



# Morbidity and Mortality of Acute Mechanical Intestinal Obstruction in the General Surgery Department of the Ignace Deen National Hospital in Conakry

Mamadou Sakoba Barry<sup>1</sup>, Soriba Naby Camara<sup>2</sup>, Hamidou Sylla<sup>3</sup>, Aboubacar Toure<sup>1</sup>, Aïssatou Taran Diallo<sup>1</sup>

<sup>1</sup>Department of General Surgery, Ignace National Hospital, Faculty of Health Sciences and Technology, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

<sup>2</sup>Department of Visceral Surgery, Friendship Hospital Sino Guinean, Faculty of Health Sciences and Technology, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

<sup>3</sup>Department of Visceral Surgery, Donka National Hospital, Faculty of Health Sciences and Technology, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

## Email address:

aissatoutaran@gmail.com (A. T. Diallo)

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**Abstract:** The aim of this study is to assess the morbidity and mortality factors associated with acute mechanical intestinal obstruction. Acute mechanical bowel obstruction is one of the most common pathologies in emergency digestive surgery. The objective of this study was to assess mortality from acute mechanical intestinal obstruction. Materials and methods: This was a descriptive and analytical typical observational study from April 1 to September 30, 2020 in the General Surgery Department of the Ignace Deen National Hospital, Conakry University Hospital. Results: Acute mechanical bowel obstructions accounted for 18% of digestive surgical emergencies. The average age was 43.94 years old. The sex ratio was 2.26 in favor of men. The 40-59 age group was the most represented with 41.9%. The most common aetiologies were bridles 40.32% followed by pelvic colon volvulus 27.42%. The site of the obstacle was on the small bowel in 69% and on the colon in 31% of cases. Bowel resection followed by end-to-end anastomosis was performed in 53.22% of cases and flange resection in 40.32% of cases. Mortality was 23%, statistically correlated with ASA $\geq$ II score, site of occlusion, bowel resection, surgical site infection and stercoral fistula. Conclusion: Acute mechanical intestinal obstruction was frequent. Their etiologies were multiple. The care recorded a significant mortality. Improving the prognosis of acute mechanical intestinal obstruction depends on early and adequate management.

**Keywords:** Mechanical Acute Bowel Obstruction, Morbidity, Mortality

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## 1. Introduction

Acute mechanical intestinal obstruction corresponds to a complete and persistent stopping of the intestinal transit of materials and gases by strangulation or by obstruction. It is a frequent and serious medical-surgical emergency that can be life-threatening [1].

It presents itself as "the most urgent emergency" when the vitality of a strangled loop is at stake. Its diagnosis is clinical and radiological and its medical and surgical

management. The obstacle can be on the small bowel or on the colon. The obstacle can be on the small bowel or on the colon [2].

In Nigeria [4] morbidity was 54.3% while in Burkina Fasso [5] and Guinea [6] it was 27.9% and 32.93%.

Thus, the high frequency of acute mechanical intestinal obstructions and the high mortality of acute intestinal obstructions in the general surgery department of Ignace Deen

Hospital motivated the choice of this theme, the objectives of which were: to determine the hospital frequency of intestinal obstructions acute mechanical among abdominal surgical emergencies, to describe the socio-demographic characteristics of patients, to describe the diagnostic and therapeutic aspects of acute mechanical intestinal obstruction and to determine the mortality rates and prognostic factors of acute mechanical intestinal obstruction.

## 2. Material and Methods

This was a descriptive and analytical observational study lasting six (06) months from April 1 to September 30, 2020.

The general surgery department at Ignace Deen National Hospital served as the setting for this study.

The media for collecting and collecting data were patient records, operating report registers and a pre-established individual survey sheet. The study population consisted of all patients who presented with acute mechanical bowel obstruction and operated on in the ward during the study period. Included were all patients with acute bowel obstruction of mechanical etiology, who were operated on in the ward during the study period. Patients with acute bowel obstruction whose etiology was not mechanical, as well as those with other pathologies were not included. The study variables were: age, sex, ASA score, consultation and treatment time, condition of the loop during surgery and whether or not a bowel resection was performed. Data were entered and analyzed using IBM SPSS version 23 software. To search for an association between morbidity and different

factors, bivariate analysis was performed.

**Table 1.** *Fréquence hospitalière des occlusions intestinales aiguës mécaniques parmi les urgences chirurgicales abdominales.*

Pathologies	Number	Percentage
Acute appendicitis	134	38,39
Acute generalized peritonitis	84	24
Acute mechanical bowel obstruction	62	18
Strangulated hernia	49	14
Abdominal contusion	10	2,86
Acute cholecystitis	6	1,71
Liver abscess	4	1,14
Total	349	100

**Table 2.** *Distribution of patients according to intraoperative diagnosis.*

Diagnosis	Number	Percentage
Flanges	25	40,32
Pelvic colon volvulus	17	27,42
Hail volvulus	9	14,52
Acute intussusception	6	9,68
Strangulated inguinal hernia	3	4,84
Colonic tumor	2	3,22
Total	62	100

**Table 3.** *Distribution of patients according to postoperative treatment.*

Variables	Number	Percentage
Surgical site infection	14	22,58
Stercoral fistula	4	6,45
Single suite	44	71
Total	62	100

**Table 4.** *Facteurs liés à la morbidité des patients.*

Variables	Effectif total	Comp.*	% Comp.*	OR	IC	P-Value
Sex						0,75
Male	43	13	30,23	1	[0,74-1,50]	
Fémele	19	5	26,31	0,9	[0,36-2,06]	
Age						0,27
Child and Adolescents	8	1	12,5	0,3	[0,05-2,64]	
Adults	54	17	31,48	1,1	[0,95-1,33]	
Consultation deadline						0,97
<24h	7	2	28,57	0,9	[0,20-4,58]	
≥24h	55	16	29,09	1	[0,82-1,22]	
Support time						0,19
<24h	37	13	34,13	1,3	[0,89-1,96]	
≥24h	25	5	20	0,6	[0,27-1,38]	
ASA score						0,01
ASA=I	29	4	13,79	0,4	[0,15-0,96]	
ASA≥II	33	14	42,42	1,8	[1,18-2,74]	
Siège						0,03
High OIA	43	9	20,93	0,6	[0,39-1,05]	
Low OIA	19	9	47,37	2,2	[1,07-4,49]	
Cove state						0,13
Viable	46	11	23,91	0,8	[0,51-1,14]	
Nécrosis	16	7	43,75	1,9	[0,83-4,32]	
Bowel Résection						0,04
yes	26	11	42,30	1,2	[1,03-3,11]	
No	36	7	19,44	0,6	[0,32-1,09]	

Comp.\*: complication

%Comp.\*: percentage of complication.

Table 5. Factors related to patient mortality.

Variables	Effectif total	Décès	% Décès	OR	IC	P-Value
Sexe						0,39
Male	43	11	25,58	1,2	[0,84-1,65]	0,10
Fémele	19	3	15,79	0,64	[0,22-1,89]	
Age						0,68
Child and Adolescents	8	0	0	-	-	0,10
Adultes	54	14	25,92	1,2	[1,06-1,33]	
Consultation deadline						0,10
<24h	7	2	28,57	1,4	[0,29-6,32]	0,68
≥24h	55	12	21,81	0,9	[0,76-1,21]	
Support time						0,10
<24h	37	11	29,80	1,4	[0,99-2,17]	0,03
≥24h	25	3	12	0,5	[0,16-1,33]	
ASA Score						0,00
ASA=I	29	3	10,34	0,4	[0,14-1,11]	0,00
ASA≥II	33	11	33,33	1,7	[1,14-2,59]	
Siège						0,09
High OIA	43	5	11,63	0,4	[0,22-0,92]	0,02
Low OIA	19	9	47,37	3	[1,57-6,06]	
Cove state						0,02
Viable	46	8	17,39	0,7	[0,44-1,16]	0,00
Necrosis	16	10	62,5	2	[0,90-4,66]	
Bowel Résection						0,01
Yes	26	9	34,61	1,8	[1,05-3,13]	0,00
No	36	5	13,88	0,5	[0,26-1,15]	
Surgical site infection						0,01
yes	11	7	63,63	6	[2,04-17,57]	0,01
No	51	7	13,72	0,5	[0,32-0,93]	
Fistule stercoral fistula						0,01
yes	4	3	75	10,2	[1,16-91,30]	0,01
No	58	11	18,96	0,8	[0,60-1,05]	

### 3. Results

Acute mechanical bowel obstructions accounted for 18% of digestive surgical emergencies. The average age was 43.94 years old. The sex ratio was 2.26 in favor of men. The 40-59 age group was the most represented with 41.9%. The most common aetiologies were bridles 40.32% followed by pelvic colon volvulus 27.42%. The site of the obstacle was on the small bowel in 69% and on the colon in 31% of cases. Bowel resection followed by end-to-end anastomosis was performed in 53.22% of cases and flange resection in 40.32% of cases. Mortality was 23%, statistically correlated with ASA≥II score, site of occlusion, bowel resection, surgical site infection and stercoral fistula.

### 4. Discussion

Acute mechanical bowel obstructions ranked 3rd among abdominal surgical emergencies in our study behind acute appendicitis and acute generalized peritonitis.

Our results were lower than those of Harouna Y. et al. [7] at the Niamey National Hospital in Niger, where acute intestinal obstruction ranked first among abdominal surgical emergencies with 30% of cases.

Adults were the most represented in our study. The mean age of our study was close to that of Kaboré RAF et al. [8], and Idris OL et al. [10] who recorded 43.1 and 44.5 years. Our results were lower than those of Bankole AO et al. [4] and

Traoré D et al. [11] who reported 45.6 and 45.66 years. On the other hand, our results were superior to those of Kambiré JL et al. [5], Blasto-Okoko P et al. [12] and Rasamoelina N et al. [13] who reported 34; 40.6 and 34.5 years.

The male predominance in our study was comparable to that of Kaboré RAF et al. [8] who reported a sex ratio of 2.9. On the other hand, our results were superior to those of Kambiré JL et al. [5] at the Ouahigouya regional university hospital in Burkina Faso and Haridimos M et al. [14] at the University of technology teaching hospital in Nigeria who found a sex ratio of 1.8 and 1.1. Our results were lower than those of Harouna Y et al. [7] at Zinder National Hospital in Niger who found a sex ratio of 5.2.

Most patients saw more than 24 hours from the onset of symptoms. The same observation was made by Kaboré RAF et al. [8] who observed 83.5% delay in consultation. Patients with an ASAI score were the most represented in our study, followed by those with ASAII. Our results were different from those of Kaboré RAF et al. [8] who found that patients with ASAII were the most represented with 52.17%.

The majority of patients were treated within 24 hours of emergency room admission. Our result was different from that of Rasamoelina N et al. [13] who noted a delay in treatment of more than twenty-four hours in 93.4% of cases.

According to the aetiology, clamp occlusions were the most common in our study. Our results were superior to those of Tahir S et al. [15] and Blasto-Okoko P et al. [12] in Kenya which reported 34% and 23.1%. Our results were lower than those of Idris OL et al. [10] in Nigeria who reported 64.3% clamp

occlusion. In Niger, Harissou A et al. [1] noted that the main cause of acute mechanical intestinal obstruction was strangulated hernia in 49.70% of cases.

Small bowel obstructions were more frequent compared to colonic occlusions in our study. Our results were superior to those of Shimou I et al. [9] in Morocco who reported a rate of 54.36%, but were comparable to those of Haridimos M et al. [14] in Nigeria who noted 76% of cases of small bowel occlusions versus 24% of colonic occlusions. The loop was viable in most cases in our study, as found by Harissou A et al. [1] which recorded 69.6% of cases.

Bowel resection followed by one-stage end-to-end anastomosis was the most common practice in our study. Our results were superior to those of Okeny PK et al. [16] in Uganda and Rajaobelison T et al. [17] in Madagascar who found 22.08% and 35.73%. On the other hand, our results were lower than those of Mitchell S et al. [18] who reported 60.1%.

The mortality rate in our study was higher than that of Ohene-Yebohm et al. [19], Rasamoelina N et al. [13], and Soumah SA et al. [20] who reported 12% respectively; 14.75% and 2.48%. In the series by Rajaobelison T et al. [17] and Harouna Y et al. [7], the death rates were 37.5% and 41%.

The mortality factors in our study were ASA  $\geq$  II score, site of occlusion, bowel resection, surgical site infection, and stercoral fistula.

In the USA Mitchell S et al. [18] noted old age, comorbidities and intestinal necrosis as factors of mortality; while Julie A et al. [20] reported these factors to be ASA IV-V score and age over 80 years.

In Turkey, for Kapan M et al. [19] these factors were represented by age, comorbidities and etiology. In Madagascar, Rasamoelina N et al. [13] noted the low social level and the state of shock as factors of mortality.

In Kenya, Blasto-Okoko P et al. [12] observed that intestinal necrosis and long hospital stay were risk factors for death.

In Burkina Faso, Kaboré RAF et al. [8] identified the ASA III-IV score, age over 50 years, defects and hypovolemic shock as factors leading to mortality, while in Bamako and Niger Traoré D et al. [11], Harouna Y et al. [7] reported that surgery, delayed treatment and intestinal necrosis were risk factors for mortality.

## 5. Conclusion

Acute mechanical intestinal obstructions were frequent at 18%. The male sex was the most represented. The aetiologies were dominated by strangulation occlusions (flanges and volvulus). Bowel resection followed by one-stage end-to-end anastomosis was the most common. Their management recorded high mortality and was correlated with ASA  $\geq$  II score, colonic site of occlusion, bowel resection, surgical site infection and stercoral fistula.

Improving the prognosis of acute mechanical intestinal obstruction depends on early and adequate management.

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