

# Emergency Digestive Oncological Surgery in Yaounde (Cameroon): Indications and Short-Term Results

Guy Aristide Bang<sup>1,2</sup>, Goura a Goura<sup>1</sup>, Joseph Cyrille Chopkeng<sup>3\*</sup>, Eric Patrick Savom<sup>2,4</sup>, Yanick Mahamat Ekani Boukar<sup>5</sup>, Daniel Biwole Biwole<sup>2</sup>, Amanda Missi<sup>6</sup>, Bernadette Ngo Nonga<sup>1,2</sup>

<sup>1</sup>Department of Surgery, Yaoundé Hospital and Teaching Center, Yaoundé, Cameroon

<sup>2</sup>Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Yaoundé, Cameroon

<sup>3</sup>Regional Hospital Limbe, Limbe, Cameroon

<sup>4</sup>Surgical Department, Yaounde General Hospital, Yaoundé, Cameroon

<sup>5</sup>Surgical Department, Yaounde Emergency Centre, Yaoundé, Cameroon

<sup>6</sup>Radiology Department, Yaounde University Hospital, Yaoundé, Cameroon

Email: \*chopkeng.c@gmail.com

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## Abstract

**Background:** Data on emergency digestive oncology surgery are limited in Cameroon. The aim of this work was to give the short-term results of emergency digestive carcinological surgery in our context. **Patients and Methods:** We conducted a descriptive and analytical observational study with retrospective data collection in four reference hospitals in the city of Yaoundé. Files of patients who had emergency digestive oncological surgery, for an acute complication, from January 1, 2016 to December 31, 2020, were included. The outcomes of the patients in the 30 days following the surgery had to be known. **Results:** We collected 41 patients, representing 20% of the digestive oncological surgery activity. Their average age was  $51.76 \pm 16.59$  years with a male predominance (63.4%). The cancer complication was inaugural in 27 patients. The main tumor sites were colic (56.1%), rectal (19.5%), and gastric (9.7%). The indications for surgery were: acute bowel obstruction (60.9%), acute generalized peritonitis (29.3%), and gastrointestinal bleeding (4.9%). The tumor was diagnosed intraoperatively in 10 patients (24.4%). The main operative procedures were left colectomy (21.9%) and Hartmann's intervention (19.5%). The morbidity and mortality rates were 60.9% and 43.9%, respectively. Preoperative anemia ( $p = 0.019$ ), peritonitis as indication for surgery ( $p = 0.039$ ) and TNM stage 4 ( $p = 0.015$ ) were identified as associated with an increased risk of death. **Conclusion:** In our context, one-fifth of digestive oncological surgery is done urgently in front of an acute complication

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which is inaugural for cancer in nearly two-thirds of patients. Postoperative morbidity and mortality are significant.

### Keywords

Digestive cancer, Emergency, Acute abdomen, Oncological Surgery, Cameroon

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## 1. Introduction

Digestive cancers are among the most frequent cancers, reaching 50% of all cancers in some studies [1] [2]. They are associated with high mortality; in 2015, three digestive tumors (liver cancer, colorectal cancer, and stomach cancer) were among the five most deadly tumors in the world [3]. This mortality is higher in disadvantaged areas, due to the delay in diagnosis, with a predominance of advanced stages [4]-[9]. Acute surgical complications of digestive cancers are thus frequent in Africa; 20% of cancers in Burkina Faso are diagnosed after an acute complication [10], 11% of colonic cancers in Senegal are discovered after an acute intestinal obstruction [11]. Tumor perforation with acute generalized peritonitis has been reported in Mali and Madagascar [12] [13]. The quality of surgical excision and prognosis of these patients is poorer compared to those who have had elective surgery [14] [15].

In Cameroon, several studies have been conducted on electively operated digestive cancers. The data on emergency surgery remained limited, hence the objective of this study was to highlight the short-term results of patients undergoing emergency surgery for digestive cancer.

## 2. Patients and Method

We conducted a descriptive and analytical observational study, with retrospective data collection, in four referral hospitals in the city of Yaoundé (capital of Cameroon): the Yaoundé University Hospital, the Yaoundé General Hospital, the Yaoundé Central Hospital and the Yaoundé Emergency Centre. The services selected are public hospital services of reference in the field of digestive surgery in the city of Yaoundé, as well as at the national level.

We consulted the registry of each of the selected hospitals to identify patients who underwent emergency surgery for a digestive tumor complication from 1 January 2016 to 31 December 2020 (*i.e.* 5 years). Their records were then extracted and we selected only those with complete clinical data and an available operative report. We considered an acute surgical complication, the following pathologies: acute intestinal occlusion, acute generalized peritonitis or mediastinitis, digestive hemorrhage with systemic repercussions which could not be contained by well-conducted medical and endoscopic management. The outcome of these patients in the 30 days following surgery had to be known. We excluded incomplete records, records of patients who had undergone emergency

oncological surgery for a tumor of the oral cavity, tongue, oropharynx or a digestive metastasis of a primary cancer located on a non-digestive organ.

The variables studied were: gender, age, cancer risk factors, comorbidities, indication for surgery, tumor site and TNM stage, main operative procedure, morbidity and mortality within 30 days of surgery. Data were collected using Cs Pro 6.2 software and analyzed using SPSS 23.0 software. Quantitative variables were expressed as their means  $\pm$  standard deviation and qualitative variables as their frequencies. Cox regression was used to identify factors associated ( $p < 0.05$ ) with an increased risk of mortality.

### 3. Results

During the study period, 205 patients underwent digestive oncology surgery, of whom 41 (20%) met our inclusion criteria.

Of these, 26 were male (63.4%) and 15 were female (36.5%), giving a sex ratio of 1.73. The age of the patients ranged from 19 to 84 years, with a mean of  $51.76 \pm 16.59$  years. The risk factors for digestive cancer found in these patients were, in descending order: alcoholism ( $n = 13$  or 31.7%), excessive consumption of red meat ( $n = 11$  or 26.8%), smoking ( $n = 10$  or 24.4%), a family history of digestive cancer ( $n = 6$  or 14.6%) and H.pylori infection ( $n = 2$  or 4.9%). At least one comorbidity was found in 17 patients (41.5%) and this was arterial hypertension ( $n = 7$ ), obesity ( $n = 5$ ), diabetes ( $n = 4$ ) and HIV infection ( $n = 2$ ).

The complication was the mode of discovery of cancer in 27 patients (65.8%). The most frequent tumor locations were: colonic ( $n = 23$  or 56.1%), rectal ( $n = 8$  or 19.5%) and gastric ( $n = 4$  or 9.7%). **Table 1** shows all the tumor locations identified. The indication for surgery was an acute intestinal obstruction in 25 cases (60.9%), acute generalized peritonitis in 12 cases (29.3%), mediastinitis in 2 cases (4.9%) and hemorrhagic emergency in 2 cases (4.9%). The hemorrhagic emergencies consisted of one case of active and massive bleeding (haematemesis and melena) from a tumor of the small gastric curve and one case of wirsungorrhage complicating a tumor of the head of the pancreas.

The preoperative morphological work-up was an abdominal-pelvic CT scan in 22 cases (53.6%), an abdominal ultrasound scan in 20 cases (48.8%) and an unprepared abdominal X-ray in 15 cases (36.6%). The tumor was discovered intraoperatively in 10 cases (24.4%). The anesthetic risk was high in the majority of these patients with 27 classified as ASA III-U (65.8%), 10 ASA IV-U (24.4%), and 4 ASA II-U (9.7%). The main operative procedures (**Table 2**) were left colectomy (21.9%), Hartmann procedure (19.5%) and right colectomy (14.7%). The TNM stage was mentioned in 36 patients (87.8%); it was stage 4 in 19 patients (52.8%), stage 3 in 15 (41.7%) and stage 2 in 2 patients (5.5%). The histological type was specified in 38 patients and was adenocarcinoma in 33 cases (86.8%), lymphoma in 2 patients (5.2%), stromal tumor in 2 patients (5.2%) and carcinoma in 2 cases (5.2%).

Of the 41 patients, 25 (60.9%) had postoperative complications (**Table 3**), the

**Table 1.** Tumor location.

Location	N	Percent
Colon	23	56.1
Rectum	8	19.5
Stomach	4	9.7
Pancreas	1	2.4
Small intestine	3	7.4
Oesophagus	2	4.9

**Table 2.** Main surgical procedures.

Location	N	Percent
Left colectomy	9	21.9
Right colectomy	6	14.7
Hartmann procedure	8	19.5
Anterior rectal resection + colostomy	3	7.3
Abdominal-perineal amputation	1	2.4
Near upstream colostomy	4	9.8
Segmental small bowel resection	3	7.3
Partial gastrectomy	2	4.9
Simple suture of a perforation	4	9.8
Cephalic duodenopancreatectomy	1	2.4

**Table 3.** Postoperative complications.

Complications	N	Percent
Thromboembolic disease	3	7.3
Anastomotic fistula	2	4.9
Pneumonia	2	4.9
Severe anemia	15	36.6
Postoperative peritonitis	3	7.3
Septic shock	5	12.2
Surgical site infection	6	14.7

most common being severe anemia (36.6%), surgical site infection (14.7%) and septic shock (12.2%). Eighteen deaths (43.9%) were recorded within 30 days of surgery. In multivariate analysis, the variables independently associated with an increased risk of mortality were preoperative anemia ( $p = 0.019$ ), TNM stage 4 ( $p = 0.039$ ) and peritonitis as an indication for surgery ( $p = 0.015$ ).

#### 4. Discussion

Our study shows that 20% of digestive oncology surgery is performed as an

emergency in our context. This result is comparable to those found in the literature where 20% to 33.8% of tumors are operated on following an acute complication [10] [16]. The acute complication was first cancer in 65.8% of patients, thus underlining the significant delay in diagnosis of digestive tumors in the African context [7] [17] [18] [19] [20].

Colorectal cancer was the most frequent cancer in this study, explaining the predominance of acute intestinal obstruction in the indications for emergency oncological surgery. Indeed, it is the most common digestive cancer worldwide [21]. Colorectal cancer is the etiology of 4% - 24% of colonic occlusions [22] [23]; 7.8% of these cancers are operated on after perforation and 0.6% after a hemorrhagic complication [16].

As in other series, gastric tumor location was among the three most frequent cancers in our patients [17] [18] [19] [20]. In developed countries, the incidence of gastric perforations of tumor origin has decreased from 10% - 16% in the 1980s [24] to less than 1% in recent years [25] [26]. In Africa, the annual incidence in a Malian study was 1.2 cases [12] and 2.6% of gastric cancers are diagnosed after a tumor perforation [27]. In China, 20.8% of gastric tumors present with gastrointestinal hemorrhage and 2.05% of these patients have an emergency hemostasis gastrectomy [28].

We found uncommon emergencies in our context: one case of wirsungorrhage and two cases of mediastinitis. Wirsungorrhagia, also known as hemosuccus pancreaticus, is a rare aetiology of digestive bleeding, characterized by duodenal bleeding via the main pancreatic duct. While its main etiology is chronic pancreatitis, tumor causes have been reported in the literature [29] [30] [31]. Only 1% of oesophageal perforations are of tumor origin [32]; the resulting mediastinitis is a serious and life-threatening condition.

The preoperative diagnosis of cancer in these patients with acute complications is not easy in an unfavoured environment like ours. Thus, 65.8% discovered that they had a tumor when the complication occurred, only 53.6% were able to carry out a CT scan before their operation and the diagnosis of a tumor was made intraoperatively in 24.4% of patients. The availability of CT scanners in our health facilities is often disrupted by numerous breakdowns and the absence of a universal health coverage system restricts their accessibility.

The management of a patient with an acute complication of digestive cancer is a real challenge in our context. The challenge is first of all anesthetic, the operative risk being high in these patients with advanced tumors associated with numerous physiological disturbances and mostly classified as ASA III-U and IV-U. It is then of a surgical order, calling for the elaboration of a surgical strategy adapted to the patient's condition and the available technical platform. In the absence of interventional endoscopy in Yaoundé, the use of colonic stents recommended in certain oesophageal tumor perforations [32] [33] or tumoral colonic occlusions [34] [35], is not possible. The same applies to hemorrhagic tumors which cannot benefit from embolization [32] [36] or palliative radiotherapy [37], as the city of Yaoundé does not have functional radiotherapy or inter-

ventional radiology service. The surgical intervention, therefore, remains an indispensable therapeutic tool in the management of these patients in our context. Left colectomy with anastomosis was the main operative procedure in our patients. This procedure combined with an offloading colostomy is the best surgical option in patients with occluded colonic tumors in good general condition; offloading colostomy is recommended in frail patients [34]. In cases of colonic tumor perforation peritonitis, the Hartmann procedure should be preferred [34]. A simple suture of the tumor perforation (oesophageal or gastric) was performed in 4 patients. In the context of acute generalized peritonitis or mediastinitis, performing a tumor removal procedure can be long and laborious; some authors have therefore proposed a two-stage approach with a first simple suture followed by a deferred removal surgery [38] [39].

Morbidity and mortality in the 30 days following surgery were significant in our patients with a prevalence of 60.9% and 43.9% respectively. In other African studies [11] [12] [15], the morbidity is in the order of 33% to 35.7% for a mortality of 13.5% to 100%. In Western series, morbidity varies from 4% to 13% and mortality from 27% to 60% [33] [34]. The occurrence of an acute complication in a patient with a digestive tumor is therefore a poor prognostic factor. Of the three factors identified in our study as associated with an increased risk of death, preoperative anemia seems to us to be the only one that can be modified. In a context where the availability of blood bags remains problematic, the care team should give particular attention to the management of anemia in the peri-operative phase of surgical oncological emergencies.

The main limitation of this work is the retrospective recruitment method. However, its multicentric nature allows us to have results representative of our population.

## 5. Conclusion

In our context, one-fifth of digestive oncology surgery is performed as an emergency, following an acute occlusive or hemorrhagic complication or after a tumor perforation. This acute complication is inaugural in almost 2/3 of cases. The morbidity and mortality in the 30 days following surgery are significant. The efficient correction of anemia preoperatively could improve these outcomes.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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