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Epidemiological, Clinical, and Outcome Aspects of Surgical Abdominal Emergencies: A Study of 189 Cases at The Ebolowa Regional Hospital

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Abstract

Introduction: Surgical abdominal emergencies (SAEs) represent a significant public health challenge in sub-Saharan Africa. The objective of this study was to describe the epidemiological and clinical profile, as well as the postoperative morbidity and mortality of SAEs.

Methods: A retrospective, descriptive study was conducted on the records of patients who underwent surgery for a non-traumatic SAE between January 2021 and January 2024 at the Ebolowa Regional Hospital. Demographic, diagnostic, and outcome variables (length of hospital stay, complications, mortality) were extracted and analyzed using descriptive statistics.

Results: Out of 189 included patient records, the mean age was 35.5 ± 18.2 years, with a male predominance (n=118; 62.4%). The main diagnoses were acute appendicitis (n=49; 25.9%), peritonitis (n=40; 21.2%), and strangulated hernias (n=32; 16.9%). The average length of hospital stay was 8.5 ± 4.1 days. The postoperative complication rate was 20.6% (n=39), and the in-hospital mortality rate was 3.7% (n=7).

Conclusion: The profile of SAEs in Ebolowa is consistent with other African data, although the observed morbidity and mortality rates are lower than the averages reported in some regional studies. These differences could be attributable to variations in the severity of presenting cases. A prospective investigation is necessary to confirm these outcomes and identify their determinants.

Keywords: acute abdomen; surgery; complications; mortality; Cameroon

Introduction

Abdominal surgical emergencies (UACs) are acute conditions of the abdomen that require prompt surgery to prevent serious or even fatal complications. They constitute a significant part of the activity of emergency services and their management is an indicator of the performance of health systems. In sub-Saharan Africa, UACs represent a major public health problem, characterized by a high incidence and morbidity and mortality rates that remain significant. A recent meta-analysis identified appendicitis (30.0%), acute bowel obstruction (28.6%), and peritonitis (26.6%) as the most common causes in the region [1]. However, the majority of the published data come from large academic hospitals. However, regional reference hospitals, such as the Regional Hospital Center (CHR) of Ebolowa inaugurated in 2021 [2], treat a substantial part of the population and operate under conditions of resources that may differ from those of tertiary centers. The data from these second-level structures are therefore crucial because they are potentially more representative of the reality of surgical care in the country, and essential for the development of health strategies adapted to the local context. The objective of this study was to describe the epidemiological and clinical profile and outcomes of the UACs treated at the Ebolowa RHC, and to compare our results to regional standards.

Materials and Methods

This was a retrospective and descriptive study, conducted in the surgery department of the CHR of Ebolowa, a second-category hospital serving as a reference structure for the Southern region of Cameroon. This retrospective design puts the study at risk of information bias due to potentially missing or inaccurate data in medical records. Data were collected for all patients operated for non-traumatic

UAC between January 5, 2021 and January 7, 2024. Complete records of patients operated for non-traumatic UAC were included. Records that are unusable and patients referred before the end of their care have been excluded. Data were extracted from emergency room records, operating room records, and hospitalization records. The variables studied were sociodemographic (age, sex), clinical (postoperative diagnosis), therapeutic (type of intervention) and postoperative outcomes. Postoperative complications were defined as any deviation from the normal course (e.g., surgical site infection, loosening of sutures, fistula, shock). Key prognostic factors, such as American Society of Anesthesiologists (ASA) score and time to surgery, could not be routinely collected due to their absence from the charts, which is a recognized limitation of the study. The data were analyzed with SPSS version 25.0 using descriptive statistics. Authorization for the study was obtained from the Research Ethics Board of the Ebolowa Regional Hospital Center and the confidentiality of the data was guaranteed.

Results

A total of 189 patients were included. The mean age was 35.5 ± 18.2 years, with a predominance of men (n=118; 62.4%; sex ratio M/F = 1.66). Pupils/students (30.2%) and housewives (21.7%) were the most represented (Table 1). The most common diagnoses were acute appendicitis (25.9%), peritonitis (21.2%) and strangulated hernias (16.9%). Exploratory laparotomy and appendectomy were the most commonly performed procedures (Table 2). Thirty-nine patients (20.6%) had at least one postoperative complication, dominated by sutures (6.3%) (n=12) and septic shock (4.2%) n=8 of the total cohort. The mean length of hospital stay was 8.5 ± 4.1 days. Seven deaths were recorded, for a mortality rate of 3.7%. In order to standardize the severity of postoperative outcomes, we attempted to retrospectively classify the 39 observed complications according to the Clavien-Dindo classification. Although limited by the retrospective nature of the data, this analysis suggests that the majority of complications were minor (Grade I-II, 66.7%), while 17.9% (n=7) were severe complications (Grade IVb) that were life-threatening.

Table 1: Sociodemographic characteristics of patients (N=189).

Characteristics	Category	Workforce (n)	Percentage (%)
Age	Average ± TEQ (Years)	35.5 ± 18.2	-
	0-12 Years	35	18.5
	13-30 Years Old	78	41.3
	31-60 Years Old	64	33.9
	>60 years	12	6.3
Sex	Masculine	118	62.4
	Feminine	71	37.6
Profession	Pupil/Student	57	30.2
	Housewife	41	21.7
	Farmer	34	18.0
	Merchant	24	12.7
	Mototaximan	10	5.3
	Other / Unspecified	23	12.2

Table 2: Diagnoses and Surgical Procedures (N=189).

Variables	Category	Workforce (n)	Percentage (%)
Primary Diagnosis	Acute Appendicitis and Its Complications	49	25.9
	Peritonitis (All Causes)	40	21.2
	Strangled Hernia	32	16.9
	Acute Bowel Obstruction	27	14.3
	Non-Traumatic Hemoperitoneum	14	7.4
	Other (Ulcer Perforation, Abscess, Abdominal Pain in Immunocompromised Patients, Ectopic Pregnancy	27	14.3
Main Intervention	Exploratory Laparotomy	69	36.5
	Appendectomy	49	25.9

	Hernia Cure	32	16.9
	Other (Laparoscopy, Non-Operative Treatment)	39	20.6

Discussion

This study provides the first profile of the UACs at the Ebolowa RHC. Our results reveal a predominantly young (mean age 35.5 years) and male (62.4%) population, with diagnoses dominated by appendicitis, peritonitis and occlusions, and morbidity and mortality rates of 20.6% and 3.7%, respectively. The demographic profile is remarkably consistent with data from other Cameroonian centers such as Yaoundé [3,4] (average age 37.6 years, sex ratio 2:1), while in Bamenda [5] (mean age 47.4 years, sex ratio 1.4:1) similar observations were also made in Douala [6]. This consistency reinforces the external validity of our demographic observations. However, a notable divergence appears concerning our postoperative outcomes, which appear more favorable in our series. The mortality rate of 3.7% is significantly lower than the 10% reported in Yaoundé by Bang et al. [4], and the 19.8% observed by Titus et al. in Bamenda [5]. Similarly, the morbidity of 20.6 per cent is lower than that of Yaoundé (33.3 per cent) [4] and Bamenda (48.3%) [5]. While these results are encouraging, they should be interpreted with extreme caution. However, comparing crude rates between hospitals without adjusting for case severity is an oversimplification. Indeed, a determining factor is the difference in the severity of the cases presented (case mix). The proportion of peritonitis, a high-lethality condition, was 21.2% in our cohort, less than half the rate reported in Yaoundé (48.3%) [4] and Zinder, Niger (51.6%) [7] and relatively similar to the rate of (22%) reported by Konaté et al. in Mali [8], where mortality rates were significantly higher (10%, 13.7% and 5.19% respectively). It is therefore scientifically more plausible that the low mortality observed in Ebolowa is mainly the reflection of a less severely affected patient population rather than the consequence of necessarily superior care. The comparative table below illustrates these disparities (Table 3). Compared to aggregate data from the Ndong meta-analysis et al. [1], our mortality rate (3.7%) is lower than the average of 7.4%, and our morbidity (20.6%) is slightly better than the average of 24.2%. However, these comparisons should be cautious, as the meta-analysis includes many tertiary centres probably treating more complex cases.

Table 3: Comparative analysis of CAUs in different African contexts.

Characteristic	Ebolowa (This Study)	Yaoundé (Bang et al)	Bamenda (Titus et al)	Zinder, Niger (Magagi et al)	SSA Meta-Analysis (Ndong et al)
Study Type	Retrospective	Prospective	Retrospective	Prospective	Meta-analysis
Sample Size (n)	189	120	207	622	38 187
Average age (Years)	35.5	37.6	47.4	22.9	32.5
Male Predominance (%)	62,4	66,7	58,5	76,4	65.9
Peritonitis (%)	21,2	48,3	15.5 (UP Seule)	51,6	26.6
Morbidity Rate (%)	20,6	33,3	48,3	38,1	24.2
Mortality Rate (%)	3,7	10,0	19,8	13,7	7.4

Limitations of The Study

This retrospective study has several limitations: missing data, lack of standardized severity scores (such as ASA), lack of information on key deadlines, and single-center nature. These constraints limit the comparability and generalization of the results, justifying the realization of a more comprehensive prospective study.

Conclusion

The profile of UACs at the Ebolowa CHR is in line with regional trends, although our initial data show lower morbidity and mortality rates than those reported by some tertiary centers in Cameroon and sub-Saharan Africa. These favorable results are likely influenced by a less severe case mix in our patient population. Prospective studies, incorporating standardized severity scores and process measures, are essential to validate these observations and identify the specific determinants of patient outcomes in our context.

Declarations

Author Contributions

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

Conflict of Interest

The authors certify that no conflict of interest exists in connection with the writing or publication of this article.

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