

# Volvulus of Sigmoid Colon at Sikasso Hospital

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## Abstract

The sigmoid volvulus is an acute strangulation of the colon by the twisting of the sigmoid loop around its mesenteric axis resulting in partial or complete obstruction of the colonic lumen. It is the most common intestinal volvulus and is an absolute medical and surgical emergency. **Objectives:** Determine the frequency of sigmoid colon volvulus, describe clinical and para-clinical signs, describe treatment, and determine morbidity and mortality. **Methodology:** This was a retrospective and prospective study performed in the General Surgery Department of Sikasso. This study concerned patients admitted and operated for sigmoid volvulus from January 1, 2014 to December 31, 2017. **Retrospective Phase:** We have created survey cards to study the following parameters: 1) The age and the sex; 2) The clinical signs and associated defects; 3) The radiological examinations, endoscopic; 4) The established treatment whether medical, or surgical; 5) The evolution and the postoperative consequences; 6) The admission period. **Prospective Phase:** At the admission each patient to benefit: a complete interrogation, a complete physical examination, additional examinations including radio of the abdomen without preparation, the rate of hemoglobin and hematocrit, grouping/rhesus. **Support:** Our data were collected from medical records and operating records of patients in the department. **Results:** We collected 54 cases of sigmoid volvulus (the annual frequency was 13.5 cases for year), which accounted for 58.1% of colonic occlusions 19.6% of intestinal occlusions and 5.9% of operative operations in emergency. The average age was 47.13 with extremes of 18 and 102 years, The sex ratio is 4.40% in favor of men. Abdominal pain, vomiting, stopping of materials and gases were present in 32 (59.3%) patients. Von Wahl's triad was present in 36 patients (66.7%), the rectal ampoule empty in 92.6%. On the X-ray of the abdomen without preparation, 70.37% of the image was recorded as a double leg. The sigmoid was necrotic in 37% of cases, and a sigmoid volvulus and

necrotic hail in 7.4% of cases. We found a simple sigmoid volvulus in 61% of cases. We performed an immediate anastomosis resection in 63%, a Hartmann resection in 29.6%, an immediate anastomosis resection plus an ileostomy in 7.4%. Operative follow-up was simple in 85.2%, with a morbidity of 11.1%, and a mortality of 14.8%. **Conclusion:** Sigmoid volvulus is a serious surgical emergency requiring early diagnosis and management to improve prognosis. Pre-, postoperative and postoperative resuscitation associated with immediate anastomosis resection, or resection plus Hartmann, would reduce morbidity and mortality.

## Keywords

Sigmoid Volvulus, Surgical Emergency, Sikasso Hospital

## 1. Introduction

Sigmoid volvulus is defined by acute strangulation of the colon by the twisting of the sigmoid loop around its mesenteric axis resulting in partial or complete obstruction of the colonic lumen [1]. This pathology was actually described for the first time in 1836 by Rokitansky [2].

It is the most common intestinal volvulus and constitutes an absolute medical-surgical emergency [3]. Its incidence reaches 50% of intestinal obstruction in developing countries, and 70% of patients are under 60 years old [4].

Diagnosis is clinically based on abdominal meteorism, stopping of material and gas, abdominal pain [5]. Radiography of the abdomen without preparation or water-soluble enema found signs in favor of sigmoid volvulus in 90% of cases [5] by the demonstration of hydro-alaeic colic levels and or beak stoppage, bird of the contrast product.

The absence of a study on this pathology at Sikasso Hospital and the problematic of the disease justified our work.

## 2. Methodology

This was a retrospective and prospective study performed in the general surgery department of Sikasso. This study concerned patients admitted from January 1, 2014 to December 31, 2017.

The parameters studied were the following: age, sex, clinical signs, paraclinical, treatment, and operative follow-up.

Our data was entered on the Word 2007 software, analyzed by SPSS10FR and processed on Word and epi-info software with significant  $P < 0.05$ .

## 3. Results

We collected 54 cases of sigmoid volvulus, which accounted for 58.1% of colonic occlusions (Table 1), 19.6% of intestinal occlusions (Table 2), the annual frequency was 13.5 cases for year (Table 3), and 5.9% of operative operations in emergency.

**Table 1.** Frequency of sigmoid volvulus in colon obstruction.

Colon obstruction	Effective	Percentage
Sigmoid volvulus	54	58.1
Other types of colon obstruction	39	41.9
Total	93	100

The sigmoid volvulus accounted for 58.1% of colonic occlusions.

**Table 2.** Frequency of sigmoid volvulus in intestinal obstruction.

Bowel obstruction	Effective	Percentage
Sigmoid volvulus	54	19.6
Other types of intestinal obstruction	221	80.4
Total	275	100

The sigmoid volvulus accounted for 19.6% of intestinal occlusions.

**Table 3.** Frequency of sigmoid volvulus according to the authors.

Authors	Effective/sampling time	Frequency/year
Naseer, Pakistan, 2010 [15]	30/2 year	15 case/an P = 0.772363
Agaoglu, Turquie, 2005 [16]	32/11 year	2.9 case/an P = 0.256712
Connolly, Irlande, 2002 [17]	16/8 year	2 case/an P = 0.296638
A. G. Diarra, Mali, 2009 [14]	138/10 year	13.8 case/an P = 0.883450
Nuhu, 2010, Nigeria [5]	48/5 year	9.6 case/an P = 0.690339
Diallo, Mali, 2009 [9]	71/6 year	11.8 case/an P = 0.772631
Our study, Mali, 2017	54/4 year	13.5 case/an

The average age was 47.13 with extremes of 18 and 102 years (**Figure 1**). The sex ratio is 4.40% in favor of men (**Figure 2**).

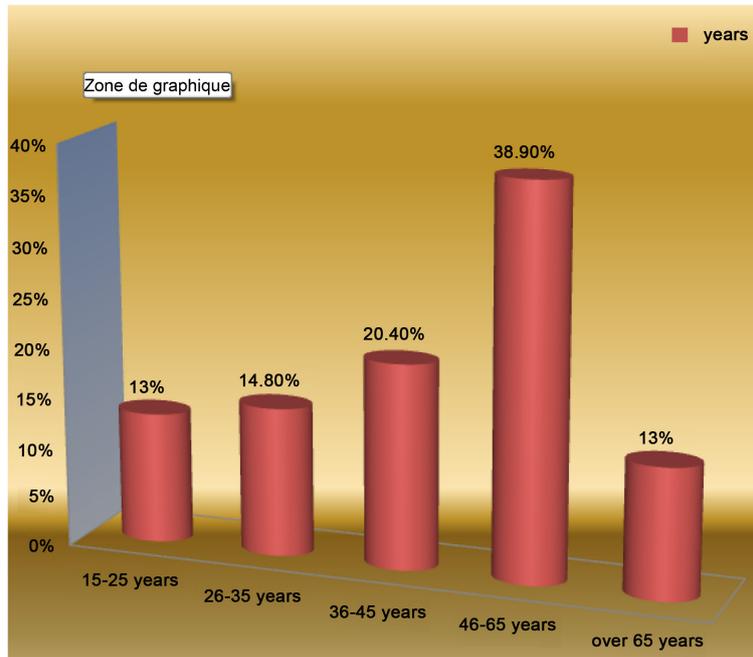
Abdominal pain, vomiting, stopping of materials and gases were present in 32 (59.3%) patients (**Figure 3**). Von Wahl's triad was present in 36 patients (66.7%) (**Table 4**) the rectal ampoule empty in 92.6%.

On the X-ray of the abdomen without preparation, 70.37% of the image was recorded as a double leg (**Table 5** and **Table 6**).

The sigmoid was necrotic in 37% of cases, and a sigmoid volvulus and necrotic hial in 7.4% of cases. We found a simple sigmoid volvulus in 61% of cases (**Table 7**).

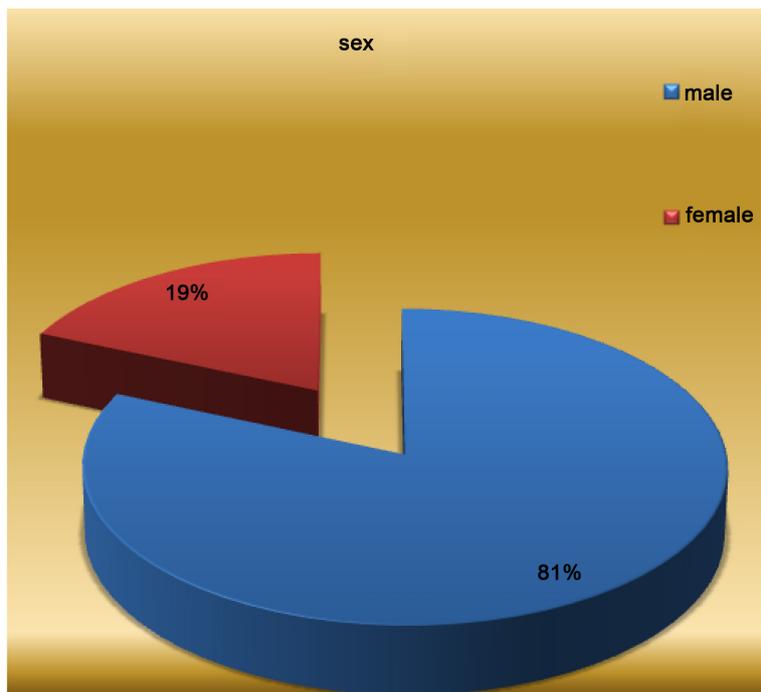
We performed an immediate anastomosis resection in 63%, a Hartmann resection in 29.6%, an immediate anastomosis resection plus an ileostomy in 7.4%

(Table 8 and Table 9). Operative follow-up was simple in 85.2% (Table 10), with a morbidity of 11.1, and a mortality of 14.8% (Table 11).



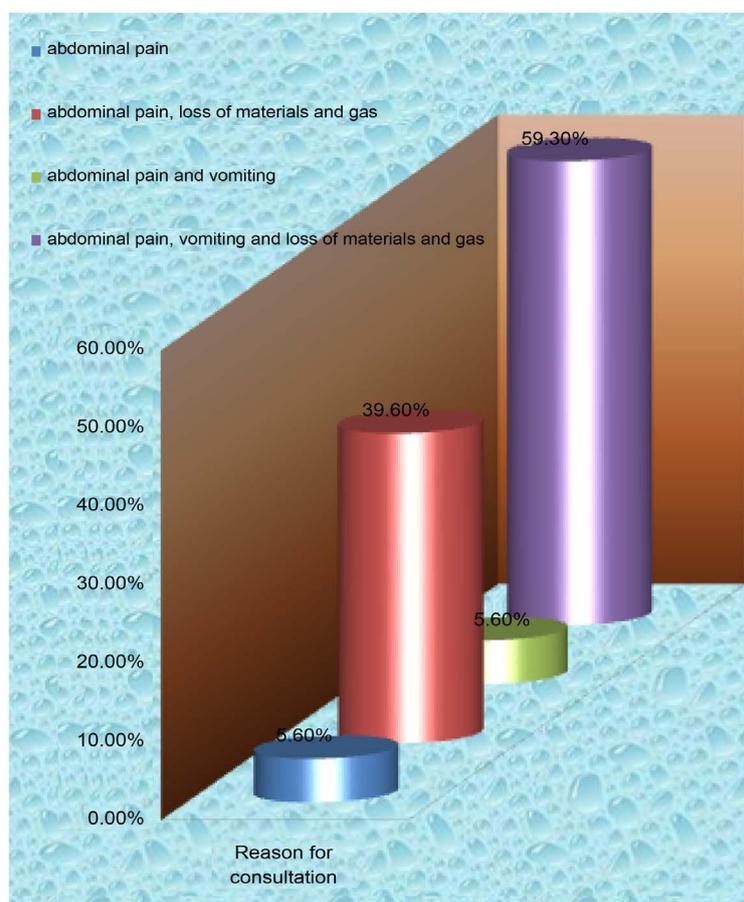
The average age is 47.13 with the extremes of 18 - 102 years. The standard deviation is 18,861.

Figure 1. Age distribution of patients.



Male 81%, female 19%, sex ratio 4.26.

Figure 2. Patient distribution by gender.



Abdominal pain, vomiting, stopping of materials and gases were present in 32 (59.3%) patients.

**Figure 3.** Patient distribution by reason of consultation.

**Table 4.** Triad of Von Wahl according to the authors.

Authors	Effective	Triad of Von Wahl	Statistical test
KHANNA, Inde, 1999 [25]	111		
El Idrissi, Maroc, 1996 [13]	82	78 (95%)	P = 0.000010
Diallo, Mali, 2009 [9]	111	89 (80.2%)	P = 0.057358
MARIKO, Mali, 2008 [4]	96	68 (70.8%)	P = 0.595269
A. G. Diarra, Mali, 2009 [14]	138	95 (68.84%)	P = 0.771136
G. Djaré, Mali, 2006 [5]	71	57 (80.3%)	P = 0.084032
Our study, Mali, 2017	54	36 (66.7%)	

**Table 5.** Distribution of patients according to the results of the abdomen without preparation (ASP).

Abdomen without preparation (ASP).	Effective	Percentage
Hydroaeric level in double jamb	38	70.37
Hydroaeric level higher than wide	16	29.63
Total	54	100

We found a double jamb image in 70.37% of the cases.

**Table 6.** Intake of the abdomen without preparation according to the authors.

Authors	Effective	Double jamb image	Statistical test
EL Idrissa, Maroc, 1996 [13]	82	70 (85%)	P = 0.006199
Khanna, Inde, 1999 [25]	111	95 (85.6)	P = 0.002010
DOUCOURÉ, Mali, 1995 [19]	56	9 (16.07%)	P = 0.000000
Diallo, Mali, 2009 [9]	111	70 (63.1)	P = 0.337846
G. Djaré, Mali, 2006 [5]	67	42 (62.7%)	P = 0.374702
A. G. Diarra, Mali, 2009 [14]	138	95 (68.84%)	P = 0.836346
Our study, Mali, 2017	54	38 (70.37%)	

**Table 7.** Distribution of patients according to the intraoperative diagnosis.

Diagnostic	Effective	Percentage
Simple sigmoid volvulus	33	61
Sigmoid volvulus with necrosis	15	27.8
Sigmoid and hail volvulus with necrosis	4	7.4
Sigmoid volvulus without necrosis/pregnancy	1	1.9
Sigmoid volvulus with necrosis/pregnancy	1	1.9
Total	54	100

We found a simple sigmoid volvulus in 61% of cases.

**Table 8.** Distribution of patients according to the actions performed inoperative.

Gestures made	Effective	Percentage
Resection + Hartmann	16	29.6
Resection immediate anastomosis	34	63
Resection immediate anastomosis and ileostomy	4	7.4
Résection anastomose immédiate + iléostomie	4	7.4
Total	54	100

We performed an immediate anastomosis resection in 63% of cases.

**Table 9.** Surgical methods according to the authors.

Authors	Resection anastomosis immediate	Resection and colostomy	Simple detorsion or with pexie	Total
Agaoglu, Turquie, 2005 [16]	n = 3 (9.3%) P = 0.000001	16 (50%) P = 0.058882	7 (22%) P = 0.001483	32 (81.3%)
Khanna, Inde, 1999 [25]	29 (28.2%) P = 0.000024	17 (16.5%) P = 0.055200	57 (55.3%) P = 0.000000	103 (100%)
Bouassria, N, Maroc, 2011 [13]	00 P = 0.000000	13 (32.5%) P = 0.841421	25 (62.5%) P = 0.000000	38 (95%)
Mehari, Erythrée, 2002 [10]	4 (3%) P = 0.000000	12 (9.1%) P = 0.006252	46 (34.8%) P = 0.000001	62 (46.9%)
Notre étude, Mali, 2017	34 (63%)	16 (29.6%)	00	50 (92.6%)

**Table 10.** Distribution of patients according to the operative sequence at 6 months.

Operative suite	Effective	Percentage
Simple	46	85.2
Death	8	14.8
Total	54	100

The operative suites were simple in 85.2% of cases.

**Table 11.** Overall mortality according to the authors.

Authors	Effective	Mortality	Statistical test
Touré, Sénégal, 2003, [3]	34	5 (14.28%)	P = 0.988812
Sani, Niger, 2003 [25]	40	8 (20%)	P = 0.508372
Uptal, Inde, 2003 [7]	197	2 (1.01%)	P = 0.000027
Mehari, Erythrée, 2002 [10]	132	30 (22.7%)	P = 0.224416
Turan, Turquie, 2004 [8]	81	10 (12.3%)	P = 0.679278
Naseer, Pakistan, 2010 [15]	30	1 (3.33%)	P = 0.206914
Notre étude, Mali, 2017	54	8 (14.8%)	

#### 4. Discussion

Sigmoid volvulus is a relatively common condition in Africa and Asia. The studies found reported hospital frequencies ranging from 9.6 to 15 cases per year [6] [7] [8] [9]. These reports seem to be superior to those published in the West (2 to 2.9 cases per year) [10] [11]. This geographical difference has been reported by several authors [10] [12] [13]. According to these authors, sigmoid volvulus is rare in Western Europe and North America. On the other hand, it is particularly common in Central and Eastern Europe, Latin America, Africa and the Middle East where the frequency of dolichocolon and congenital megacolon is a predisposing racial factor.

Von Wahl's triad is the clinical translation of the volvated sigmoid loop [14] [15]. It is defined by:

- Elasticrenency;
- A stationary and asymmetrical meteorism (in "rugby ball");
- Hightympanism.

It is usually complete. Our study differs from that of the Indian and Moroccan series [16] [17]. This statistical difference is due to the delay of consultation of our patients.

The asymmetrical meteorism disappears in favor of the diffuse one when the symptoms evolve a long time [5].

X-ray of the abdomen without preparation is an essential examination to confirm the diagnosis of sigmoid volvulus by showing a typical image in the form of a double-legged arch [18].

According to Deneuille in France [18] it allows diagnosis in 70% of cases. Millat in France, Kevin in Australia, Khanna in India found conclusive rates of

60% to 80% [1] [16] [5].

The statistical difference between our series and those of the authors mentioned above [9] [12] [16] [17] [19] is due to the fact that the typical image was not found in 16 of our patients (29.63%). They presented to ASP the image of colic-like water levels (higher than wide).

After a short resuscitation, all our patients were operated on. No patients underwent nonsurgical detorsion. In our study 34 (63%) patients underwent an immediate anastomosis resection, Hartmann's two-stage colectomy was performed in 16 (29.6%) patients. 4 (7.4%) operated patients. Surgical exploration had found a sigmoid volvulus and hail with necrosis. Patients underwent pelvic resection with a Bouilly Volkmann-type ileostomy, and sigmoid resection with a colo-rectal anastomosis. In the Uptal Indian series [20] [21], however, all patients (100%) underwent immediate anastomosis resection, whereas in Khanna [22], unresected surgical detorsion was most commonly performed (55%, 3%).

The mortality associated with sigmoid volvulus is relatively high. There is no significant difference between our results and those of the Turkish, Asian and African series [3] [5] [6] [8] [10] [19] [23]. The selected series found mortality rates ranging from 1.01% in Uptal in India [20] to 22.7% in Mehari in Eritrea [22]. The low mortality rate in Uptal is due to the early management of the one hand and the accuracy of the therapeutic indication on the other hand. In this series [24], all patients underwent immediate anastomosis resection. The peri-operative mortality is a function of the duration of the symptoms, the general condition of the patient, the vitality of the twisted loop and the surgical procedure [25].

## 5. Conclusion

Sigmoid volvulus is a serious surgical emergency requiring early diagnosis and management to improve prognosis. Pre-, postoperative and postoperative resuscitation associated with immediate anastomosis resection, or resection plus Hartmann, would reduce morbidity and mortality.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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