuity of the digestive tract by one or more anastomoses. However, a fistula can also occur after proximity, vascular, urological or gynecological surgery [3, 6]. It represents the most distressing surgical complication [7]. The etiologies and mechanisms are multiple and relate to operational difficulties, the quality of intestinal tissue, local conditions and surgical technique. The digestive sutures made in a septic environment, anastomoses under tension, draining enterostomies are all dangerous practices to be avoided [3].

Fistulas cause physical and psychological repercussions for the patient and significant economic consequences (hospitalization for several months) and are burdened with significant mortality (10 to 30%) [8, 9]. Studies around the world have shown that post-laparotomy digestive fistulas complicate 0.5 to 4% of abdominal procedures [8].

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In the USA, Draus *et al.* [10] in their study on treatment, etiologies and daily fistula losses, found an overall frequency of 1.2%. In Brazil, Antonio *et al.* [11], reported the variation in the mortality rate between 6.25% to 48%.

In Europe in France, Dray *et al.* [12], showed that the frequency of anastomotic fistulas was 9%. In the United Kingdom, Mawdsley *et al.* [13], in their study on 277 cases, found 59% of ileal localization fistulas and that the death rate represented 15% mainly related to septic complications (77%). In 2012, Rahbour *et al.* [14] in their meta-analysis on external digestive fistulas, had shown a variation in the mortality rate between 6 and 30%.

In Asia (Pakistan), Memon *et al.* [15], in their study of 40 cases of fistulas, mentioned septic interventions including, typhic perforation (45%) and digestive tuberculosis (30%) as the main causes of post laparotomy digestive fistulas. In India, Prakash *et al.* [16] in their study of 41 patients, found 95% of fistulas linked to the release of the anastomosis.

In Africa (Mali), Diallo [17] and Maïga [2], in their respective studies, found a frequency of 1.15% and 9.9% of post-laparotomy digestive fistulas. The latter author has shown that 45.46% of fistula cases followed laparotomies indicated for peritonitis. In Nigeria, Njeze and Uchebe [18] in their study, found appendectomy as the main cause of fistulas (33 out of 66 cases). In Ivory Coast, Soro *et al.* [19], in their series of 86 patients with digestive fistulas, found 29.06% of mortality.

In Democratic Republic of the Congo (Lubumbashi), Saleh *et al.* [20], had reported 8 cases (14.28%) of fistulas on 56 patients who underwent a relaparotomy for a postoperative digestive complication. We have not found in our environment studies published in connection with the detailed analysis of the external digestive fistulas post laparotomy which moreover, remain for the surgical team a frightening and dreaded possibility being able to be at the origin of serious complications putting at stake the vital prognosis. This is what motivated us to carry out this study with the objective of determining the frequency, the etiologies, evaluating the management and the evolution of patients with digestive fistulas in our environment.

## METHODOLOGY

It was a multi-center cross-sectional descriptive study with a collection of retro-prospective data. It was carried out in the surgical departments of two hospital formations in Lubumbashi, namely, the University Clinics of Lubumbashi and the Janson SENDWE Hospital.

The sampling was exhaustive for convenience, including all cases of postoperative digestive fistulas that occurred during our study period, from January 2013 to May 2019. The study population include 81 patients hospitalized in above-mentioned hospitals for external digestive fistula developed after laparotomy. We included in our study, not only all cases of postoperative digestive fistulas developed during laparotomy performed in our departments, but also all the cases referred from medical centers and other departments such as that of Gynecology-obstetrics for the management of fistula. All postoperative internal digestive fistulas (entero-enteral, entero-vesical), perianal fistulas, spontaneous digestive fistulas, those involving the non-abdomino-pelvic digestive tract (esophagus for example) and the annex glands of the digestive tract have been excluded from our study. The data collected from the operating report registers and patient files were mentioned on a pre-established questionnaire. The information thus collected was entered in Excel 2007, processed and analyzed with the Epi info software 7.1.1.14.

## RESULTS

In the two medical units in Lubumbashi concerned by our study, 81 patients had developed an external digestive fistula out of a total of 1145 laparotomies recorded during our study period, which represents

a frequency of 7.07%. The median age of the patients was 31 years (extremes : 8 days and 75 years). The patients were young, under the age of 50 in 82.72% of cases. The majority of cases were recruited from university clinics in Lubumbashi (56.79%).

The female sex was in the majority (53.09%), with a sex ratio of 1.13 and urgency was the main mode of recruitment with 64.20% of the cases.

**Table 1:** Sociodemographic data, place of recruitment and mode of patients admission

Variables	n (81)	Percentage( %)	StatisticalParameters
<b>Age (year)</b>			Median
≤7	6	7,41	31 years
]7-20]	11	13,58	
]20-33]	33	40,74	
]33-46]	15	18,52	
]46-59]	10	12,35	
]59-72]	5	6,17	
>72	1	1,23	
<b>Sex</b>			Sex-ratio :
Female	43	53,09	1,13
Male	38	46,91	
<b>Recruitment location</b>			
Lubumbashi university clinics	46	56,79	
Jason Sendwe Hospital	35	43,21	
<b>Mode of patients admission</b>			
Abdominal emergency	56	69,14	
Transferred for fistula management	19	23,46	
Normal consultation	6	7,40	

**Table 2:** Indication of the laparotomy that caused the fistula and etiology

Variables	n (81)	Percentage (%)
<b>Indication</b>		
Appendicitis	5	6,17
Dolichocolon	3	3,71
Gyneco-obstetricales indications	6	7,42
Bowel obstruction	19	23,46
Generalized acute peritonitis	46	56,79
Abdominal tumor	2	2,48
<b>Etiology</b>		
Anastomotic disunity	27	33,33
Loose of digestives stitches	27	33,33
Unknow iatrogenic lesion during surgery	23	28,40
Not specified	4	4,94

The main surgical indications that caused fistulas were generalized acute peritonitis in 56.79% of cases, including 63.04% cases of typhic perforation, and intestinal obstruction in 23.46% of cases.

In our study, the dehiscence of anastomosis and the release of the digestive suture were the most frequent cause respectively in 33.33% of cases followed by iatrogenic lesions in 28.40% of patients. Half of the fistula cases (50.61%) appeared early in the first 5 days post laparotomy. The small bowel was the most frequent site in 60.49% of the cases (50 patients) including 85.71% of ileal location. The external opening was either the middle wound in 51 patients (62.96%) or associated with the lateral opening (drainage wound) in 27.16% of patients. The output of the fistula was low in 58 patients, (71.61%). Thirty-nine (48.14%) patients presented a malnutrition and 48 patients complained of fever (59.26%). Fifty patients (61.73%) had received exclusive medical treatment. All patients received antibiotic and

infusion therapy. An antisecretory / anticholinergic was prescribed in 74 patients or 91.36% of cases. It was made of tincture of belladonna in 74.07% of cases. The nutritional intake was administered to 78 patients (72.84%); this nutrition was parenteral in 19 patients or 23.35%.

Locally, the dressing was performed with 0.9% saline solution (70.37%) and application of the zinc oxide cream in 77.78% of patients. The colostomy bag was used to collect digestive secretions in 9.88% of patients. The general and local complications observed were dominated by anemia (77.22%), malnutrition (49.37%), sepsis (17.72%), evisceration and parietal infection respectively in 23%, 54.76% and skin corrosion lesions (52.38%). Fistula closure was achieved in 45.68% of patients, while 53.09% had died and one lost to follow-up. The majority of patients had spent less than 28 days in hospital with 70.37%. The median stay was 21 days, the first quartile was 13 days, and the third quartile was 30 days. The extremes were 3 and 120 days.

**Table 3:** Time to onset, location and flow rate of the fistula

Variables	n (81)	Percentage (%)
<b>Time to onset (day)</b>		
≤5	41	50,61
]5-15 ]	34	41,98
>15	4	4,94
Not specified	2	2,47
<b>Origin Segment of fistula</b>		
Stomach	8	9,88
Small Intestine	49	60,49
Colon	24	29,63
<b>Debit</b>		
Law speed	58	71,61
Broadband	22	27,16
Not reported	1	1,23

**Table 4:** Management and evolution of patients

Variables	n (81)	Percentage (%)
<b>Type of treatment</b>		
Medical	50	61,73
Medico-surgical	31	38,27
<b>Medical treatment</b>		
Antibiotic	81	100,00
Anti-secretory/anti-cholinergic	74	91,36
<b>Nutritional intake</b>	78	96,30
Infusion (0.9% saline, Glucose serum 5% and/or Ringer Lactate)	81	100,00
Transfusion	61	75,31
Vitamine C	5	6,17
<b>Antisecretory/Anticholinergic Type</b>		
Belladonna Tincture	60	74,07
BelladonnaTincture et Antihistamine H2	3	3,70
Antihistamine H2	9	11,11
Proton pumpinhibitor	2	2,47
<b>Type of nutritional intake</b>		
Oral	59	72,84
Parenteral	19	23,46
<b>Evolution</b>		
Spontaneous closing or after resumption Of surgery	37	45,68
Death	43	53,09
Lost view	1	1,23

## DISCUSSION

The frequency of fistulas is variable according to the studies. In our series, it was 7.07%. It is close to that found by Maiga [2] in Mali which was 9.09%. The literature review shows that digestive fistulas complicate 0.8 to 2% of digestive procedures [12]. It is much higher

than that found in several series. In the USA, Draus *et al.* [10] found a frequency of 1.2% and in Africa, Soro *et al.* (Ivory Coast) and Zida *et al.* (Burkina Faso) found 0.7% and 0.8% respectively [19.21].

In our series, the frequency seems to be higher, because our study was multicentric. In addition, we also took into account the cases which were transferred for the management of the fistula, whereas the studies of the other authors were monocentric. The age group between 21 and 33 was in the majority. The median age of patients was 31 years, Q1 was 22 years and Q3 was 44 years (Extremes: 8 days and 75 years). This is similar to the study done by Antonio *et al.* [11] in Brazil, in which 63.3% were below 50 years of age but also in African studies, including those of Soro *et al.* [19] in Ivory cost where fistulas interested subjects under 55 years of age (87.2%). The average age was 36.8 years. Njeze and Uchebe [17] in Nigeria mentioned an average age of 31.7 years. Unlike European and American countries, where life expectancy is high, as shown by the meta-analysis of Fleur *et al.* [22], in the Netherlands on 70 articles, they had found a variation in the Average or Median age between 48 and 61 years. Quinn *et al.* [23] and Hollington *et al.* [24] in the United Kingdom, had respectively mentioned an average age of 48 (Extremes: 18–86 years) and 64 years (range: 20-96 years) ; Ortiz *et al.* [25] in the USA had found a median age of 60 years.

This predominance of the young population could be justified by the fact that it is the age group which undergoes the maximum of surgical interventions predisposing to fistulas [13]. In addition, the most represented pathologies were infectious dominated by typhoid fever which, according to the literature, causes many more complications in young people [26].

In our study, we found a predominance of female subjects. Some authors [18, 25] found the same trend but others the opposite [10, 23, 27]. We believe that this predominance, within the framework of our study, is linked to the number of fistula cases from the obstetrics and gynecology department that we have taken into account.

Urgent procedures provided digestive fistulas in 88.89% of the cases. This corroborates with the results of other authors including Traore and Maiga in Mali who had noted a high rate of fistulas after emergency procedures in 93.8% and 54.55% of the cases respectively [2, 3].

We believe that this may be linked to the non-preparation of the digestive tract before the intervention, but also to nutritional, hydro-electrolytic and biological disturbances in these emergency operated patients.

Compared to the method of admission, 76.54% of fistulas were developed after interventions carried out in institutions against 23.46% of cases transferred. This is similar to the series by Quinn [23] who found that 70.26% of fistulas cases had followed the interventions carried out in the institution against 29.72% of the cases referred from other centers. This calls on the staff of these institutions to improve patient care.

The diagnosis of the fistula was based on clinical examination (the abnormal flow of digestive fluid through the operating wound) in 95.06% of the patients. Methylene blue was used to diagnose four doubtful cases (4.94%). This result is similar to the Maiga series [2] which revealed 81.82% of the clinically diagnosed cases against 18.18% which required the use of methylene blue. Cisse *et al.* [27] in their study conducted in Senegal on 25 patients, mentioned the clinical diagnosis of fistula in 72% of the cases.

Ashkenazi *et al.* [29] shows the importance of the paraclinical for the diagnosis, especially the anatomical study of the digestive fistula, in particular, the use of the CT-scan with preparation.

The fistulas were early, appearing within the first 5 days in 50.61% of cases. The same observation was made by Zida *et al.* [21] in Burkina Faso. This result is different from the studies by Maiga [3] in Mali and Soro *et al.* [19] in Ivory Coast who had found that the fistulas appeared after the 5th postoperative day. In the context of our study, we believe that this precocity of the fistulas could be linked to the predominance of immediately septic interventions including typhic perforation which was the main indication for laparotomy. And in addition, during the healing process of the digestive tract, the anastomosis or digestive suture becomes more fragile at the end of the initial exudative phase, around the 4th postoperative day [30]. The small bowel was the most frequent site of the fistula in 60.49 % of the cases. This corroborates with the observations of several authors including those of, Hollington *et al.* [24] in Australia, Mawdsley *et al.* [13] in the United Kingdom, Draus *et al.* [10] in the USA and Zida *et al.* [21] in Burkina Faso who mentioned the small bowel as the main seat of the internal orifice respectively in 77.26% (including 59.81% at the level of the ileum), 75.45%, 63.21 % and 62.02% of cases. Just as Memon and Siddiqui [15] in Pakistan in their study of 40 cases of fistulas observed 85% of ileo-jejunal seat. The high number of typhic perforation cases in our study constitutes an argument which can explain the high frequency of this localization.

The external orifice was either the middle wound alone (62.96%) or associated with the drainage orifice (27.16%). Unlike Zida *et al.* [21] who had found in their series that the external orifice was mainly lateral in 18 out of 34 cases (52.94%). For these authors, this could be explained by the appendectomy found as the main cause of postoperative fistulas where as, in our study, the fistula was caused by dehiscence anastomotic and the release of the digestive suture after a median laparotomy. According to the literature, this type of synchronous fistula goes through a phase of diffuse postoperative peritonitis characterized by septic peritoneal flooding, usually causing external digestive leakage through the still fragile medial wound [30].

More than half of our patients had fever (59.26%). The other signs were represented by anorexia and abdominal pain respectively with 32.09%. This result is similar to the Maiga study [2] in which fever (alone or associated with other signs) was present in 63.63% of cases. We believe that fever represents the infectious syndrome that accompanies the digestive fistula, sometimes the forerunner of this pathology linked to suppurative intraperitoneal collections which are commonly associated with it between 30% and 60% of cases [31].

In our series, the losses were not quantified in all the patients but assessed at low- output in 58 patients (71.61%). This result is similar to the study by Hollington *et al.* [27] in Australia who had found 164 out of 277 cases of low-output fistulas (51.21%). Antonio *et al.* [20] in Brazil out of 188 cases observed 50% high-output fistulas and 50% low-output fistulas. Unlike the study by Cisse *et al.* [46] in Senegal who reported 19 out of 25 cases (76%) of high-output fistulas. Although the small bowel is the most common site, the ileal location which was observed in the majority of our patients would explain the low flow observed. Clinically, 49.38% of our patients had a good nutritional status while 48.14% were in malnutrition, unlike Maiga [2] in Mali who had mentioned 72.72% cases whose malnutrition. Nutritional status alone is not enough to explain the occurrence of fistulas.

Laparotomies indicated for generalized acute peritonitis provided digestive fistulas in 56.79% of cases, including 63.04% of ileal typhic perforation cases. These results are similar to those of Maiga [2] in Mali and Memon and Siddiqui [15] in Pakistan who found respectively 45.46% and 75% of fistula cases following the laparotomies indicated for generalized acute peritonitis of which 45% of typhic perforation for these latter authors. Unlike the majority of authors who have mentioned appendectomy as an intervention providing fistulas. This is the case of Aldo *et al.* [32] in Brazil, Zida *et al.* [21] in Burkina Faso and that of Njeze and Achebe [18] in Nigeria, the frequency of which varied between 24% and 50% of cases. We believe that the presence of

typhoid fever, which continues to be rampant as an endemic infection linked to the precarious health conditions in our environment and the high prevalence of ileal complications of typhoid fever in sub-Saharan Africa which would be linked to the presence, in this region, of a particularly virulent strain of *Salmonella typhi*, may explain the high frequency of peritonitis cases as well as postoperative fistulas [26, 33].

The fistulas were caused by the dehiscence of anastomosis and the release of digestive suture respectively in 33.33% of patients, followed by iatrogenic lesions in 28.39% of patients. This is similar to the result of Lloyd *et al.* [34] in the United Kingdom which in their meta-analysis on digestive fistulas, had mentioned the dehiscence of anastomoses as the main cause of fistulas whose frequency varied between 75 and 85%. The same cause was found by Maiga [2] in Mali with a frequency of 45.46%.

The majority of fistulas occurred after surgical interventions performed by less qualified doctors, that is to say, assistants and general practitioners (83.95%). We believe that the lack of skills in surgical techniques by inexperienced physicians and the fact that most cases of acute abdomen are treated urgently by these doctors, constitute an argument that can explain this high frequency.

In our study, 50 patients (61.73%) had received exclusive medical treatment. Prakash *et al.* [16] in India, Traore [3] in Mali and Aldo Cunha *et al.* [32] in Brazil, in their series, found that the majority of patients had received medical treatment in 58.5%, 87.4% and 92% of patients, respectively. In Nigeria, Sule [35] in 2017 advocated the non-operative approach by testing 4 out of 14 cases of fistulas with conservative treatment. This finding is contrary to the studies of Soro *et al.* [19]. and Diallo [17], in which more than half of the patients were treated surgically in 61.6% and 54.3% of the cases, respectively.

All patients received treatment with antibiotics and rehydration. Antisecretory / anticholinergic and nutrition were also administered. This result corroborates with that obtained by Maiga [2] and Zida *et al.* [21] in their study, which consisted of filling solutions (100% of patients) consisting of ringer lactate and 5% glucose serum, antibiotic therapy (100%), vitamin therapy and antisecretory.

In order to reduce the flow of the fistula, several molecules are used according to the authors [29, 36], namely the proton pump inhibitors, H2 antagonists, loperamide and somatostatin or its synthetic analogues. In our study, an anti secretory / anticholinergic was prescribed in 74 patients or 91.36% of cases, it was essentially made of tincture of belladonna, administered in 74.04% of cases.

Several methods are currently used worldwide to obtain closure of fistulas with varying results. This is the case of the use of fibrin glue by Masahiro *et al.*, Avalos-González *et al.* and Xiuwen *et al.* [28, 37, 38] ; negative pressure aspiration system (VAC) [39,36,40], reinstallation of chyme [30,41] and recently, the use of clips under endoscopies [42].

Nutritional intake plays an important role in the management of digestive fistulas, but opinions remain divided according to the authors and the schools as to the method of administration [34]. Some extolled for total parenteral nutrition (gold standard of the Anglo-Saxons) [43], which is the best option, and others for enteral nutrition (French school) with the advantages, absence of hepatic toxicity, no risk of infection and it stimulates immune system.

Ashkenazi *et al.* [29] demonstrate in their study that enteral nutrition is well tolerated when the flow is low, less than 200 ml.

In our study, only 19 patients or 24.35% were fed parenterally while 59 patients (72.84% of cases) had received an oral diet mainly prescribed by a nutritionist based on locally available food products. This is similar to the Malian studies in particular, those of Maiga [2] and Traore [3] who mentioned the administration of parenteral nutrition in 45.45% (11 patients) and 47.91% respectively (48 patients). Also in their

studies in India, Piyush *et al.* [4] and Prakash *et al.* [16] reported administration of parenteral nutrition in 14 of 80 patients (17.5%) and 10 of 41 patients, respectively. Unlike European studies which have reported the administration of parenteral nutrition in all patients [11,23,36].

Parenteral nutrition is expensive and not accessible to all strata of the population in our environment. This observation was also made in 2018 by Islam *et al.* [44]

Surgical treatment consisted of a stomy in 17 out of 31 patients (54.84%) followed by a simple suture of the breach in 29.03% and resection-anastomosis in 16.13% of the patients. This result is similar to that of Maïga in Mali, which had mentioned in its study 81.82% of stoma (enteral or colic) for the patients who were taken again surgically whereas in several studies [21,32,44], it was the resection-anastomosis from the start that was the surgical procedure performed during recovery. Soro *et al.* [19] had shown in their study that the stoma provided high mortality compared to patients who had undergone resection-anastomosis at one time. We think that this technique is marred by hydroelectric losses especially when it is high located. It can be recommended when you have parenteral nutrition.

Local care, essential in the management of fistulas, combines equipment to protect the skin and neutralize the fistulous fluid [22].

In our study, the protection of the skin against the corrosive action of digestive secretions around the external orifice, like Njeze *et al.* [18] in Nigeria, was obtained through the application of the zinc oxide cream in 77.78% of patients. Skin corrosion lesions were reported in 22 out of 42 patients with local complications (52.38%). This rate is close to that reported in the Prakash and Zida studies, which were 41.5% and 62%, respectively of cases with skin excoriation [16,21]. For this purpose, Piyush *et al.* [4] in India, had used Karaya gum, acacia gum and aluminum paint to protect the skin against the corrosive action of digestive secretions, but he had reported some cases of inflammatory reaction and skin maceration.

The colostomy bag was used to collect secretions in 8 patients (9.88%) and in 7 patients, we had to use makeshift sachets. No patient received irrigation through their fistula. Zida *et al.* [21] in their study carried out in Burkina-Faso, had reported the use of collection bags and in others the use of makeshift bags (plastic bags).

In our study, apart from the above-mentioned skin corrosion, the complications were dominated by anemia, malnutrition, evisceration and parietal infections. Our results approximate those of Zida *et al.* [21] and Traoré [3] who reported 56.3% and 100% of the cases respectively, presented with an infectious syndrome, anemia and evisceration.

The mortality rate for patients with digestive fistulas remains high and varies from 5.5 to 33% depending on the series [3, 4, 11, 15, 19, 36, 39].

In our study, fistula closure was achieved in 45.68% of patients, while 53.09% had died. This mortality rate is high compared to the observations of several authors. This result is explained on the one hand by the fact that patients are not able, financially, to ensure a good resuscitation and a good parenteral and oral nutrition. On the other hand, by the delay or the precocity of the surgical management decision but also, the technique used to manage fistulas. Sometimes, these are multi visceral failing patients who are further weakened by surgical aggression. The majority of patients had spent less than 28 days in the Hospital (70.37%). The median hospital stay was 21 days, Q1 was 13 days and Q3 was 30 days. The extremes were 3 and 120 days. This time is less than that reported in the study by Zida *et al.* [21] which was 36.2 days (range: 1 and 174 days). Aldo-cunha [32] had mentioned, in his study, the delay, in closing the fistula, less than 5 days in 48 out of 74 patients (65%). Jorge Avalos [28] obtained a reduction in hospital stay from 36.2 ± 22.8 days to 23.5 ± 19.5 thanks to the application of

fibrin glue. Our low stay could be influenced by the high number of deaths.

## CONCLUSION

External digestive fistulas are one of the serious complications of any laparotomy, whether it is performed for a digestive pathology or another nearby system that can be life-threatening. In our series, they affect the young female population. They were frequently observed following urgent, septic interventions dominated by generalized acute peritonitis on typhicileal perforation. Resection-anastomosis or any digestive suture in an infected abdominal cavity constitutes a dangerous procedure which also provides fistulas. Treatment remains demanding and requires multidisciplinary. Mortality is high in our series, this requires the codification of the management of fistulas in our environment.

## Conflicts of interest

The authors do not declare any conflict of interest.

## What is known about this subject?

- Any laparotomy can be complicated by a digestive fistula
- Digestive sutures performed in a septic environment can loosen and cause fistula
- A good nutritional intake, the management of digestive secretions by the administration of somatostatin or the similar, a hydro-electrolyte balance constitute the basis for the treatment of this pathology

## What is new about our study?

- Digestive fistulas are frequent in Lubumbashi and interspersed with high mortality
- Belladonna tincture is used as an anti cholinergic in the management of fistulas

## Author contributions

All the authors contributed to the conduct of this work. All the authors declare having read and approved the final version of the manuscript.

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