

Digestive Surgical Emergencies in the General Surgery Department of the Reference Health Center in Commune I of the District of Bamako in Mali

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Abstract

Digestive surgical emergencies concern all patients admitted urgently and for whom a decision for surgical intervention may be necessary within 24 hours. They are on guard duty day and night. To carry out this work we have set ourselves the following objectives: Study digestive surgical emergencies in the general surgery department of the Cs ref CI of Bamako; Determine the frequency of digestive surgical emergencies; Describe the clinical and therapeutic aspects, and Analyze the results of treatment. From January 2016 to December 2016, the general surgery department of the Cs ref CI of Bamako carried out 200 digestive surgical emergencies whose files were usable; 119 men and 81 women, a sex ratio of 1.5. The average age was 32.67 years; 66% medical evacuation. Abdominal pain was the main reason for consultation. In the majority of cases, the physical examination made it possible to make the diagnosis. Faced with certain doubtful cases, we requested paraclinical examinations (ultrasound, ASP and the rhesus group). The main etiology was acute appendicitis with 59% of cases. The frequency of digestive surgical emergencies was 35.1% of all activities of the general surgery department of the Cs ref CI of Bamako. The postoperative course was complicated in 4% of cases. Surgical site infections were the most common postoperative complications, accounting for 3% of our patients. One death was noted, *i.e.* 0.5% of our sample. Acute peritonitis was the cause of death in 100% of cases.

Keywords

Emergency, Digestive Surgery, Post-Operative Complication

1. Introduction

Digestive surgical emergencies concern all patients admitted urgently and for whom a decision for surgical intervention may be necessary within 24 hours [1].

According to the WHO, it is any non-traumatic disorder evolving over a few hours or days (less than three) in the abdominal area requiring urgent surgical intervention [2] [3].

In the USA, 19 etiologies including 6 surgical (acute appendicitis, acute cholecystitis, acute intestinal obstruction, duodenal ulcer; torsion of the ovarian cyst and aneurysm) were found in 1000 patients with acute abdomen [4].

In France, Domergue studied the contribution of laparoscopy in abdominal surgical emergencies and considers that in the face of an acute abdomen its performance is a diagnostic shortcut and sometimes a partial (performed at a minimum) or complete therapeutic procedure [5] [6] [7].

In Mali according to Ouologuem M.O., surgical emergencies constituted 32.1% of the overall activity of the general surgery department of the Sikasso hospital [8]; Keïta M. had 28.77% at the Gabriel TOURE University Hospital [3] and Berthé I.D. had 19.32% at the “A” surgery department of the Point G University Hospital [9]. These data show the importance and frequency of digestive surgical emergencies. Keïta S.’s study on acute abdomens reported a mortality rate of 17% [7].

Digestive surgical emergencies are pathologies which occupy an important place in surgery due to their high frequency, their difficult management, and their high morbidity and mortality rate [3]. The acute abdomen is made up of a set of signs suggestive of a surgical emergency.

Surgical emergency requires not only an accurate presumptive diagnosis but also flawless surgical intervention. The prognosis for surgical emergencies is serious [6]. This seriousness would be linked to: the delay in diagnosis, consequence of a late consultation and the poor conditioning of patients preoperatively; lack of equipment.

It constitutes a concern for the surgeon due to its frequency and its management which is often multidisciplinary. The management of digestive surgical emergencies is difficult and complex in our context. We are in a peripheral health center which does not have an intensive care unit for good postoperative care.

Thus we favored the patients’ voucher (ASA I and ASA II). (Figures 1-5)

2. Research Methodology

This work was a prospective study running from January 2016 to December

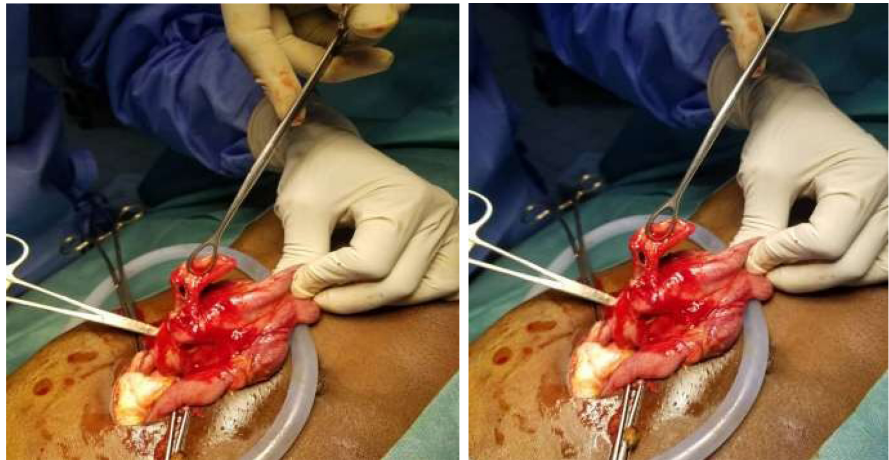


Figure 1. Acute appendicitis.



Figure 2. Acute peritonitis.



Figure 3. Intestinal obstruction.

2016. Our study was carried out in the general surgery department of the Reference Health Center of Commune I of the Bamako District.

We identified 200 patients during our study period.

- Inclusion criteria: Any patient who was admitted to the general surgery department of the Cs ref of commune I of the Bamako district for an acute surgical abdomen whose treatment was carried out within 24 hours.



Figure 4. Sigmoidectomy parts.

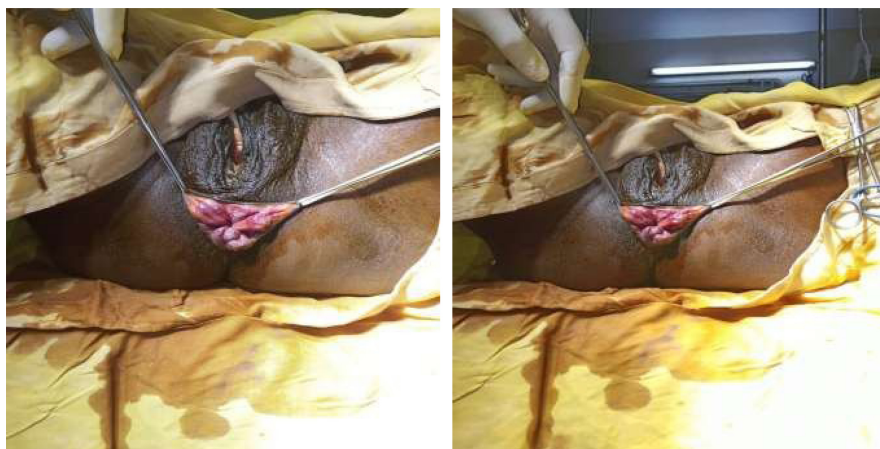


Figure 5. Hemorrhoidal thrombosis.

- Non-inclusion criteria: Any patient not presenting a digestive surgical emergency and any digestive surgical emergency not operated on in the department.

All patients on admission to the general surgery department underwent a complete clinical examination. At the end of this examination, all those whose diagnostic hypothesis converged towards an acute surgical abdomen were sent for a confirmatory imaging examination; an emergency biological assessment.

Surgical interventions were directed by the surgeon who decided on the surgical technique. The patients benefited from a postoperative hospitalization of at least 24 hours in anesthesia-intensive care before being transferred to the surgery department. Complications were looked for at the bedside during the hospitalization period.

We studied the following variables: - Sociodemographic (Age, Sex, Profession, Residence and/or Origin); - Method of admission; - Physical examination; - Additional examinations: Ultrasound, emergency biological assessment (Hemoglobin level, Hematocrit, Rhesus group and Blood sugar) and Treatment: Initial approach, surgical procedure appropriate to each case and post-operative follow-up.

The supports used were: - Consultation registers; registers recording operating reports; hospitalization; the anesthesia protocol, -Patient files and the patient investigation sheet.

Data entry and analysis were carried out using “IBM SPSS Statistique” version 23 software. The comparison tests used are Chi2 and P with a significance threshold of $P < 0.05$. Word processing was carried out on the “WORD” software version 2016 and the “ZOTERO” software was used for the management of bibliographic references.

3. Results

During our study we recorded 200 cases of digestive surgical emergencies out of 850 consultations, performed 570 surgical interventions and 238 hospitalizations. Digestive surgical emergencies represented 23.53% of consultations, 35.01% of surgical interventions carried out in the department and finally 84.03% of hospitalizations.

The 30 - 44 year old age group was the most represented, at 55.50%. The average age was 32.67 years with extremes ranging from 15 to 75 years. The male sex was the most represented, *i.e.* 59.50% of cases and sex ratio of 1.5 in favor of the male sex. (**Table 1**) Pupils/students and housewives represented 50% of cases, or 26% and 24% respectively. 66% of our patients were referred to us. 84.5% of patients had no medical history and 91% had no surgical history. (**Table 2**)

NB: Others concerned 3 appendectomies, 2 ovarian cystectomies and 1 case of prostate adenomectomy.

Abdominal pain was the most common functional sign, *i.e.* 92% of cases. The physical signs were dominated by abdominal contractures, abdominal guarding and pain in the Douglas with 82% respectively; 75% and 72% of cases. 50% of

Table 1. Socio-demographic data.

	Socio-demographic data	Number	Percentage
Age	15 - 29 years old	37	18.50
	30 - 44 years old	111	55.50
	45 - 59 years old	49	24.50
	>60 years old	3	1.50
Occupation	Trader	18	9
	Farmer/Worker	43	21.50
	Student/Pupil	52	26
	Household	48	24
	Others	39	19.50
Sex	Male	119	59.50
	Feminine	81	40.50
Total		200	100

our patients presented with stinging pain. The pain was located in the right iliac fossa in 71% of cases. Acute appendicitis was the most frequent diagnosis, accounting for 59% of cases. (**Table 3 & Table 4**)

NB: Appendicular plastrons were localized acute peritonitis, *i.e.* 22.5% of intraoperative cases.

Appendectomy with burial was the surgical procedure used in 63.8% of cases. The average duration of the operating time was 58.35 minutes with extremes ranging from 45 to 105 minutes and a standard deviation of 24.22 minutes and 94% of our patients benefited from surgical treatment. (**Table 5 and Table 6**) The duration of hospitalization did not exceed 72 hours, or 85.5%. Surgical site infections were the most frequent post-operative complications, *i.e.* 3% of patients, digestive fistulas 0.5% and mortality 0.5% of cases. (**Table 7**)

4. Discussion

The advantage of our study is that it was prospective, allowing the collection of information through the questioning of patients, operating room and hospitalization registers, recording operating reports and individual investigation sheets. However, we encountered certain difficulties, namely:

- The delay in consulting patients.
- Insufficient medium and long-term post-operative follow-up due to non-compliance with post-operative appointments by patients.

Table 2. Distribution of patients according to mode of admission and history.

Mode of admission and background		Number	Percentage	
Admission method	Referred	132	66	
	Came of his own accord	68	34	
Background	HT	9	4.50	
	Diabetes	1	0.50	
	Asthma	2	1	
	Medical	Sickle cell anemia	2	1
	Peptic ulcer	8	4	
	None	169	84.50	
	Others	9	4.50	
	Surgical	Inguinal hernia	5	2.50
		Bowel obstruction	1	0.50
		Caesarean section	6	3
Others		6	3	
None		182	91	
Total		200	100	

Table 3. Distribution according to functional signs and characteristics of pain.

Functional signs and characteristics of pain		Number	Frequency
Functional signs	Abdominal pain	184	92
	Anal pain	16	8
	Stopping materials and gases	6	3
	Constipation	19	9.50
	Diarrhea	5	2.50
Seat of pain	Right hypochondrium	1	0.50
	Epigastrium	8	4
	Peri-umbilical	9	4.50
	Hypogastrium	2	1
	Right iliac fossa	142	71
	Left iliac fossa	1	0.50
	Diffuse	19	9.50
	Anal	16	8
	Right inguinal	1	0.50
Left inguinal	1	0.50	
Type of pain	Burn	31	15.50
	Cramp	25	12.50
	Tingling	44	22
	Sting	100	50
Total		200	100

Table 4. Distribution according to physical and biological signs.

Physical and biological signs		Number	Percentage
Physical signs	Contraction	164	82
	Abdominal defense	150	75
	Pain in the Douglas	144	72
Biological signs	Hyperleukocytosis	165	82.50
	Widal positive	4	2

During our study, emergency digestive surgery represented 35.1% of all activities of the general surgery department of the Cs ref of commune I of Bamako. Lower rates were found in the study by Berthe I.D [9] in Mali: 19.32%. This lower rate compared to that of our study could be explained by the difficulty of access to the Point G University Hospital and also by the fact that our health area borders with the Koulikoro region. So in addition to our health area we receive a lot of patients from Koulikoro. In Niger Harouna Y. [10] found 25.60%. These data demonstrate the importance of surgical emergencies.

Table 5. Distribution according to the time taken for treatment and pre- and intra-operative diagnosis.

Delay in treatment and diagnosis		Effective	Frequency
Delivery time	<1 hour	147	73.50
	1 hour - 1 hour 30 minutes	13	6.50
	>1 hour 30 minutes	40	20
Pre diagnosis Operative	Acute appendicitis	118	59
	Strangulated hernia	11	5.50
	Peritonitis	33	16.50
	Bowel obstruction	5	2.50
	Hemorrhoidal thrombosis	16	8
	Appendicular plastron	12	6
	Appendiceal abscess	5	2.50
Personal diagnosis Operative	Acute appendicitis	118	59
	Strangulated hernia	12	6
	Peritonitis	32	16
	Bowel obstruction	6	3
	Hemorrhoidal thrombosis	16	8
	Appendicular plastron	12	6
	Appendiceal abscess	4	2
Total		200	100

Table 6. Distribution according to surgical treatment, surgical technique.

Surgical treatment and surgical technique		Effective	Frequency
Treatment surgical	Yes	188	94
	No	12	6
Operating techniqueused	Adhesiolysis	4	2.10
	Appendectomy with burial	120	63.80
	Washing with drainage	35	18.60
	Hernia repair	11	5.90
	Hemorrhoidectomy	16	8.50
	End-to-end anastomosis resection	2	1.10
Total		200	100

In our series, the most represented age group was 30 to 44 years old with 55.5%. This result is lower than that of KONATE M. who found 70% for the age group ($P = 0.0031$). This difference could be due to the size of our sample. In the literature, digestive surgical emergencies concern young adults with an average age varying from 30 to 45 years [10] [11] [12] [13]. Our data corroborates with those in the literature.

Table 7. Distribution according to operating time, length of hospitalization and post-operative complications.

Operating time/hospitalization duration and post-op complications		Effective	Frequency
Duration of surgical intervention	<1 hour	150	75
	1 hour - 1 hour 30 minutes	11	5.50
	>1 hour 30 minutes	27	13.50
	Undetermined	12	6
Length of hospitalization	0 - 3 days	171	85.50
	4 - 7 days	29	14.50
Postoperative complications	Death	1	0.50
	Digestive fistulas	1	0.50
	Surgical site infection	6	3
	None	192	96
Total		200	100

The male gender was represented at 59.5% with a sex ratio of 1.5. This result is comparable to that of Berthé I.D. [9] who found a sex ratio of 2.34. In the African, Asian and European literature [10] [13] [14] [15], digestive surgical emergencies concern young adult males. Pupils/students (26%) and housewives (24%) were more represented. This situation has no scientific value because digestive surgical emergencies are not linked to a defined professional activity [9].

An evacuation sheet accompanied our patients in the majority of cases, *i.e.* 66%. This is justified by the importance of the number of community health centers within commune I and the existence of the surgery department at Cs ref.

Pain was the first reason for consultation in all our patients. Its semiological characteristics and other associated signs allowed diagnostic guidance in all our cases. This pain has been reported in the literature as a very frequent reason for consultation: [3] [9] [13] [16]; 100% in their series. Pelvic examination (vaginal and rectal) was systematic for diagnostic guidance and could be done in 72% of our patients.

During our study, the etiological diagnosis of appendicitis was mentioned in 118 cases preoperatively confirmed intraoperatively. The emergency medical team consisted of a nurse, an intern and a surgeon. These data have been reported in the European [3] [4] [17] and African [5] [17] literatures. We could conclude that the diagnosis of appendicitis is clinical and should not wait for an ultrasound, a CT scan or an ASP to make the indication for surgery. The definitive diagnosis of appendicitis remains anatomo-pathological. The rate of appendicitis in our series (59%) is high compared to that obtained by Berthé I.D. [9] in the surgery department "A" of the Point G University Hospital and by Konaté M. at the Gabriel TOURE University Hospital [3]. This could be linked to the

fact that: appendicitis is treated much more in Cs refs than in CHUs. Acute appendicitis is considered in Europe to be the leading cause of abdominal surgical emergencies [15]. The diagnosis of peritonitis was made in 33 cases preoperatively and 45 cases intraoperatively. Ultrasound helped to indicate the indication for surgery.

Some authors [5] [17] [18] [19] have stated that ultrasound is the morphological examination of choice in the diagnosis of peritonitis. Peritonitis occupied second place (22.5%) among digestive surgical emergencies after acute appendicitis in our practice. This result is comparable to those of Harouna Y. [10] and Konaté M. [3] who found respectively 20.8% with $P = 0.4678$ and 32.9% with $P = 0.0580$. 25 cases of the 45 peritonitis in our series were due to appendiceal perforation, *i.e.* 55.55%. This rate is comparable to that of Berthé I.D. [9] who found 65.72% ($P = 0.363657$). The first two etiologies (typhoid; appendicular) of peritonitis are unambiguous among certain African authors: Harouna Y. [10] in Niger and Padonou in Senegal [13]. Our rate of 8%, hemorrhoidal thrombosis occupies 3rd place among the etiologies of digestive surgical emergencies. This observation is contrary to that of Berthé I.D. [9] who found the strangulated hernia with a rate of 25.53%.

Inguinal hernia represented 6% in our series. This rate is comparable to that of Harouna in Niger [10] which had 7.5% of cases $P = 0.5464$. It is lower in Europe 1/1500 for Papagrigoriadas S. *et al.* [20], 1% for Bargy F. *et al.* [21]. This could be explained by the earlier treatment of hernias in Europe than in Africa.

Postoperative morbidity was dominated by wall infections; encountered especially in peritonitis. It has helped to extend the length of patients' stay in hospital. These infections are caused by poor asepsis and hygiene measures. In our study, the postoperative course was complicated in 4% of cases. The results were simple in 96% of cases. We recorded one death or 0.5%. On the other hand, 4.46% of deaths were noted by Boubacar B.D. [22] (112 cases) with $P = 0.043782$ and 6.96% by Dembélé M. [23] (273 cases) with $P = 0.000563$ at Mali. This could be explained by the difference in the size of our samples. Peritonitis was the cause of death. A high rate was reported by Konaté M. [3] at CHU Gabriel Toué in Mali (65%). The majority of our patients (86%) were reviewed after the first thirty days of their release from hospital. This could be explained by the fact that most of our patients (75%) resided in Bamako city.

5. Conclusions

Digestive surgical emergencies occupy an important place in surgical pathology due to their high frequency. The etiologies are multiple and varied, requiring close multidisciplinary collaboration for better care.

Early diagnosis and delay in treatment constitute the main prognostic factors. A well-conducted clinical examination is the key to diagnosis in our context. Paraclinical examinations are sometimes difficult to obtain or provide little contribution and should not delay therapeutic sanction.

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Conflicts of Interest

There is no conflict of interest.

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